APPENDIX IV

MATES V

FINAL REPORT

Summaries for the MATES II-V Fixed Monitoring Sites

Appendix IV

Summaries for the MATES II-V Fixed Monitoring Sites

IV.1 Method Detection Limit (MDL) and Data Reporting

The MDL is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from the analysis of samples in a given sample matrix containing the analyte (EPA, 2017) [1]. Guidance for determination of the method detection limit (MDL) and data reporting was taken from the U. S. EPA's National Air Toxics Pilot City Monitoring Program. The MDL, as defined in 40 CFR Appendix B, Part 136, "Definition and Procedure for Determination of the Method Detection Limit" was used.

The South Coast AQMD Laboratory used this MDL determination method for the analyses conducted. It consists of performing seven replicate analyses of samples containing the analyte of interest at a level not to exceed five times the projected MDL. A standard deviation is determined using results of the analysis. The standard deviation multiplied by 3.14 (from the Tables of Student's t Values at the 99% confidence level) is the reported MDL.

In the tables below, the average generally represents the Kaplan-Meier (KM) mean, and the 95% confidence intervals (CI) are taken from bootstrapping the KM mean. The KM mean cannot be reliably calculated if more than 80% of the data points are below the MDL. In this situation, two average calculations are provided. The first average is found by substituting zero for all data below the MDL and calculating the average. The 95% confidence intervals are calculated for the zero-substituted mean using bootstrapping, which is a method of randomly sampling data and re-calculating the mean. The second average is found by substituting the MDL for all data below the MDL and calculating the average. The 95% confidence intervals are calculated for the MDL-substituted mean using bootstrapping. In the tables below, the reported lower-bound of the 95% confidence interval is taken from the zero-substituted mean calculations and the upper-bound of the 95% confidence interval is taken from the MDL-substituted mean calculations. Data for which more than 80% of the sample are below the MDL are denoted with a footnote ("a"). See Appendix XI for more information about the statistical methods used in this report.

Fine particulate matter ($PM_{2.5}$) is a component of the total suspended particle (TSP) mass. Metals in the $PM_{2.5}$ size fraction often have more than 80% of the data below the MDL, e.g., arsenic, antimony, and cadmium due to limitations in measurement techniques. The upper bound estimate of the average using MDL substitution is sometimes higher than the KM mean from the TSP analysis for the same metal. Since $PM_{2.5}$ is a subset of TSP, an upper bound estimate higher than the TSP KM mean is unrealistic. In this situation, the KM mean and upper bound of the 95% confidence interval from the TSP analysis are used instead of MDL substitution. The data for $PM_{2.5}$ metals is more uncertain than other analytes in the MATES report, and staff urge caution in the

[1] Reference: Environmental Protection Agency, 40 CFR Part 136, Clean Water Act Methods Update Rule for the Analysis of Effluent. https://www.govinfo.gov/content/pkg/FR-2017-08-28/pdf/2017-17271.pdf

interpretation of the $PM_{2.5}$ metal data, especially for older MATES data. In some cases (antimony for MATES III, tin and uranium for MATES IV), the KM mean from the TSP analysis is lower than the zero-substituted mean from the PM2.5 analysis, indicating that these data should be interpreted with caution. Data for which the TSP KM mean is used in place of MDL-substituted mean are denoted with a footnote ("b"). The station names, abbreviations, latitude (Lat.) and longitude (Lon.) l for MATES II-V are in Table IV-1 below.

Table IV-2 shows the MDLs. Some data sets have multiple MDLs for a given MATES project, pollutant, and station, in which case the minimum and maximum MDLs are provided separated by a comma. Not all pollutants were monitored during all of the MATES projects, leading to empty spaces in Table IV-2. In a few instances, MDLs were not available for certain pollutants from previous MATES projects, also resulting in empty spaces in Table IV-2. Data with missing MDL values could not be analyzed with the methods used for this report and no statistics were calculated. These are denoted as "Unk MDL" for unknown MDL in later tables in this appendix. Table IV-3 through Table IV-157 present statistical summaries for all pollutants for all MATES projects by station.

Figure IV-1 through Figure IV-297 present the MATES data as bar graphs and geographic plots to visualize all of the data for a single species both temporally and spatially. For the geographic plots, both the heights of the bars and the color scale represent the pollutant concentration. The bars that consist of a solid color represent KM mean concentrations. As described above, the KM mean is not calculated if more than 80% of the data were below detection limit, and upper and lower-bound estimates are provided using MDL and zero substitution for the data below detection limit. For this situation, the bar has a color gradient from the lower to upper bound estimates. Additionally, when upper and lower bound estimates are used, the bottom of the bar may not extend all the way to the axis, but instead the height of the bottom of the bar represents the lower bound estimate of the concentration. The location of each station is represented by a blue dot, usually at the intersection of the horizontal and vertical axes for the bar plot. To avoid overlapping bar plots, some of the bar plots are moved away from the location of the station and an arrow points to the blue dot representing the station location. The "x" in the bar graphs indicate that either no measurements were conducted, or the MDL is not available.

The bar charts show the concentration on the left vertical axis. Cancer risk and/or chronic hazard quotient (HQ) estimates are shown on the right vertical axis or axes. If there is no cancer risk and/or chronic HQ axis on the right side of the bar graph, then cancer potency values and/or chronic Reference Exposure Levels (RELs) have not been defined by OEHHA for that analyte and a health risk calculation could not be completed.

Section IV.2 describes multiple methods that were used for handling missing analytes in the aggregate risk calculations. The results from each of these methods are shown in Figure IV-298 through Figure IV-301.

Table IV-1 Station names, abbreviations, latitude (Lat.) and longitude (Lon.) l for MATES II-V.

Station	MATES II Name (Lat., Lon.)	MATES III Name (Lat., Lon.)	MATES IV Name (Lat., Lon.)	MATES V Name (Lat., Lon.)
AN	Anaheim (33.8199, -117.9144)	Anaheim (33.8199, -117.9144)	Anaheim (33.8307, -117.9406)	Anaheim (33.8307, -117.9403)
BU	Burbank (34.176, -118.317)	Burbank (34.176, -118.317)	Burbank (34.176, -118.317)	Burbank Area (34.2616, -118.4123)
CP	Compton (33.9015, -118.2065)	Compton (33.9015, -118.2065)	Compton (33.9015, -118.2065)	Compton (33.9014, -118.2069)
SB	Fontana (34.0996, -117.4919)	Inland Valley San Bernardino (34.0996, -117.4919)	Inland Valley San Bernardino (34.0996, -117.4919)	Inland Valley San Bernardino (34.0996, -117.4919)
HP	Huntington Park (33.9833, -118.2306)	Huntington Park (33.9833, -118.2306)	Huntington Park (33.9833, -118.2306)	Huntington Park (33.9798, -118.2159)
LB	Long Beach (34.176, -118.317)	North Long Beach (34.176, -118.317)	North Long Beach (34.176, -118.317)	Long Beach (34.2616, -118.4123)
LA	Los Angeles (34.0665, -118.2276)	Central Los Angeles (34.0665, -118.2276)	Central Los Angeles (34.0665, -118.2276)	Central L.A. (34.0665, -118.2276)
PR	Pico Rivera (34.0135, -118.0604)	Pico Rivera (34.0135, -118.0604)	Pico Rivera (34.0135, -118.0604)	Pico Rivera (34.0135, -118.0604)
RU	Rubidoux (34.0006, -117.4151)	Rubidoux (34.0006, -117.4151)	Rubidoux (34.0006, -117.4151)	Rubidoux (34.0006, -117.4151)
WLB	Wilmington (33.7993, -118.2584)	West Long Beach (33.7924, -118.2158)	West Long Beach (33.8015, -118.2203)	West Long Beach (33.8015, -118.2203)

Table IV-2. Method detection limits (MDLs) for MATES II-V

Analysis	Analyte	MATES II MDL	MATES III MDL	MATES IV MDL	MATES V MDL
Carbonyls	Acetaldehyde	0.1 ppb	0.1 ppb	0.00785 ppb	0.0189, 0.0211 ppb
Carbonyls	Acetone	0.1 ppb	0.1 ppb	0.00455 ppb	0.0838, 0.12 ppb
Carbonyls	Benzaldehyde				0.00346, 0.0205 ppb
Carbonyls	Formaldehyde	0.1 ppb	0.1 ppb	0.0137 ppb	0.0195, 0.0236 ppb
Carbonyls	Methyl Ethyl Ketone	0.1 ppb	0.1 ppb	0.00125 ppb	0.00882, 0.0207 ppb
Carbonyls	Propionaldehyde				0.00463, 0.00842 ppb
VOCs	Acrolein			0.079 ppb	0.03, 0.05 ppb
VOCs	Benzene	0.1, 0.2 ppb	0.1 ppb	0.026 ppb	0.01, 0.04 ppb
VOCs	Bromomethane				0.01, 0.1 ppb
VOCs	1,3 Butadiene	0.04, 1.9 ppb	0.2 ppb	0.028 ppb	0.02, 0.03 ppb
VOCs	Carbon Tetrachloride	0.02, 0.2 ppb	0.05 ppb	0.046 ppb	0.01, 0.05 ppb
VOCs	Chloroform	0.02, 0.1 ppb	0.1 ppb	0.054 ppb	0.01, 0.05 ppb
VOCs	Chloromethane	0.1 ppb			
VOCs	1,2-Dibromoethane	0.1 ppb	0.2 ppb	0.07 ppb	0.03, 0.07 ppb
VOCs	1,2-Dichlorobenzene	0.01, 0.1 ppb	0.3 ppb	0.095 ppb	0.04, 0.07 ppb
VOCs	1,4-Dichlorobenzene	0.02, 0.1 ppb	0.3 ppb	0.057 ppb	0.04, 0.06 ppb
VOCs	Dichloroethane [1,1]	0.1 ppb			
VOCs	1,2-Dichloroethane	0.1 ppb	0.1 ppb	0.044 ppb	0.01, 0.04 ppb
VOCs	1,1-Dichloroethene (VDC)	0.1, 0.5 ppb			
VOCs	1,2-Dichloropropane		0.2 ppb	0.022 ppb	0.02, 0.03 ppb
VOCs	Ethyl Benzene	0.1, 0.6 ppb	0.1 ppb	0.05 ppb	0.02, 0.06 ppb
VOCs	Methylene Chloride	0.1, 1 ppb	0.1 ppb	0.076 ppb	0.02, 0.08 ppb
VOCs	Methyl tertiary-butyl ether (MTBE)		0.3 ppb	0.051 ppb	0.01, 0.05 ppb
VOCs	Non Methane Organic Carbon			0.3 ppbC	
VOCs	Perchloroethylene	0.01, 0.1 ppb	0.1 ppb	0.065 ppb	0.03, 0.04 ppb
VOCs	Styrene	0.1 ppb	0.1 ppb	0.069 ppb	0.04, 0.07 ppb
VOCs	Toluene	0.1, 0.2 ppb	0.1 ppb	0.024 ppb	0.02, 0.09 ppb
VOCs	Trichloroethylene	0.02, 0.1 ppb	0.1 ppb	0.072 ppb	0.008, 0.04 ppb
VOCs	Vinyl Chloride	0.2, 0.7 ppb	0.2 ppb	0.051 ppb	0.01, 0.04 ppb

Analysis	Analyte	MATES II MDL	MATES III MDL	MATES IV MDL	MATES V MDL
VOCs	Vinyl Chloride	0.2, 0.7 ppb	0.2 ppb	0.051 ppb	0.01, 0.04 ppb
VOCs	Xylene (m-, p-)	0.1, 0.6 ppb	0.1 ppb	0.072 ppb	0.05, 0.09 ppb
VOCs	Xylene (o-)	0.1 ppb	0.2 ppb	0.065 ppb	0.02, 0.05 ppb
TSP Hexavalent Chromium	Hexavalent Chromium	0.06, 0.4 ng/m3	0.06 ng/m3	0.0032 ng/m3	0.002, 0.003 ng/m3
TSP Metals	Aluminum	6, 60 ng/m3	150 ng/m3		
TSP Metals	Antimony	6, 19 ng/m3	2 ng/m3	0.077 ng/m3	0.08, 0.43 ng/m3
TSP Metals	Arsenic	3, 4 ng/m3	1 ng/m3	0.091 ng/m3	0.07 ng/m3
TSP Metals	Barium	19, 25 ng/m3	17 ng/m3	2.4 ng/m3	1.4, 7.24 ng/m3
TSP Metals	Beryllium			0.087 ng/m3	0.04, 0.22 ng/m3
TSP Metals	Bromine	1, 2 ng/m3			
TSP Metals	Cadmium	10 ng/m3	2 ng/m3	0.0785 ng/m3	0.02, 0.09 ng/m3
TSP Metals	Calcium	3, 12 ng/m3	5 ng/m3	0.291 ng/m3	337, 1740 ng/m3
TSP Metals	Cesium			0.291 ng/m3	0.01, 0.07 ng/m3
TSP Metals	Chlorine	7, 13 ng/m3			
TSP Metals	Chromium	2 ng/m3	2 ng/m3	1.05 ng/m3	0.7, 0.74 ng/m3
TSP Metals	Cobalt	16, 35 ng/m3	1 ng/m3	0.122 ng/m3	0.05, 0.25 ng/m3
TSP Metals	Copper	1, 2 ng/m3	1 ng/m3	0.933 ng/m3	0.73, 3.76 ng/m3
TSP Metals	Gallium	3 ng/m3			
TSP Metals	Indium	11 ng/m3	2 ng/m3		
TSP Metals	Iron	2, 8 ng/m3	1 ng/m3	0.291 ng/m3	14, 145 ng/m3
TSP Metals	Lanthanum	67 ng/m3			
TSP Metals	Lead	1, 3 ng/m3	5 ng/m3	0.49 ng/m3	0.2, 1.01 ng/m3
TSP Metals	Magnesium	67 ng/m3			
TSP Metals	Manganese	2 ng/m3	1 ng/m3	0.37 ng/m3	0.28, 1.45 ng/m3
TSP Metals	Mercury	3 ng/m3			
TSP Metals	Molybdenum	1, 3 ng/m3	2 ng/m3	0.12 ng/m3	0.04, 0.22 ng/m3
TSP Metals	Nickel	1, 2 ng/m3	1 ng/m3	0.719 ng/m3	0.21, 0.22 ng/m3
TSP Metals	Palladium	11 ng/m3	3 ng/m3		
TSP Metals	Phosphorus	13, 20 ng/m3	21 ng/m3		
TSP Metals	Potassium	5, 11 ng/m3	2 ng/m3	0.291 ng/m3	56.1, 58.3 ng/m3
TSP Metals	Rubidium	2 ng/m3	1 ng/m3	0.291 ng/m3	0.04, 0.22 ng/m3
TSP Metals	Selenium	1, 2 ng/m3	2 ng/m3	0.868 ng/m3	0.56, 0.59 ng/m3

Analysis	Analyte	MATES II MDL	MATES III MDL	MATES IV MDL	MATES V MDL
TSP Metals	Silicon	5, 64 ng/m3	275 ng/m3		
TSP Metals	Silver	5 ng/m3	2 ng/m3		
TSP Metals	Strontium	2, 3 ng/m3	2 ng/m3	0.211 ng/m3	0.7, 3.62 ng/m3
TSP Metals	Sulfur	4, 32 ng/m3	21 ng/m3		
TSP Metals	Tin	5 ng/m3	3 ng/m3	0.442 ng/m3	0.15, 0.8 ng/m3
TSP Metals	Titanium	4, 14 ng/m3	5 ng/m3	0.882 ng/m3	1.74, 8.97 ng/m3
TSP Metals	Uranium	3, 6 ng/m3		0.0813 ng/m3	0.01, 0.07 ng/m3
TSP Metals	Vanadium	3, 6 ng/m3	2 ng/m3	0.197 ng/m3	0.04 ng/m3
TSP Metals	Yttrium	1, 2 ng/m3	1 ng/m3		
TSP Metals	Zinc	1, 2 ng/m3	1 ng/m3	0.291 ng/m3	8.42, 8.74 ng/m3
TSP Metals	Zirconium	2 ng/m3			
PM10 Mass	PM10 Mass	22 µg/m3		0.0613 µg/m3	
PM10 Carbon	Elemental Carbon	947 ng/m3		7.47 ng/m3	
PM10 Carbon	Organic Carbon	3320 ng/m3		99.6 ng/m3	
PM10 Carbon	Total Carbon	5010 ng/m3		99.6 ng/m3	
PAH	Acenaphthene		0.037 ng/m3	0.0302, 0.346 ng/m3	0.0689, 0.69 ng/m3
PAH	Acenaphthylene		0.037 ng/m3	0.0212, 0.229 ng/m3	0.00807, 0.0444 ng/m3
PAH	Anthracene		0.037 ng/m3	0.0219, 0.306 ng/m3	0.0124, 0.0321 ng/m3
PAH	Benzo(a)anthracene		0.0018 ng/m3	0.0349, 0.377 ng/m3	0.00863, 0.00965 ng/m3
PAH	Benzo(a)pyrene	0.05 ng/m3	0.0018 ng/m3	0.0407, 0.47 ng/m3	0.00984, 0.0133 ng/m3
PAH	Benzo(b)fluoranthene	0.05 ng/m3		0.032, 0.352 ng/m3	0.0077, 0.0198 ng/m3
PAH	Benzo(b+j+k)Fluoranthene		0.0018 ng/m3		
PAH	Benzo(e)pyrene			0.0389, 0.42 ng/m3	0.0051, 0.00975 ng/m3
PAH	Benzo(g,h,i)perylene	0.05 ng/m3	0.0018 ng/m3	0.0288, 0.396 ng/m3	0.00538, 0.0538 ng/m3
PAH	Benzo(k)fluoranthene	0.05 ng/m3		0.0404, 0.459 ng/m3	0.0039, 0.0108 ng/m3

Analysis	Analyte	MATES II MDL	MATES III MDL	MATES IV MDL	MATES V MDL
PAH	Chrysene		0.0018 ng/m3	0.0186, 0.347 ng/m3	0.00633, 0.00747 ng/m3
PAH	Coronene			0.0394, 0.438 ng/m3	0.00278, 0.0278 ng/m3
PAH	Cyclopenta(c,d)pyrene			0.0304, 0.582 ng/m3	0.00386, 0.0066 ng/m3
PAH	Dibenz(a,h)anthracene	0.05 ng/m3	0.0018 ng/m3	0.0293, 0.393 ng/m3	0.0121, 0.121 ng/m3
PAH	Fluoranthene		0.037 ng/m3	0.0355, 0.612 ng/m3	0.023, 0.23 ng/m3
PAH	Fluorene		0.037 ng/m3	0.0301, 0.325 ng/m3	0.0643, 0.688 ng/m3
PAH	9-Fluorenone			0.0364, 0.393 ng/m3	0.0375, 0.563 ng/m3
PAH	Indeno(1,2,3-c,d)pyrene	0.05 ng/m3	0.0018 ng/m3	0.0264, 0.455 ng/m3	0.0123, 0.132 ng/m3
PAH	Naphthalene		0.037 ng/m3	0.118, 1.71 ng/m3	1.07, 16.9 ng/m3
PAH	Perylene			0.0291, 0.469 ng/m3	0.0084, 0.0841 ng/m3
PAH	Phenanthrene		0.037 ng/m3	0.0297, 0.321 ng/m3	0.116, 0.207 ng/m3
PAH	Pyrene		0.037 ng/m3	0.0376, 0.601 ng/m3	0.0117, 0.155 ng/m3
PAH	Retene			0.0762, 1.1 ng/m3	0.0572, 1.77 ng/m3
PM2.5 Mass (SASS)	PM2.5 Mass		0.104 µg/m3	0.104 µg/m3	0.0001 µg/m3
PM2.5 Carbon	EC1				40 ng/m3
PM2.5 Carbon	EC2				40 ng/m3
PM2.5 Carbon	EC3				40 ng/m3
PM2.5 Carbon	Elemental Carbon		74.2 ng/m3	37.5 ng/m3	40 ng/m3
PM2.5 Carbon	OC1				490, 500 ng/m3
PM2.5 Carbon	OC2				490, 500 ng/m3
PM2.5 Carbon	OC3				490, 500 ng/m3
PM2.5 Carbon	OC4				490, 500 ng/m3
PM2.5 Carbon	Organic Carbon		557 ng/m3	500 ng/m3	490, 500 ng/m3
PM2.5 Carbon	Total Carbon		557 ng/m3	500 ng/m3	490, 500 ng/m3
PM2.5 Ions	Ammonium Ion		43.8 ng/m3	43.8 ng/m3	40 ng/m3
PM2.5 Ions	Chloride		150 ng/m3	150 ng/m3	150, 160 ng/m3
PM2.5 Ions	Nitrate		150 ng/m3	150 ng/m3	154, 156 ng/m3
PM2.5 Ions	Potassium Ion				80 ng/m3
PM2.5 Ions	Sodium		15.6 ng/m3	15.6 ng/m3	20 ng/m3

Analysis	Analyte	MATES II MDL	MATES III MDL	MATES IV MDL	MATES V MDL
PM2.5 Ions	Sulfate		150 ng/m3	150 ng/m3	154, 156 ng/m3
PM2.5 Metals	Aluminum		1.2 ng/m3	42.2 ng/m3	42 ng/m3
PM2.5 Metals	Antimony		1.4 ng/m3	59.8 ng/m3	42 ng/m3
PM2.5 Metals	Arsenic		0.2 ng/m3	13.1 ng/m3	12 ng/m3
PM2.5 Metals	Barium		10 ng/m3	123 ng/m3	68 ng/m3
PM2.5 Metals	Cadmium		1 ng/m3	42.7 ng/m3	25 ng/m3
PM2.5 Metals	Calcium		1 ng/m3	13.9 ng/m3	17 ng/m3
PM2.5 Metals	Cesium			154 ng/m3	123, 124 ng/m3
PM2.5 Metals	Chlorine			12.4 ng/m3	14 ng/m3
PM2.5 Metals	Chromium		1 ng/m3	8.86 ng/m3	6 ng/m3
PM2.5 Metals	Cobalt		0.4 ng/m3	10.3 ng/m3	7 ng/m3
PM2.5 Metals	Copper		0.2 ng/m3	11.7 ng/m3	7 ng/m3
PM2.5 Metals	Indium		1 ng/m3		
PM2.5 Metals	Iron		0.4 ng/m3	15.8 ng/m3	25 ng/m3
PM2.5 Metals	Lead		3 ng/m3	22.2 ng/m3	14 ng/m3
PM2.5 Metals	Magnesium				67 ng/m3
PM2.5 Metals	Manganese		0.5 ng/m3	14.7 ng/m3	9 ng/m3
PM2.5 Metals	Molybdenum		1 ng/m3		10 ng/m3
PM2.5 Metals	Nickel		0.2 ng/m3	8.03 ng/m3	4 ng/m3
PM2.5 Metals	Palladium		1.5 ng/m3		
PM2.5 Metals	Phosphorus		12 ng/m3	15.4 ng/m3	15 ng/m3
PM2.5 Metals	Potassium		1 ng/m3	7.16 ng/m3	7 ng/m3
PM2.5 Metals	Rubidium		0.4 ng/m3	13.3 ng/m3	12 ng/m3
PM2.5 Metals	Samarium				123, 124 ng/m3
PM2.5 Metals	Selenium		1 ng/m3	25.6 ng/m3	25 ng/m3
PM2.5 Metals	Silicon		160 ng/m3	28.7 ng/m3	28, 29 ng/m3
PM2.5 Metals	Silver		1.2 ng/m3		
PM2.5 Metals	Strontium		1 ng/m3	16.4 ng/m3	9 ng/m3
PM2.5 Metals	Sulfur		12 ng/m3	31.3 ng/m3	28, 29 ng/m3
PM2.5 Metals	Thallium				25 ng/m3
PM2.5 Metals	Tin		1.5 ng/m3	49.8 ng/m3	25 ng/m3
PM2.5 Metals	Titanium		3 ng/m3	17.5 ng/m3	20 ng/m3
PM2.5 Metals	Uranium			23.4 ng/m3	25 ng/m3

Analysis	Analyte	MATES II MDL	MATES III MDL	MATES IV MDL	MATES V MDL
PM2.5 Metals	Vanadium		1.2 ng/m3	15.5 ng/m3	11 ng/m3
PM2.5 Metals	Yttrium		0.2 ng/m3	15.7 ng/m3	12 ng/m3
PM2.5 Metals	Zinc		0.2 ng/m3	8.37 ng/m3	7 ng/m3
PM2.5 Levoglucosan	Galactosan				2 ng/m3
PM2.5 Levoglucosan	Levoglucosan				2 ng/m3
PM2.5 Levoglucosan	Mannosan				2 ng/m3
Diesel PM	Diesel PM				

Carbonyls Analysis

Acetaldehyde

Table IV-3. Ambient Concentrations (ppb) of Acetaldehyde from the Carbonyls analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1.6	2.35	1.99	1.85	1.33	1.32	1.77	2.13	1.99	1.1
95% CI LB	1.33	1.99	1.62	1.49	0.993	1.09	1.45	1.73	1.59	0.908
95% CI UB	1.88	2.72	2.37	2.26	1.71	1.57	2.15	2.61	2.41	1.33
N	51	55	41	59	50	62	51	52	49	40
% < MDL	2	0	0	1.7	20	0	0	0	2	2.5
Max	3.8	6.1	5.4	8.5	4.5	4.9	5.4	10.3	7.1	2.7
MATES III										
Average	1.3	1.96	1.54	1.88	1.39	1.31	1.89	1.68	1.73	1.42
95% CI LB	1.22	1.85	1.43	1.76	1.23	1.22	1.76	1.55	1.62	1.32
95% CI UB	1.39	2.06	1.65	2.02	1.55	1.4	2.01	1.8	1.85	1.52
N	243	240	228	238	117	242	241	119	239	237
% < MDL	0.4	0	0.4	0	0.9	0.8	0.4	0	0	0
Max	3.73	5	4.67	4.71	4	3.99	5.22	3.9	4.31	4.52
MATES IV										
Average	0.587	1.08	0.83	0.992	1.04	0.667	0.944	1.25	0.838	0.746
95% CI LB	0.48	0.941	0.69	0.869	0.891	0.568	0.839	1.11	0.741	0.598
95% CI UB	0.716	1.23	0.987	1.12	1.2	0.779	1.06	1.39	0.939	0.914
N	60	59	60	59	57	59	59	59	59	55
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	3.07	2.7	2.94	2.44	2.94	2.07	2	2.61	1.95	2.79
MATES V										
Average		1.77	1.46	2.11	1.63	1.24	1.32	1.38	1.05	1.16
95% CI LB		1.55	1.26	1.82	1.44	1.09	1.1	1.24	0.849	1.02
95% CI UB		1.97	1.65	2.42	1.84	1.4	1.56	1.54	1.27	1.32
N	0	59	61	59	60	55	18	58	12	60
% < MDL		0	0	1.7	0	0	0	0	0	0
Max		4	3.71	7	4.5	3.26	2.78	3.26	1.87	3.26

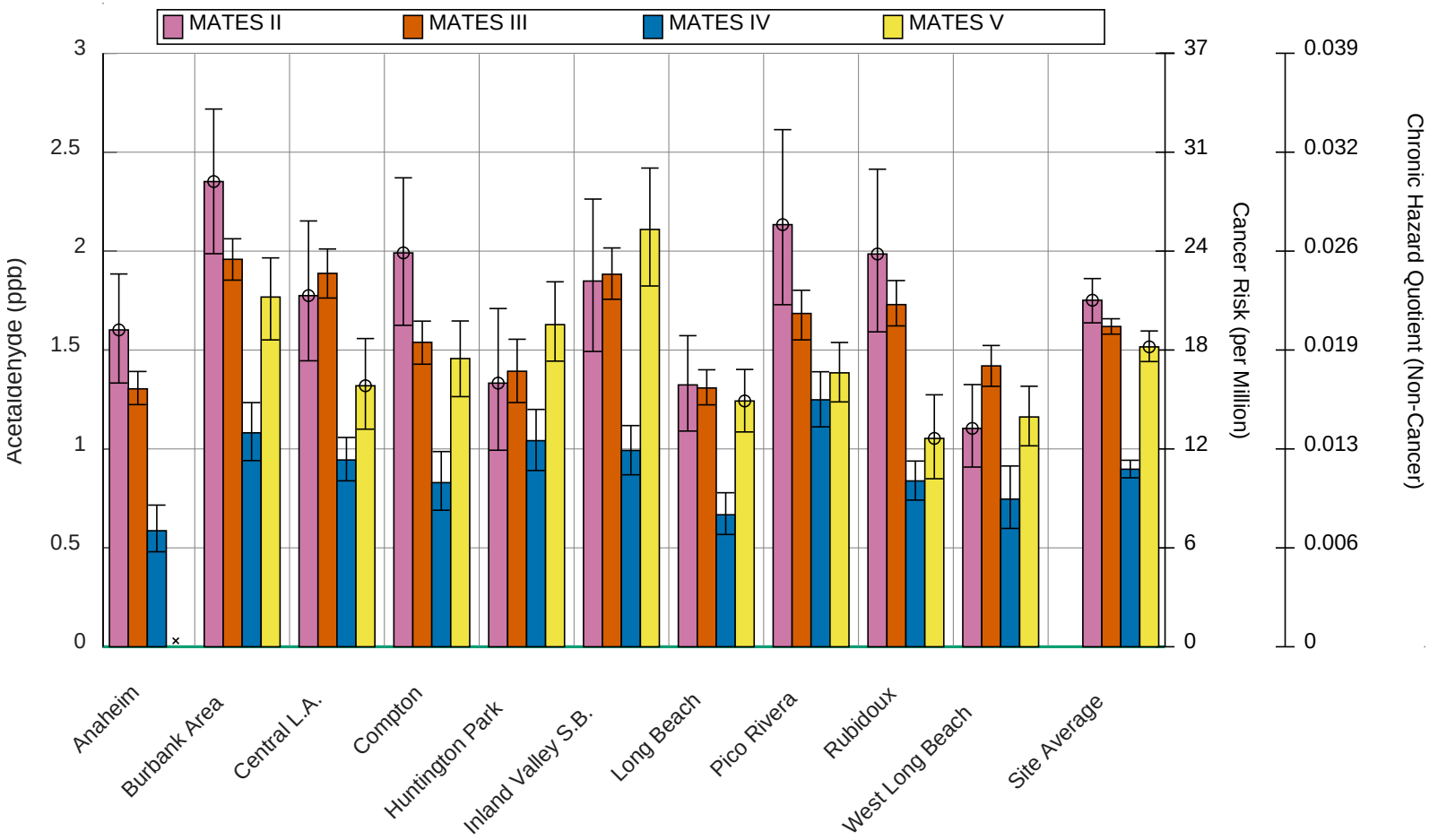


Figure IV-1. Annual Average Concentrations of Acetaldehyde in the Carbonyls Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

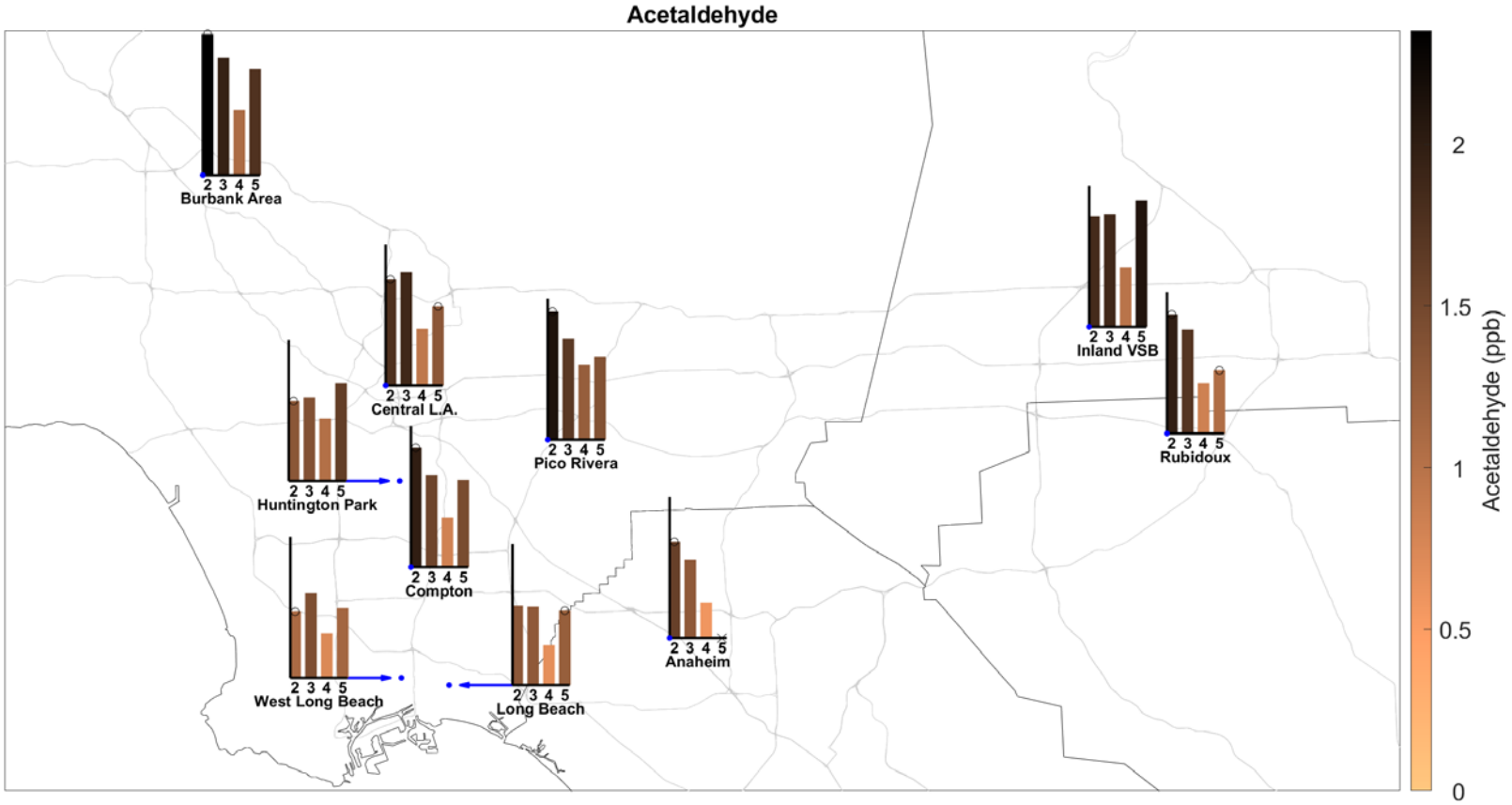


Figure IV-2. Geographic distribution of Acetaldehyde from the Carbonyls Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Acetone

Table IV-4. Ambient Concentrations (ppb) of Acetone from the Carbonyls analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1.85	2.75	1.95	2.79	1.82	1.15	1.95	2.14	3.15	1.36
95% CI LB	1.25	1.95	1.24	2.08	1.01	0.885	1.38	1.33	2.37	0.924
95% CI UB	2.56	3.67	2.78	3.56	2.86	1.45	2.62	3.09	4.03	1.9
N	27	26	20	30	24	28	27	28	25	19
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	8.71	9.97	7.7	7.2	9.62	3.78	5.9	8.65	8.5	5.15
MATES III										
Average	1.81	1.84	1.46	1.63	2.02	0.933	1.42	1.76	1.6	1.35
95% CI LB	1.49	1.57	1.27	1.51	1.6	0.796	1.24	1.4	1.47	1.13
95% CI UB	2.15	2.14	1.7	1.77	2.48	1.08	1.61	2.15	1.73	1.61
N	243	240	228	238	117	242	241	119	239	237
% < MDL	0.4	0	1.8	0.4	2.6	2.1	2.1	0.8	0	0.8
Max	21.4	14.1	9.68	5.34	11.2	8.04	9.23	11.5	5.9	12.4
MATES IV										
Average	1.65	2.34	1.62	1.43	2.59	1.17	1.91	1.92	1.14	1.23
95% CI LB	0.896	1.49	0.96	1.19	1.62	0.756	1.39	1.33	0.936	0.74
95% CI UB	2.72	3.4	2.4	1.69	3.74	1.68	2.53	2.61	1.37	1.81
N	59	59	60	59	57	59	59	60	59	55
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	21.8	19.5	12.4	4.77	19.7	8.95	9.97	11.4	5.05	9.93
MATES V										
Average		3.09	2.41	3.12	2.56	1.96	1.14	2.33	1.54	1.85
95% CI LB		2.66	1.84	2.51	1.99	1.58	0.963	1.87	1.09	1.28
95% CI UB		3.56	3.05	3.87	3.18	2.42	1.32	2.85	2.11	2.55
N	0	58	61	59	60	56	18	58	12	60
% < MDL		0	1.6	1.7	0	1.8	0	0	0	0
Max		8.54	10.5	16.3	9.99	6.7	1.75	8.57	3.89	15.7

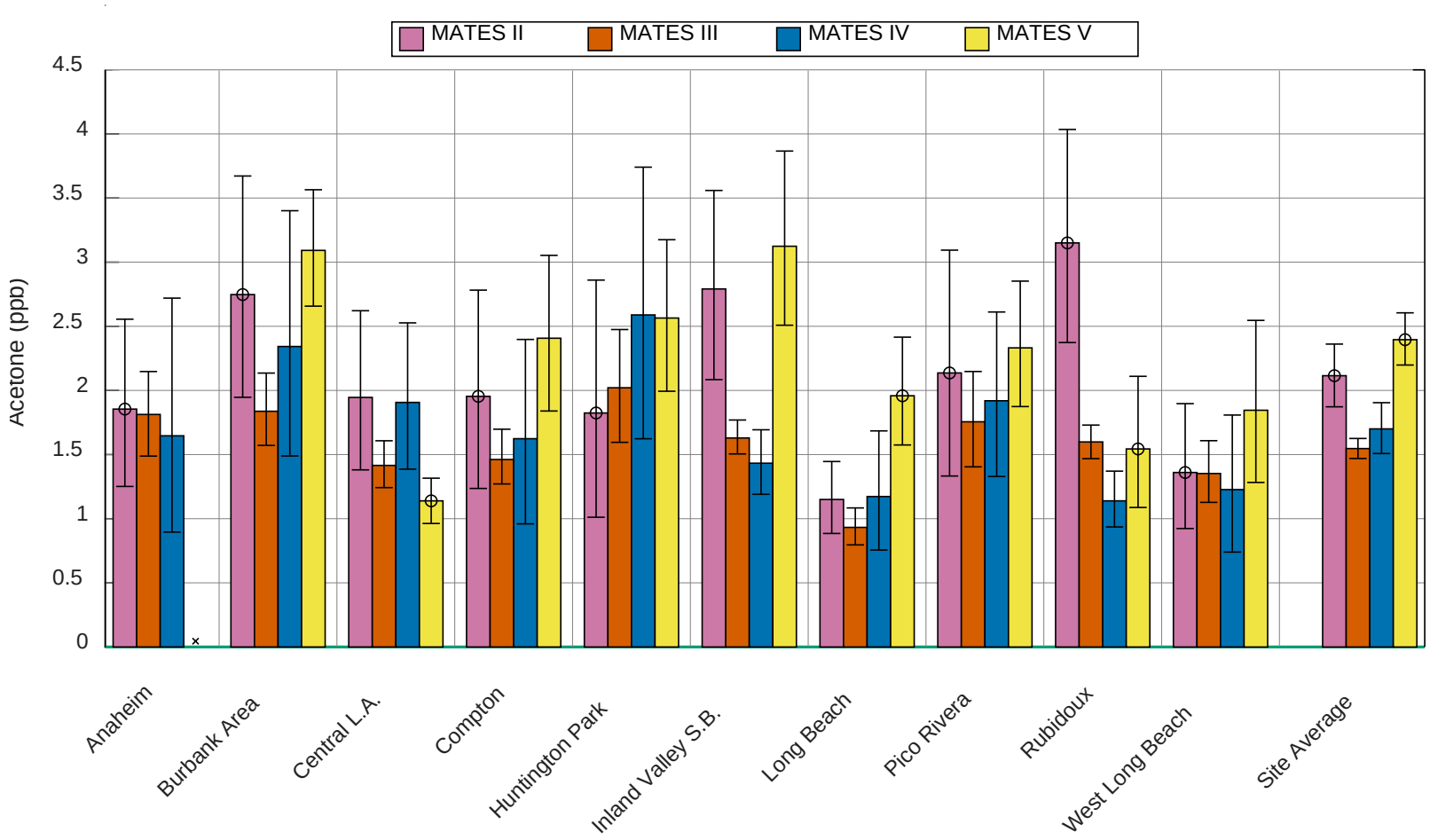


Figure IV-3. Annual Average Concentrations of Acetone in the Carbonyls Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

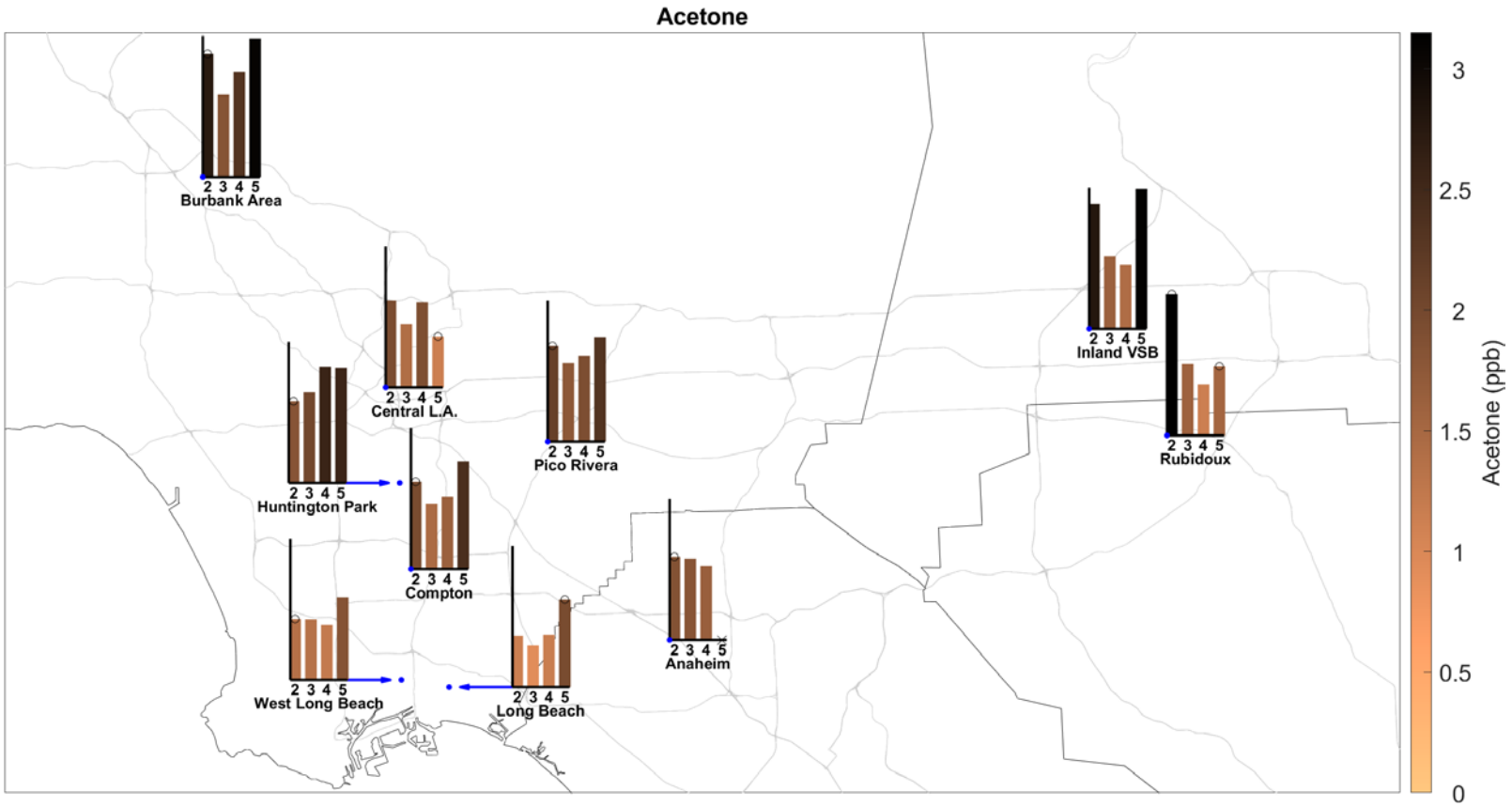


Figure IV-4. Geographic distribution of Acetone from the Carbonyls Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Benzaldehyde

Table IV-5. Ambient Concentrations (ppb) of Benzaldehyde from the Carbonyls analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average		0.0608	0.0796	0.0853	0.0631	0.0466	0.0551	0.063	0.0415	0.0496
95% CI LB		0.051	0.0679	0.0678	0.0545	0.0385	0.0446	0.0552	0.0311	0.0422
95% CI UB		0.0718	0.0917	0.107	0.0723	0.0554	0.0662	0.071	0.0542	0.0572
N	0	58	61	59	60	56	18	58	12	60
% < MDL		1.7	1.6	5.1	0	1.8	0	0	0	1.7
Max		0.259	0.182	0.57	0.191	0.13	0.108	0.137	0.0871	0.138

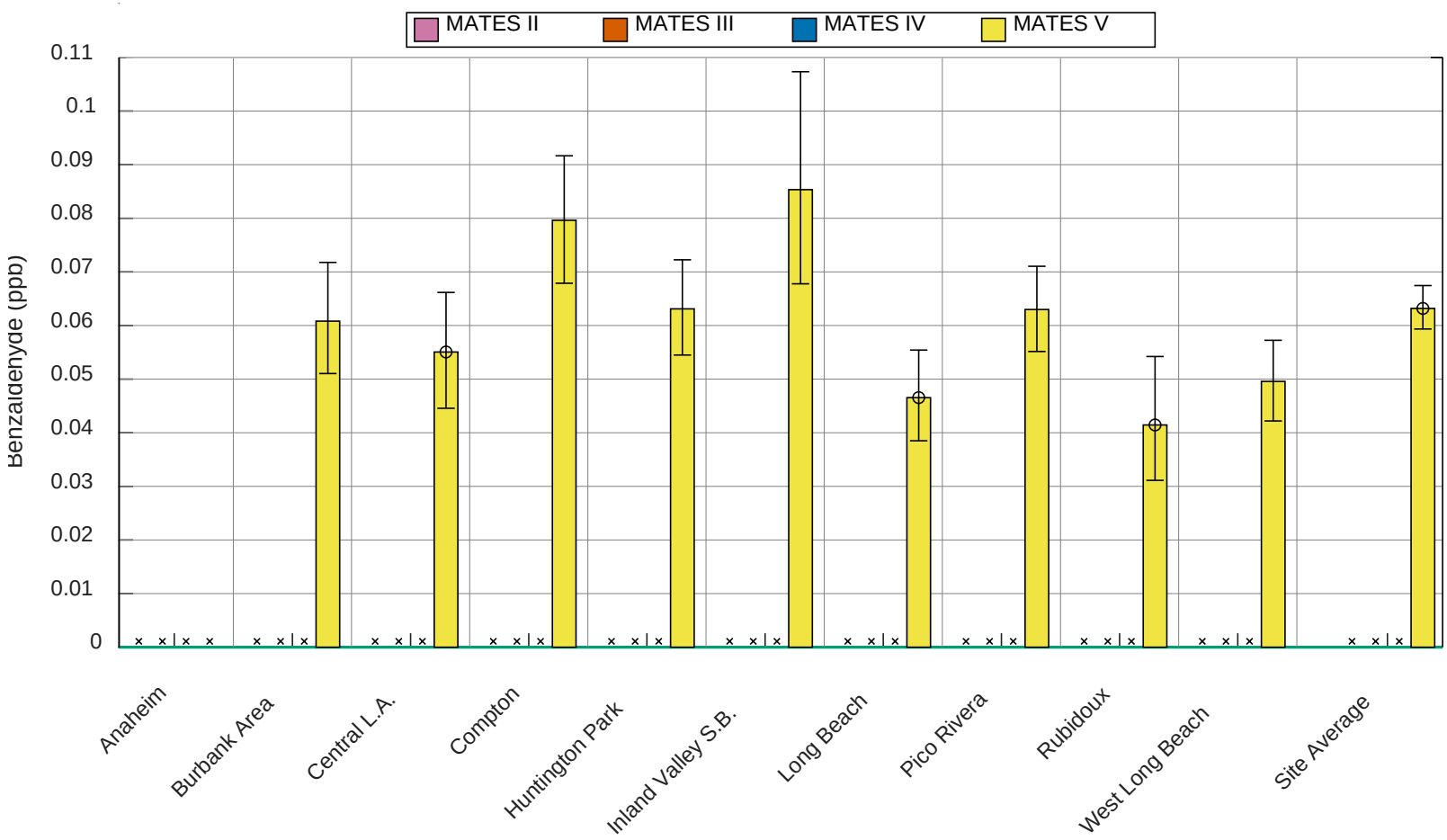


Figure IV-5. Annual Average Concentrations of Benzaldehyde in the Carbonyls Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

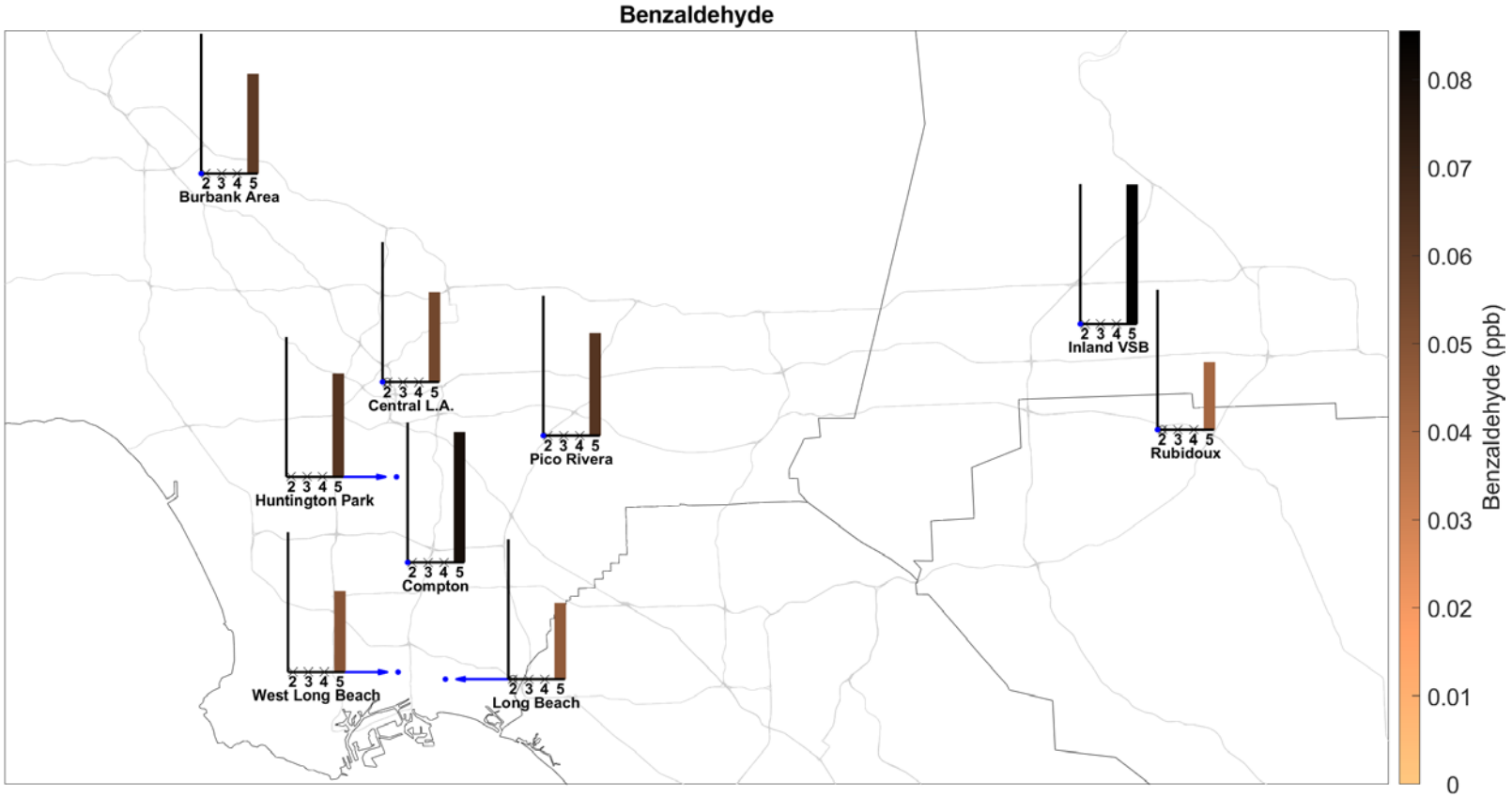


Figure IV-6. Geographic distribution of Benzaldehyde from the Carbonyls Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Formaldehyde

Table IV-6. Ambient Concentrations (ppb) of Formaldehyde from the Carbonyls analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	3.72	5.27	4.8	3.7	3.12	3.23	3.88	4.31	4.2	2.71
95% CI LB	3.2	4.49	4.04	3.12	2.29	2.79	3.2	3.7	3.54	2.26
95% CI UB	4.26	6	5.51	4.32	3.99	3.68	4.62	4.94	4.93	3.16
N	52	55	41	59	50	62	51	53	50	40
% < MDL	1.9	0	0	0	18	0	0	1.9	0	2.5
Max	7.6	13.6	10	9.5	10.9	7.32	12	10	11.4	5.8
MATES III										
Average	2.96	3.79	3.06	3.6	4.18	3.7	4.24	3.49	3.74	3.26
95% CI LB	2.8	3.61	2.89	3.36	3.9	3.48	4.01	3.24	3.5	3.07
95% CI UB	3.13	3.99	3.24	3.86	4.46	3.9	4.48	3.73	3.98	3.46
N	243	240	228	238	88	242	241	119	239	237
% < MDL	0	0	0	0	0	0	0.4	0	0	0
Max	7.74	7.71	8.43	8.96	8.49	11.5	10.6	6.85	8.95	12.8
MATES IV										
Average	1.19	2.58	2.05	2.63	2.73	1.86	2.94	2.81	2	1.55
95% CI LB	0.994	2.27	1.85	2.34	2.48	1.69	2.7	2.55	1.71	1.3
95% CI UB	1.4	2.87	2.26	2.92	2.96	2.05	3.18	3.08	2.29	1.83
N	58	59	60	59	57	59	59	59	57	51
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	3.73	4.72	4.18	5.15	5.4	3.79	5.06	6.32	4.4	4.06
MATES V										
Average		3.73	2.43	4.4	2.56	2.08	3.32	3	2.59	2.33
95% CI LB		3.17	2.2	3.34	2.3	1.92	2.84	2.69	2.16	2.14
95% CI UB		4.4	2.67	6.1	2.82	2.27	3.89	3.3	3.03	2.51
N	0	59	61	59	60	56	18	58	12	60
% < MDL		0	0	1.7	0	0	0	0	0	0
Max		19.3	4.55	46.3	5.63	3.95	6.35	5.73	3.89	4.49

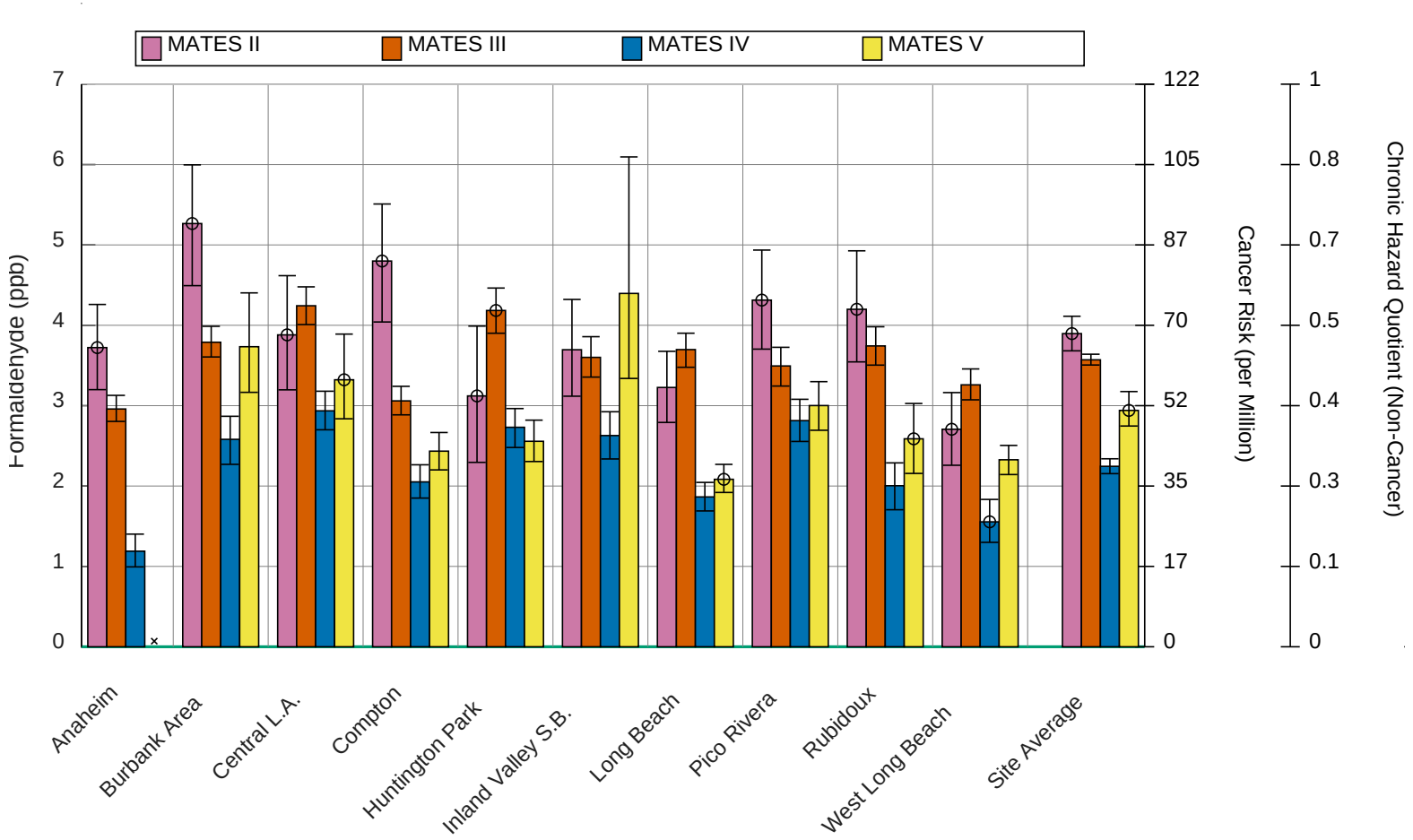


Figure IV-7. Annual Average Concentrations of Formaldehyde in the Carbonyls Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

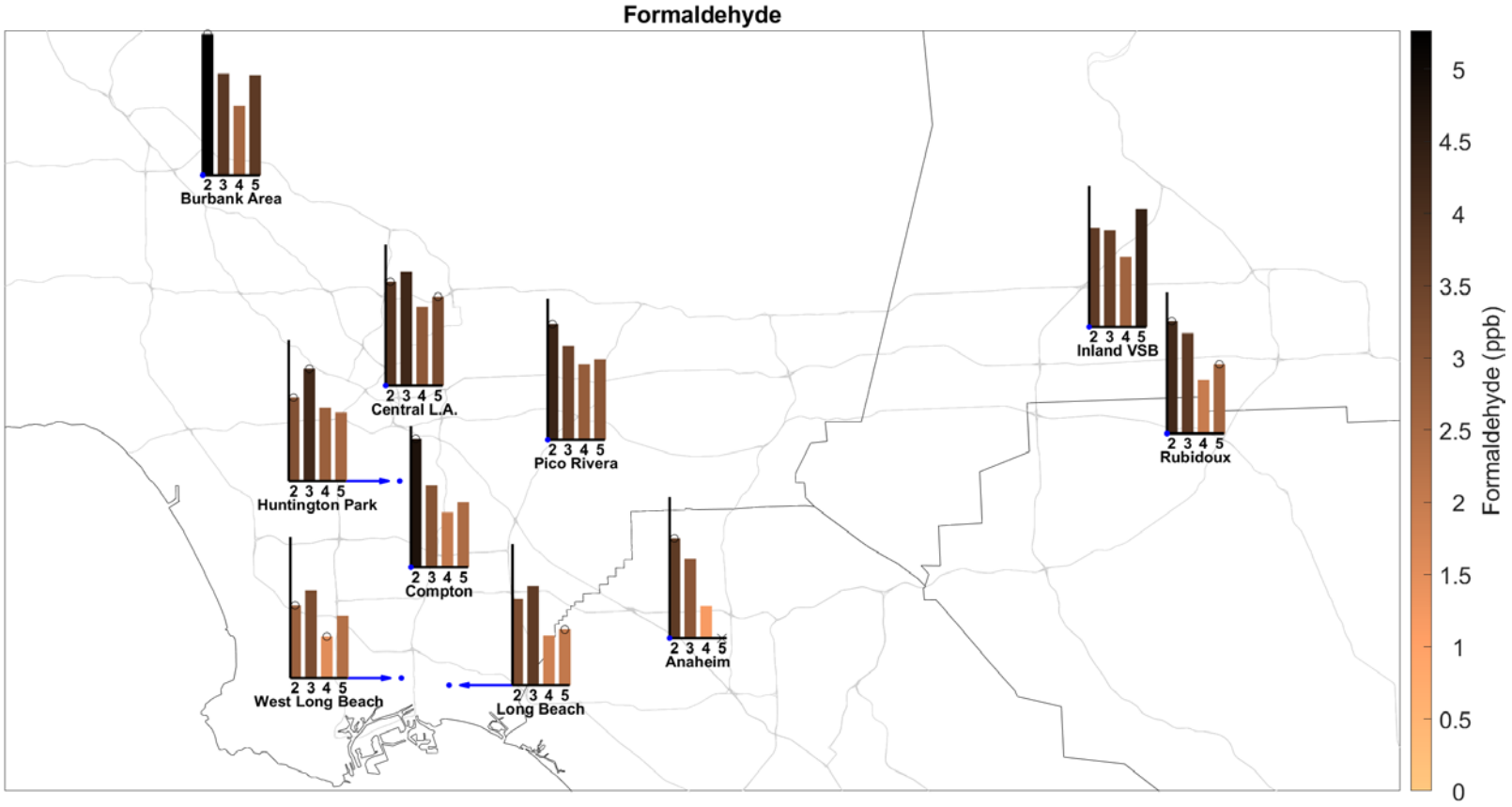


Figure IV-8. Geographic distribution of Formaldehyde from the Carbonyls Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Methyl Ethyl Ketone

Table IV-7. Ambient Concentrations (ppb) of Methyl Ethyl Ketone from the Carbonyls analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.377	0.565	0.417	0.353	0.272	0.295	0.31	0.391	0.416	0.255
95% CI LB	0.286	0.439	0.312	0.274	0.198	0.224	0.23	0.293	0.323	0.192
95% CI UB	0.478	0.704	0.531	0.441	0.362	0.382	0.397	0.502	0.517	0.327
N	46	47	41	50	46	54	43	46	46	40
% < MDL	19.6	2.1	26.8	16	39.1	25.9	34.9	19.6	13	32.5
Max	1.42	2.19	1.35	1.35	1.53	1.83	1.15	1.72	1.22	1.03
MATES III										
Average	0.276	0.369	0.292	0.366	0.338	0.241	0.317	0.421	0.359	0.326
95% CI LB	0.251	0.338	0.264	0.339	0.293	0.218	0.292	0.369	0.333	0.286
95% CI UB	0.302	0.4	0.322	0.394	0.387	0.264	0.342	0.474	0.386	0.37
N	243	240	228	238	117	242	241	119	239	237
% < MDL	20.6	6.7	15.8	5.5	12.8	23.1	9.5	10.1	6.3	16.9
Max	1.07	1.2	1.22	1.06	1.39	0.88	1.07	1.32	1.11	2.4
MATES IV										
Average	0.0646	0.11	0.0764	0.0895	0.115	0.0639	0.084	0.146	0.0748	0.0695
95% CI LB	0.0425	0.0757	0.0503	0.0756	0.0776	0.0453	0.0657	0.106	0.0623	0.0447
95% CI UB	0.0921	0.152	0.107	0.104	0.16	0.0864	0.105	0.192	0.089	0.0999
N	58	59	60	58	57	59	59	60	59	54
% < MDL	1.7	0	3.3	0	0	0	0	0	0	3.7
Max	0.568	0.619	0.547	0.227	0.768	0.39	0.345	0.758	0.288	0.472
MATES V										
Average		0.273	0.197	0.252	0.249	0.172	0.0609	0.238	0.165	0.142
95% CI LB		0.235	0.153	0.213	0.188	0.14	0.0432	0.182	0.115	0.107
95% CI UB		0.313	0.243	0.293	0.32	0.209	0.079	0.299	0.229	0.181
N	0	58	60	59	60	56	17	57	12	59
% < MDL		1.7	11.7	1.7	3.3	1.8	17.6	3.5	0	5.1
Max		0.615	0.711	0.669	1.21	0.648	0.172	0.888	0.433	0.623

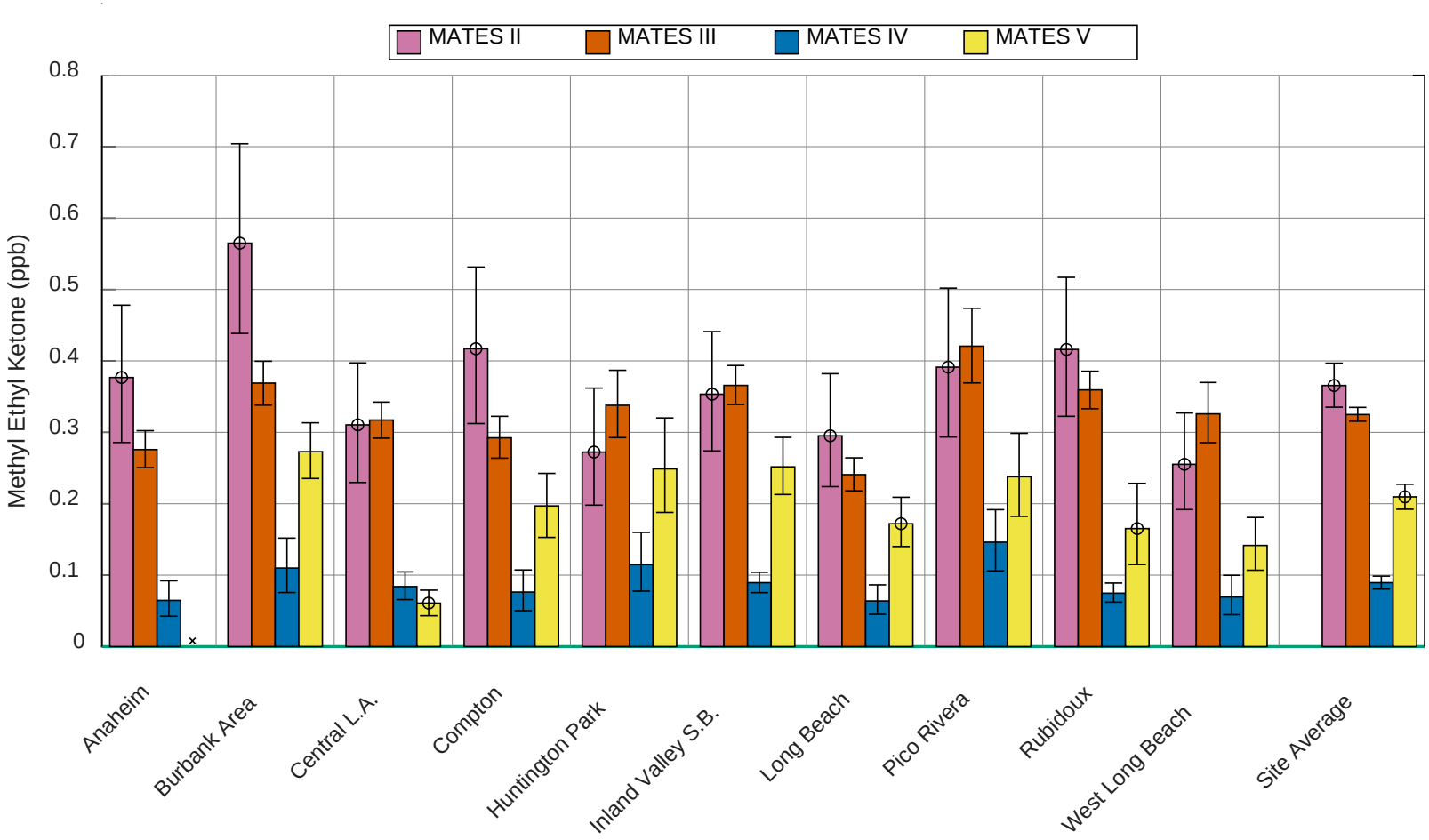


Figure IV-9. Annual Average Concentrations of Methyl Ethyl Ketone in the Carbonyls Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

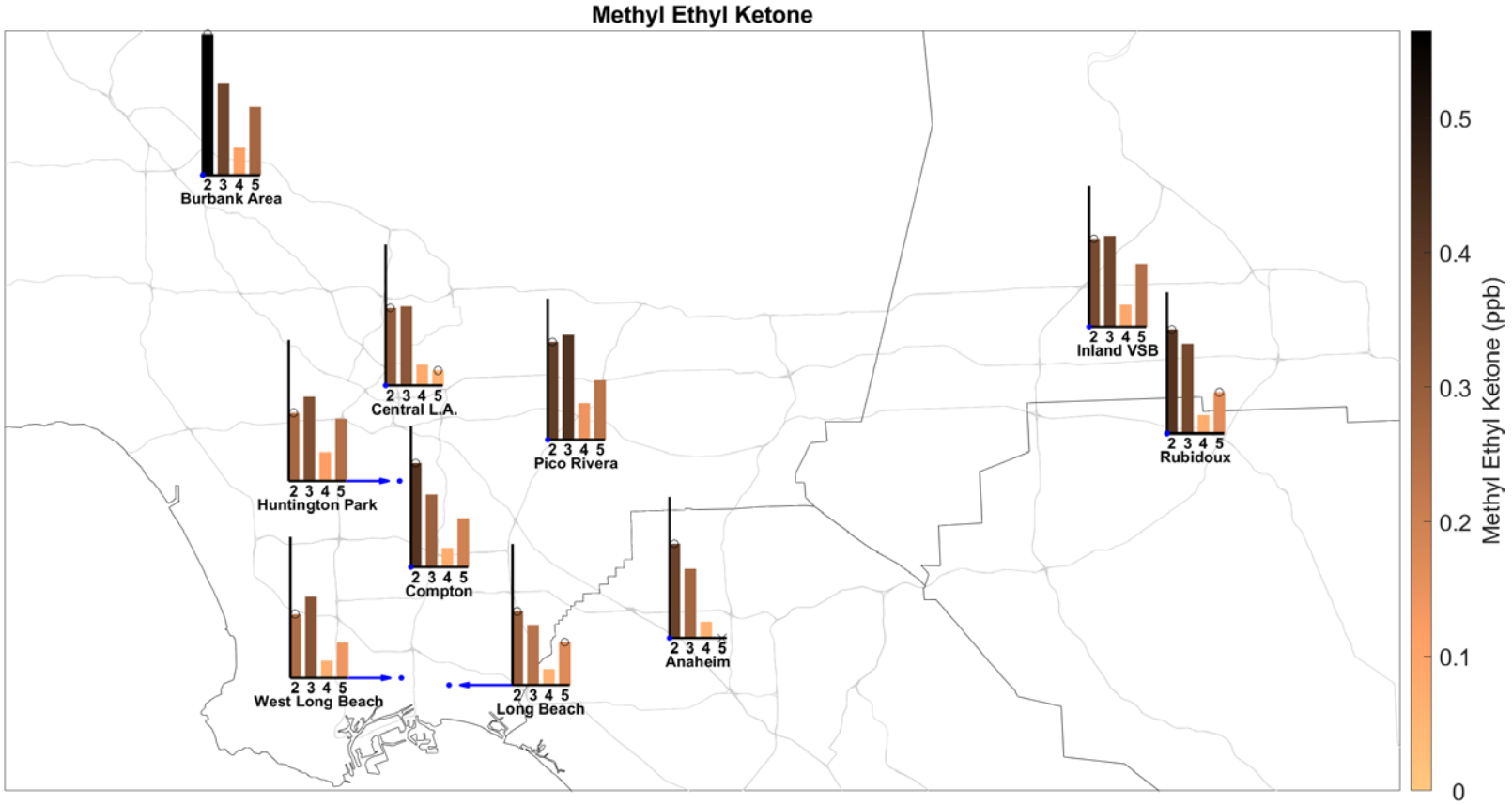


Figure IV-10. Geographic distribution of Methyl Ethyl Ketone from the Carbonyls Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Propionaldehyde

Table IV-8. Ambient Concentrations (ppb) of Propionaldehyde from the Carbonyls analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average		0.215	0.168	0.249	0.175	0.137	0.17	0.164	0.145	0.147
95% CI LB		0.189	0.149	0.216	0.156	0.121	0.142	0.147	0.113	0.13
95% CI UB		0.241	0.187	0.283	0.195	0.156	0.203	0.183	0.181	0.164
N	0	58	61	59	59	56	18	57	12	60
% < MDL		0	1.6	1.7	0	0	0	0	0	0
Max		0.574	0.36	0.636	0.427	0.324	0.353	0.382	0.282	0.364

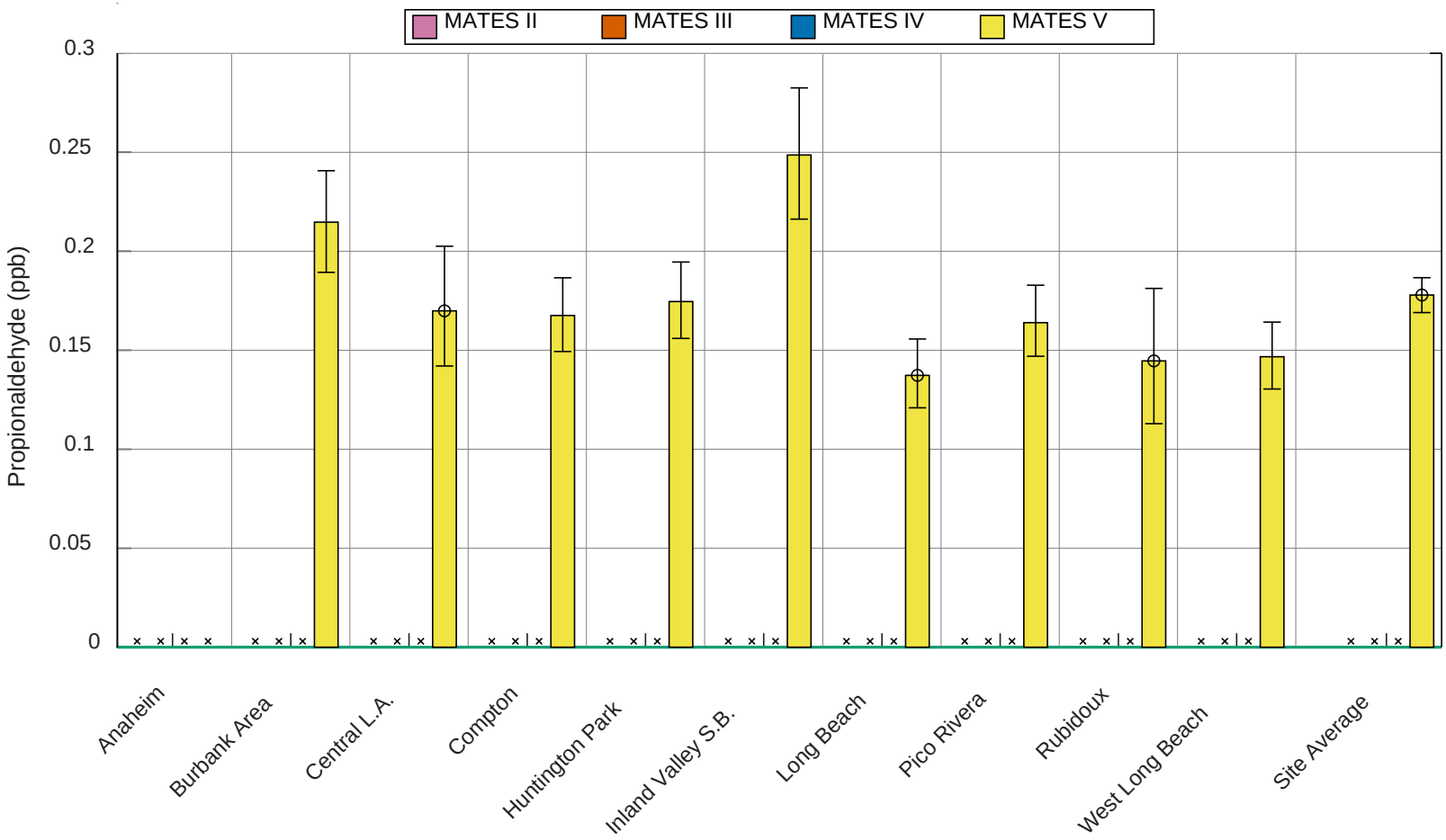


Figure IV-11. Annual Average Concentrations of Propionaldehyde in the Carbonyls Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

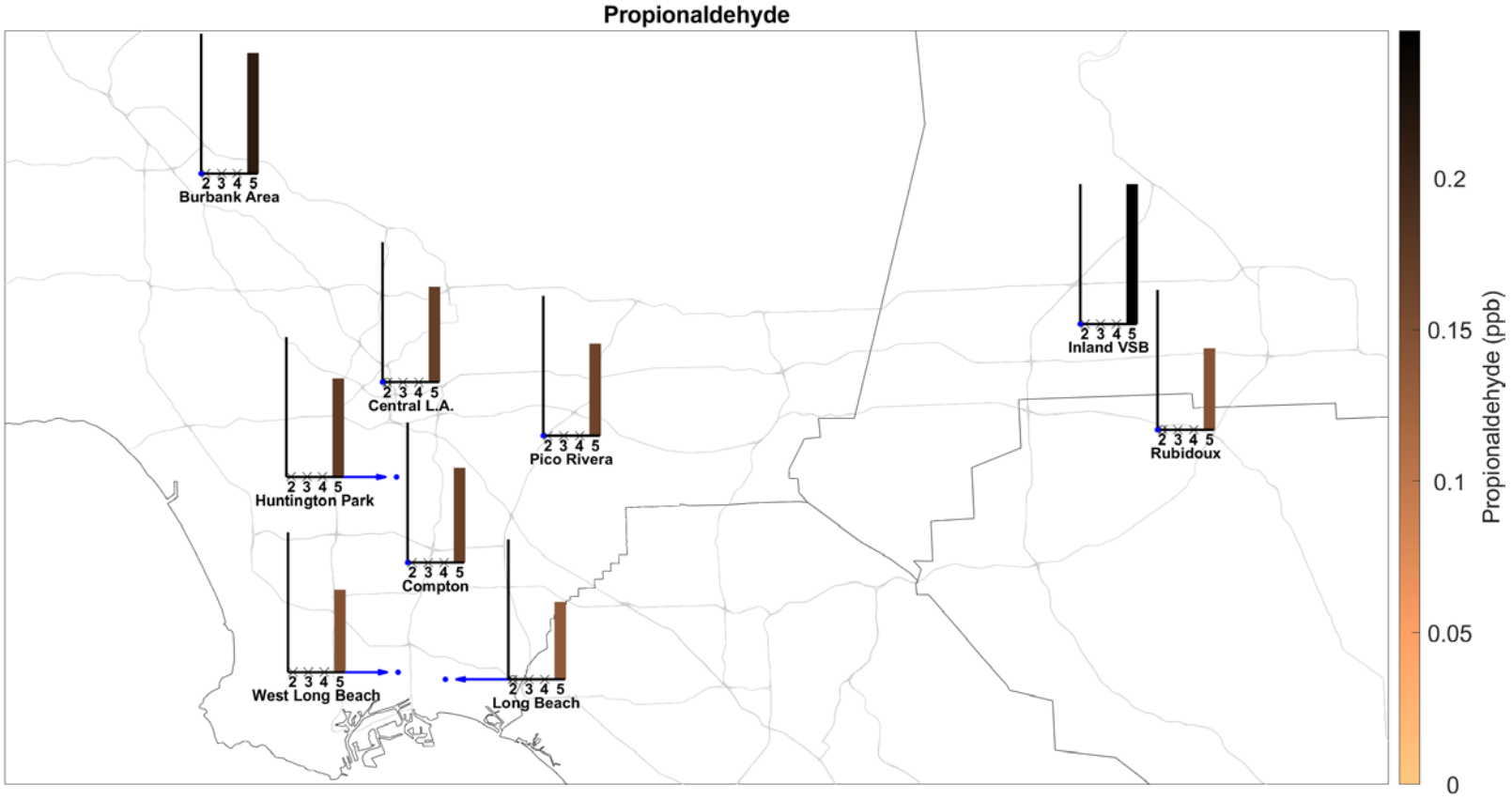


Figure IV-12. Geographic distribution of Propionaldehyde from the Carbonyls Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

VOCs Analysis

Acrolein

Table IV-9. Ambient Concentrations (ppb) of Acrolein from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	0.154	0.197	0.196	0.162	0.196	0.146	0.18	0.155	0.159	0.139
95% CI LB	0.133	0.173	0.171	0.144	0.174	0.13	0.161	0.14	0.138	0.124
95% CI UB	0.176	0.224	0.226	0.18	0.22	0.163	0.201	0.172	0.183	0.156
N	51	55	57	53	53	54	53	57	52	57
% < MDL	9.8	5.5	3.5	15.1	5.7	14.8	11.3	7	3.8	15.8
Max	0.43	0.51	0.56	0.36	0.48	0.41	0.41	0.38	0.52	0.37
MATES V										
Average		0.196	0.219	0.227	0.252	0.169	0.208	0.235	0.263	0.16
95% CI LB		0.178	0.187	0.207	0.224	0.151	0.183	0.203	0.229	0.142
95% CI UB		0.214	0.253	0.247	0.287	0.191	0.238	0.273	0.302	0.178
N	0	58	58	58	57	57	55	50	58	55
% < MDL		0	0	0	0	0	0	0	0	0
Max		0.42	0.65	0.41	0.61	0.55	0.71	0.87	0.77	0.4

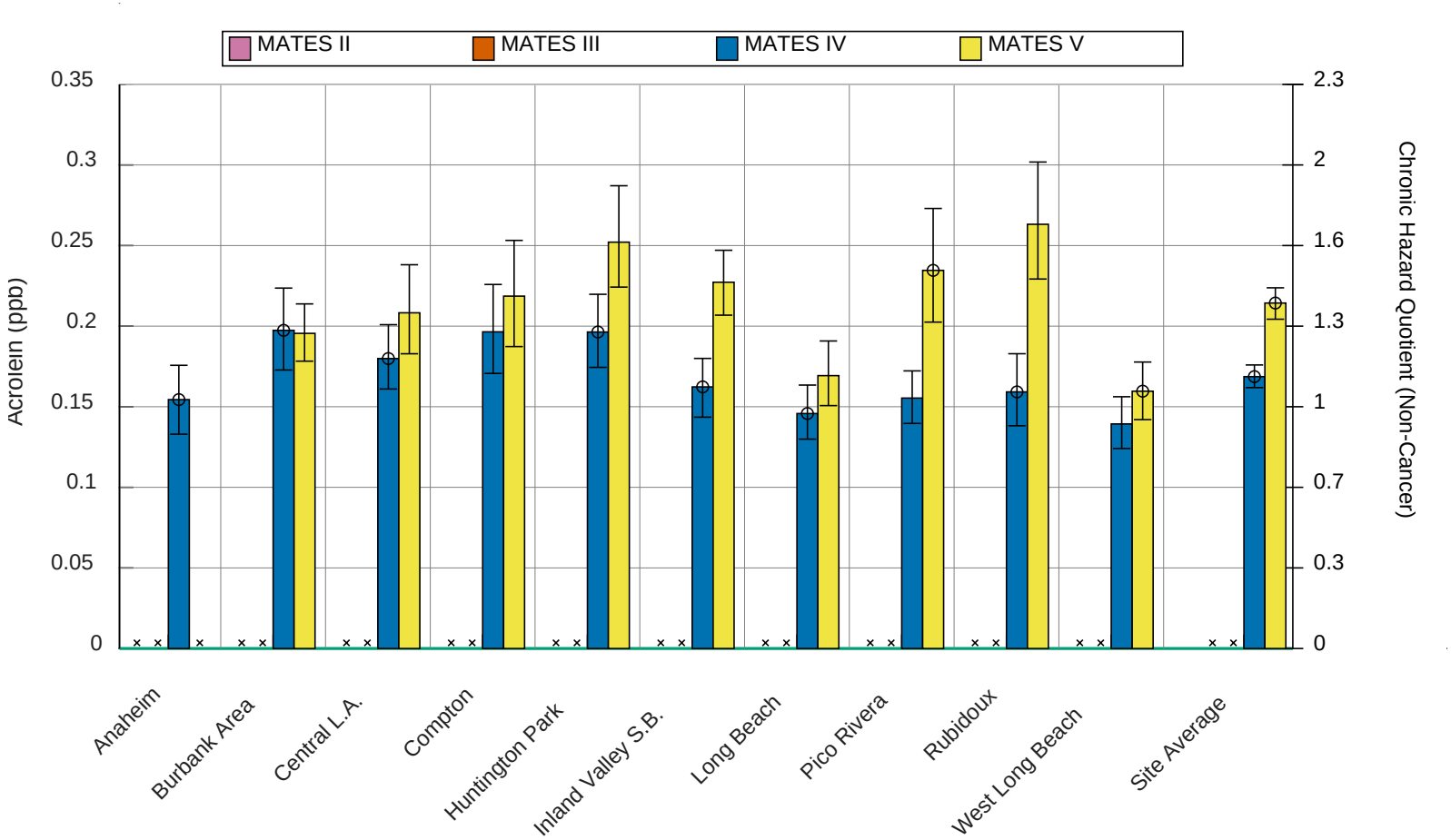


Figure IV-13. Annual Average Concentrations of Acrolein in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

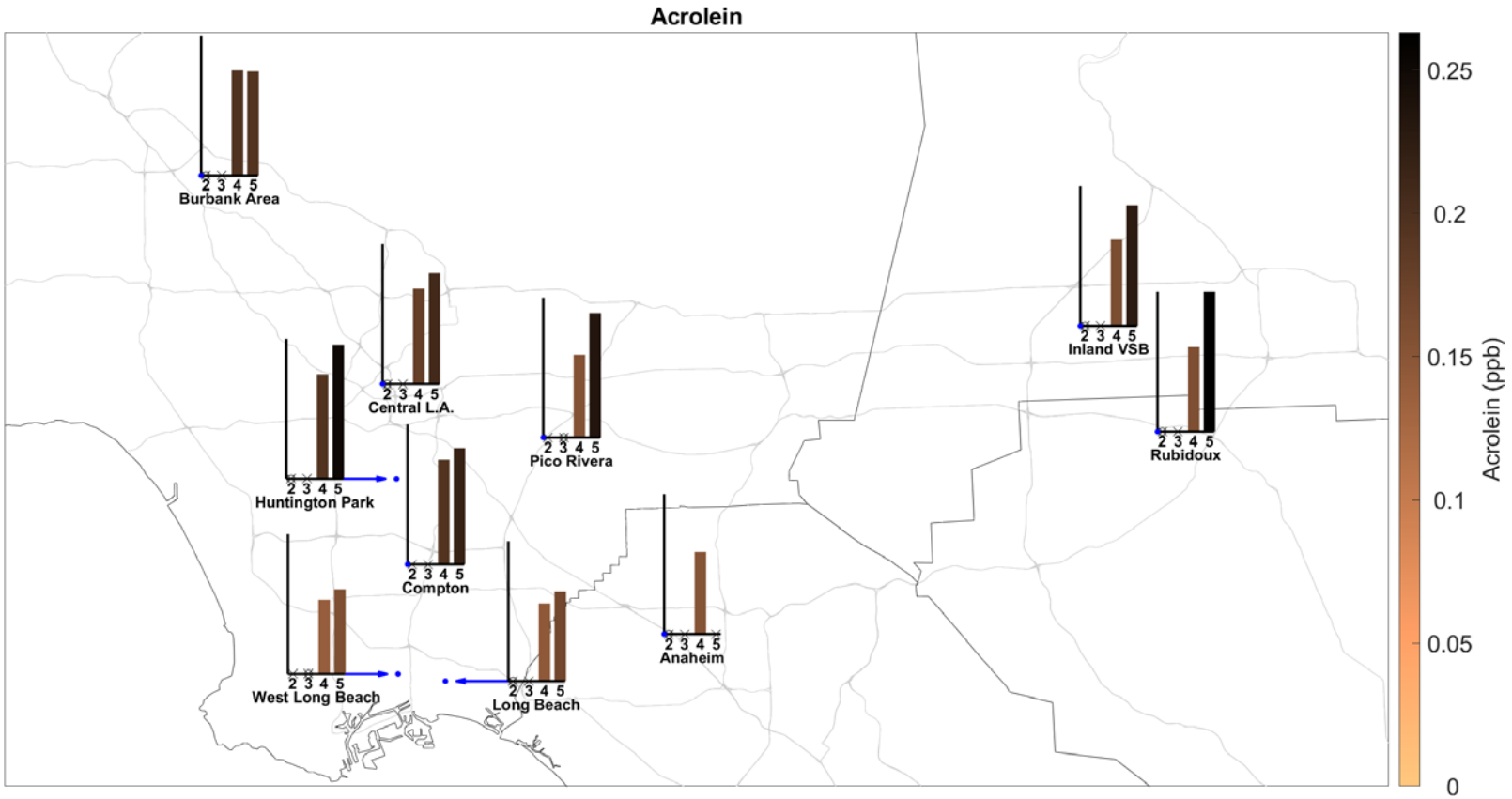


Figure IV-14. Geographic distribution of Acrolein from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Benzene

Table IV-10. Ambient Concentrations (ppb) of Benzene from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1.05	1.27	1.8	0.742	1.65	0.826	1	0.892	0.874	1.27
95% CI LB	0.83	1.02	1.37	0.628	1.32	0.673	0.846	0.746	0.736	0.978
95% CI UB	1.34	1.52	2.29	0.864	1.99	0.996	1.2	1.05	1.02	1.6
N	51	58	42	60	46	60	59	54	45	35
% < MDL	5.9	1.7	2.4	3.3	0	1.7	0	1.9	4.4	5.7
Max	5.2	4.1	6.9	2.2	5.1	3.4	3.6	2.2	2.5	3.9
MATES III										
Average	0.43	0.708	0.804	0.487	0.754	0.52	0.579	0.566	0.438	0.532
95% CI LB	0.392	0.655	0.719	0.456	0.666	0.48	0.541	0.511	0.407	0.481
95% CI UB	0.47	0.763	0.893	0.519	0.846	0.567	0.621	0.626	0.471	0.586
N	233	241	237	232	100	238	238	121	234	235
% < MDL	0	0	0	0.9	0	0	0	0	0	0.4
Max	2.06	2.16	3.53	1.26	2.2	1.7	1.83	1.85	1.32	1.95
MATES IV										
Average	0.33	0.456	0.495	0.291	0.521	0.327	0.388	0.347	0.276	0.356
95% CI LB	0.263	0.38	0.38	0.257	0.423	0.279	0.335	0.295	0.239	0.284
95% CI UB	0.404	0.534	0.614	0.33	0.625	0.379	0.443	0.402	0.321	0.434
N	51	55	57	53	53	54	53	57	52	57
% < MDL	0	0	0	0	1.9	0	1.9	0	0	0
Max	1.33	1.23	1.77	0.91	1.72	0.84	1.15	0.91	0.91	1.17
MATES V										
Average		0.22	0.38	0.233	0.313	0.323	0.257	0.249	0.223	0.298
95% CI LB		0.199	0.289	0.203	0.255	0.251	0.219	0.205	0.188	0.241
95% CI UB		0.241	0.477	0.265	0.376	0.404	0.297	0.3	0.262	0.367
N	0	60	61	61	60	59	56	53	60	58
% < MDL		0	0	0	0	0	0	0	0	0
Max		0.45	1.55	0.69	0.94	1.57	0.69	0.85	0.78	1.12

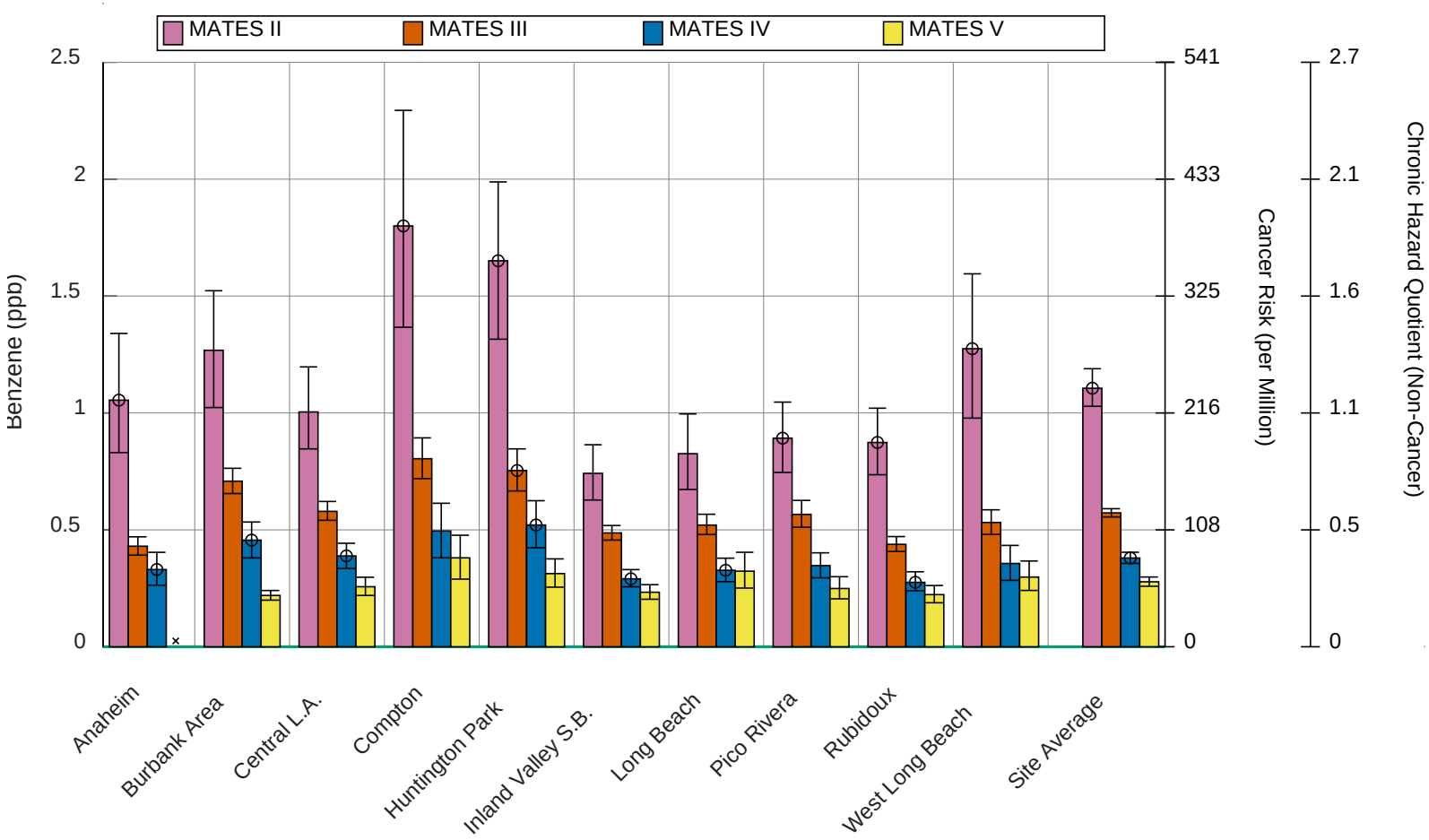


Figure IV-15. Annual Average Concentrations of Benzene in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

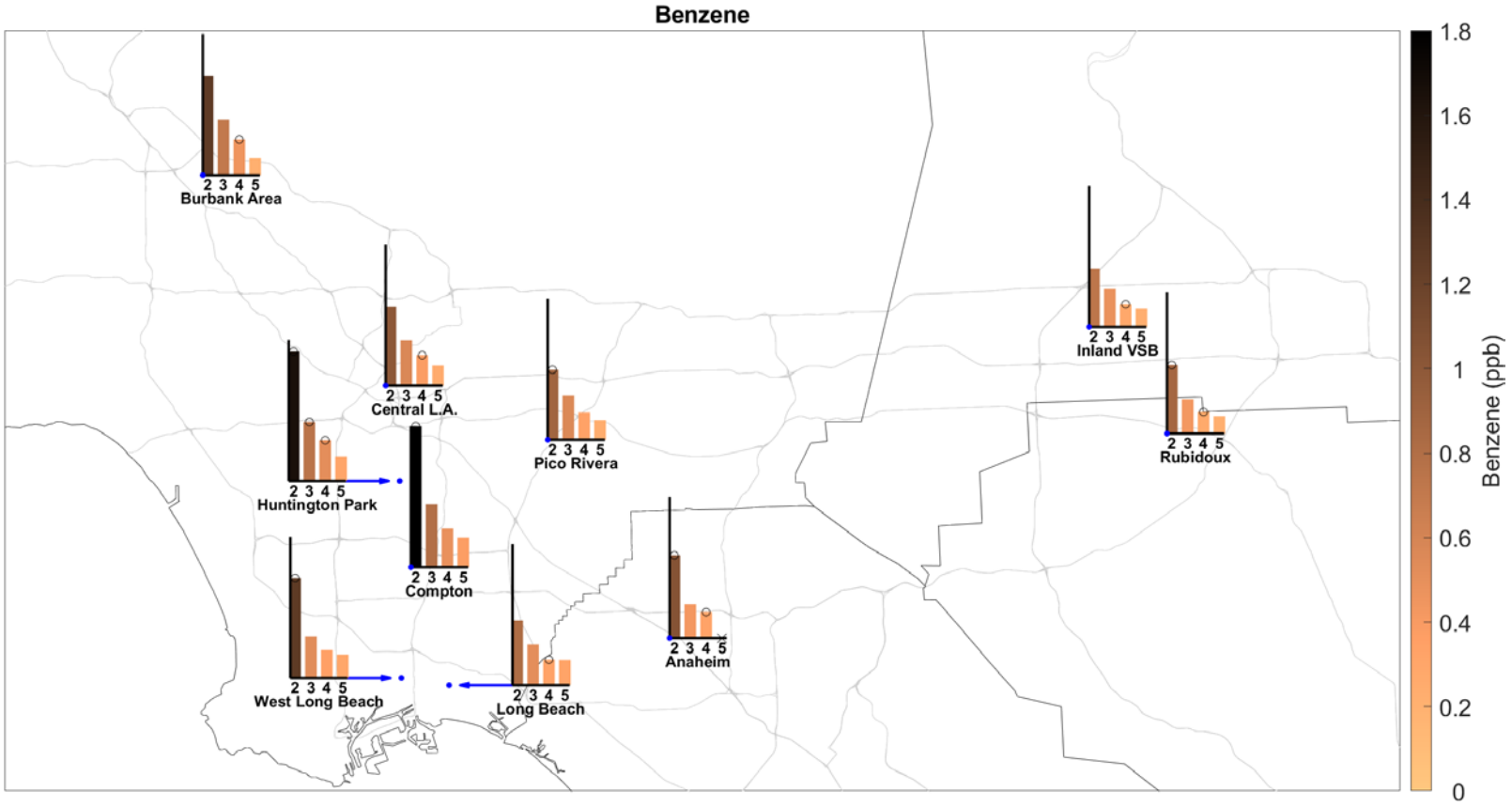


Figure IV-16. Geographic distribution of Benzene from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Bromomethane

Table IV-11. Ambient Concentrations (ppb) of Bromomethane from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average		0.0119	0.0174	0.0126	0.0158	0.0433	0.0129	0.0136	0.0127	1.14
95% CI LB		0.0104	0.0149	0.0108	0.0136	0.0232	0.0109	0.0116	0.0109	0.387
95% CI UB		0.0138	0.0204	0.0147	0.0179	0.0742	0.0152	0.0156	0.015	2.09
N	0	43	43	43	42	41	40	37	42	40
% < MDL		48.8	44.2	48.8	47.6	46.3	52.5	54.1	52.4	30
Max		0.03	0.03	0.03	0.03	0.54	0.03	0.02	0.03	12.2

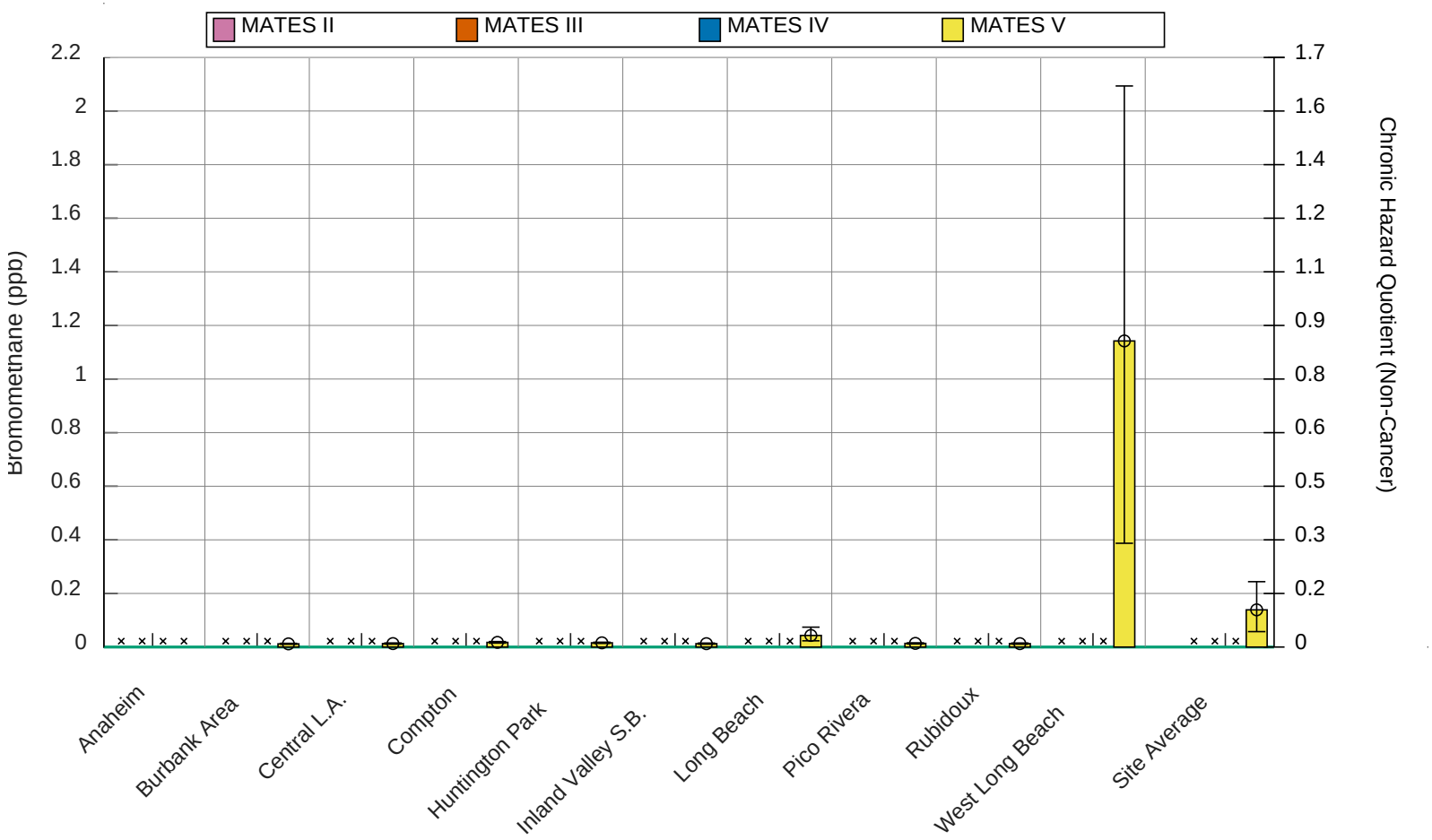


Figure IV-17. Annual Average Concentrations of Bromomethane in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

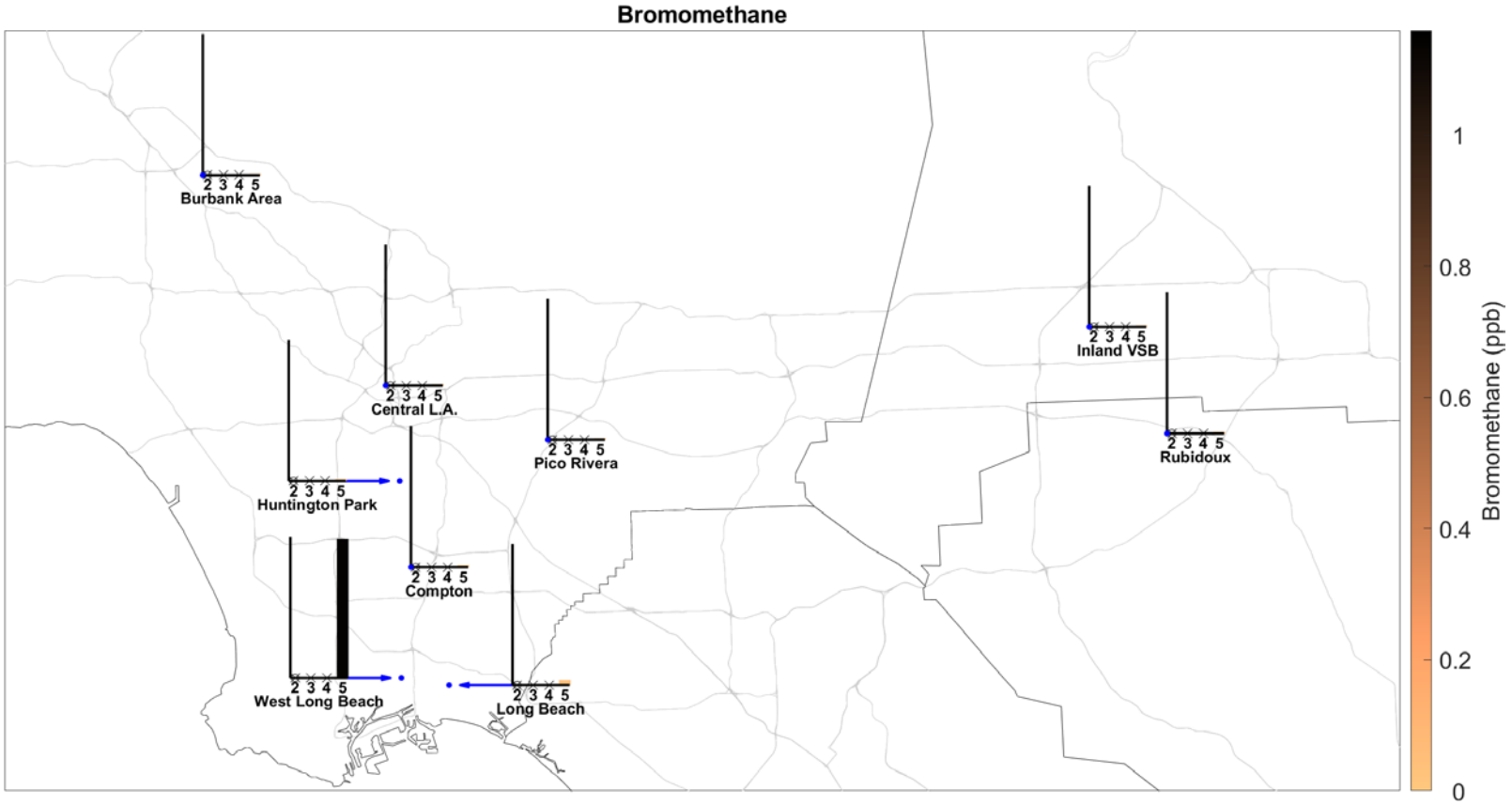


Figure IV-18. Geographic distribution of Bromomethane from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

1,3 Butadiene

Table IV-12. Ambient Concentrations (ppb) of 1,3 Butadiene from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.257	0.428	0.627	0.202	0.579	0.275	0.35	0.295	0.238	0.435
95% CI LB	0.201	0.337	0.464	0.166	0.458	0.217	0.288	0.238	0.187	0.323
95% CI UB	0.323	0.528	0.807	0.24	0.708	0.34	0.422	0.355	0.293	0.554
N	51	58	42	60	46	60	59	54	45	35
% < MDL	13.7	13.8	2.4	16.7	4.3	10	10.2	11.1	13.3	8.6
Max	1	1.5	2.4	0.66	1.9	1.2	1.3	0.972	0.828	1.3
MATES III										
Average	0.0161, 0.203[a]	0.232	0.267	0.0056, 0.2[a]	0.242	0.0424, 0.213[a]	0.0412, 0.21[a]	0.0534, 0.217[a]	0.0143, 0.203[a]	0.0404, 0.215[a]
95% CI LB	0.00854[a]	0.223	0.249	0.00181[a]	0.225	0.0295[a]	0.0295[a]	0.0334[a]	0.00718[a]	0.027[a]
95% CI UB	0.206[a]	0.242	0.286	0.201[a]	0.261	0.218[a]	0.214[a]	0.226[a]	0.205[a]	0.221[a]
N	233[a]	241	237	232[a]	100	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	93.6[a]	78.8	70.9	97.4[a]	69	85.3[a]	84.5[a]	81.8[a]	94.4[a]	87.2[a]
Max	0.34[a]	0.62	1.02	0.24[a]	0.71	0.48[a]	0.42[a]	0.47[a]	0.33[a]	0.5[a]
MATES IV										
Average	0.0833	0.113	0.122	0.0578	0.14	0.0782	0.0996	0.0792	0.0661	0.081
95% CI LB	0.062	0.0852	0.0878	0.0475	0.108	0.0612	0.0828	0.0643	0.0534	0.0612
95% CI UB	0.107	0.143	0.161	0.0698	0.174	0.0971	0.118	0.0961	0.0801	0.103
N	51	55	57	53	53	54	53	57	52	57
% < MDL	23.5	9.1	15.8	24.5	5.7	14.8	9.4	24.6	30.8	38.6
Max	0.41	0.39	0.58	0.22	0.53	0.28	0.36	0.3	0.21	0.32
MATES V										
Average		0.0367	0.0975	0.0516	0.0743	0.0527	0.0535	0.0587	0.0497	0.061
95% CI LB		0.0322	0.0749	0.0438	0.0615	0.0408	0.0454	0.0492	0.0413	0.0472
95% CI UB		0.042	0.123	0.0623	0.0888	0.068	0.0638	0.0698	0.0597	0.0791
N	0	60	61	61	60	59	56	53	60	58
% < MDL		16.7	16.4	16.4	8.3	35.6	17.9	24.5	28.3	29.3
Max		0.14	0.49	0.25	0.25	0.32	0.19	0.21	0.18	0.33

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

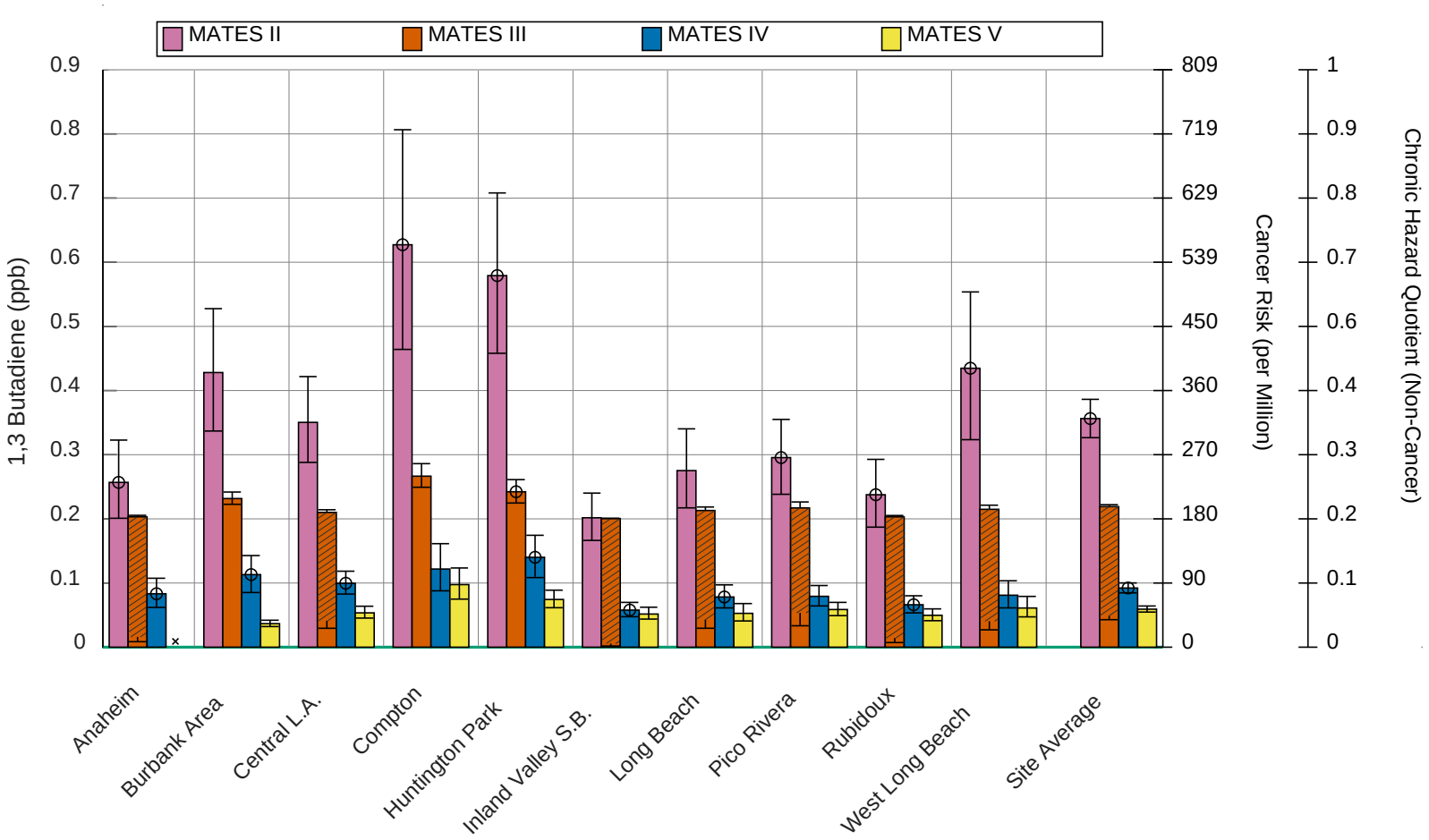


Figure IV-19. Annual Average Concentrations of 1,3 Butadiene in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

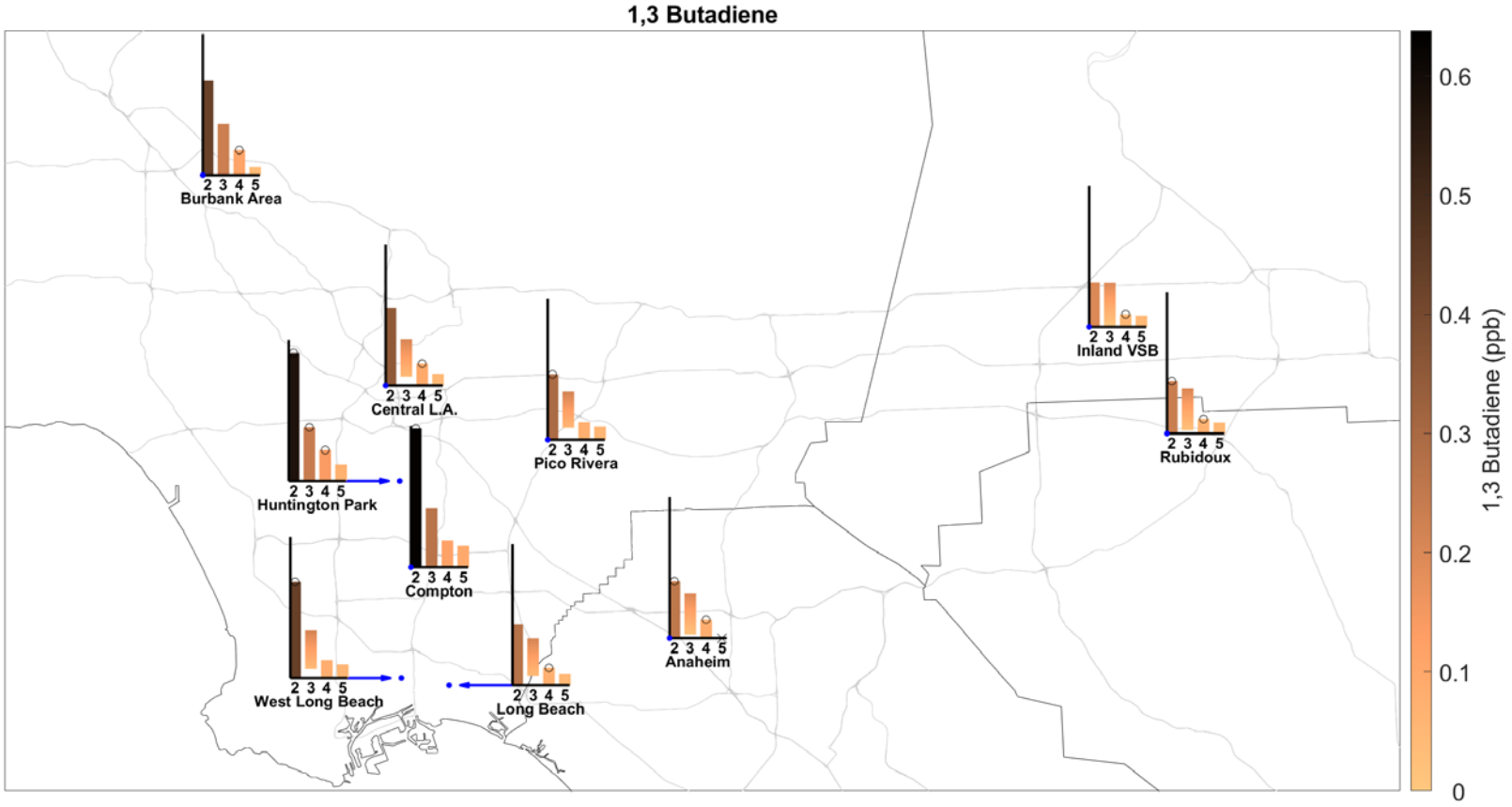


Figure IV-20. Geographic distribution of 1,3 Butadiene from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Carbon Tetrachloride

Table IV-13. Ambient Concentrations (ppb) of Carbon Tetrachloride from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.108	0.105	0.106	0.109	0.108	0.112	0.107	0.105	0.0995	0.104
95% CI LB	0.103	0.0985	0.0992	0.102	0.101	0.106	0.101	0.0968	0.0916	0.0962
95% CI UB	0.114	0.111	0.112	0.115	0.115	0.118	0.114	0.112	0.108	0.113
N	51	56	42	60	44	59	57	53	45	34
% < MDL	51	50	50	50	52.3	50.8	50.9	54.7	53.3	47.1
Max	0.13	0.14	0.13	0.15	0.13	0.17	0.14	0.14	0.13	0.2
MATES III										
Average	0.0837	0.0824	0.0824	0.0837	0.077	0.0818	0.0823	0.0754	0.0809	0.0827
95% CI LB	0.0822	0.0809	0.081	0.0819	0.0752	0.0802	0.081	0.0738	0.0795	0.0811
95% CI UB	0.085	0.0838	0.0838	0.0856	0.0787	0.0832	0.0836	0.0771	0.0824	0.0845
N	233	241	237	232	100	238	238	121	234	235
% < MDL	0.9	1.2	0.8	0.9	2	1.3	0.4	2.5	0.4	1.7
Max	0.12	0.11	0.11	0.13	0.09	0.11	0.11	0.09	0.11	0.12
MATES IV										
Average	0.0845	0.0833	0.0843	0.0827	0.0817	0.0814	0.0818	0.0825	0.082	0.0823
95% CI LB	0.0813	0.0802	0.0816	0.0792	0.0783	0.0782	0.078	0.0796	0.0786	0.0792
95% CI UB	0.0881	0.0863	0.0875	0.0865	0.0849	0.0846	0.0857	0.0858	0.0855	0.0853
N	47	49	51	49	47	50	47	51	49	53
% < MDL	0	0	0	0	0	0	2.1	0	0	0
Max	0.12	0.11	0.11	0.11	0.1	0.11	0.11	0.11	0.11	0.11
MATES V										
Average		0.0757	0.0748	0.0756	0.077	0.0763	0.0757	0.0747	0.075	0.0755
95% CI LB		0.0735	0.0726	0.0734	0.0747	0.0739	0.0736	0.0725	0.073	0.0731
95% CI UB		0.0781	0.0769	0.0779	0.0793	0.0786	0.0779	0.0771	0.077	0.0778
N	0	60	61	61	60	59	56	53	60	58
% < MDL		0	0	0	0	0	0	0	0	0
Max		0.1	0.1	0.1	0.1	0.1	0.1	0.11	0.1	0.11

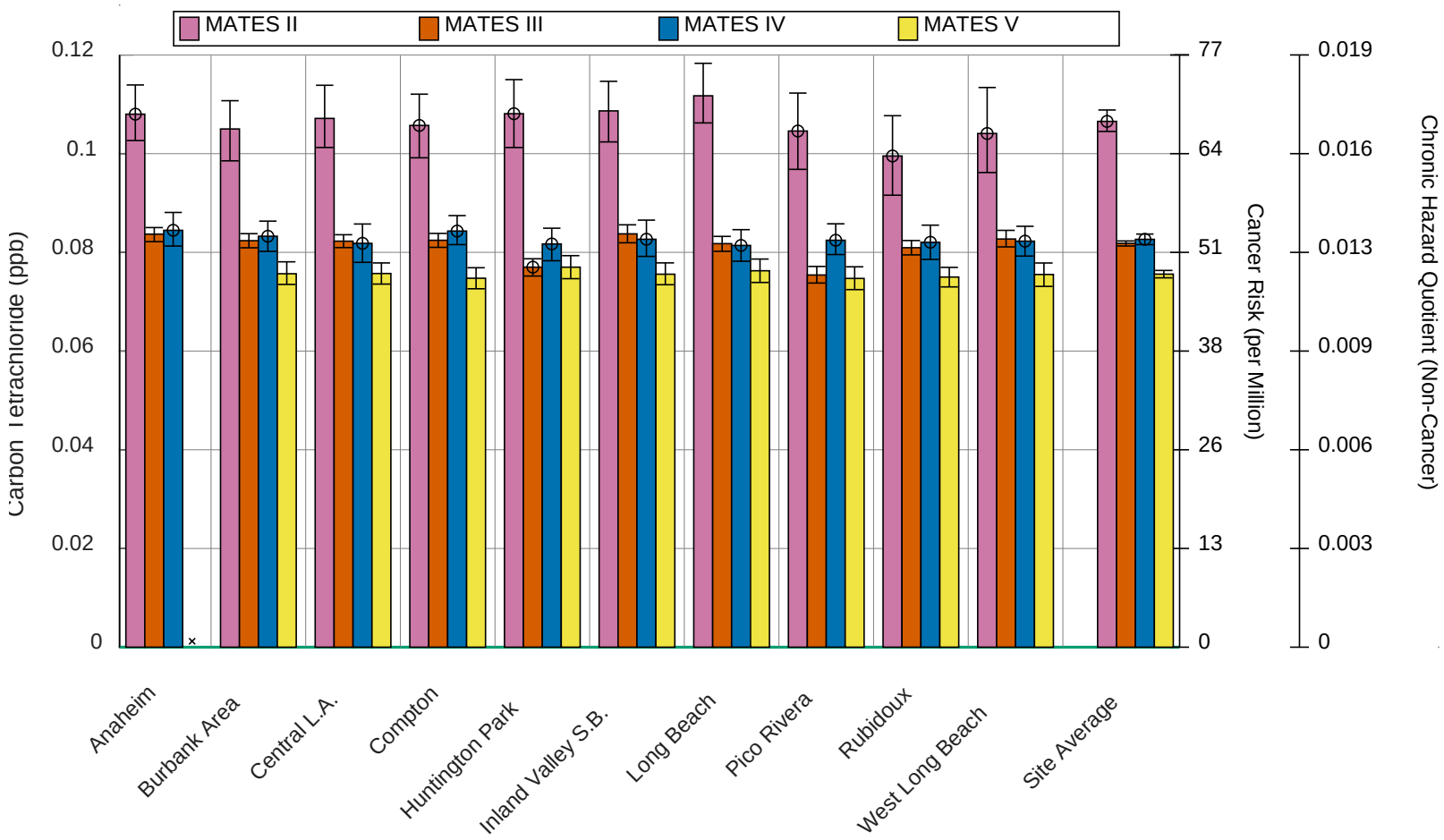


Figure IV-21. Annual Average Concentrations of Carbon Tetrachloride in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

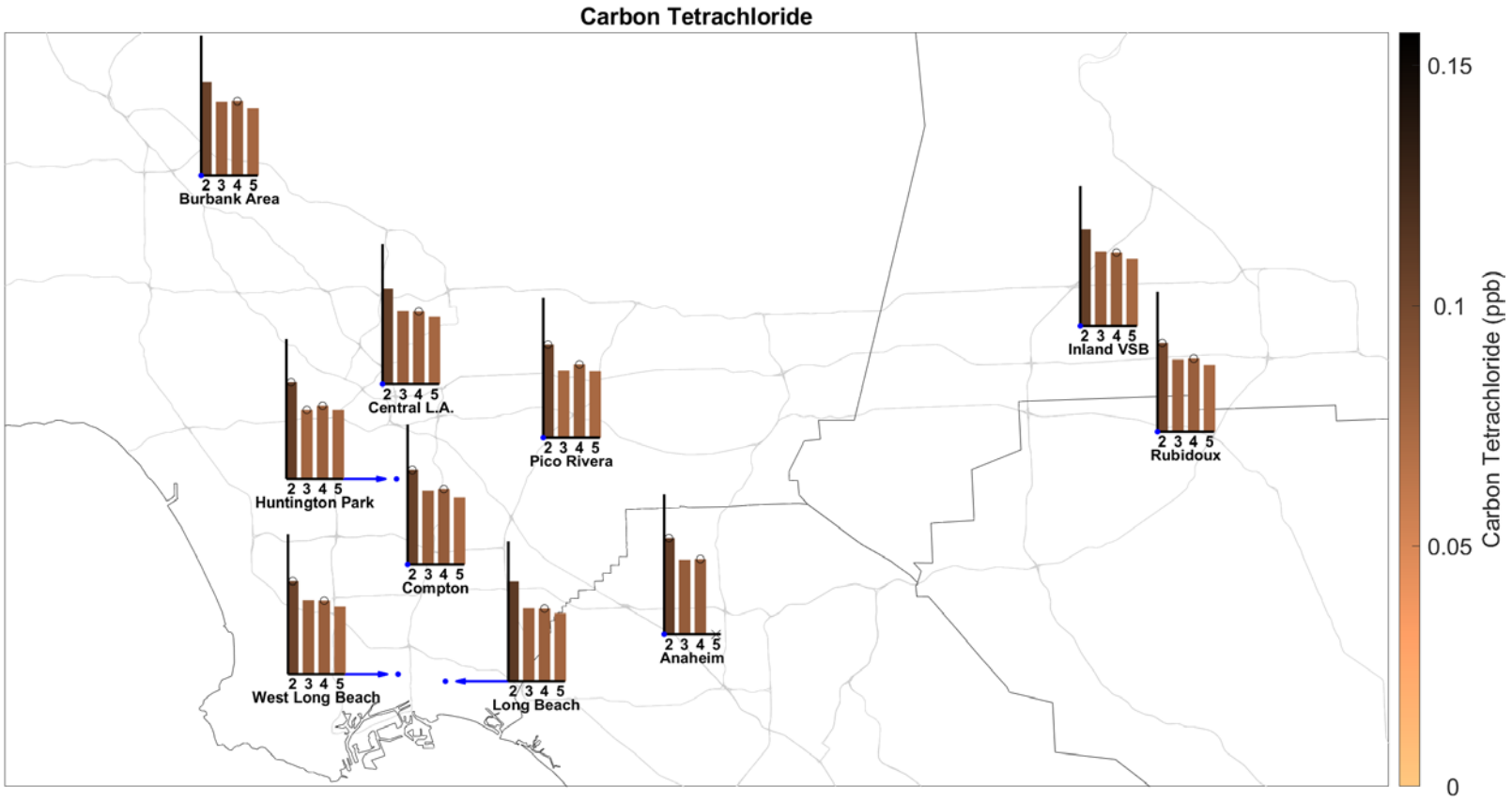


Figure IV-22. Geographic distribution of Carbon Tetrachloride from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Chloroform

Table IV-14. Ambient Concentrations (ppb) of Chloroform from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.037	0.0628	0.0391	0.0397	0.0578	0.0421	0.0483	0.045	0.0382	0.0416
95% CI LB	0.031	0.0535	0.0322	0.0309	0.0431	0.0331	0.0394	0.0386	0.0311	0.0281
95% CI UB	0.0434	0.0724	0.0502	0.0509	0.0759	0.0531	0.0583	0.0517	0.0525	0.0597
N	46	55	36	57	39	56	54	50	41	30
% < MDL	63	41.8	63.9	61.4	56.4	58.9	55.6	60	65.9	63.3
Max	0.06	0.18	0.1	0.24	0.3	0.22	0.2	0.11	0.08	0.2
MATES III										
Average	0, 0.1[a]	0.00469, 0.101[a]	0.000422, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0.00095, 0.1[a]	0, 0.1[a]	0, 0.1[a]
95% CI LB	0[a]	0.00199[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.1[a]	0.101[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]
N	233[a]	241[a]	237[a]	232[a]	100[a]	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	100[a]	95.9[a]	99.6[a]	100[a]	100[a]	100[a]	100[a]	99.2[a]	100[a]	100[a]
Max	< MDL[a]	0.13[a]	0.1[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	0.115[a]	< MDL[a]	< MDL[a]
MATES IV										
Average	0.00843, 0.0561[a]	0.0621	0.00667, 0.055[a]	0.0109, 0.0558[a]	0.00887, 0.0557[a]	0.00111, 0.0541[a]	0.00887, 0.0557[a]	0.0128, 0.0573[a]	0.00769, 0.0555[a]	0.00211, 0.0542[a]
95% CI LB	0.00275[a]	0.0574	0.00211[a]	0.00472[a]	0.0034[a]	0[a]	0.0034[a]	0.00579[a]	0.0025[a]	0[a]
95% CI UB	0.058[a]	0.0671	0.0559[a]	0.0572[a]	0.0578[a]	0.0544[a]	0.0575[a]	0.0598[a]	0.057[a]	0.0545[a]
N	51[a]	55	57[a]	53[a]	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	88.2[a]	74.5	89.5[a]	83[a]	86.8[a]	98.1[a]	86.8[a]	82.5[a]	88.5[a]	96.5[a]
Max	0.08[a]	0.14	0.07[a]	0.08[a]	0.1[a]	0.06[a]	0.09[a]	0.1[a]	0.08[a]	0.06[a]
MATES V										
Average		0.0237	0.0347	0.0342	0.0339	0.0331	0.0386	0.0426	0.0354	0.0341
95% CI LB		0.0204	0.0306	0.0304	0.0295	0.0285	0.0316	0.0373	0.0316	0.0298
95% CI UB		0.0271	0.039	0.0382	0.0387	0.0379	0.0477	0.0481	0.0392	0.0383
N	0	60	61	61	60	59	56	53	60	58
% < MDL		55	49.2	34.4	53.3	54.2	46.4	43.4	41.7	51.7
Max		0.04	0.07	0.08	0.07	0.08	0.23	0.09	0.07	0.07

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

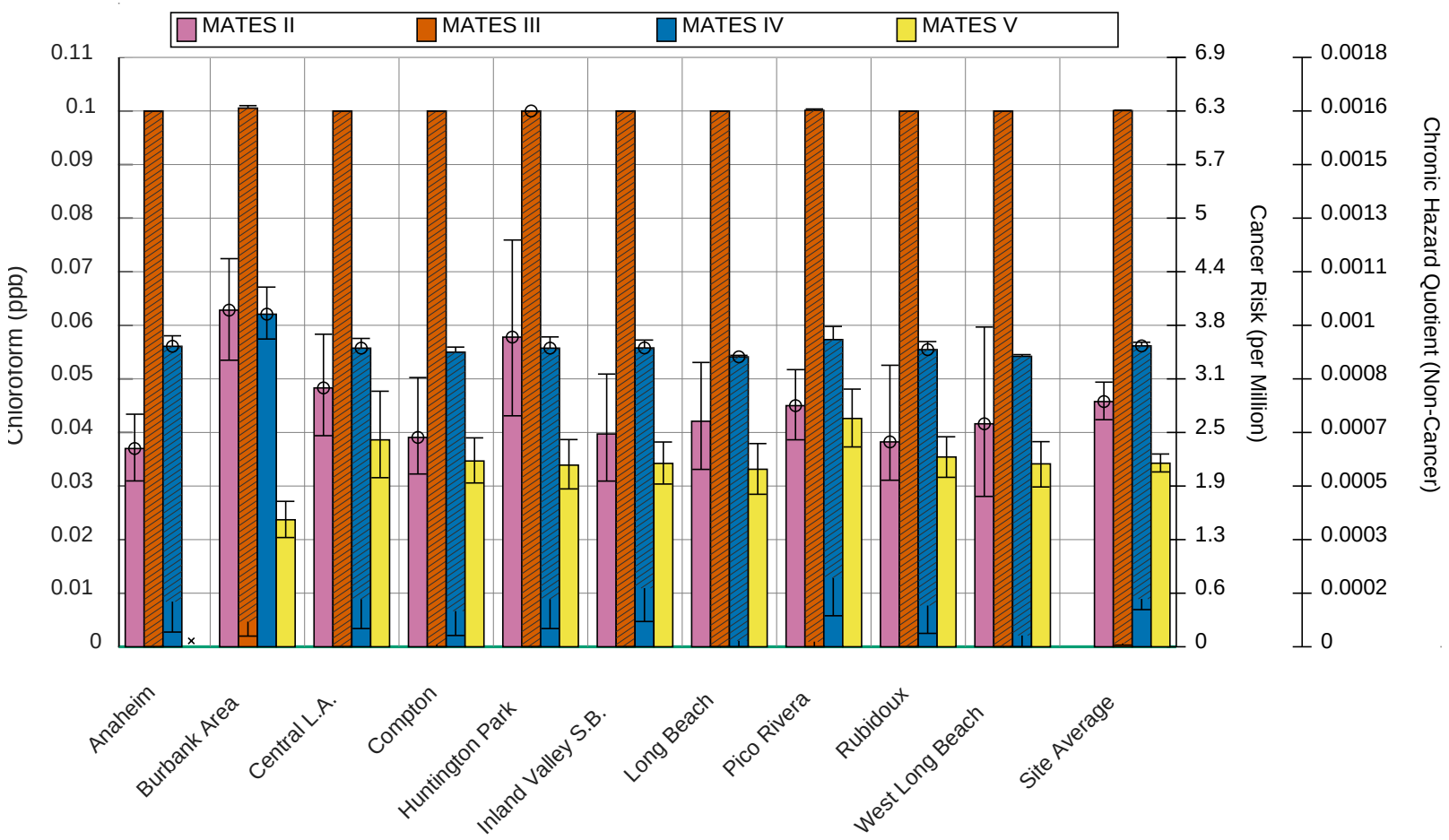


Figure IV-23. Annual Average Concentrations of Chloroform in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

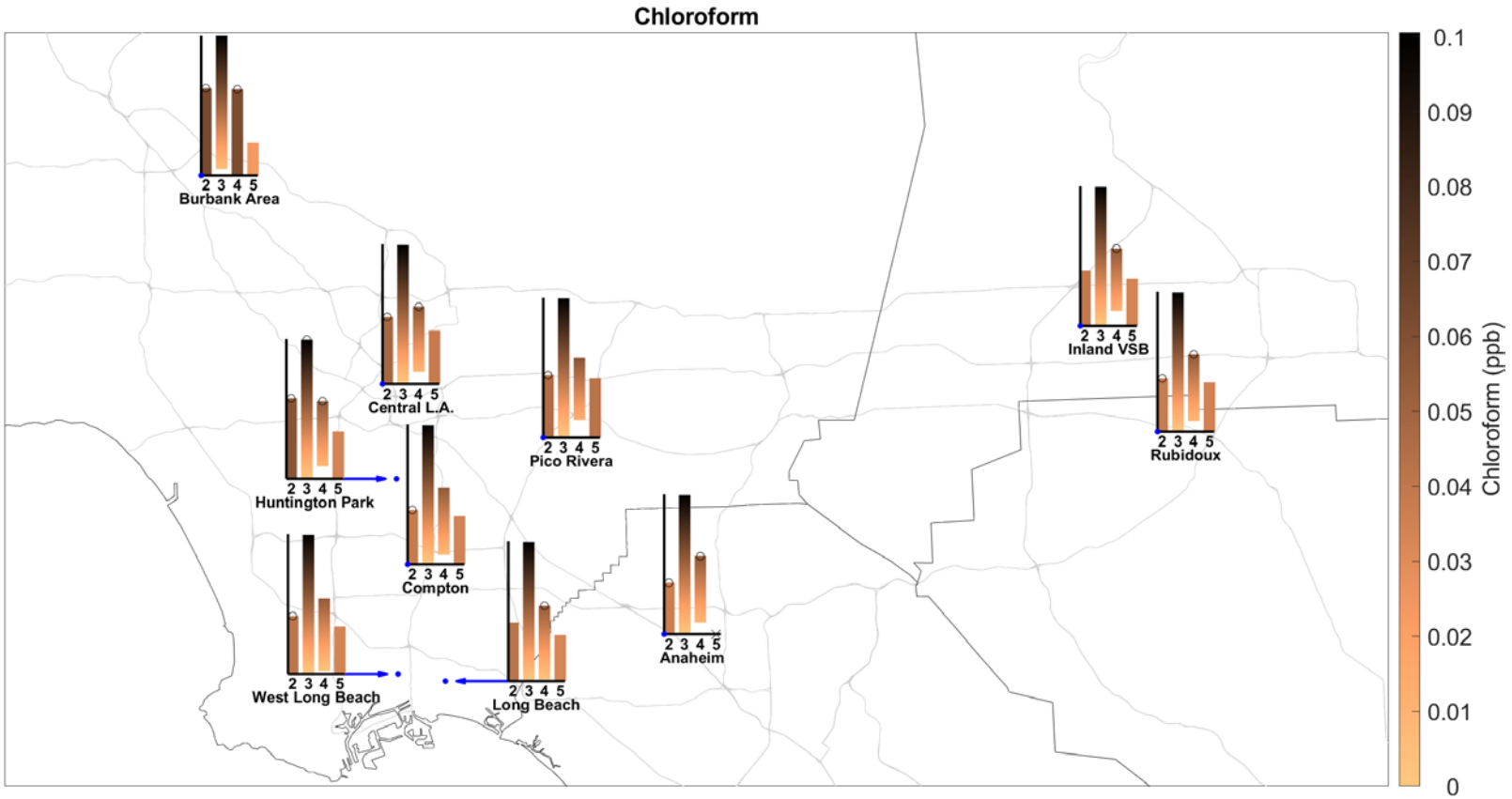


Figure IV-24. Geographic distribution of Chloroform from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Chloromethane

Table IV-15. Ambient Concentrations (ppb) of Chloromethane from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.626	0.623	0.71	0.618	0.643	0.619	0.627	0.596	0.629	0.729
95% CI LB	0.579	0.564	0.624	0.565	0.57	0.569	0.577	0.539	0.558	0.565
95% CI UB	0.684	0.686	0.795	0.671	0.717	0.677	0.683	0.655	0.688	0.994
N	26	28	21	30	23	30	29	29	24	17
% < MDL	0	0	0	0	0	0	0	0	4.2	0
Max	1	1.1	1.2	1	1	1.1	1.1	1	0.9	2.5
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

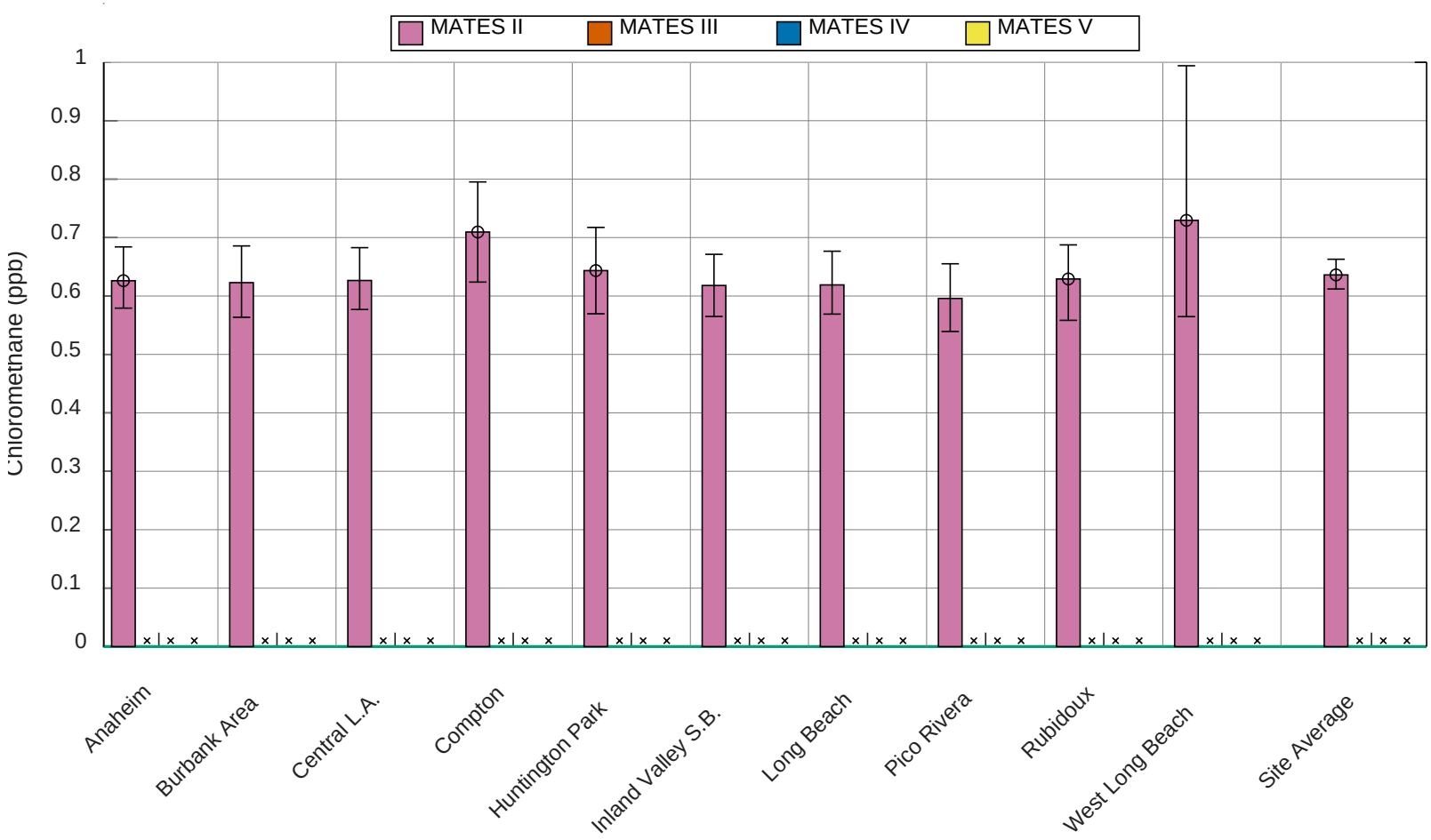


Figure IV-25. Annual Average Concentrations of Chloromethane in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

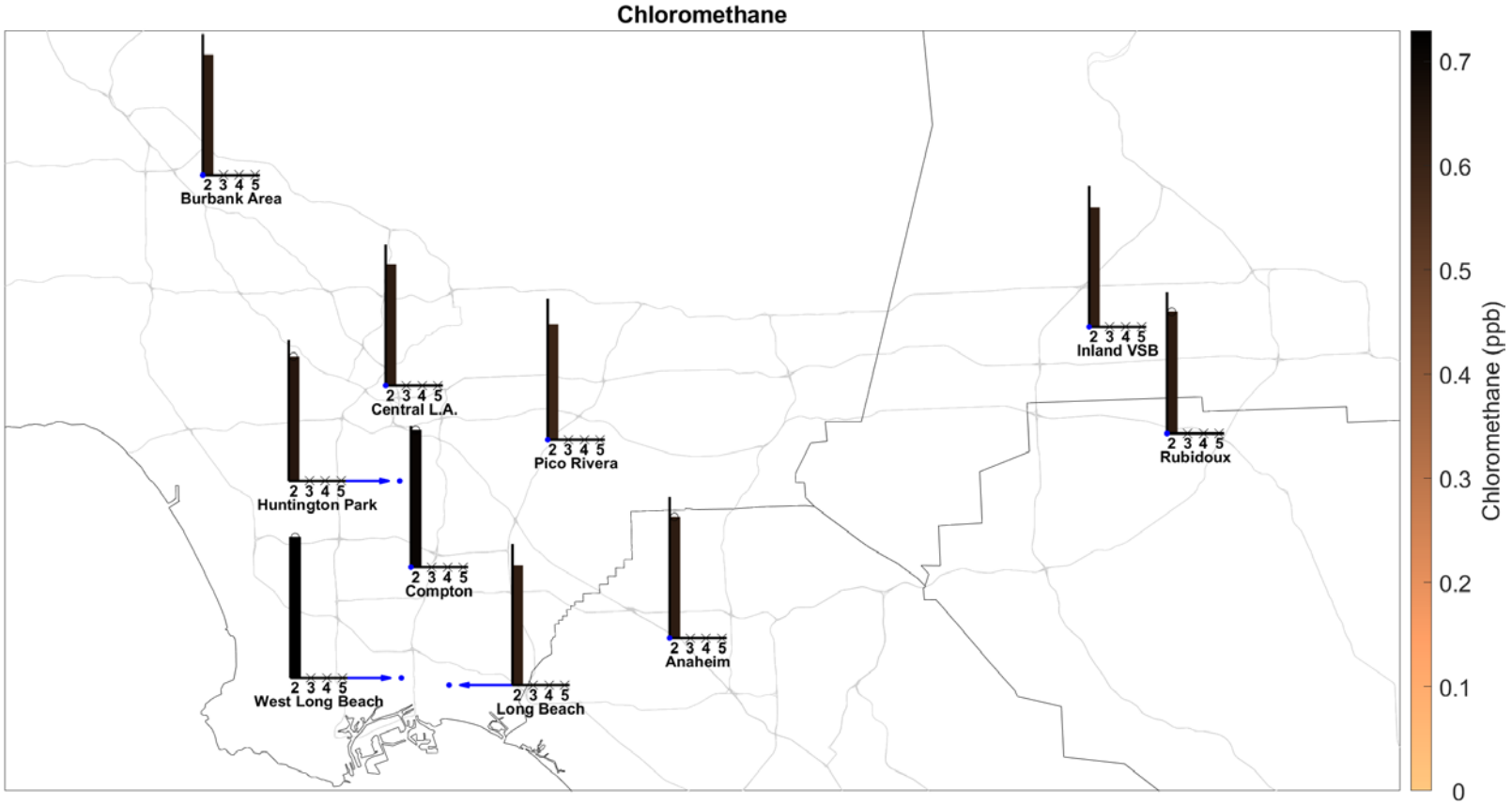


Figure IV-26. Geographic distribution of Chloromethane from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

1,2-Dibromoethane

Table IV-16. Ambient Concentrations (ppb) of 1,2-Dibromoethane from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]
N	26[a]	28[a]	21[a]	30[a]	23[a]	30[a]	29[a]	29[a]	24[a]	17[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES III										
Average	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]
N	233[a]	241[a]	237[a]	232[a]	100[a]	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES IV										
Average	0, 0.07[a]	0, 0.07[a]	0, 0.07[a]	0, 0.07[a]	0, 0.07[a]	0, 0.07[a]	0, 0.07[a]	0, 0.07[a]	0, 0.07[a]	0, 0.07[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.07[a]	0.07[a]	0.07[a]	0.07[a]	0.07[a]	0.07[a]	0.07[a]	0.07[a]	0.07[a]	0.07[a]
N	51[a]	55[a]	57[a]	53[a]	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES V										
Average		0, 0.036[a]	0, 0.0365[a]	0, 0.0365[a]	0, 0.0364[a]	0, 0.0364[a]	0, 0.036[a]	0, 0.0365[a]	0, 0.0364[a]	0, 0.0367[a]
95% CI LB		0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB		0.0383[a]	0.039[a]	0.039[a]	0.0392[a]	0.039[a]	0.0385[a]	0.0395[a]	0.0392[a]	0.0395[a]
N	0	60[a]	60[a]	60[a]	59[a]	58[a]	55[a]	52[a]	59[a]	57[a]
% < MDL		100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max		< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

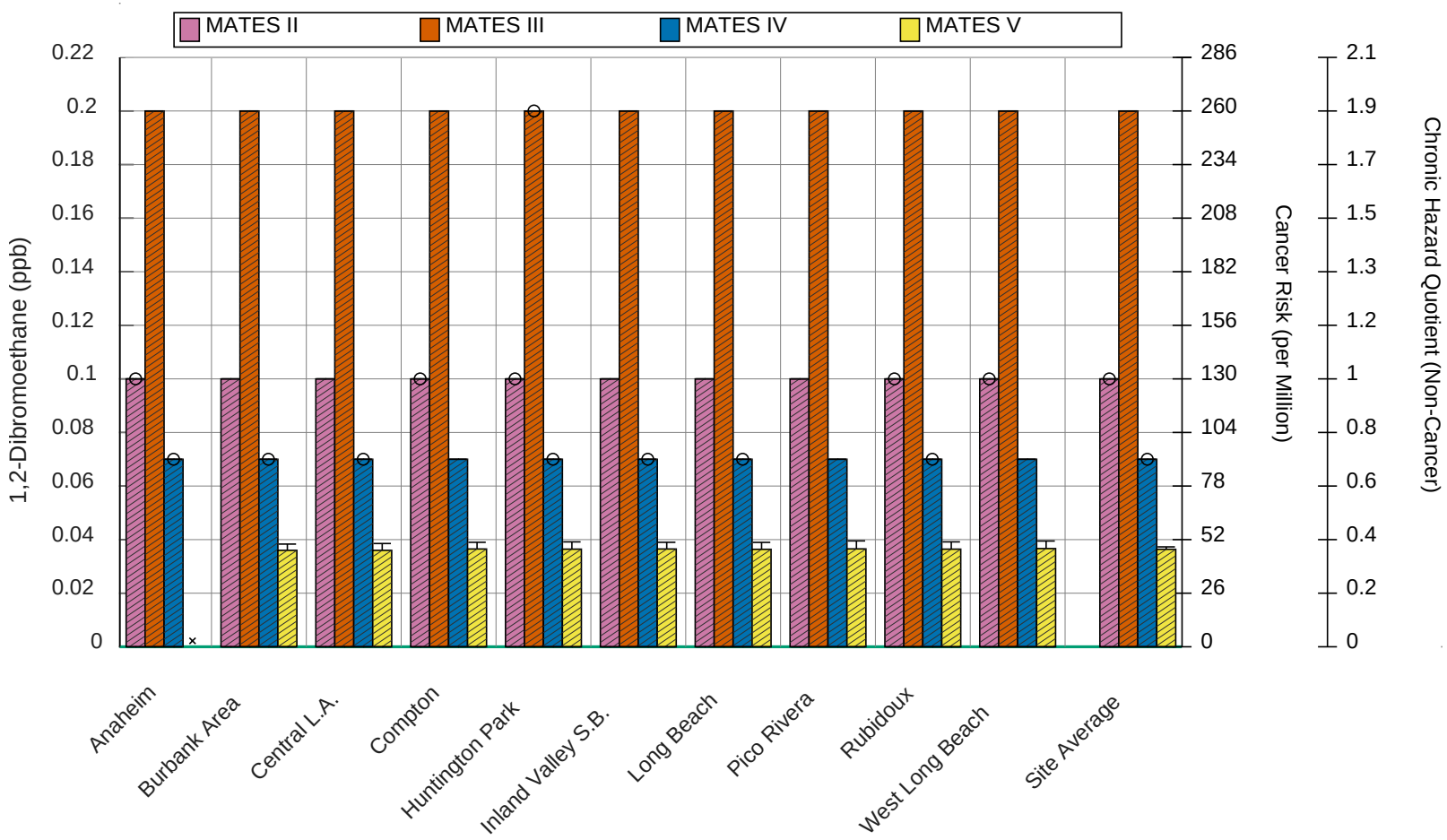


Figure IV-27. Annual Average Concentrations of 1,2-Dibromoethane in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

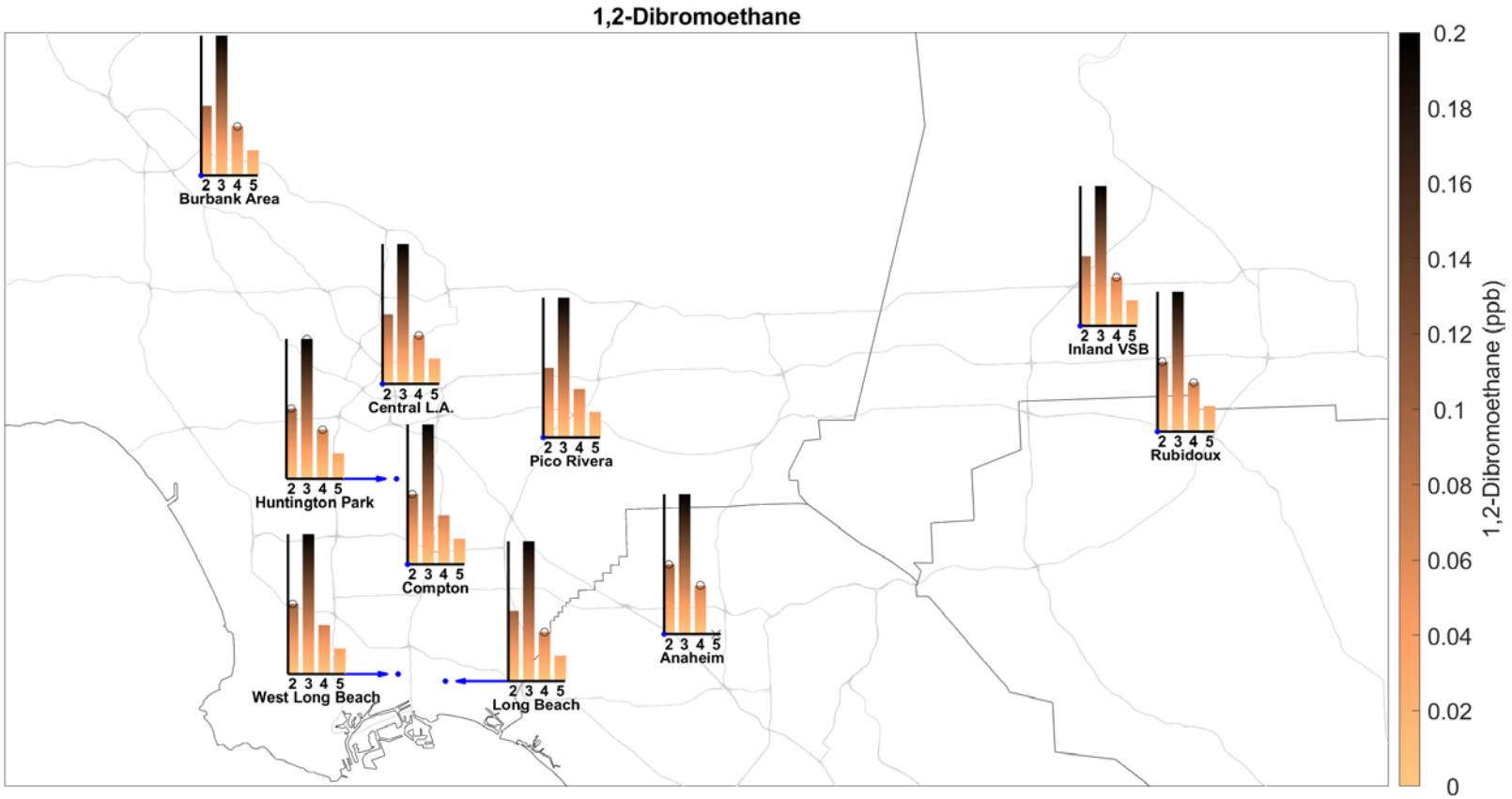


Figure IV-28. Geographic distribution of 1,2-Dibromoethane from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

1,2-Dichlorobenzene

Table IV-17. Ambient Concentrations (ppb) of 1,2-Dichlorobenzene from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.0204, 0.109[a]	0.0578	0.0286, 0.119[a]	0.0556	0.0304, 0.117[a]	0.0176, 0.1[a]	0.0132, 0.0956[a]	0.00968, 0.1[a]	0.0167, 0.108[a]	0.0235, 0.112[a]
95% CI LB	0[a]	0.0531	0[a]	0.05	0[a]	0.00368[a]	0.00294[a]	0[a]	0[a]	0[a]
95% CI UB	0.128[a]	0.105	0.152[a]	0.103	0.152[a]	0.11[a]	0.104[a]	0.109[a]	0.125[a]	0.129[a]
N	27[a]	32	21[a]	36	23[a]	34[a]	34[a]	31[a]	24[a]	17[a]
% < MDL	88.9[a]	78.1	90.5[a]	77.8	87[a]	82.4[a]	82.4[a]	90.3[a]	91.7[a]	88.2[a]
Max	0.3[a]	0.2	0.4[a]	0.2	0.4[a]	0.2[a]	0.2[a]	0.2[a]	0.3[a]	0.2[a]
MATES III										
Average	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]
N	233[a]	241[a]	237[a]	232[a]	100[a]	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES IV										
Average	0, 0.095[a]	0, 0.095[a]	0, 0.095[a]	0, 0.095[a]	0.00226, 0.0955[a]	0, 0.095[a]	0, 0.095[a]	0.00211, 0.0954[a]	0, 0.095[a]	0, 0.095[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.095[a]	0.095[a]	0.095[a]	0.095[a]	0.0964[a]	0.095[a]	0.095[a]	0.0963[a]	0.095[a]	0.095[a]
N	51[a]	55[a]	57[a]	53[a]	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	98.1[a]	100[a]	100[a]	98.2[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	0.12[a]	< MDL[a]	< MDL[a]	0.12[a]	< MDL[a]	< MDL[a]
MATES V										
Average		0.00132, 0.0502[a]	0, 0.0496[a]	0, 0.0496[a]	0, 0.0494[a]	0.00212, 0.0506[a]	0, 0.0492[a]	0, 0.0491[a]	0.000769, 0.0496[a]	0, 0.0498[a]
95% CI LB		0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB		0.0532[a]	0.0524[a]	0.0524[a]	0.0523[a]	0.0546[a]	0.052[a]	0.0524[a]	0.0525[a]	0.0527[a]
N	0	53[a]	54[a]	54[a]	53[a]	52[a]	49[a]	46[a]	52[a]	51[a]
% < MDL		98.1[a]	100[a]	100[a]	100[a]	98.1[a]	100[a]	100[a]	98.1[a]	100[a]
Max		0.07[a]	< MDL[a]	< MDL[a]	< MDL[a]	0.11[a]	< MDL[a]	< MDL[a]	0.04[a]	< MDL[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

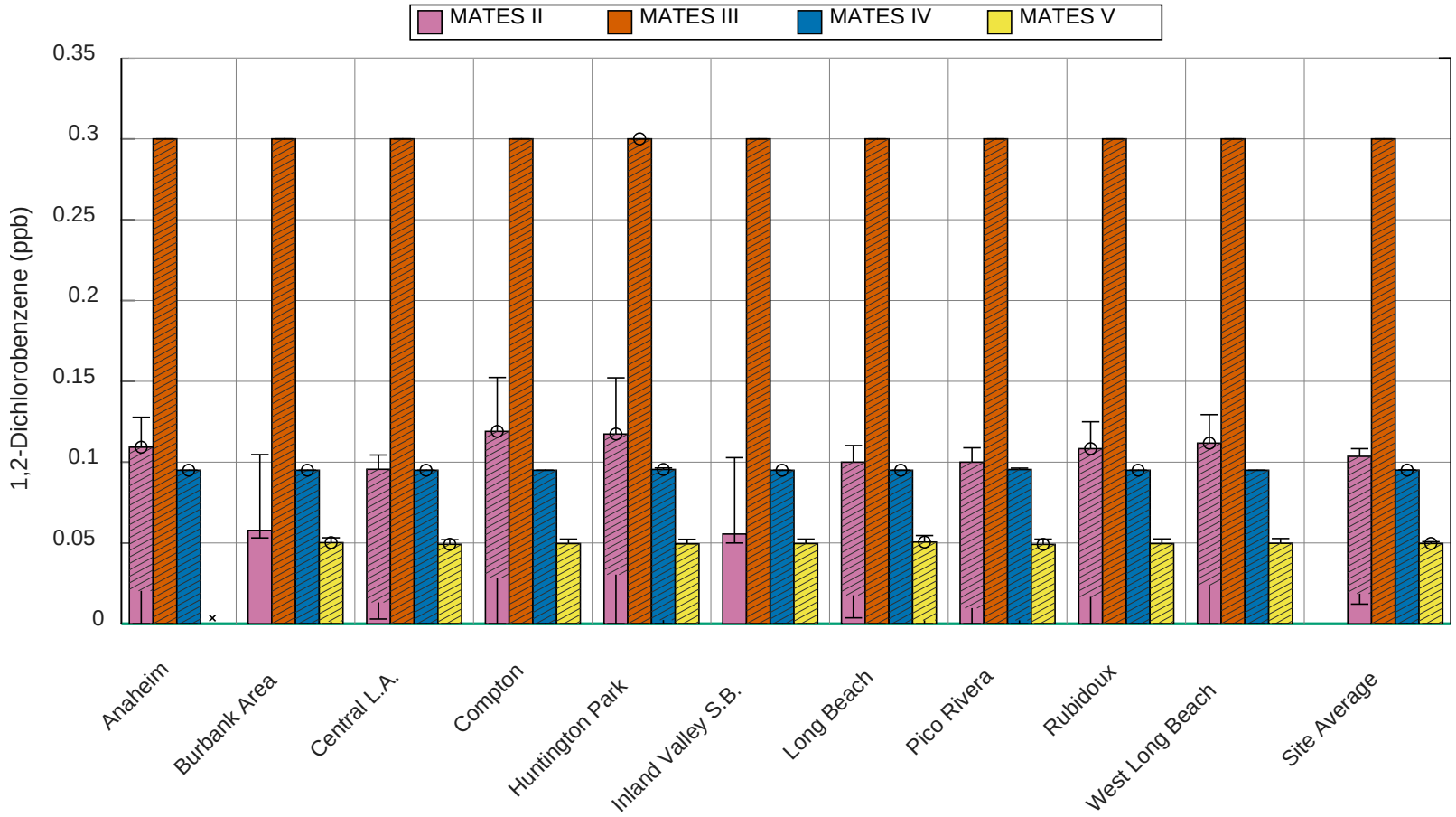


Figure IV-29. Annual Average Concentrations of 1,2-Dichlorobenzene in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

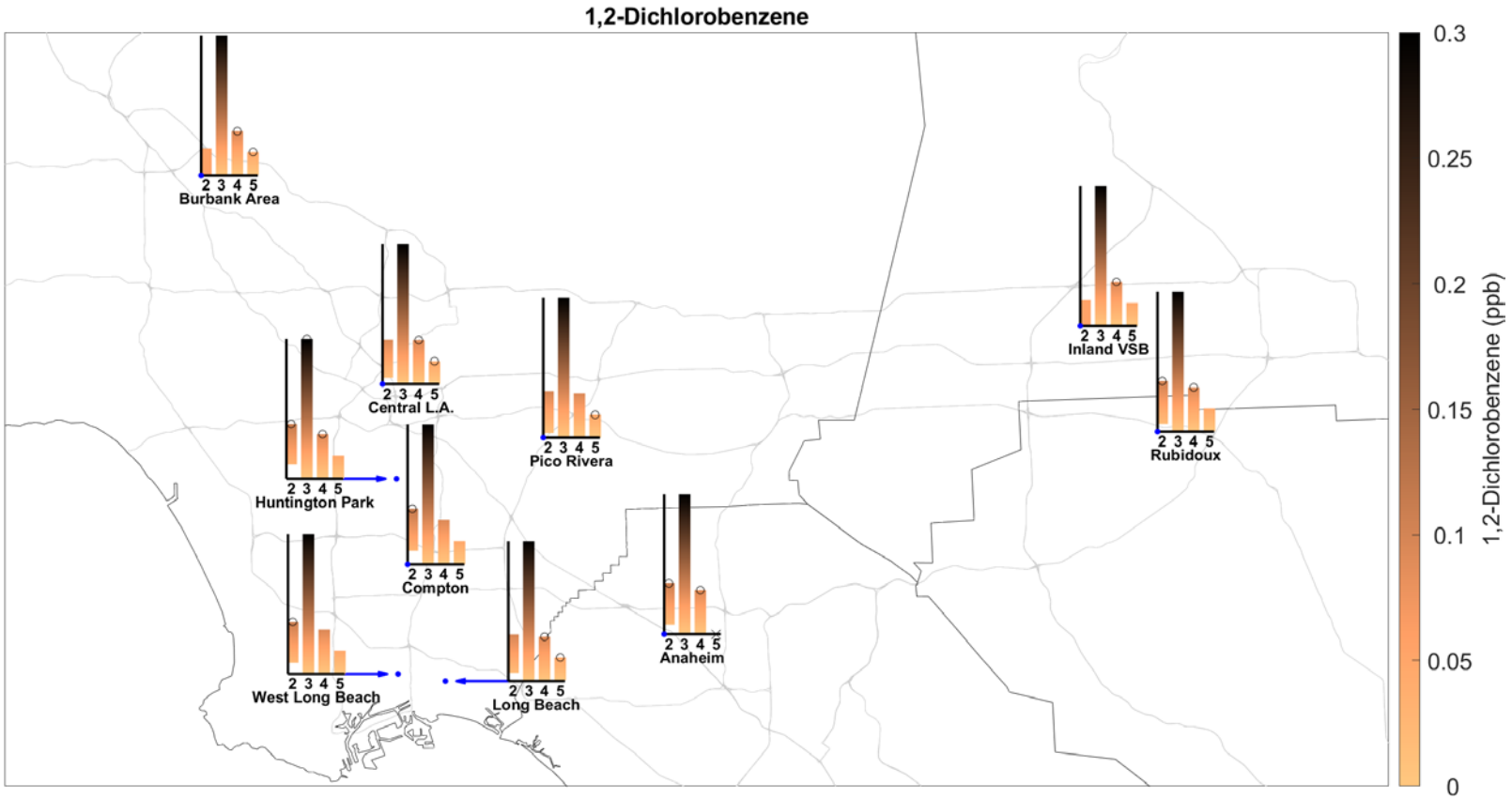


Figure IV-30. Geographic distribution of 1,2-Dichlorobenzene from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

1,4-Dichlorobenzene

Table IV-18. Ambient Concentrations (ppb) of 1,4-Dichlorobenzene from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.136	0.172	0.243	0.136	0.361	0.123	0.165	0.152	0.133	0.153
95% CI LB	0.115	0.138	0.186	0.114	0.261	0.106	0.129	0.126	0.1	0.124
95% CI UB	0.162	0.209	0.305	0.164	0.47	0.143	0.209	0.182	0.179	0.188
N	27	32	21	36	23	34	34	31	24	17
% < MDL	55.6	37.5	14.3	47.2	8.7	52.9	38.2	51.6	70.8	52.9
Max	0.3	0.5	0.5	0.4	1.1	0.3	0.5	0.4	0.5	0.3
MATES III										
Average	0, 0.3[a]	0, 0.3[a]	0.00595, 0.301[a]	0, 0.3[a]	0.0032, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]
95% CI LB	0[a]	0[a]	0.00131[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.3[a]	0.3[a]	0.302[a]	0.3[a]	0.301[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]
N	233[a]	241[a]	237[a]	232[a]	100[a]	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	100[a]	100[a]	98.3[a]	100[a]	99[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	0.42[a]	< MDL[a]	0.32[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES IV										
Average	0, 0.057[a]	0.00145, 0.0574[a]	0, 0.057[a]	0, 0.057[a]	0.00453, 0.0605[a]	0, 0.057[a]	0.00208, 0.058[a]	0, 0.057[a]	0, 0.057[a]	0, 0.057[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.057[a]	0.0583[a]	0.057[a]	0.057[a]	0.0674[a]	0.057[a]	0.06[a]	0.057[a]	0.057[a]	0.057[a]
N	51[a]	55[a]	57[a]	53[a]	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	100[a]	98.2[a]	100[a]	100[a]	98.1[a]	100[a]	98.1[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	0.08[a]	< MDL[a]	< MDL[a]	0.24[a]	< MDL[a]	0.11[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES V										
Average		0.00593, 0.0476[a]	0.0449	0.00545, 0.0455[a]	0.046	0.01, 0.0489[a]	0.0487	0.0116, 0.0484[a]	0.011, 0.0479[a]	0.00824, 0.0473[a]
95% CI LB		0.000926[a]	0.0429	0.00164[a]	0.043	0.00283[a]	0.0442	0.0049[a]	0.00491[a]	0.00275[a]
95% CI UB		0.0526[a]	0.0507	0.0473[a]	0.0504	0.0557[a]	0.0543	0.0516[a]	0.0513[a]	0.0514[a]
N	0	54[a]	55	55[a]	54	53[a]	51	49[a]	56[a]	51[a]
% < MDL		92.6[a]	80	89.1[a]	72.2	86.8[a]	64.7	81.6[a]	82.1[a]	86.3[a]
Max		0.15[a]	0.12	0.07[a]	0.11	0.2[a]	0.14	0.09[a]	0.1[a]	0.13[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

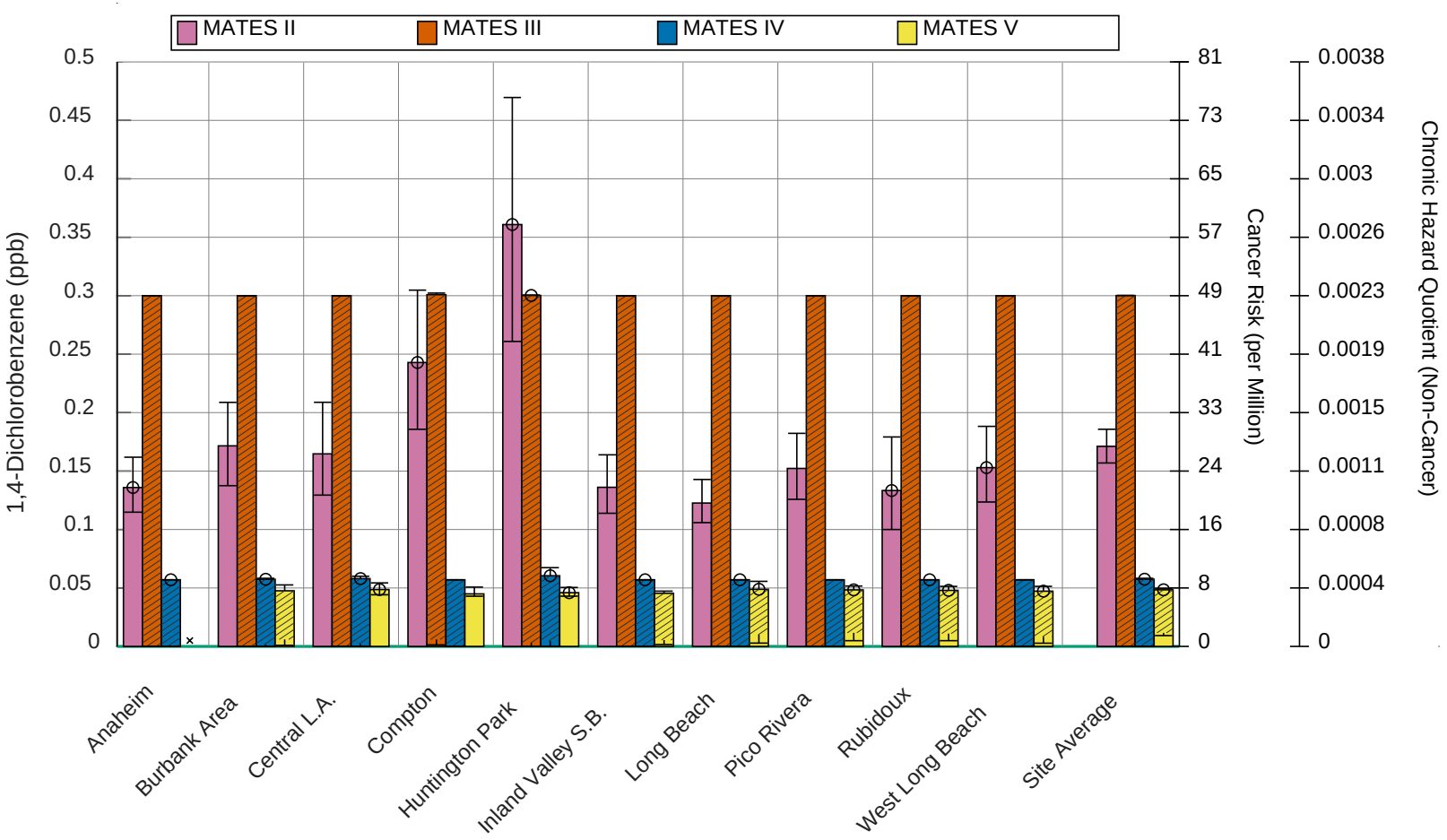


Figure IV-31. Annual Average Concentrations of 1,4-Dichlorobenzene in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

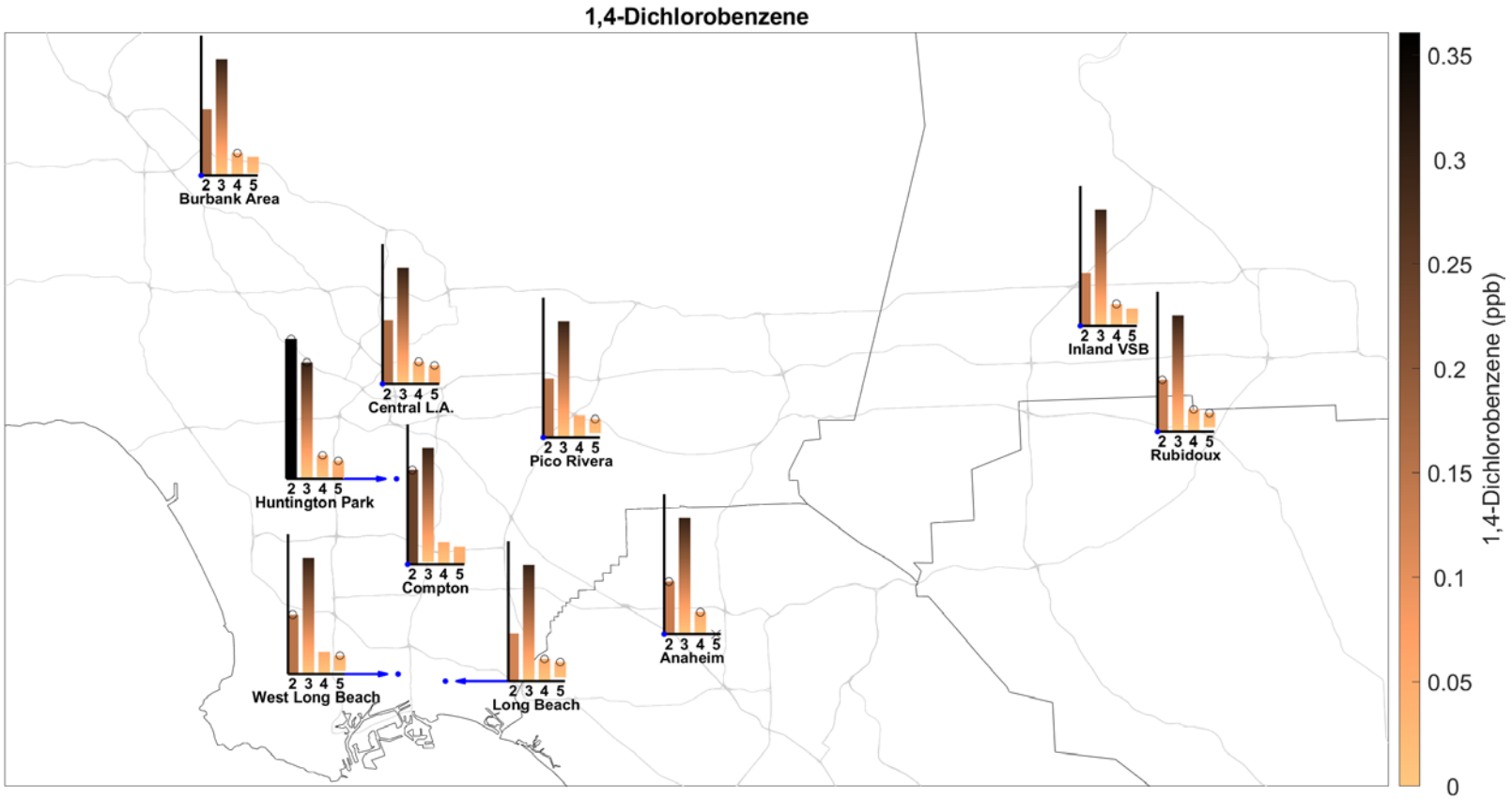


Figure IV-32. Geographic distribution of 1,4-Dichlorobenzene from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Dichloroethane [1,1]

Table IV-19. Ambient Concentrations (ppb) of Dichloroethane [1,1] from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]
N	26[a]	28[a]	21[a]	30[a]	23[a]	30[a]	29[a]	29[a]	24[a]	17[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

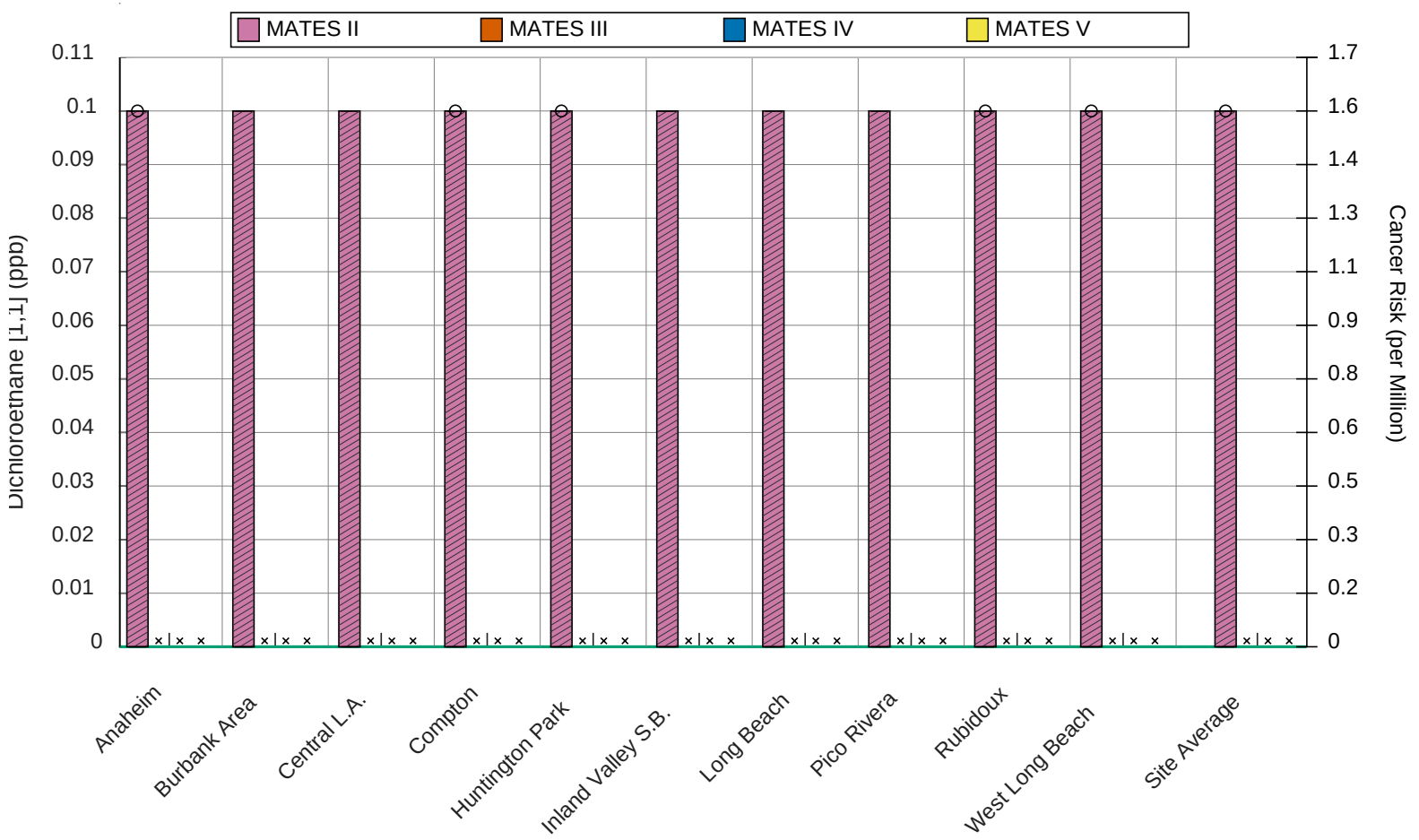


Figure IV-33. Annual Average Concentrations of Dichloroethane [1,1] in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

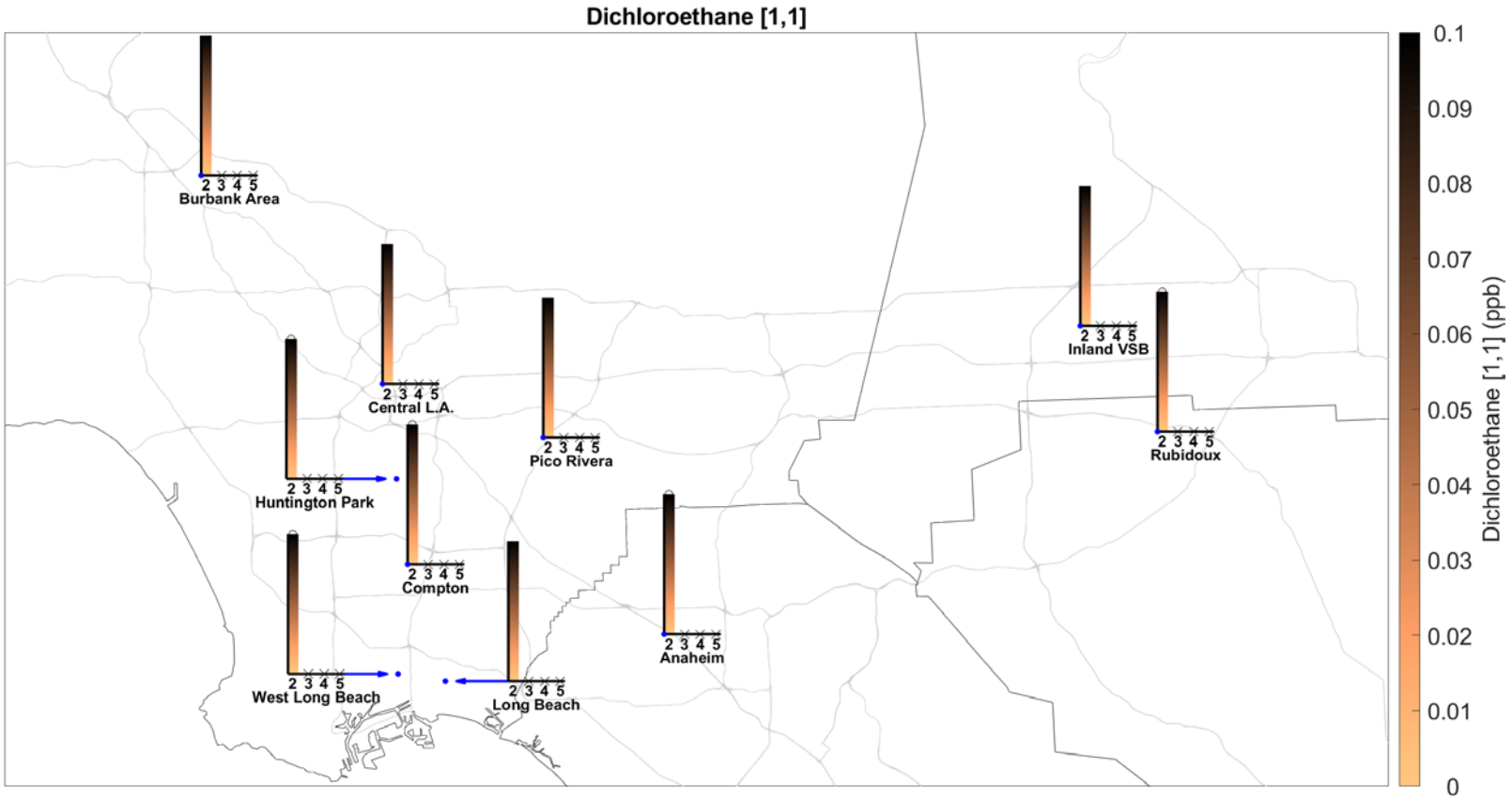


Figure IV-34. Geographic distribution of Dichloroethane [1,1] from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

1,2-Dichloroethane

Table IV-20. Ambient Concentrations (ppb) of 1,2-Dichloroethane from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0.0347, 0.131[a]	0, 0.1[a]	0.0433, 0.14[a]	0.0517, 0.148[a]	0, 0.1[a]	0, 0.1[a]	0.0118, 0.106[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.1[a]	0.1[a]	0.1[a]	0.194[a]	0.1[a]	0.22[a]	0.245[a]	0.1[a]	0.1[a]	0.118[a]
N	26[a]	28[a]	21[a]	30[a]	23[a]	30[a]	29[a]	29[a]	24[a]	17[a]
% < MDL	100[a]	100[a]	100[a]	96.7[a]	100[a]	96.7[a]	96.6[a]	100[a]	100[a]	94.1[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	1.04[a]	< MDL[a]	1.3[a]	1.5[a]	< MDL[a]	< MDL[a]	0.2[a]
MATES III										
Average	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]
N	233[a]	241[a]	237[a]	232[a]	100[a]	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES IV										
Average	0.00098, 0.0441[a]	0.002, 0.0444[a]	0.00439, 0.0445[a]	0.000943, 0.0441[a]	0.00396, 0.0446[a]	0, 0.044[a]	0.000943, 0.0441[a]	0.00368, 0.0446[a]	0.000962, 0.0441[a]	0.00263, 0.0443[a]
95% CI LB	0[a]	0[a]	0.000877[a]	0[a]	0.000943[a]	0[a]	0[a]	0.000877[a]	0[a]	0[a]
95% CI UB	0.0444[a]	0.0451[a]	0.0449[a]	0.0443[a]	0.0455[a]	0.044[a]	0.0443[a]	0.0453[a]	0.0443[a]	0.0446[a]
N	51[a]	55[a]	57[a]	53[a]	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	98[a]	96.4[a]	91.2[a]	98.1[a]	92.5[a]	100[a]	98.1[a]	93[a]	98.1[a]	94.7[a]
Max	0.05[a]	0.06[a]	0.05[a]	0.05[a]	0.06[a]	< MDL[a]	0.05[a]	0.06[a]	0.05[a]	0.05[a]
MATES V										
Average		0.0253	0.0333	0.0311	0.0333	0.0356	0.0274	0.0315	0.0298	0.0326
95% CI LB		0.0233	0.0308	0.029	0.031	0.032	0.0251	0.0292	0.0277	0.0295
95% CI UB		0.0274	0.0359	0.033	0.0355	0.0388	0.0296	0.0338	0.0315	0.0356
N	0	60	61	61	60	59	56	53	60	58
% < MDL		55	49.2	49.2	53.3	47.5	55.4	54.7	51.7	51.7
Max		0.04	0.06	0.05	0.06	0.07	0.04	0.05	0.04	0.06

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

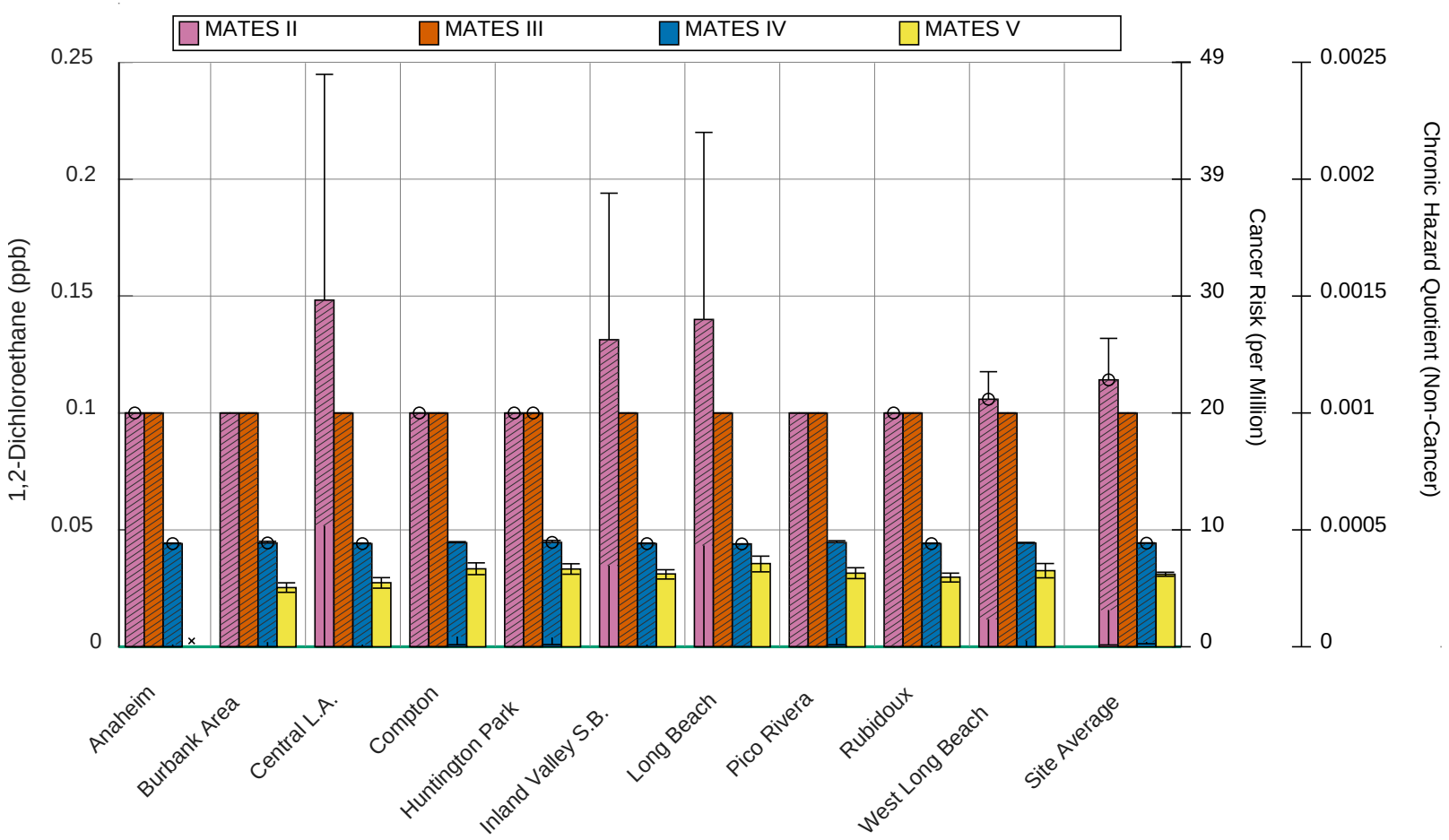


Figure IV-35. Annual Average Concentrations of 1,2-Dichloroethane in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

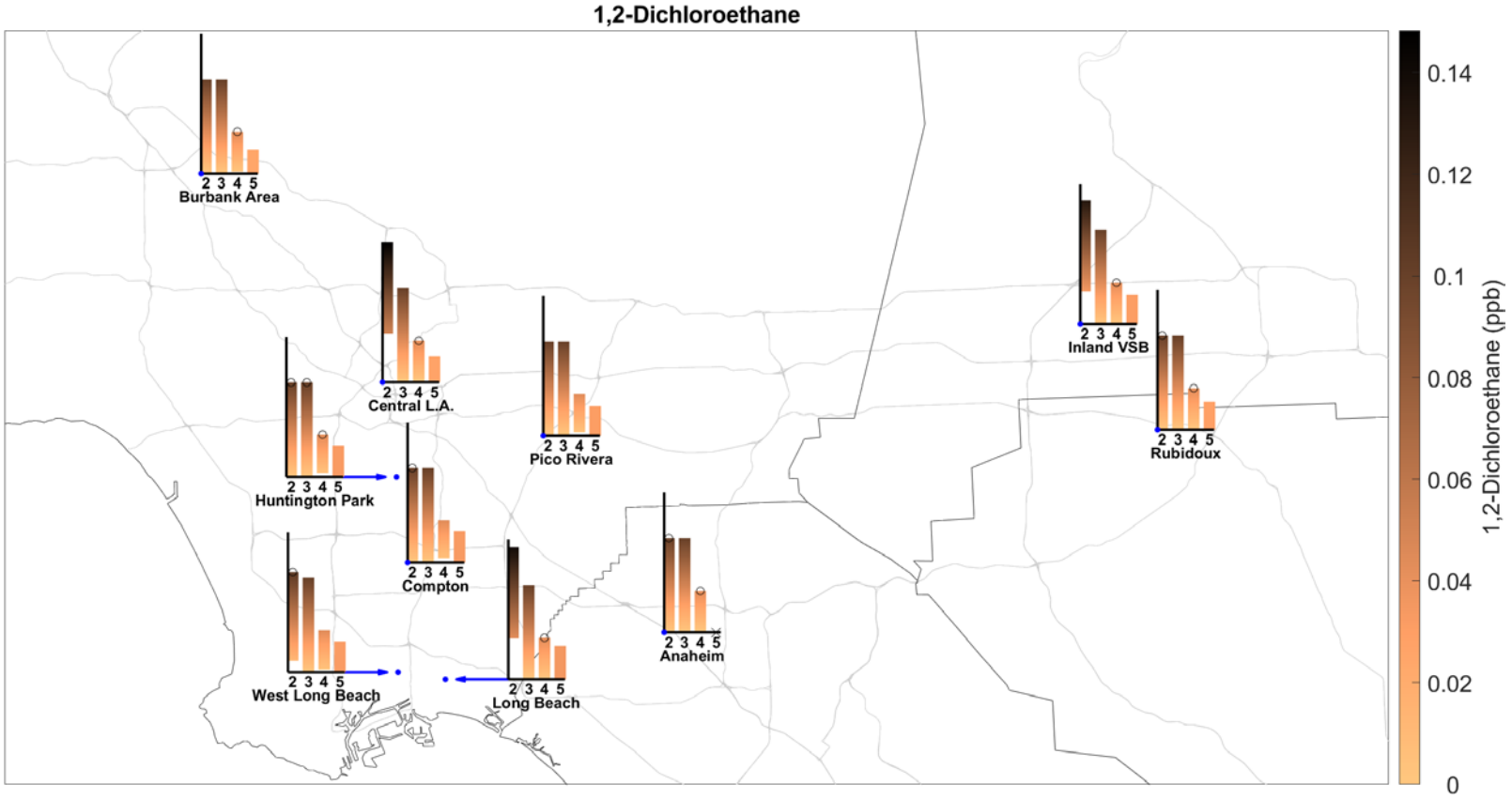


Figure IV-36. Geographic distribution of 1,2-Dichloroethane from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

1,1-Dichloroethene (VDC)

Table IV-21. Ambient Concentrations (ppb) of 1,1-Dichloroethene (VDC) from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.1[a]	0, 0.133[a]	0, 0.1[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.1[a]	0.183[a]	0.1[a]
N	26[a]	28[a]	21[a]	30[a]	23[a]	30[a]	29[a]	29[a]	24[a]	17[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

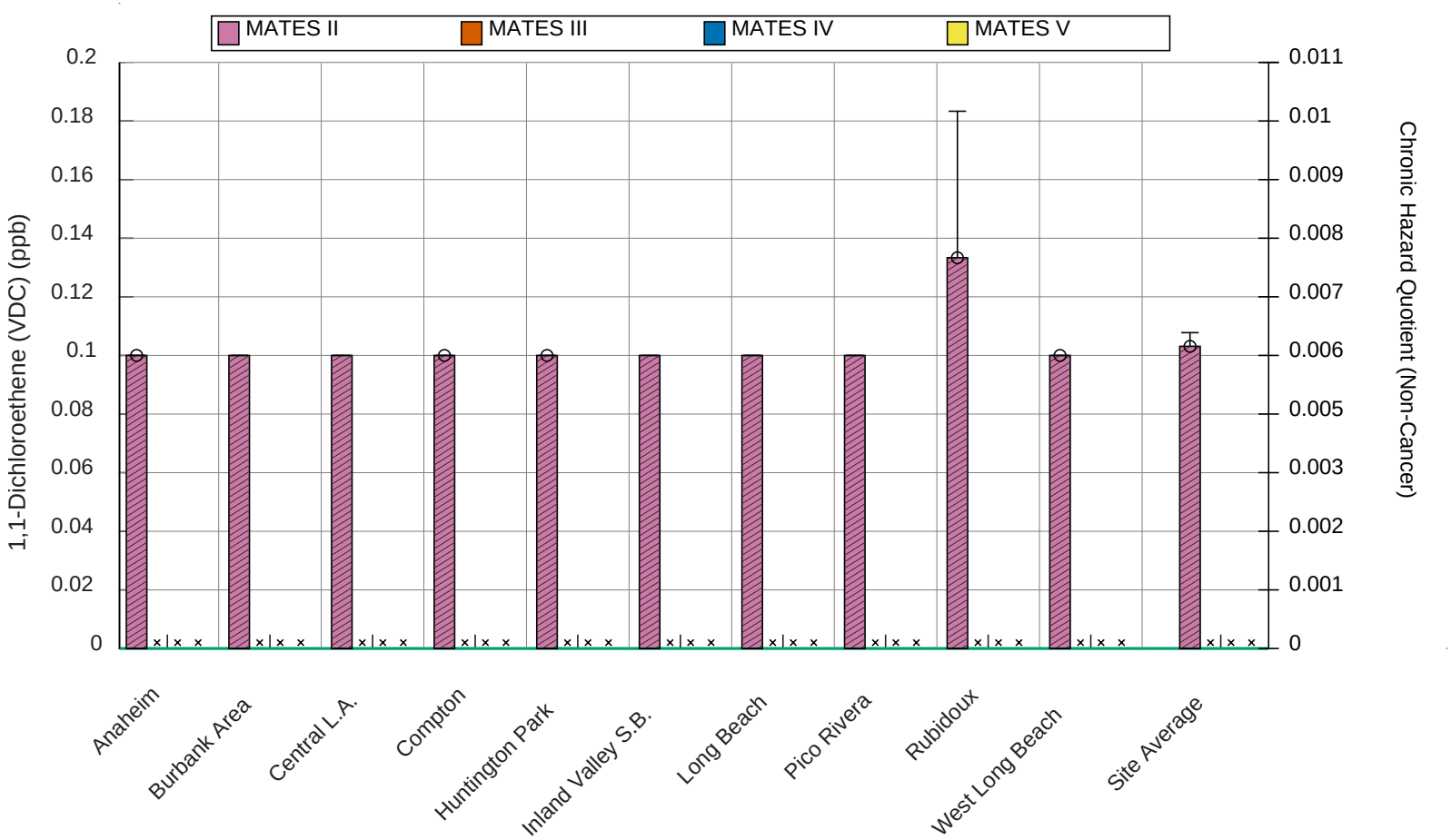


Figure IV-37. Annual Average Concentrations of 1,1-Dichloroethene (VDC) in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

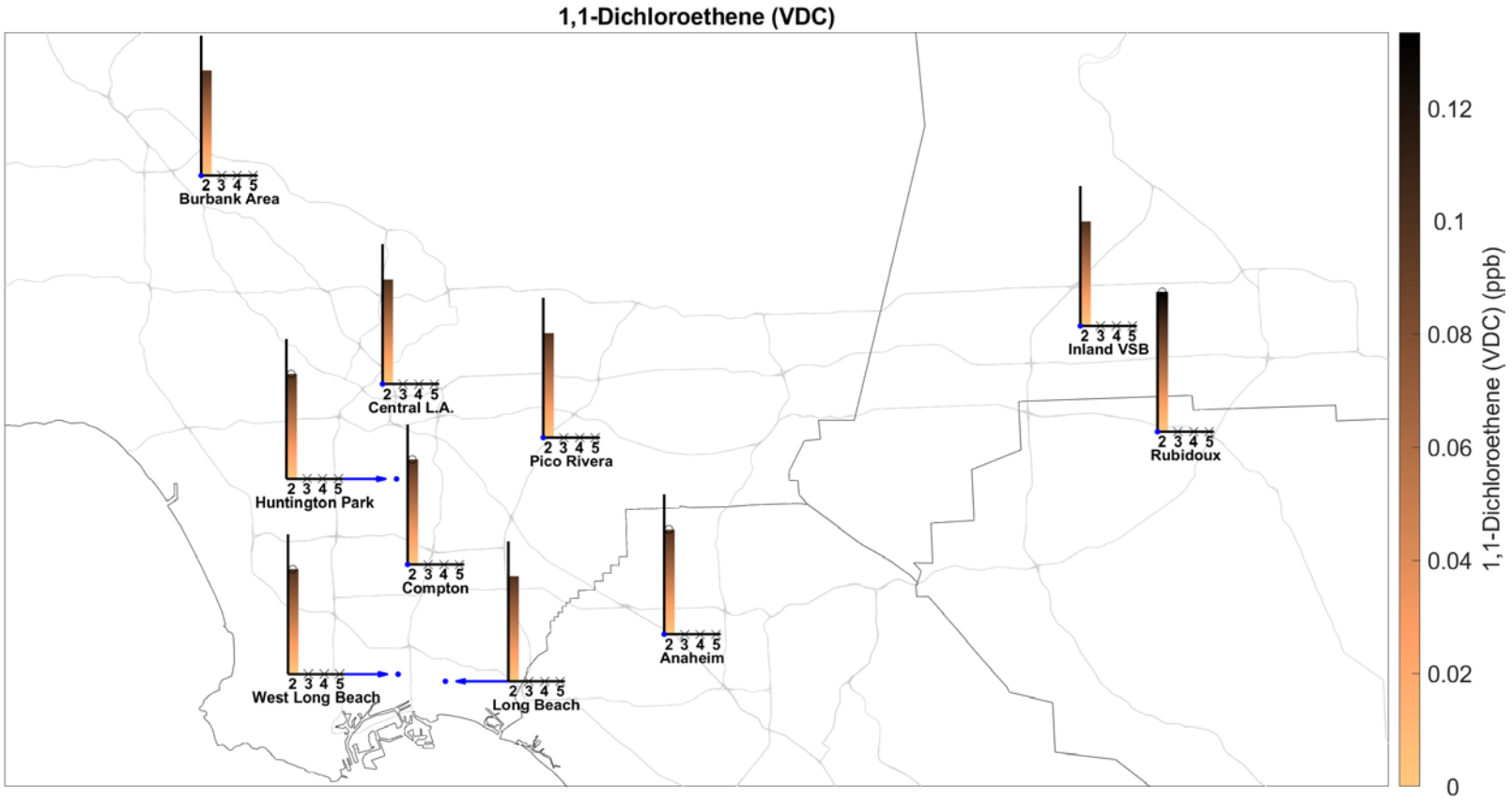


Figure IV-38. Geographic distribution of 1,1-Dichloroethene (VDC) from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

1,2-Dichloropropane

Table IV-22. Ambient Concentrations (ppb) of 1,2-Dichloropropane from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]
N	233[a]	241[a]	237[a]	232[a]	100[a]	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES IV										
Average	0.000588, 0.0222[a]	0, 0.022[a]	0, 0.022[a]	0, 0.022[a]	0, 0.022[a]	0, 0.022[a]	0.000566, 0.0222[a]	0, 0.022[a]	0.00712, 0.0253[a]	0, 0.022[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0.00317[a]	0[a]
95% CI UB	0.0225[a]	0.022[a]	0.022[a]	0.022[a]	0.022[a]	0.022[a]	0.0225[a]	0.022[a]	0.0278[a]	0.022[a]
N	51[a]	55[a]	57[a]	53[a]	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	98[a]	100[a]	100[a]	100[a]	100[a]	100[a]	98.1[a]	100[a]	82.7[a]	100[a]
Max	0.03[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	0.03[a]	< MDL[a]	0.06[a]	< MDL[a]
MATES V										
Average		0, 0.0255[a]	0.000656, 0.0256[a]	0, 0.0256[a]	0.0005, 0.0258[a]	0.000678, 0.0258[a]	0, 0.0257[a]	0.00302, 0.0266[a]	0.00133, 0.0262[a]	0, 0.0255[a]
95% CI LB		0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0.000755[a]	0[a]	0[a]
95% CI UB		0.0268[a]	0.0267[a]	0.0267[a]	0.0272[a]	0.0269[a]	0.027[a]	0.0281[a]	0.028[a]	0.0267[a]
N	0	60[a]	61[a]	61[a]	60[a]	59[a]	56[a]	53[a]	60[a]	58[a]
% < MDL		100[a]	96.7[a]	100[a]	98.3[a]	96.6[a]	100[a]	88.7[a]	96.7[a]	100[a]
Max		< MDL[a]	0.02[a]	< MDL[a]	0.03[a]	0.02[a]	< MDL[a]	0.05[a]	0.06[a]	< MDL[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

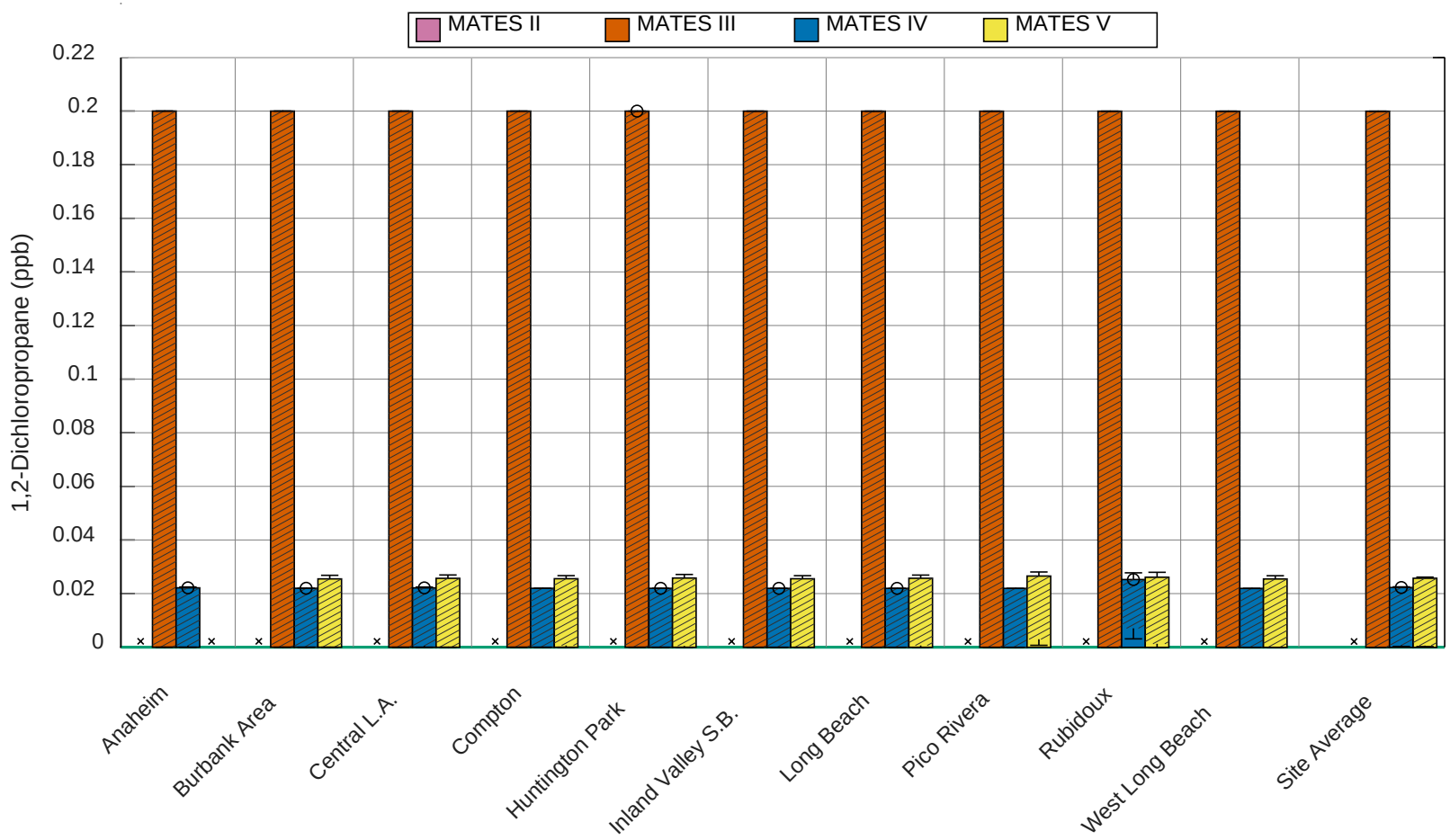


Figure IV-39. Annual Average Concentrations of 1,2-Dichloropropane in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

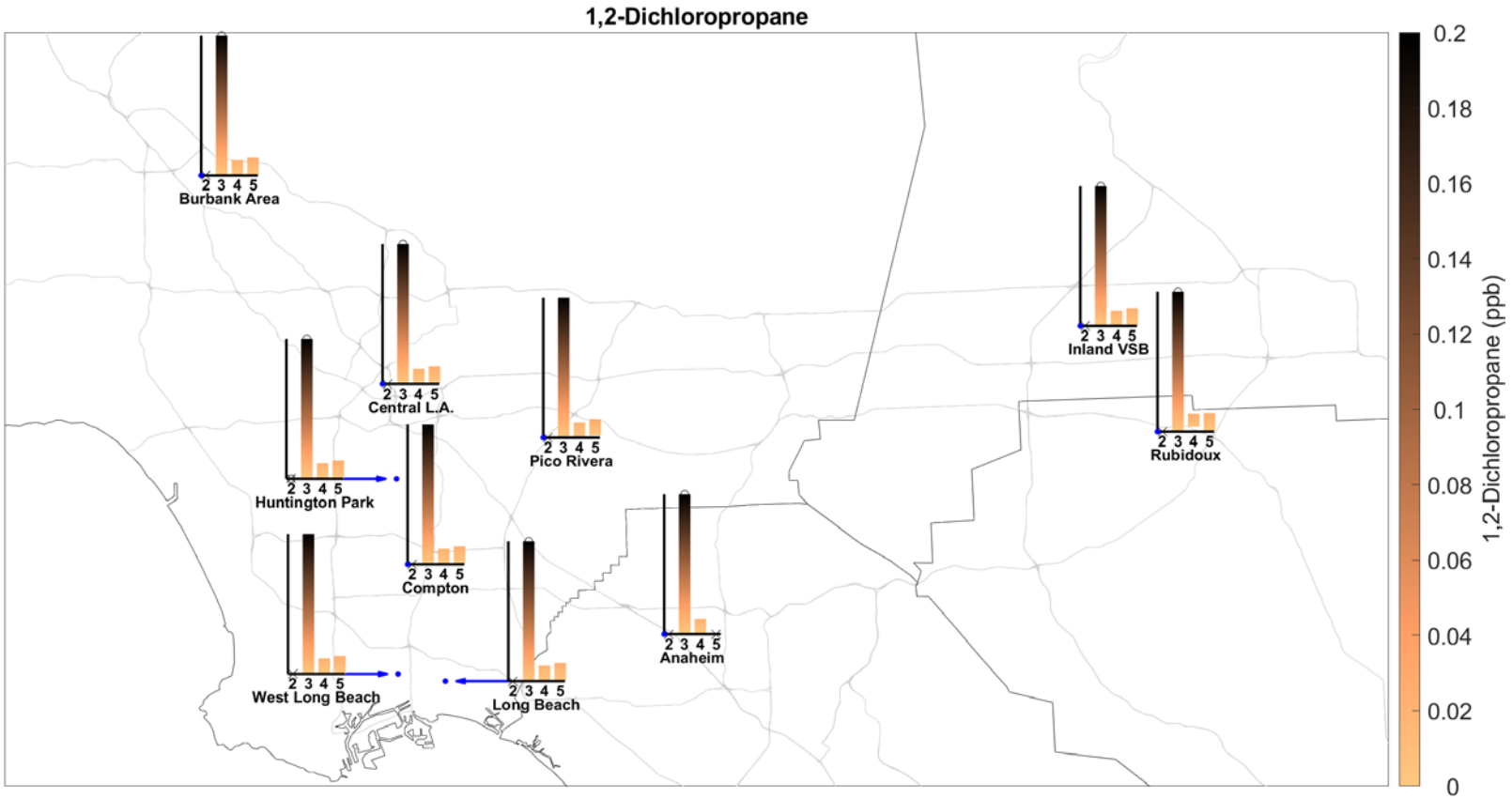


Figure IV-40. Geographic distribution of 1,2-Dichloropropane from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Ethyl Benzene

Table IV-23. Ambient Concentrations (ppb) of Ethyl Benzene from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.388	0.527	0.835	0.321	0.804	0.327	0.421	0.386	0.332	0.469
95% CI LB	0.305	0.439	0.662	0.271	0.642	0.264	0.349	0.317	0.268	0.342
95% CI UB	0.48	0.623	1.03	0.369	0.981	0.388	0.493	0.451	0.393	0.607
N	51	57	42	59	45	58	56	54	44	35
% < MDL	47.1	38.6	28.6	52.5	26.7	46.6	42.9	44.4	47.7	40
Max	1.5	1.6	3.1	0.6	2.7	1.2	1.3	1.1	0.8	1.7
MATES III										
Average	0.21	0.345	0.405	0.223	0.357	0.217	0.254	0.256	0.197	0.248
95% CI LB	0.189	0.316	0.36	0.206	0.31	0.198	0.237	0.226	0.182	0.223
95% CI UB	0.231	0.375	0.453	0.239	0.406	0.238	0.275	0.287	0.212	0.276
N	233	241	237	232	100	238	238	121	234	235
% < MDL	30.5	3.3	6.8	18.5	0	23.1	6.7	9.1	26.1	23.4
Max	1.25	1.16	1.97	0.69	1.22	0.85	0.85	0.92	0.8	1.13
MATES IV										
Average	0.125	0.178	0.2	0.114	0.24	0.11	0.698	0.126	0.154	0.139
95% CI LB	0.0963	0.143	0.15	0.0972	0.183	0.092	0.53	0.106	0.128	0.109
95% CI UB	0.16	0.215	0.256	0.132	0.311	0.131	0.917	0.147	0.183	0.174
N	51	55	57	53	53	54	53	57	52	57
% < MDL	17.6	3.6	15.8	9.4	1.9	9.3	1.9	12.3	1.9	28.1
Max	0.63	0.58	0.81	0.42	1.43	0.32	4.75	0.35	0.43	0.73
MATES V										
Average		0.0753	0.149	0.103	0.125	0.0969	0.145	0.0982	0.107	0.111
95% CI LB		0.0668	0.116	0.0917	0.103	0.0767	0.107	0.082	0.0911	0.0889
95% CI UB		0.0846	0.186	0.115	0.15	0.119	0.198	0.116	0.127	0.134
N	0	57	58	58	57	55	54	50	57	54
% < MDL		5.3	0	1.7	0	0	1.9	0	1.8	0
Max		0.2	0.57	0.27	0.38	0.38	1.29	0.3	0.51	0.43

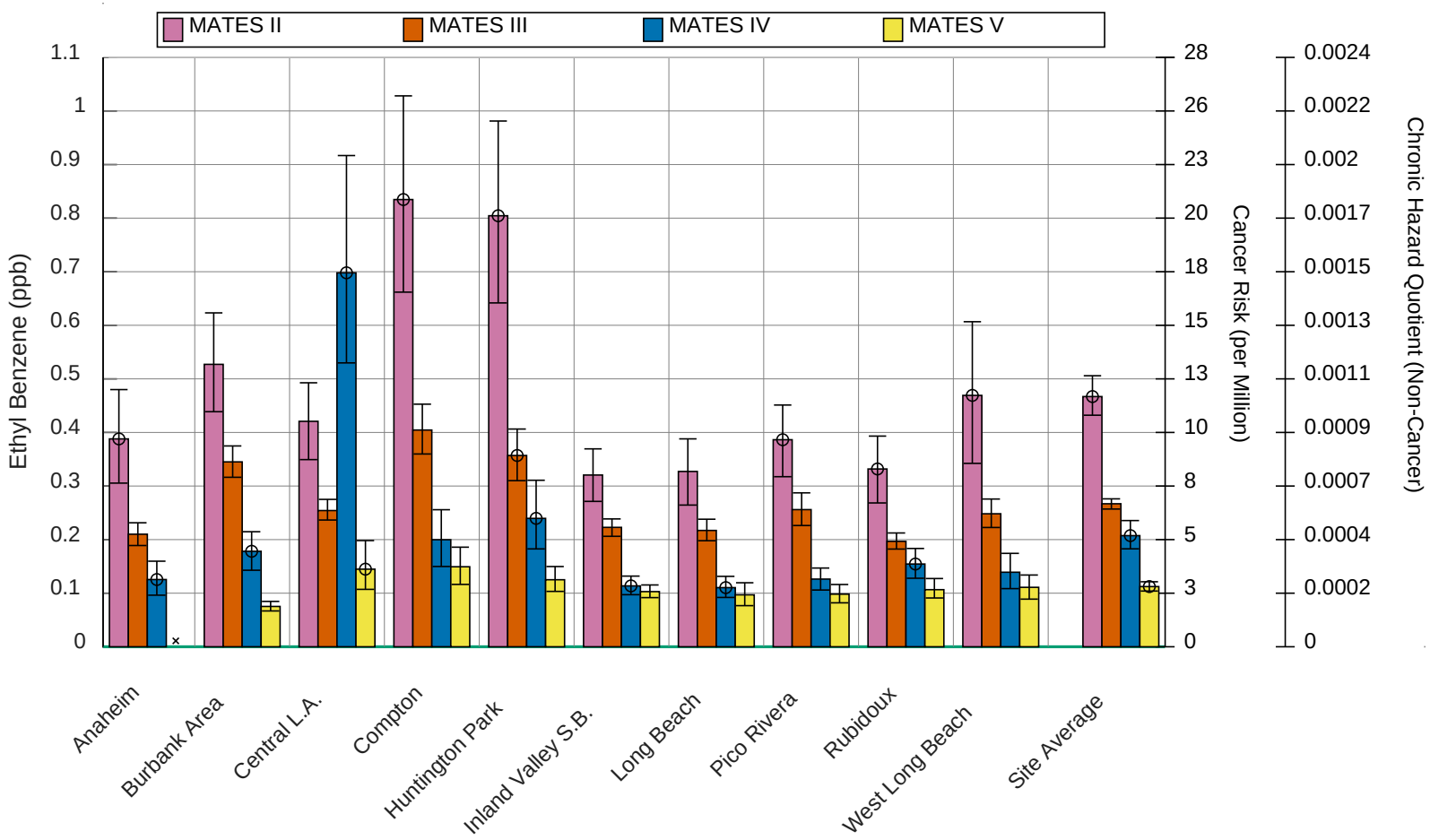


Figure IV-41. Annual Average Concentrations of Ethyl Benzene in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

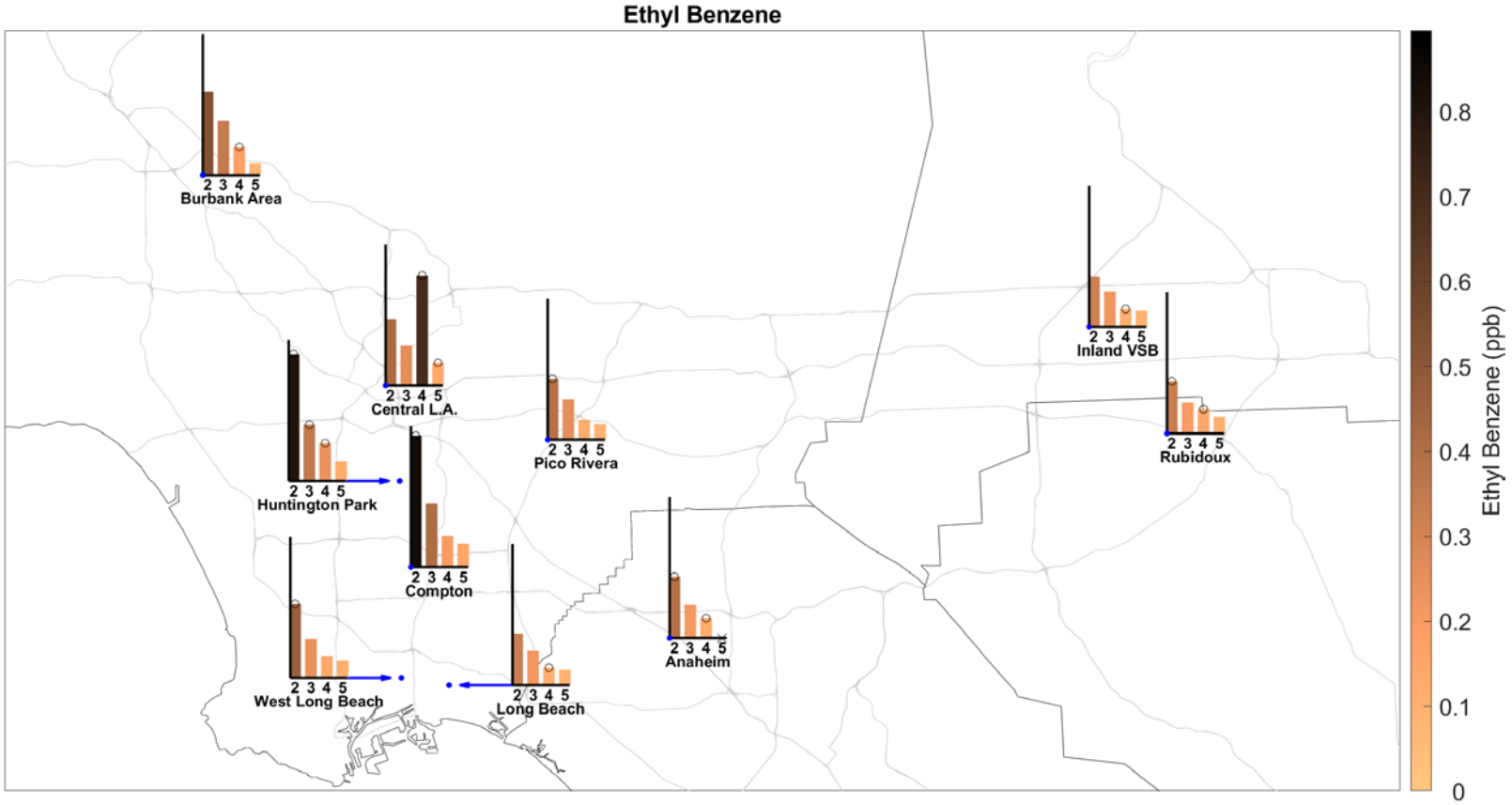


Figure IV-42. Geographic distribution of Ethyl Benzene from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Methylene Chloride

Table IV-24. Ambient Concentrations (ppb) of Methylene Chloride from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.604	0.941	0.777	0.592	1.07	0.501	0.809	0.856	0.556	0.631
95% CI LB	0.418	0.758	0.614	0.455	0.625	0.353	0.626	0.652	0.443	0.437
95% CI UB	0.845	1.14	0.956	0.758	1.76	0.693	1.03	1.12	0.68	0.849
N	51	57	42	59	45	57	56	54	44	35
% < MDL	47.1	24.6	35.7	42.4	37.8	49.1	32.1	27.8	38.6	40
Max	5	3.3	3	3.6	13	4.6	5.2	5.8	2.1	2.7
MATES III										
Average	0.232	0.35	0.342	0.189	0.312	1.05	0.368	0.29	0.265	0.21
95% CI LB	0.212	0.317	0.276	0.176	0.255	0.219	0.341	0.251	0.246	0.188
95% CI UB	0.254	0.388	0.445	0.201	0.384	2.29	0.397	0.34	0.287	0.232
N	233	241	237	232	100	238	238	121	234	235
% < MDL	14.6	3.3	5.1	20.3	4	21	1.3	5	8.1	33.2
Max	0.99	2.81	10.3	0.59	2.97	110	1.37	2.47	0.91	1.42
MATES IV										
Average	0.635	0.238	0.171	0.283	0.238	0.913	0.313	0.168	2	0.478
95% CI LB	0.26	0.202	0.15	0.184	0.195	0.207	0.263	0.15	1.23	0.167
95% CI UB	1.25	0.276	0.193	0.406	0.289	2.29	0.371	0.188	2.93	1.05
N	51	55	57	53	53	54	53	57	52	57
% < MDL	0	0	0	1.9	1.9	1.9	3.8	0	0	7
Max	13.8	0.86	0.44	2.56	1.05	36.8	1.16	0.45	17.1	13.6
MATES V										
Average		0.164	0.193	0.188	0.172	0.165	0.436	0.162	1.02	0.157
95% CI LB		0.151	0.162	0.164	0.151	0.143	0.321	0.145	0.718	0.138
95% CI UB		0.179	0.231	0.217	0.196	0.187	0.586	0.182	1.37	0.179
N	0	59	60	60	59	58	54	52	59	57
% < MDL		0	0	0	0	0	0	0	0	0
Max		0.33	0.97	0.67	0.47	0.43	2.24	0.41	5.92	0.39

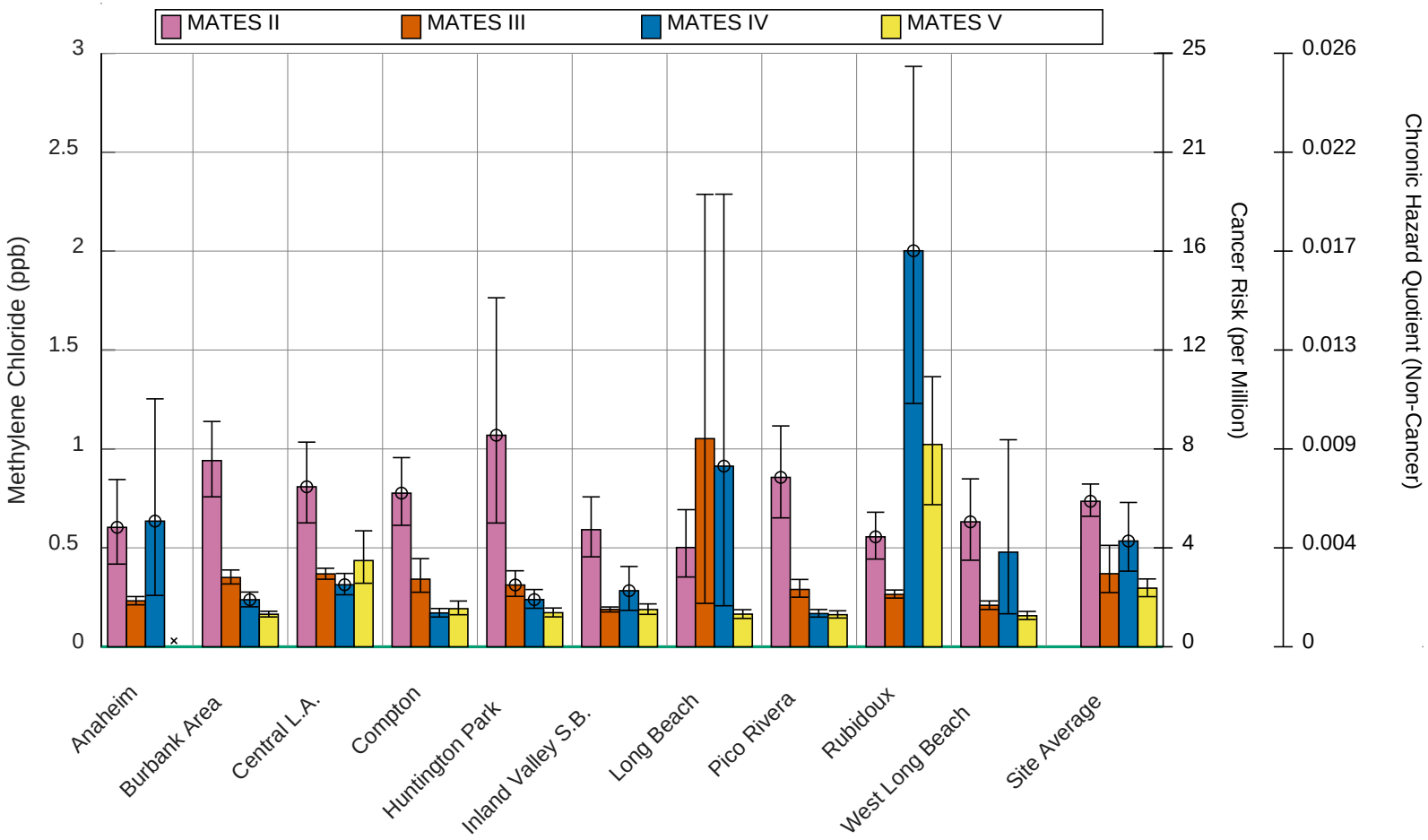


Figure IV-43. Annual Average Concentrations of Methylene Chloride in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

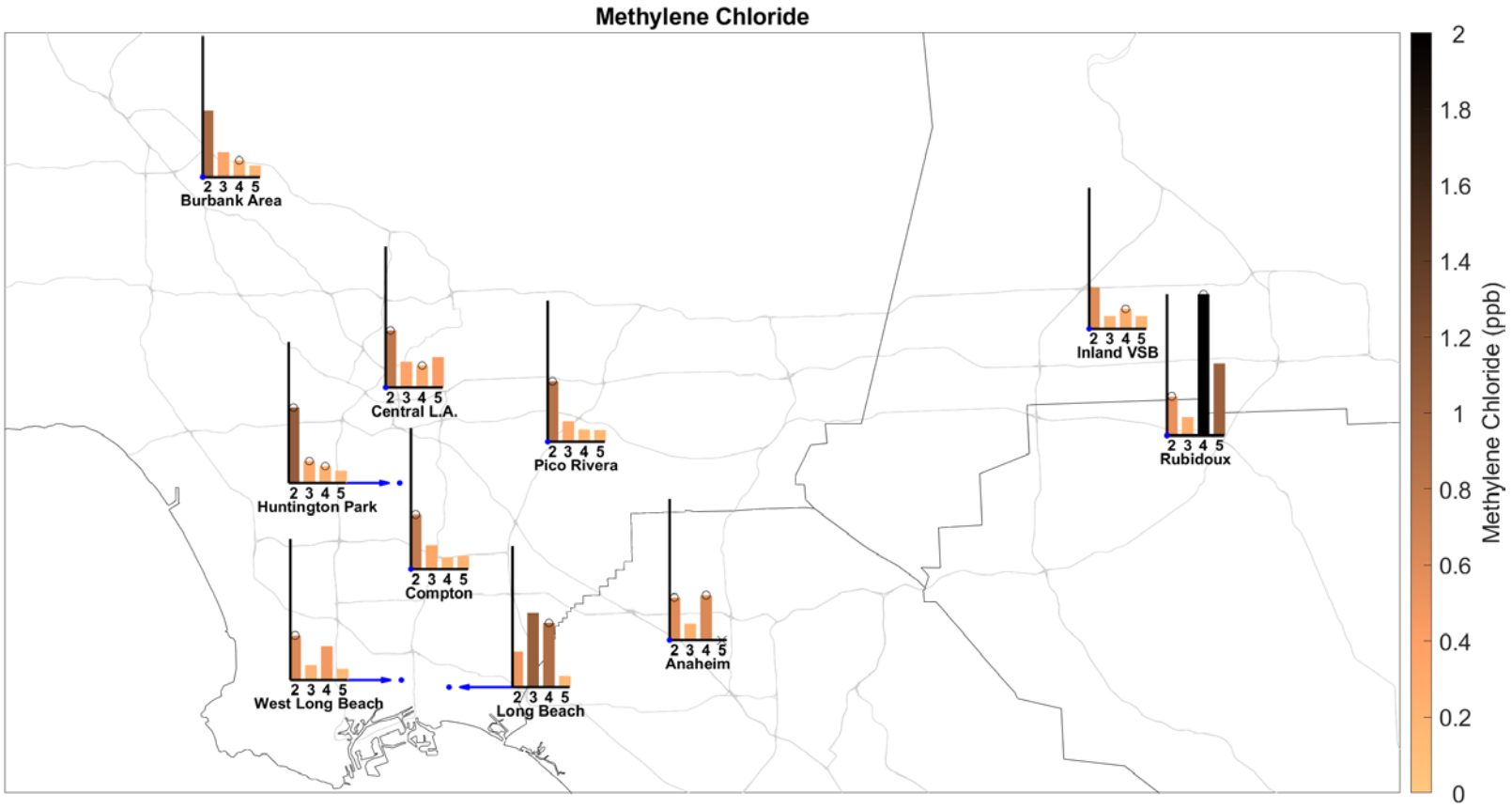


Figure IV-44. Geographic distribution of Methylene Chloride from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Methyl tertiary-butyl ether (MTBE)

Table IV-25. Ambient Concentrations (ppb) of Methyl tertiary-butyl ether (MTBE) from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	0, 0.3[a]	0.0204, 0.318[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]	0, 0.3[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.3[a]	0.348[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]	0.3[a]
N	233[a]	241[a]	237[a]	232[a]	100[a]	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	100[a]	99.2[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	3.35[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES IV										
Average	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]
N	51[a]	55[a]	57[a]	53[a]	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES V										
Average		0, 0.0329[a]	0, 0.0334[a]	0, 0.0334[a]	0, 0.0338[a]	0, 0.0342[a]	0, 0.0339[a]	0.00098, 0.0347[a]	0.000175, 0.0335[a]	0.000179, 0.0332[a]
95% CI LB		0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB		0.0378[a]	0.0382[a]	0.0382[a]	0.0384[a]	0.0391[a]	0.0391[a]	0.0398[a]	0.0384[a]	0.0379[a]
N	0	58[a]	59[a]	59[a]	58[a]	57[a]	54[a]	51[a]	57[a]	56[a]
% < MDL		100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	98[a]	98.2[a]	98.2[a]
Max		< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	0.05[a]	0.01[a]	0.01[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

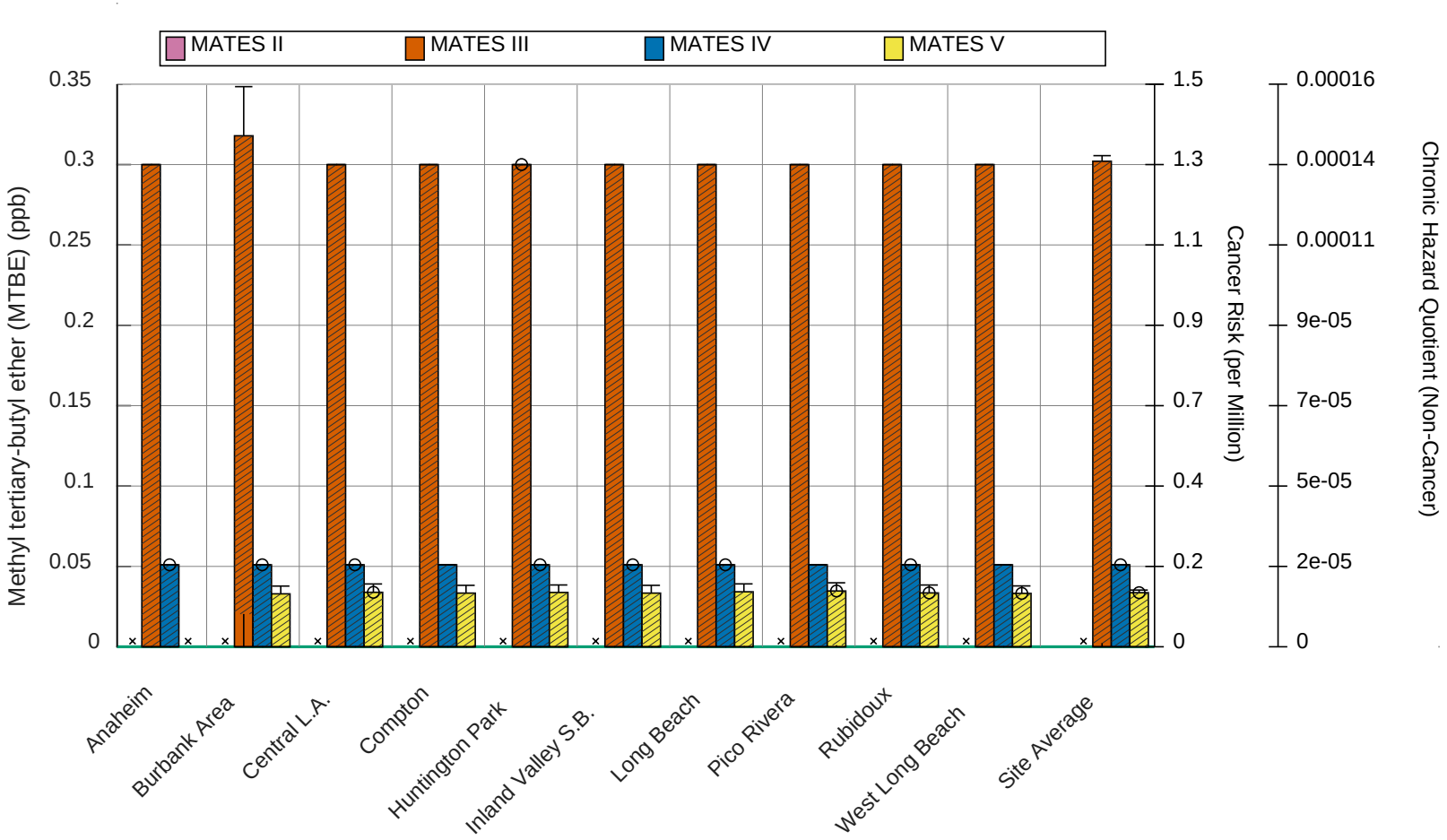


Figure IV-45. Annual Average Concentrations of Methyl tertiary-butyl ether (MTBE) in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

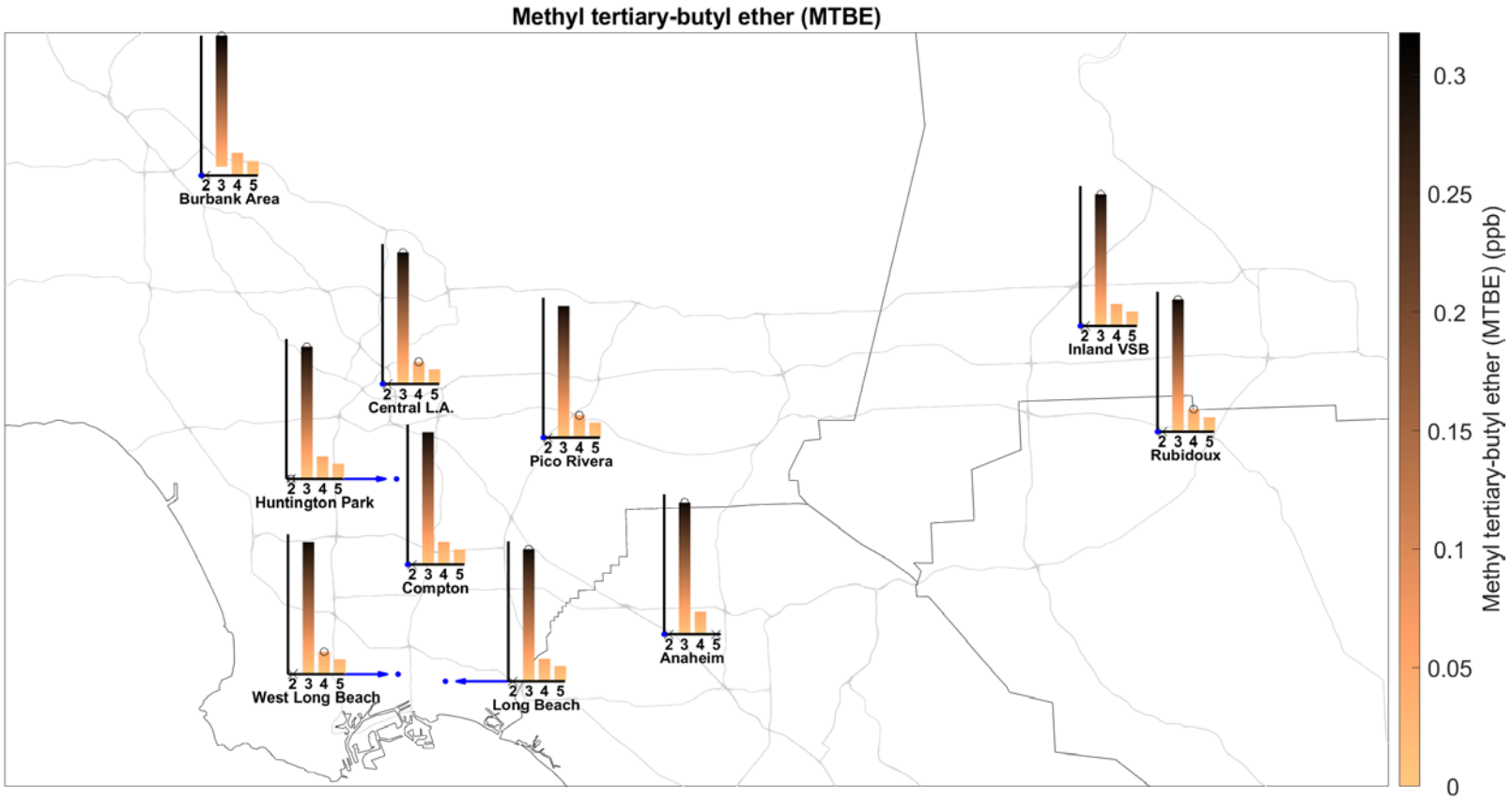


Figure IV-46. Geographic distribution of Methyl tertiary-butyl ether (MTBE) from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Non Methane Organic Carbon

Table IV-26. Ambient Concentrations (ppbC) of Non Methane Organic Carbon from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	168	243	233	214	252	178	415	179	154	199
95% CI LB	135	201	185	183	208	158	295	152	136	165
95% CI UB	206	287	286	253	300	200	583	206	175	238
N	51	55	57	53	53	54	53	57	52	57
% < MDL	0	0	0	0	1.9	0	1.9	0	0	0
Max	715	733	810	940	836	417	3730	447	361	596
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

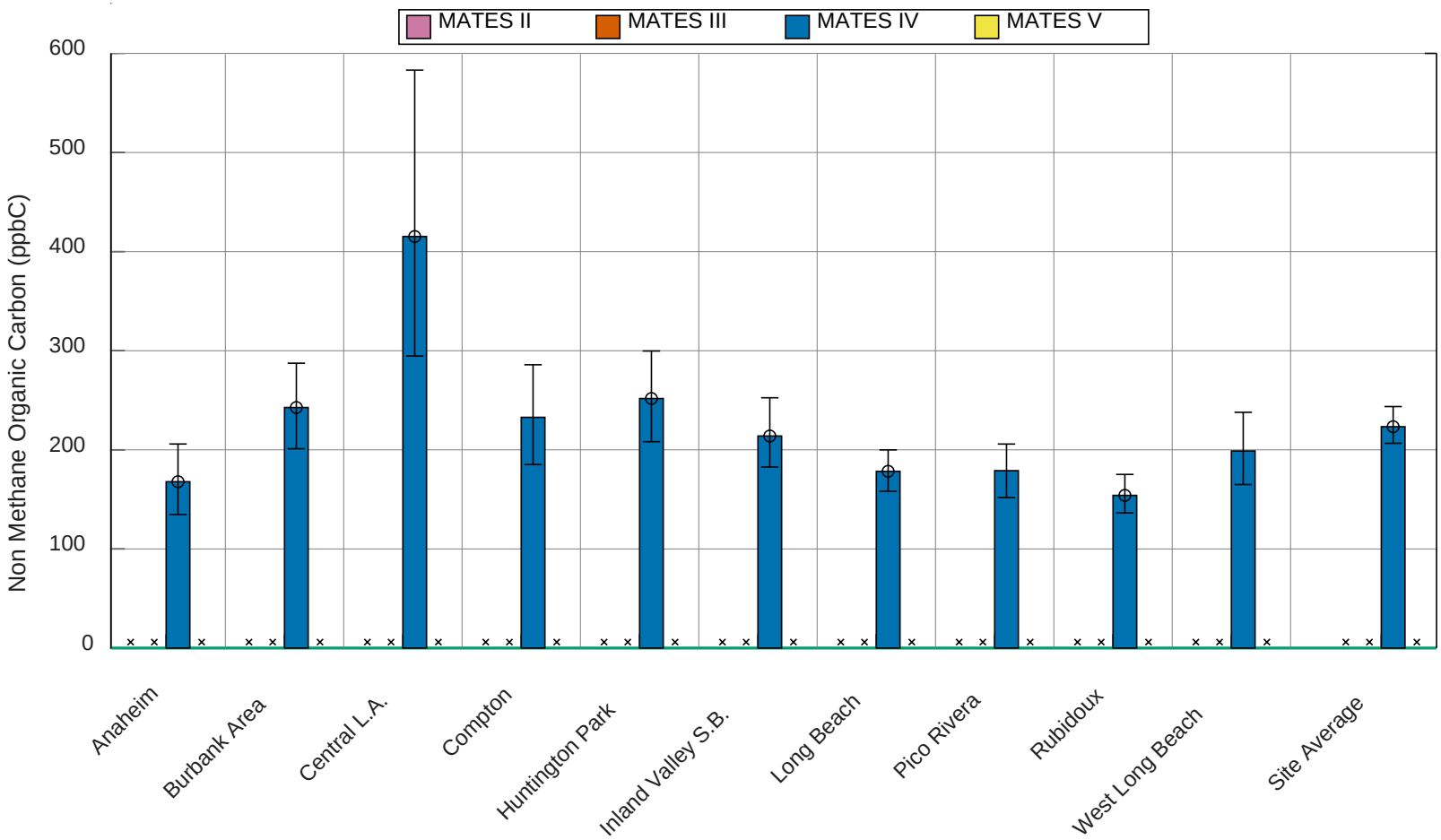


Figure IV-47. Annual Average Concentrations of Non Methane Organic Carbon in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

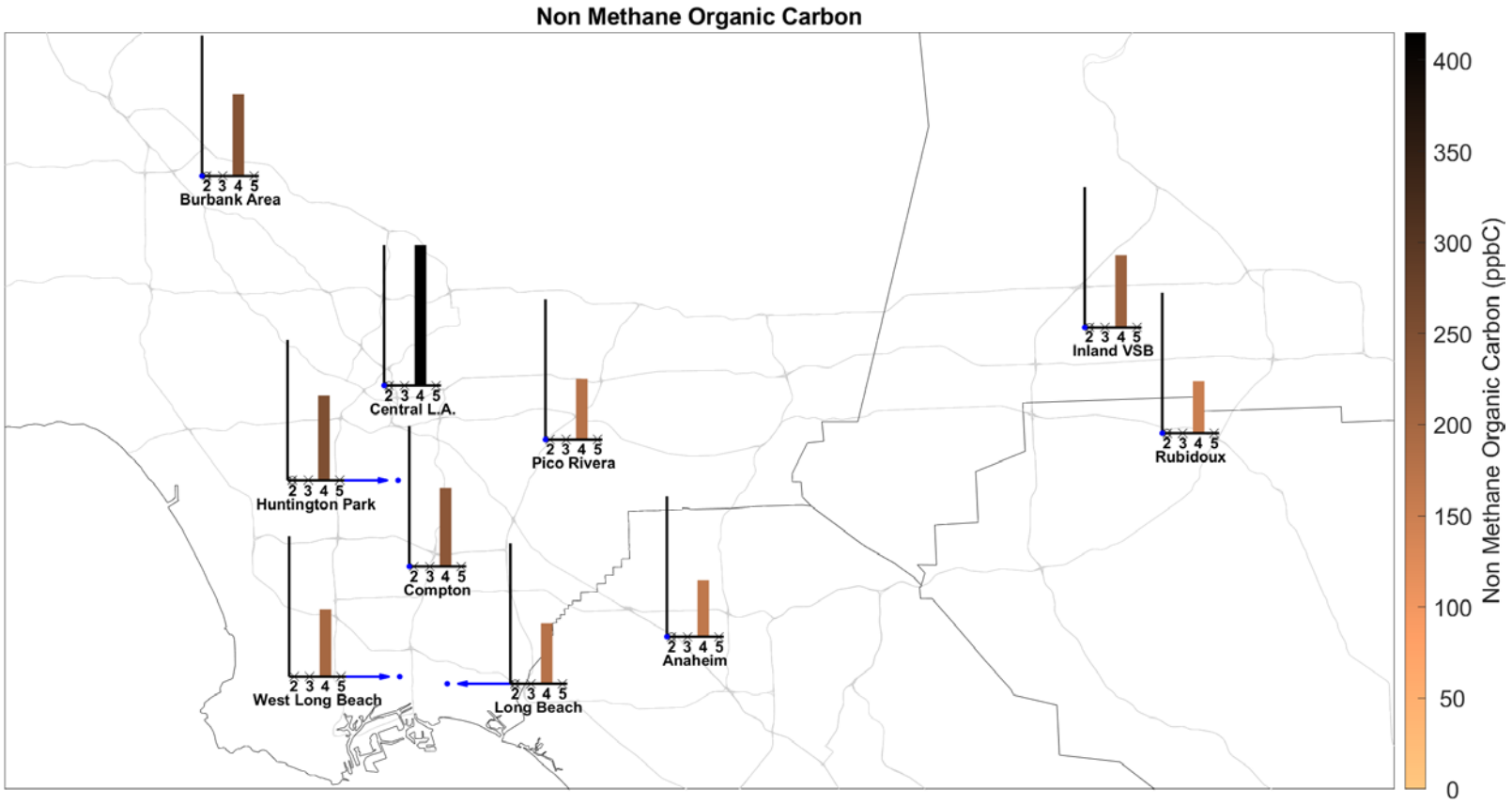


Figure IV-48. Geographic distribution of Non Methane Organic Carbon from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Perchloroethylene

Table IV-27. Ambient Concentrations (ppb) of Perchloroethylene from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.321	0.53	0.397	0.18	0.396	0.172	0.245	0.245	0.169	0.238
95% CI LB	0.217	0.406	0.315	0.15	0.3	0.126	0.205	0.201	0.136	0.161
95% CI UB	0.449	0.671	0.488	0.212	0.507	0.222	0.286	0.294	0.201	0.333
N	49	56	40	59	44	57	55	50	45	33
% < MDL	14.3	5.4	0	8.5	2.3	21.1	7.3	12	11.1	18.2
Max	2.6	2	1.3	0.6	1.9	0.79	0.8	0.9	0.5	1.3
MATES III										
Average	0.0209, 0.108[a]	0.128	0.153	0.00672, 0.101[a]	0.123	0.0119, 0.103[a]	0.0185, 0.105[a]	0.0172, 0.106[a]	0.00244, 0.1[a]	0.0103, 0.103[a]
95% CI LB	0.0133[a]	0.12	0.139	0.00336[a]	0.113	0.00702[a]	0.0126[a]	0.00905[a]	0.00047[a]	0.00596[a]
95% CI UB	0.113[a]	0.138	0.17	0.102[a]	0.136	0.106[a]	0.107[a]	0.109[a]	0.101[a]	0.104[a]
N	233[a]	241	237	232[a]	100	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	87.1[a]	66	60.3	94.4[a]	73	91.6[a]	86.6[a]	88.4[a]	97.9[a]	92.3[a]
Max	0.46[a]	0.79	1.21	0.17[a]	0.5	0.22[a]	0.21[a]	0.22[a]	0.15[a]	0.19[a]
MATES IV										
Average	0.0159, 0.072[a]	0.0182, 0.0725[a]	0.0184, 0.0743[a]	0.0749	0.0147, 0.0699[a]	0.0013, 0.0651[a]	0.00189, 0.0657[a]	0.00298, 0.0657[a]	0, 0.065[a]	0.00123, 0.0651[a]
95% CI LB	0.00549[a]	0.00745[a]	0.00693[a]	0.0683	0.00585[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.0785[a]	0.0783[a]	0.0848[a]	0.0831	0.0739[a]	0.0653[a]	0.067[a]	0.067[a]	0.065[a]	0.0653[a]
N	51[a]	55[a]	57[a]	53	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	86.3[a]	83.6[a]	86[a]	79.2	84.9[a]	98.1[a]	98.1[a]	96.5[a]	100[a]	98.2[a]
Max	0.17[a]	0.15[a]	0.26[a]	0.23	0.12[a]	0.07[a]	0.1[a]	0.1[a]	< MDL[a]	0.07[a]
MATES V										
Average		0.0305	0.0536	0.0558	0.0364	0.0324	0.0325	0.0367	0.0305	0.0326
95% CI LB		0.03	0.0427	0.043	0.0331	0.0307	0.0312	0.0331	0.03	0.0311
95% CI UB		0.0312	0.0678	0.0734	0.0398	0.0345	0.0342	0.0406	0.0312	0.0344
N	0	60	59	60	58	58	54	51	58	57
% < MDL		73.3	33.9	25	36.2	70.7	55.6	49	69	64.9
Max		0.04	0.34	0.46	0.09	0.07	0.05	0.07	0.04	0.06

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

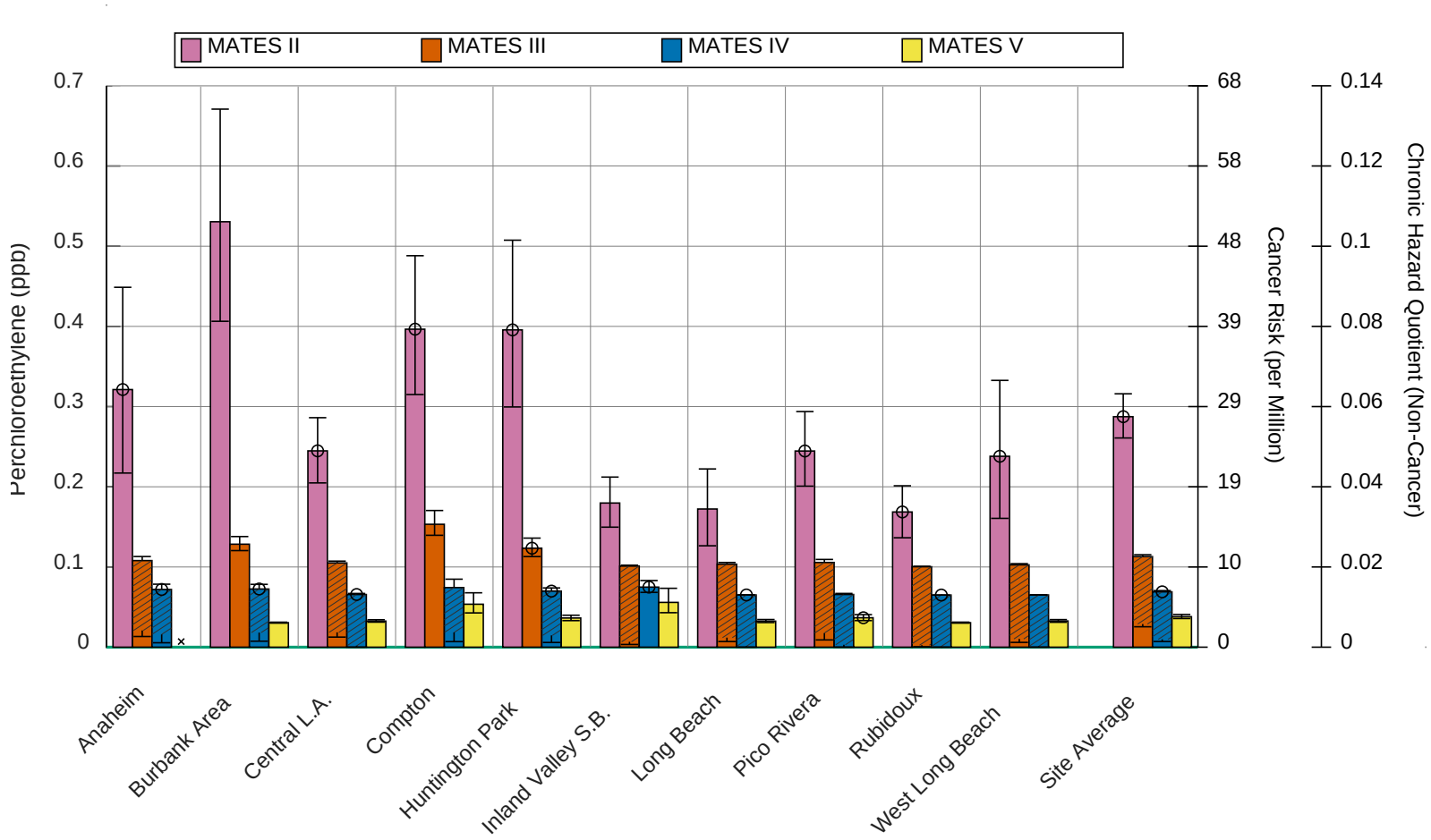


Figure IV-49. Annual Average Concentrations of Perchloroethylene in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

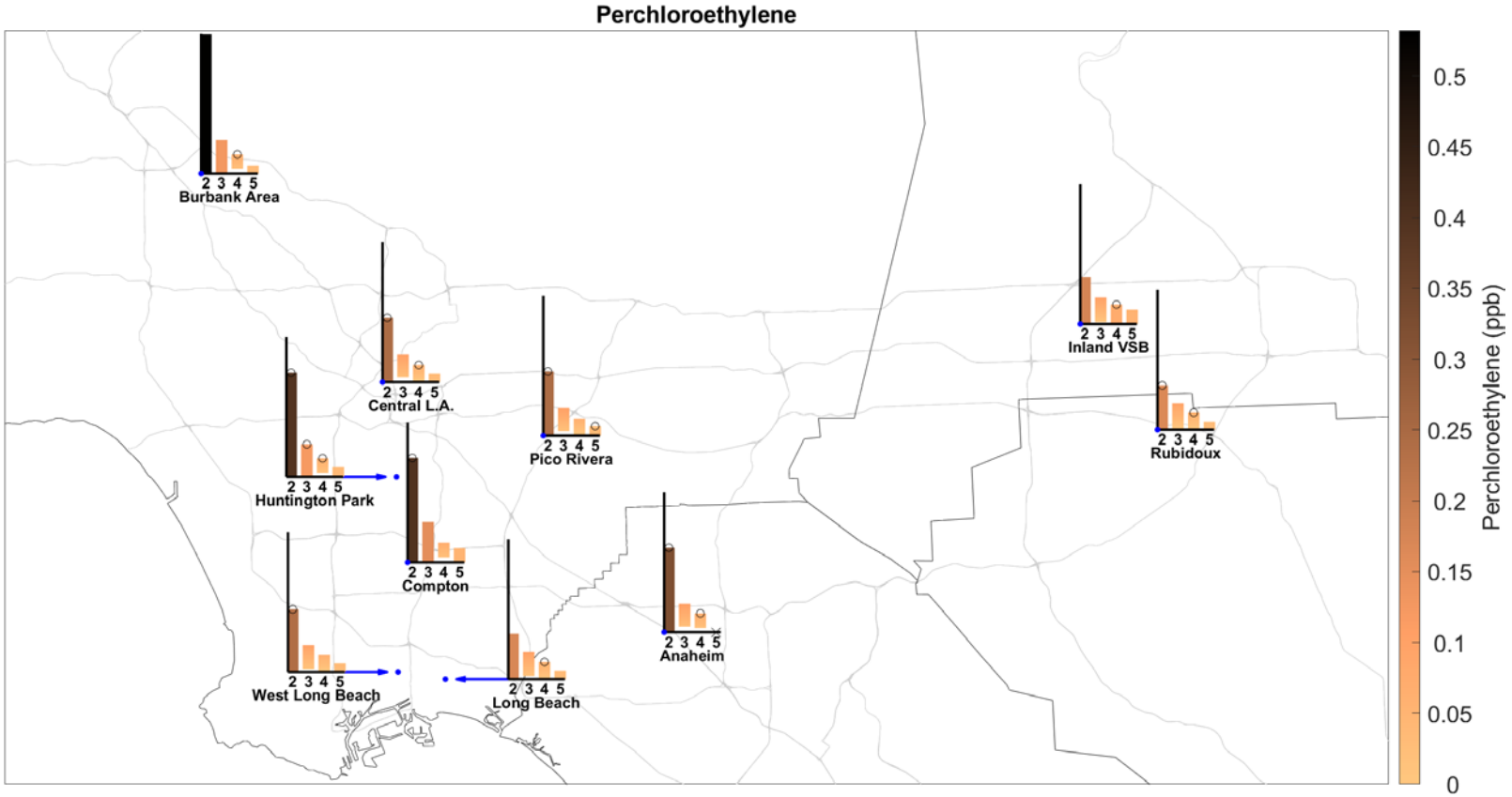


Figure IV-50. Geographic distribution of Perchloroethylene from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Styrene

Table IV-28. Ambient Concentrations (ppb) of Styrene from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.998	0.261	0.362	0.161	0.246	0.223	0.195	0.19	0.242	0.282
95% CI LB	0.426	0.147	0.267	0.137	0.183	0.162	0.137	0.152	0.179	0.171
95% CI UB	1.74	0.403	0.467	0.186	0.313	0.297	0.285	0.232	0.308	0.4
N	29	35	21	38	24	37	35	34	24	17
% < MDL	34.5	42.9	0	39.5	8.3	35.1	40	38.2	20.8	35.3
Max	8	1.8	1	0.4	0.6	1	1.4	0.5	0.6	0.9
MATES III										
Average	0.395	0.14	0.181	0.116	0.112	0.145	0.0294, 0.112[a]	0.0291, 0.109[a]	0.126	0.336
95% CI LB	0.31	0.129	0.161	0.11	0.107	0.132	0.0209[a]	0.0186[a]	0.118	0.288
95% CI UB	0.49	0.155	0.203	0.123	0.118	0.159	0.118[a]	0.115[a]	0.135	0.391
N	233	241	237	232	100	238	238[a]	121[a]	234	235
% < MDL	63.9	74.7	53.6	72.8	73	71.4	82.8[a]	80.2[a]	74.8	37.4
Max	3.78	0.805	1.33	0.39	0.27	0.78	0.41[a]	0.265[a]	0.62	3.69
MATES IV										
Average	0.112	0.0958	0.11	0.00189, 0.0696[a]	0.0877	0.0146, 0.076[a]	0.0175, 0.0735[a]	0.0131, 0.0724[a]	0.0748	0.108
95% CI LB	0.0835	0.0805	0.0858	0[a]	0.0771	0.00407[a]	0.00802[a]	0.00504[a]	0.0711	0.0911
95% CI UB	0.15	0.114	0.139	0.0708[a]	0.101	0.085[a]	0.0783[a]	0.0751[a]	0.0792	0.126
N	51	55	57	53[a]	53	54[a]	53[a]	57[a]	52	57
% < MDL	74.5	74.5	71.9	98.1[a]	77.4	88.9[a]	81.1[a]	86[a]	78.8	64.9
Max	0.85	0.33	0.49	0.1[a]	0.25	0.26[a]	0.16[a]	0.105[a]	0.14	0.32
MATES V										
Average		0.0547	0.0896	0.0636	0.0805	0.0652	0.0643	0.0876	0.0822	0.109
95% CI LB		0.0488	0.0681	0.0544	0.0599	0.0533	0.0537	0.0788	0.0704	0.0834
95% CI UB		0.0614	0.117	0.0745	0.109	0.0777	0.0772	0.0987	0.0959	0.138
N	0	59	60	60	59	58	55	52	60	57
% < MDL		54.2	40	43.3	49.2	60.3	54.5	13.5	28.3	38.6
Max		0.15	0.68	0.31	0.68	0.3	0.28	0.25	0.32	0.62

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

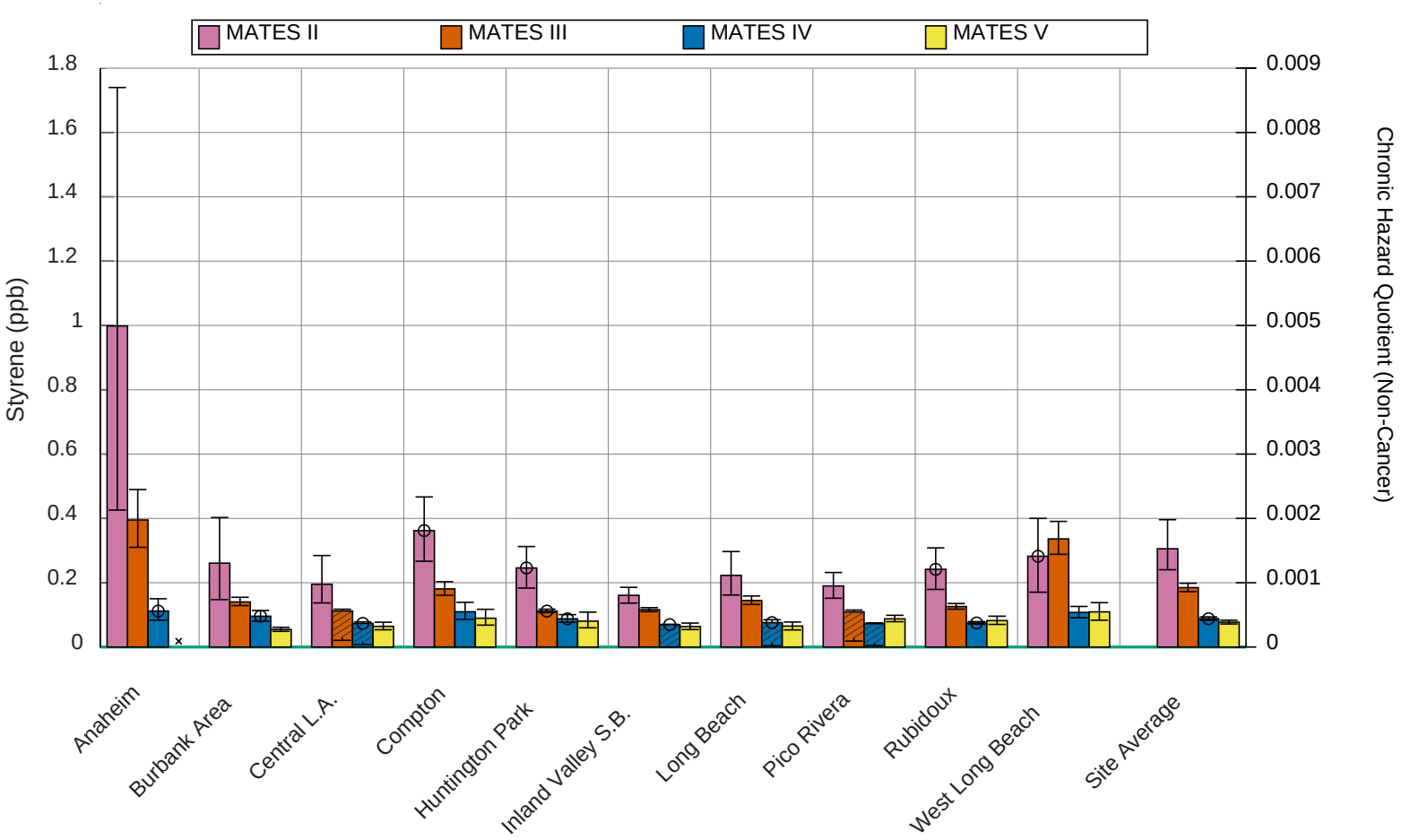


Figure IV-51. Annual Average Concentrations of Styrene in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

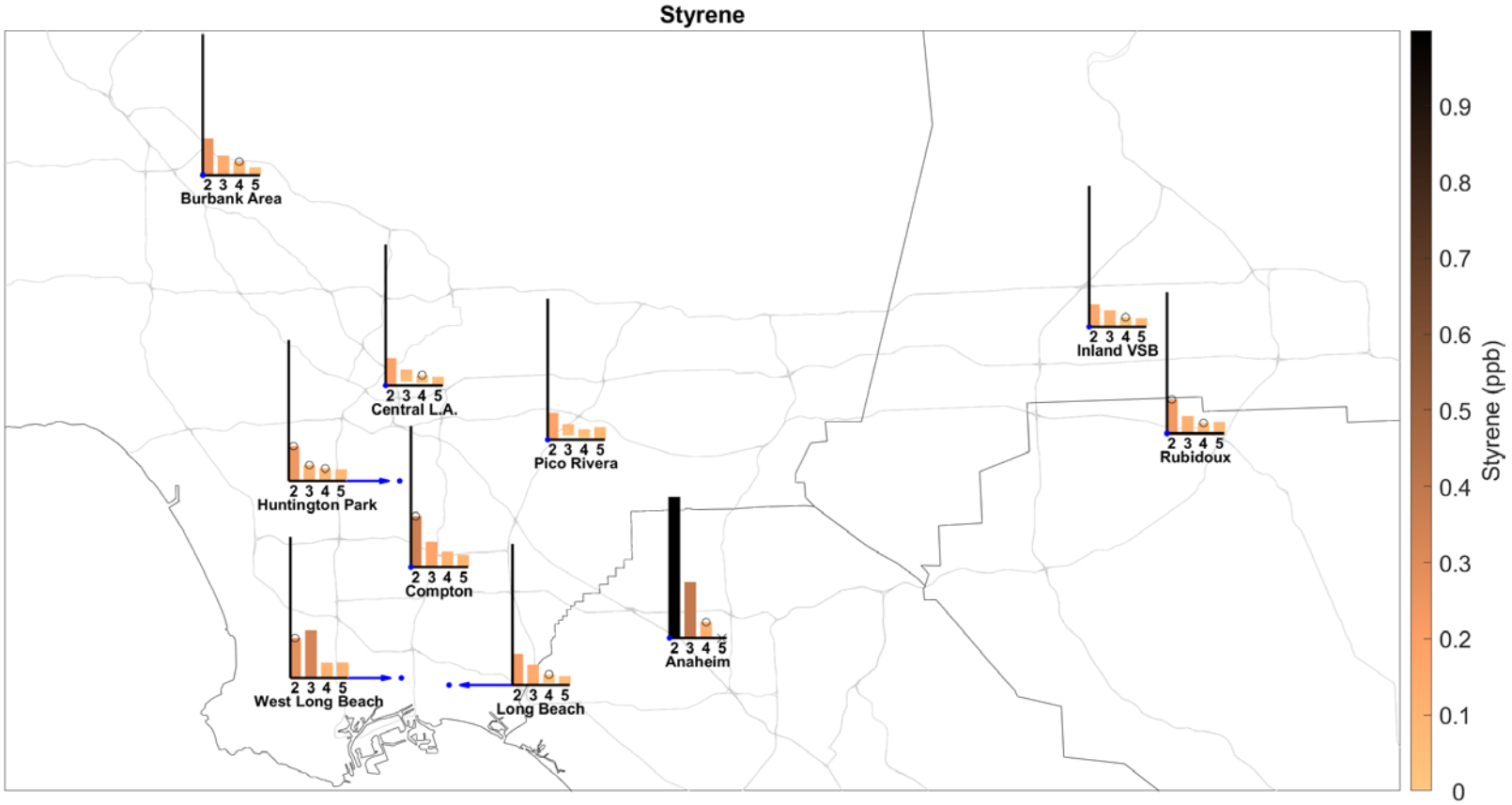


Figure IV-52. Geographic distribution of Styrene from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Toluene

Table IV-29. Ambient Concentrations (ppb) of Toluene from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	2.77	4.17	5.08	2.42	5.79	2.1	2.95	3.13	2.78	3.65
95% CI LB	2.18	3.49	3.93	2.04	4.76	1.73	2.48	2.6	2.25	2.64
95% CI UB	3.42	4.9	6.32	2.8	6.91	2.51	3.42	3.7	3.3	4.78
N	49	56	40	56	44	56	53	53	42	34
% < MDL	2	1.8	0	1.8	2.3	1.8	1.9	3.8	2.4	2.9
Max	8.8	11.6	20	7.6	15.1	6.1	7.4	8.8	7.5	15
MATES III										
Average	1.5	2.58	2.82	1.71	2.84	1.5	1.82	1.98	1.51	1.76
95% CI LB	1.35	2.38	2.51	1.58	2.51	1.36	1.69	1.74	1.4	1.57
95% CI UB	1.66	2.8	3.14	1.83	3.2	1.64	1.96	2.23	1.63	1.97
N	233	241	237	232	100	238	238	121	234	235
% < MDL	0	0	0	0.4	0	0	0	0	0	0
Max	8.42	8.94	13.2	5.55	8.68	5.58	6.11	6.95	5.5	8.44
MATES IV										
Average	0.875	1.32	1.42	0.837	1.61	0.741	1.11	0.966	0.813	0.892
95% CI LB	0.669	1.07	1.06	0.715	1.31	0.61	0.937	0.798	0.685	0.689
95% CI UB	1.12	1.57	1.82	0.97	1.95	0.886	1.3	1.15	0.96	1.12
N	51	55	57	53	53	54	53	57	52	57
% < MDL	0	0	0	0	0	0	1.9	0	0	0
Max	4.6	3.78	6.15	2.92	5.67	2.33	3.76	2.81	2.71	3.58
MATES V										
Average		0.905	1.04	0.681	0.895	0.613	0.607	0.686	0.641	0.71
95% CI LB		0.802	0.785	0.595	0.724	0.476	0.517	0.544	0.529	0.57
95% CI UB		1.01	1.3	0.777	1.08	0.763	0.704	0.872	0.764	0.87
N	0	60	61	61	60	59	56	53	60	58
% < MDL		0	0	0	0	0	0	0	0	0
Max		1.85	4.2	1.78	2.88	2.27	1.62	3.64	2.4	2.37

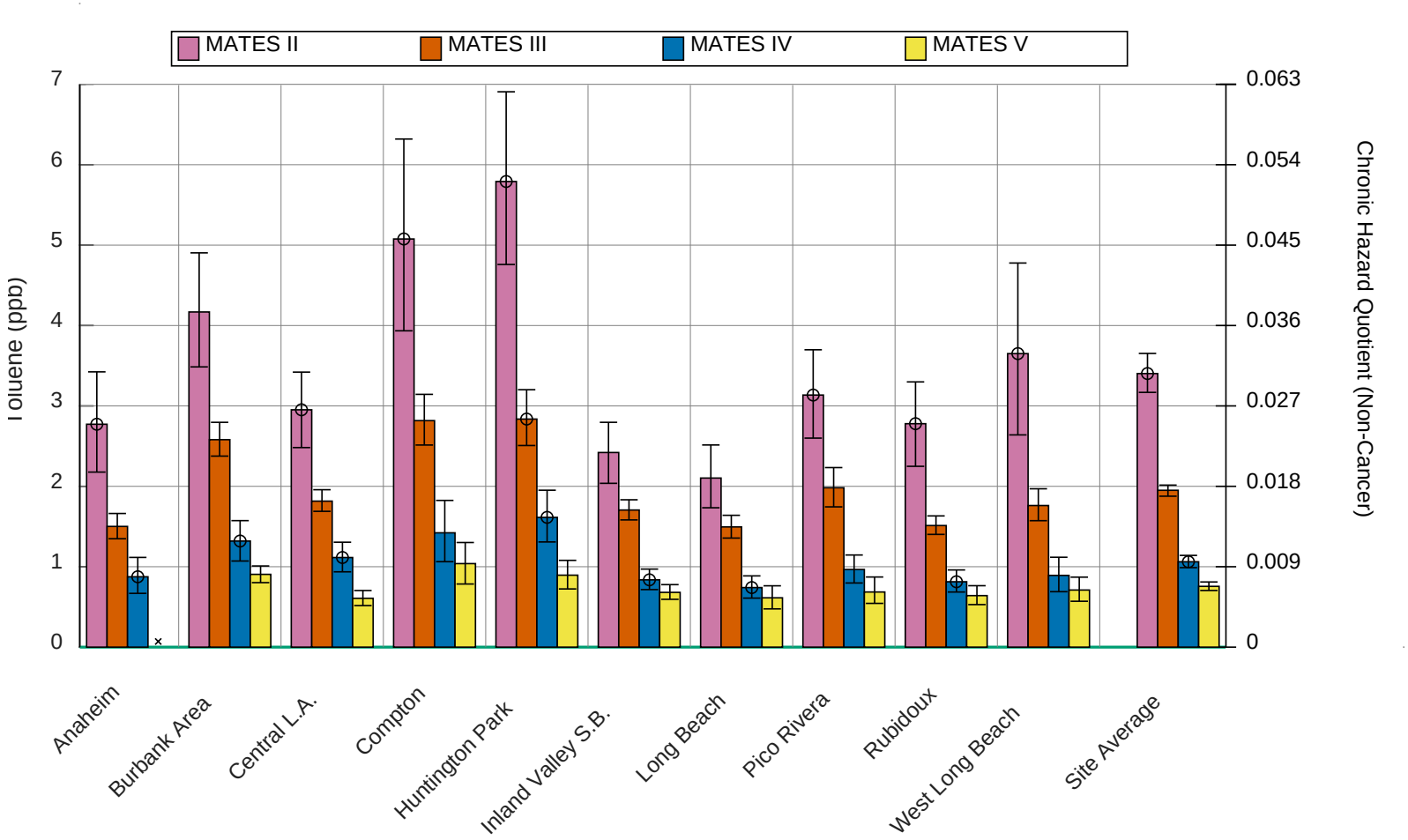


Figure IV-53. Annual Average Concentrations of Toluene in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

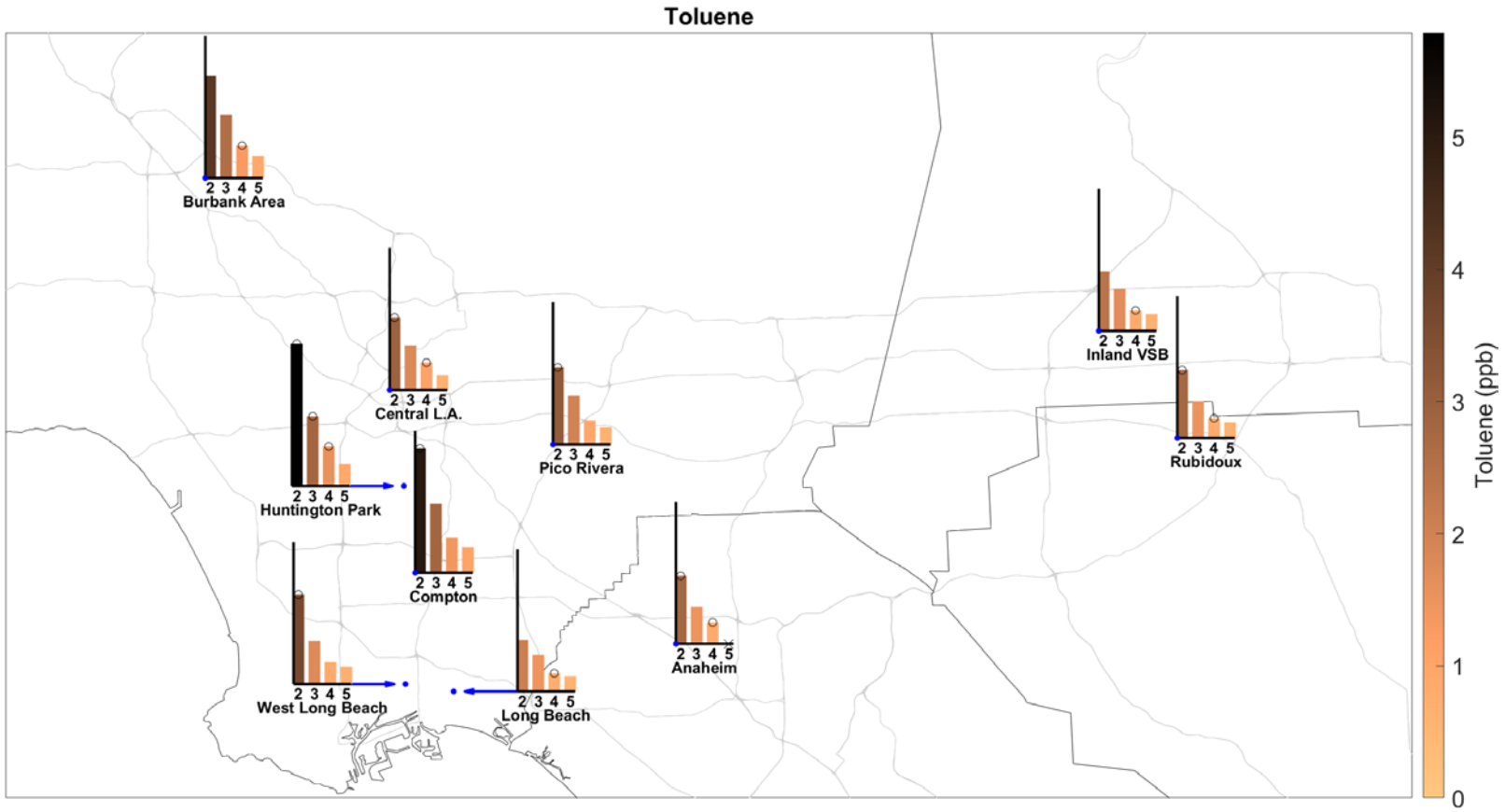


Figure IV-54. Geographic distribution of Toluene from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Trichloroethylene

Table IV-30. Ambient Concentrations (ppb) of Trichloroethylene from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.131	0.0459	0.0621	0.0277	0.0422	0.0317	0.265	0.0387	0.0248	0.0621
95% CI LB	0.106	0.0352	0.0423	0.0252	0.0336	0.0263	0.202	0.0316	0.0224	0.0324
95% CI UB	0.159	0.0585	0.0876	0.0723	0.0521	0.0737	0.332	0.0459	0.0751	0.111
N	51	57	42	60	45	59	57	54	45	35
% < MDL	23.5	52.6	57.1	80	53.3	74.6	14	59.3	80	54.3
Max	0.57	0.29	0.36	0.07	0.13	0.15	1.3	0.1	0.06	0.8
MATES III										
Average	0.0012, 0.1[a]	0.00546, 0.101[a]	0.000886, 0.1[a]	0, 0.1[a]	0.0012, 0.1[a]	0, 0.1[a]	0.00559, 0.102[a]	0.00446, 0.1[a]	0, 0.1[a]	0.00294, 0.101[a]
95% CI LB	0[a]	0.00249[a]	0[a]	0[a]	0[a]	0[a]	0.00206[a]	0.000909[a]	0[a]	0.000426[a]
95% CI UB	0.101[a]	0.102[a]	0.1[a]	0.1[a]	0.101[a]	0.1[a]	0.104[a]	0.101[a]	0.1[a]	0.104[a]
N	233[a]	241[a]	237[a]	232[a]	100[a]	238[a]	238[a]	121[a]	234[a]	235[a]
% < MDL	99.1[a]	95.4[a]	99.2[a]	100[a]	99[a]	100[a]	96.2[a]	95.9[a]	100[a]	98.3[a]
Max	0.18[a]	0.15[a]	0.11[a]	< MDL[a]	0.12[a]	< MDL[a]	0.33[a]	0.115[a]	< MDL[a]	0.36[a]
MATES IV										
Average	0, 0.072[a]	0, 0.072[a]	0, 0.072[a]	0, 0.072[a]	0, 0.072[a]	0, 0.072[a]	0.00679, 0.0734[a]	0, 0.072[a]	0, 0.072[a]	0, 0.072[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0.00151[a]	0[a]	0[a]	0[a]
95% CI UB	0.072[a]	0.072[a]	0.072[a]	0.072[a]	0.072[a]	0.072[a]	0.0749[a]	0.072[a]	0.072[a]	0.072[a]
N	51[a]	55[a]	57[a]	53[a]	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	92.5[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	0.1[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES V										
Average		0.00283, 0.0282[a]	0.0141	0.00377, 0.0286[a]	0.0149	0.0124	0.00429, 0.0299[a]	0.0109	0.0108	0.0178
95% CI LB		0.000667[a]	0.0115	0.00131[a]	0.0121	0.0103	0.00125[a]	0.0095	0.00965	0.0133
95% CI UB		0.0319[a]	0.0316	0.0323[a]	0.0291	0.0325	0.0338[a]	0.0317	0.0324	0.0297
N	0	60[a]	61	61[a]	60	59	56[a]	53	60	58
% < MDL		90[a]	70.5	82[a]	70	72.9	85.7[a]	73.6	80	69
Max		0.05[a]	0.06	0.05[a]	0.07	0.05	0.05[a]	0.05	0.05	0.14

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

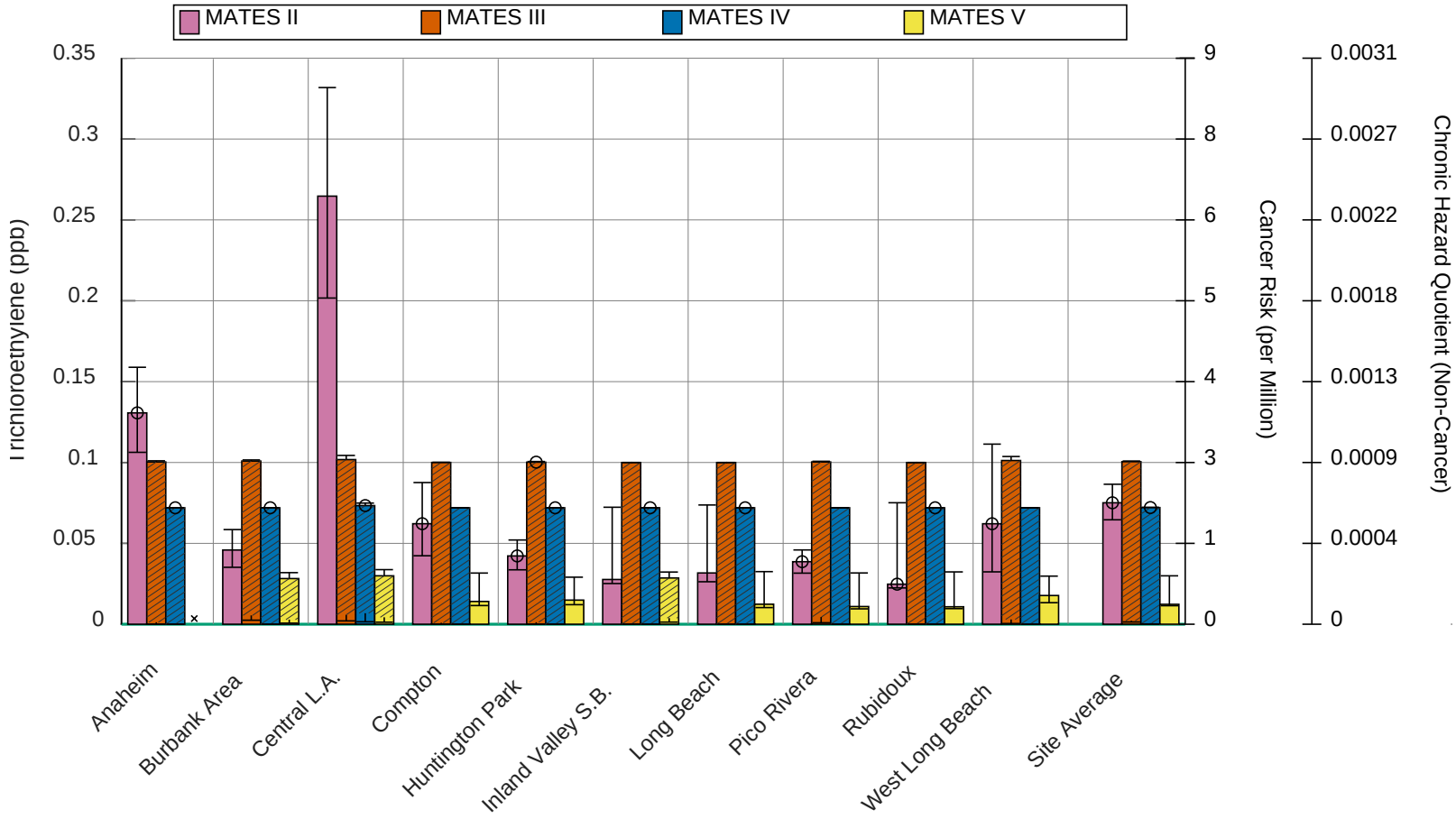


Figure IV-55. Annual Average Concentrations of Trichloroethylene in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

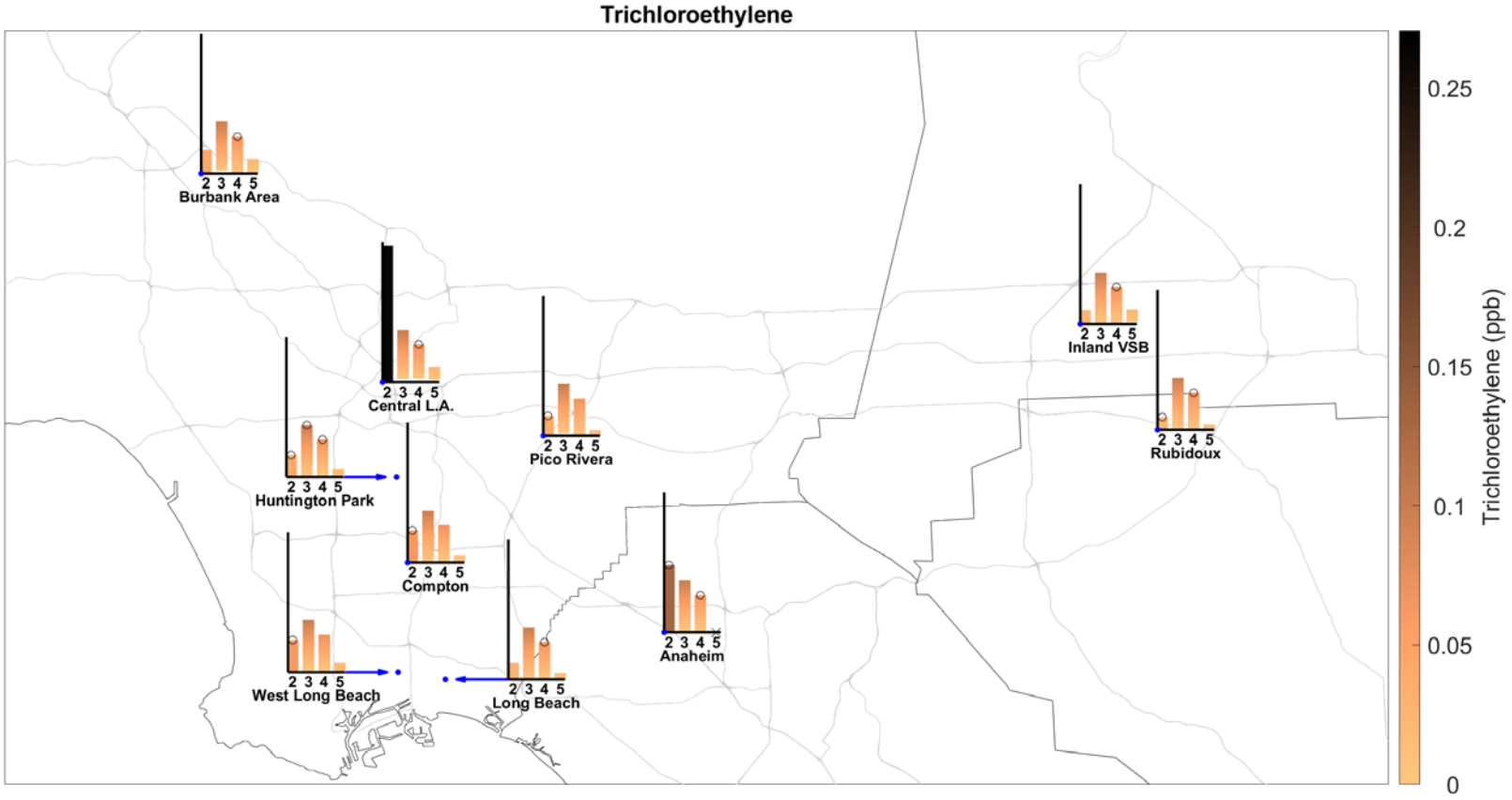


Figure IV-56. Geographic distribution of Trichloroethylene from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Vinyl Chloride

Table IV-31. Ambient Concentrations (ppb) of Vinyl Chloride from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.242[a]	0, 0.2[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.304[a]	0.2[a]
N	26[a]	28[a]	21[a]	30[a]	23[a]	30[a]	29[a]	29[a]	24[a]	17[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES III										
Average	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]	0, 0.2[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]	0.2[a]
N	233[a]	241[a]	237[a]	232[a]	100[a]	238[a]	238[a]	121[a]	234[a]	234[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES IV										
Average	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]	0, 0.051[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]	0.051[a]
N	51[a]	55[a]	57[a]	53[a]	53[a]	54[a]	53[a]	57[a]	52[a]	57[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES V										
Average		0.000667, 0.0275[a]	0.00082, 0.0282[a]	0.000328, 0.028[a]	0.000167, 0.0283[a]	0.00119, 0.0288[a]	0.000357, 0.0282[a]	0.000943, 0.0292[a]	0.000167, 0.0283[a]	0.00069, 0.0279[a]
95% CI LB		0.000167[a]	0.000164[a]	0[a]	0[a]	0.000339[a]	0[a]	0.000189[a]	0[a]	0.000172[a]
95% CI UB		0.0312[a]	0.0316[a]	0.0315[a]	0.0318[a]	0.0322[a]	0.0316[a]	0.0328[a]	0.0318[a]	0.0314[a]
N	0	60[a]	61[a]	61[a]	60[a]	59[a]	56[a]	53[a]	60[a]	58[a]
% < MDL		93.3[a]	93.4[a]	96.7[a]	98.3[a]	89.8[a]	96.4[a]	92.5[a]	98.3[a]	93.1[a]
Max		0.01[a]	0.02[a]	0.01[a]	0.01[a]	0.02[a]	0.01[a]	0.02[a]	0.01[a]	0.01[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

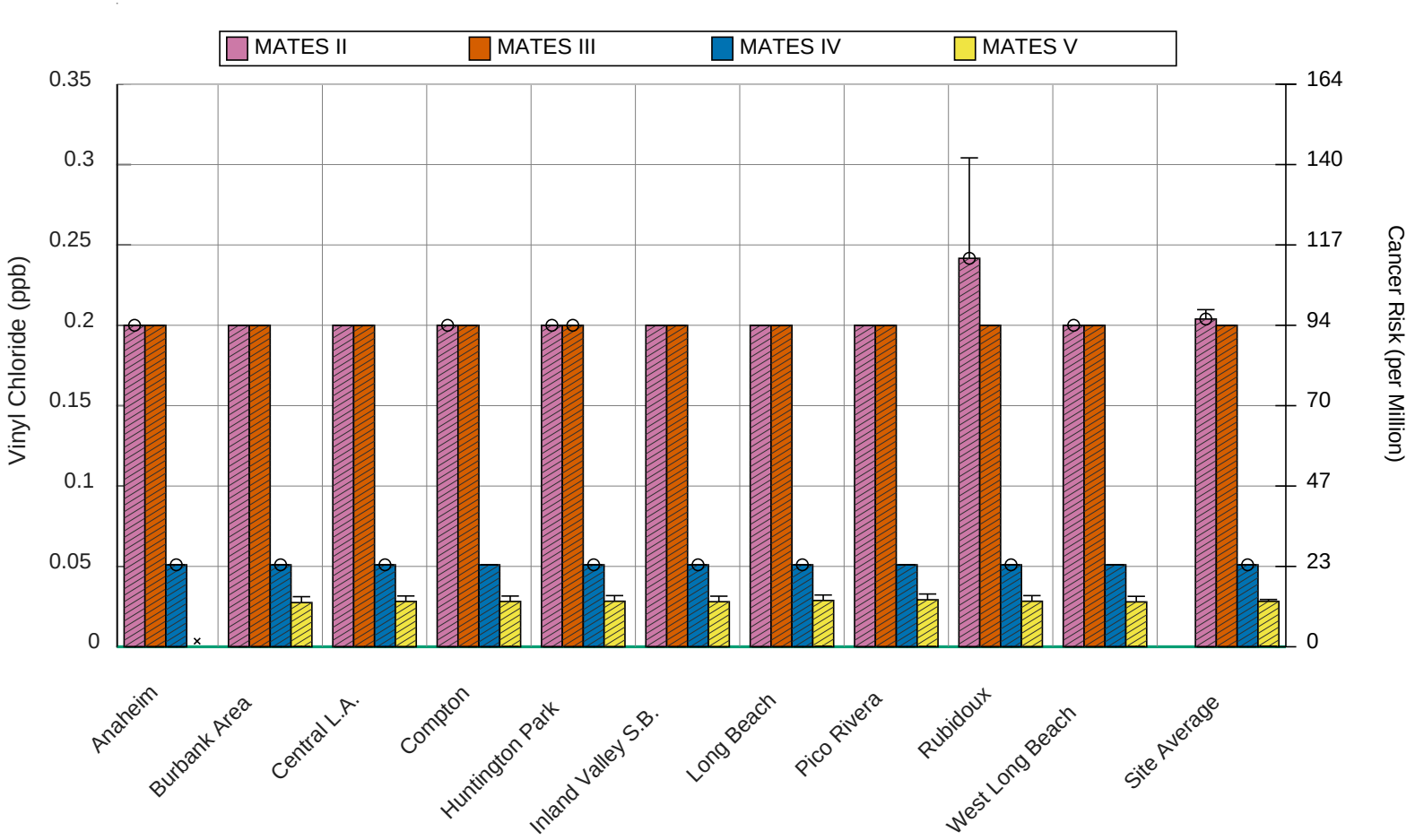


Figure IV-57. Annual Average Concentrations of Vinyl Chloride in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

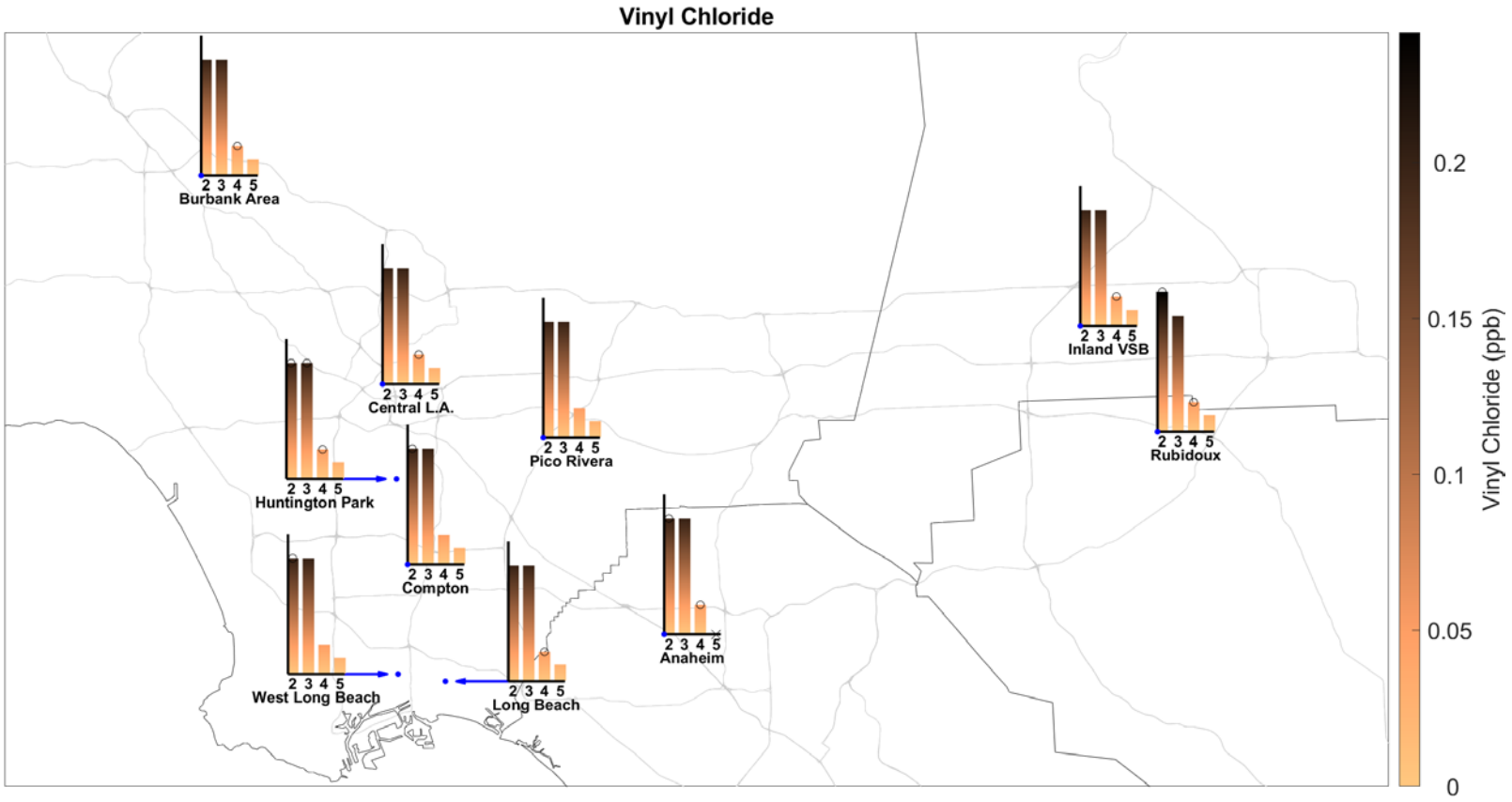


Figure IV-58. Geographic distribution of Vinyl Chloride from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Xylene (m-, p-)

Table IV-32. Ambient Concentrations (ppb) of Xylene (m-, p-) from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1.36	1.81	2.98	0.949	3.02	1.02	1.4	1.38	1.16	1.78
95% CI LB	1.06	1.45	2.32	0.816	2.45	0.833	1.17	1.14	0.951	1.27
95% CI UB	1.7	2.2	3.66	1.09	3.62	1.24	1.67	1.65	1.39	2.34
N	50	56	41	58	44	57	55	54	42	35
% < MDL	22	16.1	17.1	31	2.3	31.6	20	18.5	21.4	20
Max	6.1	6	8.8	2.5	8.9	3.2	3.8	4.3	3.3	7.2
MATES III										
Average	0.724	1.3	1.51	0.753	1.42	0.764	0.939	0.97	0.65	0.822
95% CI LB	0.647	1.19	1.34	0.697	1.24	0.69	0.874	0.862	0.598	0.732
95% CI UB	0.806	1.42	1.69	0.81	1.61	0.846	1.01	1.09	0.704	0.917
N	233	241	237	232	100	238	238	121	234	235
% < MDL	0	0	0	2.6	0	0	0	0	0.4	0.4
Max	4.03	4.91	7.85	2.4	4.58	3.03	3.04	3.74	2.5	4.53
MATES IV										
Average	0.404	0.606	0.672	0.348	0.865	0.34	2.42	0.394	0.379	0.435
95% CI LB	0.297	0.482	0.49	0.292	0.631	0.277	1.86	0.324	0.316	0.328
95% CI UB	0.528	0.744	0.877	0.413	1.17	0.41	3.15	0.467	0.451	0.558
N	51	55	57	53	53	54	53	57	52	57
% < MDL	3.9	0	1.8	3.8	1.9	0	1.9	1.8	0	5.3
Max	2.31	2.19	3.06	1.42	6.62	1.09	16.2	1.08	1.03	2.53
MATES V										
Average		0.204	0.484	0.302	0.383	0.293	0.492	0.294	0.27	0.343
95% CI LB		0.181	0.363	0.26	0.306	0.223	0.341	0.235	0.226	0.267
95% CI UB		0.229	0.619	0.35	0.469	0.373	0.715	0.355	0.321	0.43
N	0	57	58	58	57	56	54	50	57	55
% < MDL		1.8	1.7	1.7	0	1.8	0	0	1.8	0
Max		0.48	2.01	1.04	1.26	1.39	5.1	0.98	0.84	1.52

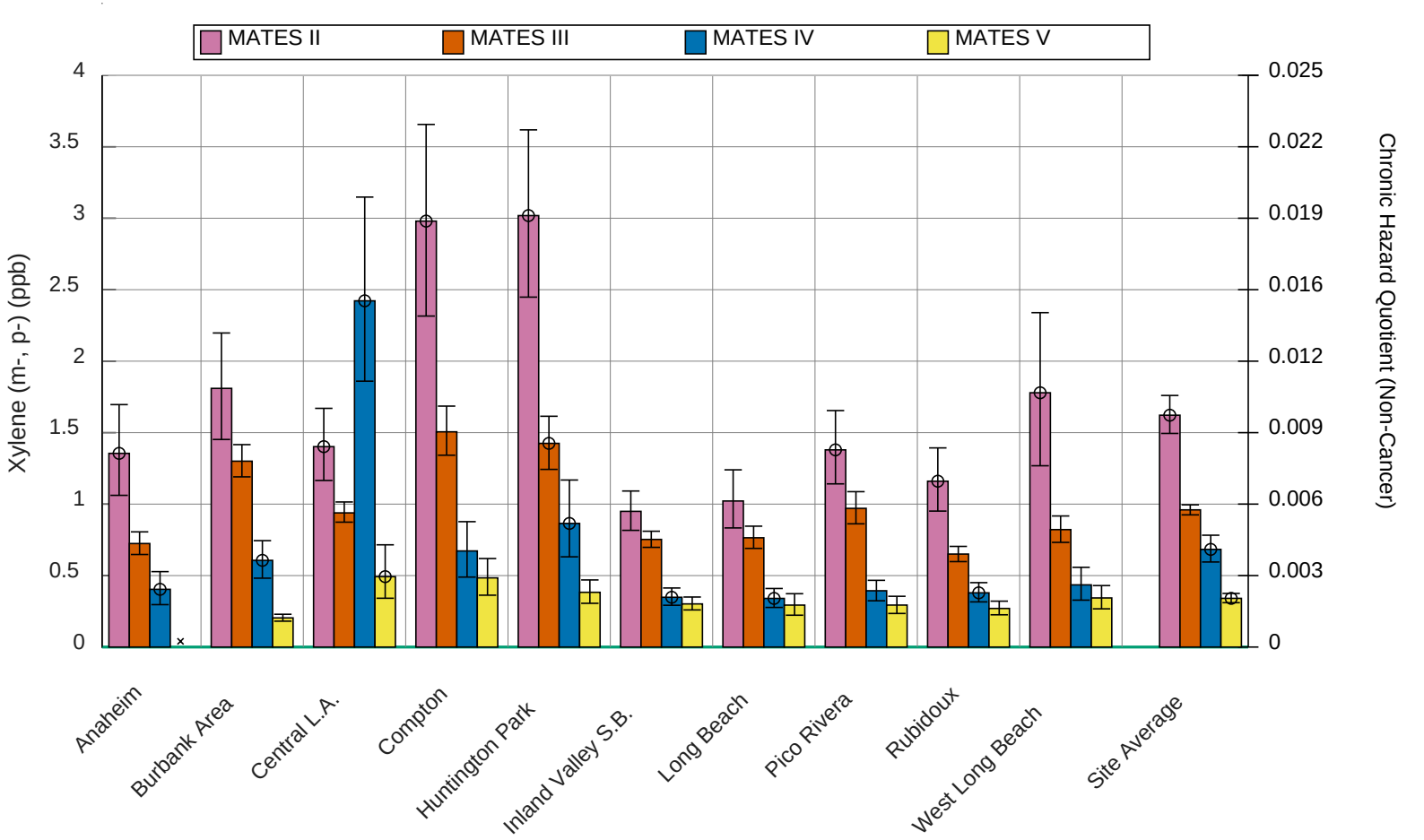


Figure IV-59. Annual Average Concentrations of Xylene (m-, p-) in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

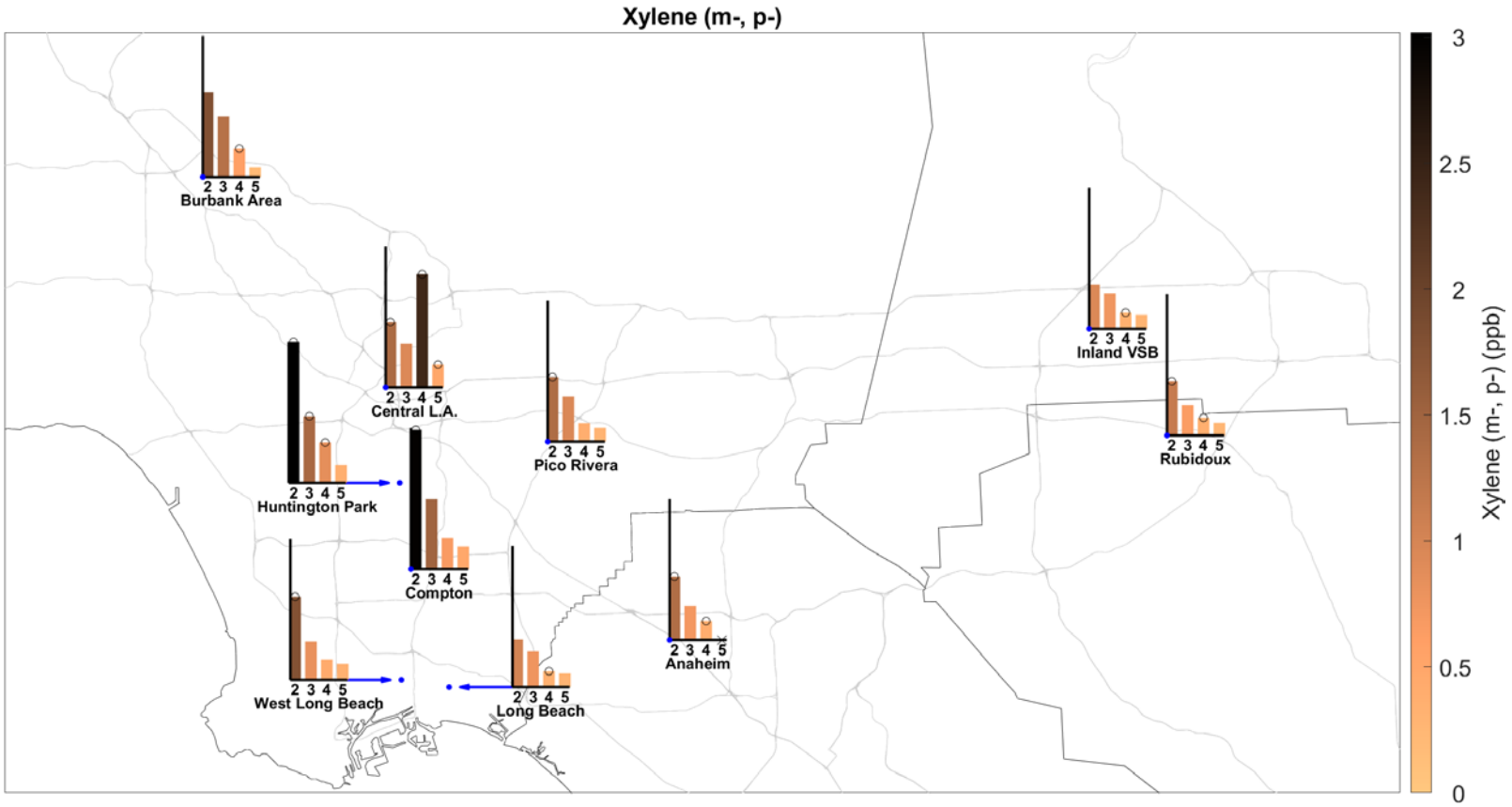


Figure IV-60. Geographic distribution of Xylene (m-, p-) from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Xylene (o-)

Table IV-33. Ambient Concentrations (ppb) of Xylene (o-) from the VOCs analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.498	0.635	0.901	0.353	0.927	0.384	0.526	0.519	0.431	0.59
95% CI LB	0.389	0.525	0.697	0.299	0.758	0.315	0.443	0.439	0.353	0.437
95% CI UB	0.618	0.756	1.12	0.407	1.11	0.456	0.612	0.604	0.509	0.75
N	51	56	42	56	44	56	55	54	42	35
% < MDL	19.6	7.1	11.9	16.1	0	19.6	10.9	9.3	16.7	22.9
Max	1.7	2.1	2.9	0.9	2.3	1.1	1.3	1.5	1	1.7
MATES III										
Average	0.269	0.356	0.436	0.243	0.363	0.265	0.274	0.266	0.24	0.283
95% CI LB	0.248	0.325	0.389	0.23	0.315	0.249	0.257	0.243	0.229	0.26
95% CI UB	0.292	0.391	0.488	0.256	0.415	0.283	0.294	0.291	0.253	0.307
N	233	241	237	232	100	238	238	121	234	235
% < MDL	73	49	45.6	65.9	40	69.7	58	60.3	72.6	68.1
Max	1.69	1.45	2.26	0.82	1.32	0.83	0.94	0.965	1.1	1.28
MATES IV										
Average	0.131	0.174	0.203	0.101	0.238	0.101	0.505	0.114	0.13	0.133
95% CI LB	0.0989	0.136	0.144	0.0877	0.168	0.0844	0.384	0.0966	0.109	0.101
95% CI UB	0.173	0.217	0.273	0.116	0.333	0.121	0.656	0.135	0.153	0.171
N	51	55	57	53	53	54	53	57	52	57
% < MDL	51	18.2	36.8	35.8	15.1	48.1	1.9	33.3	28.8	49.1
Max	0.79	0.72	1.01	0.3	2.03	0.34	3.17	0.34	0.35	0.86
MATES V										
Average		0.083	0.176	0.117	0.142	0.109	0.187	0.111	0.123	0.127
95% CI LB		0.0742	0.136	0.102	0.115	0.083	0.132	0.0908	0.103	0.1
95% CI UB		0.0927	0.218	0.134	0.172	0.139	0.264	0.134	0.15	0.159
N	0	57	58	58	57	56	54	50	57	55
% < MDL		1.8	0	0	0	0	0	0	0	0
Max		0.2	0.81	0.43	0.5	0.55	1.81	0.38	0.63	0.62

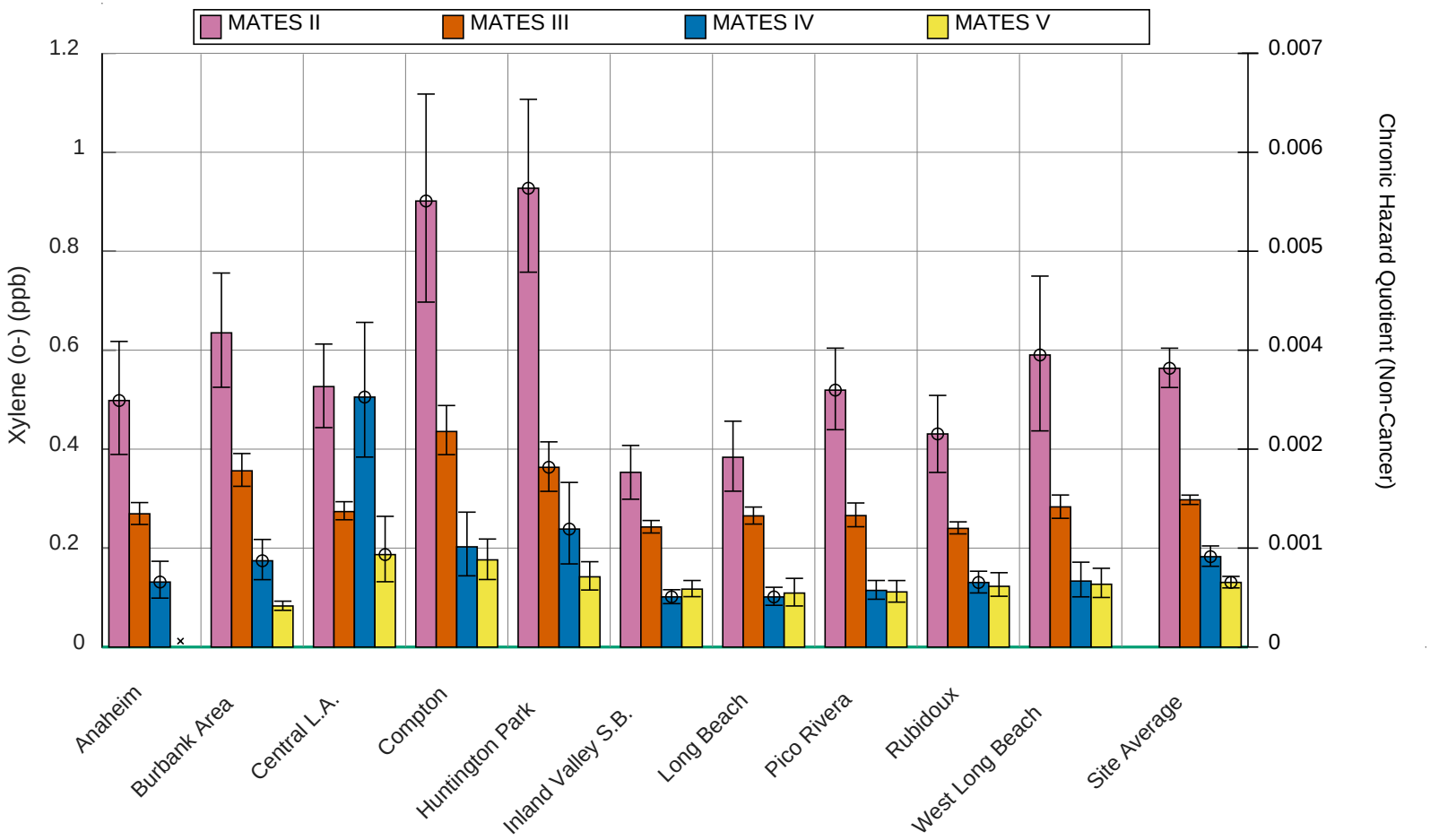


Figure IV-61. Annual Average Concentrations of Xylene (o-) in the VOCs Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

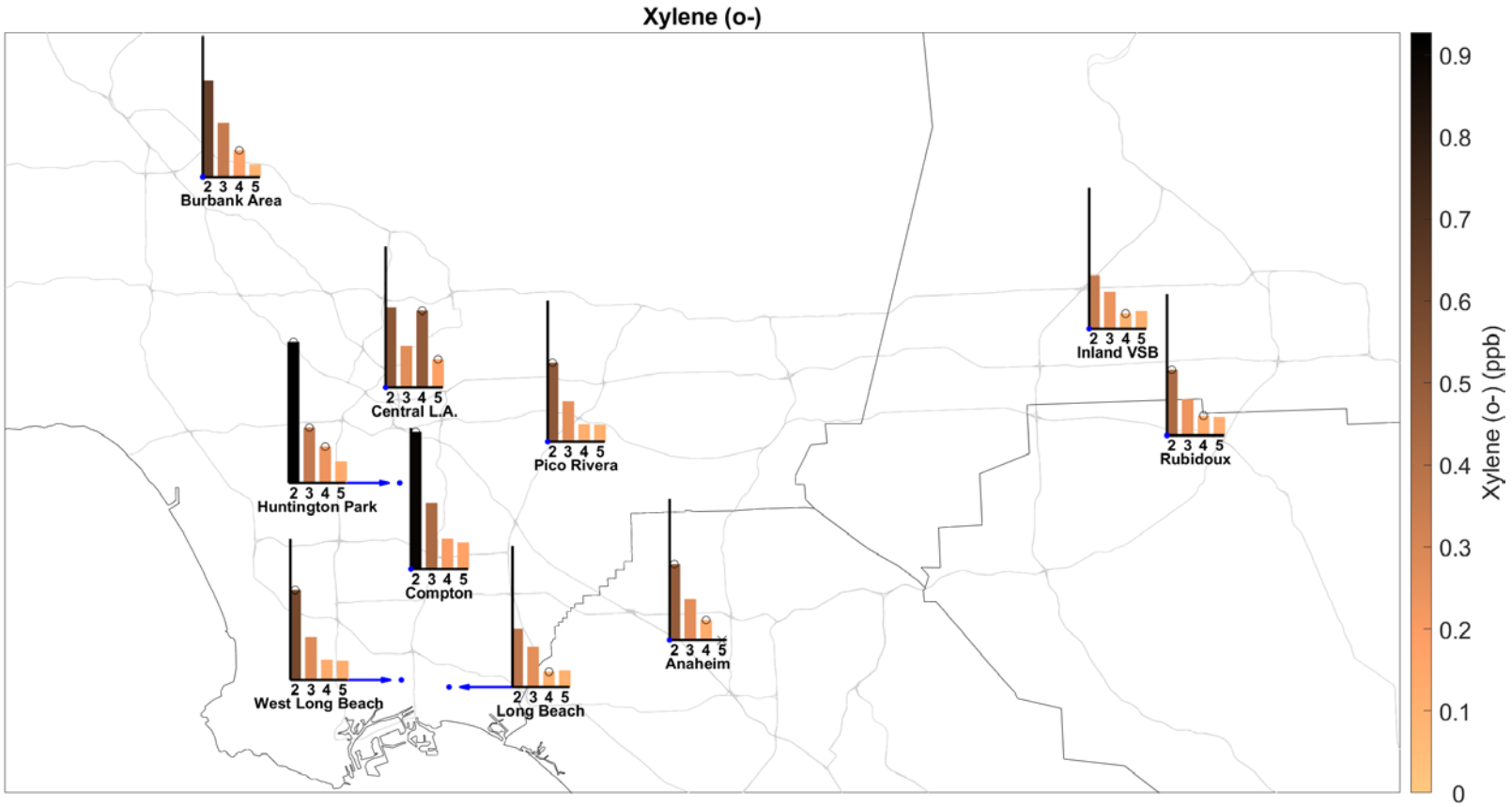


Figure IV-62. Geographic distribution of Xylene (o-) from the VOCs Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

TSP Hexavalent Chromium Analysis

Hexavalent Chromium

Table IV-34. Ambient Concentrations (ng/m^3) of Hexavalent Chromium from the TSP Hexavalent Chromium analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.174	0.209	0.244	0.148	0.219	0.16	0.156	0.135	0.255	0.182
95% CI LB	0.135	0.166	0.188	0.127	0.171	0.136	0.131	0.111	0.207	0.145
95% CI UB	0.217	0.257	0.304	0.171	0.271	0.186	0.185	0.162	0.306	0.227
N	51	52	40	53	48	58	55	51	48	41
% < MDL	54.9	51.9	42.5	66	52.1	63.8	67.3	64.7	39.6	43.9
Max	0.7	0.6	1.1	0.44	0.82	0.39	0.41	0.41	0.8	0.71
MATES III										
Average	0.14	0.157	0.251	0.187	0.188	0.155	0.164	0.158	0.403	0.208
95% CI LB	0.127	0.144	0.22	0.172	0.16	0.14	0.15	0.14	0.338	0.185
95% CI UB	0.153	0.171	0.286	0.203	0.218	0.172	0.177	0.178	0.474	0.233
N	238	237	231	230	118	237	240	121	234	232
% < MDL	17.2	15.6	9.1	7	8.5	13.5	10	7.4	13.2	14.2
Max	0.68	0.75	1.77	0.69	0.91	1.07	0.79	0.69	3.55	1.16
MATES IV										
Average	0.0266	0.0398	0.112	0.0443	0.105	0.0434	0.0686	0.049	0.0409	0.0338
95% CI LB	0.022	0.0319	0.0814	0.0373	0.0606	0.034	0.0538	0.0408	0.0324	0.0278
95% CI UB	0.0316	0.0492	0.154	0.0519	0.178	0.054	0.0864	0.0585	0.0513	0.0408
N	60	57	60	58	55	60	59	61	59	58
% < MDL	1.7	0	0	1.7	0	1.7	0	0	1.7	1.7
Max	0.09	0.19	0.85	0.12	1.8	0.2	0.39	0.17	0.25	0.14
MATES V										
Average	0.038	0.0322	0.0607	0.0385	0.0567	0.0336	0.0434	0.0349	0.0264	0.0346
95% CI LB	0.0312	0.0281	0.0533	0.0341	0.0462	0.0286	0.0375	0.0313	0.0235	0.0299
95% CI UB	0.0468	0.0367	0.0683	0.0432	0.0689	0.0392	0.0499	0.0389	0.0297	0.0397
N	60	58	60	59	61	59	59	61	59	59
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	0.24	0.1	0.16	0.1	0.24	0.13	0.16	0.09	0.06	0.11

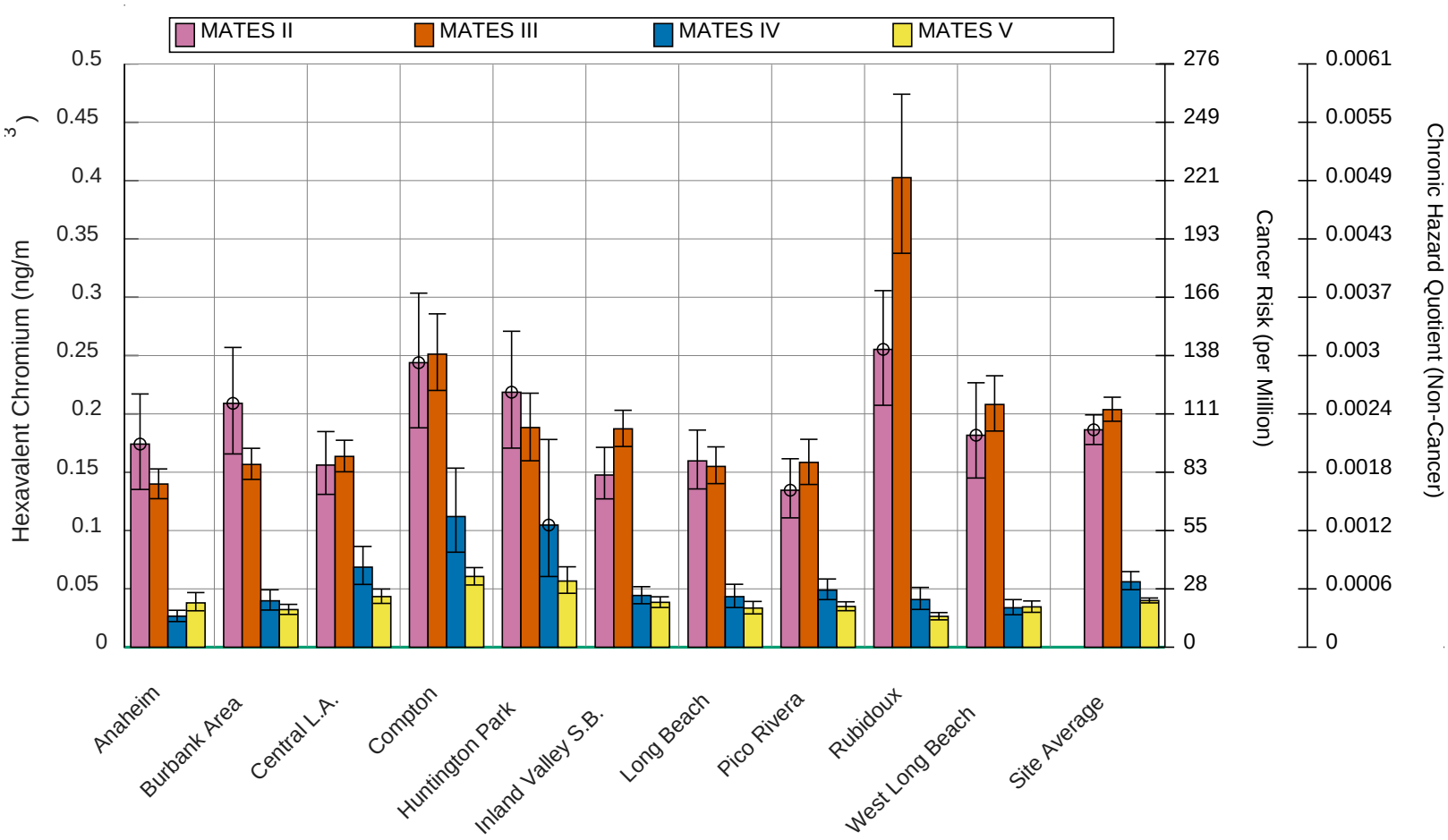


Figure IV-63. Annual Average Concentrations of Hexavalent Chromium in the TSP Hexavalent Chromium Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

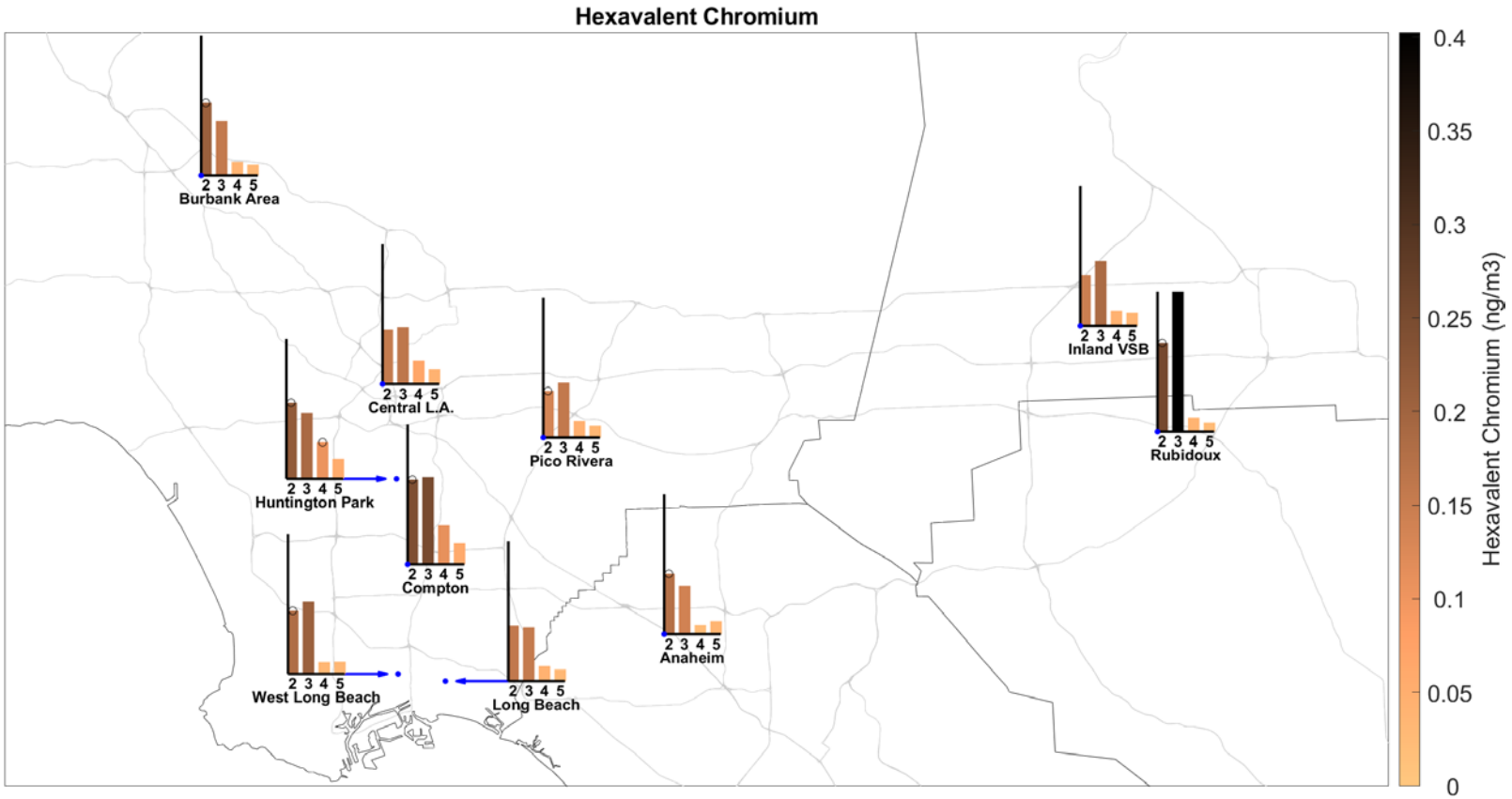


Figure IV-64. Geographic distribution of Hexavalent Chromium from the TSP Hexavalent Chromium Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

TSP Metals Analysis

Aluminum

Table IV-35. Ambient Concentrations (ng/m^3) of Aluminum from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1280	1160	1420	1800	1130	937	1020	1090	2330	1290
95% CI LB	1020	988	1110	1460	961	776	839	899	1990	1080
95% CI UB	1570	1340	1740	2170	1330	1110	1200	1270	2680	1550
N	45	47	39	41	42	56	51	41	41	39
% < MDL	4.4	4.3	7.7	7.3	4.8	7.1	9.8	9.8	2.4	2.6
Max	4160	2960	4480	4930	3170	2840	3030	2620	5670	3580
MATES III										
Average	3060	3340	3530	5770	3020	3160	3460	3230	7180	4110
95% CI LB	2800	3100	3280	5330	2720	2940	3250	2930	6710	3770
95% CI UB	3330	3590	3800	6220	3380	3380	3670	3580	7670	4440
N	232	218	228	224	116	230	229	118	237	227
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	11800	13100	10700	17200	13700	11600	8210	14900	18000	14600
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

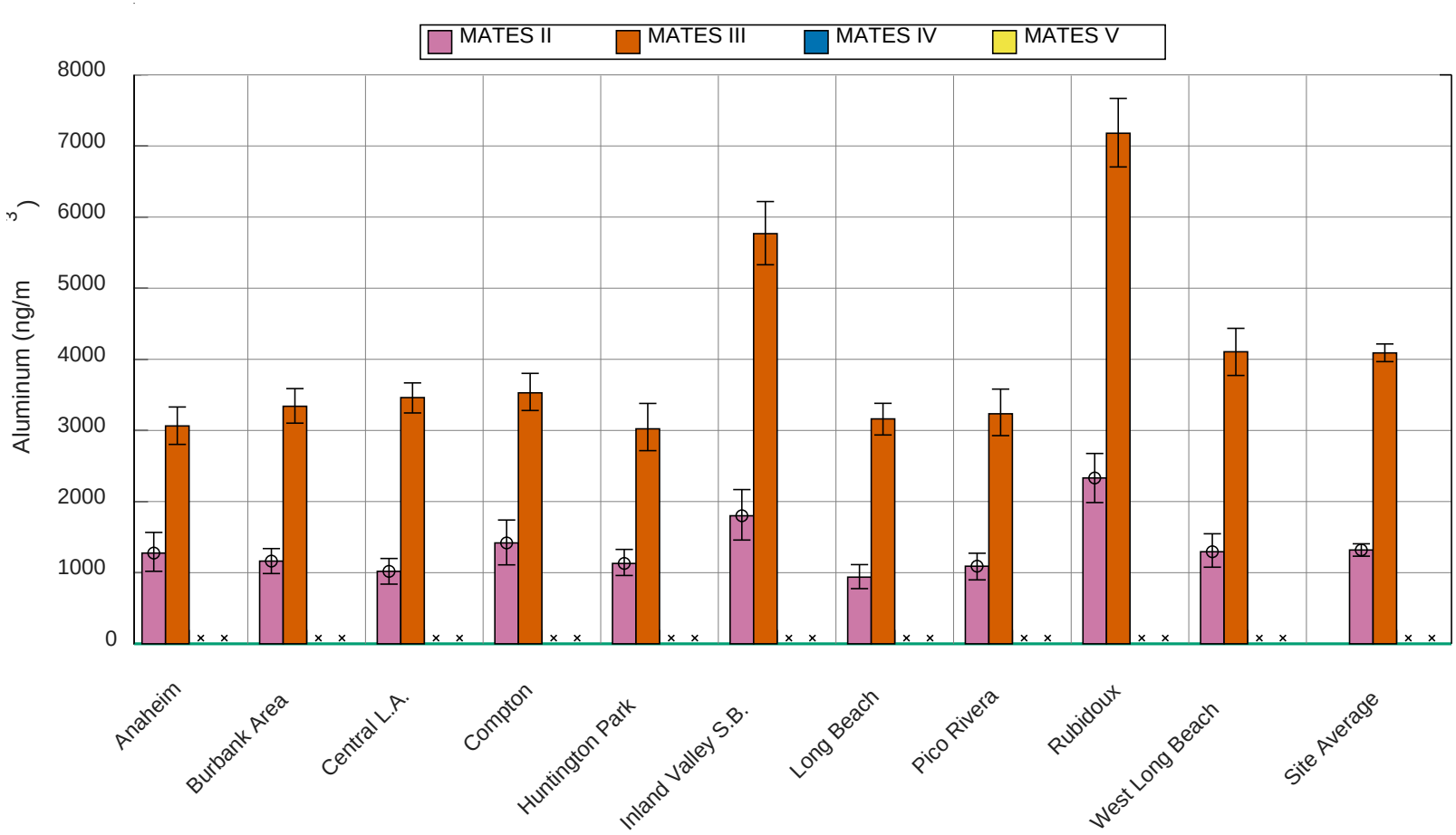


Figure IV-65. Annual Average Concentrations of Aluminum in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

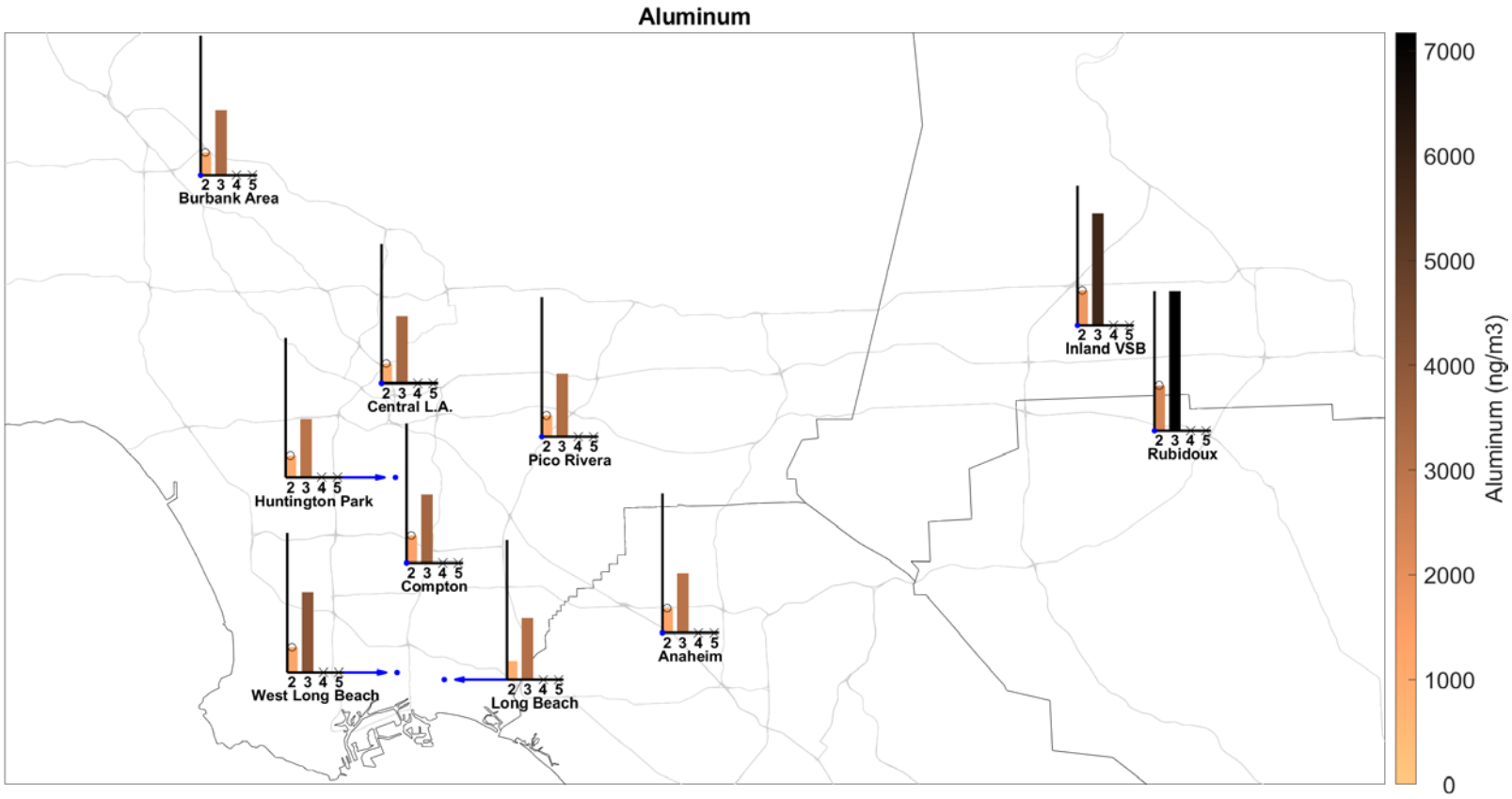


Figure IV-66. Geographic distribution of Aluminum from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Antimony

Table IV-36. Ambient Concentrations (ng/m^3) of Antimony from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.978, 13.5[a]	6.74	1.67, 12.6[a]	0.366, 12.7[a]	1.21, 13.2[a]	0.339, 12.2[a]	1.53, 12.2[a]	34.5	0.415, 12.8[a]	6.9
95% CI LB	0.2[a]	6.58	0.59[a]	0[a]	0.31[a]	0[a]	0.706[a]	15	0[a]	6.38
95% CI UB	15.2[a]	13.8	14.5[a]	14.6[a]	15[a]	13.7[a]	13.9[a]	70.2	14.6[a]	14.6
N	45[a]	47	39[a]	41[a]	42[a]	56[a]	51[a]	41	41[a]	39
% < MDL	88.9[a]	78.7	82.1[a]	95.1[a]	85.7[a]	96.4[a]	80.4[a]	78	95.1[a]	79.5
Max	15[a]	10	16[a]	8[a]	13[a]	10[a]	13[a]	547	11[a]	12
MATES III										
Average	1.35, 3.03[a]	4.18	1.14, 2.82[a]	0.58, 2.39[a]	1.1, 2.72[a]	1.05, 2.74[a]	3.54	3.16	0.687, 2.44[a]	0.653, 2.4[a]
95% CI LB	0.835[a]	3.69	0.752[a]	0.23[a]	0.646[a]	0.686[a]	3.19	2.77	0.336[a]	0.411[a]
95% CI UB	3.64[a]	4.7	3.19[a]	2.9[a]	3.12[a]	3.07[a]	3.88	3.57	2.87[a]	2.63[a]
N	232[a]	218	228[a]	224[a]	116[a]	230[a]	229	118	237[a]	227[a]
% < MDL	84.1[a]	59.6	83.8[a]	90.6[a]	81[a]	84.3[a]	67.2	66.9	87.8[a]	87.2[a]
Max	53.7[a]	20.4	31.9[a]	53[a]	15.2[a]	16.8[a]	17.7	11.5	46.5[a]	17.2[a]
MATES IV										
Average	2.45	5.07	3.97	4.5	4.95	3.28	6.06	6.09	3.98	2.76
95% CI LB	1.92	4.16	3.11	3.99	4.01	2.55	5	5.08	3.24	2.19
95% CI UB	3.04	6.09	4.92	5.03	5.9	4.1	7.22	7.3	4.94	3.43
N	60	58	59	56	55	59	59	60	58	58
% < MDL	1.7	0	0	0	0	1.7	0	0	0	0
Max	11.4	21.4	13.9	9.01	16.6	11.8	19	30.4	23.7	11.4
MATES V										
Average	4.49	3.54	4.76	5.37	4.43	3.26	5.41	5.3	4.84	3.48
95% CI LB	3.43	3.06	3.67	4.65	3.38	2.47	4.57	4.42	4.09	2.64
95% CI UB	5.71	4.06	5.93	6.13	5.5	4.14	6.29	6.29	5.66	4.43
N	61	58	61	59	61	60	60	60	60	59
% < MDL	0	0	0	0	11.5	0	1.7	0	0	0
Max	23.1	7.95	20.2	15.4	16.7	13	15.5	16.9	14.2	16.4

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

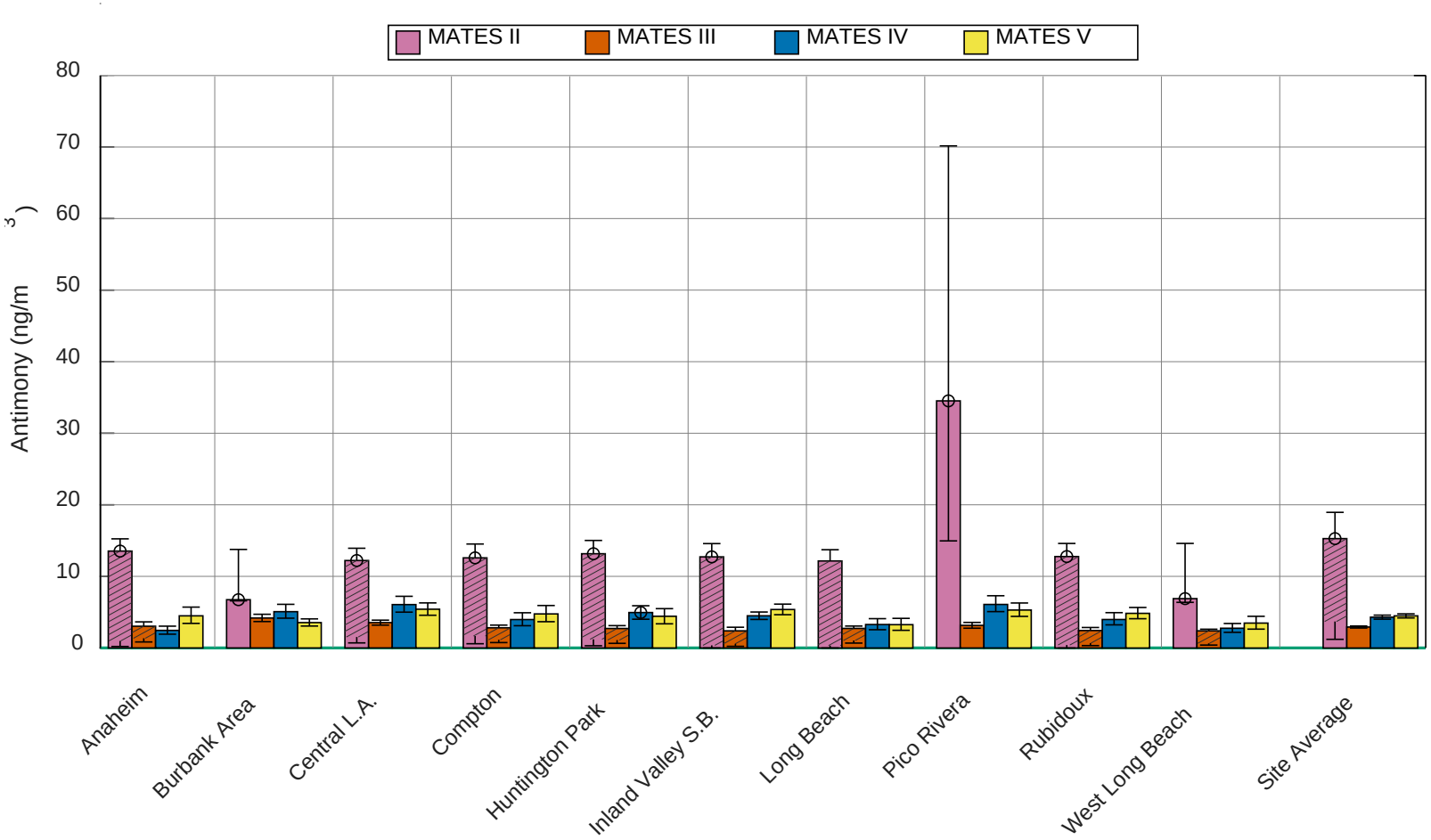


Figure IV-67. Annual Average Concentrations of Antimony in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

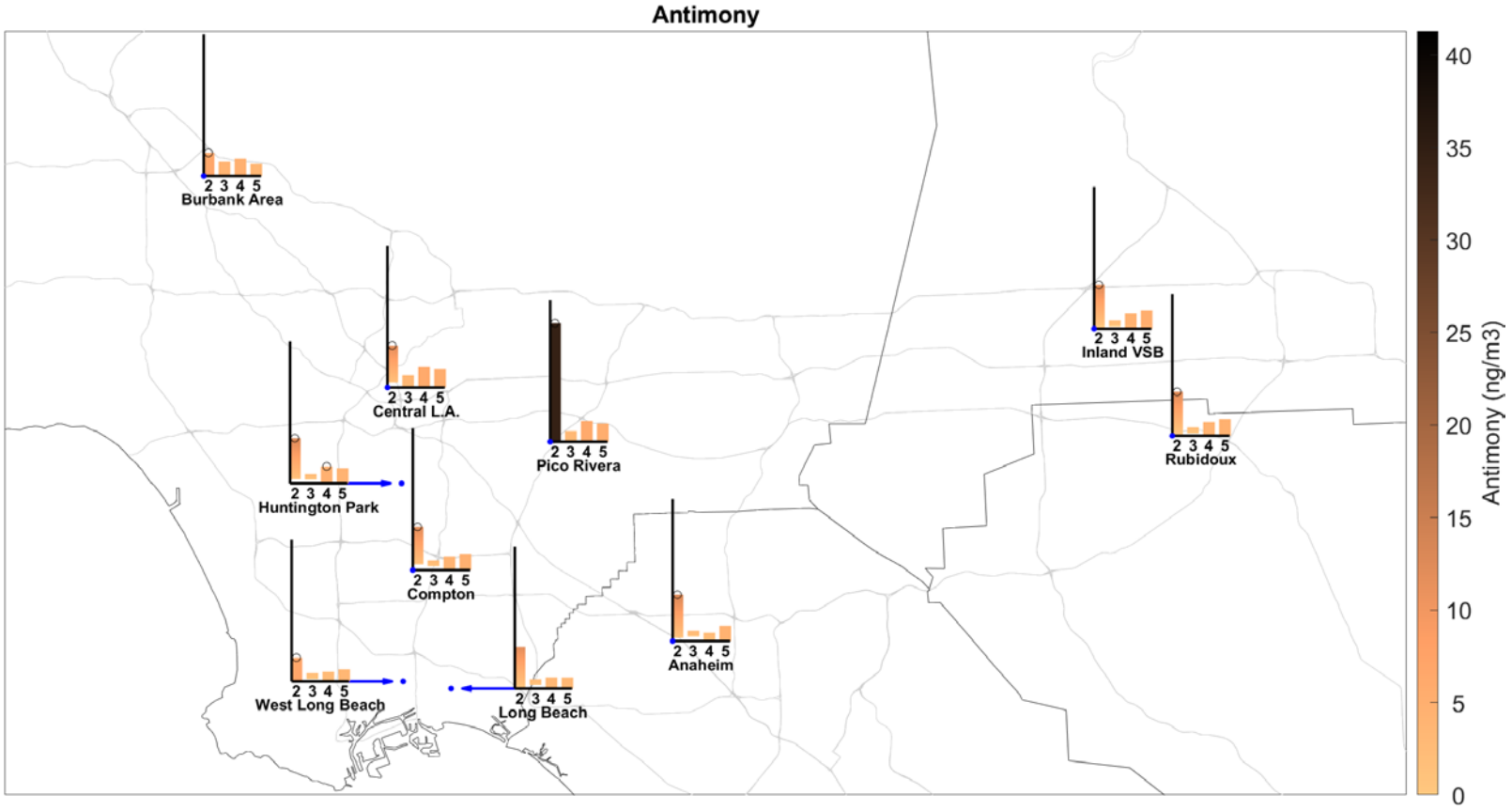


Figure IV-68. Geographic distribution of Antimony from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Arsenic

Table IV-37. Ambient Concentrations (ng/m^3) of Arsenic from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 3.56[a]	0, 3.43[a]	0.308, 3.54[a]	0.293, 3.59[a]	0.238, 3.55[a]	0, 3.46[a]	0, 3.45[a]	0.0732, 3.63[a]	0.171, 3.54[a]	0, 3.49[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	3.69[a]	3.57[a]	3.69[a]	3.76[a]	3.69[a]	3.59[a]	3.59[a]	3.78[a]	3.68[a]	3.64[a]
N	45[a]	47[a]	39[a]	41[a]	42[a]	56[a]	51[a]	41[a]	41[a]	39[a]
% < MDL	100[a]	100[a]	92.3[a]	92.7[a]	92.9[a]	100[a]	100[a]	97.6[a]	95.1[a]	100[a]
Max	< MDL[a]	< MDL[a]	4[a]	5[a]	4[a]	< MDL[a]	< MDL[a]	3[a]	4[a]	< MDL[a]
MATES III										
Average	0.212, 1.06[a]	1.16	1.17	1.22	1.42	1.13	1.2	1.36	1.16	1.15
95% CI LB	0.149[a]	1.12	1.11	1.15	1.26	1.08	1.13	1.24	1.11	1.1
95% CI UB	1.08[a]	1.2	1.24	1.3	1.62	1.18	1.26	1.51	1.21	1.22
N	232[a]	218	228	224	116	230	229	118	237	227
% < MDL	84.5[a]	68.8	73.7	67.9	61.2	77	71.2	66.1	71.3	72.7
Max	2.31[a]	3.43	5.77	7.23	6.47	4.2	4.95	4.97	4.3	4.98
MATES IV										
Average	0.238	0.447	0.502	0.909	0.557	0.396	0.637	0.566	0.757	0.497
95% CI LB	0.207	0.393	0.418	0.794	0.467	0.338	0.538	0.503	0.6	0.418
95% CI UB	0.271	0.502	0.596	1.03	0.653	0.458	0.745	0.629	0.993	0.583
N	60	58	59	56	55	59	59	60	58	58
% < MDL	16.7	3.4	5.1	0	0	5.1	0	3.3	0	3.4
Max	0.52	0.96	2.08	2.35	1.67	1.02	2.1	1.19	6.33	1.46
MATES V										
Average	0.36	0.459	0.441	0.885	0.413	0.376	0.412	0.663	0.663	0.466
95% CI LB	0.311	0.396	0.365	0.745	0.342	0.311	0.356	0.571	0.578	0.388
95% CI UB	0.414	0.524	0.528	1.04	0.489	0.452	0.477	0.759	0.743	0.561
N	61	58	61	59	61	60	60	60	60	59
% < MDL	1.6	0	0	0	14.8	0	1.7	0	0	0
Max	1.03	1.13	1.58	3.16	1.12	1.64	1.58	1.51	1.46	2.12

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

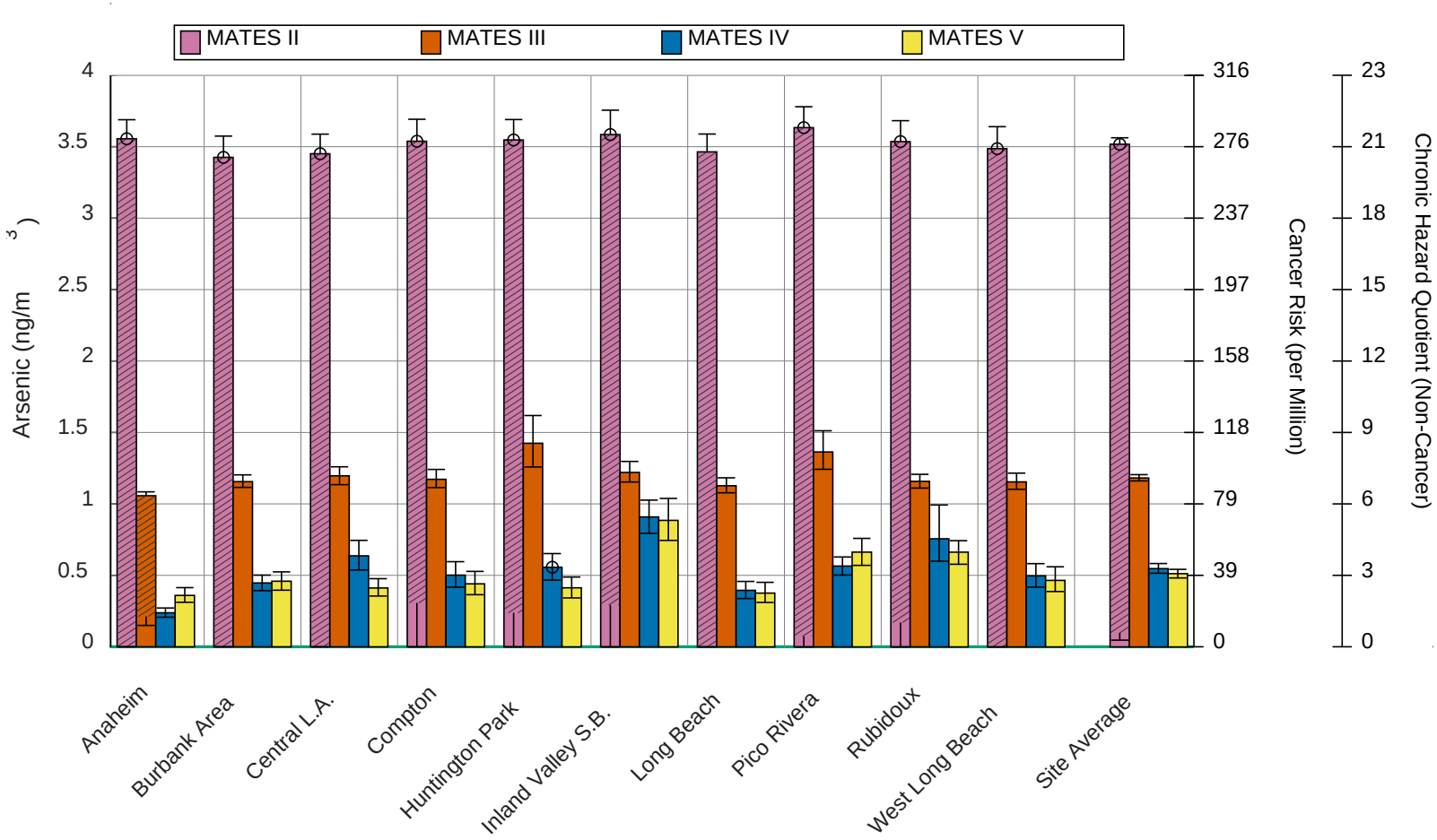


Figure IV-69. Annual Average Concentrations of Arsenic in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

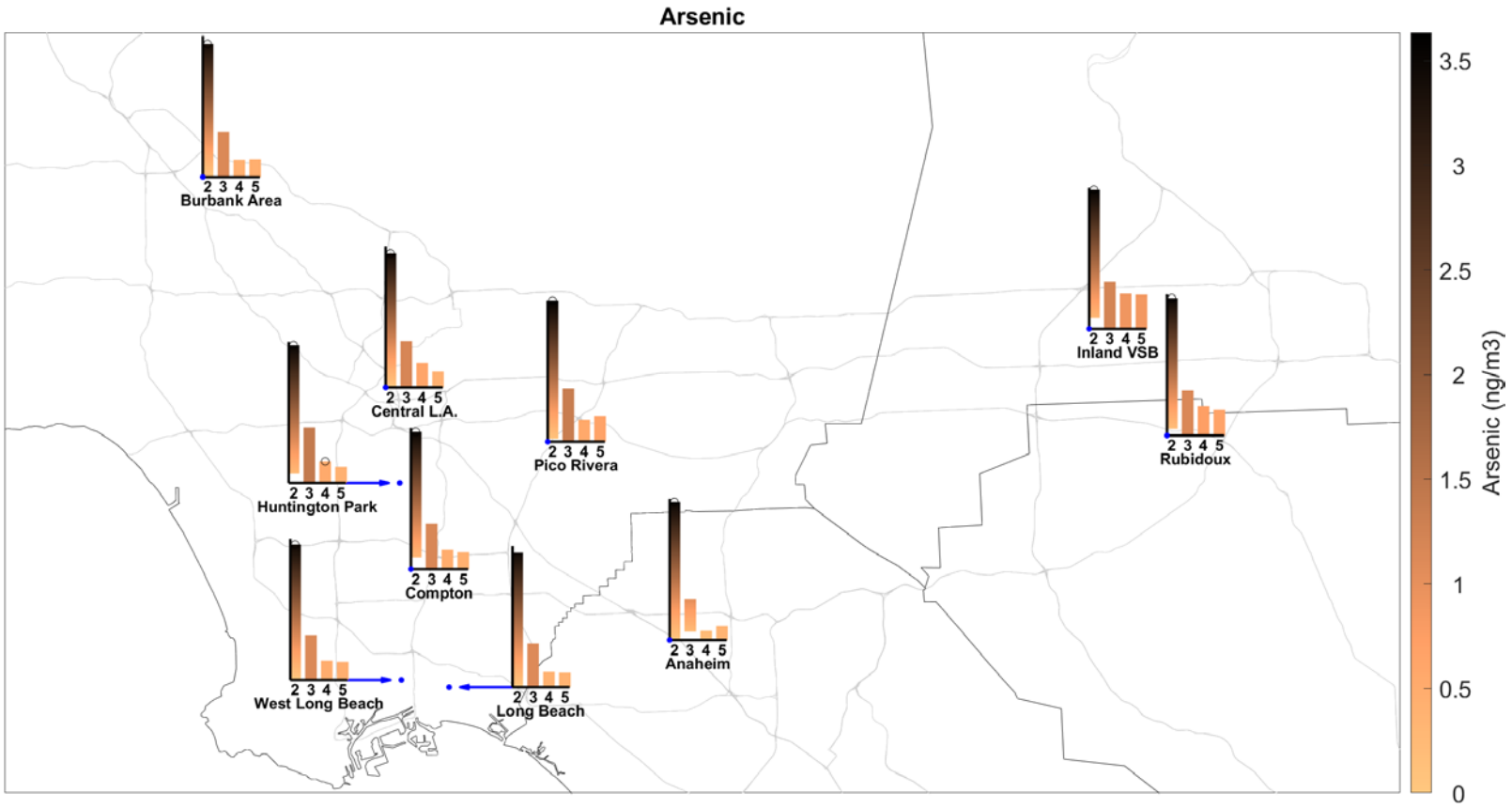


Figure IV-70. Geographic distribution of Arsenic from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

The TSP arsenic concentrations from MATES V are consistent with or lower than those measured at most of the 79 sites in 13 states around the U.S. in the Ambient Monitoring Archive (AMA) for 2017 (https://www3.epa.gov/ttn/amtic/toxdat.html#data), see Figure IV-71. South Coast AQMD staff analyzed the 2017 AMA data using the same methods used for the MATES data (see Appendix XI). One site in Pennsylvania has a 95% confidence interval entirely lower than the 95% confidence intervals observed for the SoCAB for MATES V. Several sites around the nation have 95% confidence intervals that are entirely above the 95% confidence intervals seen in MATES V.

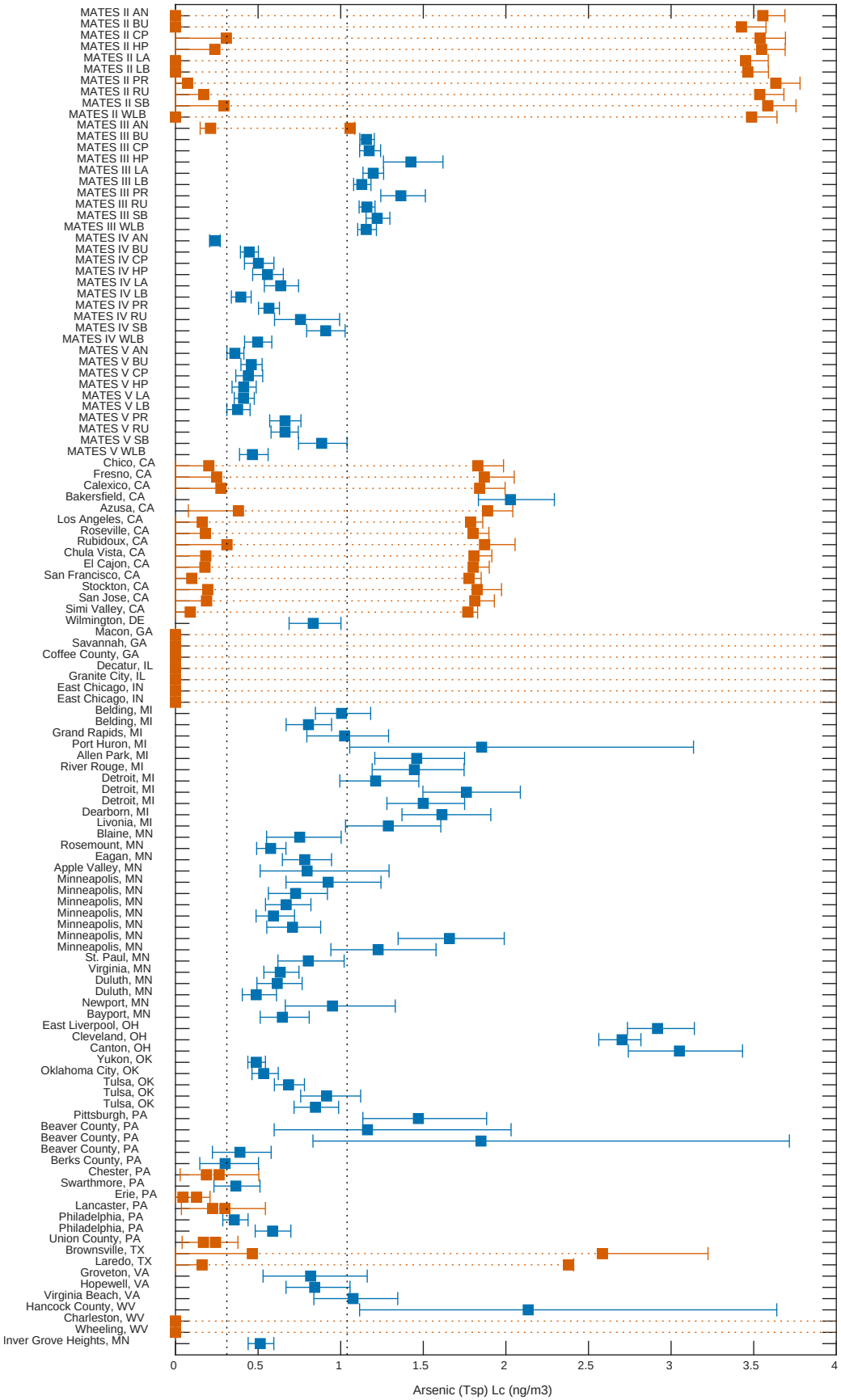


Figure IV-71. Comparison of MATES TSP Arsenic data with TSP Arsenic data from the Ambient Monitoring Archive (AMA) for 2017 (https://www3.epa.gov/ttn/amtic/toxdat.html#data). The 2-letter abbreviations for the MATES stations

are the same as those shown in Table IV-1. For the AMA data, the city or county is followed by the 2-letter state abbreviation. Blue data are the KM mean and corresponding error bars. The red-orange data have more than 80% below detection limit. For these data, the zero-substituted mean with its lower bound bootstrap 95% confidence interval, a dotted line between the zero-substituted mean and the MDL-substituted mean, and then the upper 95% confidence interval corresponding to the MDL substituted mean are shown. Note that some of the upper-bound estimates go well off the right-side of the plot. Vertical dotted lines mark the minimum and maximum 95% confidence intervals for TSP arsenic KM means from MATES V.

Barium

Table IV-38. Ambient Concentrations (ng/m^3) of Barium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	55.8	55	65.8	56.1	89.8	42.3	59.2	52.1	56.7	54.5
95% CI LB	42.3	46.1	51.3	45.5	58.7	35.1	50	39.5	46.3	43.9
95% CI UB	72.6	65.3	81.6	67.3	131	49.7	69.3	68.3	67.4	66.1
N	45	47	39	41	42	56	51	41	41	39
% < MDL	42.2	27.7	23.1	29.3	19	41.1	25.5	41.5	29.3	30.8
Max	237	161	212	176	602	127	197	286	152	170
MATES III										
Average	55	77	63.1	74.6	81.4	55.7	89	73.7	78.9	56.9
95% CI LB	49.3	70.8	57.4	63.3	72.9	51	82.4	66.4	70.3	51.6
95% CI UB	61.5	83.3	69.1	92.8	90.9	60.2	95.9	81.4	91.6	62.6
N	232	218	228	224	116	230	229	118	237	227
% < MDL	10.3	3.2	4.4	5.4	0.9	5.7	2.6	0.8	5.1	11
Max	457	366	268	1830	300	214	353	210	1280	218
MATES IV										
Average	29.4	57.3	46.3	69.7	55.6	43.4	67.1	61.1	58.5	57
95% CI LB	23.3	47.8	38.3	56.5	46.5	36.3	55.3	52.3	46.6	47.7
95% CI UB	36.6	68.1	54.1	85.5	66	51.3	79.8	70.7	73.6	67.6
N	60	58	59	56	55	59	59	60	58	58
% < MDL	1.7	0	0	0	0	0	0	0	0	0
Max	159	216	139	306	158	115	216	162	371	159
MATES V										
Average	48.6	46.4	57.7	75	50.7	40	60.6	67.9	60	54.6
95% CI LB	39.5	39.6	45.7	64.1	40.1	32.2	50.8	58.3	51.1	44.1
95% CI UB	59	52.9	71.1	86.2	61.5	49.8	71.1	78.1	69.9	66.5
N	55	51	54	55	56	55	53	55	53	54
% < MDL	0	0	0	0	1.8	0	1.9	0	0	0
Max	218	109	215	189	171	154	185	179	160	225

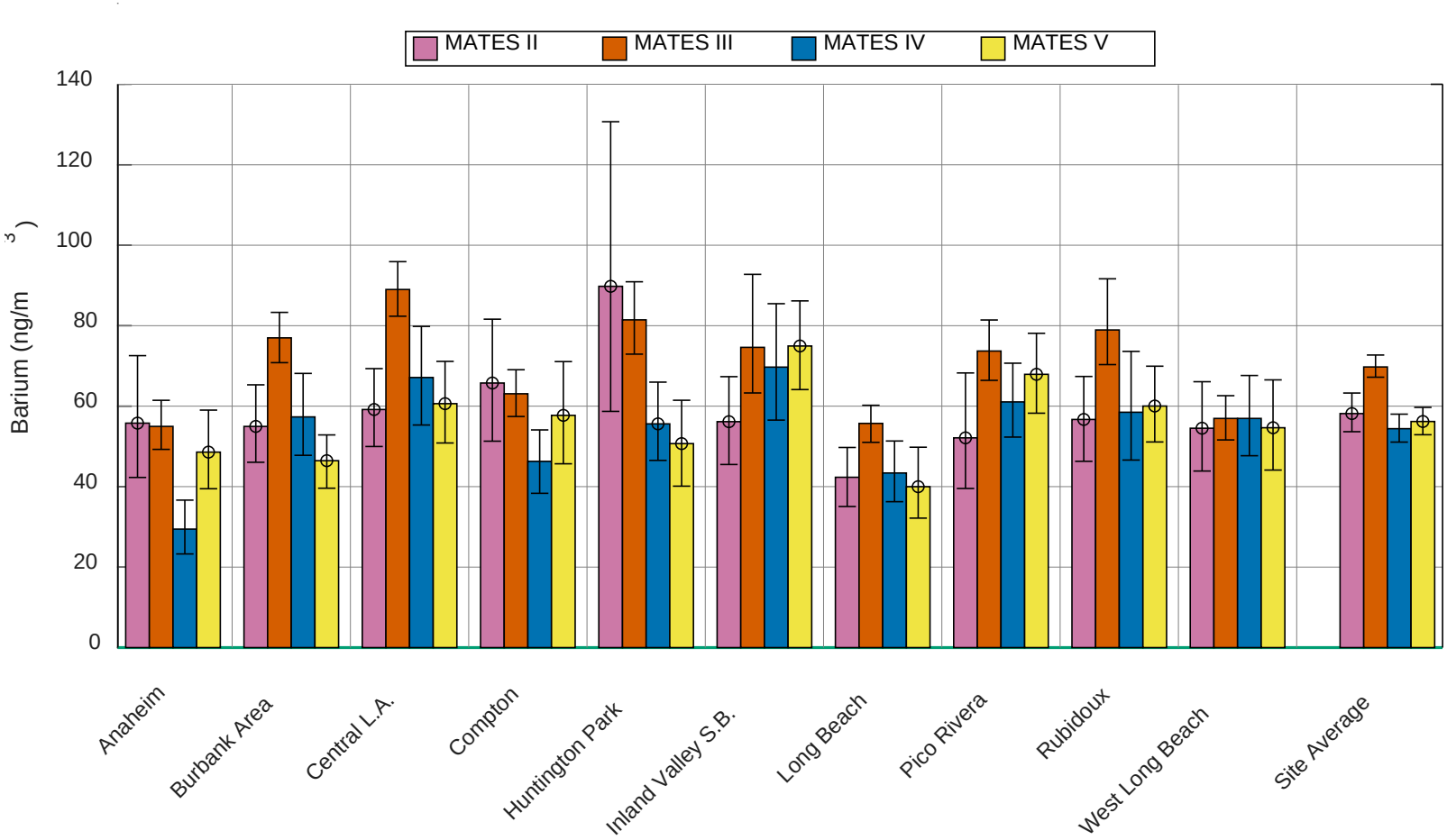


Figure IV-72. Annual Average Concentrations of Barium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

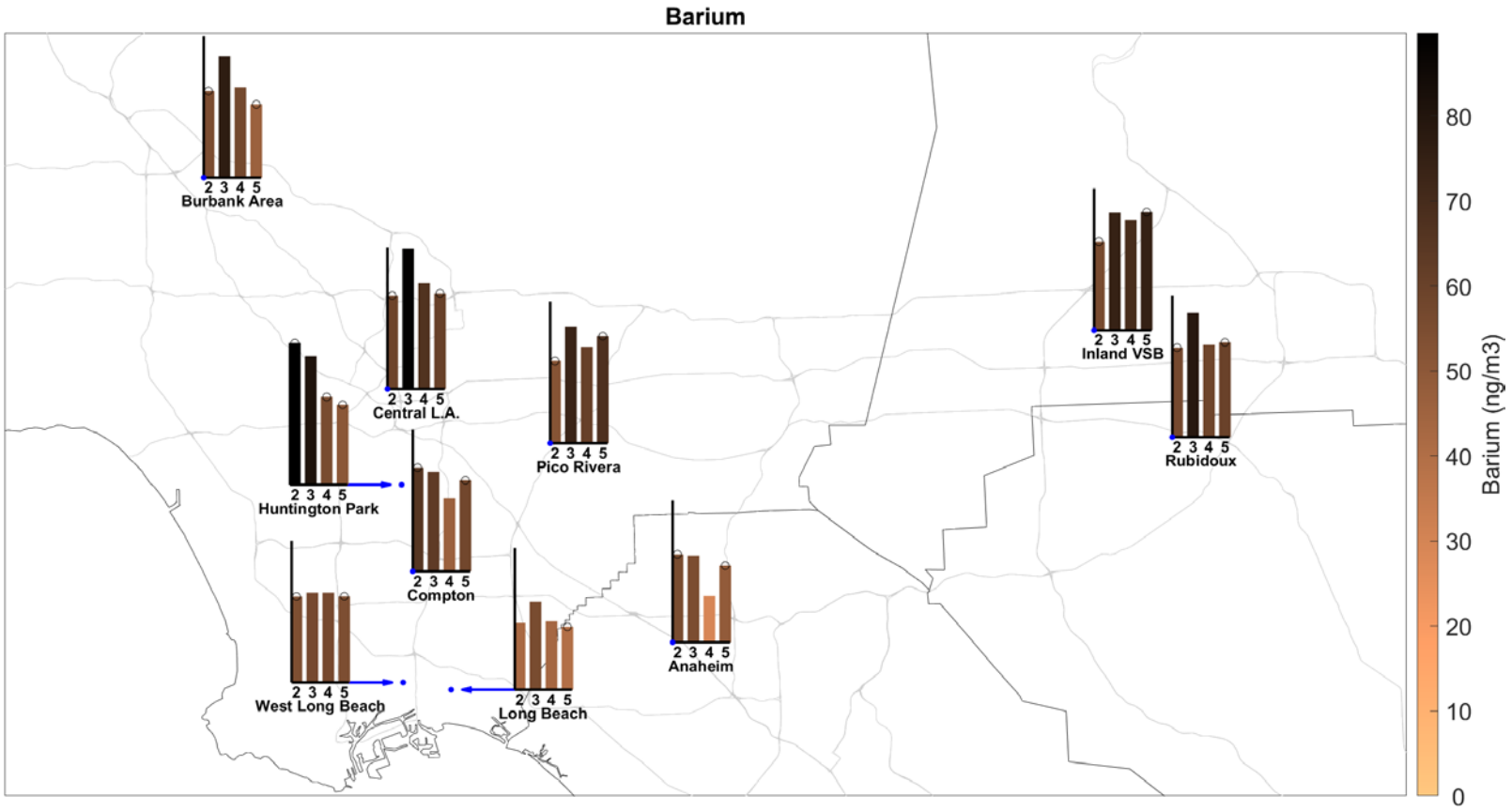


Figure IV-73. Geographic distribution of Barium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Beryllium

Table IV-39. Ambient Concentrations (ng/m^3) of Beryllium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	0.00633, 0.089[a]	0, 0.087[a]	0.00153, 0.0871[a]	0.005, 0.0874[a]	0, 0.087[a]	0, 0.087[a]	0, 0.087[a]	0, 0.087[a]	0.00397, 0.0895[a]	0.00155, 0.0871[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.0922[a]	0.087[a]	0.0872[a]	0.0879[a]	0.087[a]	0.087[a]	0.087[a]	0.087[a]	0.0944[a]	0.0872[a]
N	60[a]	58[a]	59[a]	56[a]	55[a]	59[a]	59[a]	60[a]	58[a]	58[a]
% < MDL	95[a]	100[a]	98.3[a]	94.6[a]	100[a]	100[a]	100[a]	100[a]	98.3[a]	98.3[a]
Max	0.15[a]	< MDL[a]	0.09[a]	0.1[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	0.23[a]	0.09[a]
MATES V										
Average	0.0077, 0.0411[a]	0.00931, 0.0417[a]	0.00705, 0.0431[a]	0.06	0.00328, 0.0407[a]	0.00483, 0.0422[a]	0.0045, 0.0412[a]	0.0483	0.0499	0.0105, 0.0431[a]
95% CI LB	0.00361[a]	0.00431[a]	0.00197[a]	0.0517	0.000656[a]	0.000667[a]	0.001[a]	0.0447	0.046	0.00458[a]
95% CI UB	0.0426[a]	0.044[a]	0.0469[a]	0.0695	0.042[a]	0.0465[a]	0.0428[a]	0.0527	0.0547	0.0478[a]
N	61[a]	58[a]	61[a]	59	61[a]	60[a]	60[a]	60	60	59[a]
% < MDL	83.6[a]	81[a]	90.2[a]	40.7	93.4[a]	93.3[a]	91.7[a]	58.3	46.7	81.4[a]
Max	0.07[a]	0.09[a]	0.13[a]	0.18	0.07[a]	0.15[a]	0.08[a]	0.11	0.14	0.15[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

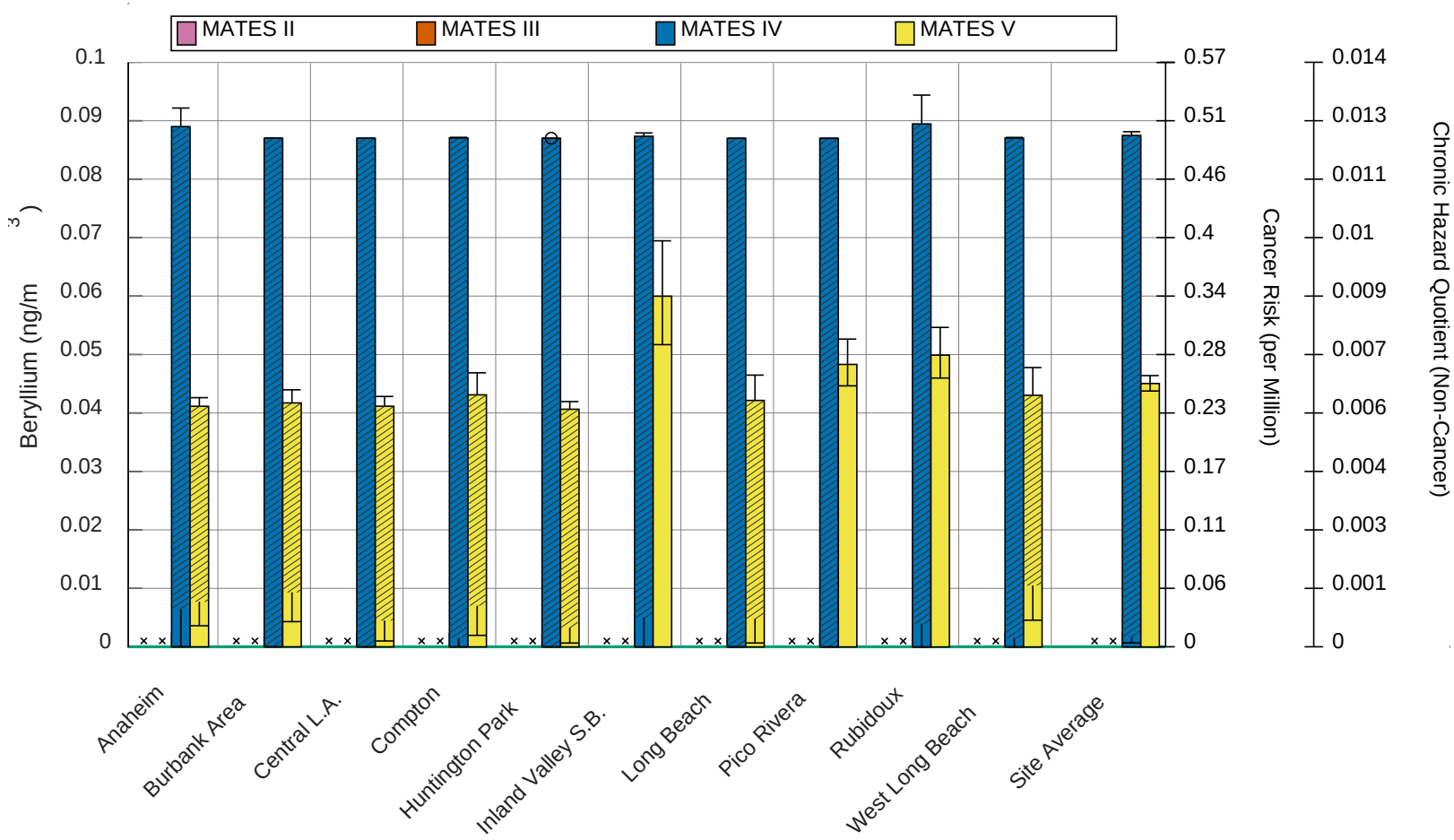


Figure IV-74. Annual Average Concentrations of Beryllium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

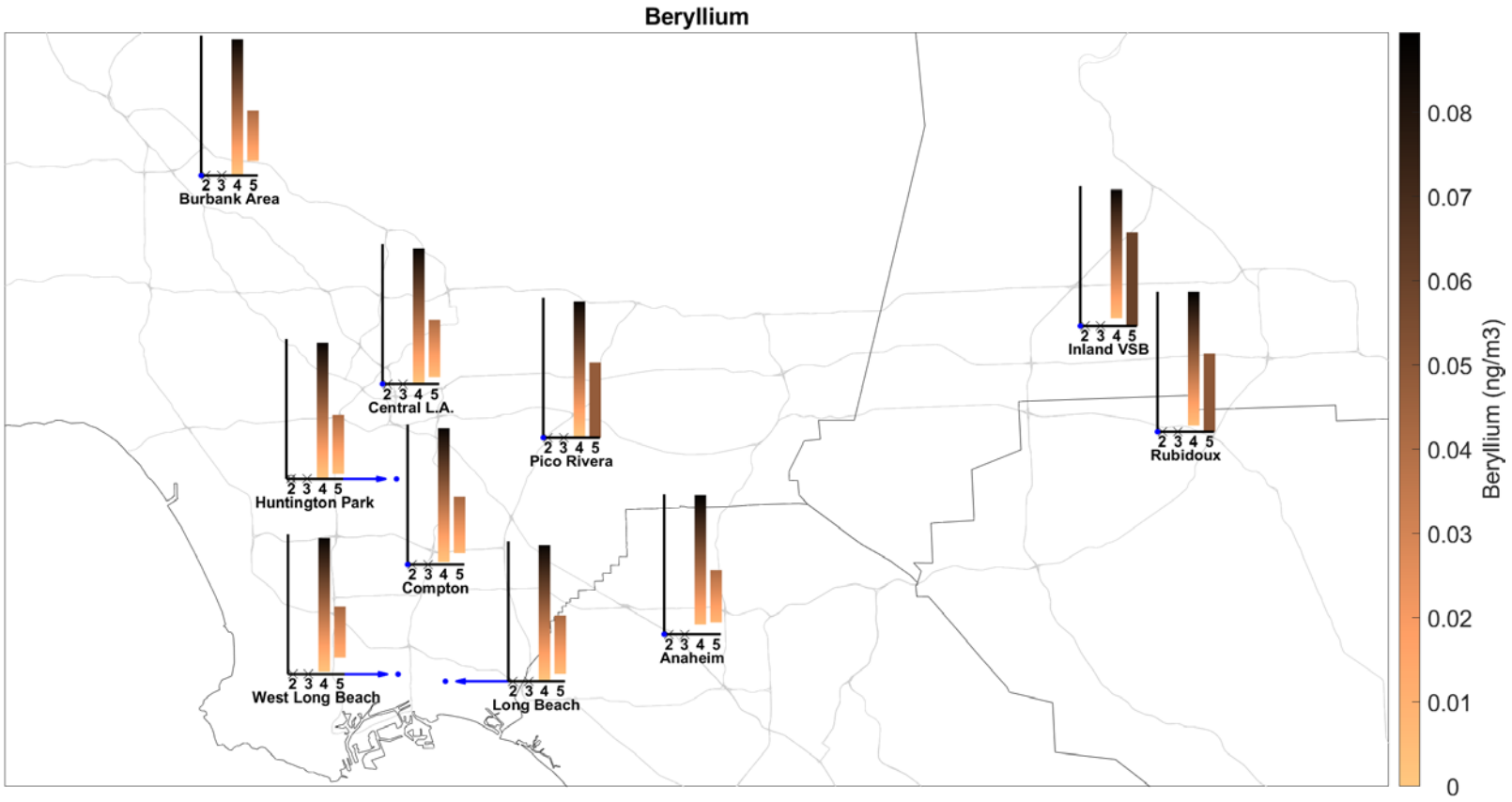


Figure IV-75. Geographic distribution of Beryllium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Bromine

Table IV-40. Ambient Concentrations (ng/m^3) of Bromine from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	11.7	10.4	12.5	10.3	13.8	12	10.7	11.3	13.2	13.3
95% CI LB	9.99	8.98	10.7	8.42	12	10.4	9.31	9.73	11	11.4
95% CI UB	13.6	12	14.4	12.1	15.5	13.7	12.2	12.9	15.3	15.1
N	45	47	39	41	42	56	51	41	41	39
% < MDL	2.2	0	0	4.9	0	0	3.9	2.4	4.9	0
Max	28	30.1	35.1	28.4	29	37.5	22.4	23.9	29.1	28.8
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

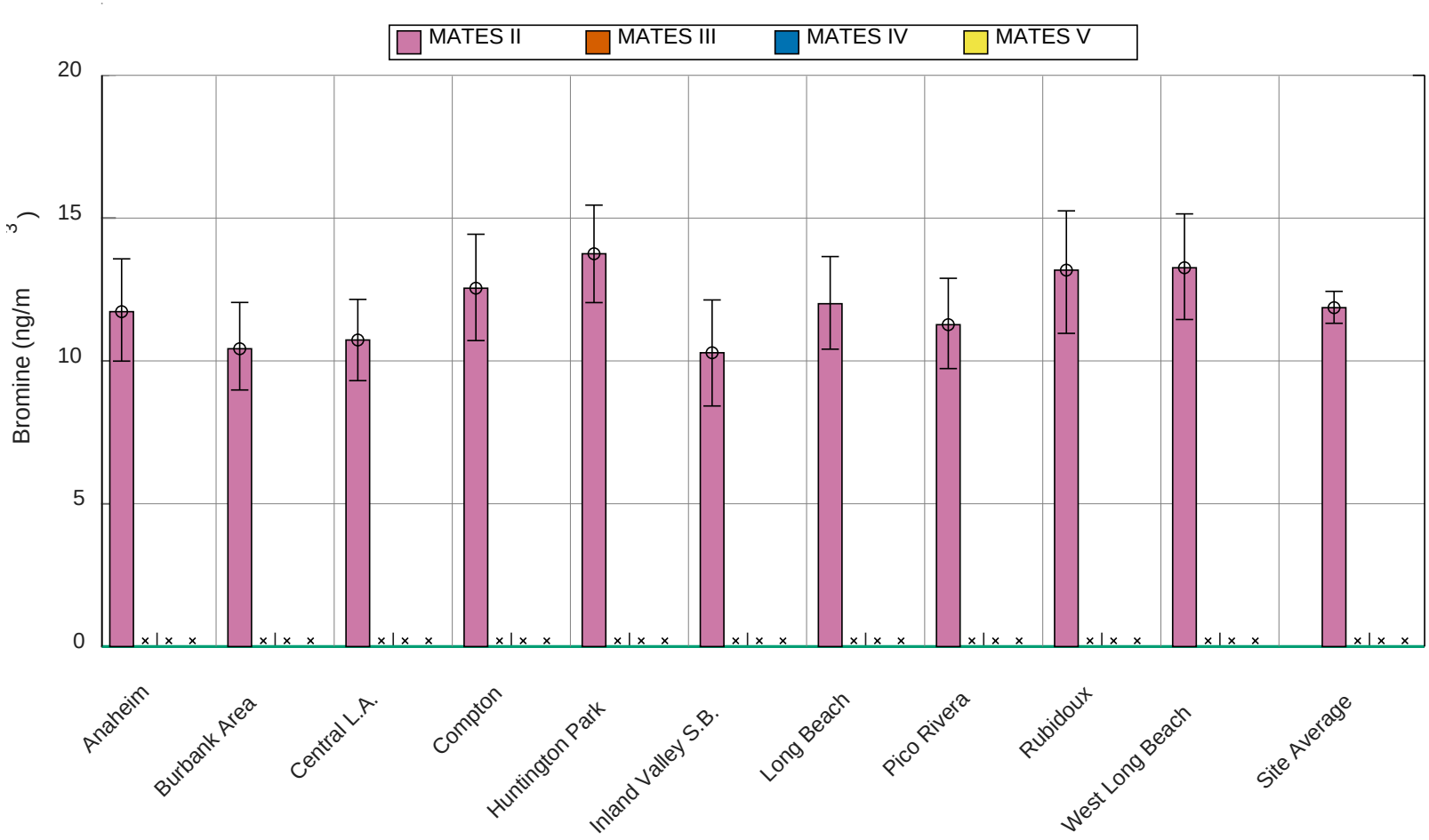


Figure IV-76. Annual Average Concentrations of Bromine in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

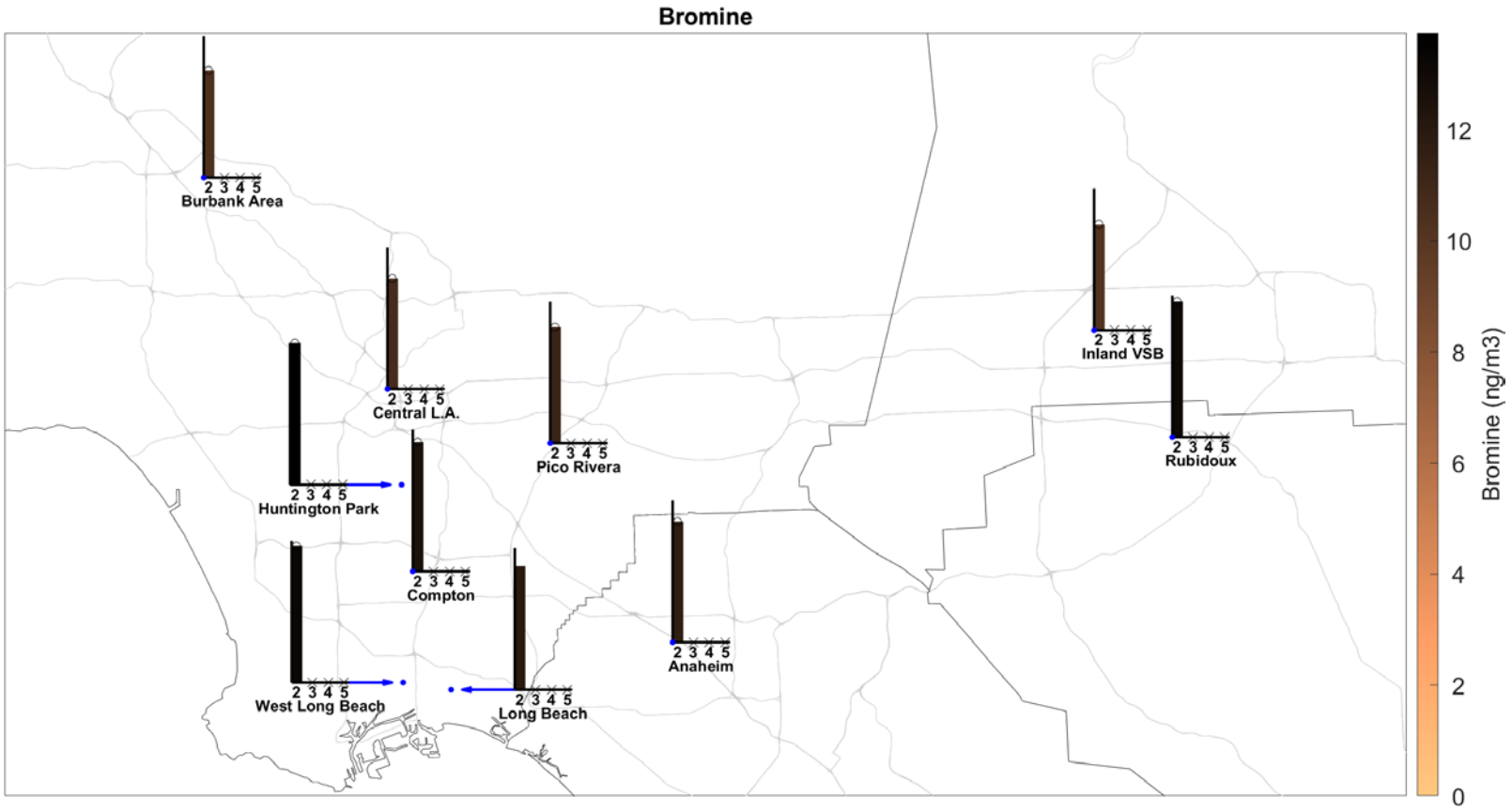


Figure IV-77. Geographic distribution of Bromine from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Cadmium

Table IV-41. Ambient Concentrations (ng/m^3) of Cadmium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 10[a]	9.64, 19.1[a]	0, 10[a]	0, 10[a]	0, 10[a]	0, 10[a]	0, 10[a]	2.01, 11.2[a]	0, 10[a]	0, 10[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	10[a]	37.4[a]	10[a]	10[a]	10[a]	10[a]	10[a]	13.3[a]	10[a]	10[a]
N	25[a]	20[a]	18[a]	21[a]	22[a]	26[a]	23[a]	26[a]	21[a]	19[a]
% < MDL	100[a]	95[a]	100[a]	100[a]	100[a]	100[a]	100[a]	92.3[a]	100[a]	100[a]
Max	< MDL[a]	193[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	31.7[a]	< MDL[a]	< MDL[a]
MATES III										
Average	0.595, 2.21[a]	0.821, 2.46[a]	0.555, 2.16[a]	2.27	2.24	0.531, 2.18[a]	0.542, 2.18[a]	0.614, 2.22[a]	2.11	2.22
95% CI LB	0.437[a]	0.49[a]	0.409[a]	2.15	2.15	0.384[a]	0.391[a]	0.387[a]	2.08	2.15
95% CI UB	2.28[a]	2.84[a]	2.22[a]	2.47	2.36	2.25[a]	2.25[a]	2.34[a]	2.15	2.3
N	232[a]	218[a]	228[a]	224	116	230[a]	229[a]	118[a]	237	227
% < MDL	80.6[a]	82.1[a]	80.3[a]	76.8	74.1	82.6[a]	82.1[a]	80.5[a]	78.9	77.5
Max	6.58[a]	28.1[a]	4.6[a]	17.5	5.71	5.45[a]	5.34[a]	6.53[a]	3.83	6.94
MATES IV										
Average	0.0876	0.134	0.168	0.283	0.181	0.227	0.26	0.124	0.131	0.127
95% CI LB	0.0817	0.109	0.13	0.232	0.144	0.14	0.134	0.106	0.108	0.107
95% CI UB	0.0947	0.164	0.211	0.346	0.222	0.36	0.491	0.148	0.164	0.152
N	60	58	59	56	55	59	59	60	58	58
% < MDL	80	41.4	40.7	7.1	27.3	35.6	30.5	35	39.7	44.8
Max	0.2	0.65	0.7	1.45	0.76	3.19	6.5	0.59	0.84	0.42
MATES V										
Average	0.244	0.69	0.249	0.311	0.449	0.088	0.15	0.144	0.588	0.771
95% CI LB	0.193	0.136	0.166	0.239	0.234	0.0646	0.107	0.1	0.251	0.531
95% CI UB	0.306	1.76	0.359	0.394	0.751	0.129	0.219	0.214	1.04	1.05
N	61	58	61	59	61	60	60	60	60	59
% < MDL	0	0	0	0	3.3	0	1.7	0	0	0
Max	1.42	30	2.62	1.72	7.13	1.01	1.85	1.77	9.18	4.43

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

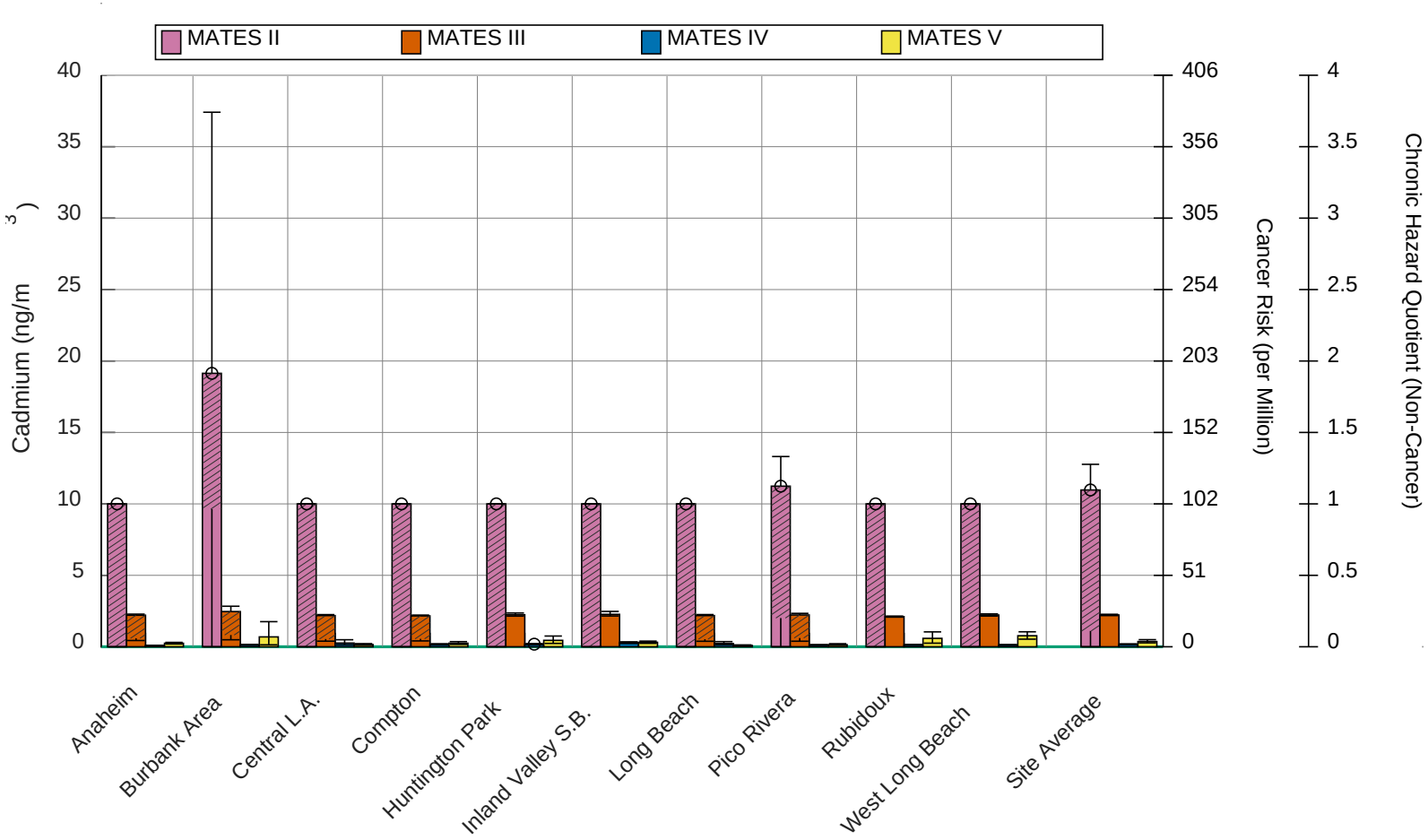


Figure IV-78. Annual Average Concentrations of Cadmium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

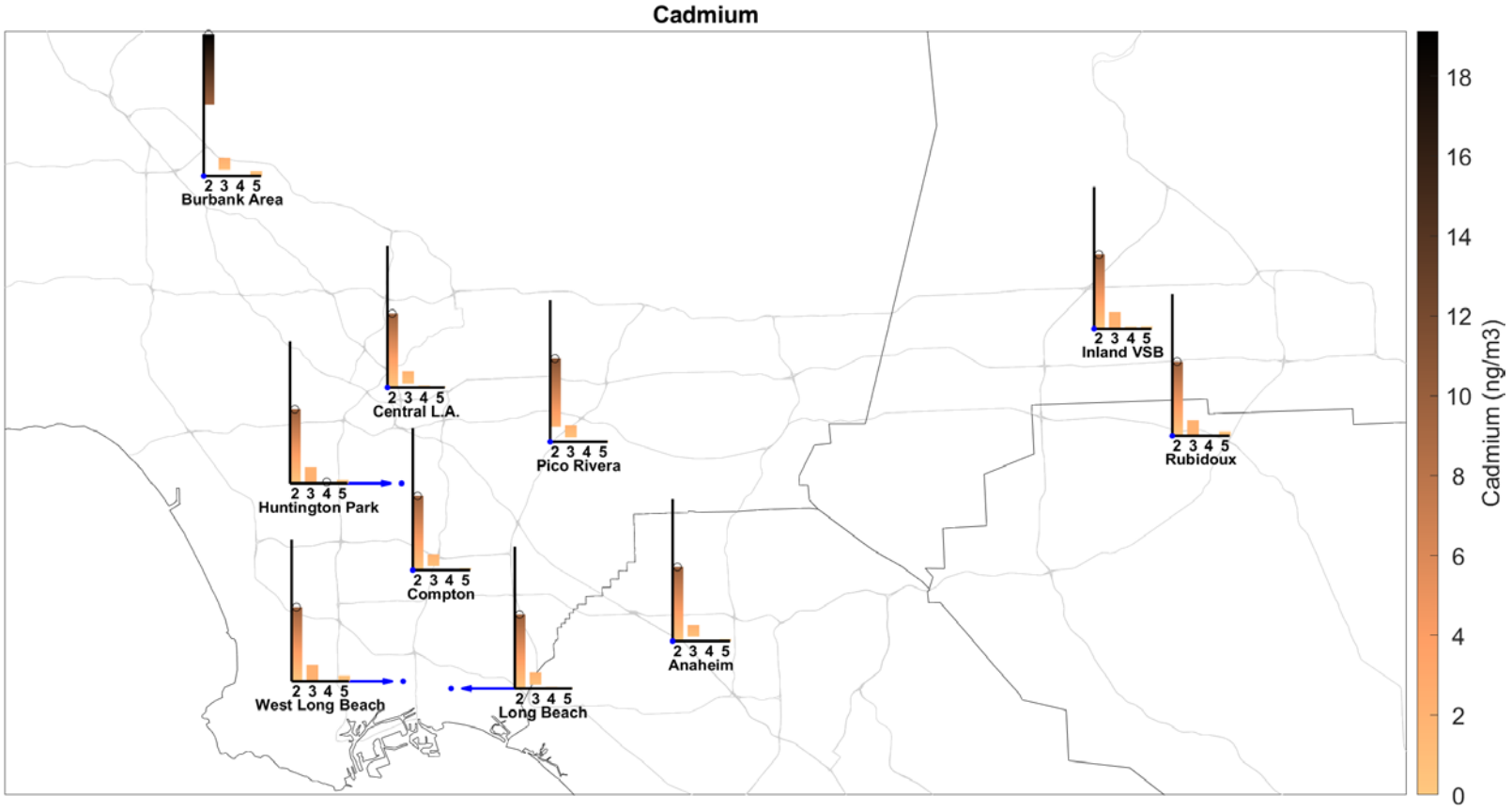


Figure IV-79. Geographic distribution of Cadmium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Calcium

Table IV-42. Ambient Concentrations (ng/m^3) of Calcium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1670	1530	1670	3330	1780	1160	1400	1640	5130	1570
95% CI LB	1390	1250	1250	2550	1470	937	1190	1340	3870	1300
95% CI UB	1960	1840	2170	4230	2110	1430	1640	1970	6480	1840
N	45	47	39	41	42	56	51	41	41	39
% < MDL	0	2.1	0	0	0	0	0	2.4	4.9	0
Max	3840	5920	9710	14600	4750	6070	4320	4930	16100	3810
MATES III										
Average	1200	1360	1280	2710	1690	1170	1460	1440	5360	1800
95% CI LB	1100	1260	1190	2500	1490	1080	1380	1310	4900	1660
95% CI UB	1320	1470	1370	2920	1910	1250	1550	1560	5840	1950
N	232	218	228	224	116	230	229	118	237	227
% < MDL	0	0	0	0.4	0	0	0	0	0	0
Max	5750	5920	3720	9080	10300	4630	3330	3660	20600	7020
MATES IV										
Average	640	903	987	2330	1020	879	1130	1150	2320	1300
95% CI LB	507	767	840	1810	869	725	935	974	1850	1070
95% CI UB	799	1050	1150	2950	1190	1050	1360	1350	2890	1570
N	60	58	59	56	55	59	59	60	58	58
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	3540	2880	3090	11200	3420	3340	4610	3800	9220	4640
MATES V										
Average	962	1160	1010	2300	1020	795	1210	1680	1960	1110
95% CI LB	821	974	851	1890	861	669	1020	1400	1630	925
95% CI UB	1110	1350	1160	2780	1200	930	1430	1980	2290	1300
N	41	39	40	42	41	38	37	39	39	38
% < MDL	7.3	5.1	7.5	4.8	14.6	7.9	5.4	5.1	7.7	5.3
Max	2430	2530	2500	7320	2490	1860	3540	4280	4320	2660

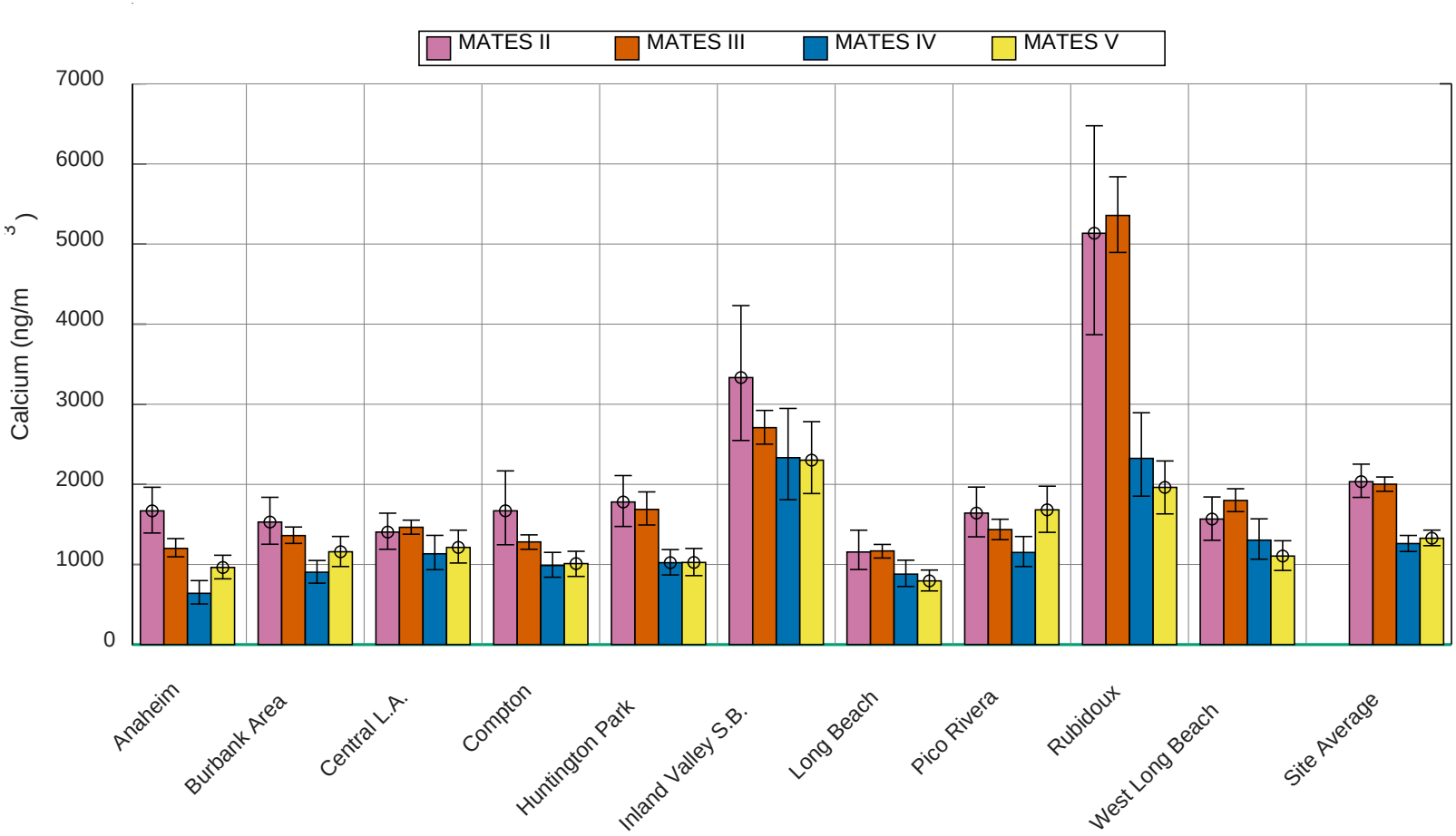


Figure IV-80. Annual Average Concentrations of Calcium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

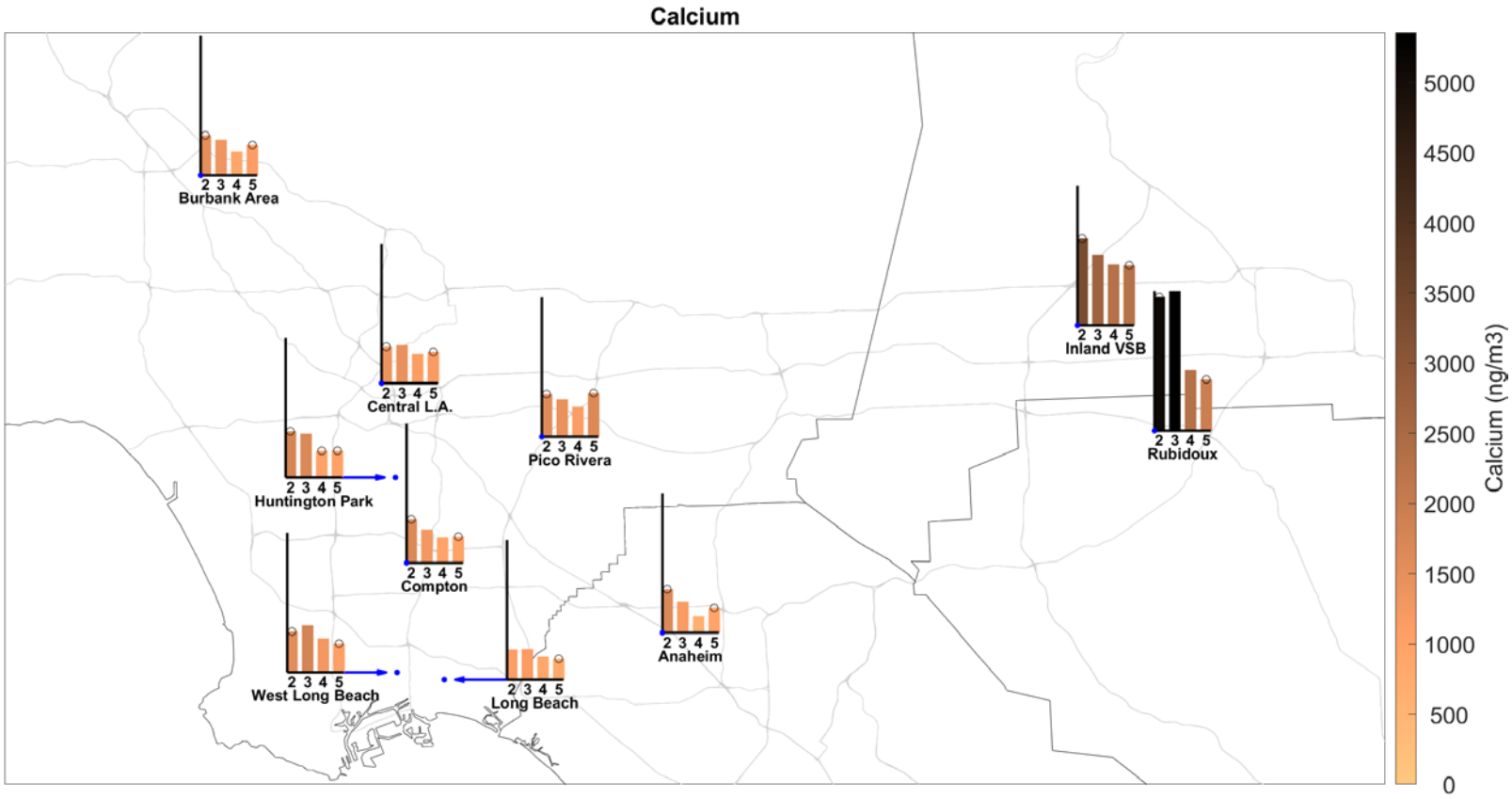


Figure IV-81. Geographic distribution of Calcium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Cesium

Table IV-43. Ambient Concentrations (ng/m^3) of Cesium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	0, 0.291[a]	0, 0.291[a]	0, 0.291[a]	0.0328, 0.301[a]	0, 0.291[a]	0, 0.291[a]	0, 0.291[a]	0, 0.291[a]	0.0259, 0.302[a]	0, 0.291[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	0.291[a]	0.291[a]	0.291[a]	0.319[a]	0.291[a]	0.291[a]	0.291[a]	0.291[a]	0.321[a]	0.291[a]
N	41[a]	39[a]	40[a]	39[a]	40[a]	41[a]	40[a]	42[a]	39[a]	41[a]
% < MDL	100[a]	100[a]	100[a]	92.3[a]	100[a]	100[a]	100[a]	100[a]	94.9[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	0.63[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	0.67[a]	< MDL[a]
MATES V										
Average	0.0757	0.0773	0.0644	0.148	0.0551	0.0581	0.0604	0.109	0.162	0.0746
95% CI LB	0.0624	0.0648	0.0522	0.122	0.0439	0.0467	0.0522	0.0919	0.139	0.0582
95% CI UB	0.0907	0.0905	0.0788	0.179	0.0671	0.0742	0.0699	0.126	0.188	0.0954
N	58	55	59	56	59	58	56	58	56	57
% < MDL	1.7	3.6	3.4	3.6	20.3	5.2	5.4	5.2	0	3.5
Max	0.28	0.27	0.3	0.6	0.2	0.38	0.19	0.33	0.53	0.5

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

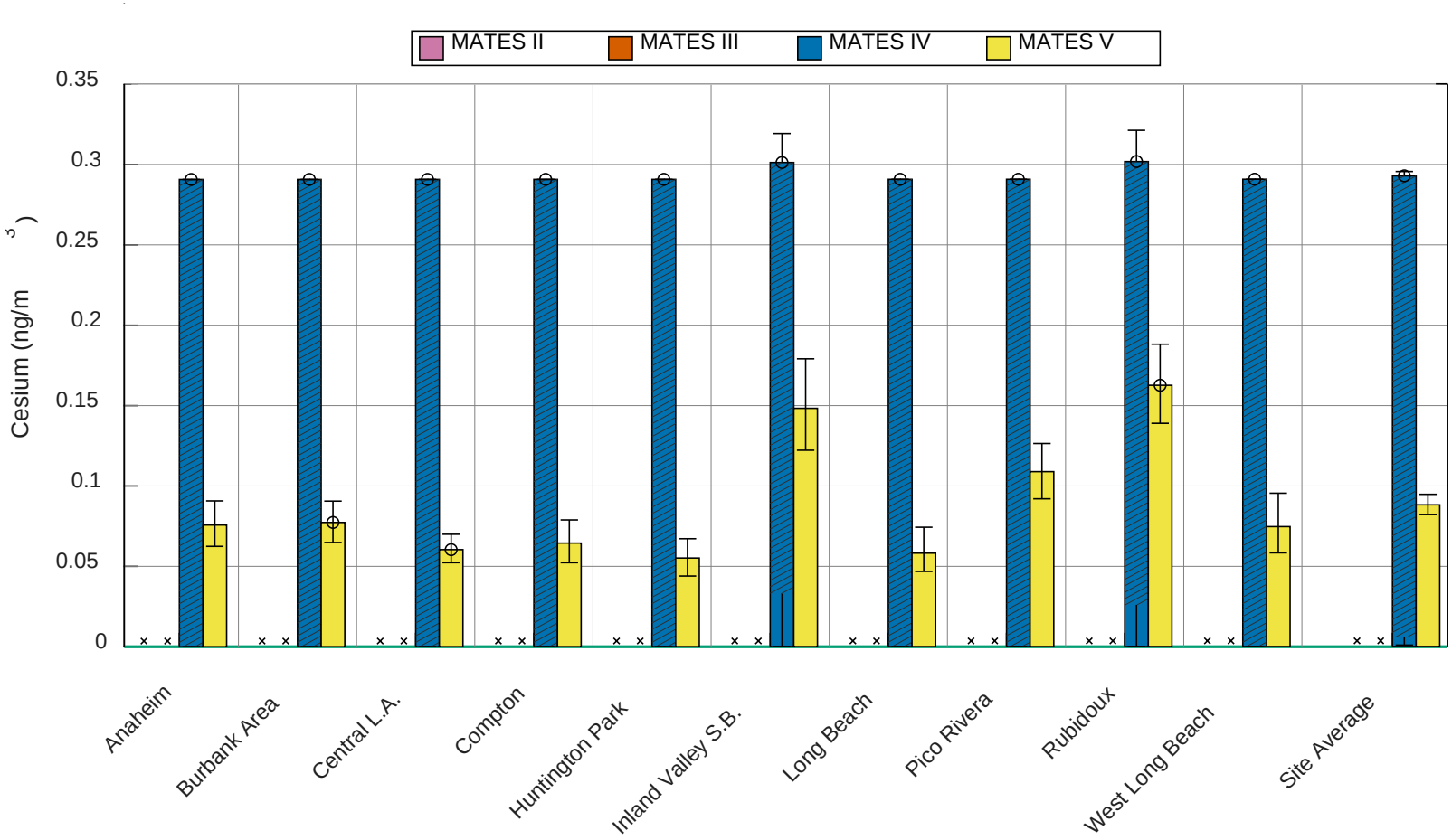


Figure IV-82. Annual Average Concentrations of Cesium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

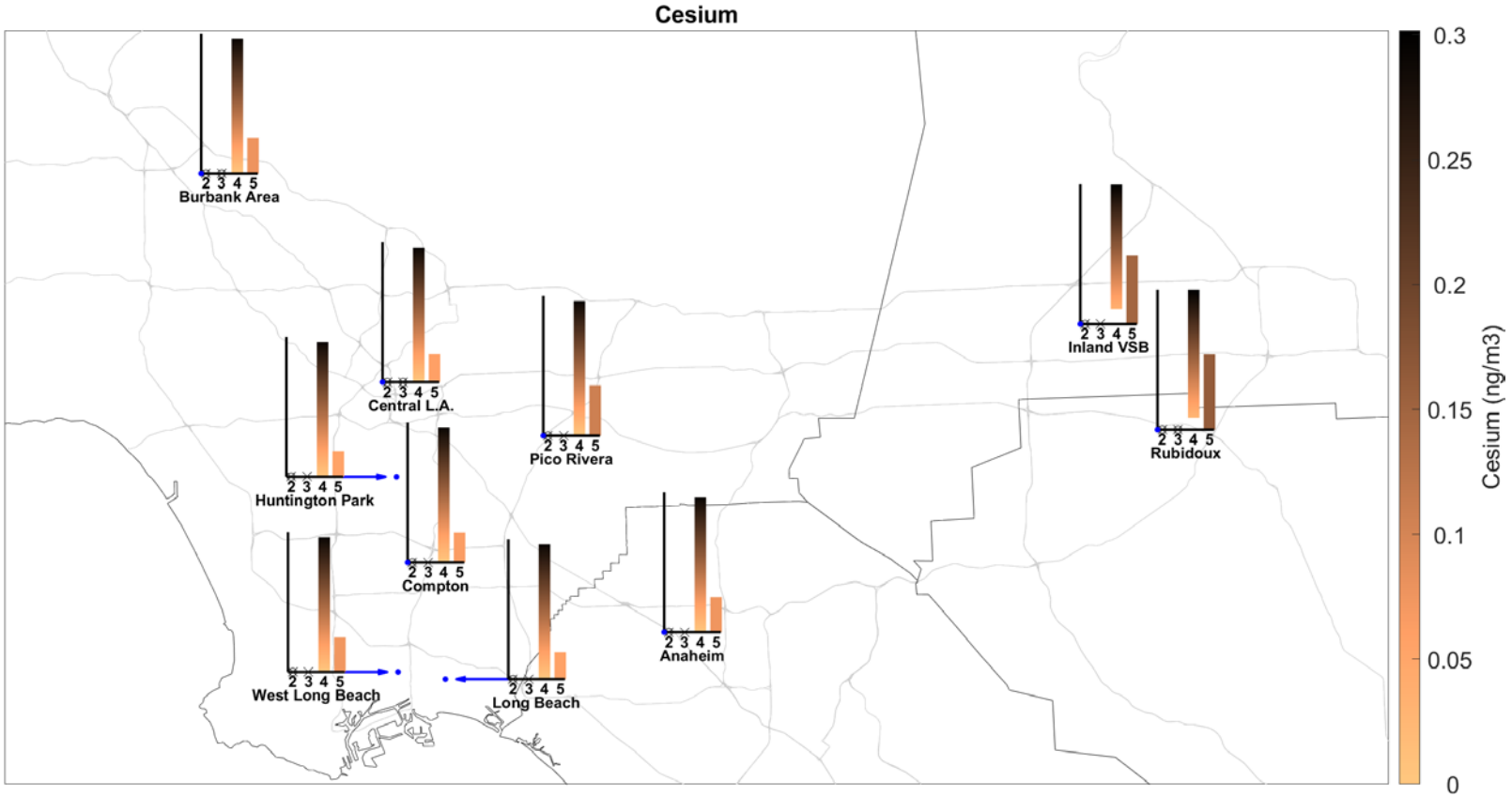


Figure IV-83. Geographic distribution of Cesium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Chlorine

Table IV-44. Ambient Concentrations (ng/m^3) of Chlorine from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1340	1160	1810	1260	1910	1920	1350	1320	1200	1980
95% CI LB	962	883	1420	873	1500	1550	1010	923	813	1600
95% CI UB	1840	1460	2240	1730	2390	2340	1790	1810	1680	2360
N	45	47	39	41	42	56	51	41	41	39
% < MDL	0	0	0	0	0	0	2	2.4	2.4	0
Max	9700	5180	7040	7950	7730	8320	7920	8760	7890	5140
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

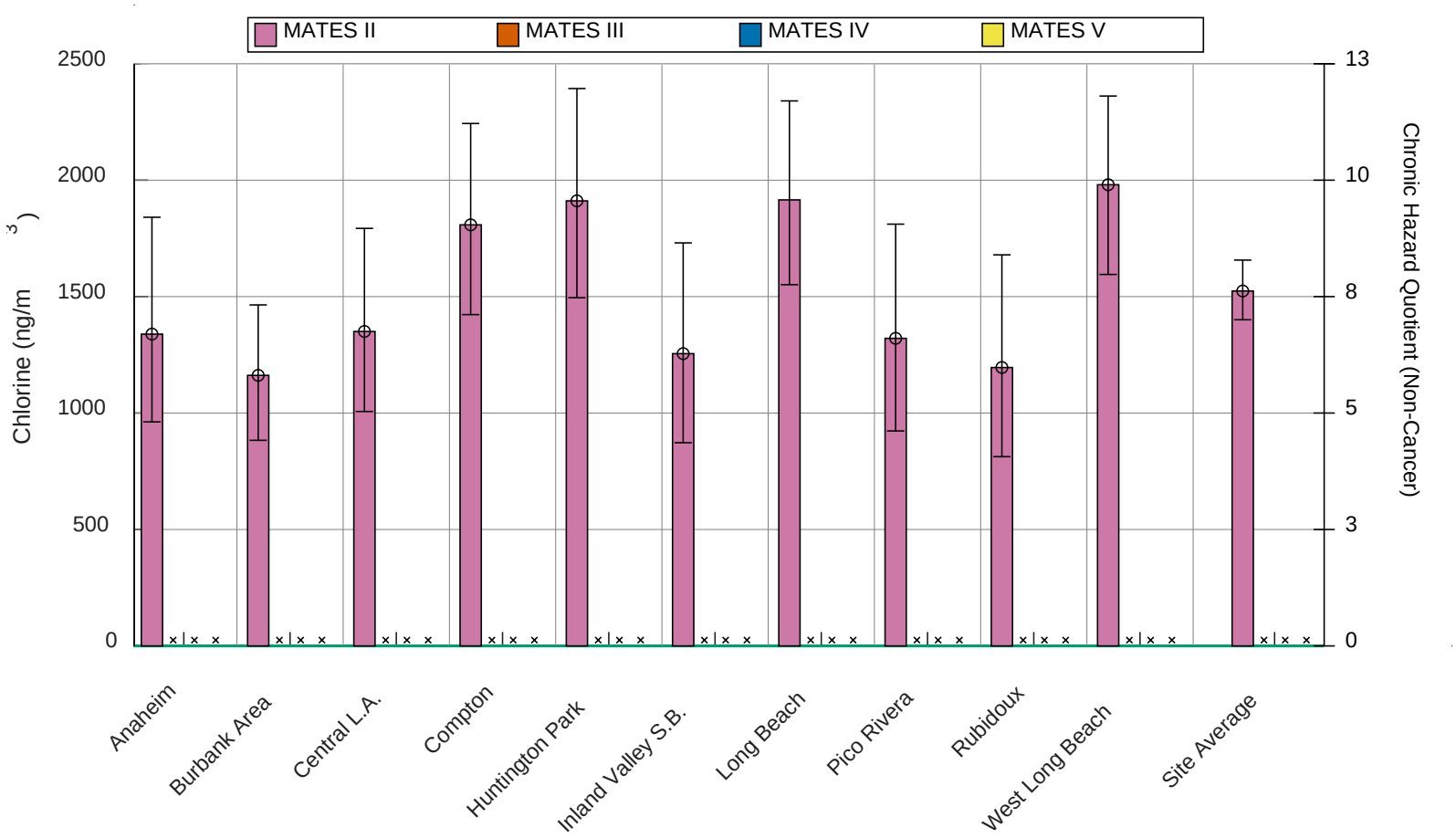


Figure IV-84. Annual Average Concentrations of Chlorine in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

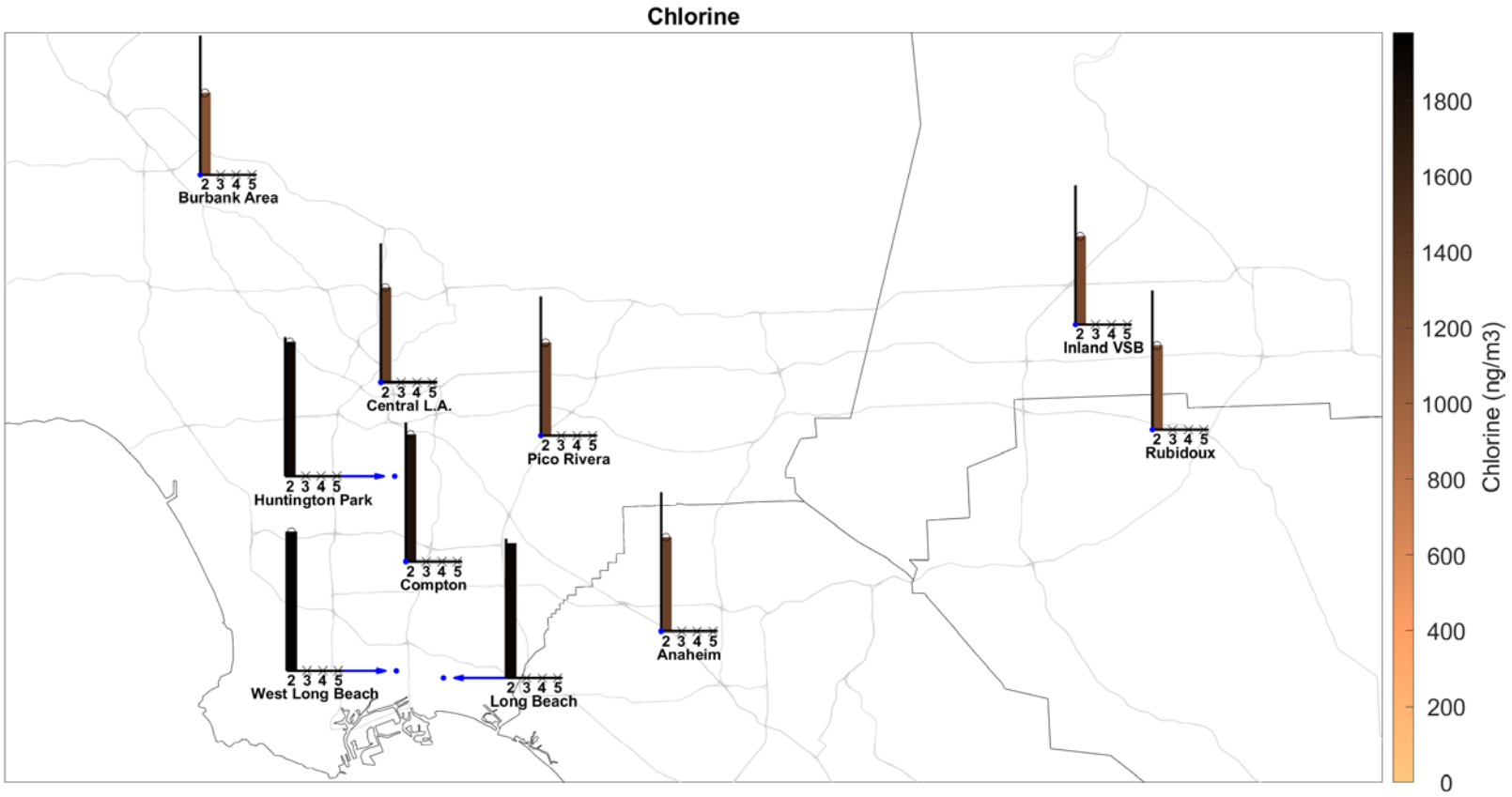


Figure IV-85. Geographic distribution of Chlorine from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Chromium

Table IV-45. Ambient Concentrations (ng/m^3) of Chromium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	3.62	4.64	6.07	7.38	9.17	3.54	4.35	6.05	4.67	4.63
95% CI LB	2.87	3.8	4.37	5.76	6.56	2.88	3.47	4.66	3.69	3.46
95% CI UB	4.47	5.57	8.03	9.1	12.2	4.31	5.35	7.56	5.71	6.03
N	45	47	39	41	42	56	51	41	41	39
% < MDL	57.8	38.3	43.6	36.6	38.1	51.8	49	41.5	46.3	46.2
Max	14	14	27	20	38	15	20	19	13	20
MATES III										
Average	2.8	3.98	4.62	7	9.45	4.28	4.51	4.61	4.74	4.33
95% CI LB	2.57	3.64	4.14	6.36	6.98	3.77	4.2	4.07	4.42	3.83
95% CI UB	3.06	4.31	5.13	7.65	12.3	4.88	4.83	5.21	5.07	4.88
N	232	218	228	224	116	230	229	118	237	227
% < MDL	68.1	36.7	36.8	21	19	51.3	23.6	27.1	22.8	48
Max	15	20.3	22.5	21.9	83.3	34.1	18	20.1	15	24.5
MATES IV										
Average	1.97	3.15	3.66	5.54	5.28	3.74	3.76	3.53	4.21	3.37
95% CI LB	1.77	2.75	3.04	4.71	3.64	2.68	3.37	3.16	3.36	2.94
95% CI UB	2.21	3.56	4.29	6.46	7.49	5.48	4.14	3.93	5.4	3.84
N	60	58	59	56	55	59	59	60	58	58
% < MDL	20	3.4	0	1.8	0	6.8	5.1	0	5.2	3.4
Max	4.6	7.94	13.1	19.9	49.5	47.7	6.92	8.17	31.5	8.83
MATES V										
Average	2.31	2.69	3.32	5.83	3.14	2.95	3.03	4.19	3.6	3.63
95% CI LB	1.99	2.36	2.72	4.93	2.49	2.34	2.68	3.66	3.12	2.97
95% CI UB	2.66	3.03	4.01	6.83	3.92	3.66	3.41	4.71	4.12	4.38
N	61	58	61	59	61	60	60	60	60	59
% < MDL	1.6	5.2	0	1.7	9.8	8.3	3.3	3.3	0	3.4
Max	8.49	5.66	13.7	17.3	17.5	12.9	7.6	9.66	8.61	14.5

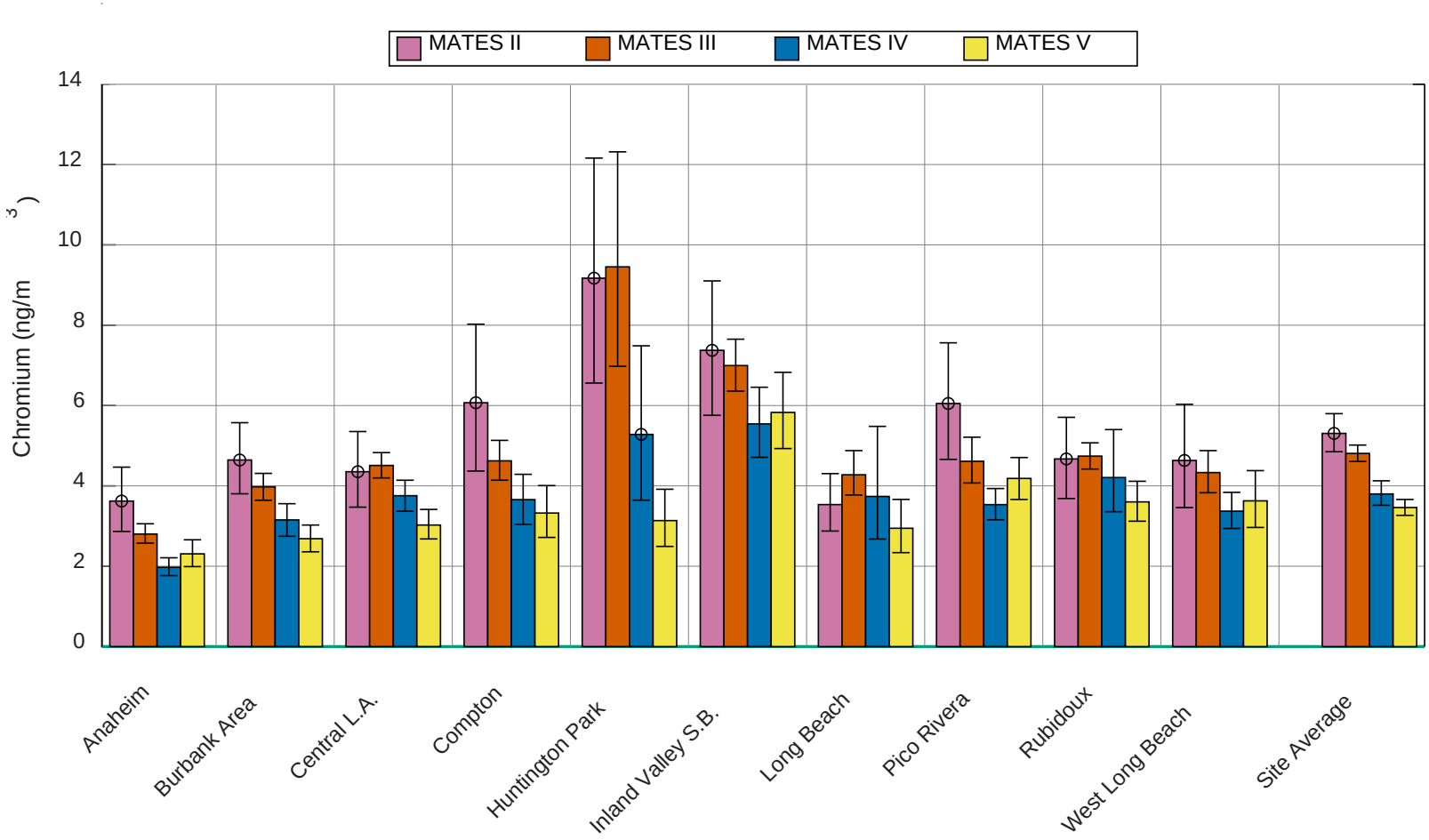


Figure IV-86. Annual Average Concentrations of Chromium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

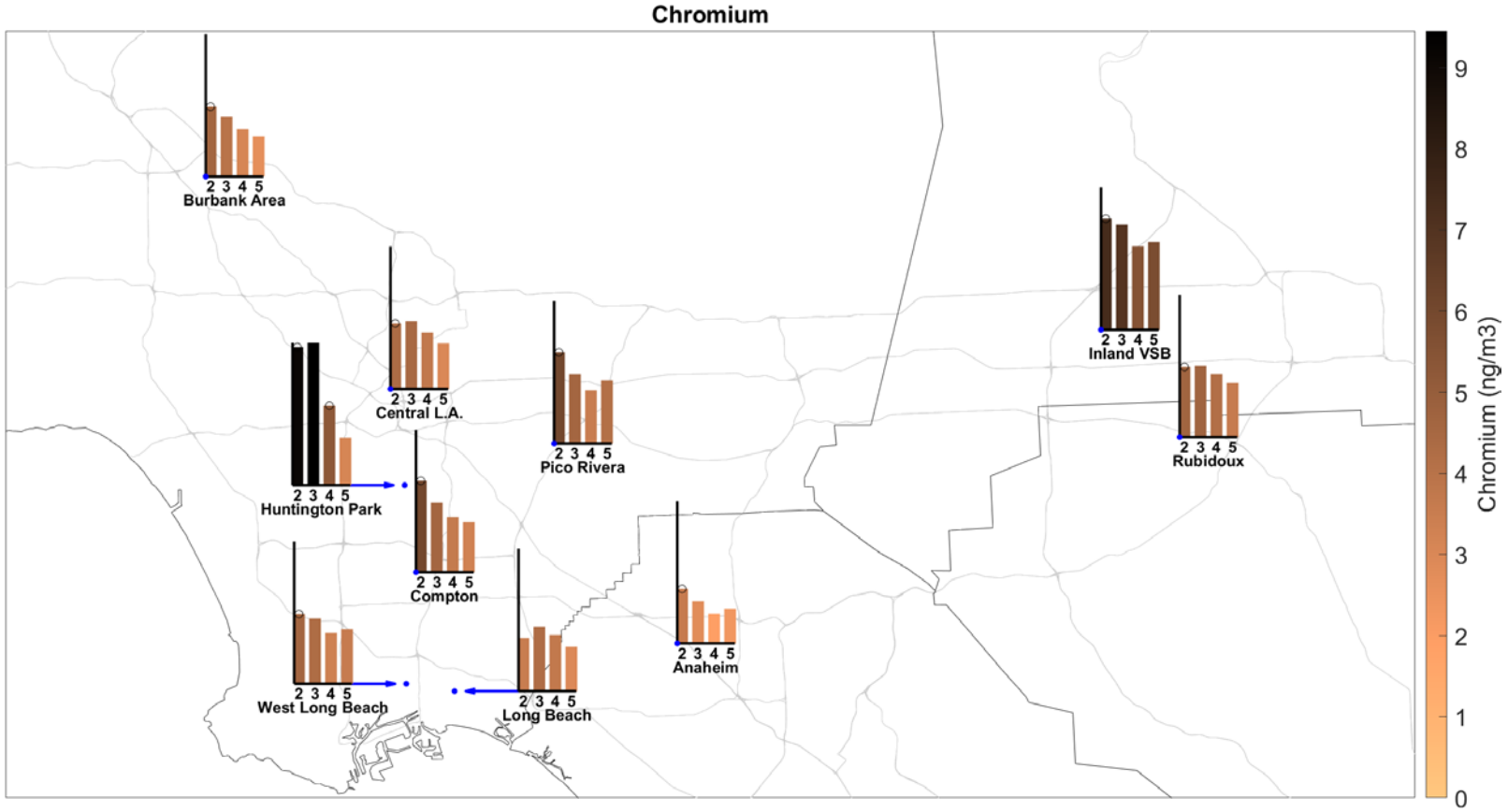


Figure IV-87. Geographic distribution of Chromium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Cobalt

Table IV-46. Ambient Concentrations (ng/m^3) of Cobalt from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 26.6[a]	0, 24.1[a]	0, 24.8[a]	0, 25.7[a]	0, 26[a]	0, 24.8[a]	0, 24.6[a]	0, 28[a]	0, 25.7[a]	0, 25.3[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	29.1[a]	26.9[a]	27.7[a]	28.5[a]	28.7[a]	27.2[a]	27.2[a]	30.8[a]	28.5[a]	28.2[a]
N	45[a]	47[a]	39[a]	41[a]	42[a]	56[a]	51[a]	41[a]	41[a]	39[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES III										
Average	2.71	3.63	3.38	6.06	4.81	2.85	3.98	4.13	5.78	3.64
95% CI LB	2.46	3.35	3.11	5.55	4.32	2.62	3.72	3.7	5.38	3.27
95% CI UB	2.97	3.92	3.67	6.58	5.32	3.11	4.25	4.6	6.18	4.04
N	232	218	228	224	116	230	229	118	237	227
% < MDL	26.7	8.7	14.9	8.5	4.3	21.3	8.3	5.9	7.2	15
Max	10.7	11	12.7	18.5	14.5	9.6	11.4	17	15.4	16.7
MATES IV										
Average	0.217	0.482	0.414	0.792	0.458	0.367	0.426	0.461	0.646	0.562
95% CI LB	0.187	0.401	0.356	0.682	0.382	0.312	0.375	0.403	0.526	0.442
95% CI UB	0.252	0.572	0.477	0.904	0.543	0.425	0.478	0.522	0.791	0.716
N	60	58	59	56	55	59	59	60	58	58
% < MDL	35	10.3	8.5	0	0	10.2	8.5	8.3	5.2	8.6
Max	0.66	1.92	1.04	1.96	1.74	0.98	1	1.26	3.57	3.7
MATES V										
Average	0.329	0.454	0.452	0.804	0.366	0.751	0.4	0.674	0.594	0.636
95% CI LB	0.284	0.388	0.383	0.666	0.304	0.523	0.349	0.576	0.514	0.504
95% CI UB	0.38	0.519	0.527	0.96	0.431	1.01	0.455	0.784	0.675	0.79
N	60	58	60	58	60	59	59	59	60	58
% < MDL	1.7	1.7	1.7	1.7	10	1.7	3.4	1.7	1.7	0
Max	1.04	1.01	1.52	3.47	1.02	4.48	1.27	2.54	1.54	2.73

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

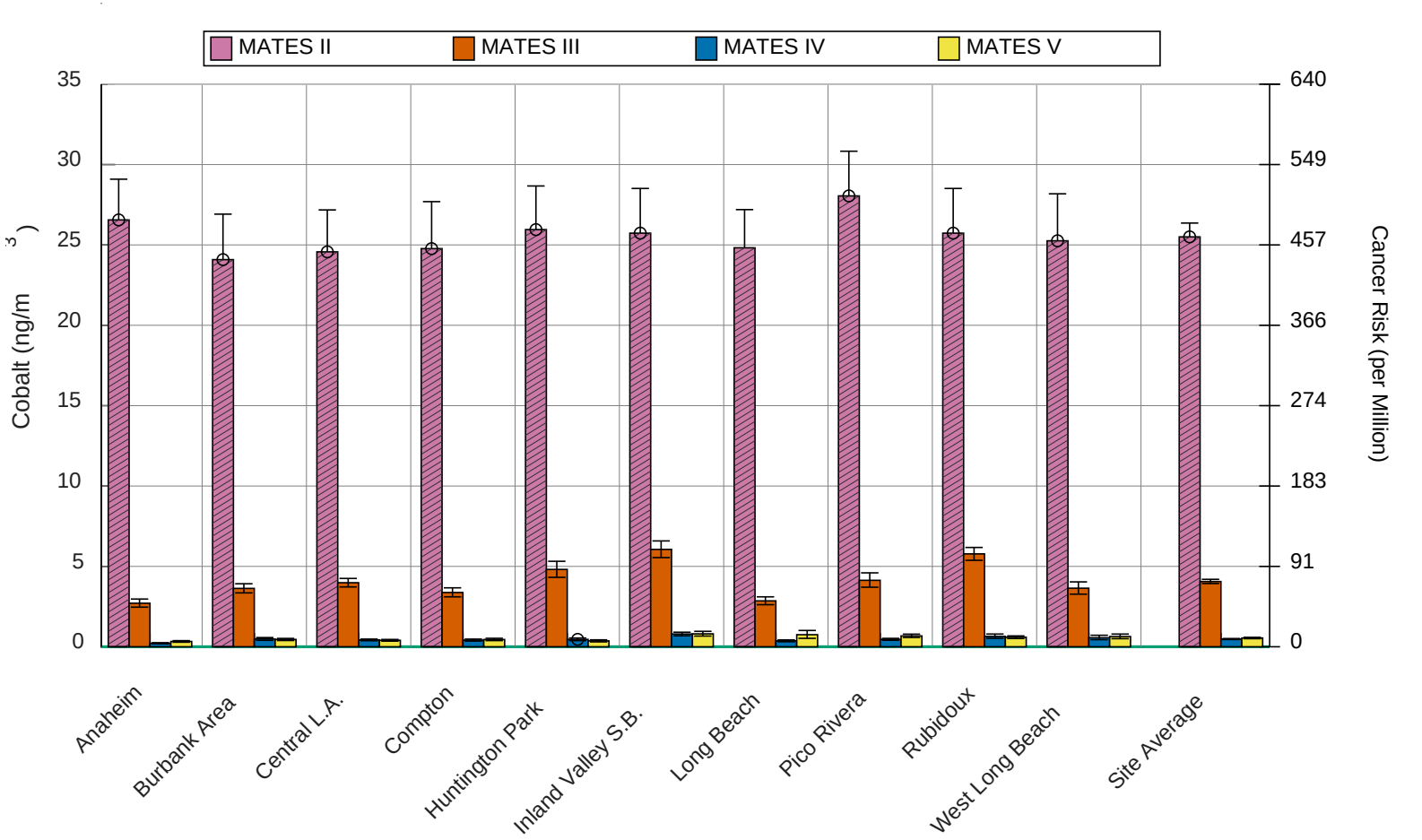


Figure IV-88. Annual Average Concentrations of Cobalt in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

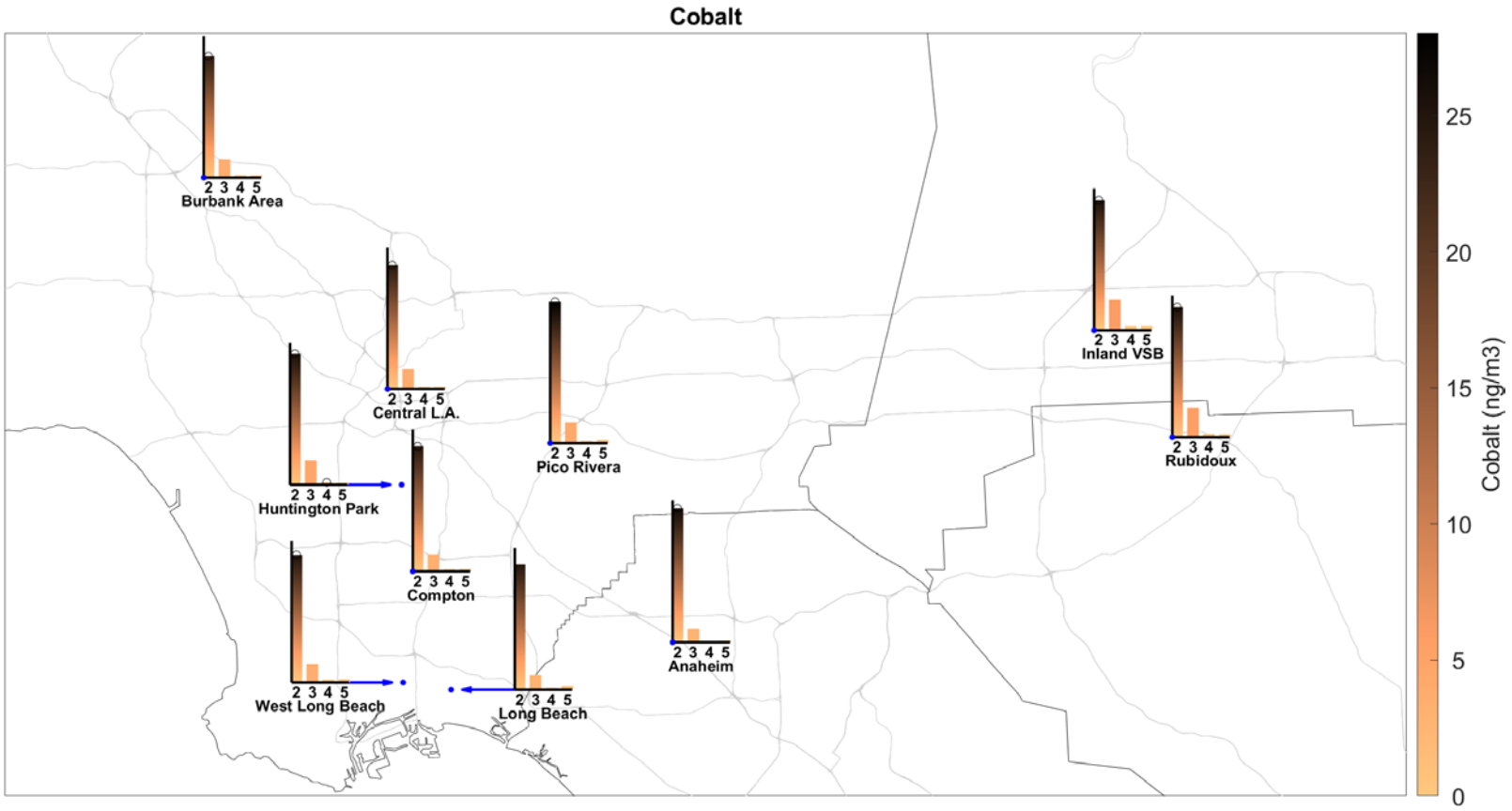


Figure IV-89. Geographic distribution of Cobalt from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Copper

Table IV-47. Ambient Concentrations (ng/m^3) of Copper from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	25.4	52.3	18.9	77.3	72.2	25.4	38.7	36.6	25.8	17.4
95% CI LB	20.8	42.6	15.1	67.6	60.7	22.3	33.9	30.5	21.3	13.7
95% CI UB	30.6	62.9	22.9	87.3	84.2	28.9	43.8	43.2	30.4	21.1
N	45	47	39	41	42	56	51	41	41	39
% < MDL	2.2	0	2.6	0	0	0	3.9	0	2.4	7.7
Max	72	173	72	171	162	77	89	114	71	53
MATES III										
Average	33.1	45.8	37.3	56.6	167	23.8	57.5	34.8	37.8	35.3
95% CI LB	30.2	42.4	33.6	50.1	150	21.7	53.3	31.4	33.3	32.6
95% CI UB	36.4	49.3	42	66.6	185	25.9	61.6	38.3	44.8	38.1
N	232	218	228	224	116	230	229	118	237	227
% < MDL	0	0	0.4	0.4	0	0	0	0	0	0
Max	265	199	417	959	496	79.9	198	101	697	110
MATES IV										
Average	17.3	38	29.6	42.5	49.7	32	42.2	46.9	33.4	31.6
95% CI LB	13.6	31.7	24.7	35.5	40.1	21.4	34.1	38.6	27.1	24
95% CI UB	21.5	45.1	34.8	50.3	60.8	49	50.9	55.6	40.8	42
N	60	58	59	56	55	59	59	60	58	58
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	74.1	127	87.4	147	261	459	160	140	162	251
MATES V										
Average	21.9	22.7	24.9	27.7	24.3	17.9	32.5	28.3	21.8	19.6
95% CI LB	17.6	19.6	19.9	24.1	18.9	14.2	27.6	24.2	18.8	15.6
95% CI UB	26.9	25.9	30.3	31.5	29.5	22.1	37.5	32.7	25	24.3
N	61	58	61	59	61	60	60	60	60	59
% < MDL	0	0	0	0	4.9	0	1.7	0	0	0
Max	111	52.4	94	73.3	79.1	72.4	91.1	78.4	60.2	84.1

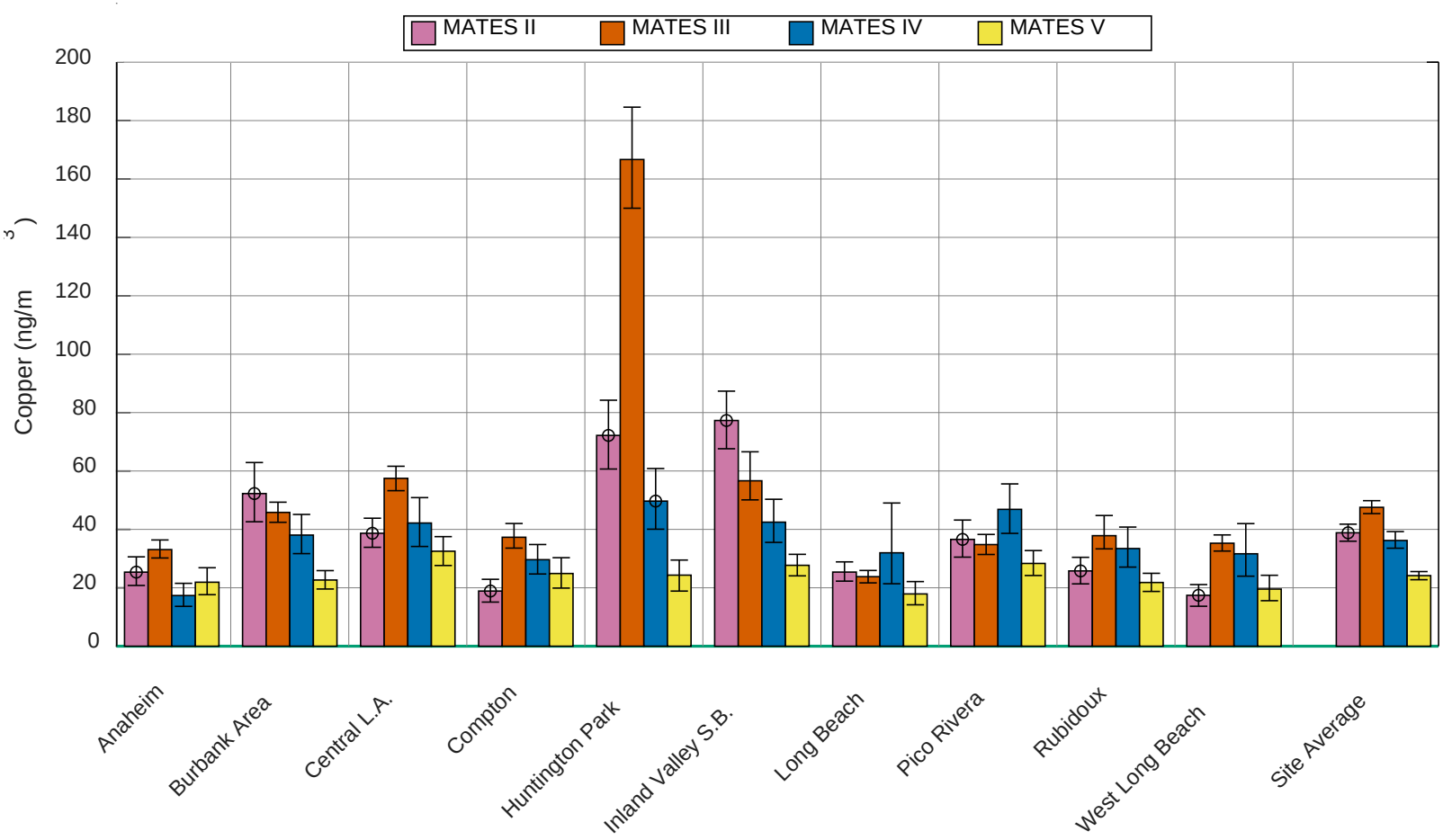


Figure IV-90. Annual Average Concentrations of Copper in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

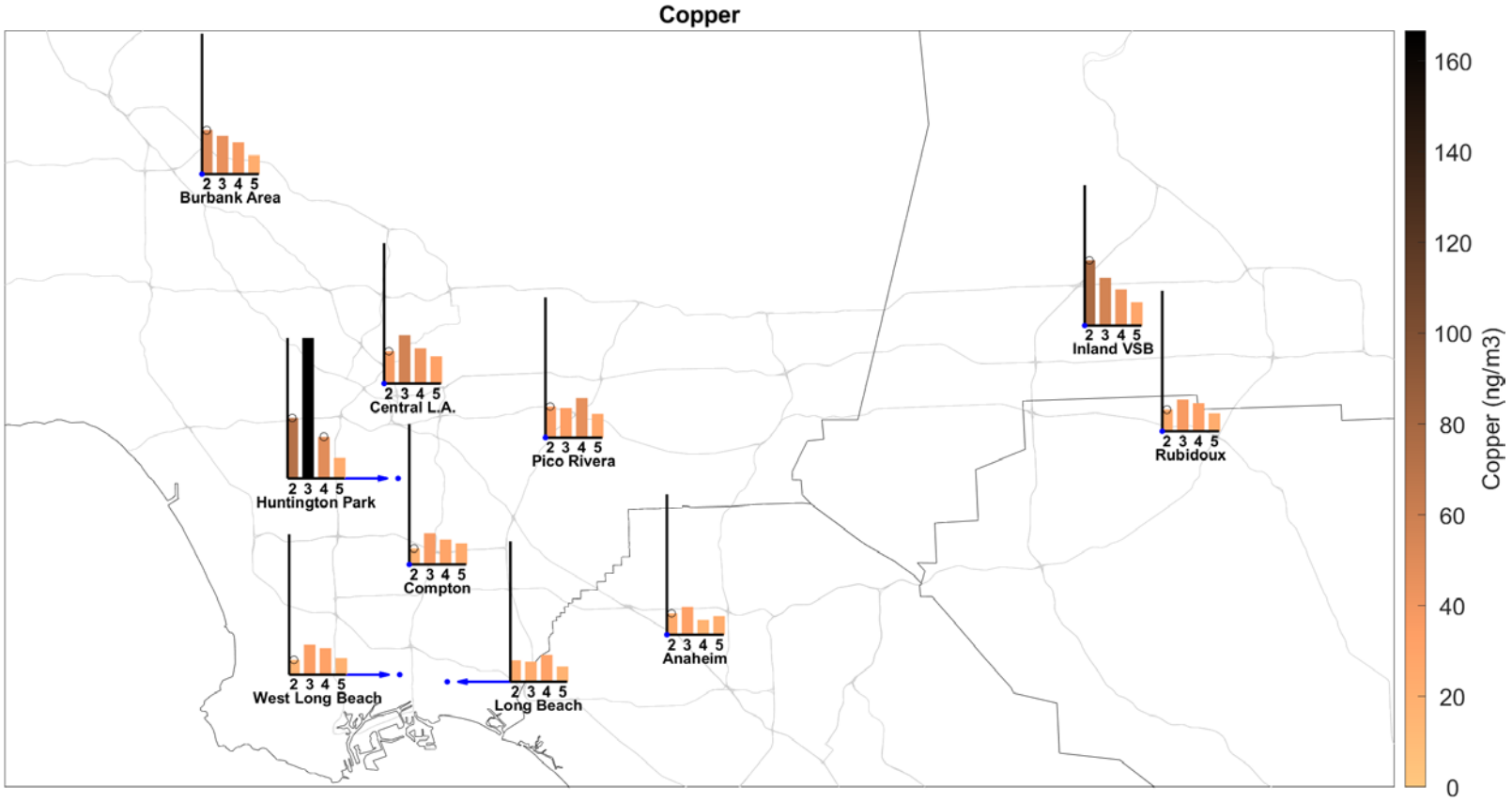


Figure IV-91. Geographic distribution of Copper from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Gallium

Table IV-48. Ambient Concentrations (ng/m^3) of Gallium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	4.6	4.4	0.408, 3.24[a]	2.22, 4.65[a]	4.28	5.26	4.32	4.67	0.763, 3.48[a]	0.859, 3.54[a]
95% CI LB	3.59	3.33	0[a]	0.326[a]	3.45	4.14	3.47	3.54	0[a]	0[a]
95% CI UB	5.81	5.81	3.72[a]	6.76[a]	5.43	6.41	5.32	6.02	4.26[a]	4.45[a]
N	25	20	18[a]	21[a]	22	26	23	26	21[a]	19[a]
% < MDL	72	80	94.4[a]	81[a]	77.3	61.5	73.9	73.1	90.5[a]	89.5[a]
Max	11.6	13.1	7.34[a]	20.3[a]	10	11.6	10.6	14.1	9.33[a]	9.83[a]
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

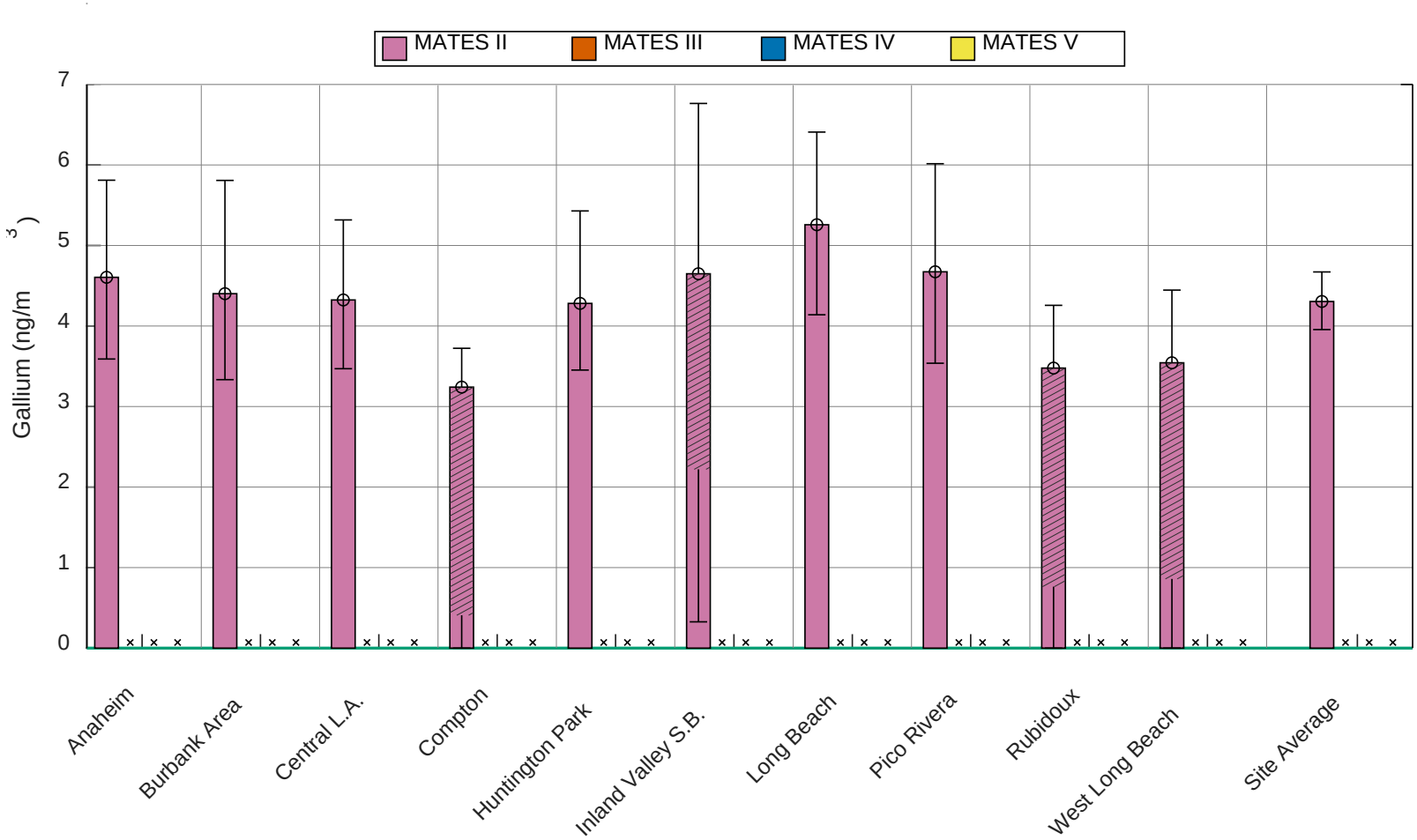


Figure IV-92. Annual Average Concentrations of Gallium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

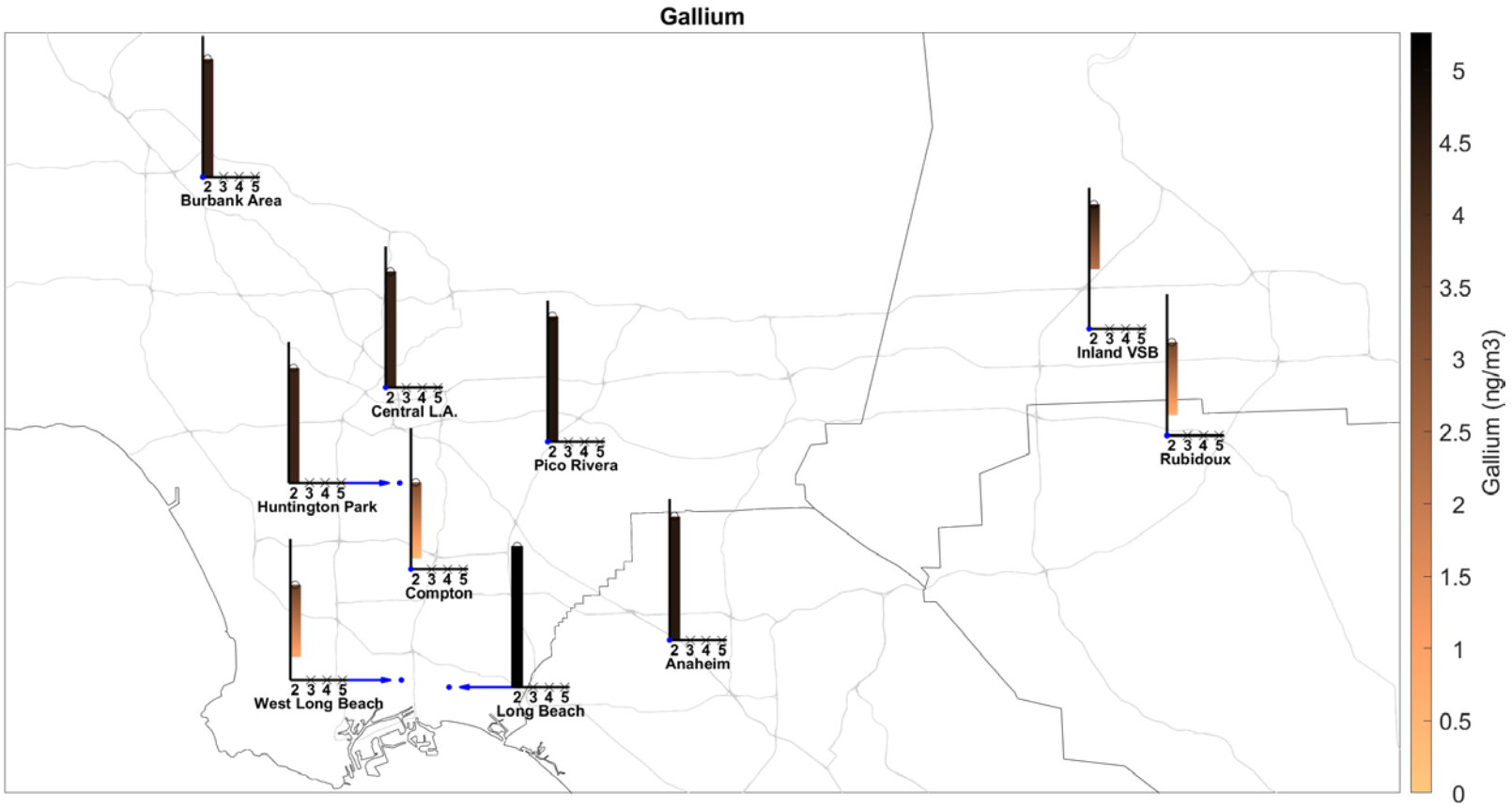


Figure IV-93. Geographic distribution of Gallium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Indium

Table IV-49. Ambient Concentrations (ng/m^3) of Indium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 11[a]	0, 11[a]	0, 11[a]	0, 11[a]	0, 11[a]	0, 11[a]	0, 11[a]	2.91, 13.1[a]	0, 11[a]	0, 11[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	11[a]	11[a]	11[a]	11[a]	11[a]	11[a]	11[a]	16.3[a]	11[a]	11[a]
N	25[a]	20[a]	18[a]	21[a]	22[a]	26[a]	23[a]	26[a]	21[a]	19[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	92.3[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	41[a]	< MDL[a]	< MDL[a]
MATES III										
Average	2.43	2.4	2.45	2.42	2.38	2.34	2.35	2.44	2.28	2.4
95% CI LB	2.34	2.3	2.34	2.32	2.24	2.26	2.28	2.3	2.21	2.29
95% CI UB	2.53	2.5	2.58	2.54	2.55	2.44	2.44	2.59	2.35	2.53
N	232	218	228	224	116	230	229	118	237	227
% < MDL	64.2	70.2	68.4	64.7	74.1	68.7	68.6	63.6	67.9	66.5
Max	7.32	6.15	7.28	6.83	6.47	7.18	5	6.15	4.91	9.96
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

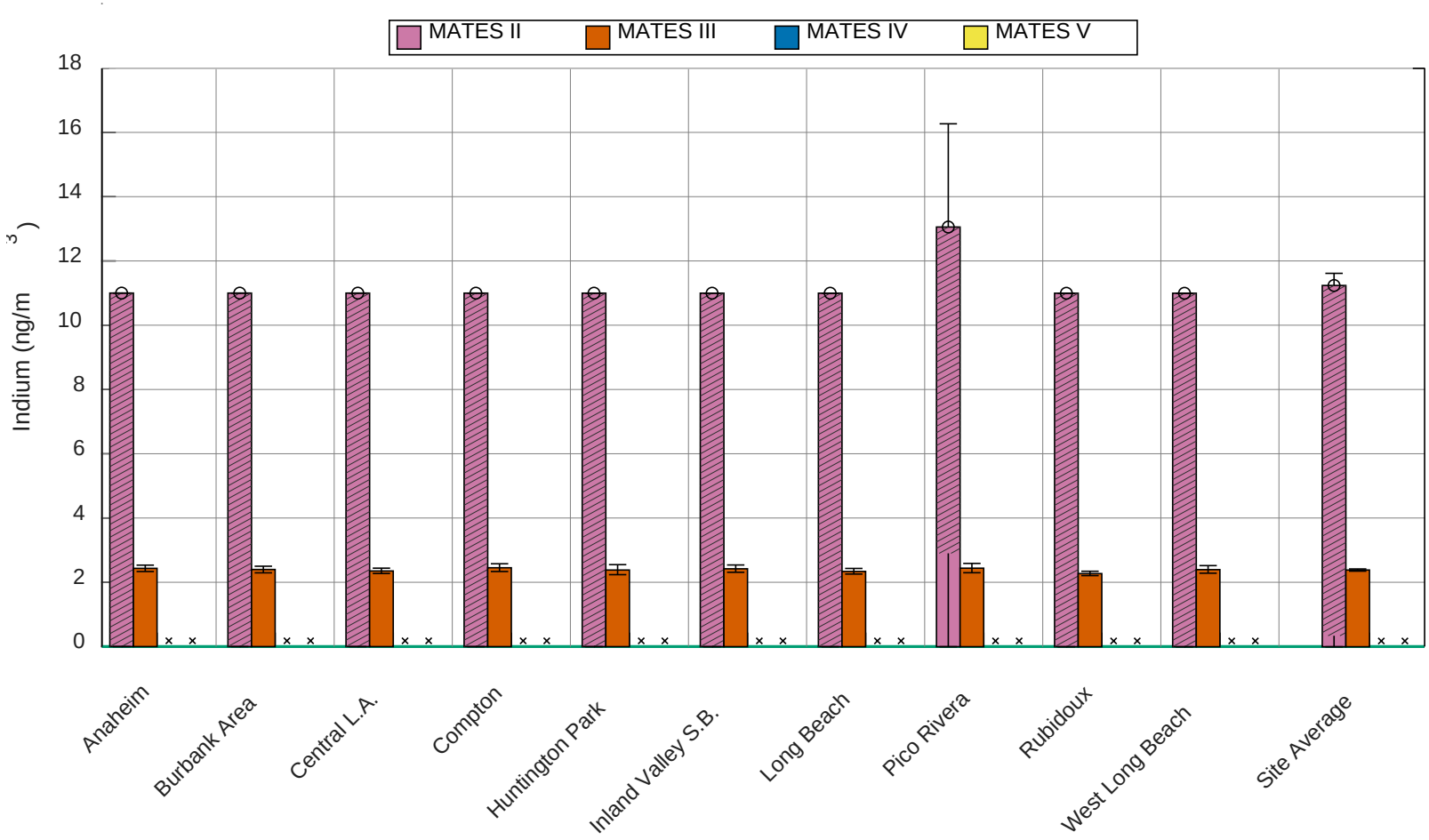


Figure IV-94. Annual Average Concentrations of Indium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

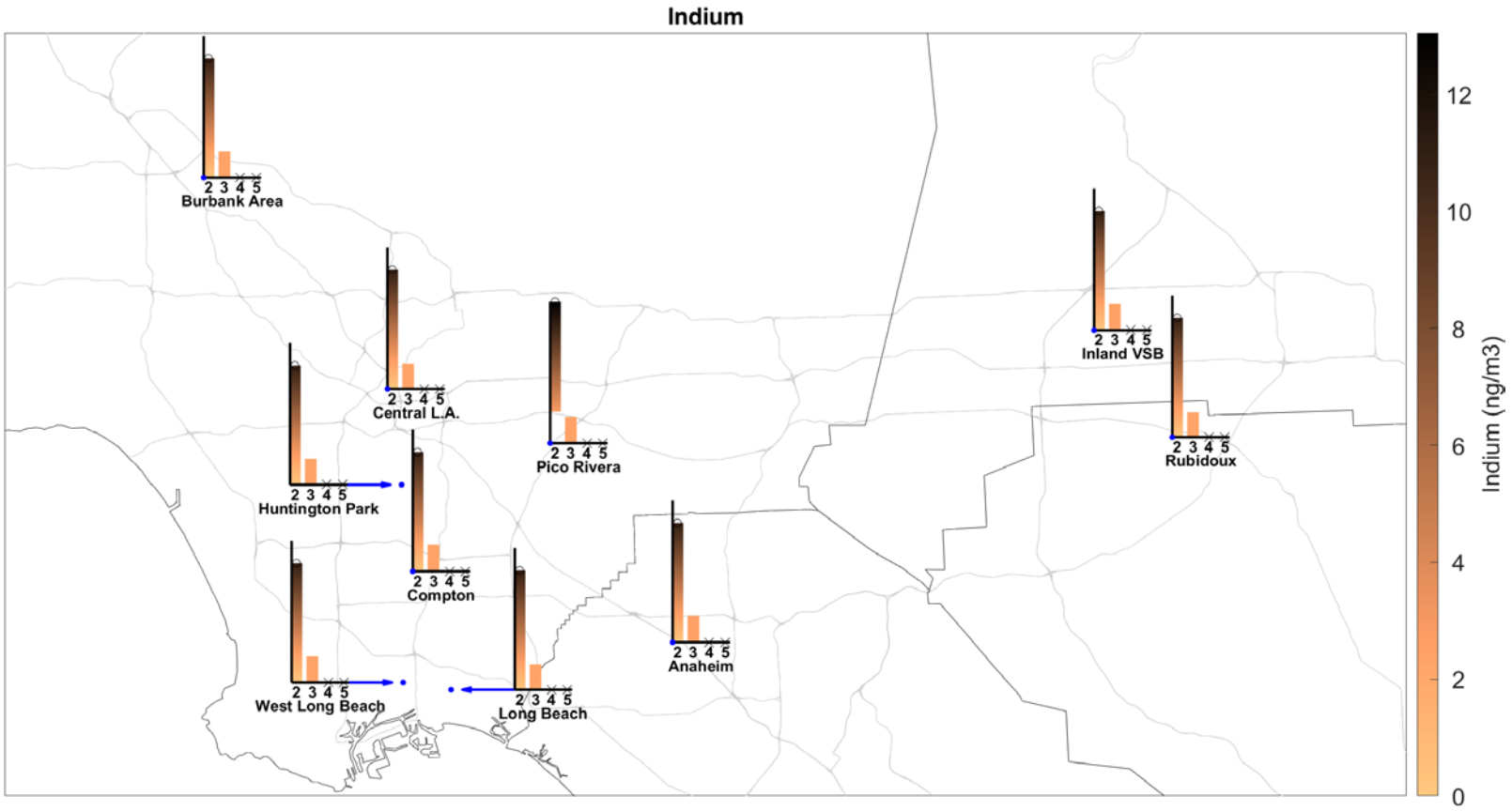


Figure IV-95. Geographic distribution of Indium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Iron

Table IV-50. Ambient Concentrations (ng/m^3) of Iron from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1470	1470	1660	2590	1640	1100	1350	2220	2680	1520
95% CI LB	1210	1250	1350	2140	1420	930	1160	1800	2240	1270
95% CI UB	1760	1700	1980	3050	1870	1270	1540	2700	3130	1760
N	45	47	39	41	42	56	51	41	41	39
% < MDL	0	0	0	0	0	0	2	2.4	2.4	0
Max	3870	3910	4380	5630	3890	3630	3680	8550	5870	3710
MATES III										
Average	1540	1910	1750	3170	2220	1580	2100	2140	3140	2050
95% CI LB	1410	1790	1630	2950	2030	1470	1980	1950	2960	1880
95% CI UB	1670	2040	1880	3420	2430	1690	2230	2340	3330	2230
N	232	218	228	224	116	230	229	118	237	227
% < MDL	0	0	0	0.4	0	0	0	0	0	0
Max	5800	7570	5260	8470	5700	4950	5330	6240	7180	9820
MATES IV										
Average	613	1160	1150	2730	1240	1040	1420	1470	2150	1490
95% CI LB	477	988	981	2140	1050	848	1180	1240	1710	1220
95% CI UB	786	1350	1330	3410	1460	1250	1700	1720	2650	1800
N	60	58	59	56	55	59	59	60	58	58
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	4050	3310	3000	11600	3660	3920	5560	4470	9440	5730
MATES V										
Average	843	981	926	1500	890	749	1030	1370	1410	1120
95% CI LB	692	798	776	1200	722	605	885	1130	1120	932
95% CI UB	1010	1170	1090	1830	1060	912	1180	1630	1690	1320
N	44	37	42	31	46	43	43	33	35	41
% < MDL	0	0	0	0	0	0	2.3	0	0	0
Max	2520	2230	2020	3380	2580	2300	2650	3240	3260	2570

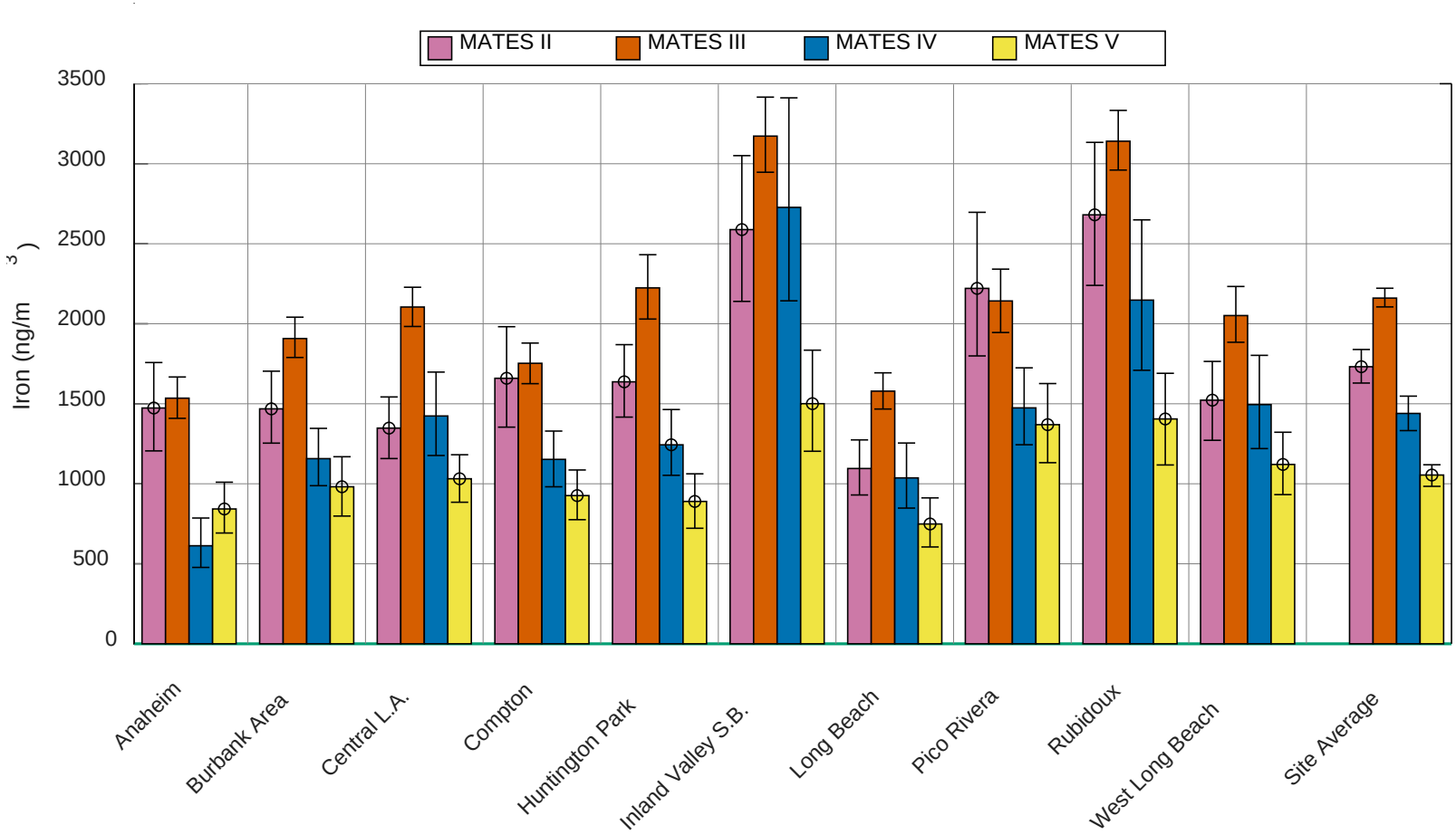


Figure IV-96. Annual Average Concentrations of Iron in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

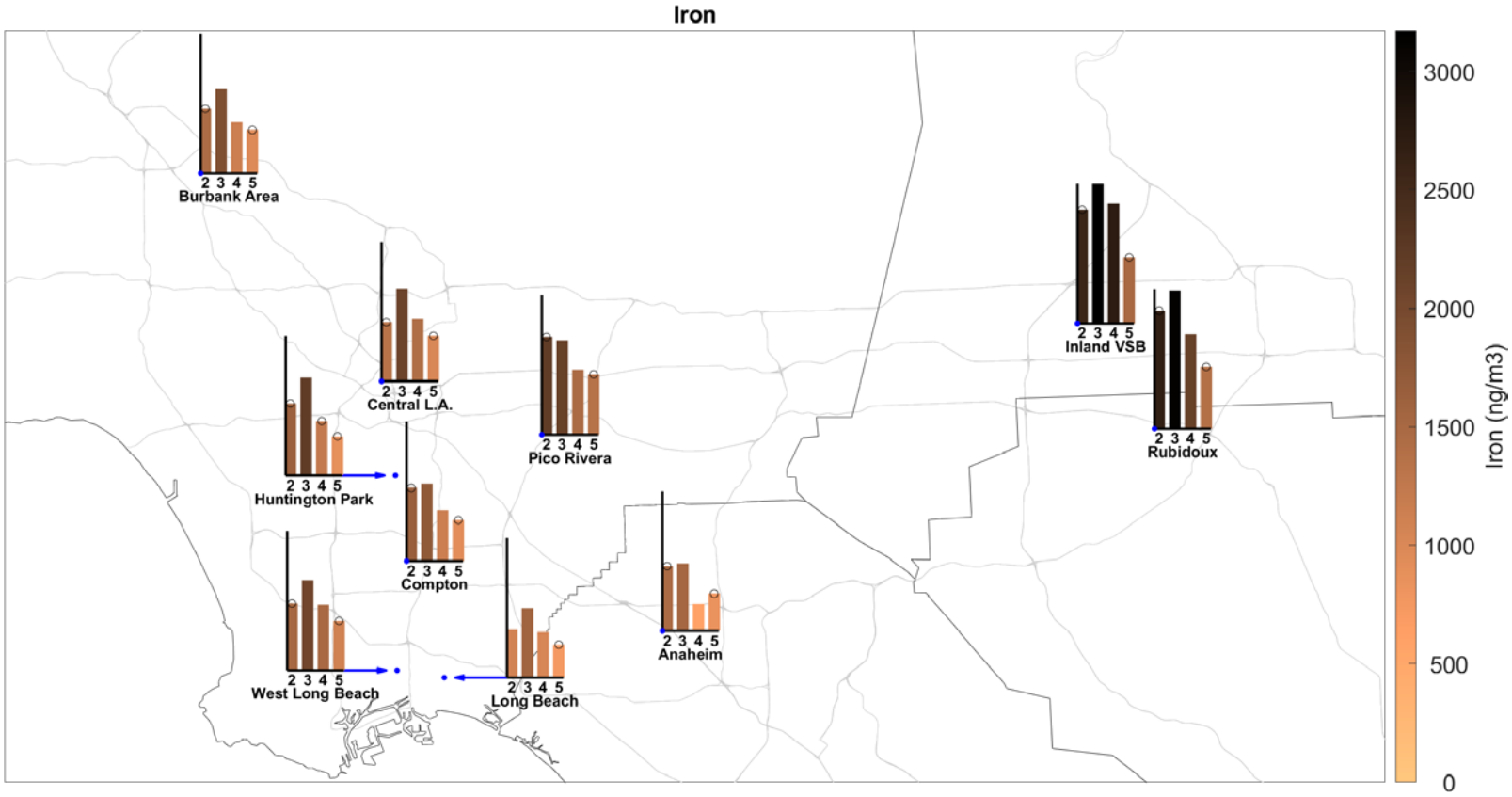


Figure IV-97. Geographic distribution of Iron from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Lanthanum

Table IV-51. Ambient Concentrations (ng/m^3) of Lanthanum from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 67[a]	0, 67[a]	0, 67[a]	0, 67[a]	0, 67[a]	6.91, 71.3[a]	0, 67[a]	0, 67[a]	0, 67[a]	0, 67[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	67[a]	67[a]	67[a]	67[a]	67[a]	80[a]	67[a]	67[a]	67[a]	67[a]
N	25[a]	20[a]	18[a]	21[a]	22[a]	26[a]	23[a]	26[a]	21[a]	19[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	96.2[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	180[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

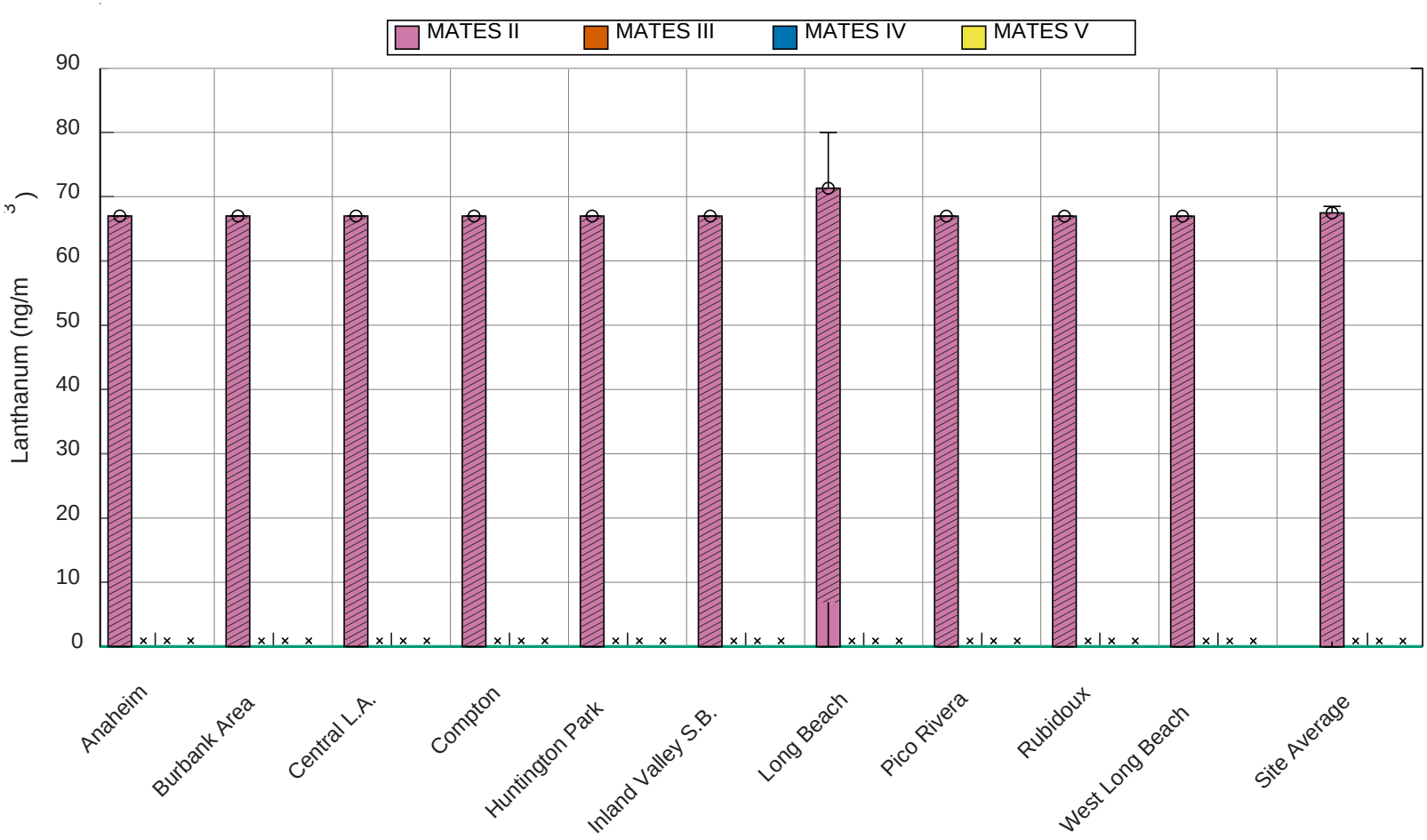


Figure IV-98. Annual Average Concentrations of Lanthanum in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

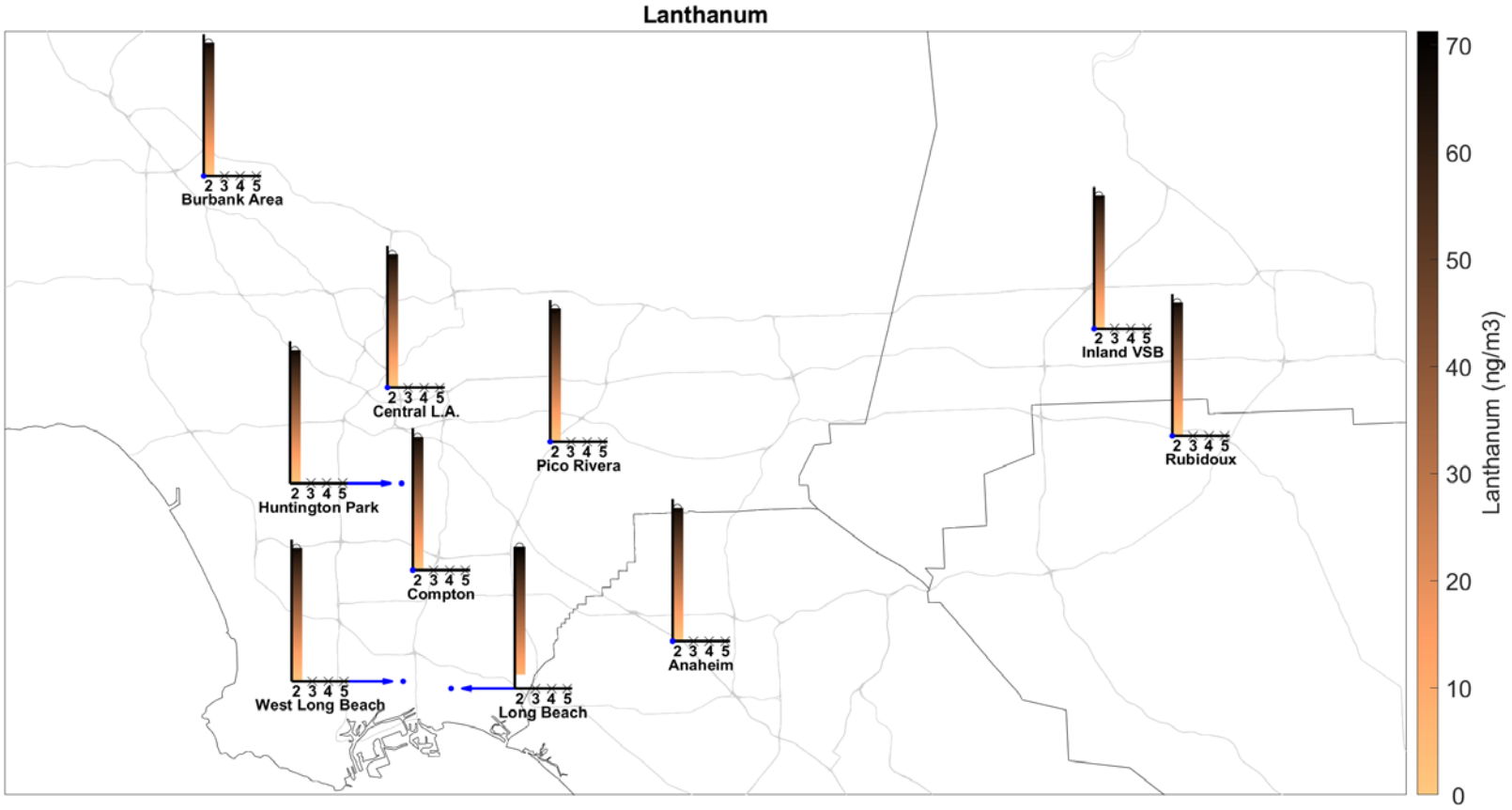


Figure IV-99. Geographic distribution of Lanthanum from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Lead

Table IV-52. Ambient Concentrations (ng/m^3) of Lead from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	21.5	23	21.5	27.7	49.7	16.4	22.9	31.3	24.7	17
95% CI LB	12.2	18.7	17.1	22.3	30.3	13.7	19.4	23.1	19.2	13.9
95% CI UB	33.6	27.7	26.3	34.4	76.3	19.4	26.7	42.3	30.7	20
N	45	47	39	41	42	56	51	41	41	39
% < MDL	11.1	0	2.6	0	0	3.6	3.9	4.9	7.3	5.1
Max	181	93.2	62	124	391	57.1	60.2	189	96.5	41.6
MATES III										
Average	7.32	10.5	12	15.8	22.8	9.66	15.3	14.8	12.4	11.4
95% CI LB	6.7	9.88	10.7	14.2	18.8	8.86	14.3	13.2	11.3	10.2
95% CI UB	8.05	11.3	13.3	17.6	27.3	10.6	16.3	16.5	13.7	12.9
N	232	218	228	224	116	230	229	118	237	227
% < MDL	51.7	17.4	27.2	15.2	5.2	30	11.4	5.9	15.6	26
Max	51.4	37.8	75.9	146	156	37.6	54.9	48.4	93.3	111
MATES IV										
Average	2.12	5.27	6.24	9.8	9.46	4.4	7.34	5.89	6.21	5.83
95% CI LB	1.82	4.59	5.25	8.52	7.29	3.8	6.5	5.28	5.19	4.58
95% CI UB	2.44	6.02	7.42	11	12.8	5.02	8.19	6.51	7.46	7.57
N	60	58	59	56	55	59	59	60	58	58
% < MDL	5	0	0	0	0	1.7	0	0	0	0
Max	6.84	16.8	20.1	19.3	81.7	13	15.6	12.6	32.3	43.3
MATES V										
Average	2.72	6.87	4.81	7.66	5.75	3.19	4.97	4.73	4.46	4.02
95% CI LB	2.28	5.97	3.94	6.51	3.46	2.54	4.21	4.06	3.8	3.05
95% CI UB	3.19	7.75	5.83	8.89	9.35	3.96	5.83	5.46	5.17	5.17
N	61	58	61	59	61	60	60	60	60	59
% < MDL	0	0	0	0	3.3	0	1.7	0	0	0
Max	9.53	19.7	16.9	24	106	15.2	20	18.2	11.3	20.4

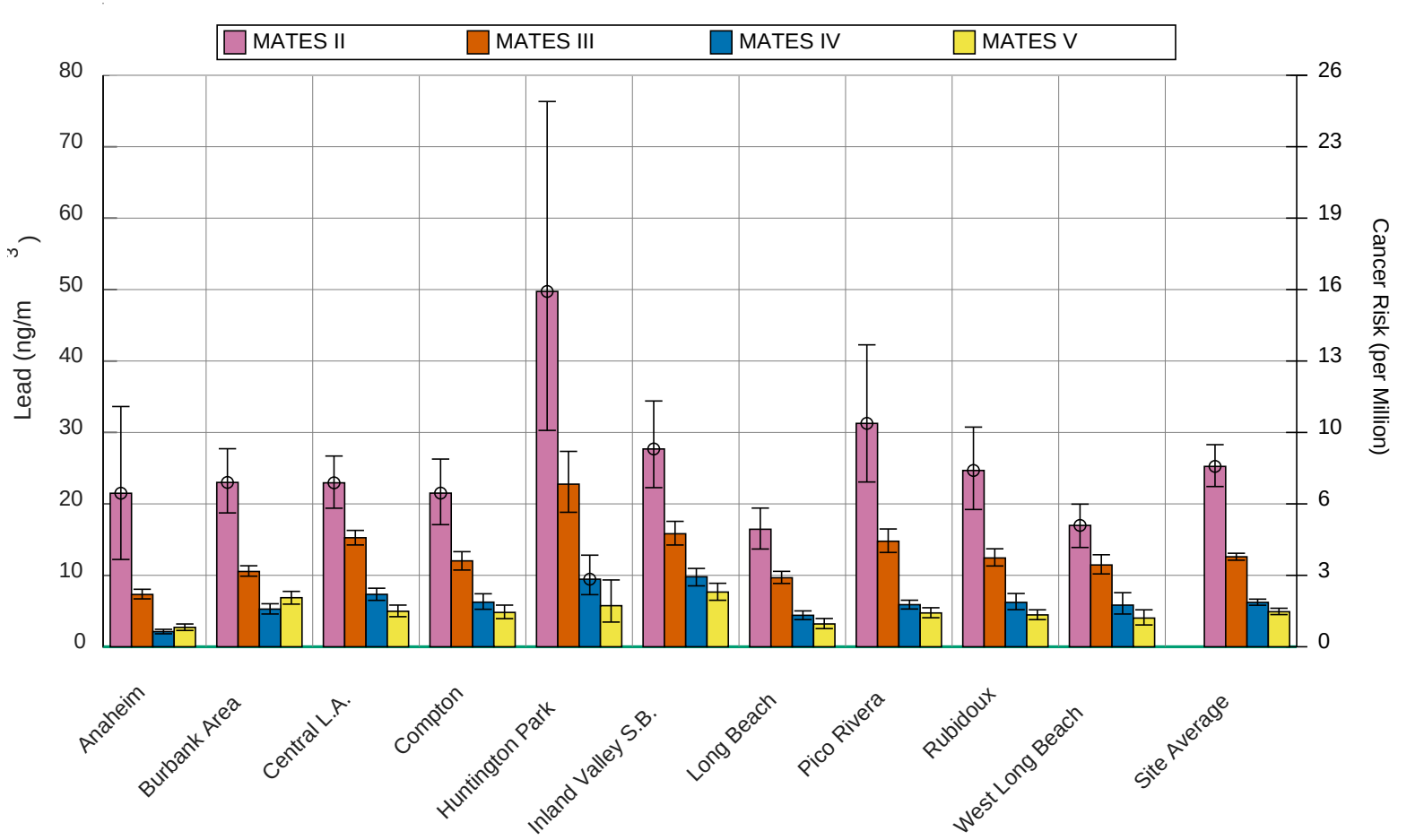


Figure IV-100. Annual Average Concentrations of Lead in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

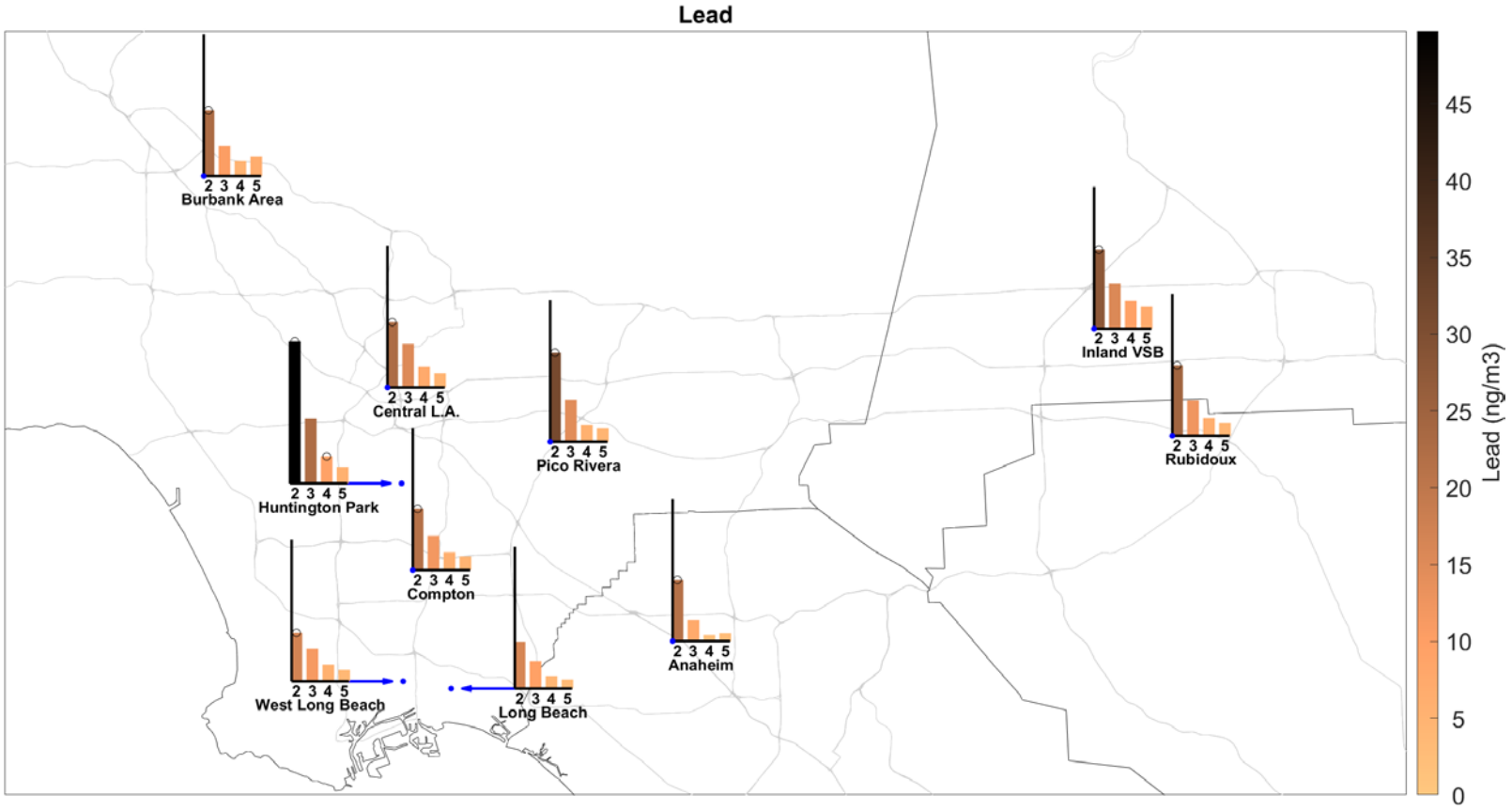


Figure IV-101. Geographic distribution of Lead from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Magnesium

Table IV-53. Ambient Concentrations (ng/m^3) of Magnesium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	175	149	195	204	190	173	123	143	280	231
95% CI LB	112	117	130	161	122	112	90.8	105	231	140
95% CI UB	268	184	281	246	282	264	163	186	330	360
N	25	20	18	21	22	26	23	26	21	19
% < MDL	48	35	33.3	23.8	40.9	46.2	65.2	53.8	9.5	26.3
Max	1170	331	762	357	999	1130	422	498	543	1160
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

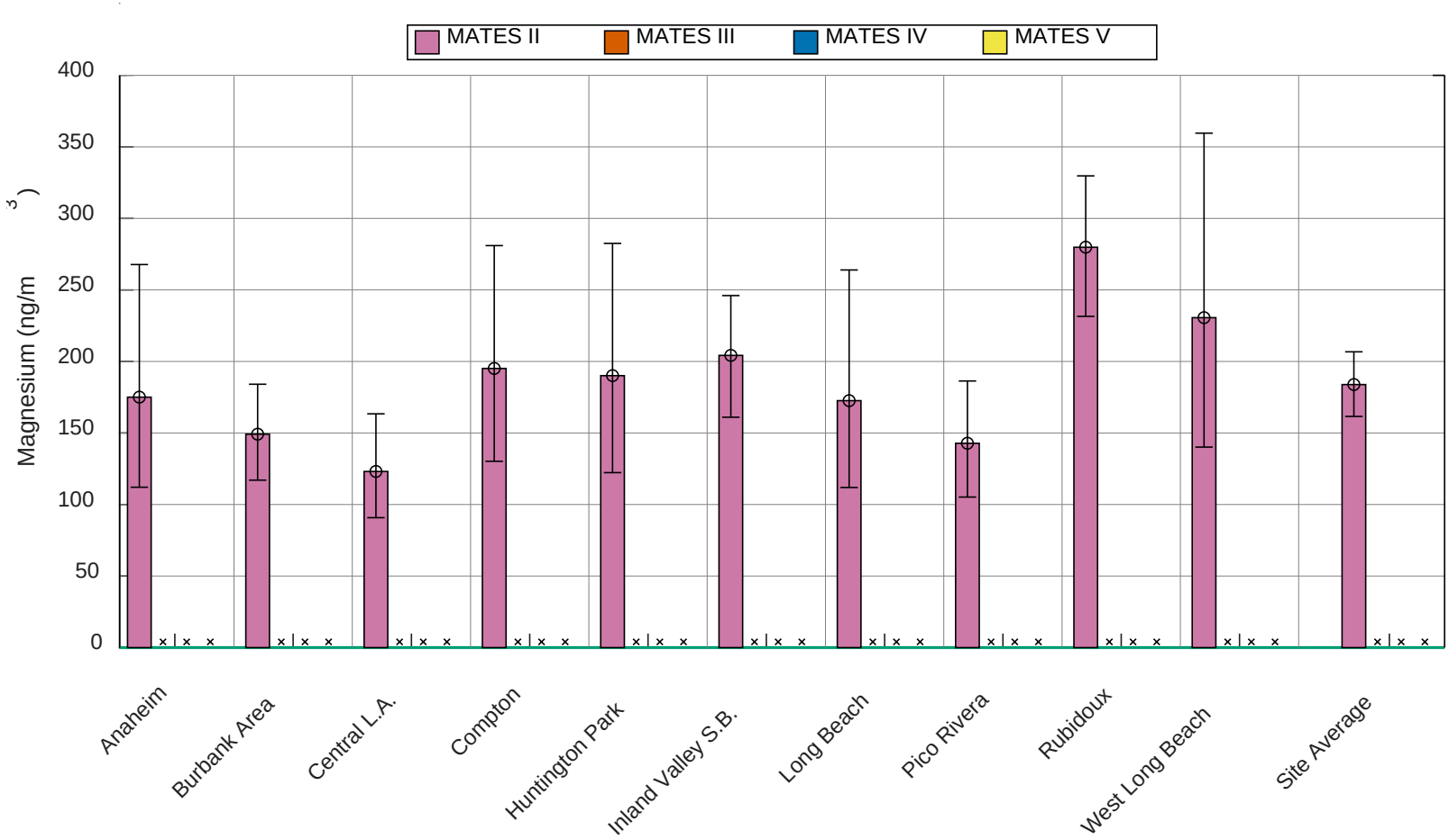


Figure IV-102. Annual Average Concentrations of Magnesium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

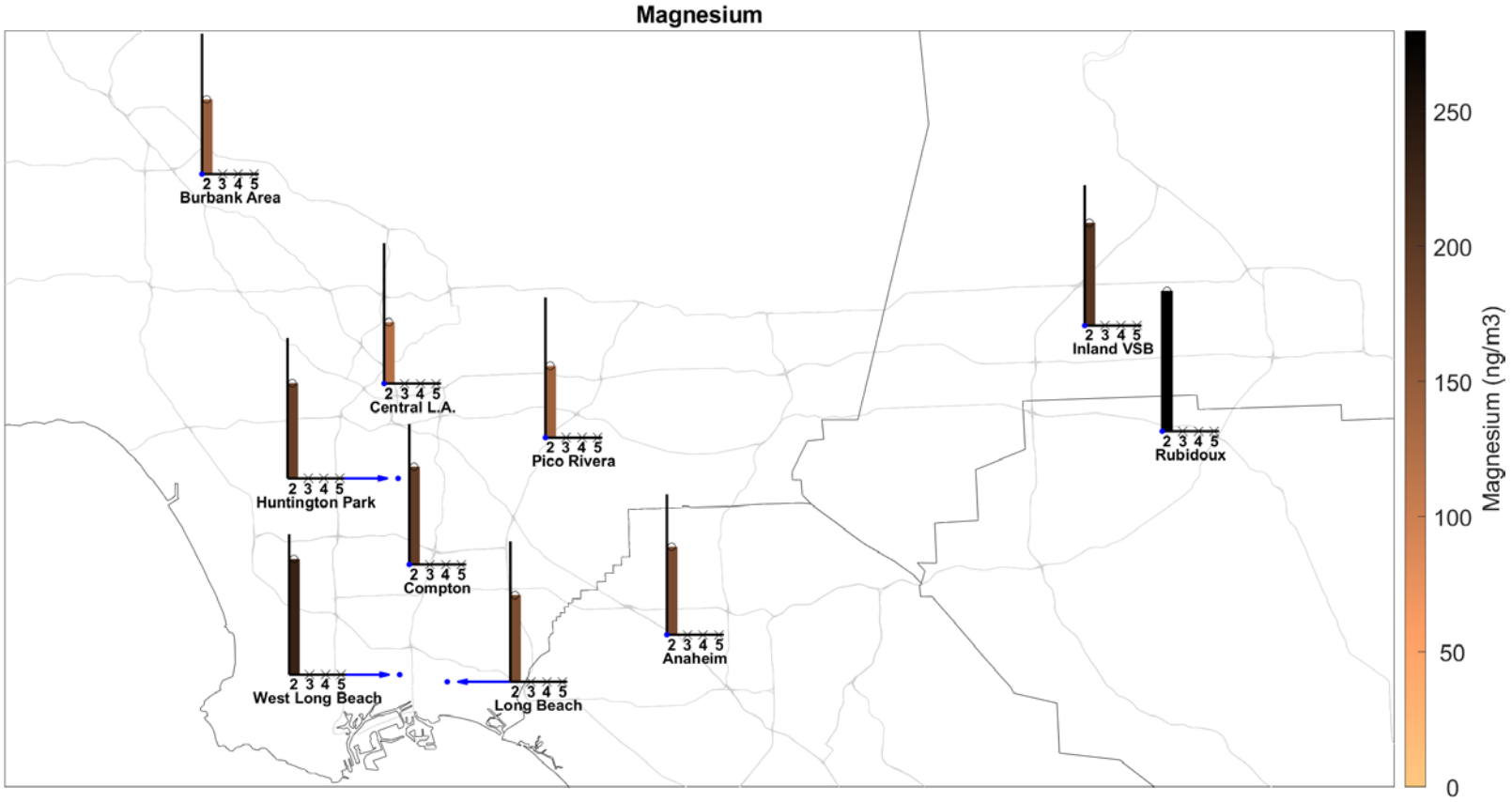


Figure IV-103. Geographic distribution of Magnesium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Manganese

Table IV-54. Ambient Concentrations (ng/m^3) of Manganese from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	21.4	19.7	27	70	26.1	18.6	19.1	29.8	51.5	24.5
95% CI LB	17	16.5	21.4	57.1	21.6	15.1	15.7	24.5	42.7	19
95% CI UB	26.1	22.9	33	83.3	30.5	22.4	22.4	35.3	60.4	30.1
N	45	47	39	41	42	56	51	41	41	39
% < MDL	17.8	8.5	10.3	2.4	7.1	12.5	11.8	4.9	2.4	10.3
Max	66	55.3	76	158	71	72.7	55	68	110	85.1
MATES III										
Average	18.6	21.6	25.1	60.2	32	19.7	25.6	27.3	51.5	29.3
95% CI LB	16.7	20	23.1	55.4	28.4	18	24.1	24.6	48.2	25.7
95% CI UB	20.5	23.3	27.1	65.2	35.9	21.3	27.2	30	55	33.7
N	232	218	228	224	116	230	229	118	237	227
% < MDL	0.4	0.5	0	0.4	0	0.4	0	0	0	0.4
Max	110	128	102	192	99.6	72.5	56.5	86.7	158	357
MATES IV										
Average	8.32	15.2	18.6	52	22.7	14.4	19.2	21.2	33	21.3
95% CI LB	7.01	13	15.5	44.4	17.8	12.3	17	18.7	27.3	18.1
95% CI UB	9.73	17.3	22	60.1	28.6	16.5	21.5	23.8	40.1	24.9
N	60	58	59	56	55	59	59	60	58	58
% < MDL	0	0	0	0	0	1.7	0	0	0	0
Max	28.3	40.2	77.5	120	103	42.6	38.8	40.3	178	61.7
MATES V										
Average	14.3	19.3	17.8	54.1	14.7	13.8	16.7	29.4	31.7	20.2
95% CI LB	12.2	16.5	14.9	44.9	12.1	11.1	14.6	25.4	27.1	16.4
95% CI UB	16.9	22.3	21.3	64.4	17.3	17.4	19	33.5	36.5	25.1
N	61	58	61	59	61	60	60	60	60	59
% < MDL	0	0	0	0	0	0	1.7	0	0	0
Max	43.6	51.2	68.7	194	43.1	86.8	40.6	75.5	99	122

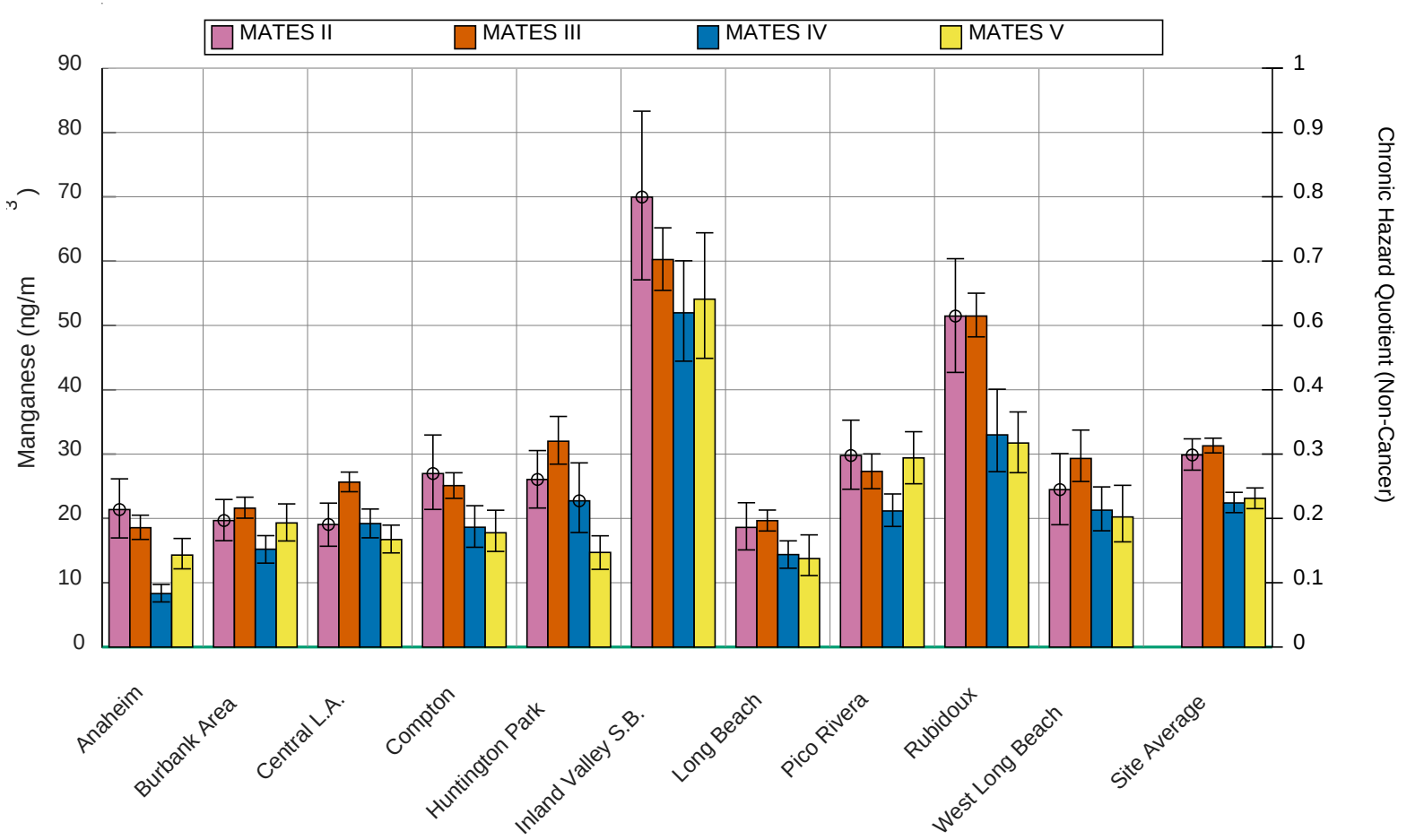


Figure IV-104. Annual Average Concentrations of Manganese in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

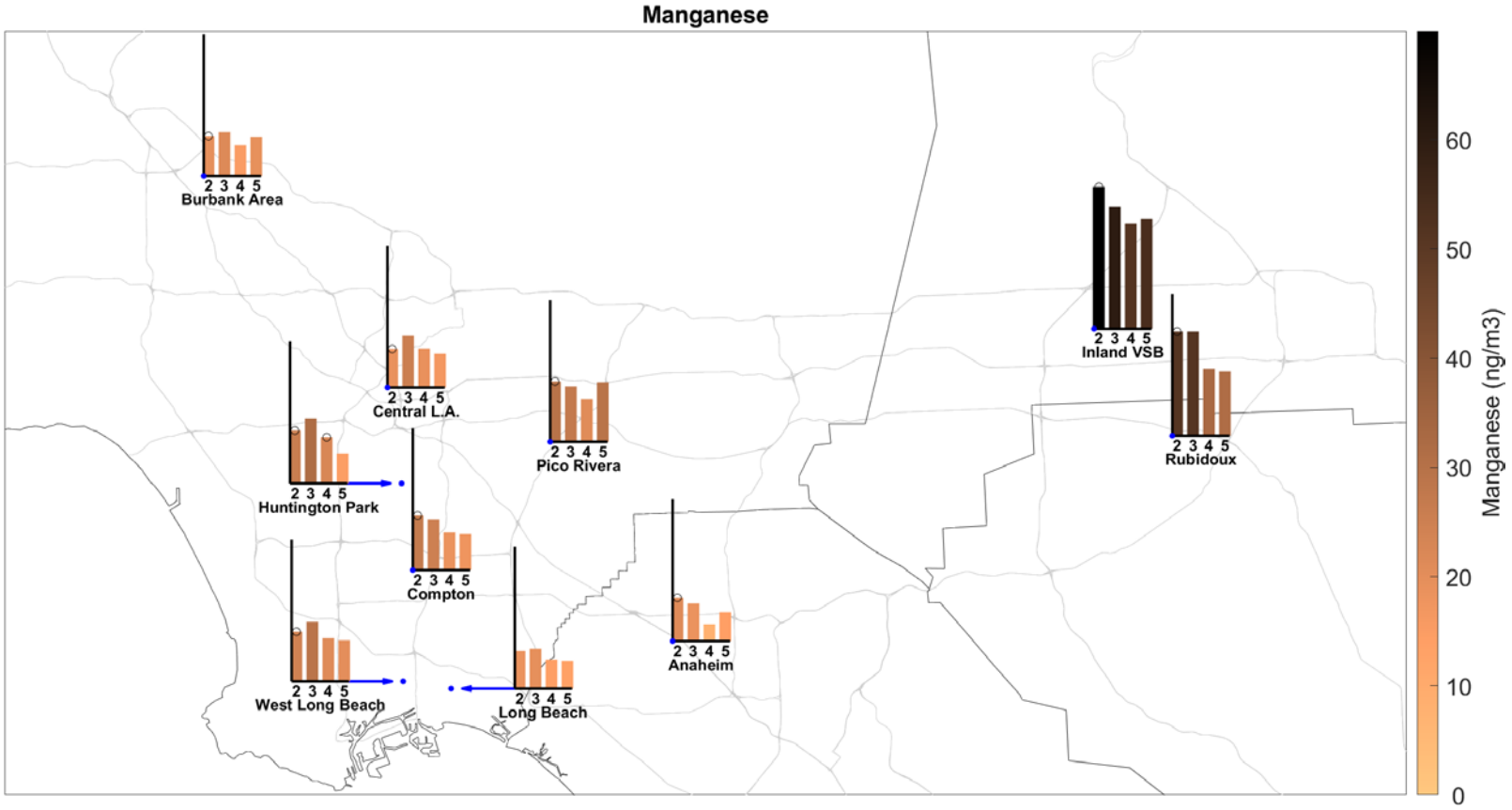


Figure IV-105. Geographic distribution of Manganese from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Mercury

Table IV-55. Ambient Concentrations (ng/m^3) of Mercury from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.2, 3.05[a]	0.111, 3[a]	0.143, 3[a]	0.25, 3.1[a]	3.65	0, 3[a]	0, 3[a]	0.2, 3[a]	0.55, 3.1[a]	0.2, 3.05[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	3	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	3.15[a]	3[a]	3[a]	3.3[a]	4.7	3[a]	3[a]	3[a]	3.25[a]	3.15[a]
N	20[a]	27[a]	21[a]	20[a]	20	30[a]	28[a]	15[a]	20[a]	20[a]
% < MDL	95[a]	96.3[a]	95.2[a]	95[a]	80	100[a]	100[a]	93.3[a]	85[a]	95[a]
Max	4[a]	3[a]	3[a]	5[a]	12	< MDL[a]	< MDL[a]	3[a]	4[a]	4[a]
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

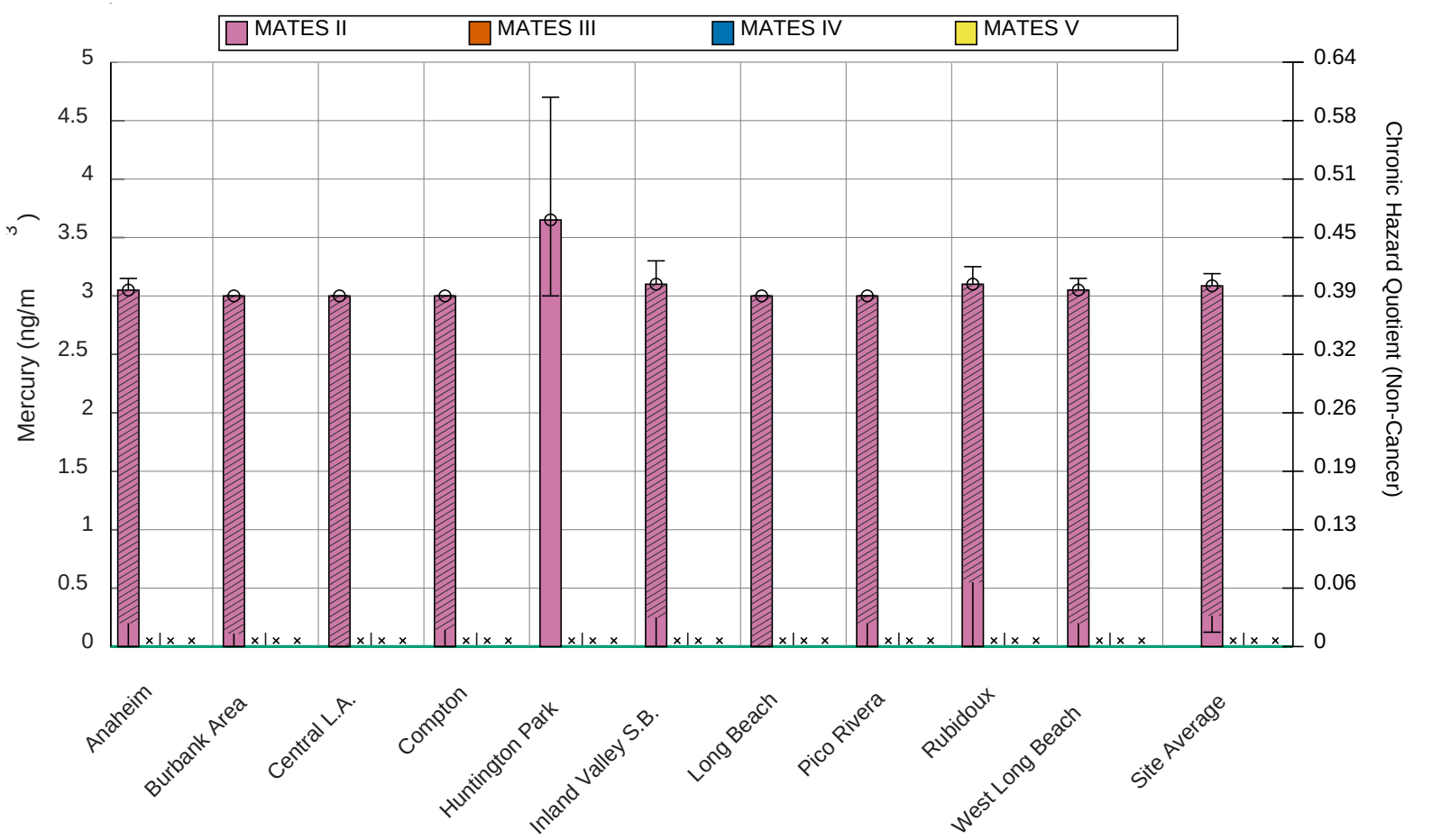


Figure IV-106. Annual Average Concentrations of Mercury in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

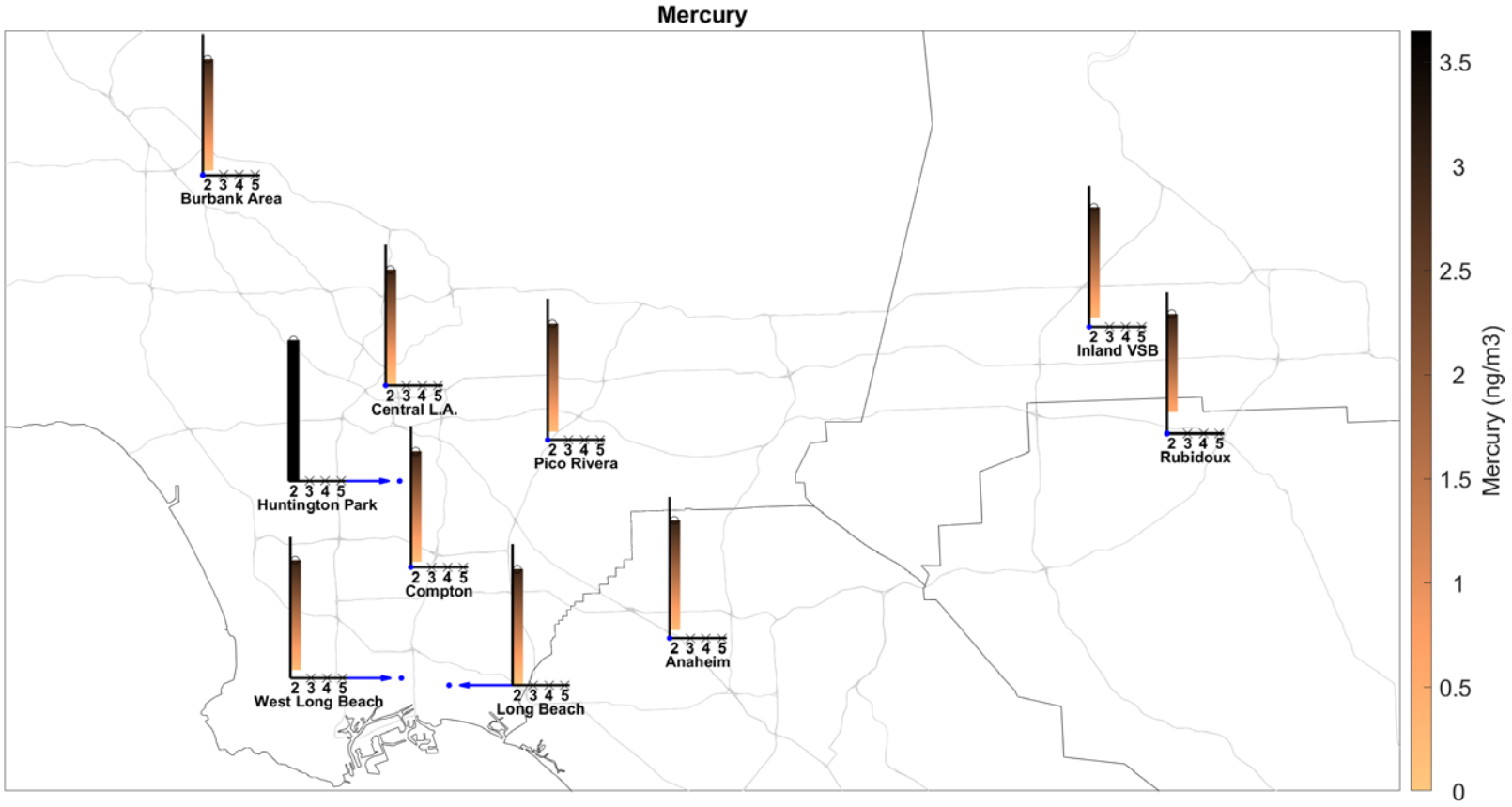


Figure IV-107. Geographic distribution of Mercury from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Molybdenum

Table IV-56. Ambient Concentrations (ng/m^3) of Molybdenum from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	7.73	6.91	3.5	8.33	9.99	7.96	5.05	9.22	5.46	4.17
95% CI LB	4.63	4.65	2.27	4.69	6.47	4.89	3.52	5.74	2.98	2.62
95% CI UB	11.1	10.9	5.32	12.7	13.8	11.8	7.66	13.1	8.96	6.93
N	45	47	39	41	42	56	51	41	41	39
% < MDL	60	74.5	71.8	56.1	45.2	67.9	74.5	48.8	70.7	76.9
Max	32.7	63.6	27.7	57.7	38.4	59.8	35	44.2	39.5	36.7
MATES III										
Average	3.95	4.13	3.99	3.73	4.14	3.93	4.74	4.55	3.68	4.32
95% CI LB	3.48	3.67	3.57	3.33	3.35	3.53	4.21	3.87	3.36	3.77
95% CI UB	4.44	4.65	4.5	4.21	5.05	4.37	5.32	5.33	4.06	4.93
N	232	218	228	224	116	230	229	118	237	227
% < MDL	34.1	26.1	31.6	29.5	33.6	27	21	20.3	23.2	32.2
Max	26.3	24.7	29.6	23.6	28.1	23.4	25.3	22.3	22.6	28.2
MATES IV										
Average	0.826	1.81	1.9	2.13	2.39	1.74	3.36	1.66	1.39	1.58
95% CI LB	0.678	1.53	1.56	1.72	1.81	1.34	2.72	1.4	1.12	1.28
95% CI UB	0.991	2.12	2.29	2.64	3.15	2.18	4.03	1.96	1.72	1.96
N	60	58	59	56	55	59	59	60	58	58
% < MDL	0	0	0	0	0	1.7	0	0	0	0
Max	2.84	5.27	6.62	9.78	17	7.25	12.6	5.88	8.48	7.35
MATES V										
Average	0.793	0.852	1.31	1.52	1.25	1	2.45	1.07	0.766	1.17
95% CI LB	0.647	0.729	1.06	1.16	0.931	0.737	2.1	0.922	0.664	0.915
95% CI UB	0.97	0.981	1.61	2.08	1.64	1.35	2.82	1.23	0.873	1.46
N	60	57	60	59	59	59	60	60	60	58
% < MDL	0	0	0	0	3.4	0	0	0	0	0
Max	4.16	2.09	5.01	14.7	9.48	8	6.52	2.84	1.87	5.56

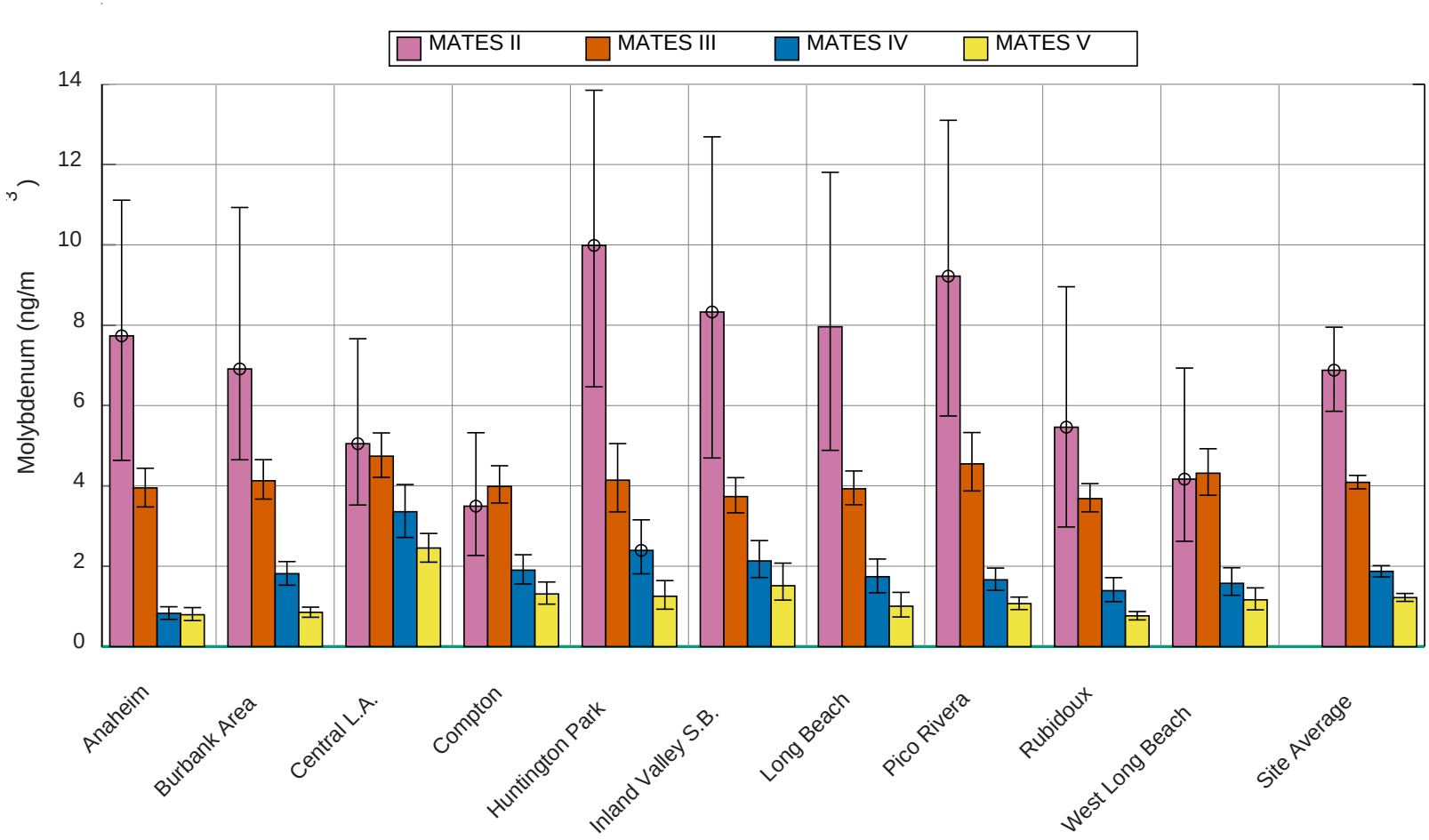


Figure IV-108. Annual Average Concentrations of Molybdenum in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

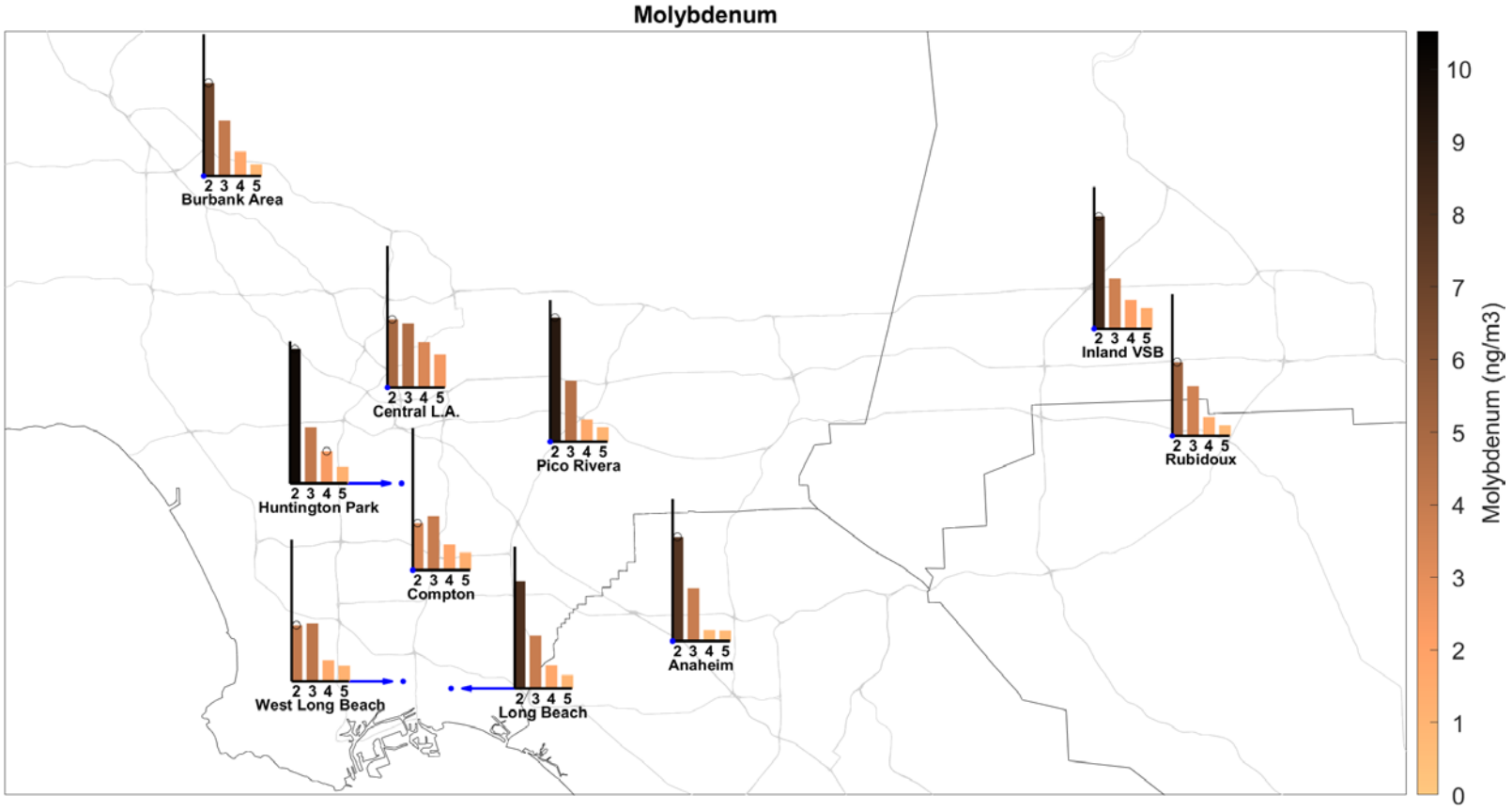


Figure IV-109. Geographic distribution of Molybdenum from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Nickel

Table IV-57. Ambient Concentrations (ng/m^3) of Nickel from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	7.29	6.41	8.65	8.65	11.8	7.89	7.36	12.5	7.65	10.2
95% CI LB	6.03	5.26	6.96	7.01	9.61	6.61	5.76	7.78	6.02	8.25
95% CI UB	8.64	7.79	10.4	10.4	14.2	9.28	9.31	20.4	9.42	12.2
N	45	47	39	41	42	56	51	41	41	39
% < MDL	6.7	8.5	0	4.9	2.4	5.4	9.8	4.9	9.8	2.6
Max	18.7	24.9	30.2	21.4	38.8	21.8	38	153	21.6	25.7
MATES III										
Average	4.3	3.97	6.24	4.04	7.79	7.12	5.49	5.2	3.91	11.2
95% CI LB	3.97	3.69	5.76	3.71	6.8	6.64	4.89	4.71	3.62	10.4
95% CI UB	4.64	4.27	6.71	4.38	8.86	7.62	6.23	5.71	4.2	12.1
N	232	218	228	224	116	230	229	118	237	227
% < MDL	4.3	5	3.1	11.2	1.7	2.6	3.5	0.8	11	1.8
Max	15	17.1	21.4	13.2	29.7	19.2	69.8	17.4	15	34.5
MATES IV										
Average	1.78	3.9	4.06	4.06	5.4	3.6	3.37	4.47	3.36	3.73
95% CI LB	1.55	2.3	3.44	3.51	3.95	2.98	2.69	3.87	2.79	3.23
95% CI UB	2.03	6.2	4.75	4.68	7.5	4.34	4.44	5.19	4.02	4.3
N	60	58	59	56	55	59	59	60	58	58
% < MDL	15	5.2	0	1.8	0	5.1	0	0	6.9	1.7
Max	5.8	44.5	13.7	13.4	50	14.8	29.4	17.5	14.6	13
MATES V										
Average	2.17	2.01	2.93	6.31	2.64	3.64	2	3	2.41	3.74
95% CI LB	1.82	1.75	2.38	4.04	2	2.8	1.77	2.67	2.08	3.07
95% CI UB	2.58	2.28	3.49	9.66	3.53	4.6	2.26	3.33	2.79	4.48
N	61	58	61	59	61	60	60	60	60	59
% < MDL	0	0	0	0	3.3	0	1.7	0	0	0
Max	8.32	4.24	8.85	83.5	23.2	18.3	5.24	7.55	9.23	12.2

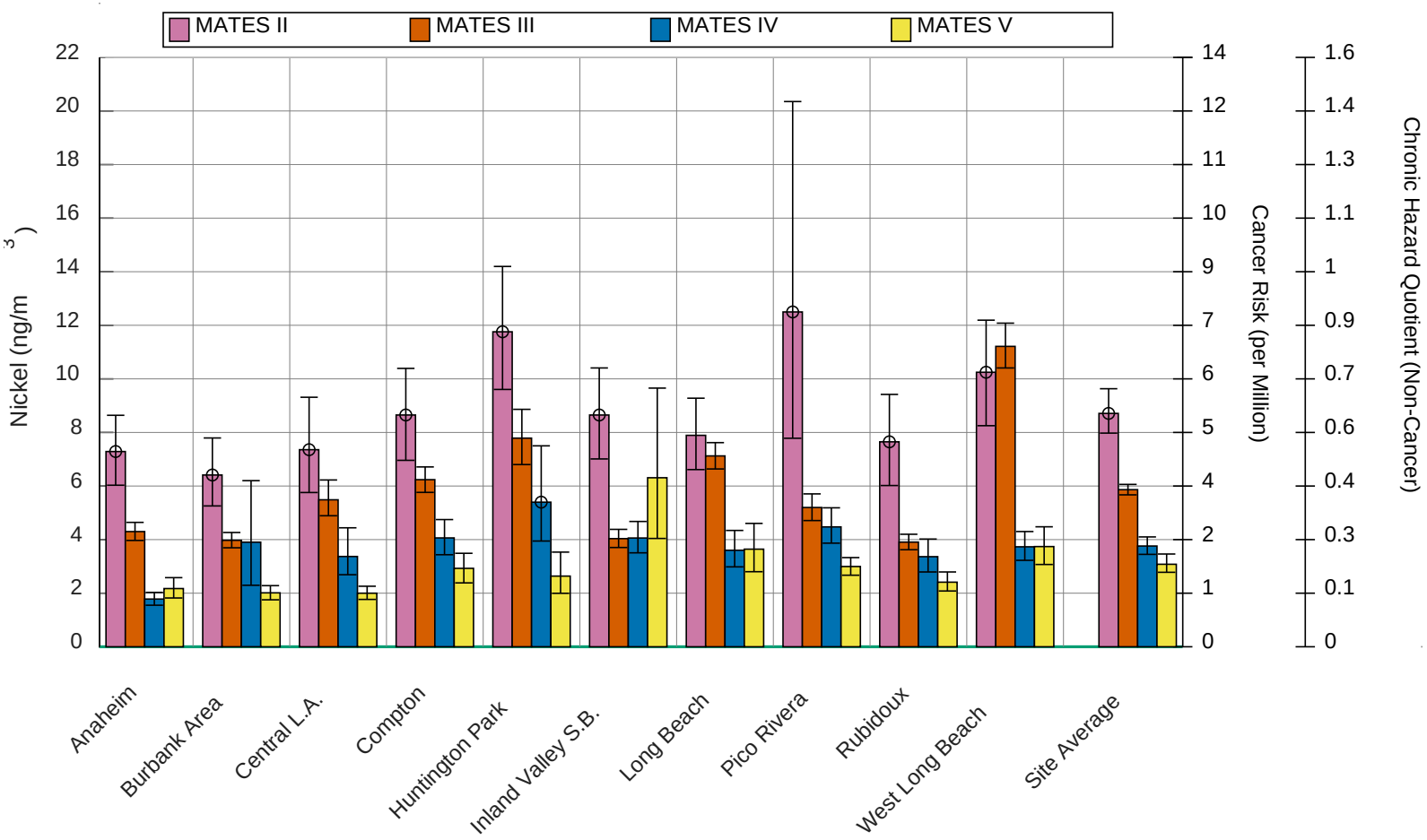


Figure IV-110. Annual Average Concentrations of Nickel in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

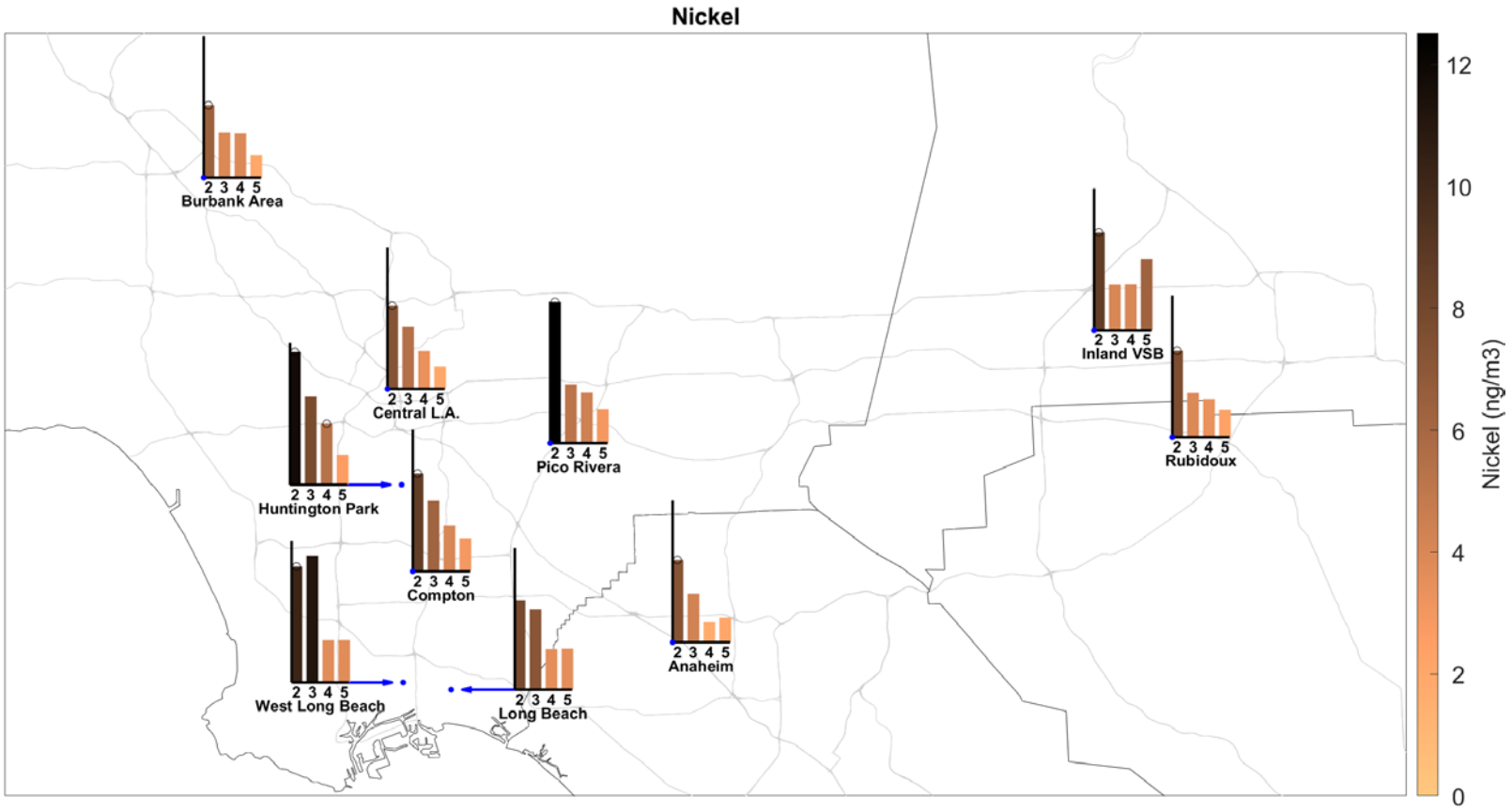


Figure IV-111. Geographic distribution of Nickel from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Palladium

Table IV-58. Ambient Concentrations (ng/m^3) of Palladium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 11[a]	1.29, 11.7[a]	0, 11[a]	1.1, 11.6[a]	0, 11[a]	0, 11[a]	1.37, 11.9[a]	1.24, 11.8[a]	1.19, 11.7[a]	0, 11[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	11[a]	13.2[a]	11[a]	12.7[a]	11[a]	11[a]	13.7[a]	13.5[a]	13[a]	11[a]
N	25[a]	20[a]	18[a]	21[a]	22[a]	26[a]	23[a]	26[a]	21[a]	19[a]
% < MDL	100[a]	95[a]	100[a]	95.2[a]	100[a]	100[a]	95.7[a]	96.2[a]	95.2[a]	100[a]
Max	< MDL[a]	25.7[a]	< MDL[a]	23.1[a]	< MDL[a]	< MDL[a]	31.4[a]	32.3[a]	24.9[a]	< MDL[a]
MATES III										
Average	0.142, 3.03[a]	0.145, 3.02[a]	0.0487, 3.01[a]	0.0997, 3.01[a]	0.0852, 3.01[a]	0.0621, 3.01[a]	0.101, 3.01[a]	0.256, 3.05[a]	0.0267, 3[a]	0.093, 3.01[a]
95% CI LB	0.0583[a]	0.0613[a]	0[a]	0.0297[a]	0[a]	0.0136[a]	0.0304[a]	0.0939[a]	0[a]	0.027[a]
95% CI UB	3.05[a]	3.04[a]	3.03[a]	3.01[a]	3.02[a]	3.02[a]	3.02[a]	3.11[a]	3[a]	3.04[a]
N	232[a]	218[a]	228[a]	224[a]	116[a]	230[a]	229[a]	118[a]	237[a]	227[a]
% < MDL	96.1[a]	95.9[a]	98.7[a]	96.9[a]	97.4[a]	98.3[a]	96.9[a]	93.2[a]	99.2[a]	97.4[a]
Max	4.64[a]	4.55[a]	4.61[a]	3.52[a]	3.8[a]	4.28[a]	3.8[a]	5.63[a]	3.26[a]	5.4[a]
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

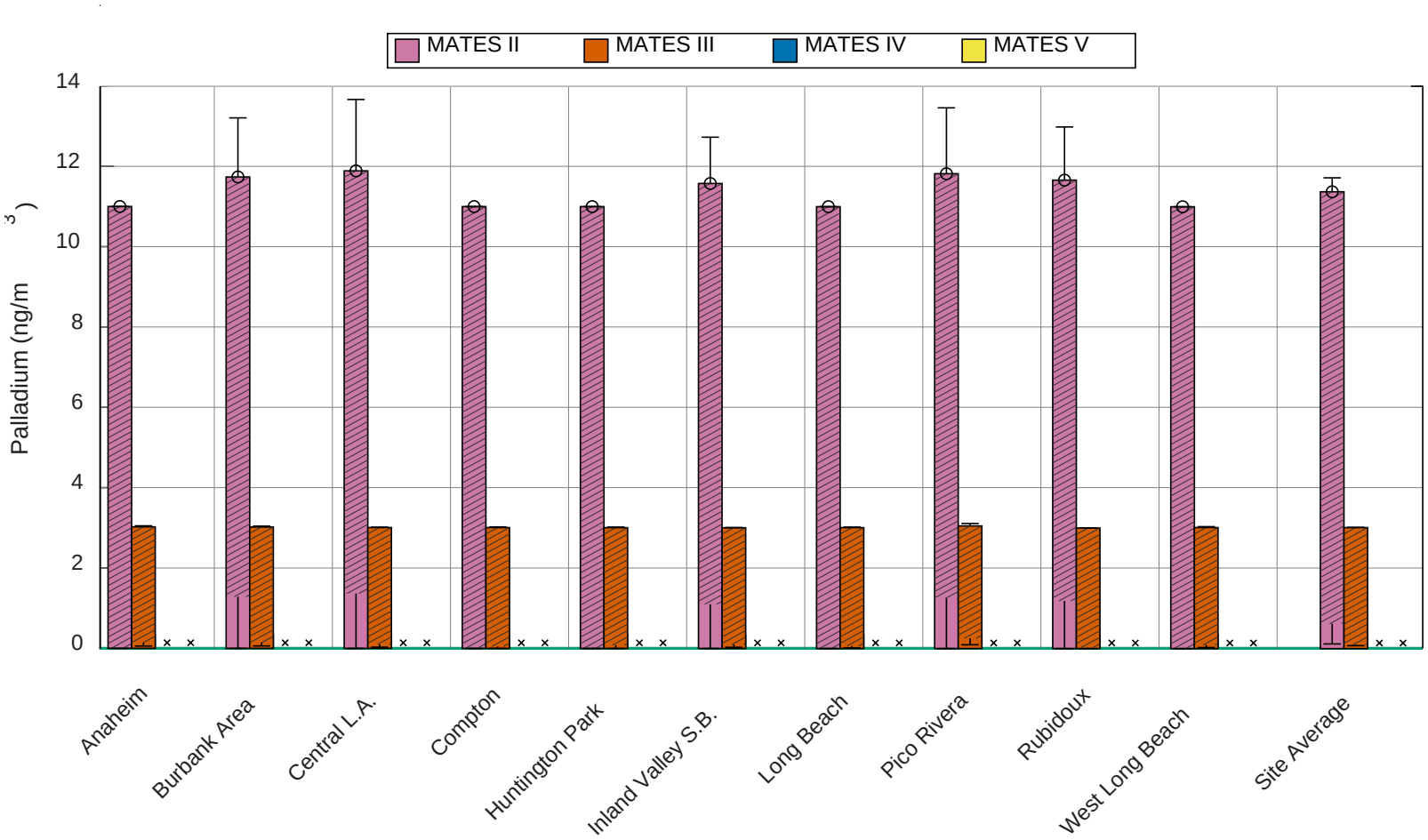


Figure IV-112. Annual Average Concentrations of Palladium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

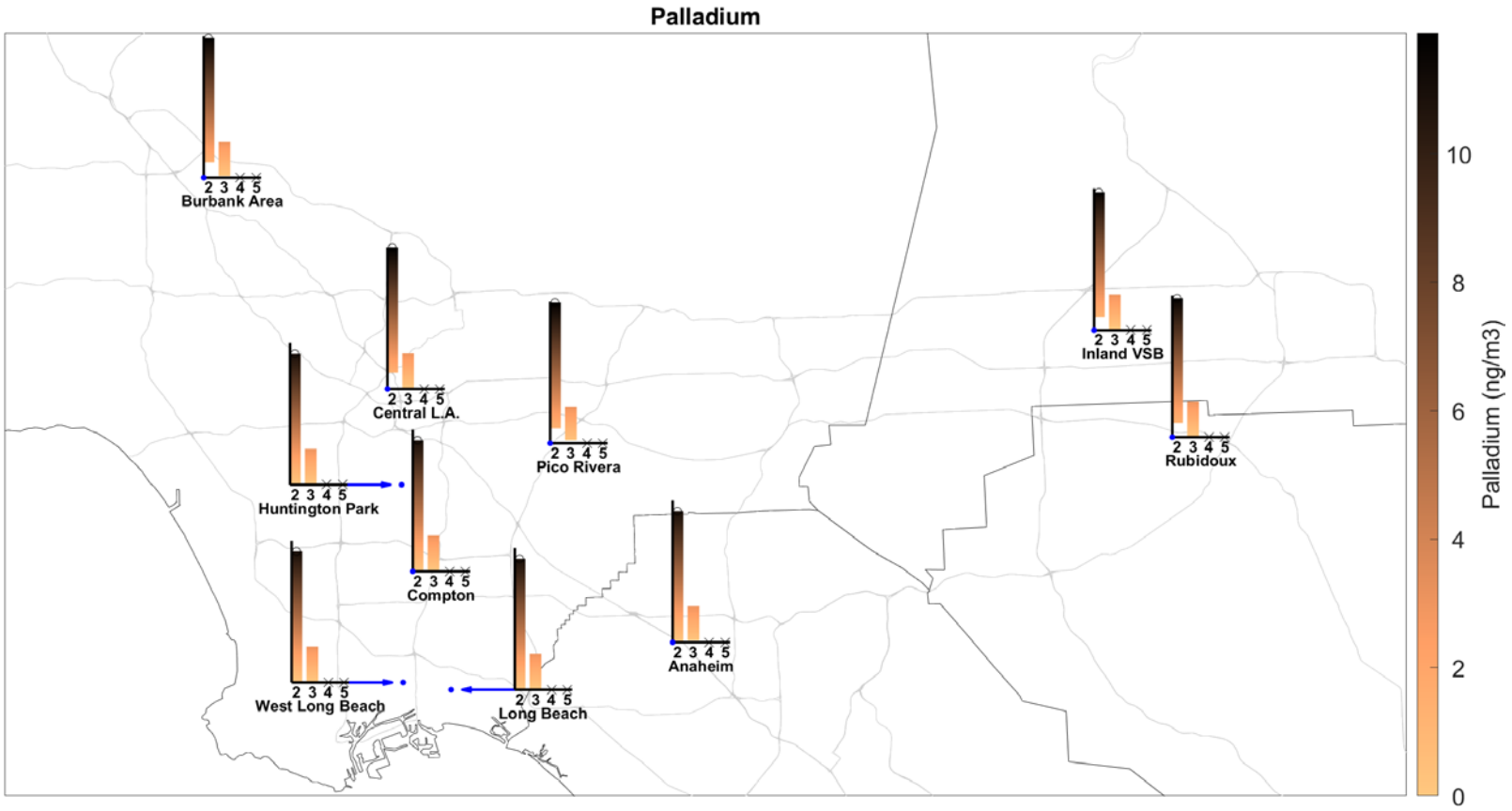


Figure IV-113. Geographic distribution of Palladium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Phosphorus

Table IV-59. Ambient Concentrations (ng/m^3) of Phosphorus from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	35.6	42.1	53.3	80.6	47.6	33	40	35.2	196	39.2
95% CI LB	26.9	34	39.6	58.1	35.6	26.7	31.9	26.5	152	29.9
95% CI UB	45.3	50.1	68.5	106	60.5	39.4	48.2	44.4	243	49.5
N	45	47	39	41	42	56	51	41	41	39
% < MDL	55.6	42.6	41	36.6	50	48.2	45.1	63.4	17.1	48.7
Max	151	101	187	372	186	121	140	109	471	143
MATES III										
Average	48.2	45.5	57.7	42.8	63.6	54.8	47.5	44.9	91.2	55.4
95% CI LB	44.5	42.3	53.4	39.4	57.7	50.2	43.4	40.2	82.1	50.7
95% CI UB	52.2	48.7	62.2	46.8	69.8	59.7	51.5	49.7	101	60.1
N	232	218	228	224	116	230	229	118	237	227
% < MDL	25	23.9	10.1	37.9	6	18.7	31	23.7	24.5	18.1
Max	152	126	160	147	159	200	182	143	264	197
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

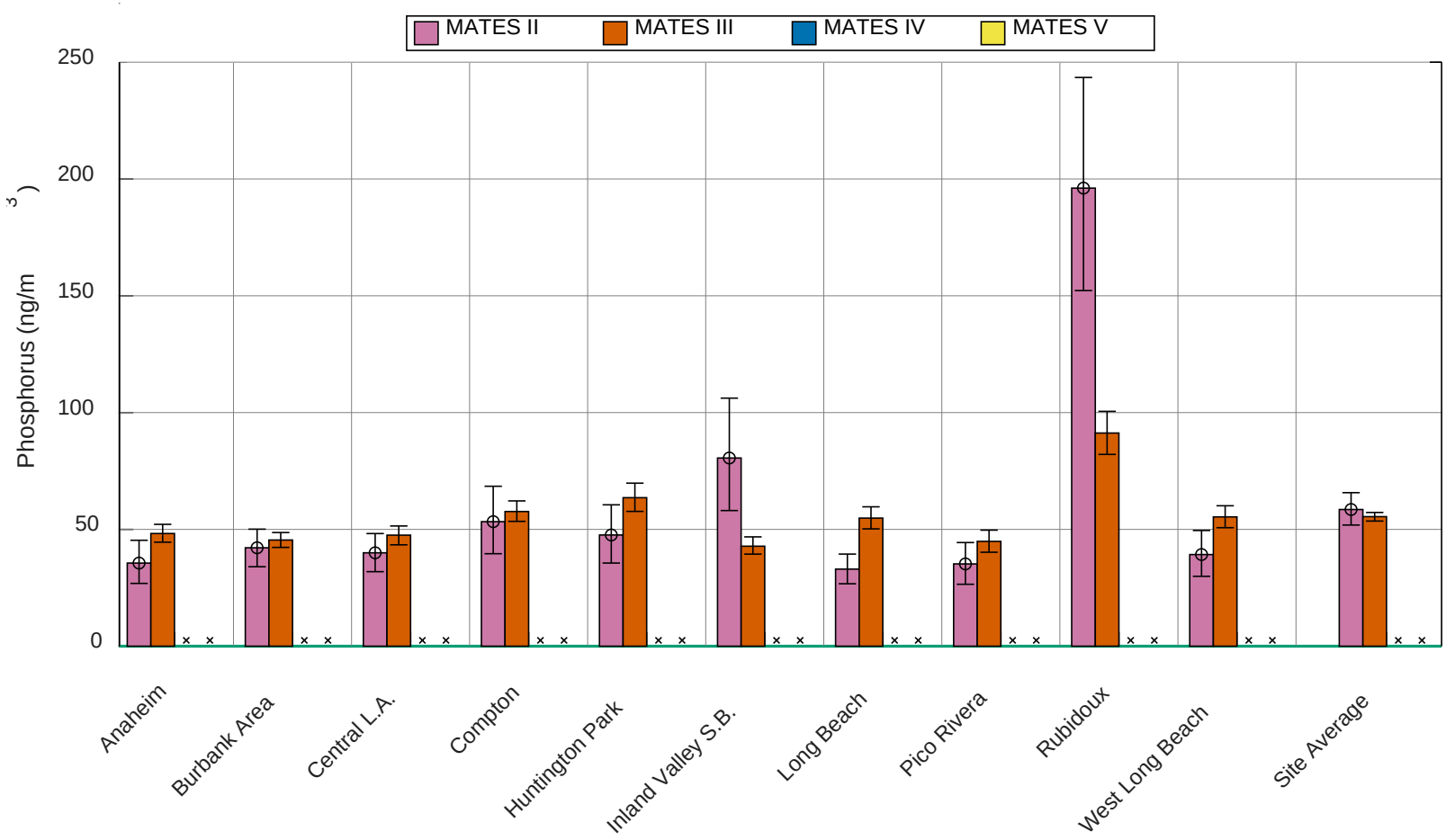


Figure IV-114. Annual Average Concentrations of Phosphorus in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

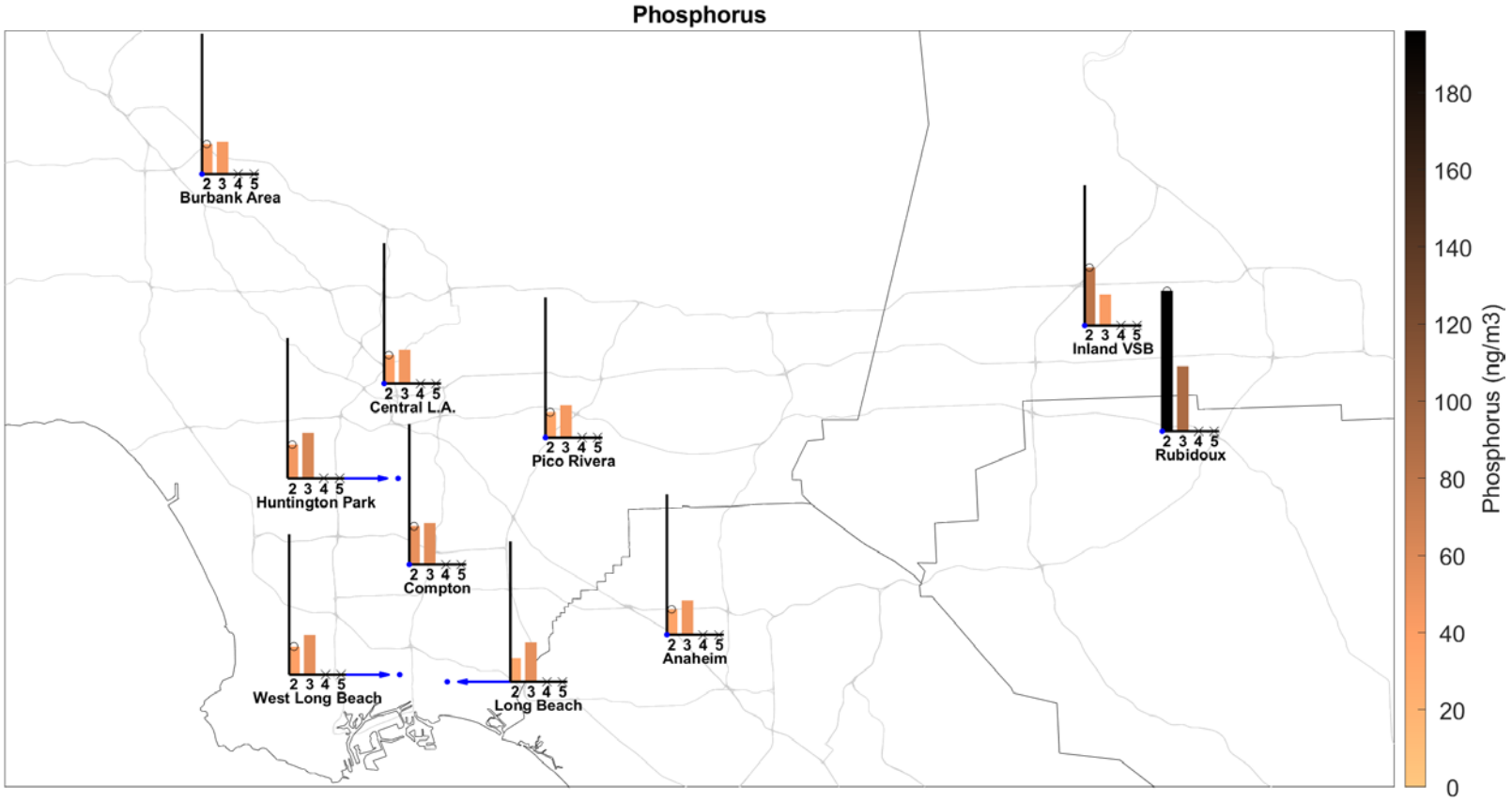


Figure IV-115. Geographic distribution of Phosphorus from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Potassium

Table IV-60. Ambient Concentrations (ng/m^3) of Potassium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	913	655	777	1120	1040	588	568	910	1690	725
95% CI LB	694	575	650	891	653	510	489	695	1380	618
95% CI UB	1190	743	913	1370	1580	673	653	1180	2010	830
N	45	47	39	41	42	56	51	41	41	39
% < MDL	0	0	0	0	0	0	2	2.4	2.4	0
Max	4380	1760	1810	3390	7950	1740	1640	4550	4100	1760
MATES III										
Average	447	460	483	762	582	429	457	531	1130	524
95% CI LB	404	422	449	649	521	401	422	488	1020	485
95% CI UB	505	511	524	940	660	458	501	578	1270	567
N	232	218	228	224	116	230	229	118	237	227
% < MDL	0	0	0	0.4	0	0	0	0	0	0
Max	5650	4540	3040	17500	3720	1740	4190	1910	13100	2380
MATES IV										
Average	250	320	398	812	371	357	382	454	985	475
95% CI LB	199	271	342	616	316	293	315	380	751	390
95% CI UB	308	372	463	1040	433	431	458	537	1250	572
N	60	58	59	56	55	59	59	60	58	58
% < MDL	0	0	0	0	0	1.7	0	0	0	0
Max	1150	998	1240	4420	1350	1350	1490	1470	4170	1920
MATES V										
Average	350	372	431	641	323	352	336	634	791	415
95% CI LB	297	313	357	526	270	275	291	504	660	349
95% CI UB	410	439	521	765	382	462	387	783	932	488
N	46	44	47	45	47	45	45	44	44	44
% < MDL	0	2.3	0	0	12.8	0	4.4	2.3	0	0
Max	1260	950	1760	1880	911	2290	850	2390	1710	1190

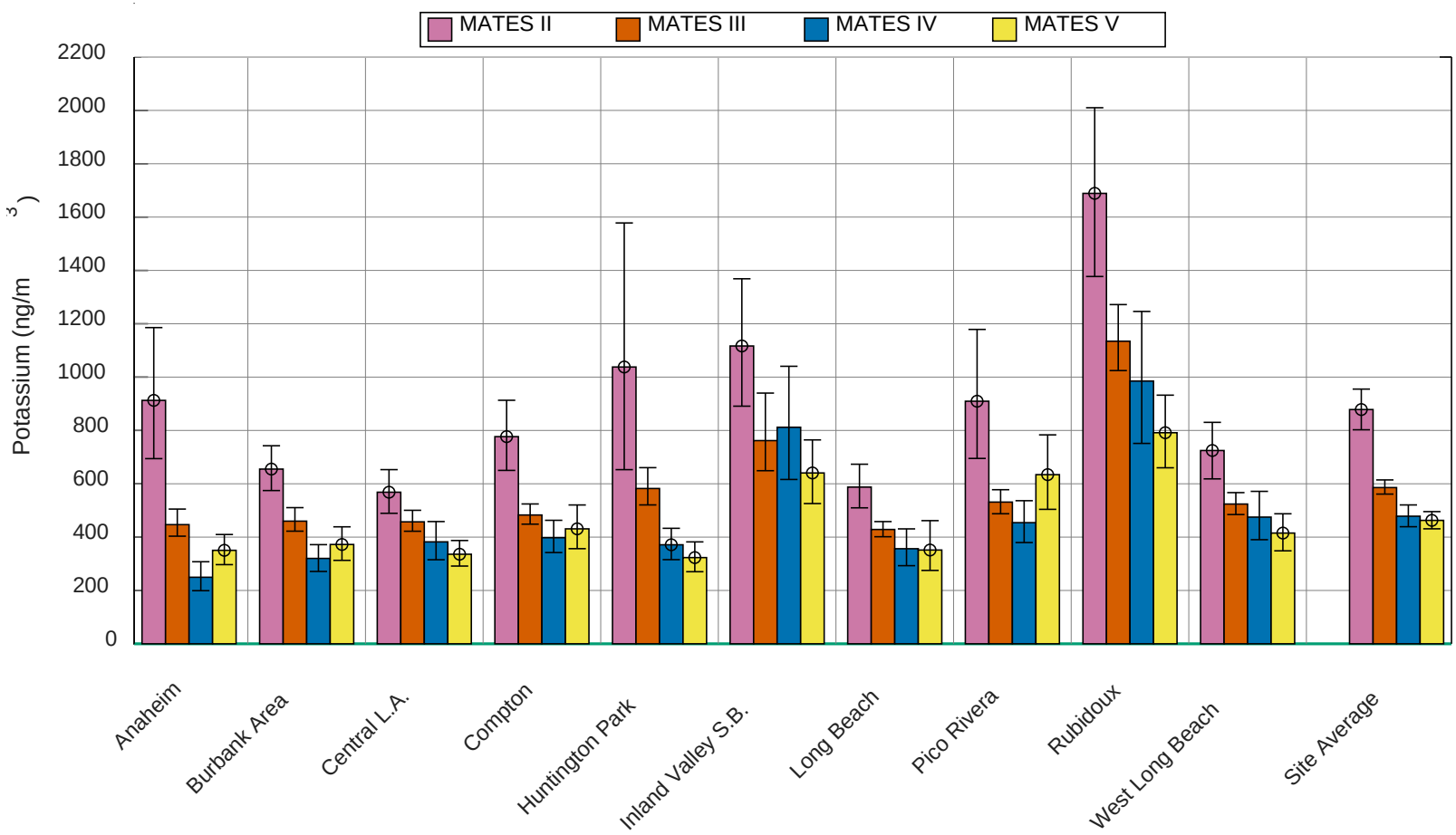


Figure IV-116. Annual Average Concentrations of Potassium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

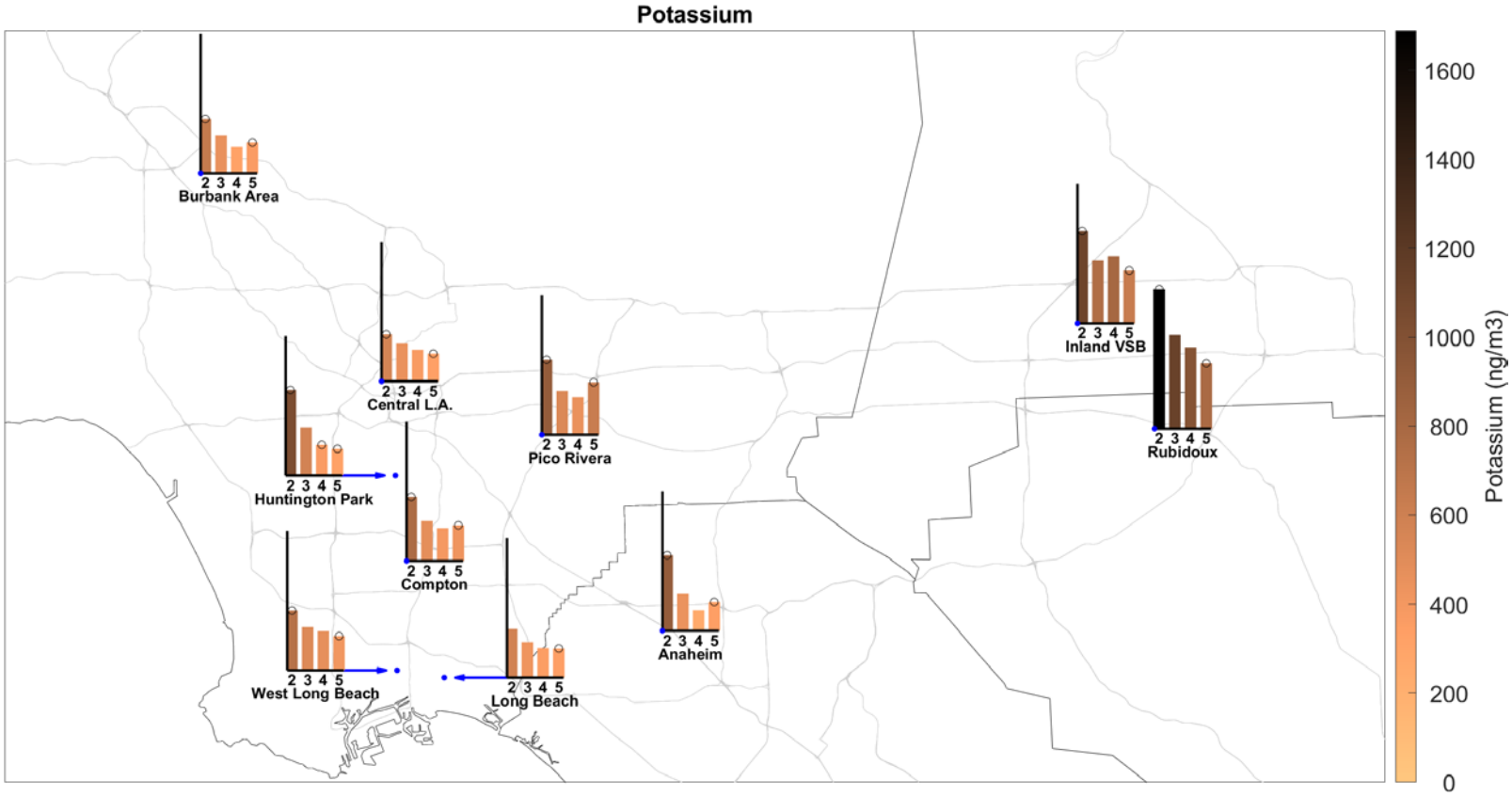


Figure IV-117. Geographic distribution of Potassium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Rubidium

Table IV-61. Ambient Concentrations (ng/m^3) of Rubidium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	3.89	3	3.44	5.22	3.2	2.71	2.71	3.18	7.19	3.17
95% CI LB	3.28	2.57	2.84	4.23	2.74	2.4	2.42	2.68	5.8	2.64
95% CI UB	4.56	3.48	4.1	6.33	3.73	3.08	3.05	3.73	8.64	3.76
N	45	47	39	41	42	56	51	41	41	39
% < MDL	35.6	48.9	43.6	24.4	42.9	62.5	58.8	48.8	19.5	51.3
Max	10	8.81	9.94	16.6	8.29	8.84	6.55	7.87	18.1	9.01
MATES III										
Average	1.41	1.25	1.29	2.64	1.52	1.29	1.3	1.69	4.22	1.67
95% CI LB	1.31	1.19	1.23	2.41	1.34	1.22	1.23	1.5	3.91	1.51
95% CI UB	1.54	1.32	1.38	2.9	1.73	1.36	1.36	1.9	4.53	1.86
N	232	218	228	224	116	230	229	118	237	227
% < MDL	62.9	64.2	61.4	30.8	50.9	64.8	58.1	44.9	16.5	53.7
Max	6.9	4.57	5.36	12	9.13	5.29	3.51	8.13	11.6	13.6
MATES IV										
Average	0.643	1.14	1.17	2.24	1.14	0.948	1.12	1.25	2.18	1.45
95% CI LB	0.539	0.924	0.966	1.78	0.938	0.783	0.926	1.02	1.73	1.17
95% CI UB	0.758	1.36	1.39	2.68	1.36	1.12	1.31	1.46	2.61	1.78
N	41	39	40	39	40	41	40	42	39	41
% < MDL	19.5	7.7	7.5	0	5	7.3	12.5	7.1	5.1	7.3
Max	1.63	3.24	2.77	5.77	3.39	2.07	3.41	3.18	5.57	4.48
MATES V										
Average	1.33	1.53	1.38	3.01	1.1	1.18	1.18	2.38	3.16	1.58
95% CI LB	1.11	1.29	1.13	2.43	0.905	0.937	1.01	2.03	2.7	1.25
95% CI UB	1.57	1.78	1.68	3.67	1.3	1.53	1.36	2.75	3.63	2.03
N	61	58	61	59	61	60	60	60	60	59
% < MDL	0	0	0	0	0	0	1.7	0	0	0
Max	5.17	4.41	6.85	14.7	3.68	8.84	3.54	7.26	9.39	11.3

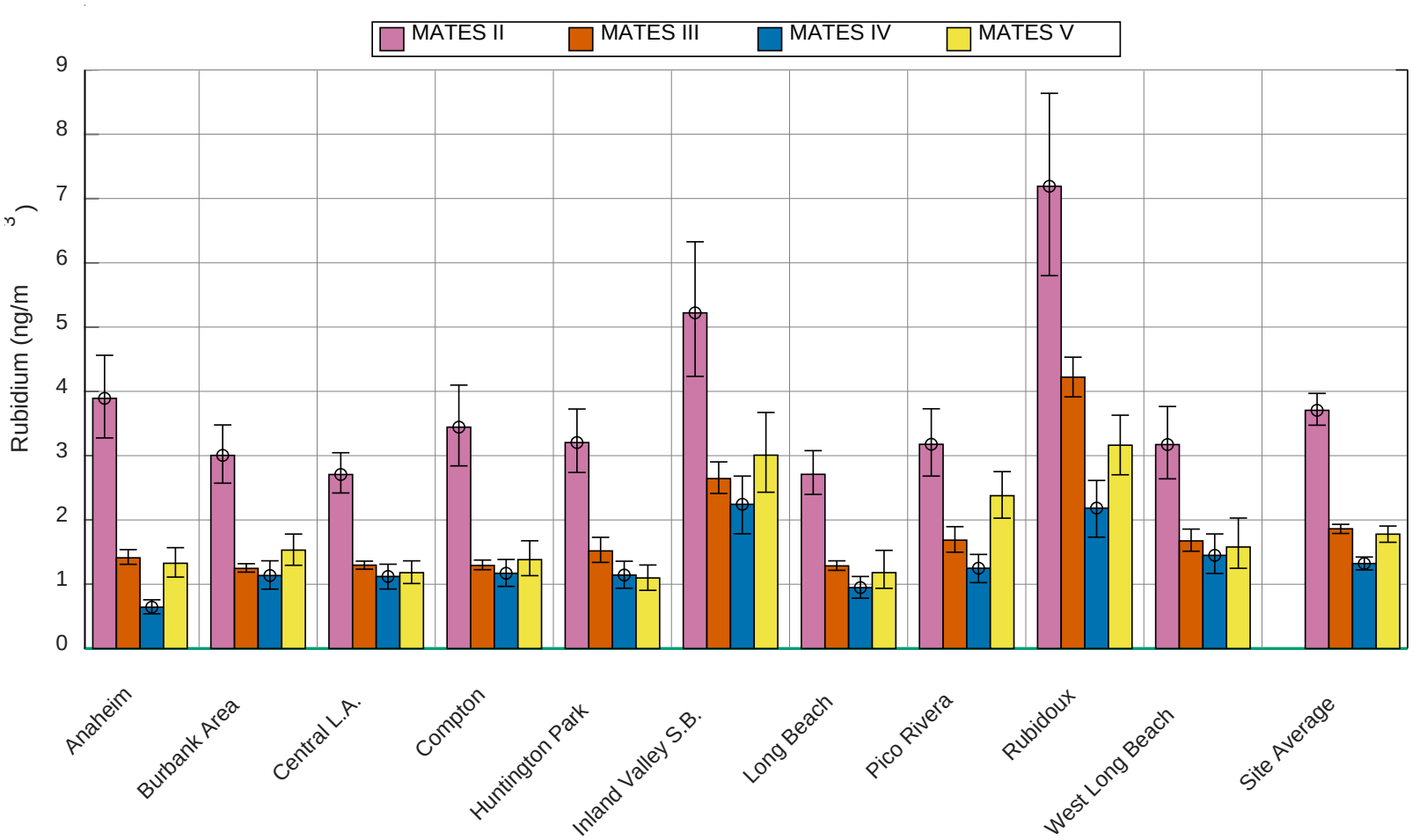


Figure IV-118. Annual Average Concentrations of Rubidium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

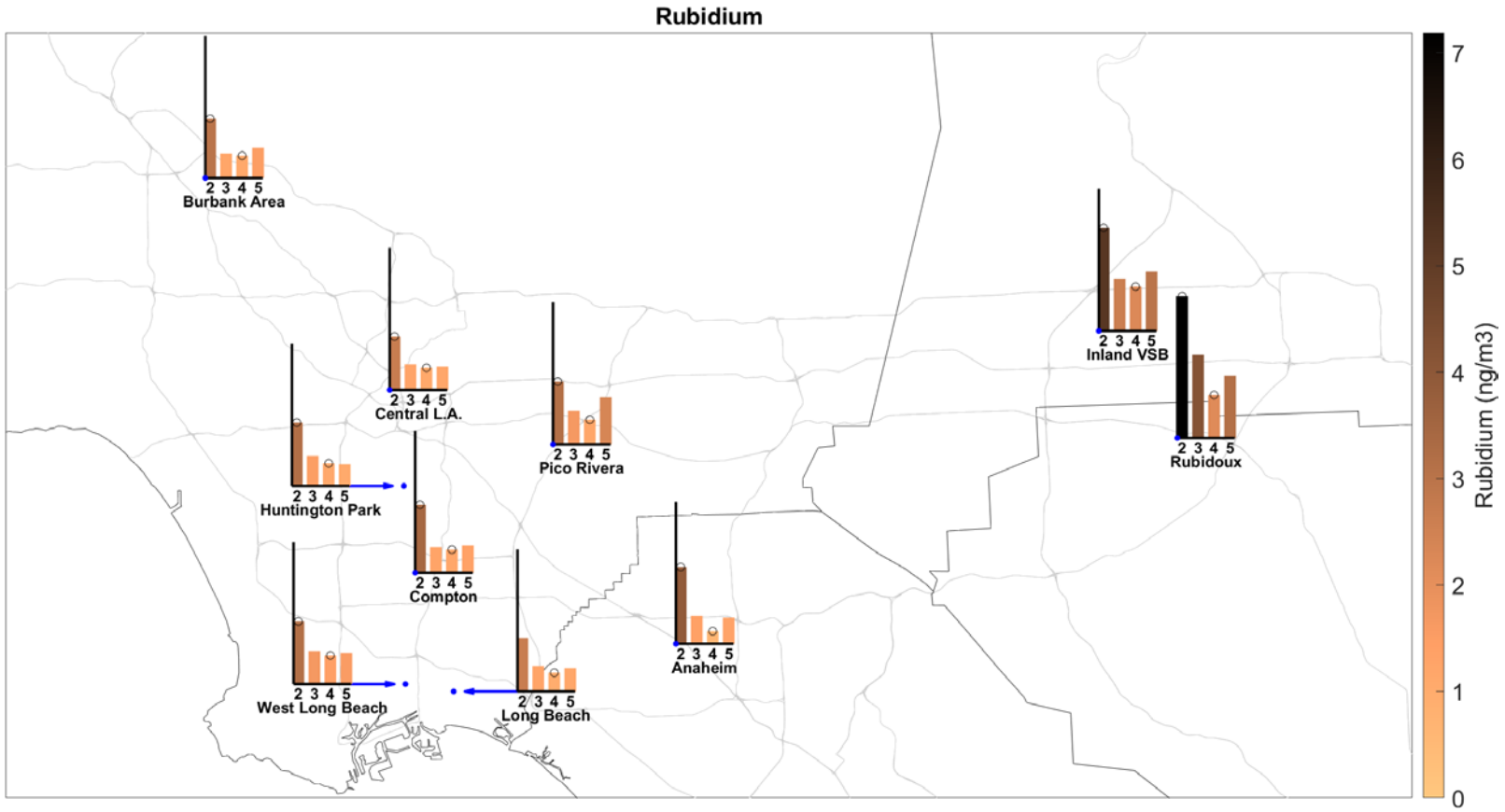


Figure IV-119. Geographic distribution of Rubidium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Selenium

Table IV-62. Ambient Concentrations (ng/m^3) of Selenium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1.41	1.71	2.07	1.72	3.76	1.75	2.15	3.16	0.556, 1.87[a]	1.85
95% CI LB	1.27	1.44	1.55	1.47	2.44	1.44	1.7	2.41	0.202[a]	1.56
95% CI UB	1.71	2.17	2.78	2.15	5.33	2.12	2.69	4.01	2.13[a]	2.69
N	45	47	39	41	42	56	51	41	41[a]	39
% < MDL	68.9	70.2	69.2	70.7	50	66.1	58.8	39	82.9[a]	79.5
Max	2.96	7	11.2	5.41	20.7	7.17	11.4	12.1	4.29[a]	13
MATES III										
Average	0, 2[a]	0, 2[a]	0, 2[a]	0, 2[a]	0, 2[a]	0, 2[a]	0, 2[a]	0, 2[a]	0, 2[a]	0, 2[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	2[a]	2[a]	2[a]	2[a]	2[a]	2[a]	2[a]	2[a]	2[a]	2[a]
N	232[a]	218[a]	228[a]	224[a]	116[a]	230[a]	229[a]	118[a]	237[a]	227[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES IV										
Average	0.0942, 0.889[a]	0.207, 0.925[a]	1.04	1	1.79	1.08	1.17	1.17	1.02	0.182, 0.975[a]
95% CI LB	0.0207[a]	0.0947[a]	0.929	0.933	1.35	0.895	1.07	1.04	0.908	0.0283[a]
95% CI UB	0.917[a]	0.972[a]	1.24	1.07	2.33	1.4	1.3	1.3	1.17	1.14[a]
N	60[a]	58[a]	59	56	55	59	59	60	58	58[a]
% < MDL	91.7[a]	82.8[a]	72.9	62.5	36.4	78	50.8	65	75.9	91.4[a]
Max	1.46[a]	1.73[a]	5.21	2.14	12.6	9.26	2.52	3.32	4.06	5.19[a]
MATES V										
Average	0.117, 0.601[a]	0.135, 0.615[a]	0.614	0.681	0.697	0.0785, 0.591[a]	0.637	0.691	0.0842, 0.597[a]	0.591
95% CI LB	0.0543[a]	0.0624[a]	0.595	0.642	0.622	0.0305[a]	0.608	0.631	0.0299[a]	0.585
95% CI UB	0.619[a]	0.642[a]	0.638	0.723	0.817	0.601[a]	0.681	0.771	0.613[a]	0.608
N	61[a]	58[a]	61	59	61	60[a]	60	60	60[a]	59
% < MDL	83.6[a]	82.8[a]	75.4	61	73.8	88.3[a]	71.7	63.3	88.3[a]	78
Max	0.89[a]	0.99[a]	0.96	1.12	3.68	0.79[a]	1.23	2.37	0.88[a]	0.82

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

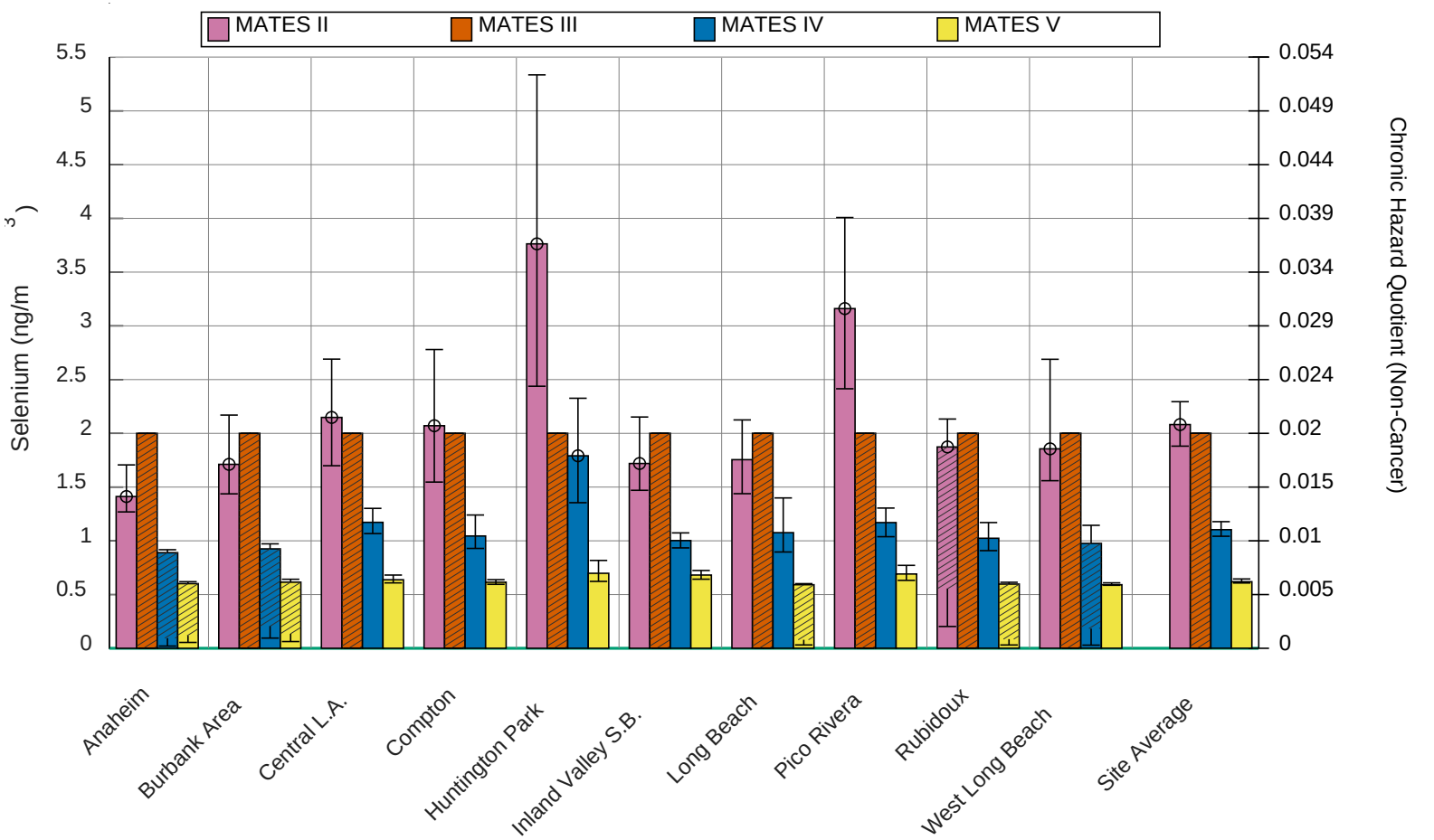


Figure IV-120. Annual Average Concentrations of Selenium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

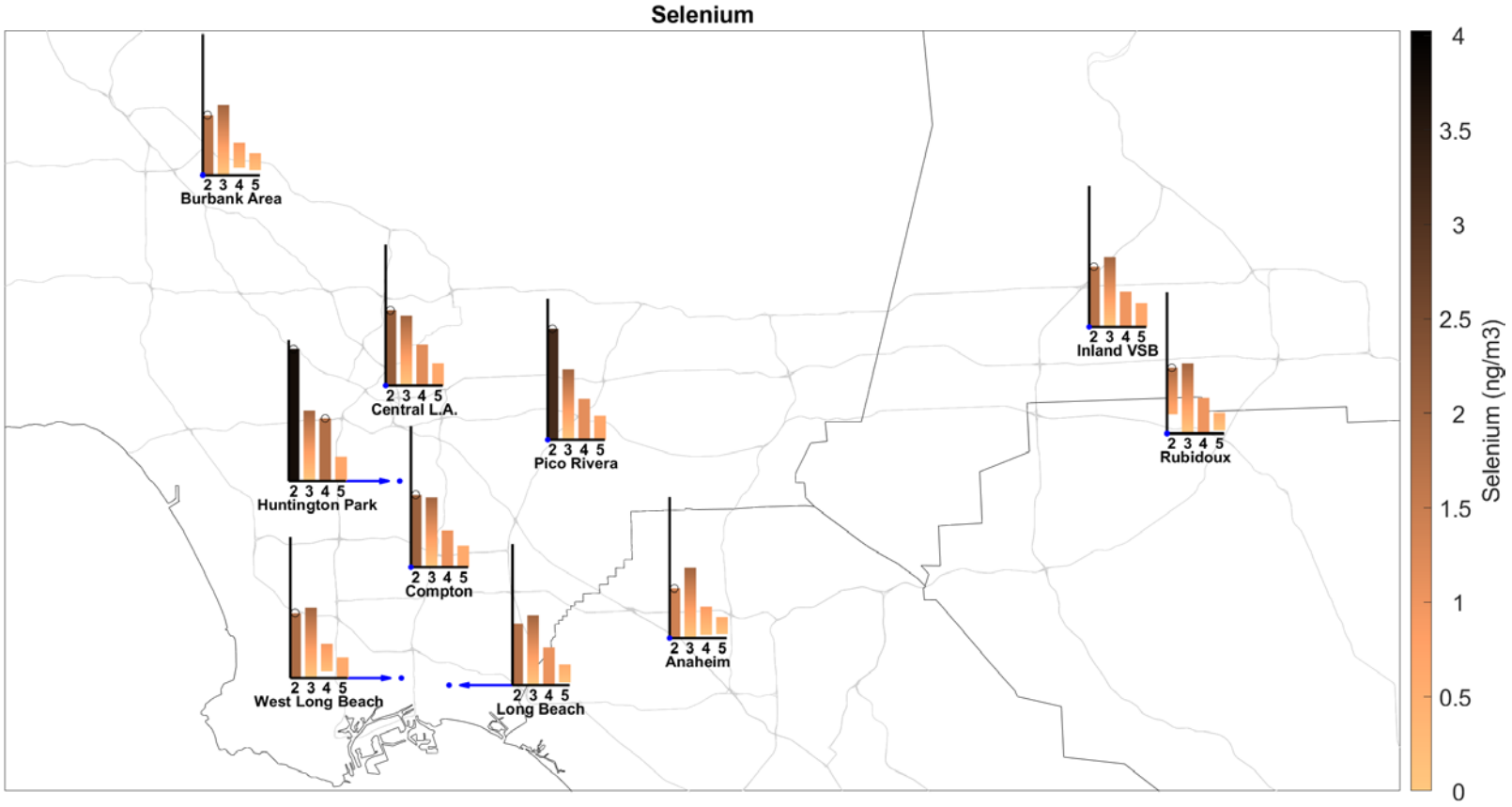


Figure IV-121. Geographic distribution of Selenium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Silicon

Table IV-63. Ambient Concentrations (ng/m^3) of Silicon from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	3770	3200	3960	4810	3340	2690	2870	3020	6200	3900
95% CI LB	2860	2750	3200	3930	2720	2180	2410	2490	5310	3150
95% CI UB	4760	3660	4770	5740	4070	3290	3340	3520	7110	4770
N	45	47	39	41	42	56	51	41	41	39
% < MDL	2.2	0	0	2.4	2.4	0	2	2.4	2.4	0
Max	17200	7520	11500	12000	13000	12800	8210	7860	13600	14900
MATES III										
Average	5130	5330	5790	8300	6760	5170	5870	7040	10000	6730
95% CI LB	4720	5030	5420	7710	6180	4800	5530	6390	9420	6170
95% CI UB	5550	5640	6170	8950	7350	5540	6200	7710	10700	7330
N	232	218	228	224	116	230	229	118	237	227
% < MDL	3	1.4	1.3	1.8	0.9	3	0.9	0	0	0.9
Max	19000	13900	17100	24300	17200	13400	12100	28000	25900	31900
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

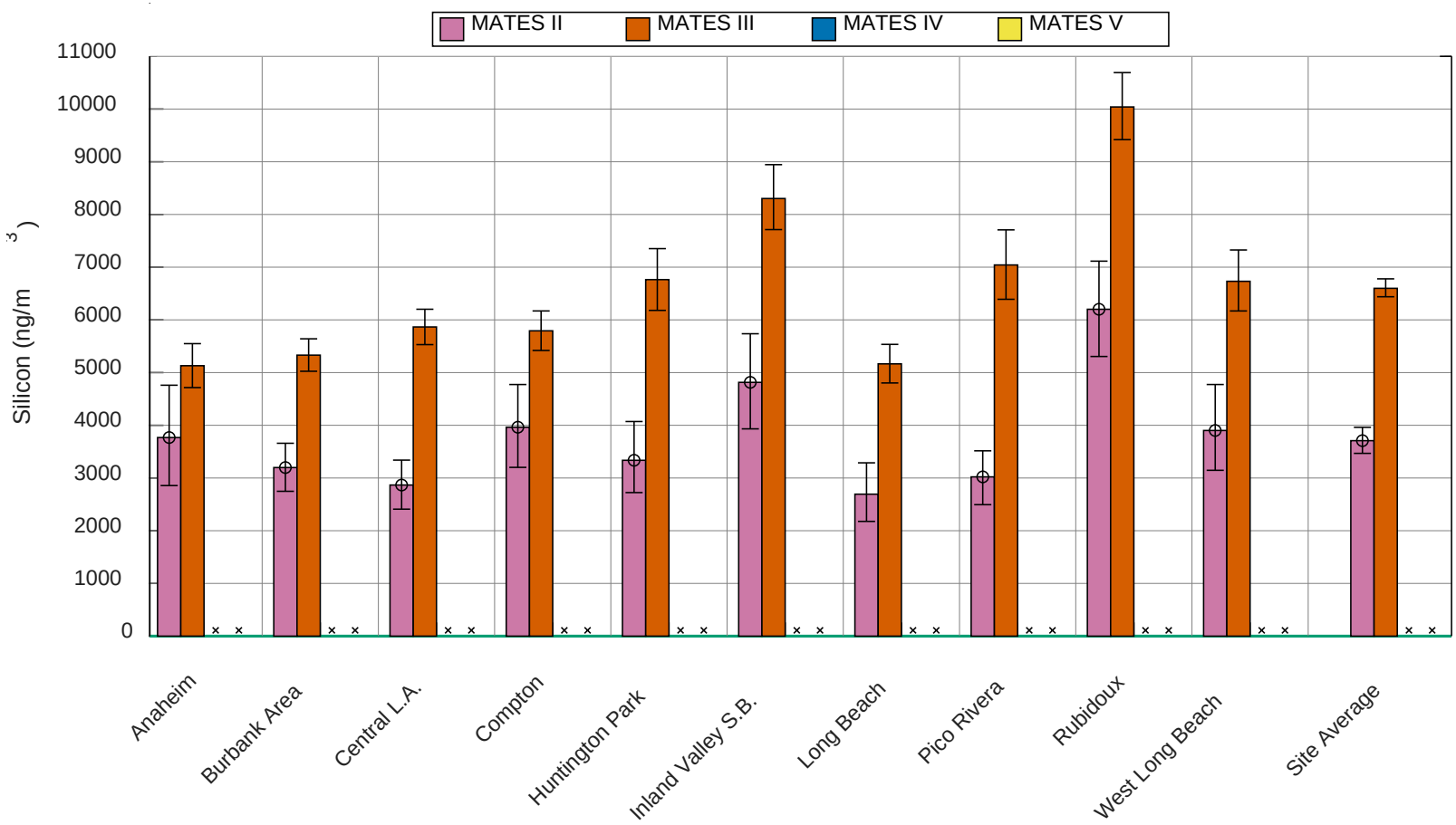


Figure IV-122. Annual Average Concentrations of Silicon in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

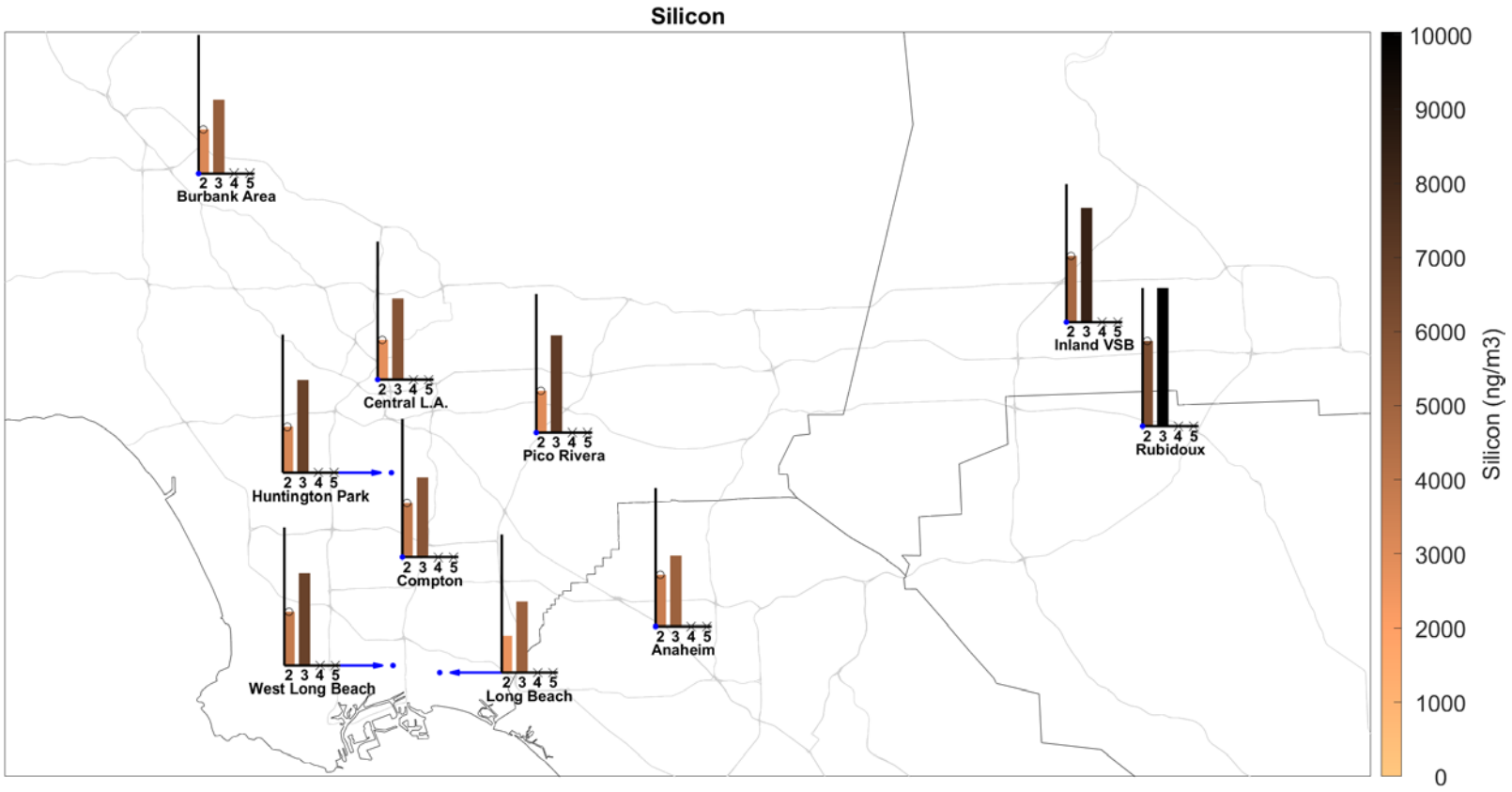


Figure IV-123. Geographic distribution of Silicon from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Silver

Table IV-64. Ambient Concentrations (ng/m^3) of Silver from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 5[a]	0, 5[a]	0, 5[a]	0, 5[a]	0, 5[a]	0, 5[a]	0, 5[a]	0, 5[a]	0, 5[a]	0, 5[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	5[a]	5[a]	5[a]	5[a]	5[a]	5[a]	5[a]	5[a]	5[a]	5[a]
N	25[a]	20[a]	18[a]	21[a]	22[a]	26[a]	23[a]	26[a]	21[a]	19[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES III										
Average	0.613, 2.53[a]	0.682, 2.51[a]	0.363, 2.27[a]	0.564, 2.44[a]	0.869, 2.66[a]	0.41, 2.31[a]	0.864, 2.72[a]	0.8, 2.63[a]	0.667, 2.5[a]	0.797, 2.66[a]
95% CI LB	0.262[a]	0.327[a]	0.118[a]	0.219[a]	0.331[a]	0.145[a]	0.432[a]	0.282[a]	0.373[a]	0.392[a]
95% CI UB	2.88[a]	2.87[a]	2.54[a]	2.79[a]	3.22[a]	2.58[a]	3.15[a]	3.19[a]	2.78[a]	3.07[a]
N	232[a]	218[a]	228[a]	224[a]	116[a]	230[a]	229[a]	118[a]	237[a]	227[a]
% < MDL	95.7[a]	91.3[a]	95.6[a]	93.8[a]	89.7[a]	95.2[a]	93[a]	91.5[a]	91.6[a]	93[a]
Max	18.4[a]	17.6[a]	18.4[a]	25.3[a]	18.3[a]	17.6[a]	22[a]	18.1[a]	19.2[a]	18.5[a]
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

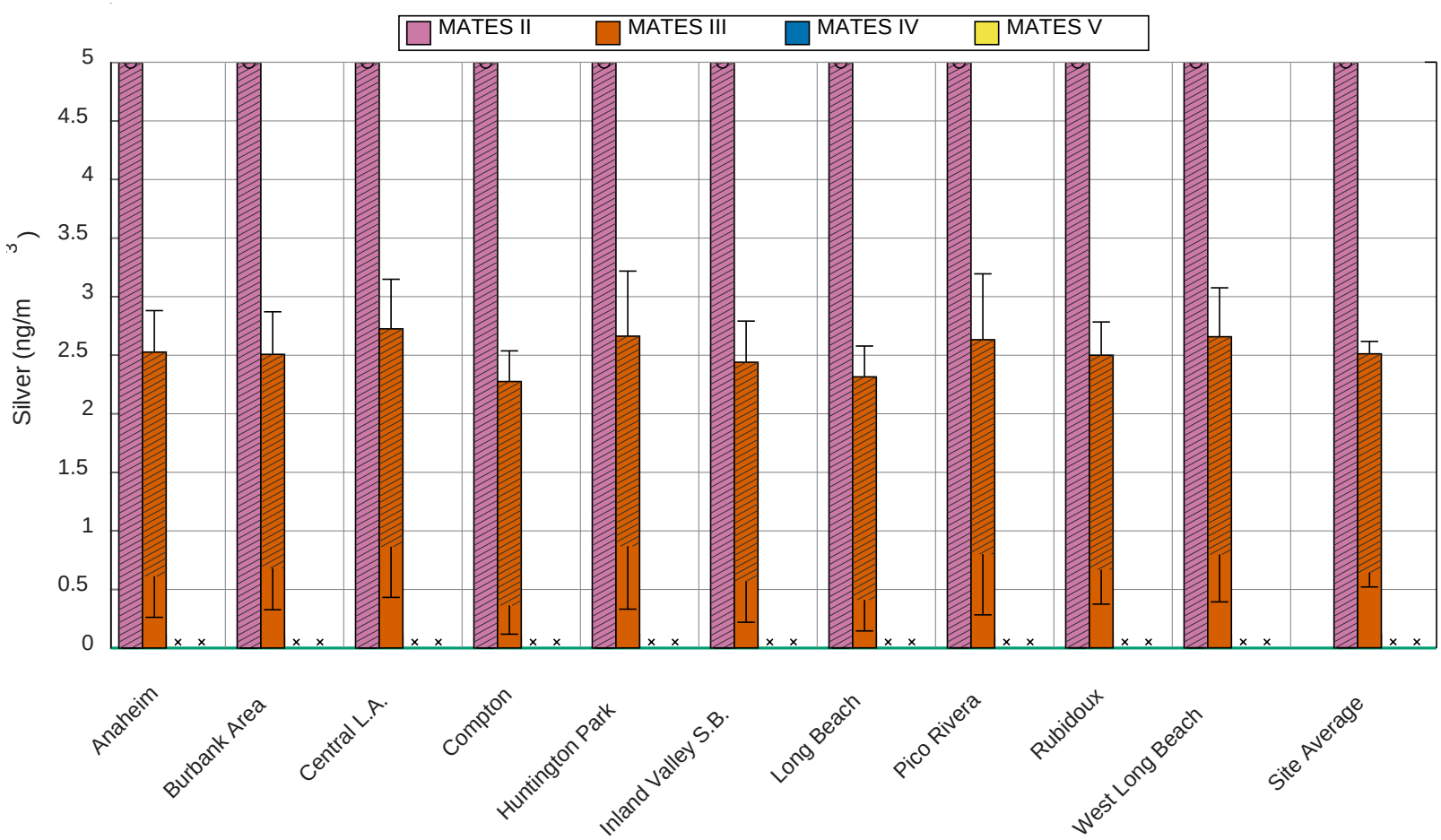


Figure IV-124. Annual Average Concentrations of Silver in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

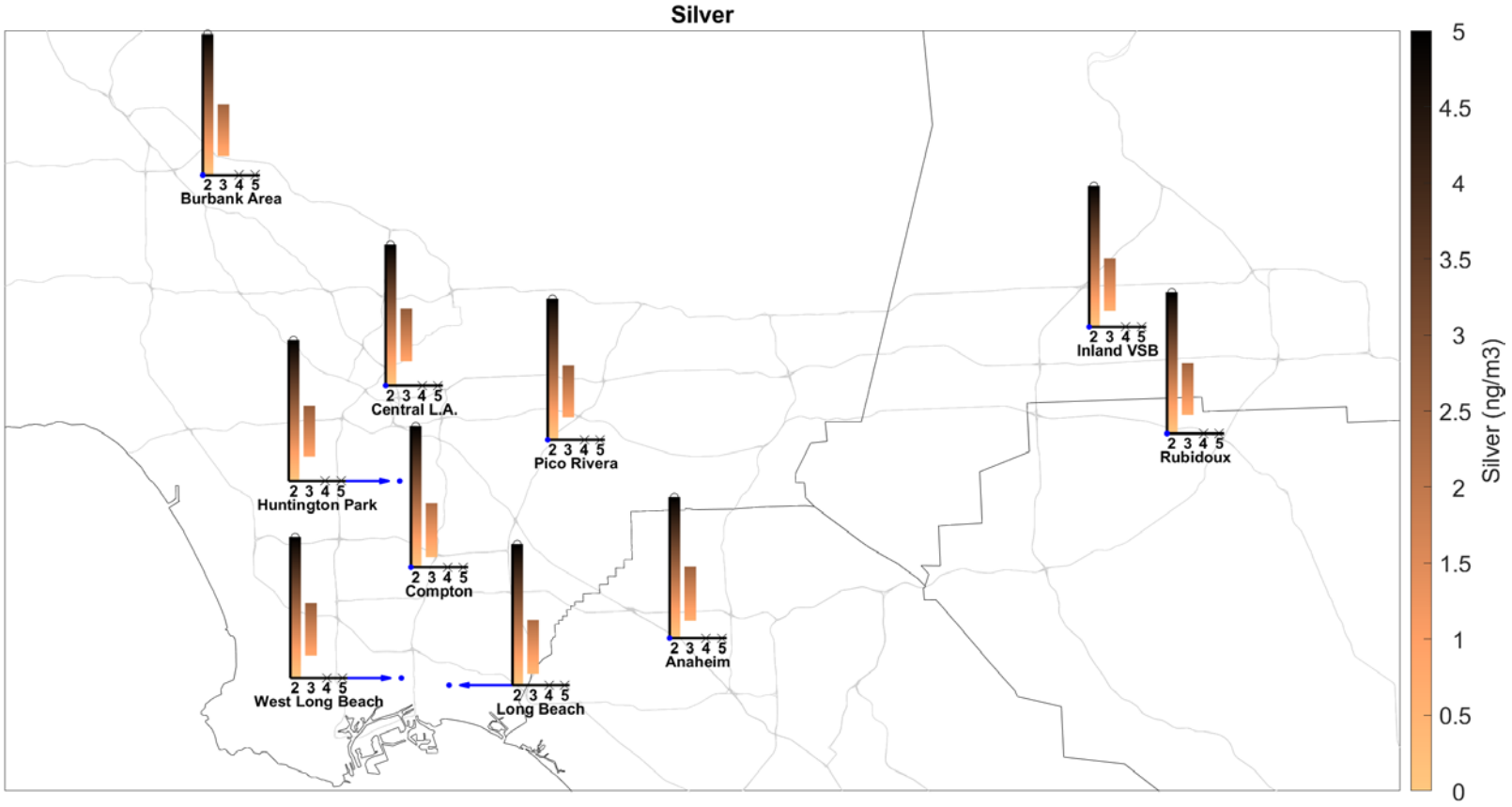


Figure IV-125. Geographic distribution of Silver from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Strontium

Table IV-65. Ambient Concentrations (ng/m^3) of Strontium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	148	107	105	162	197	90.2	111	134	225	107
95% CI LB	96.9	71.1	66.5	104	112	63.6	76.9	90.5	153	67.8
95% CI UB	209	147	147	223	300	119	149	182	307	147
N	45	47	39	41	42	56	51	41	41	39
% < MDL	0	0	0	0	0	0	3.9	0	2.4	0
Max	770	585	474	684	1470	476	546	707	786	524
MATES III										
Average	11.9	13.1	13.1	18.2	18.4	11.4	16.8	14.1	26	15.7
95% CI LB	10.4	12	12.1	15.2	16.6	10.6	15.7	12.7	23.3	14.5
95% CI UB	13.6	14.3	14.1	23.1	20.5	12.2	18	15.5	29.3	17
N	232	218	228	224	116	230	229	118	237	227
% < MDL	4.3	4.1	3.5	5.8	1.7	3.9	1.3	5.9	1.7	1.3
Max	126	95.5	63.6	478	82.5	39.7	91.2	43.8	346	64.4
MATES IV										
Average	7.27	10.9	10.9	17.8	11.9	9.6	16.1	12.7	20.1	15.6
95% CI LB	5.8	9.32	9.37	14.1	10.2	8.09	13.4	10.8	16.1	12.9
95% CI UB	9.01	12.7	12.5	22.2	13.9	11.3	19.2	14.8	24.7	18.8
N	60	58	59	56	55	59	59	60	58	58
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	37.6	34	33	75.3	40.5	28.5	58.8	36.9	83.8	56
MATES V										
Average	9.54	10.2	11.1	16.1	10.4	8.22	12.5	14.6	17.6	11.9
95% CI LB	7.99	8.58	9.16	13.1	8.8	6.71	10.5	12.2	14.8	9.57
95% CI UB	11.3	11.8	13.2	19.3	12.2	10.2	14.5	17	20.4	14.7
N	44	43	43	44	45	42	45	44	43	42
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	31.6	24.1	33	51.3	24.9	37.8	36.8	33.8	44.5	53

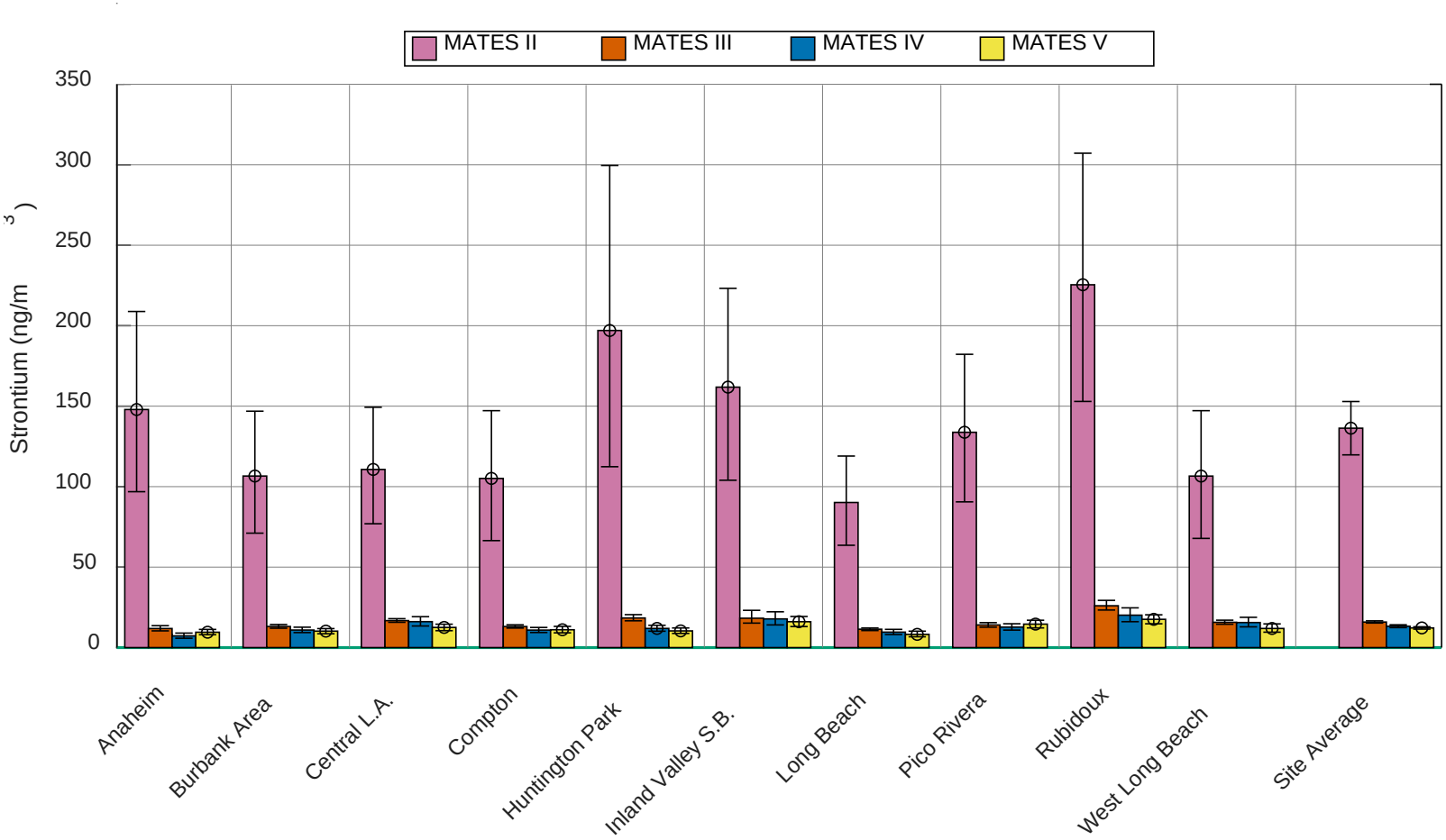


Figure IV-126. Annual Average Concentrations of Strontium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

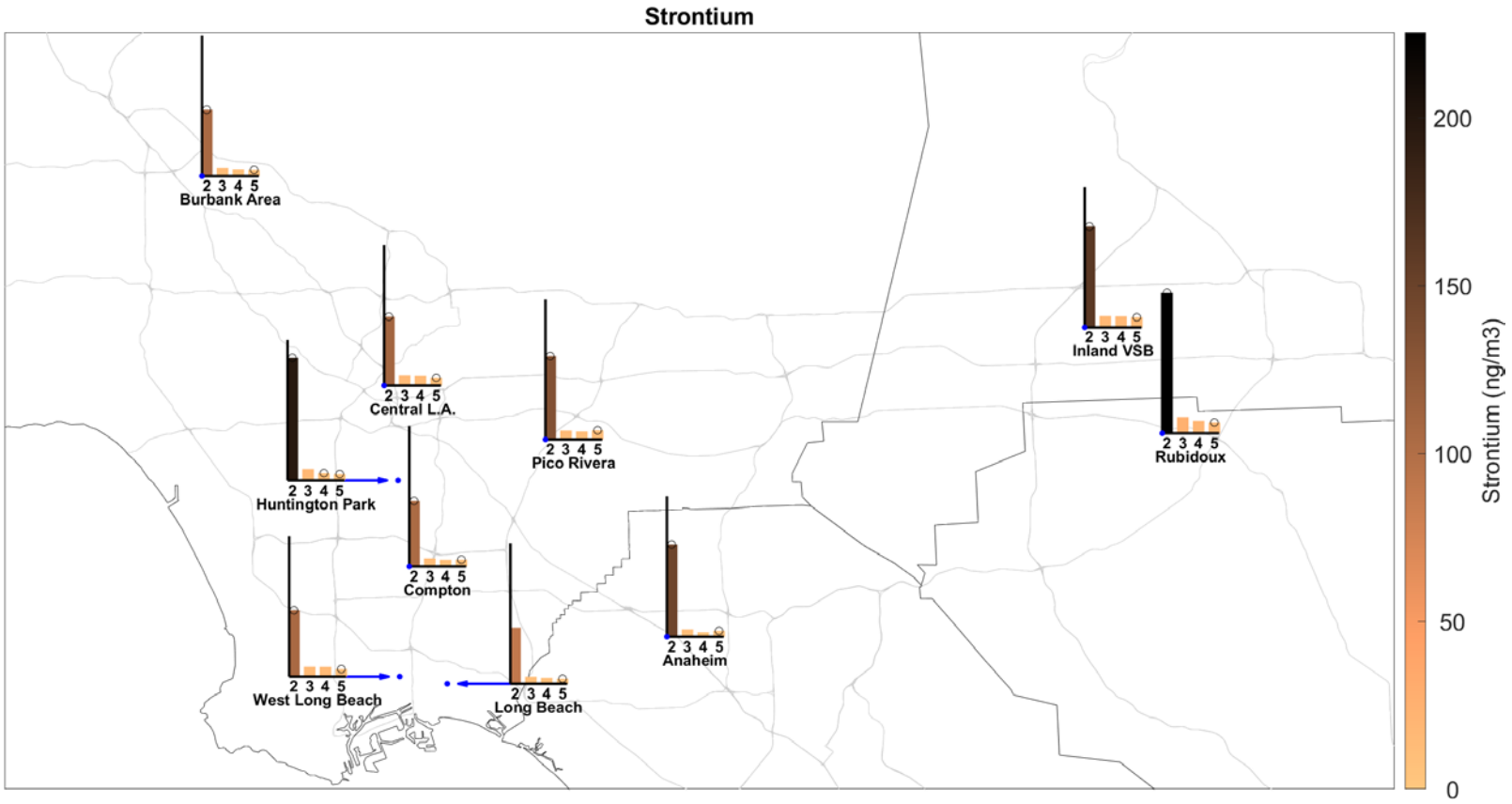


Figure IV-127. Geographic distribution of Strontium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Sulfur

Table IV-66. Ambient Concentrations (ng/m^3) of Sulfur from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1380	1260	1190	1070	1410	1400	1240	1210	1240	1390
95% CI LB	1130	1050	964	857	1120	1170	1020	957	1010	1130
95% CI UB	1650	1490	1430	1310	1710	1640	1480	1470	1490	1690
N	45	47	39	41	42	56	51	41	41	39
% < MDL	0	0	0	2.4	0	0	2	2.4	2.4	0
Max	3430	3310	3910	2940	4350	4140	3190	2940	3320	3990
MATES III										
Average	1570	1500	1720	1020	1900	1830	1570	1530	1270	2000
95% CI LB	1440	1370	1570	916	1670	1680	1420	1350	1170	1850
95% CI UB	1700	1620	1870	1140	2130	1990	1710	1700	1380	2160
N	232	218	228	224	116	230	229	118	237	227
% < MDL	0	0	0.4	0.4	0	0	0	0	0	0
Max	5230	4270	5800	9040	5510	6420	4730	4640	7480	6740
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

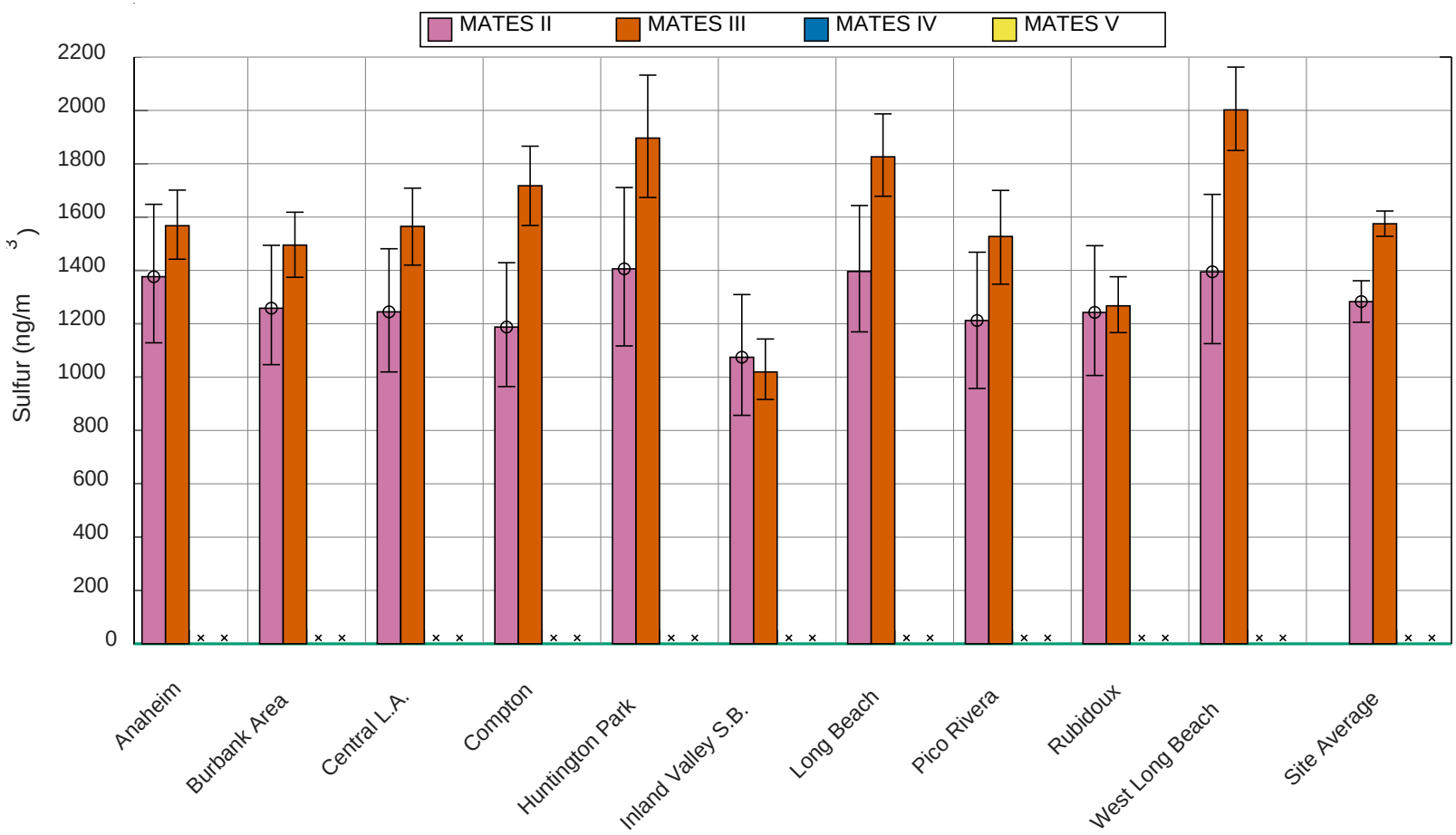


Figure IV-128. Annual Average Concentrations of Sulfur in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

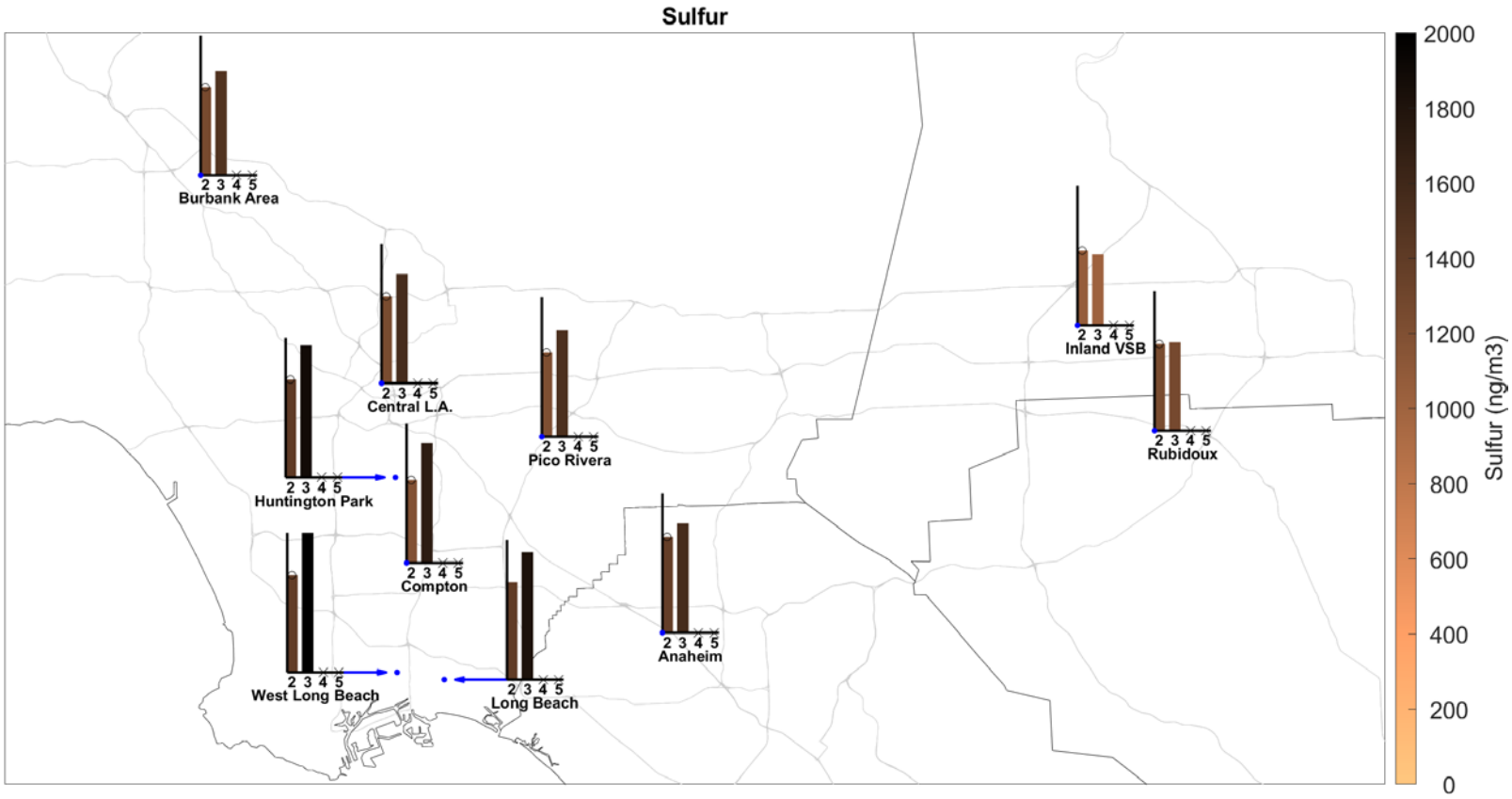


Figure IV-129. Geographic distribution of Sulfur from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Tin

Table IV-67. Ambient Concentrations (ng/m^3) of Tin from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1.31, 5.42[a]	6.05	12.3	7.54	9.45	3.09, 7.2[a]	6.32	574	2.22, 6.24[a]	7.03
95% CI LB	0.489[a]	5.38	8.48	6.18	7.6	1.18[a]	5.57	71.3	0.829[a]	5.95
95% CI UB	5.84[a]	6.91	16.2	8.98	11.5	9.12[a]	7.21	1260	7.35[a]	8.43
N	45[a]	47	39	41	42	56[a]	51	41	41[a]	39
% < MDL	82.2[a]	72.3	66.7	63.4	57.1	82.1[a]	68.6	43.9	80.5[a]	71.8
Max	11[a]	20.5	45.7	24	37	43.1[a]	17	9200	18.3[a]	23.2
MATES III										
Average	3.51	4.75	4.18	3.58	5.47	4.31	4.91	15.8	3.31	4.16
95% CI LB	3.35	4.41	3.87	3.42	4.76	3.96	4.6	10.5	3.22	3.82
95% CI UB	3.67	5.1	4.52	3.76	6.23	4.7	5.23	22	3.41	4.56
N	232	218	228	224	116	230	229	118	237	227
% < MDL	74.6	35.3	67.1	69.2	45.7	66.1	40.6	25.4	74.7	68.3
Max	10.8	26.7	17.5	10.8	21.7	19.4	15.4	245	8.83	19.1
MATES IV										
Average	1.9	5.26	2.86	3.98	5.83	3.25	6.5	20	2.89	2.55
95% CI LB	1.53	4.43	2.37	3.19	4.28	2.32	5.23	8.27	2.36	2.07
95% CI UB	2.27	6.17	3.38	4.87	7.62	4.55	7.95	40.3	3.55	3.07
N	60	58	59	56	55	59	59	60	58	58
% < MDL	1.7	0	0	1.8	0	0	0	0	0	0
Max	7.7	18.4	8.93	17.7	33.5	32.8	31.1	549	13.2	8.63
MATES V										
Average	2.92	3.5	3.25	4.17	3.72	2.44	5.16	4.63	2.69	2.54
95% CI LB	2.26	3.04	2.51	3.62	2.77	1.87	4.34	3.83	2.25	1.92
95% CI UB	3.68	3.99	4.12	4.73	4.78	3.07	6.05	5.45	3.13	3.23
N	60	57	60	58	60	59	59	60	58	58
% < MDL	0	0	0	0	13.3	0	1.7	0	0	0
Max	15.8	9.28	13	9.47	16.6	10.1	14.5	12.8	8.16	11

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

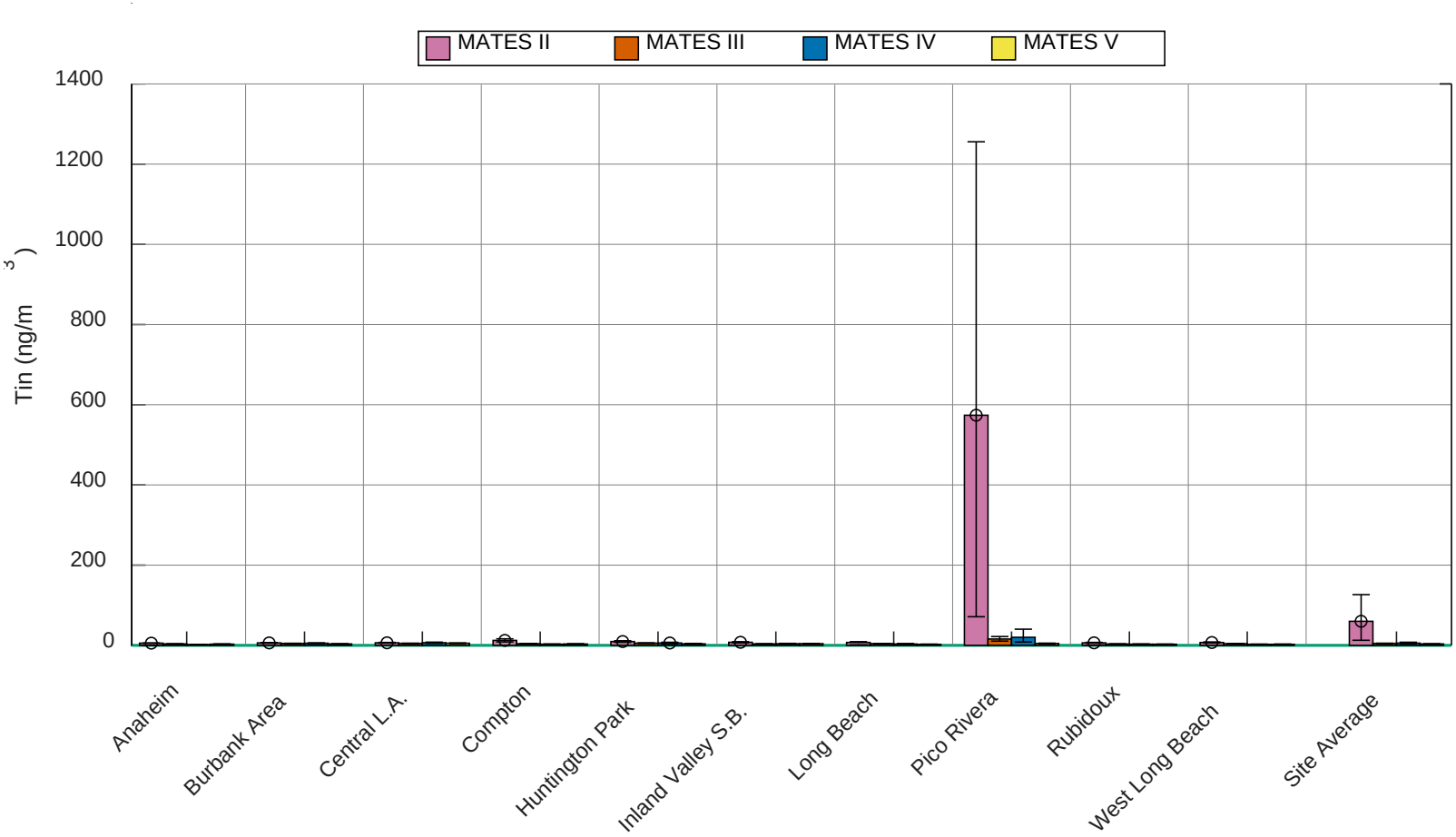


Figure IV-130. Annual Average Concentrations of Tin in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

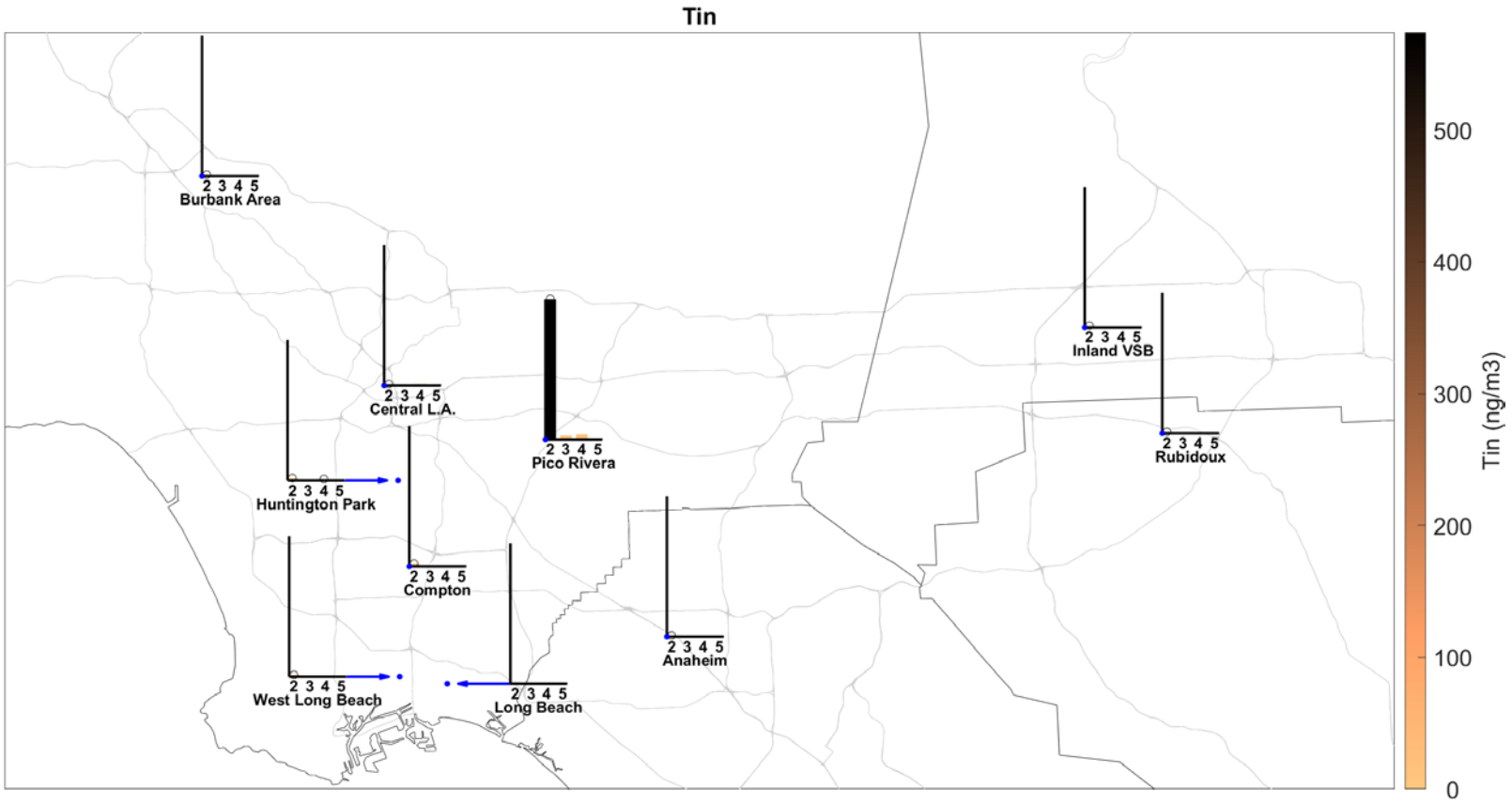


Figure IV-131. Geographic distribution of Tin from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Titanium

Table IV-68. Ambient Concentrations (ng/m^3) of Titanium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	114	116	165	171	119	80.9	81.9	154	214	94.8
95% CI LB	87.3	94.9	127	133	92.1	63.1	63.1	123	171	70.2
95% CI UB	144	140	206	211	146	100	101	187	260	120
N	45	48	39	41	42	56	51	41	41	39
% < MDL	26.7	18.8	15.4	17.1	26.2	25	33.3	12.2	12.2	28.2
Max	388	396	445	478	334	318	285	470	530	316
MATES III										
Average	150	166	178	252	213	149	181	191	301	188
95% CI LB	137	156	166	235	195	137	172	173	282	168
95% CI UB	163	177	191	272	230	161	191	211	321	213
N	232	218	228	224	116	230	229	118	237	227
% < MDL	0.4	0	0	0.4	0	0	0	0	0	0
Max	620	476	504	786	511	500	378	788	693	1870
MATES IV										
Average	30	53.9	58.8	146	56.2	51.6	59.7	71.5	133	73.1
95% CI LB	23.7	45.9	50.4	114	47.7	41.4	49.3	59.6	105	58.6
95% CI UB	38	62.4	67.8	183	65.7	63.2	71.3	84.5	165	89.6
N	60	58	59	56	55	59	59	60	58	58
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	183	147	145	636	169	215	221	238	554	324
MATES V										
Average	52.5	66.3	62	134	49.7	49	54.8	103	112	65.2
95% CI LB	44.7	56.5	50.4	109	41.4	38.2	47.7	88.4	95.7	51.2
95% CI UB	61.3	76.7	75.2	163	58.2	64.3	62.1	119	127	84.5
N	59	57	59	58	58	58	59	59	60	57
% < MDL	0	0	0	0	0	0	1.7	0	0	0
Max	175	166	283	657	135	384	134	298	298	476

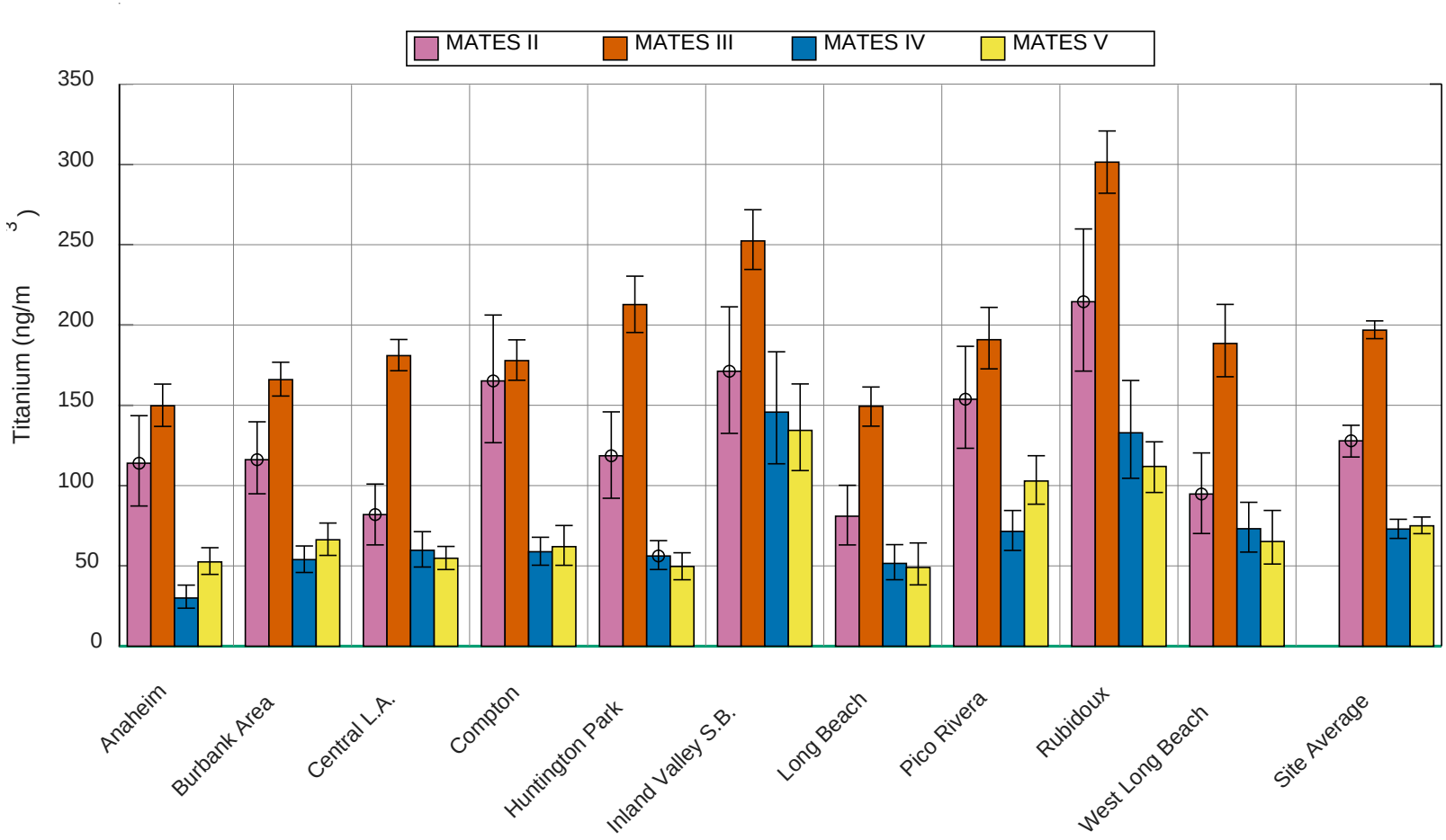


Figure IV-132. Annual Average Concentrations of Titanium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

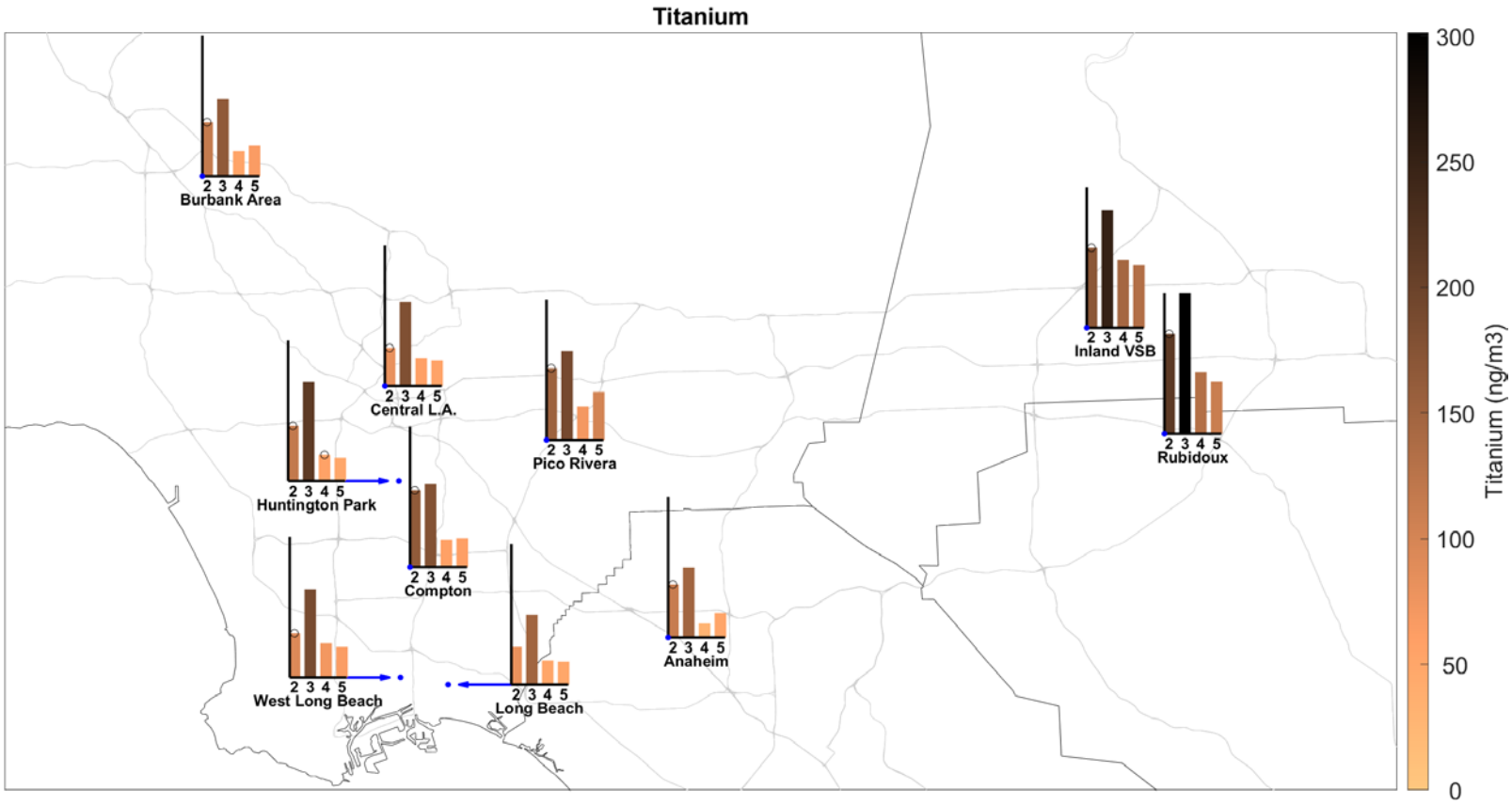


Figure IV-133. Geographic distribution of Titanium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Uranium

Table IV-69. Ambient Concentrations (ng/m^3) of Uranium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0, 4.67[a]	0.191, 4.28[a]	0.0769, 4.38[a]	0, 4.54[a]	0, 4.57[a]	0, 4.39[a]	0, 4.35[a]	0.0732, 4.9[a]	0, 4.54[a]	0, 4.46[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	5.07[a]	4.72[a]	4.85[a]	4.98[a]	5[a]	4.77[a]	4.76[a]	5.34[a]	4.98[a]	4.92[a]
N	45[a]	47[a]	39[a]	41[a]	42[a]	56[a]	51[a]	41[a]	41[a]	39[a]
% < MDL	100[a]	93.6[a]	97.4[a]	100[a]	100[a]	100[a]	100[a]	97.6[a]	100[a]	100[a]
Max	< MDL[a]	3[a]	3[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	3[a]	< MDL[a]	< MDL[a]
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	0.0178, 0.0897[a]	0.0128, 0.0857[a]	0.0112, 0.0856[a]	0.122	0.00727, 0.0827[a]	0.00881, 0.0846[a]	0.0254, 0.093[a]	0.0248, 0.0953[a]	0.123	0.0169, 0.0898[a]
95% CI LB	0.00617[a]	0.00379[a]	0.0022[a]	0.104	0.00164[a]	0.00169[a]	0.0112[a]	0.00767[a]	0.103	0.00466[a]
95% CI UB	0.0972[a]	0.0903[a]	0.0924[a]	0.145	0.0842[a]	0.0891[a]	0.103[a]	0.113[a]	0.147	0.0995[a]
N	60[a]	58[a]	59[a]	56	55[a]	59[a]	59[a]	60[a]	58	58[a]
% < MDL	88.3[a]	89.7[a]	91.5[a]	51.8	92.7[a]	93.2[a]	83.1[a]	86.7[a]	55.2	89.7[a]
Max	0.24[a]	0.18[a]	0.24[a]	0.54	0.11[a]	0.19[a]	0.25[a]	0.46[a]	0.61	0.29[a]
MATES V										
Average	0.0561	0.0577	0.0453	0.0944	0.0376	0.036	0.0465	0.0664	0.0908	0.0475
95% CI LB	0.0476	0.0488	0.037	0.0772	0.0308	0.0284	0.04	0.0564	0.078	0.0361
95% CI UB	0.0658	0.0675	0.0571	0.114	0.0459	0.0472	0.0542	0.0781	0.105	0.0647
N	59	56	59	57	59	58	58	59	59	57
% < MDL	5.1	5.4	5.1	5.3	22	6.9	5.2	5.1	1.7	5.3
Max	0.22	0.21	0.28	0.4	0.18	0.29	0.17	0.26	0.26	0.43

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

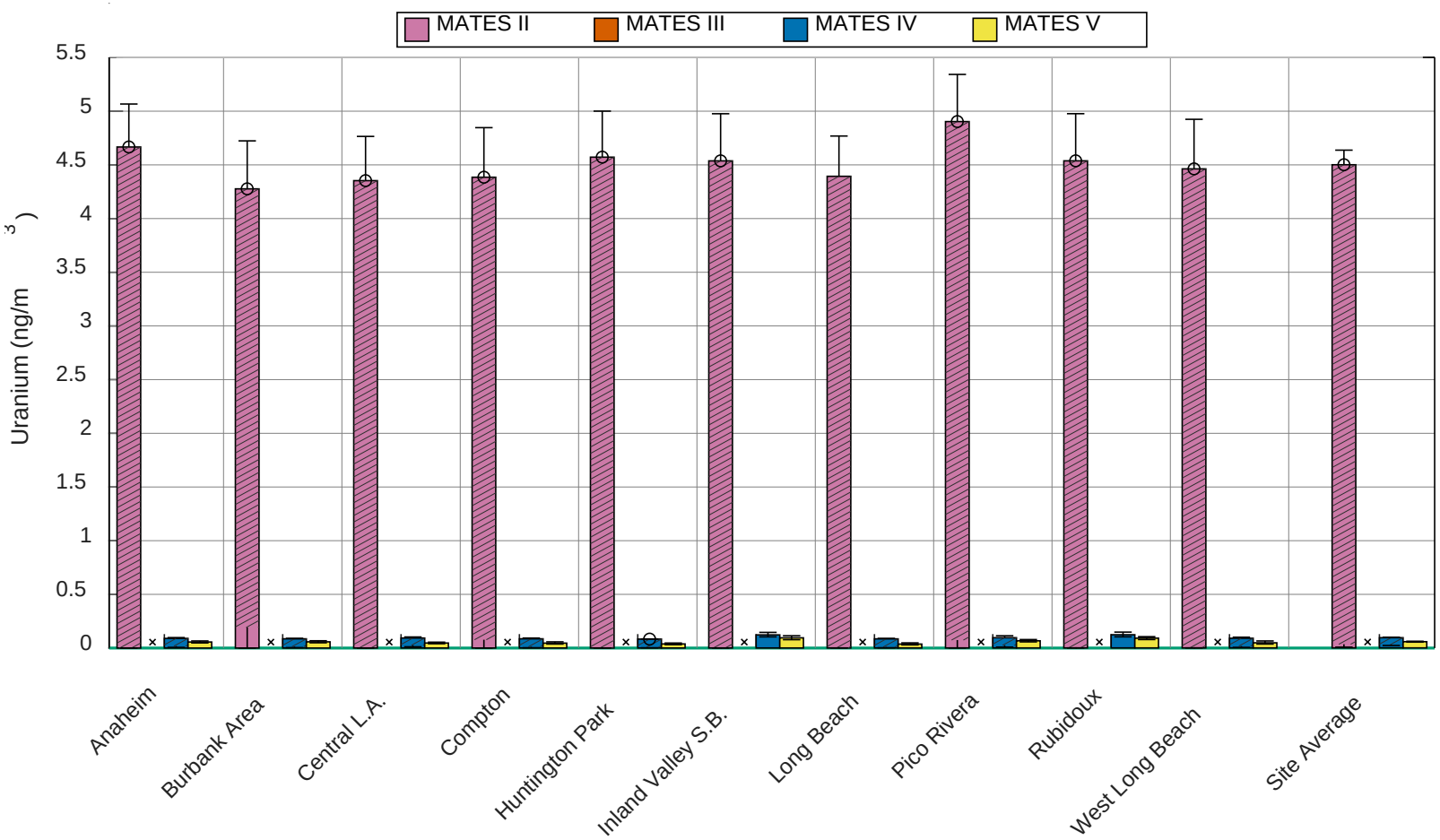


Figure IV-134. Annual Average Concentrations of Uranium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

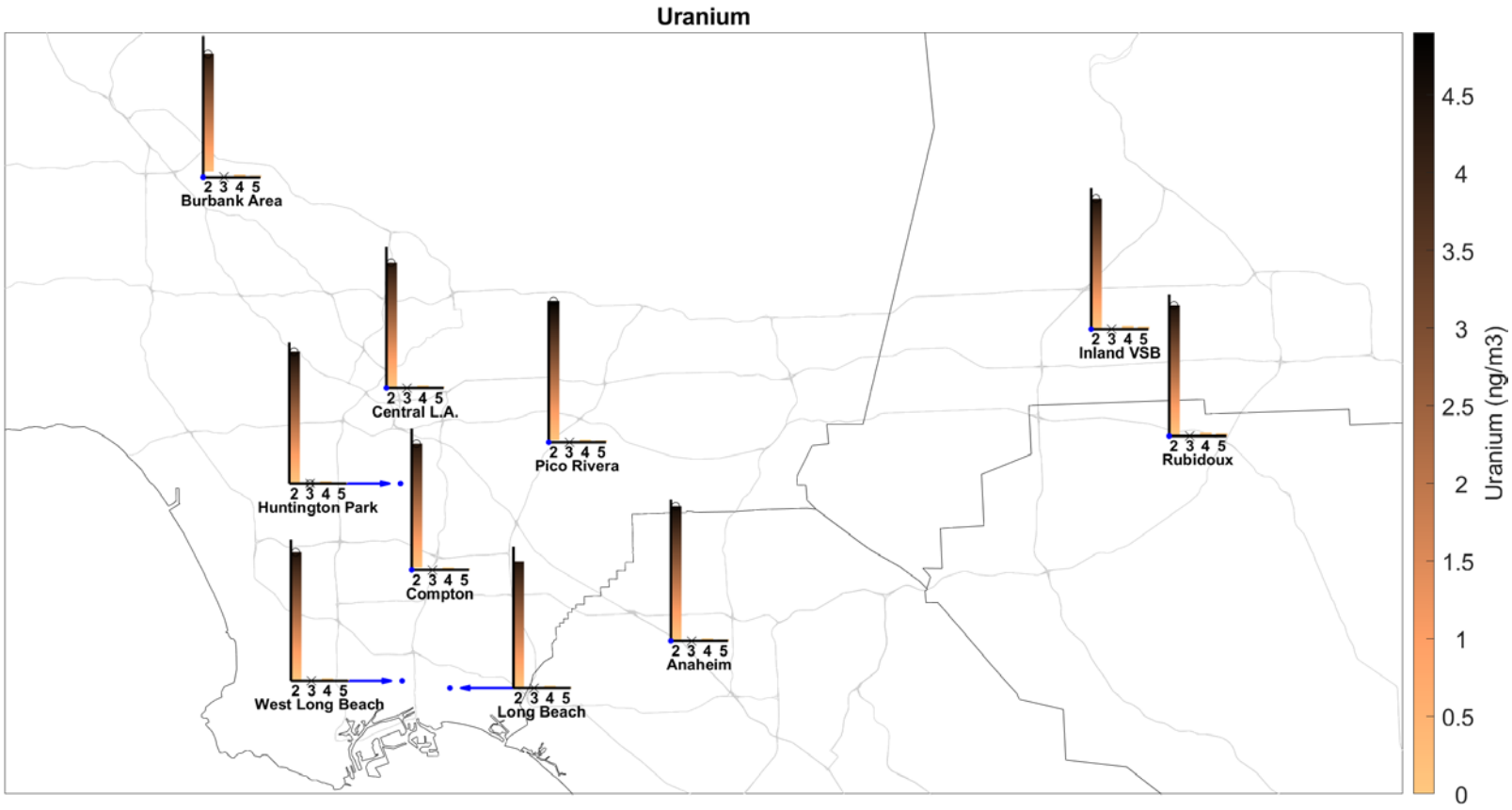


Figure IV-135. Geographic distribution of Uranium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Vanadium

Table IV-70. Ambient Concentrations (ng/m^3) of Vanadium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	12.7	9.15	16	16.3	14.1	13.7	9.12	14	19.6	19.7
95% CI LB	9.47	6.63	11.5	11.5	9.69	10.9	6.79	10.1	14	14.9
95% CI UB	16.4	12.2	20.4	21.5	19.4	16.7	11.7	18.4	25.8	24.8
N	45	47	39	41	42	56	51	41	41	39
% < MDL	48.9	66	28.2	41.5	50	35.7	58.8	41.5	31.7	25.6
Max	44	39.3	58.8	54.7	67.7	48.2	34.7	51.8	68.8	66
MATES III										
Average	9.06	6.01	10.7	6.43	9.06	15.8	6.9	7.72	7.76	26.6
95% CI LB	8.21	5.47	9.82	5.88	7.95	14.5	6.22	6.77	7.1	24.3
95% CI UB	9.94	6.58	11.6	7.01	10.2	17.2	7.58	8.72	8.44	29
N	232	218	228	224	116	230	229	118	237	227
% < MDL	12.9	26.6	8.8	25.4	17.2	5.2	28.4	14.4	14.3	3.1
Max	34.9	24.5	40.8	22.8	36.5	59.5	26.4	30.4	31.5	99.6
MATES IV										
Average	1.82	2.1	3.14	5.63	2.67	3.53	2.64	3.11	4.72	4.58
95% CI LB	1.26	1.78	2.73	4.31	2.28	2.8	2.18	2.55	3.63	3.78
95% CI UB	2.64	2.43	3.59	7.16	3.08	4.34	3.16	3.73	5.94	5.49
N	60	58	59	56	55	59	59	60	58	58
% < MDL	5	0	0	0	0	1.7	0	0	0	0
Max	21.1	6.09	8.5	28.1	8.08	12.3	10	11.1	22.3	18
MATES V										
Average	1.94	2.22	2.4	4.78	1.85	2.21	1.9	3.41	3.66	3.06
95% CI LB	1.69	1.85	2.04	3.75	1.54	1.9	1.64	2.81	3.06	2.59
95% CI UB	2.19	2.57	2.78	5.83	2.16	2.54	2.16	4.04	4.24	3.55
N	45	44	44	41	41	42	36	40	41	42
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	4.2	5.85	6.25	15.8	3.96	6.03	3.81	10.9	7.09	8.29

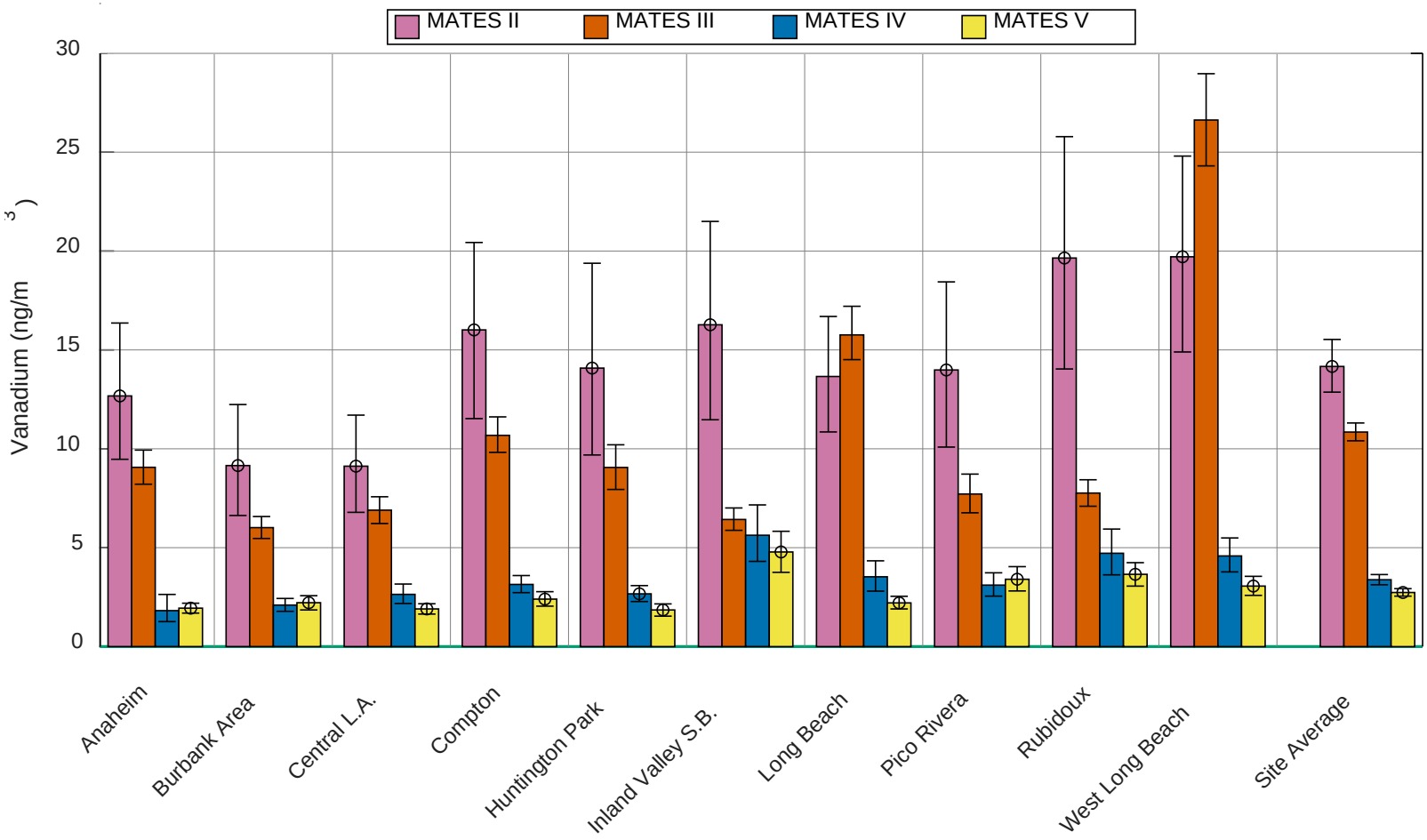


Figure IV-136. Annual Average Concentrations of Vanadium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

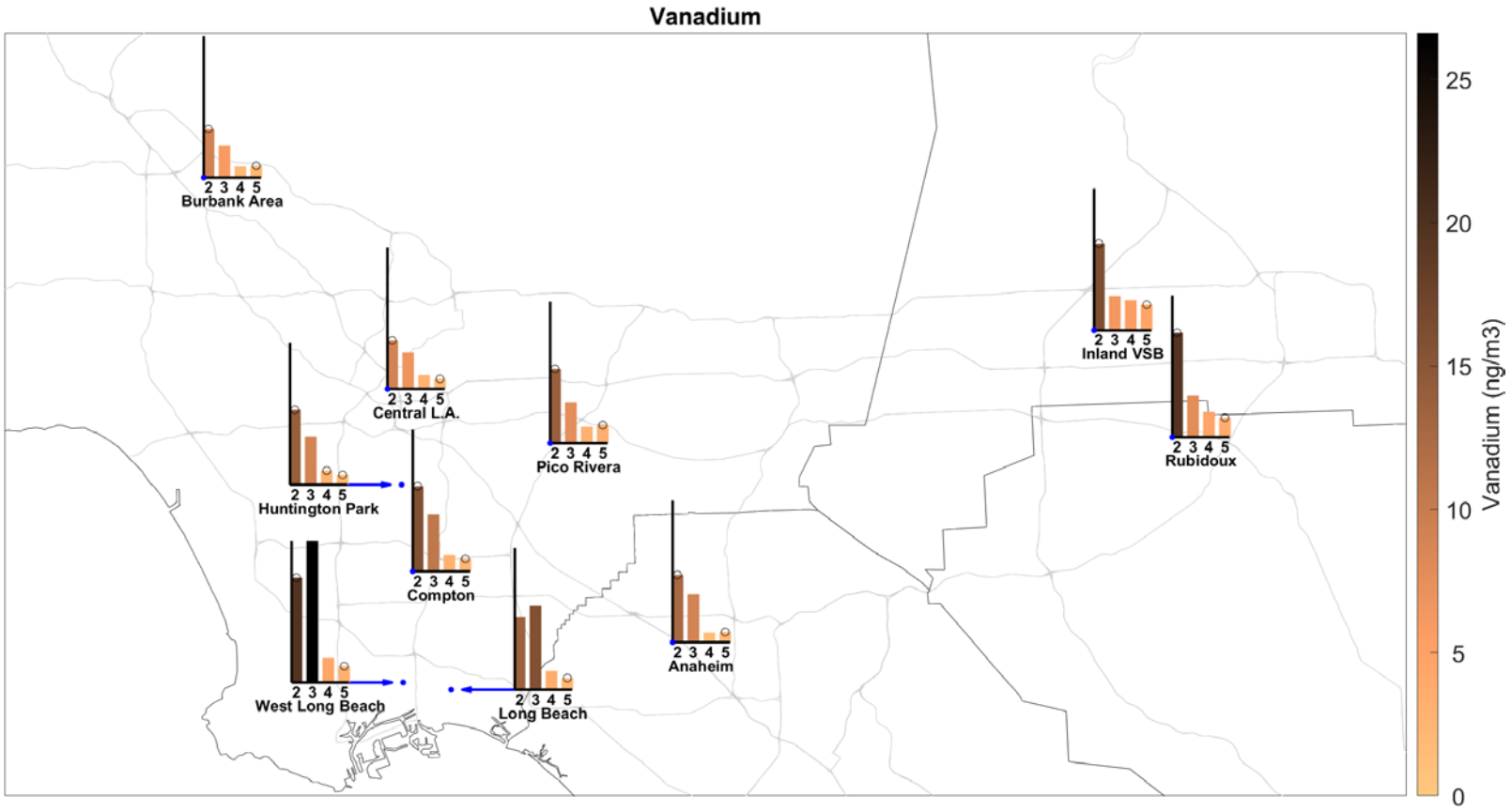


Figure IV-137. Geographic distribution of Vanadium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Yttrium

Table IV-71. Ambient Concentrations (ng/m^3) of Yttrium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	1.88	1.54	1.42	2.15	2.35	1.64	0.519, 1.87[a]	1.97	2.47	1.41
95% CI LB	1.51	1.41	1.34	1.69	1.66	1.43	0.204[a]	1.55	1.98	1.33
95% CI UB	2.33	2.25	1.91	2.65	3.23	2.17	2.11[a]	2.46	2.97	1.95
N	45	47	39	41	42	56	51[a]	41	41	39
% < MDL	64.4	78.7	79.5	53.7	57.1	75	84.3[a]	65.9	46.3	79.5
Max	7.21	8.42	5.06	6.16	12.6	8.9	4.69[a]	6.35	6.69	4.45
MATES III										
Average	0.231, 1.07[a]	0.213, 1.08[a]	0.161, 1.04[a]	1.13	0.197, 1.04[a]	0.163, 1.04[a]	0.166, 1.04[a]	0.192, 1.06[a]	1.12	0.231, 1.08[a]
95% CI LB	0.166[a]	0.13[a]	0.106[a]	1.09	0.111[a]	0.109[a]	0.11[a]	0.102[a]	1.08	0.158[a]
95% CI UB	1.1[a]	1.17[a]	1.07[a]	1.17	1.07[a]	1.06[a]	1.06[a]	1.09[a]	1.15	1.12[a]
N	232[a]	218[a]	228[a]	224	116[a]	230[a]	229[a]	118[a]	237	227[a]
% < MDL	84.1[a]	86.2[a]	88.2[a]	74.1	84.5[a]	87.4[a]	87.8[a]	86.4[a]	71.3	84.6[a]
Max	2.69[a]	8.83[a]	1.92[a]	2.81	1.9[a]	1.96[a]	1.94[a]	1.93[a]	2.48	3.88[a]
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

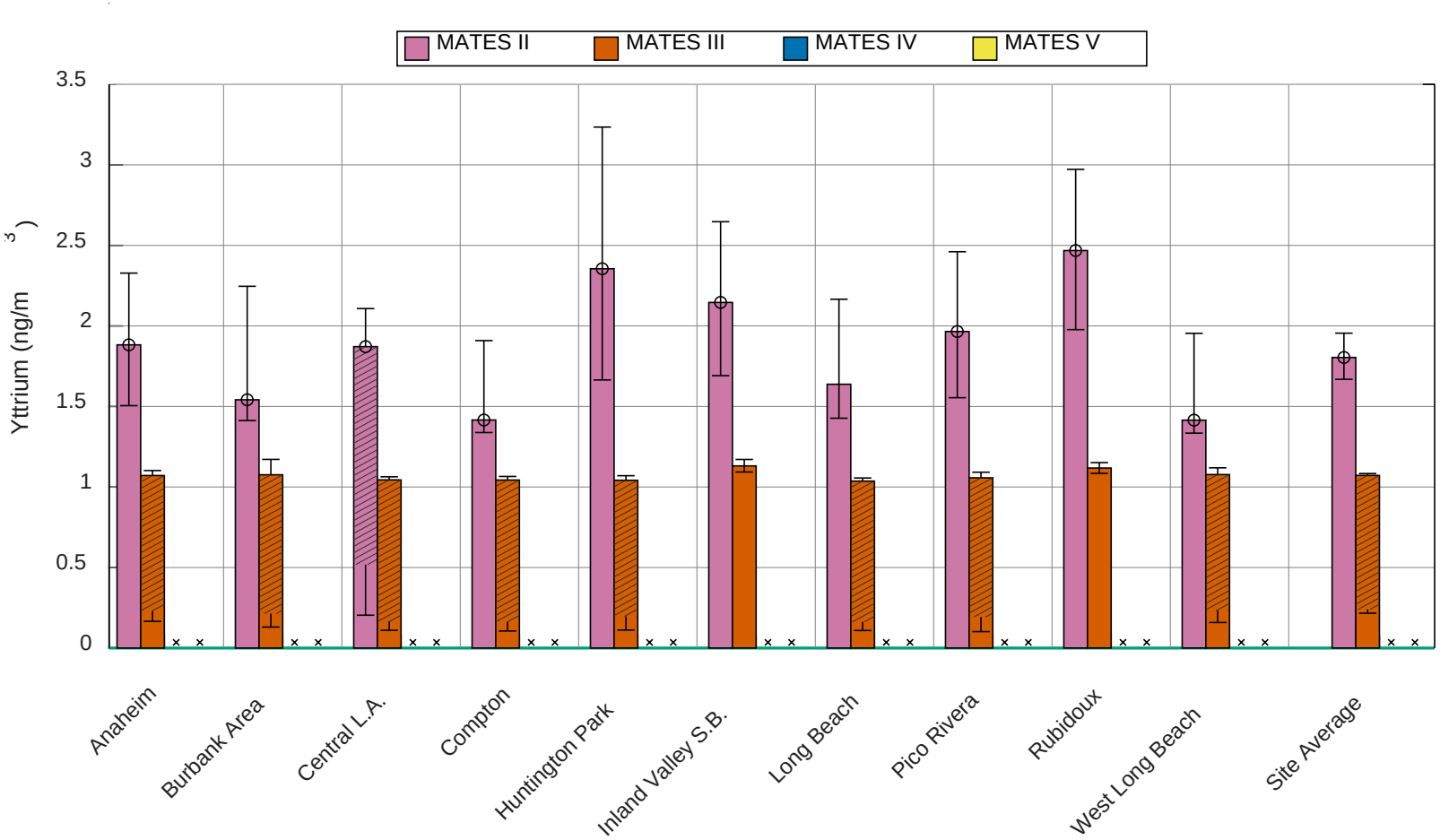


Figure IV-138. Annual Average Concentrations of Yttrium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

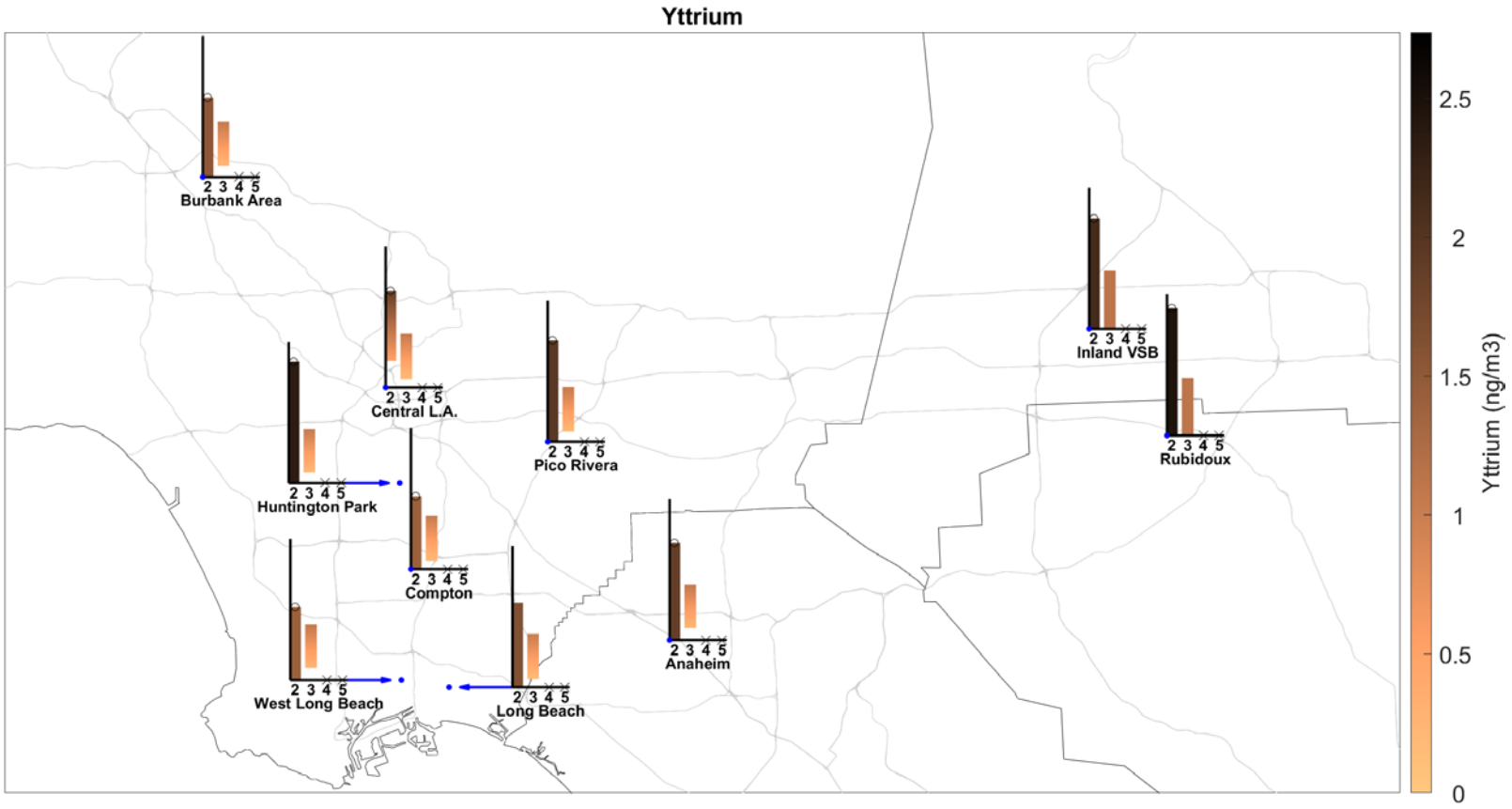


Figure IV-139. Geographic distribution of Yttrium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Zinc

Table IV-72. Ambient Concentrations (ng/m^3) of Zinc from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	77.1	87.6	105	128	136	85.1	88.6	158	114	101
95% CI LB	65.5	70.6	82.1	106	114	71.8	75	97.3	91.3	81.1
95% CI UB	89.2	108	133	150	161	98.9	103	255	137	122
N	45	47	39	41	42	56	51	41	41	39
% < MDL	0	0	0	0	0	0	3.9	2.4	2.4	0
Max	181	348	390	343	335	246	228	1830	309	325
MATES III										
Average	58.6	66.1	66.7	102	104	70.7	78.5	86.1	85.6	80.3
95% CI LB	53.3	62.1	61.1	95	92.6	65.5	73.7	75.5	78.5	72.9
95% CI UB	64.4	70.7	72.7	110	117	76.3	84.3	98.1	93	88.2
N	232	218	228	224	116	230	229	118	237	227
% < MDL	0	0	0	0.4	0	0	0	0	0	0
Max	246	181	252	312	364	207	433	362	351	352
MATES IV										
Average	43.4	53.7	54.1	110	74.1	61	72.4	73	64.3	71.7
95% CI LB	33.1	45.9	46	87.8	60	49.3	60	59.6	53.7	59.8
95% CI UB	55	62.4	62.6	135	90	74.8	86.2	89	76	85.1
N	60	58	59	56	55	59	59	60	58	58
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	219	162	138	496	305	267	264	351	250	225
MATES V										
Average	59.1	40.5	52.3	63.9	56.1	50.5	58.8	56.8	54.6	60.2
95% CI LB	42.8	32.7	41	53	45	39.7	48	45.8	43.2	46.3
95% CI UB	79.9	48.7	64.6	75	68.2	62.4	69.9	68	66.7	75.8
N	23	20	25	24	24	24	25	23	24	23
% < MDL	0	5	4	4.2	4.2	0	4	4.3	0	4.3
Max	236	84.3	141	112	121	129	119	114	121	162

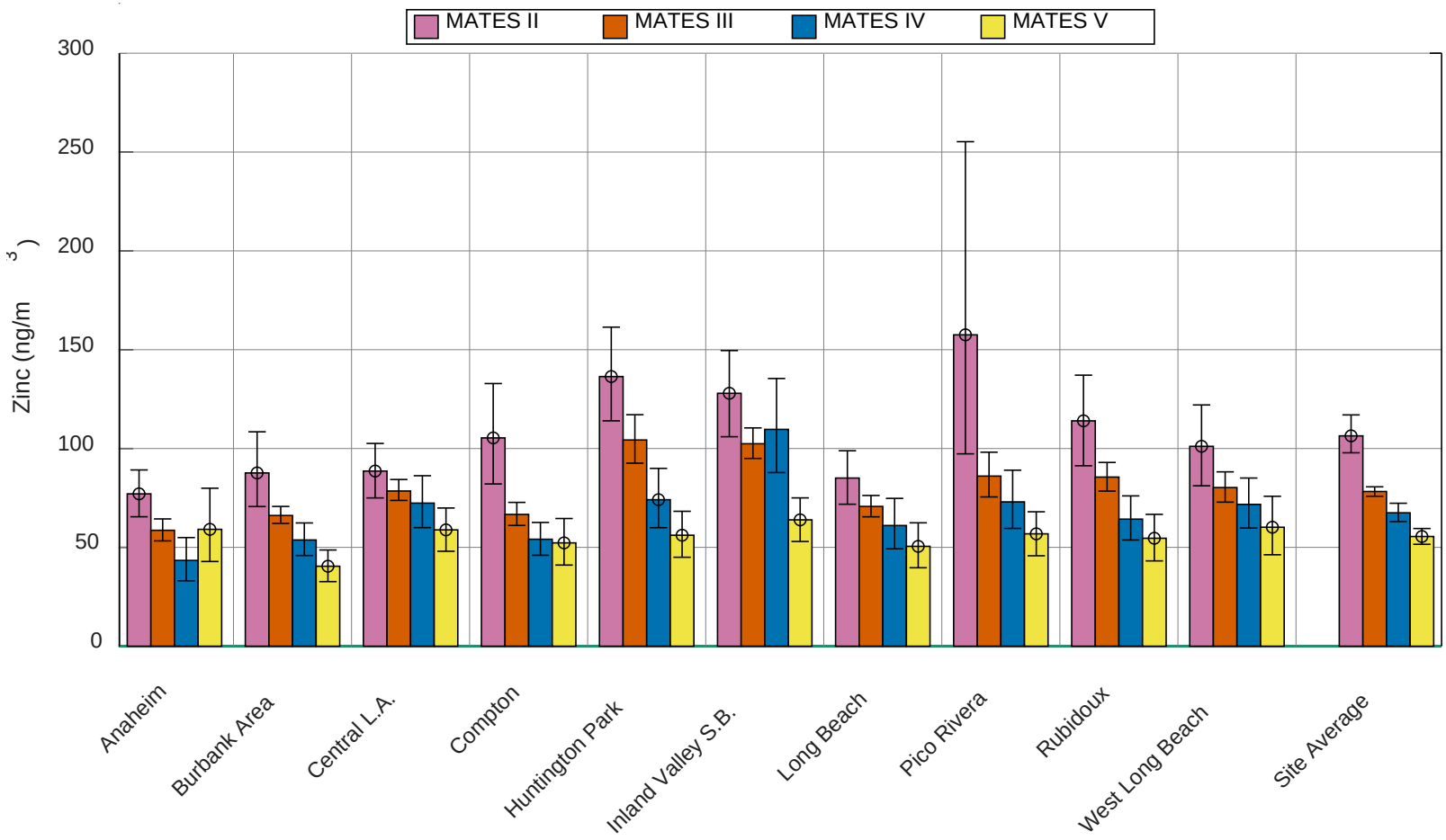


Figure IV-140. Annual Average Concentrations of Zinc in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

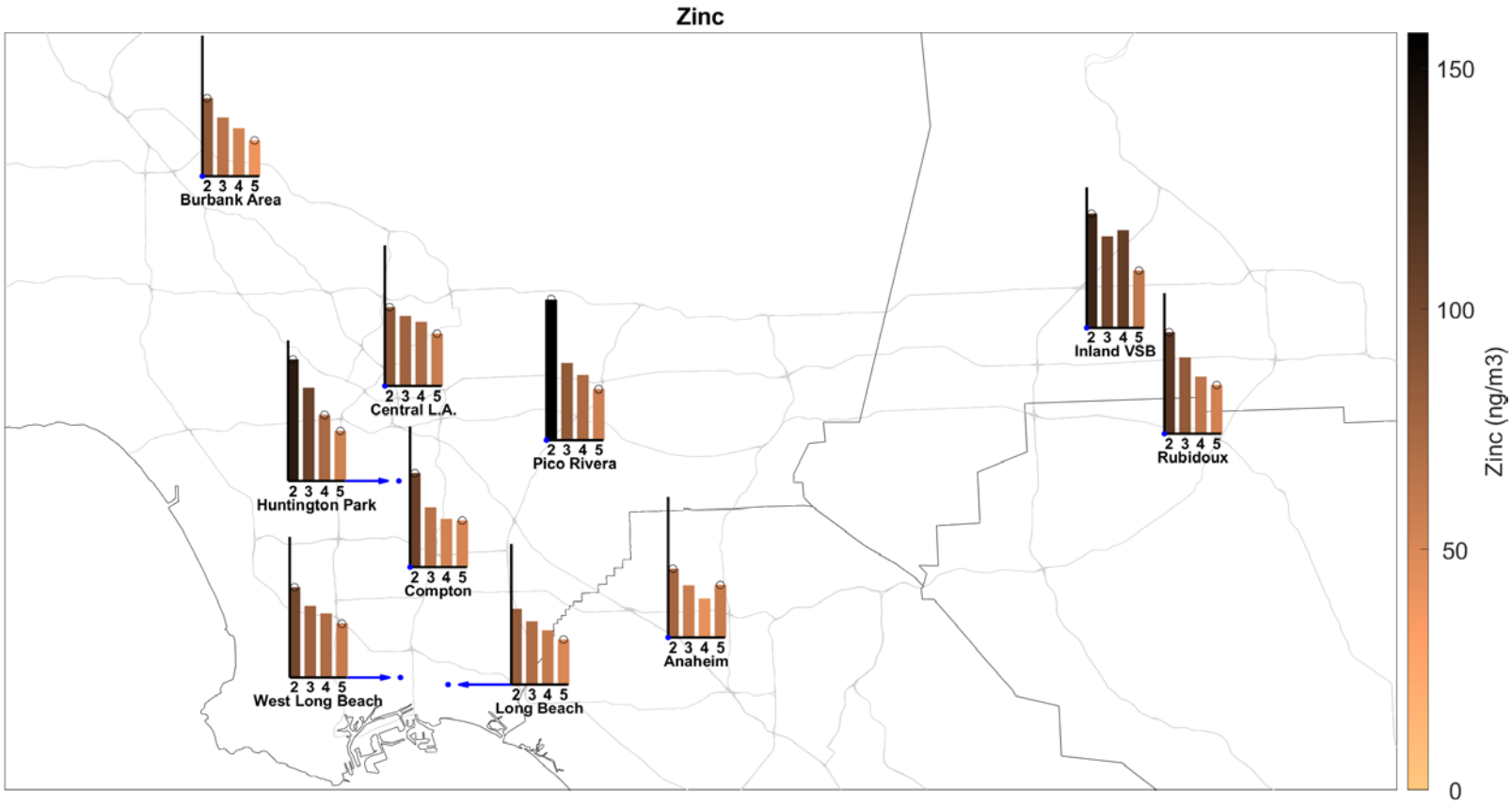


Figure IV-141. Geographic distribution of Zinc from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Zirconium

Table IV-73. Ambient Concentrations (ng/m^3) of Zirconium from the TSP Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	5.8	4.26	10.3	7.85	9.6	4.23	5.21	6.53	6.8	5.2
95% CI LB	4.45	3.78	7.71	5.9	6.65	3.33	4.29	5.13	5.65	4.05
95% CI UB	7.35	4.81	13.1	9.85	13.1	5.3	6.27	7.93	7.95	6.55
N	20	27	21	20	20	30	28	15	20	20
% < MDL	5	3.7	4.8	10	0	20	7.1	13.3	5	10
Max	15	7	25	15	32	13	14	12	11	14
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

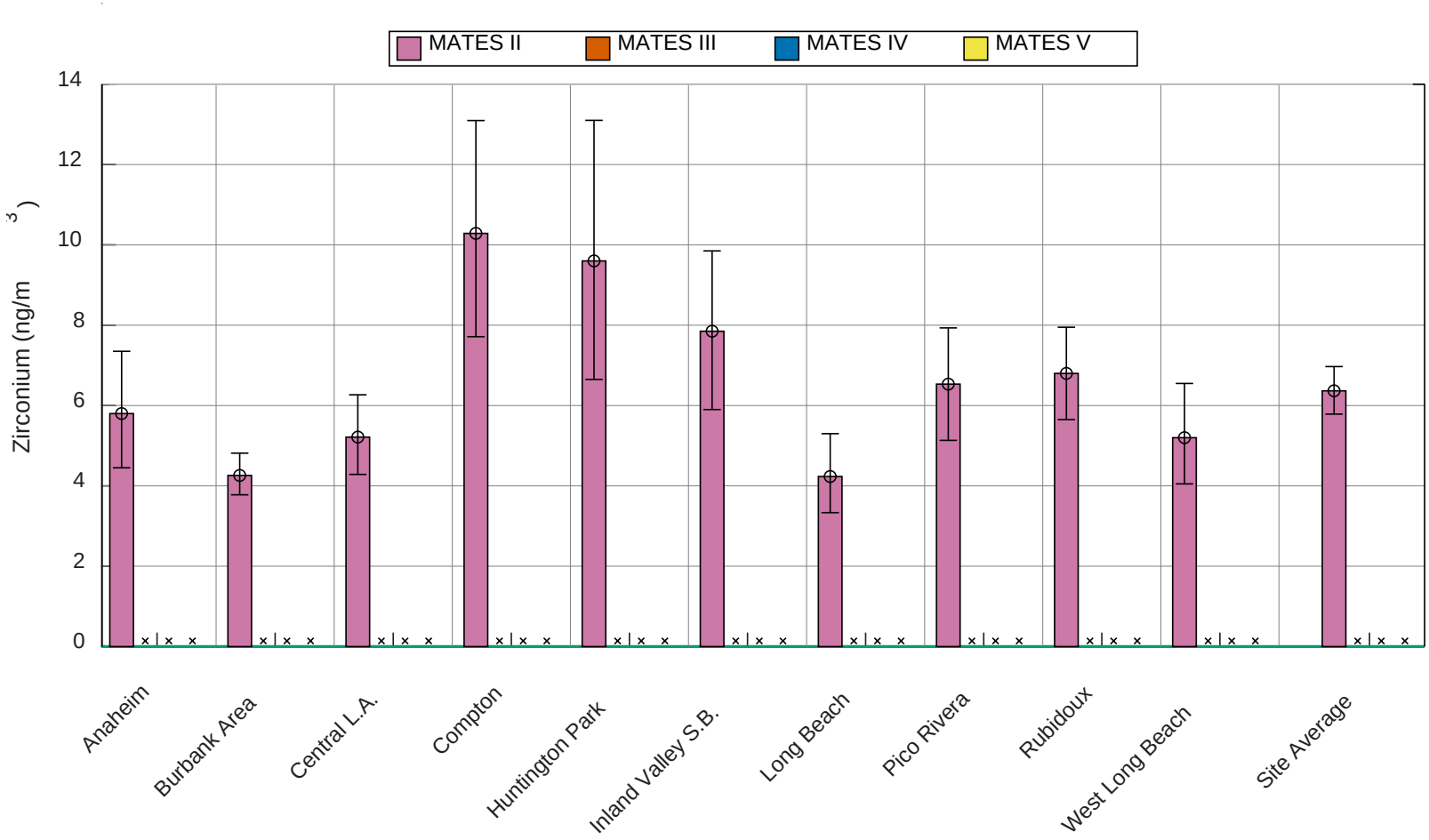


Figure IV-142. Annual Average Concentrations of Zirconium in the TSP Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

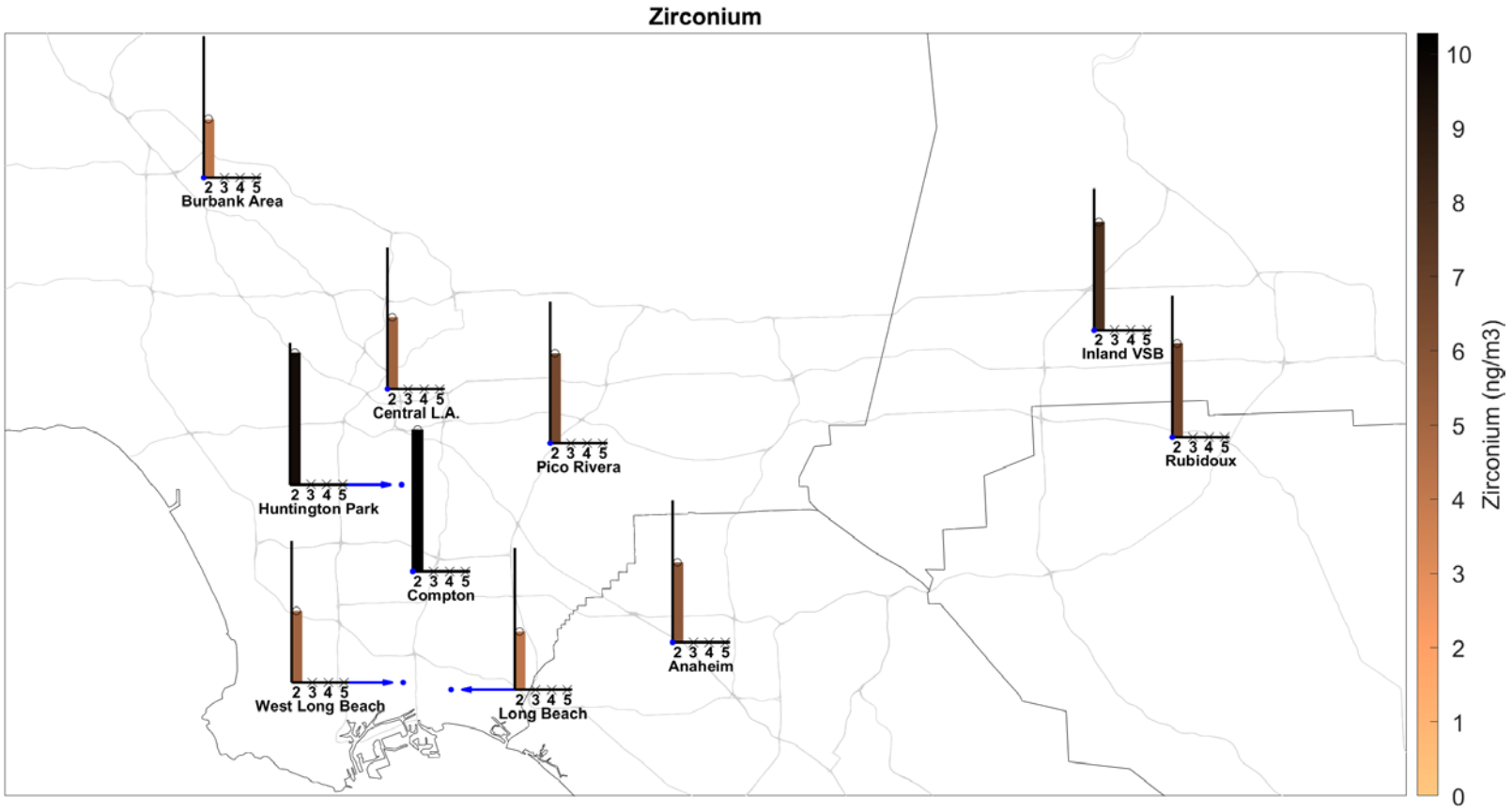


Figure IV-143. Geographic distribution of Zirconium from the TSP Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

PM10 Mass Analysis

PM10 Mass

Table IV-74. Ambient Concentrations (µg/m) of PM10 Mass from the PM10 Mass analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	37.8	39.2		54.8	54.7	35	41.7	61.9	66.4	
95% CI LB	34.2	35.9		48.5	49.6	31.9	37.7	55.1	60	
95% CI UB	41.6	42.5		61.3	59.5	38.1	46.1	69	73.5	
N	58	53	0	59	46	58	59	38	62	0
% < MDL	15.5	15.1		10.2	2.2	20.7	11.9	0	4.8	
Max	81	69		101	104	69	88	115	119	
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	22.5	26.2	26.3	35.6	27.4	22.4	27.3	27.3	33.5	30
95% CI LB	20.7	23.9	24.1	31.7	25.1	20.5	25	24.8	30.2	26.5
95% CI UB	24.2	28.3	28.7	39.3	29.5	24.2	29.5	29.6	36.7	34.2
N	61	57	57	61	52	60	60	50	60	51
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	43	40	52	63	41	36	45	48	66	78
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

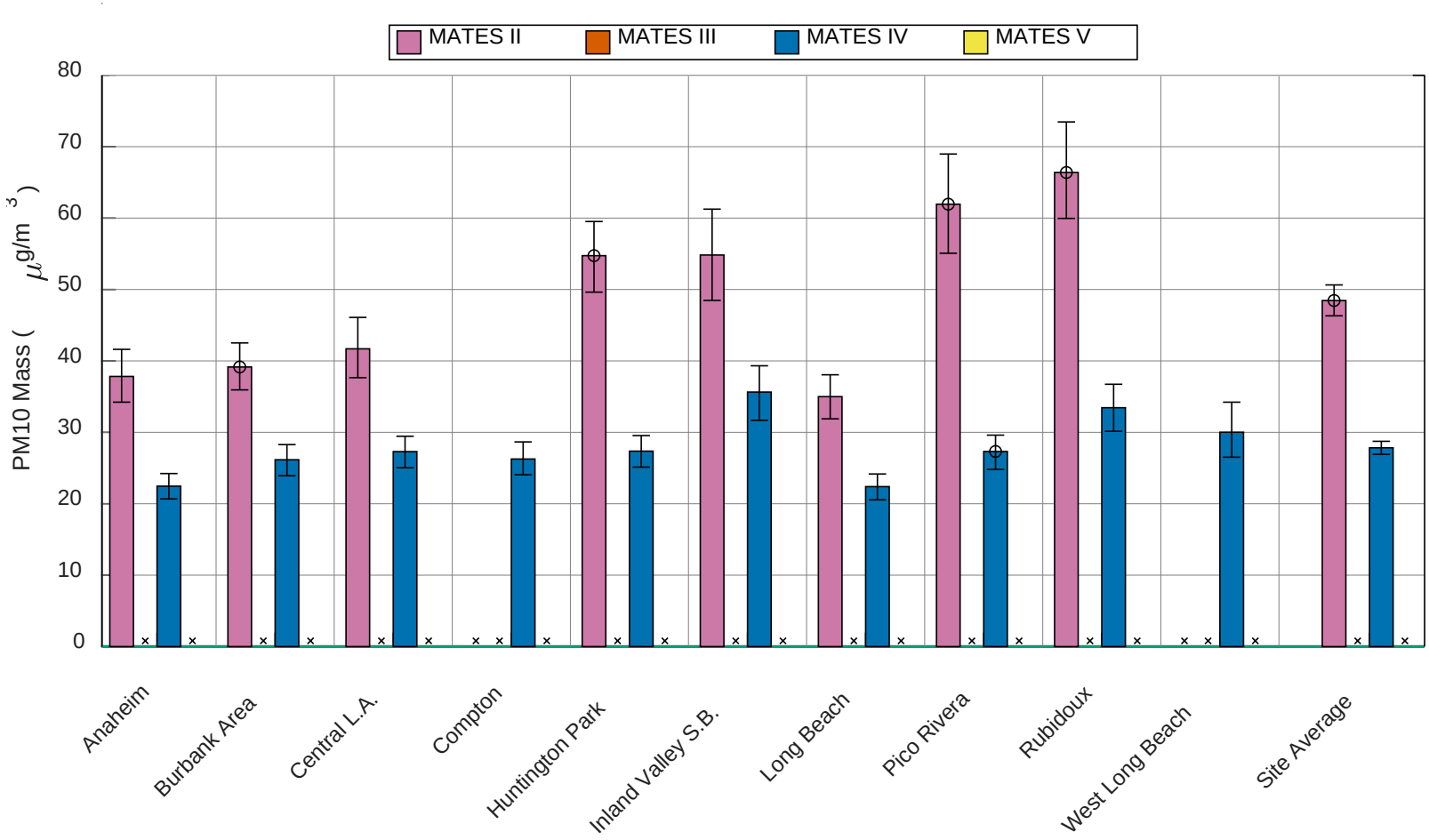


Figure IV-144. Annual Average Concentrations of PM10 Mass in the PM10 Mass Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

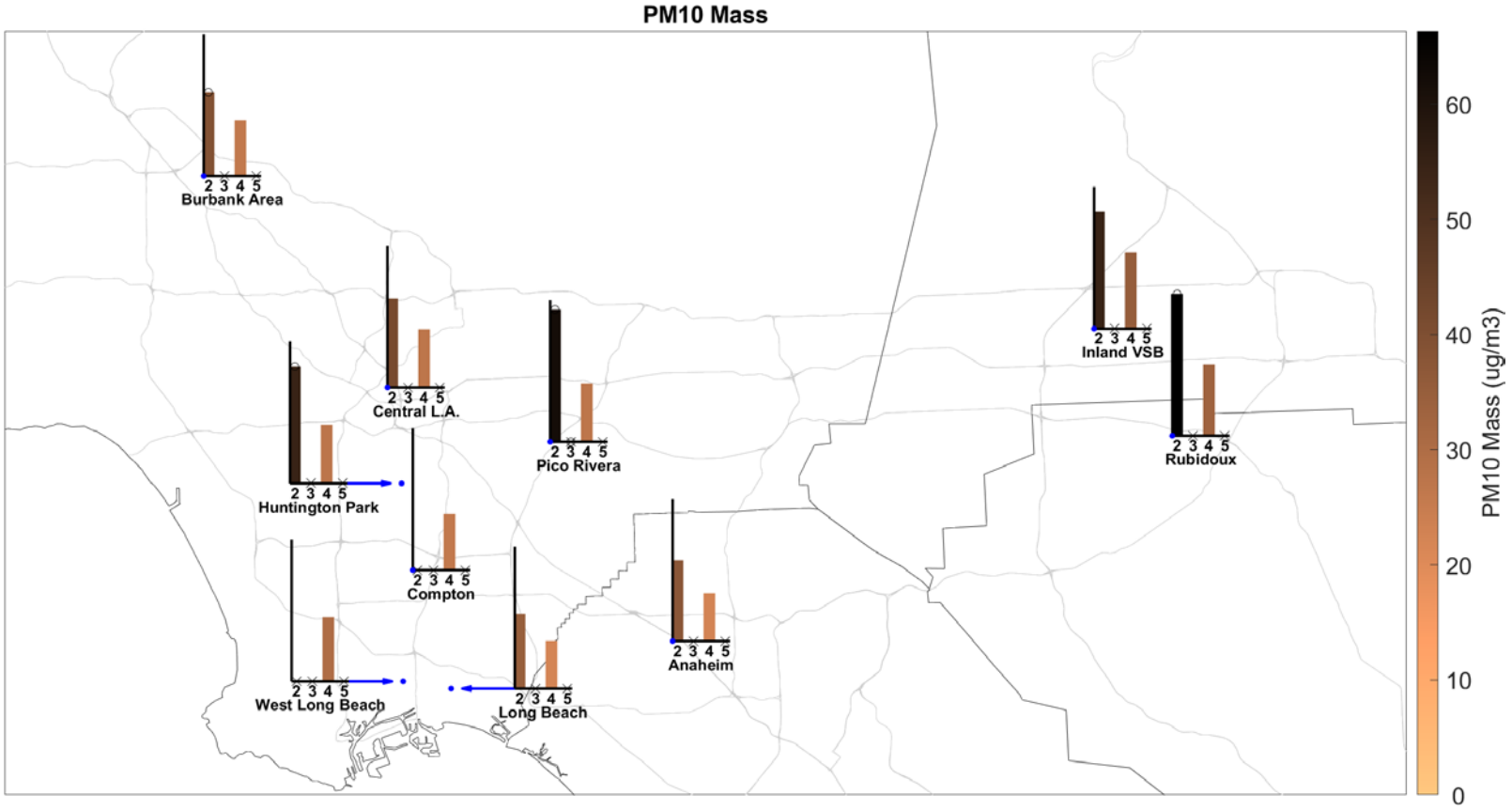


Figure IV-145. Geographic distribution of PM10 Mass from the PM10 Mass Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

PM10 Carbon Analysis

Elemental Carbon

Table IV-75. Ambient Concentrations (ng/m^3) of Elemental Carbon from the PM10 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	2320	3190		3110	4530	2570	3530	4350	3420	
95% CI LB	1980	2710		2680	3870	2170	3080	3680	2970	
95% CI UB	2700	3680		3570	5240	3000	4000	5090	3920	
N	58	53	0	59	46	58	59	38	62	0
% < MDL	12.1	3.8		5.1	0	20.7	1.7	0	12.9	
Max	7760	8410		6860	10600	7700	8160	10200	8290	
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	1170	1740	1500	1740	1650	1290	1670	1870	1480	1780
95% CI LB	951	1480	1210	1540	1380	1060	1440	1590	1300	1440
95% CI UB	1400	2010	1820	1940	1950	1520	1910	2140	1680	2180
N	61	57	57	61	52	58	60	50	59	51
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	4760	4540	4680	3980	5150	3690	4240	4390	3960	5980
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

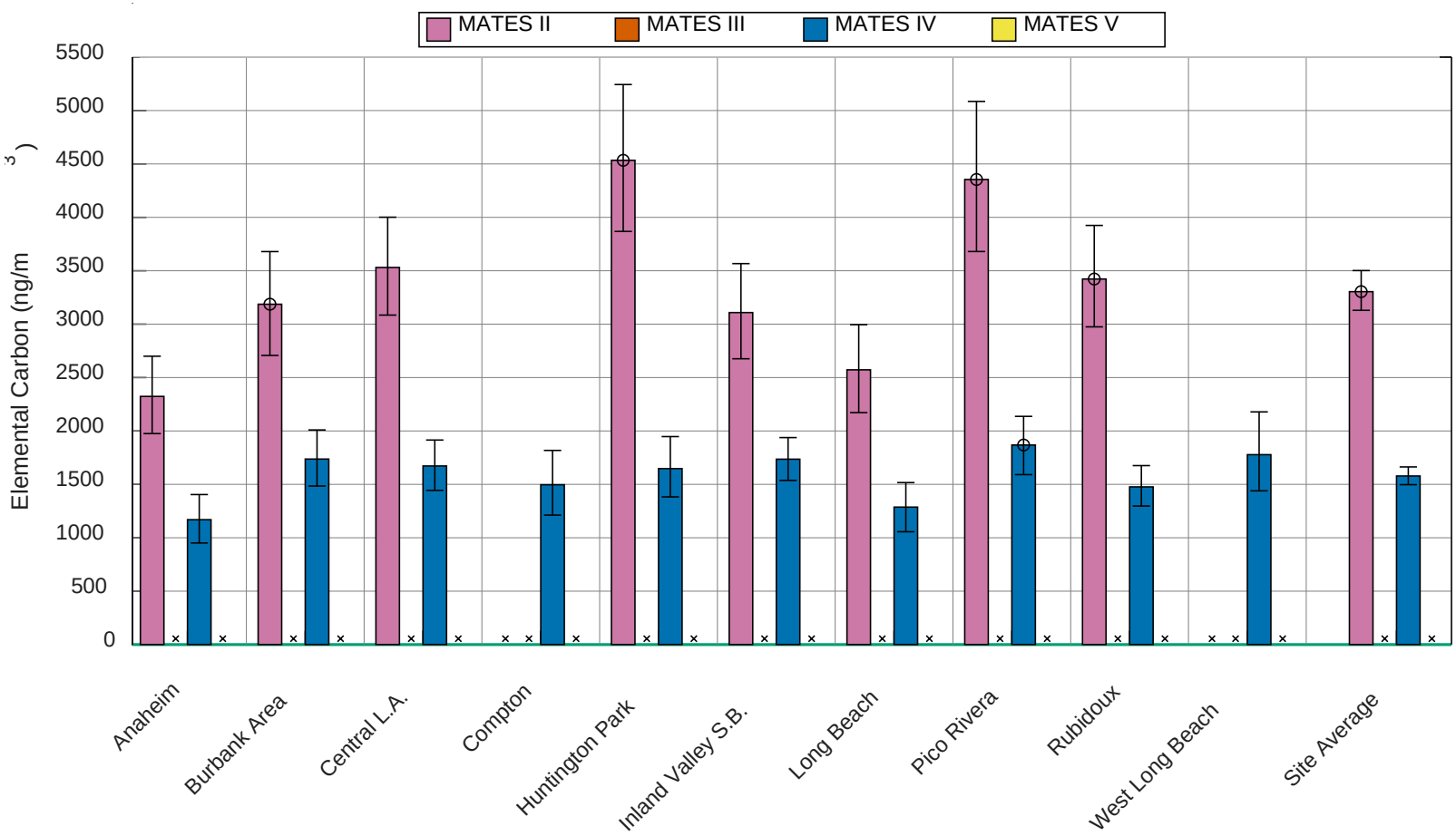


Figure IV-146. Annual Average Concentrations of Elemental Carbon in the PM10 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

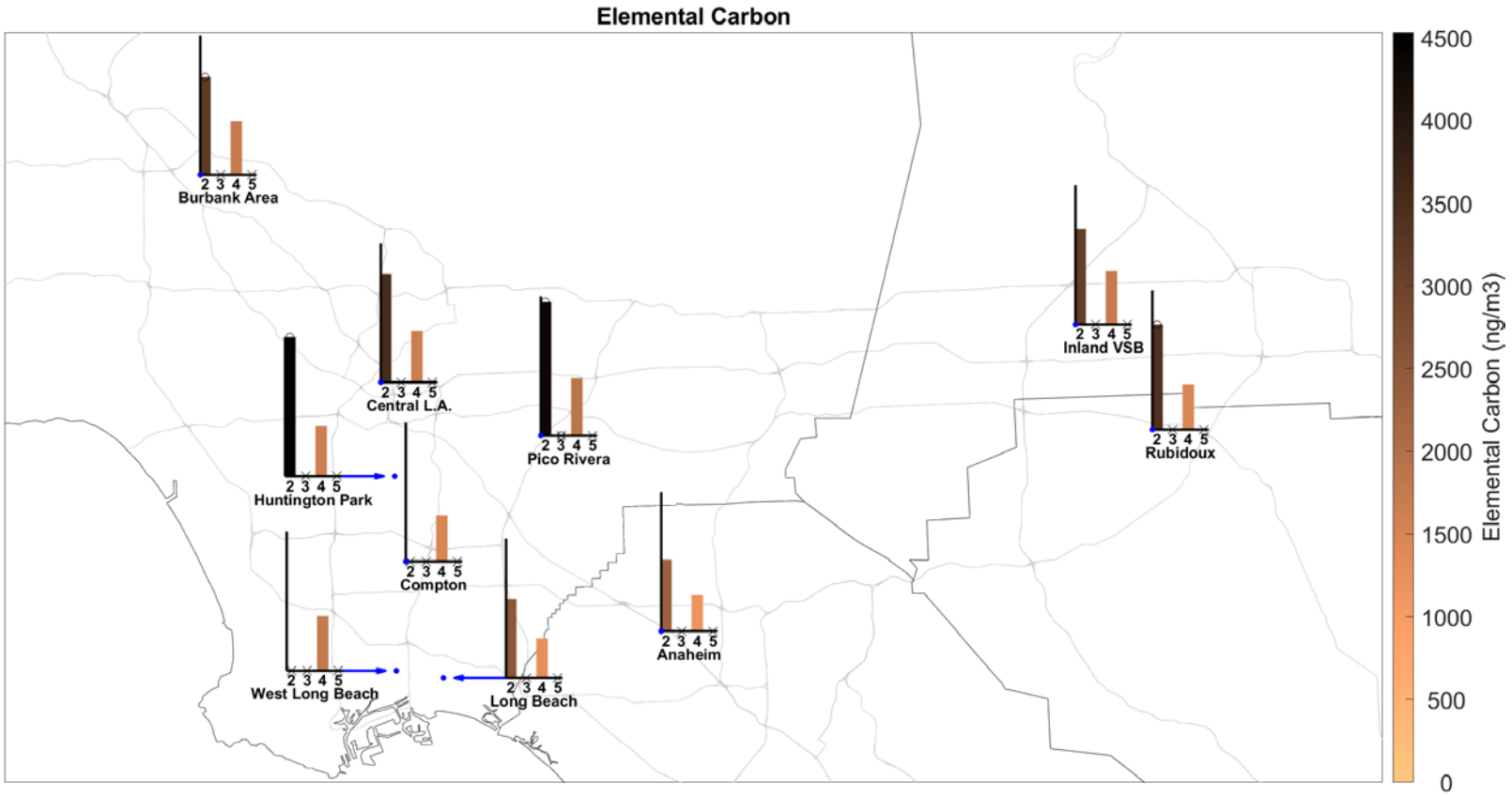


Figure IV-147. Geographic distribution of Elemental Carbon from the PM10 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Organic Carbon

Table IV-76. Ambient Concentrations (ng/m^3) of Organic Carbon from the PM10 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	4970	5980		6440	8150	4870	6140	8030	7460	
95% CI LB	4500	5320		5740	6970	4390	5520	7090	6720	
95% CI UB	5500	6710		7170	9500	5380	6810	9050	8230	
N	58	53	0	59	46	58	59	38	62	0
% < MDL	31	17		18.6	0	39.7	13.6	0	9.7	
Max	12600	13800		15200	26100	11600	14400	16700	14600	
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	3710	4860	4440	5320	4540	3640	4440	4820	5290	4450
95% CI LB	3320	4410	3860	4880	4090	3260	4080	4410	4900	3820
95% CI UB	4100	5340	5090	5740	5030	4060	4830	5270	5700	5160
N	61	57	57	61	52	58	60	50	59	51
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	9320	10300	12100	9270	9260	7960	8220	9280	9170	12200
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

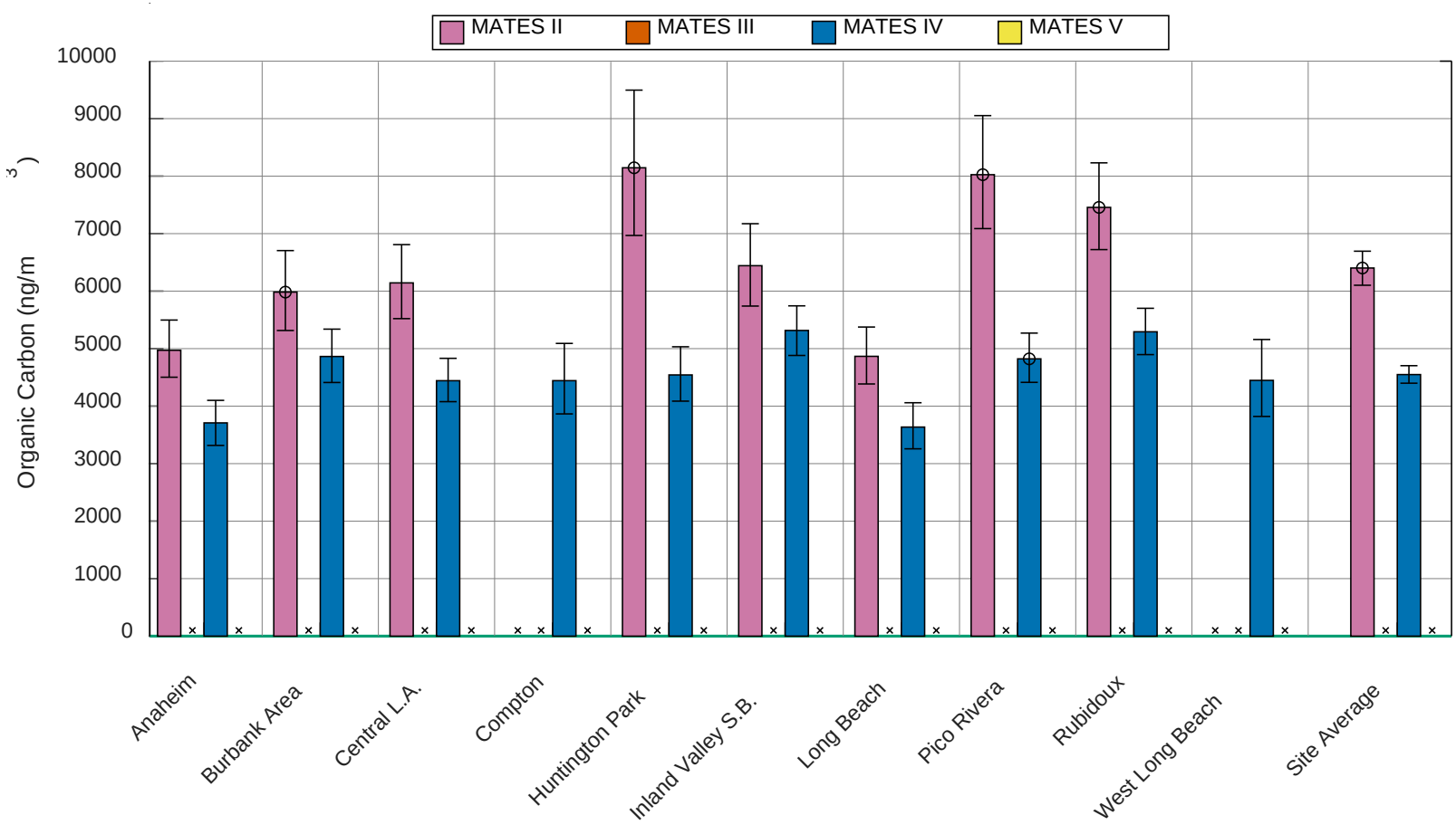


Figure IV-148. Annual Average Concentrations of Organic Carbon in the PM10 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

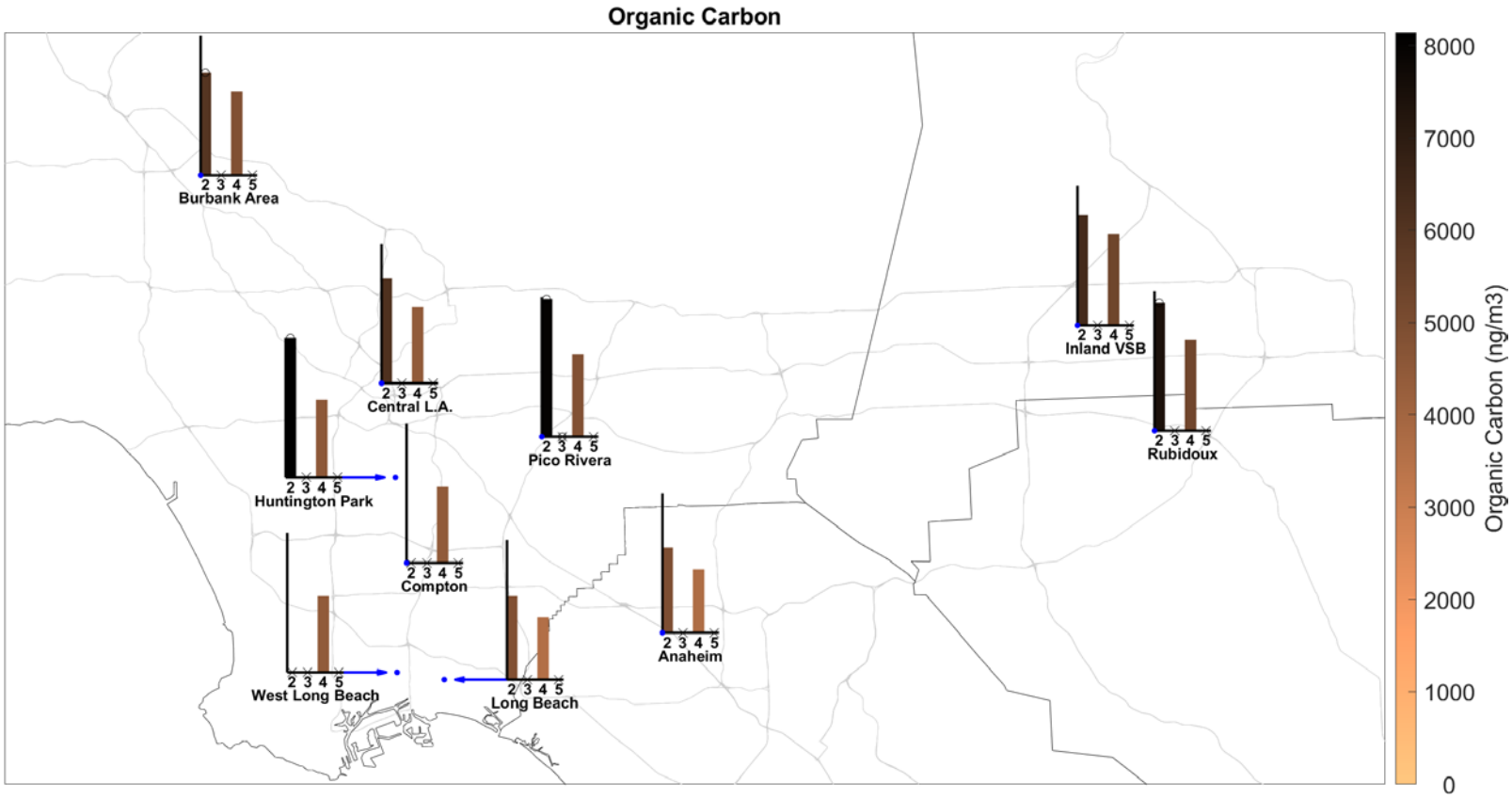


Figure IV-149. Geographic distribution of Organic Carbon from the PM10 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Total Carbon

Table IV-77. Ambient Concentrations (ng/m^3) of Total Carbon from the PM10 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	7470	9290		9640	12700	7630	9730	12400	10900	
95% CI LB	6700	8210		8530	11000	6790	8720	10900	9850	
95% CI UB	8360	10400		10700	14600	8570	10800	14000	12100	
N	58	53	0	59	46	58	59	38	62	0
% < MDL	37.9	24.5		20.3	2.2	39.7	18.6	2.6	14.5	
Max	20300	22200		20300	36700	19300	22500	24100	22100	
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	4880	6600	5940	7050	6190	4920	6120	6690	6770	6230
95% CI LB	4260	5910	5080	6470	5480	4260	5540	6040	6240	5280
95% CI UB	5520	7340	6900	7610	6960	5550	6730	7410	7320	7280
N	61	57	57	61	52	58	60	50	59	51
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	14100	14200	16800	12900	13600	11600	12400	13700	13100	18200
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

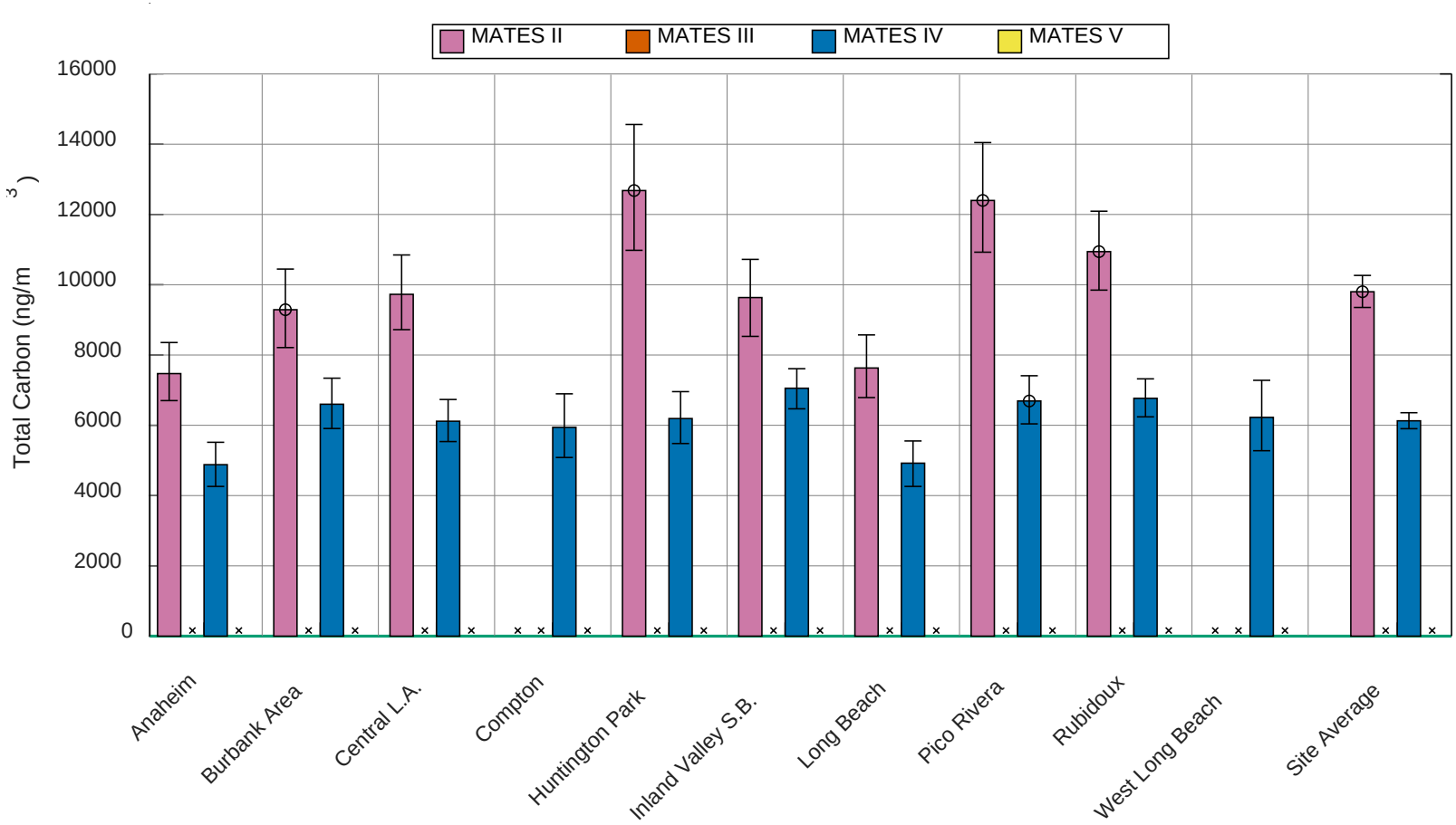


Figure IV-150. Annual Average Concentrations of Total Carbon in the PM10 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

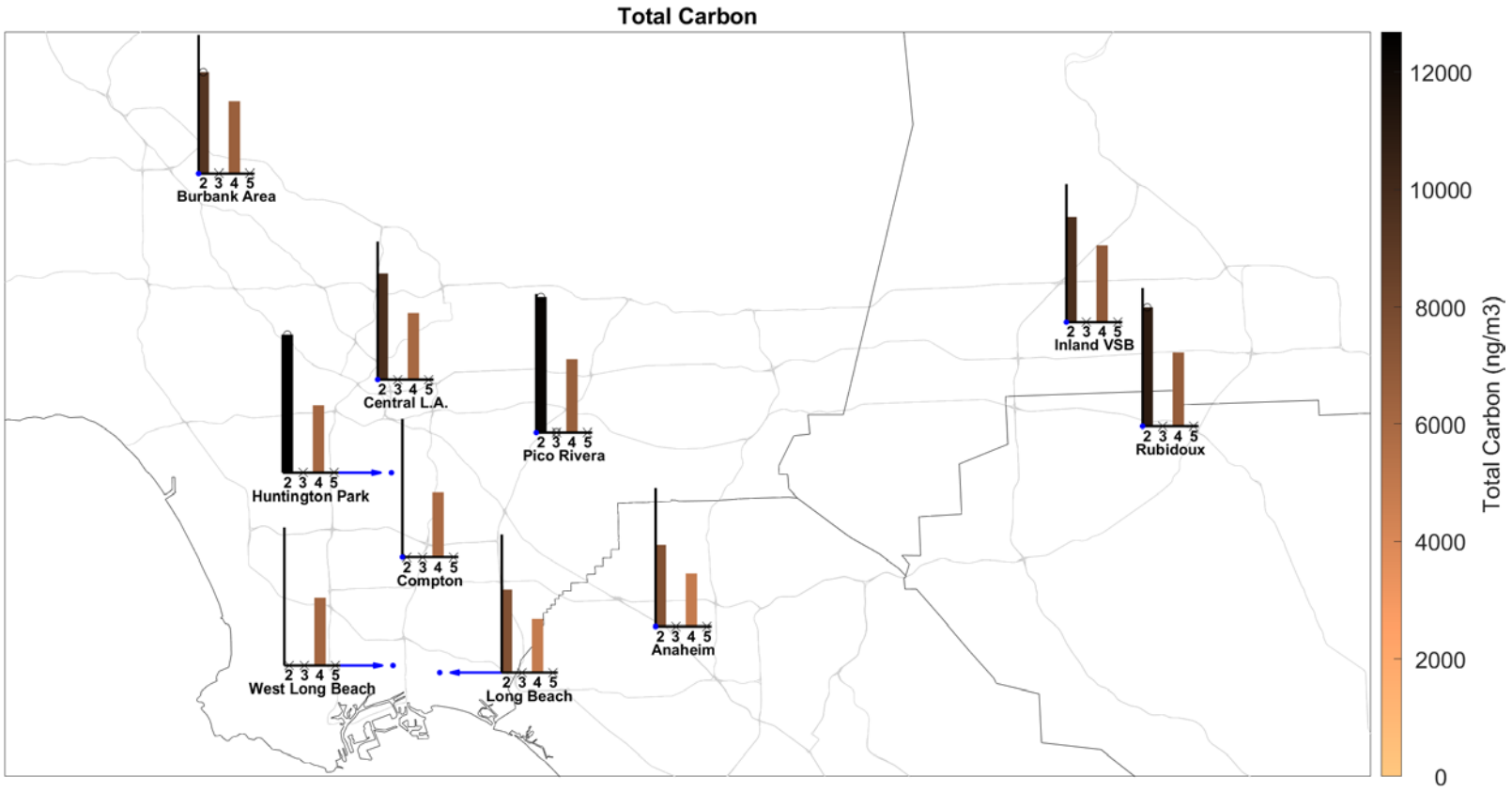


Figure IV-151. Geographic distribution of Total Carbon from the PM10 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

PAH Analysis

Acenaphthene

Table IV-78. Ambient Concentrations (ng/m^3) of Acenaphthene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							7.4		4.31	7.81
95% CI LB							6.56		3.85	6.79
95% CI UB							8.35		4.79	8.87
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							38.1		13.4	34.8
MATES IV										
Average						1.98	5		2.3	
95% CI LB						1.71	4.26		1.98	
95% CI UB						2.26	5.78		2.65	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						0	0		0	
Max						4.37	12.4		6.7	
MATES V										
Average							6.53		1.67	
95% CI LB							5.32		1.35	
95% CI UB							7.84		2.06	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		3.3	
Max							27.1		9.98	

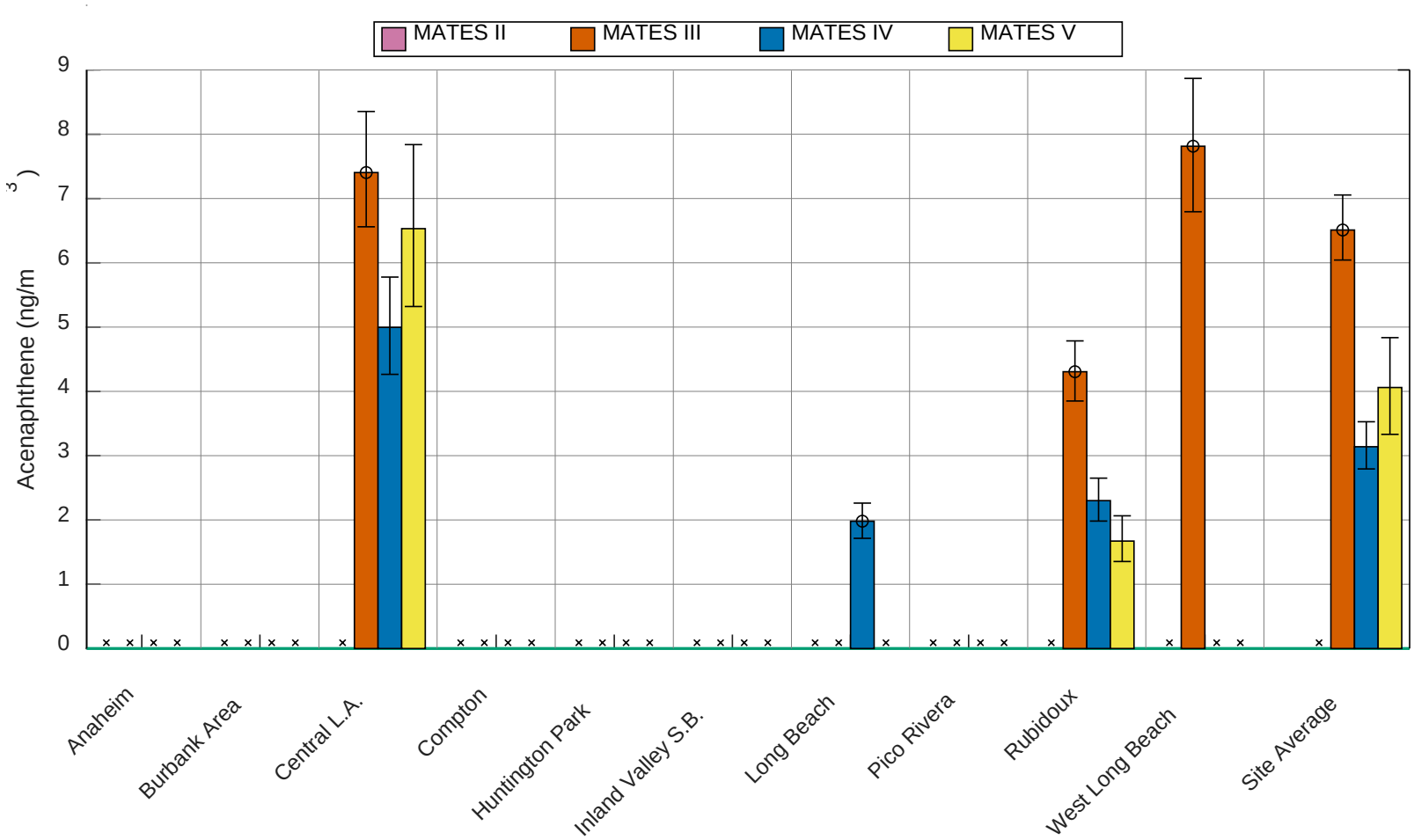


Figure IV-152. Annual Average Concentrations of Acenaphthene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

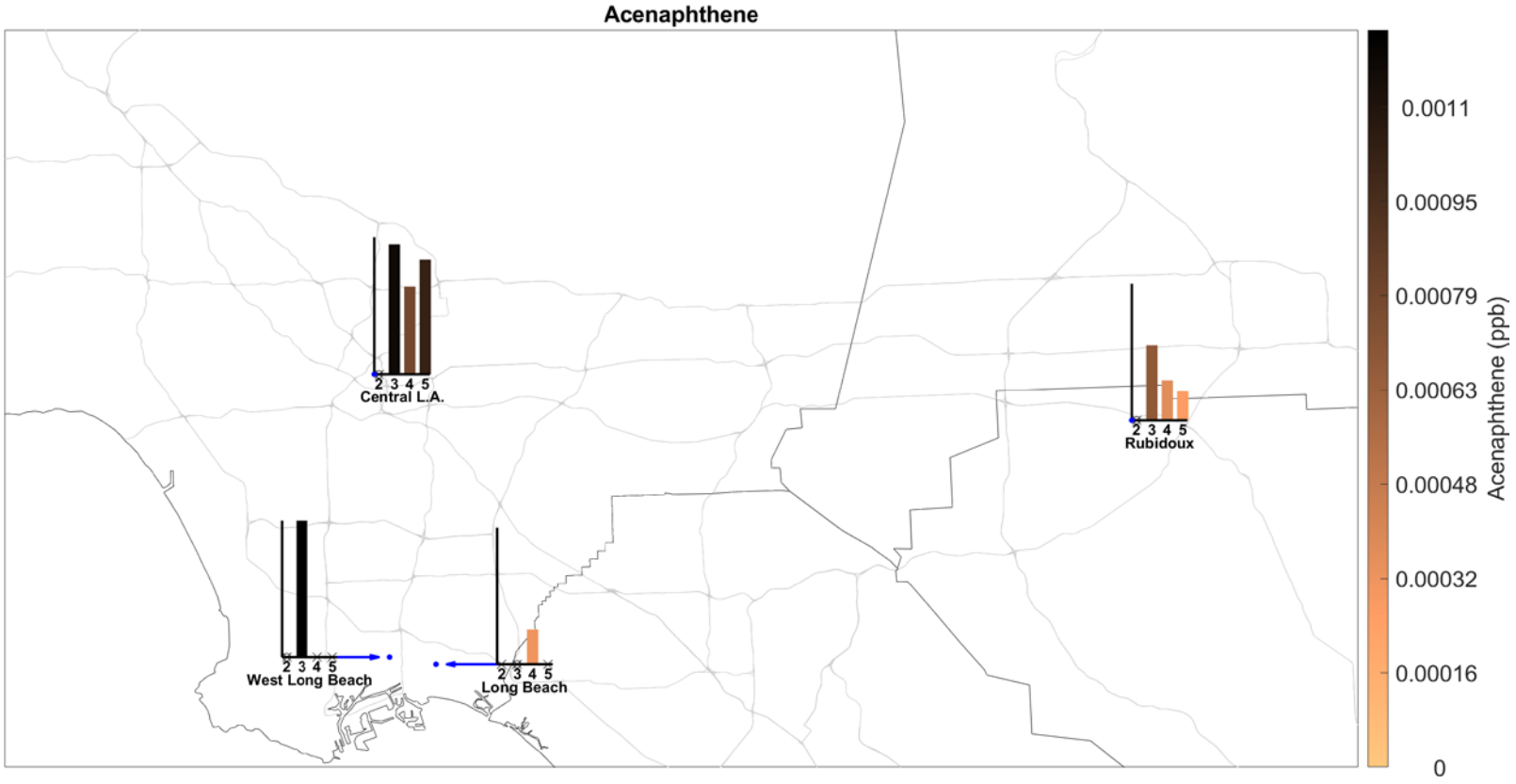


Figure IV-153. Geographic distribution of Acenaphthene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Acenaphthylene

Table IV-79. Ambient Concentrations (ng/m^3) of Acenaphthylene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							5.39		4.6	5.68
95% CI LB							4.72		3.87	4.75
95% CI UB							6.09		5.38	6.63
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							16.6		20.9	24.7
MATES IV										
Average						0.629	0.703		0.467	
95% CI LB						0.349	0.438		0.284	
95% CI UB						0.988	1.01		0.682	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						60.8	56.9		55.2	
Max						5.36	4.64		4.05	
MATES V										
Average							0.447		0.351	
95% CI LB							0.287		0.164	
95% CI UB							0.631		0.59	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							15.5		35	
Max							3.15		5	

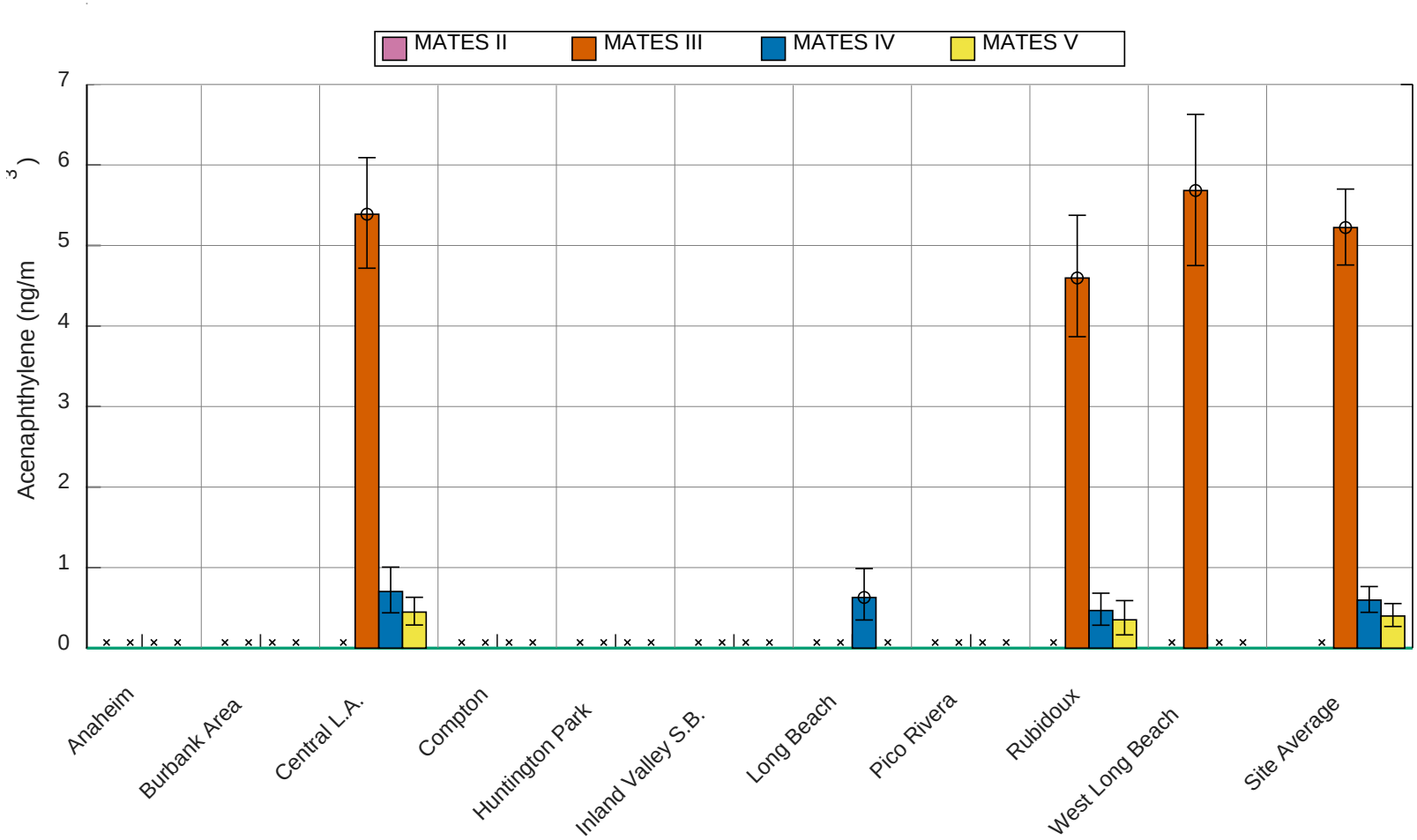


Figure IV-154. Annual Average Concentrations of Acenaphthylene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

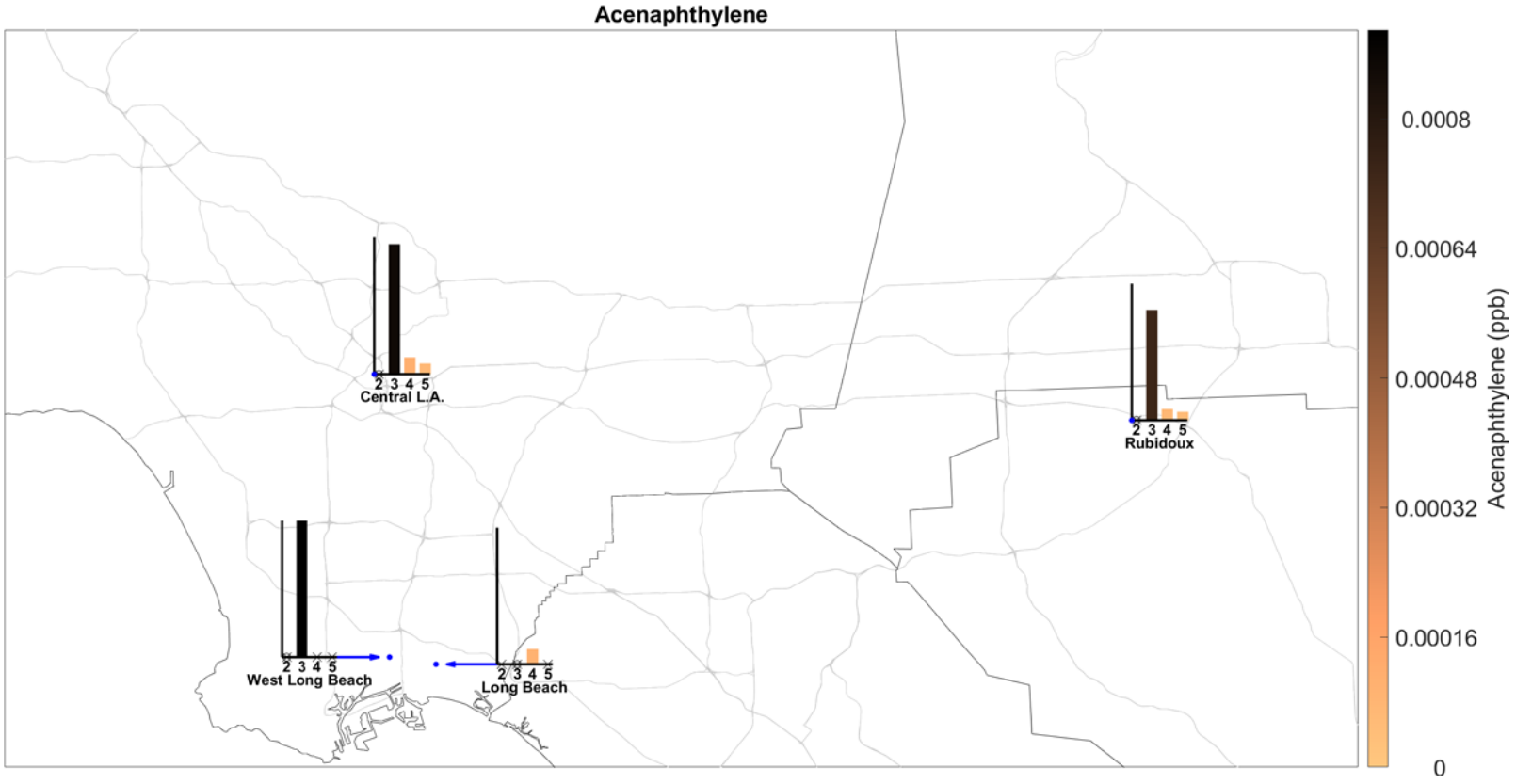


Figure IV-155. Geographic distribution of Acenaphthylene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Anthracene

Table IV-80. Ambient Concentrations (ng/m^3) of Anthracene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							1.11		0.788	0.997
95% CI LB							0.729		0.524	0.697
95% CI UB							1.63		1.12	1.44
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							21.6		11.8	22.3
MATES IV										
Average						0.263	0.474		0.222	
95% CI LB						0.198	0.402		0.164	
95% CI UB						0.339	0.551		0.29	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						19.6	5.2		36.2	
Max						1.15	1.51		1.38	
MATES V										
Average							0.289		0.125	
95% CI LB							0.222		0.0835	
95% CI UB							0.362		0.174	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							15.5		18.3	
Max							1.12		1.04	

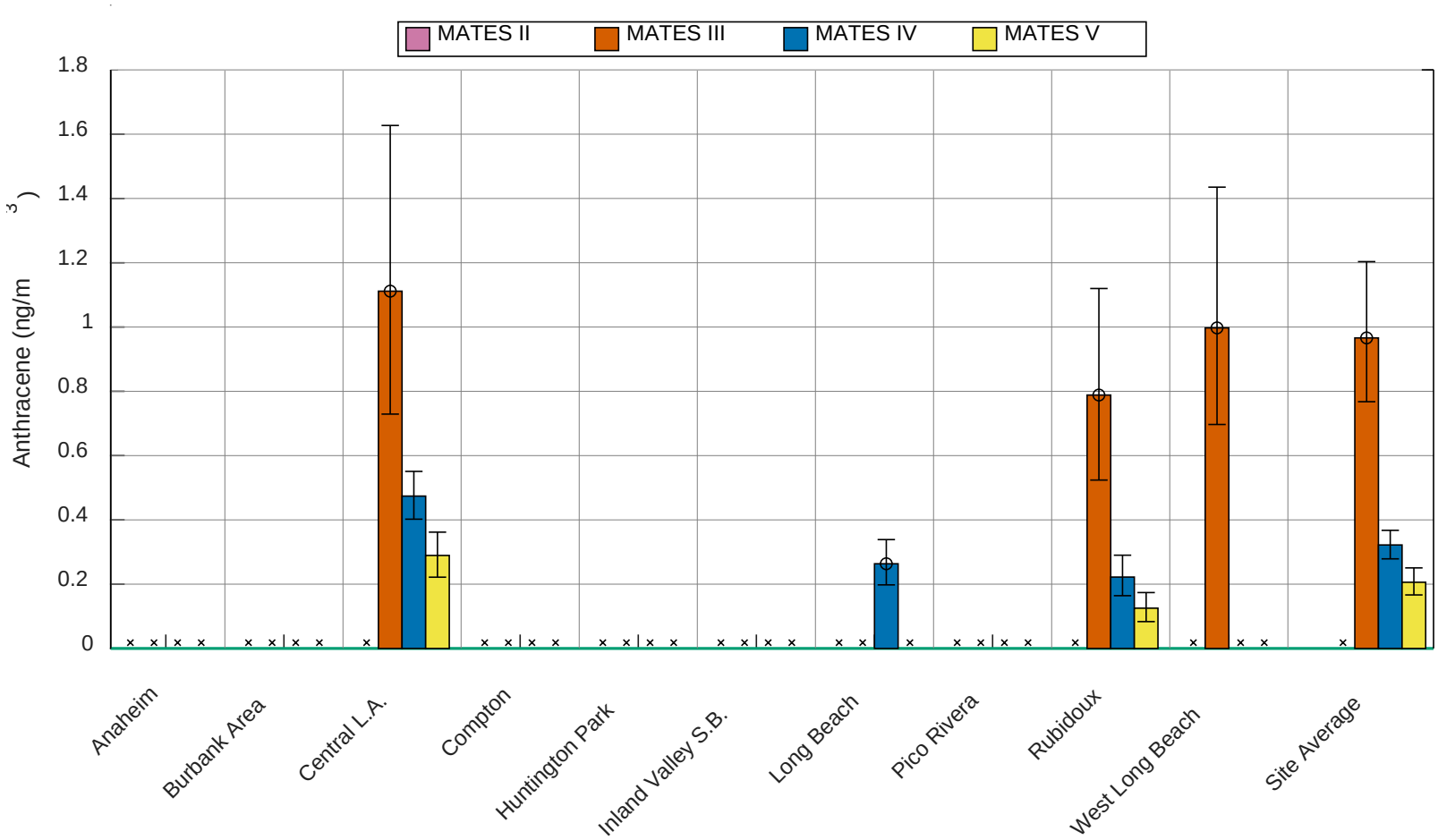


Figure IV-156. Annual Average Concentrations of Anthracene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

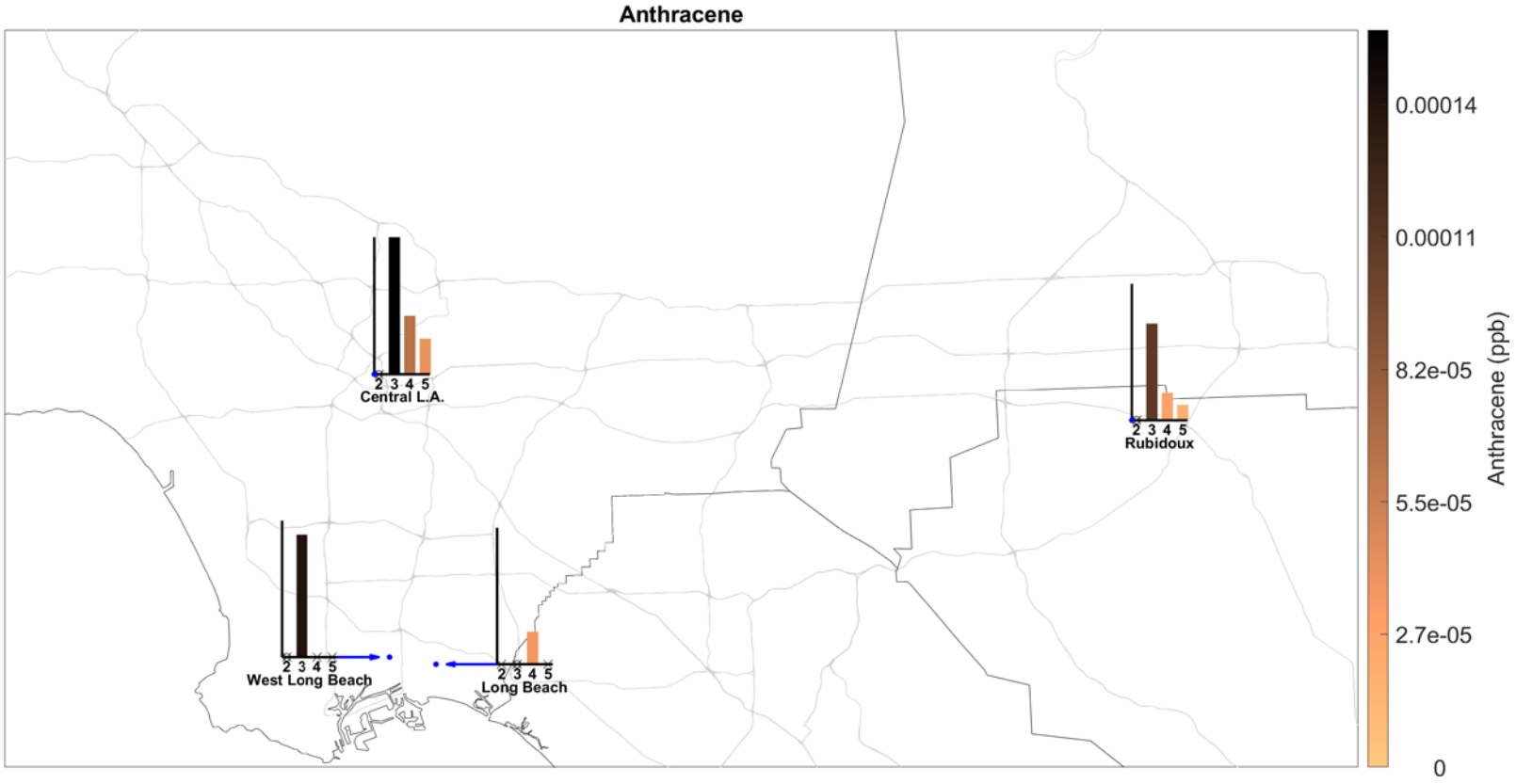


Figure IV-157. Geographic distribution of Anthracene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Benzo(a)anthracene

Table IV-81. Ambient Concentrations (ng/m^3) of Benzo(a)anthracene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							0.112		0.126	0.153
95% CI LB							0.0957		0.104	0.127
95% CI UB							0.128		0.149	0.18
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							0.536		0.696	0.853
MATES IV										
Average						0.107	0.0548		0.074	
95% CI LB						0.0623	0.0479		0.063	
95% CI UB						0.193	0.0822		0.109	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						74.5	74.1		77.6	
Max						1.97	0.248		0.684	
MATES V										
Average							0.0639		0.0613	
95% CI LB							0.0425		0.0408	
95% CI UB							0.0928		0.0855	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		1.7	
Max							0.645		0.548	

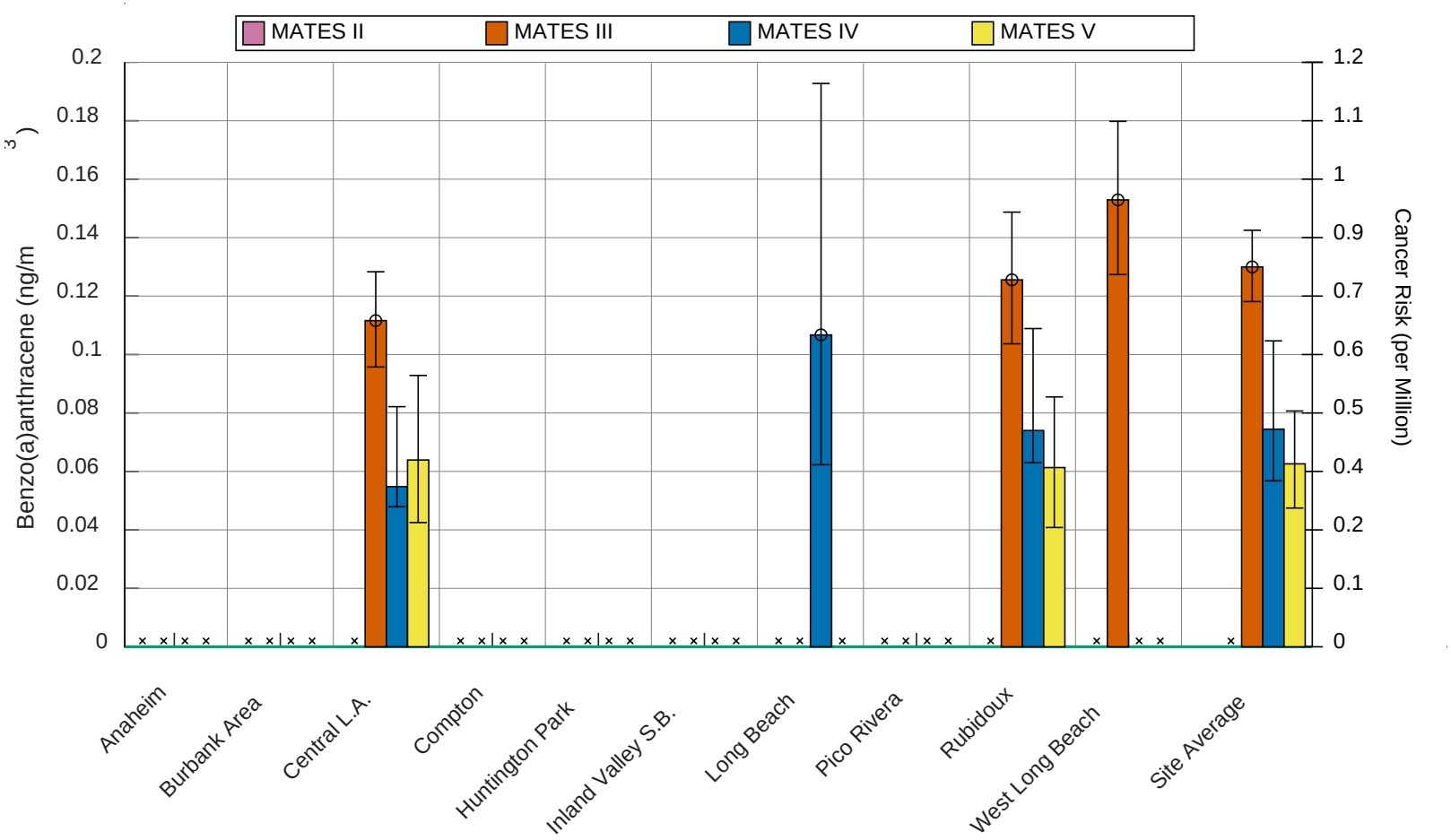


Figure IV-158. Annual Average Concentrations of Benzo(a)anthracene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

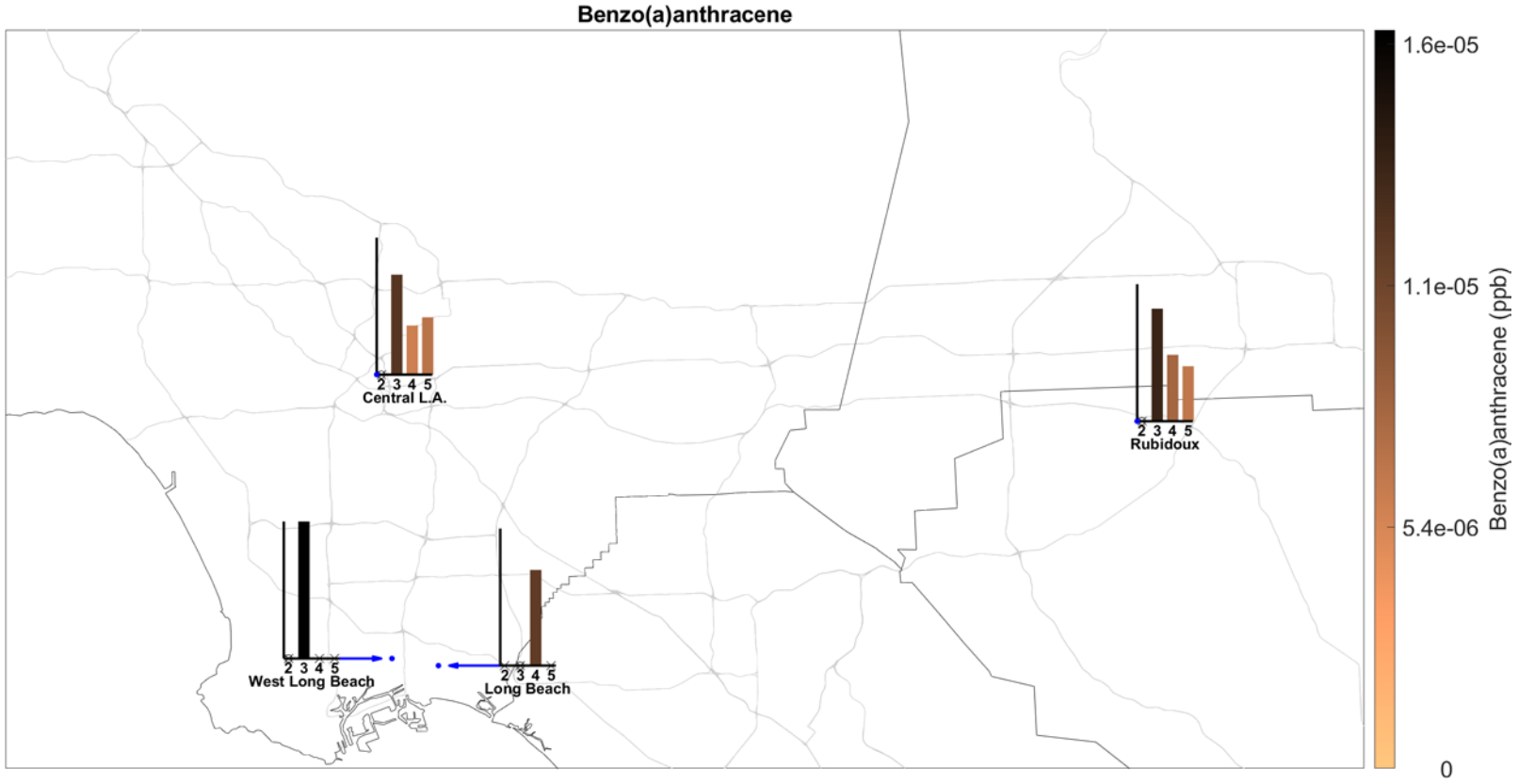


Figure IV-159. Geographic distribution of Benzo(a)anthracene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Benzo(a)pyrene

Table IV-82. Ambient Concentrations (ng/m^3) of Benzo(a)pyrene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.133	0.242		0.0897	0.307	0.173	0.16	0.262	0.126	
95% CI LB	0.0732	0.137		0.0719	0.144	0.0942	0.107	0.131	0.0731	
95% CI UB	0.221	0.378		0.112	0.526	0.29	0.224	0.445	0.2	
N	31	31	0	31	24	31	31	22	30	0
% < MDL	58.1	35.5		45.2	20.8	41.9	32.3	36.4	53.3	
Max	1.3	1.8		0.27	2.3	1.6	0.9	1.9	1	
MATES III										
Average							0.142		0.15	0.212
95% CI LB							0.119		0.123	0.169
95% CI UB							0.169		0.179	0.259
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							1.1		0.76	1.83
MATES IV										
Average						0.0582, 0.108[a]	0.0185, 0.0707[a]		0.0689	
95% CI LB						0.0156[a]	0.0076[a]		0.0614	
95% CI UB						0.169[a]	0.089[a]		0.0952	
N	0	0	0	0	0	51[a]	58[a]	0	58	0
% < MDL						80.4[a]	82.8[a]		79.3	
Max						1.4[a]	0.221[a]		0.519	
MATES V										
Average							0.0584		0.0589	
95% CI LB							0.0362		0.0368	
95% CI UB							0.0865		0.0877	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							10.3		11.7	
Max							0.516		0.654	

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

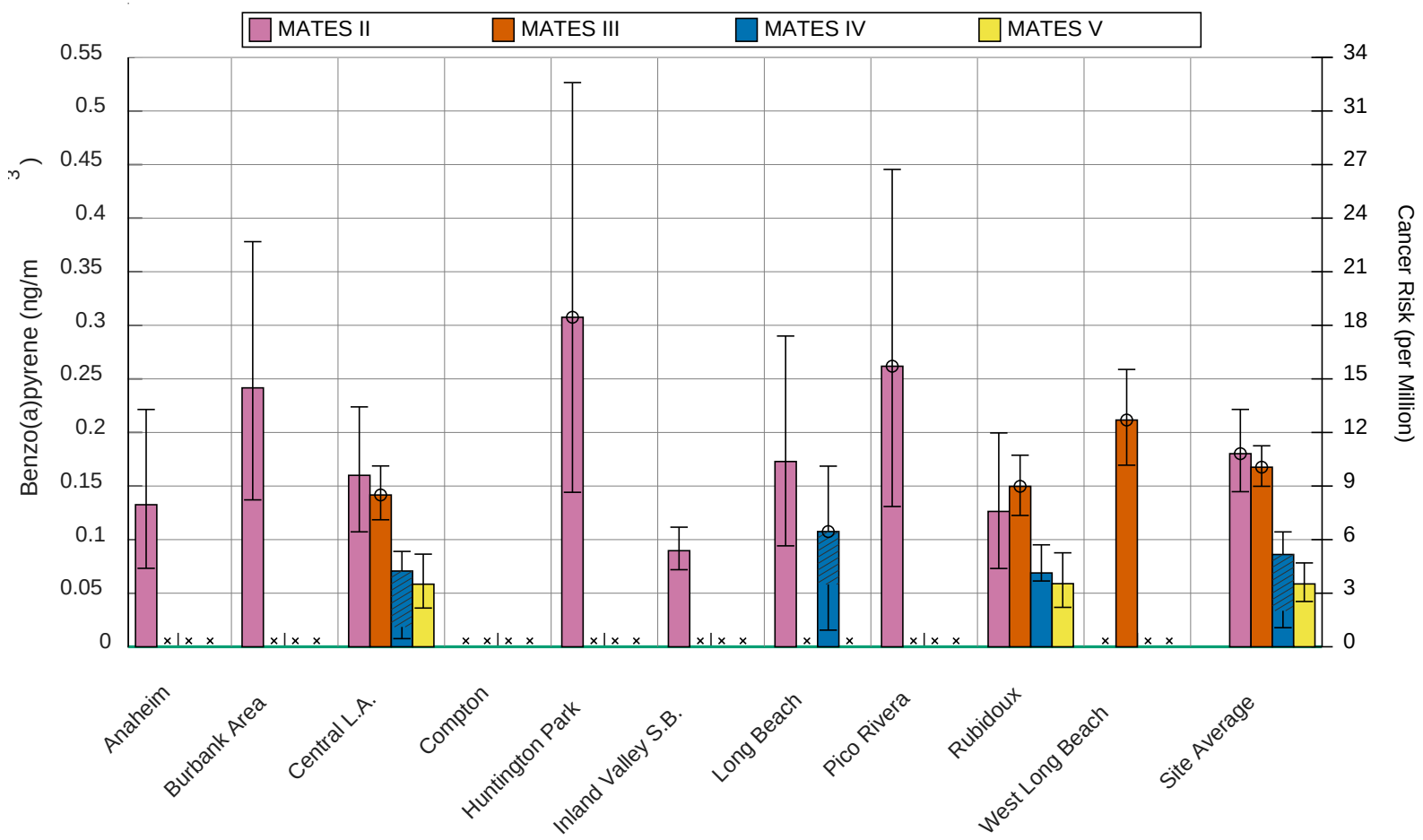


Figure IV-160. Annual Average Concentrations of Benzo(a)pyrene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

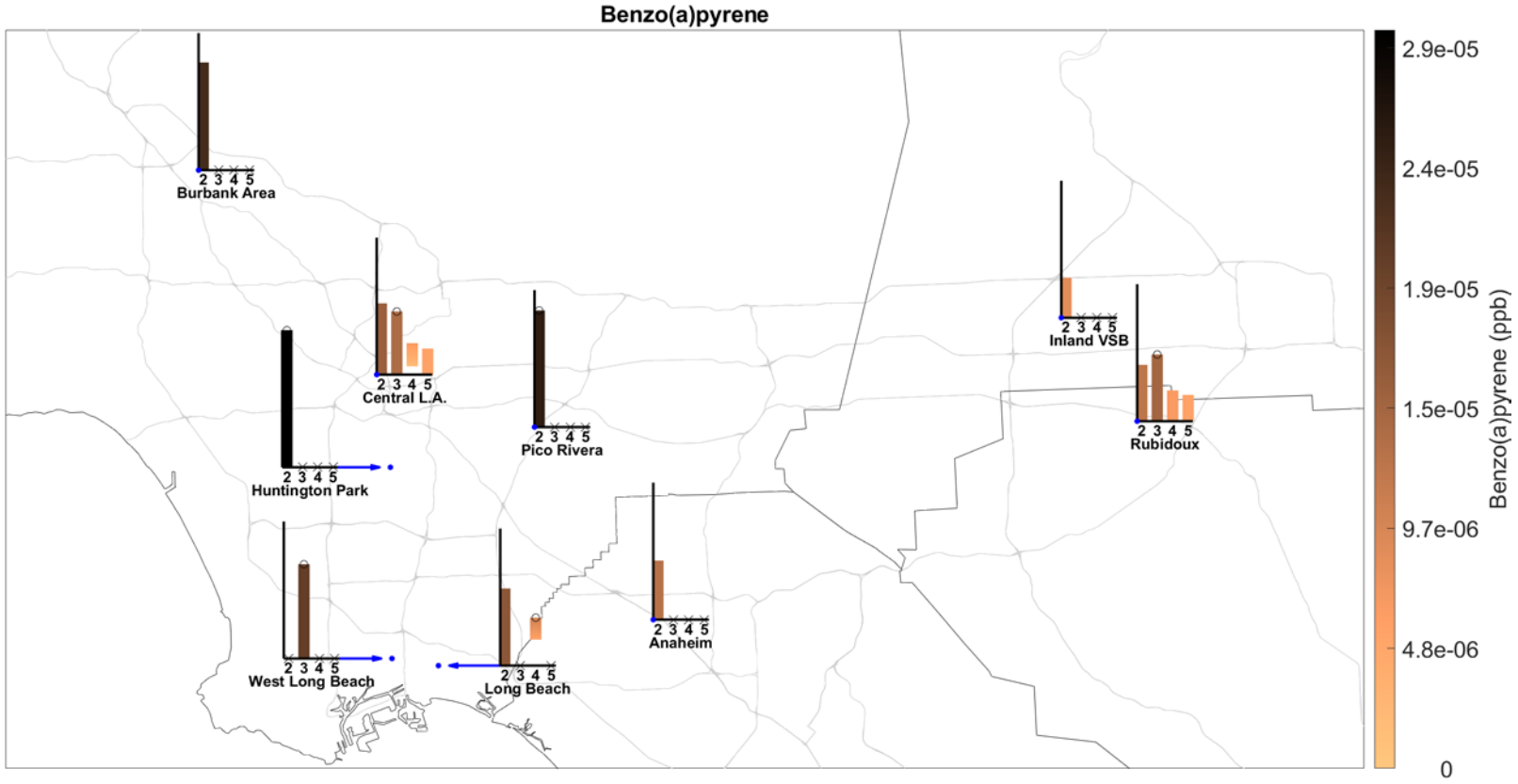
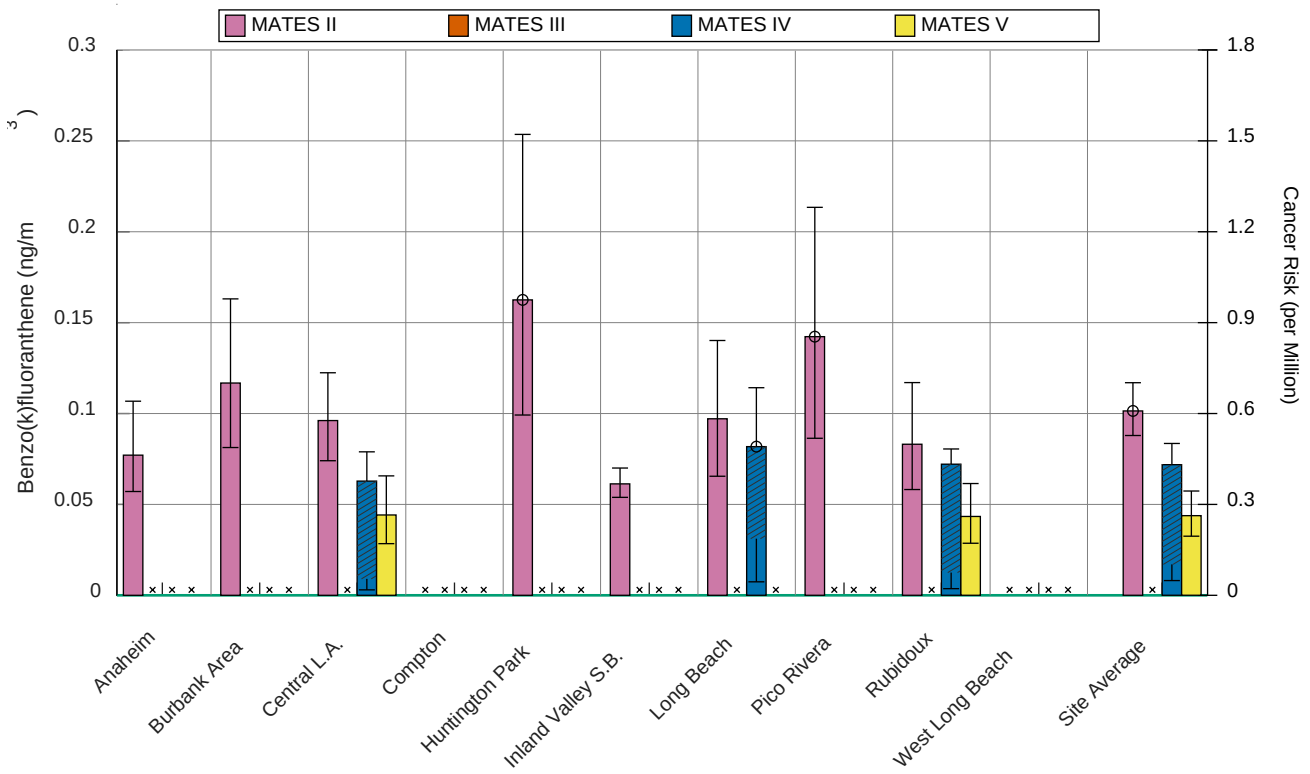


Figure IV-161. Geographic distribution of Benzo(a)pyrene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Benzo(b)fluoranthene

Table IV-83. Ambient Concentrations (ng/m^3) of Benzo(b)fluoranthene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.151	0.267		0.126	0.388	0.208	0.223	0.345	0.169	
95% CI LB	0.091	0.174		0.1	0.225	0.122	0.16	0.199	0.101	
95% CI UB	0.235	0.387		0.156	0.614	0.325	0.3	0.531	0.256	
N	31	31	0	31	24	31	31	22	30	0
% < MDL	38.7	9.7		16.1	16.7	29	19.4	4.5	30	
Max	1.2	1.6		0.38	2	1.6	1	1.9	1.25	
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average						0.169	0.0949		0.115	
95% CI LB						0.0878	0.0715		0.0863	
95% CI UB						0.285	0.123		0.15	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						52.9	32.8		46.6	
Max						2.46	0.577		0.74	
MATES V										
Average							0.162		0.159	
95% CI LB							0.104		0.105	
95% CI UB							0.243		0.221	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		0	
Max							1.86		1.27	


MATES II
MATES III
MATES IV
MATES V
Benzo(k)fluoranthene (ng/m3)
Cancer Risk (per Million)
0.3
0.25
0.2
0.15
0.1
0.05
0
1.8
1.5
1.2
0.9
0.6
0.3
0
Anaheim
Burbank Area
Central L.A.
Compton
Huntington Park
Inland Valley S.B.
Long Beach
Pico Rivera
Rubidoux
West Long Beach
Site Average

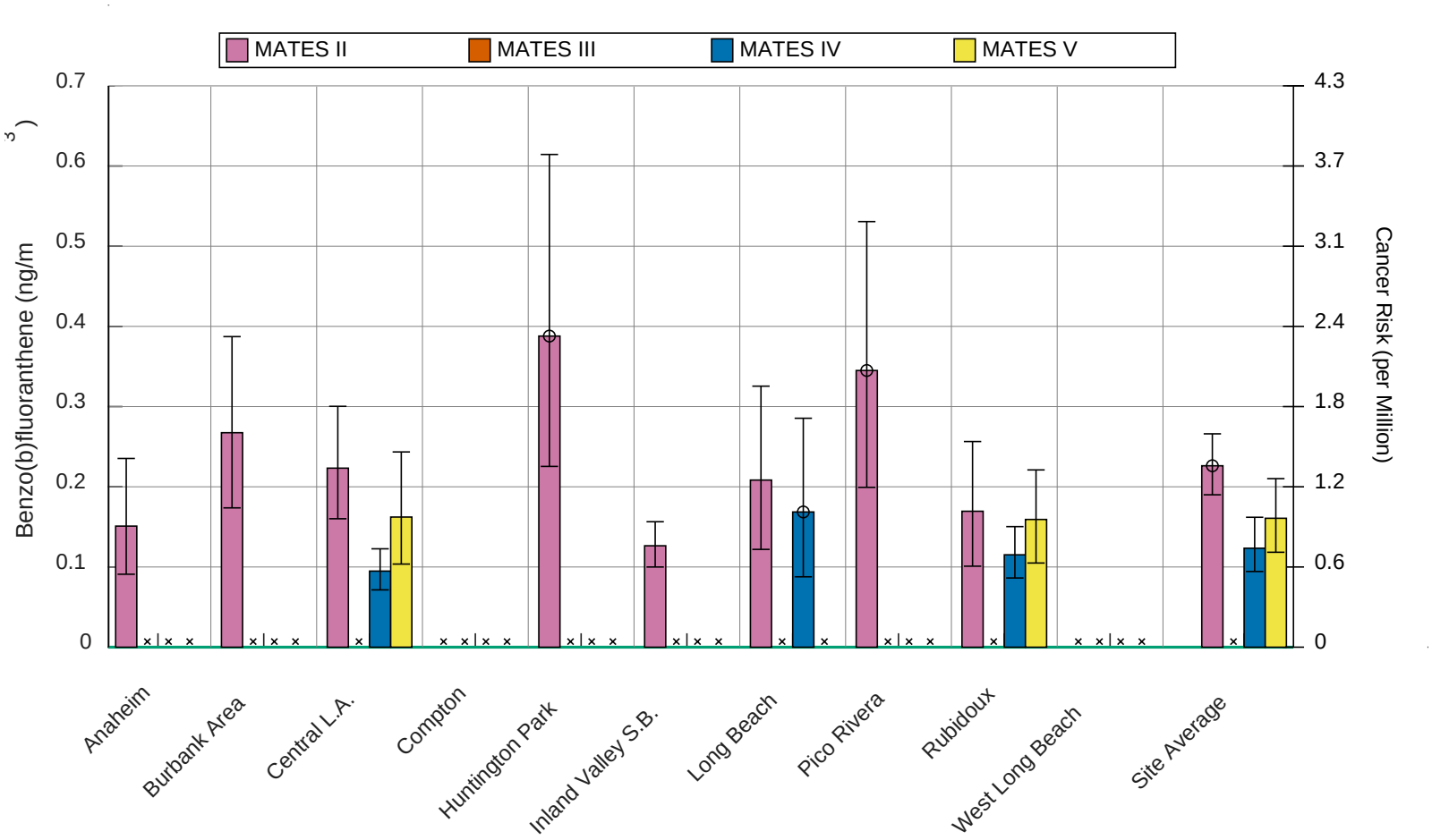


Figure IV-162. Annual Average Concentrations of Benzo(b)fluoranthene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

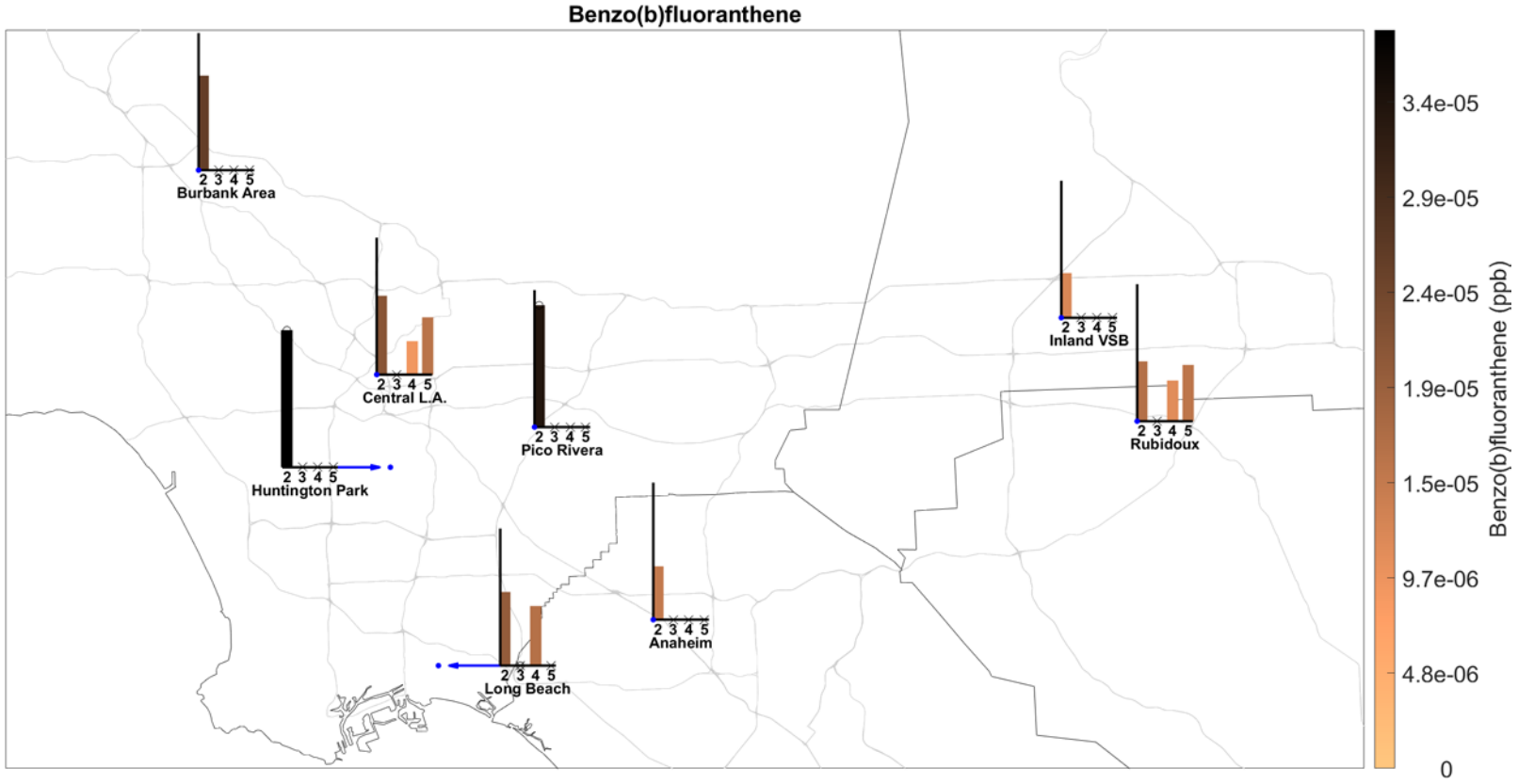


Figure IV-163. Geographic distribution of Benzo(b)fluoranthene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Benzo(b+j+k)Fluoranthene

Table IV-84. Ambient Concentrations (ng/m^3) of Benzo(b+j+k)Fluoranthene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							0.363		0.393	0.419
95% CI LB							0.314		0.331	0.348
95% CI UB							0.414		0.458	0.491
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							1.75		1.58	2.09
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

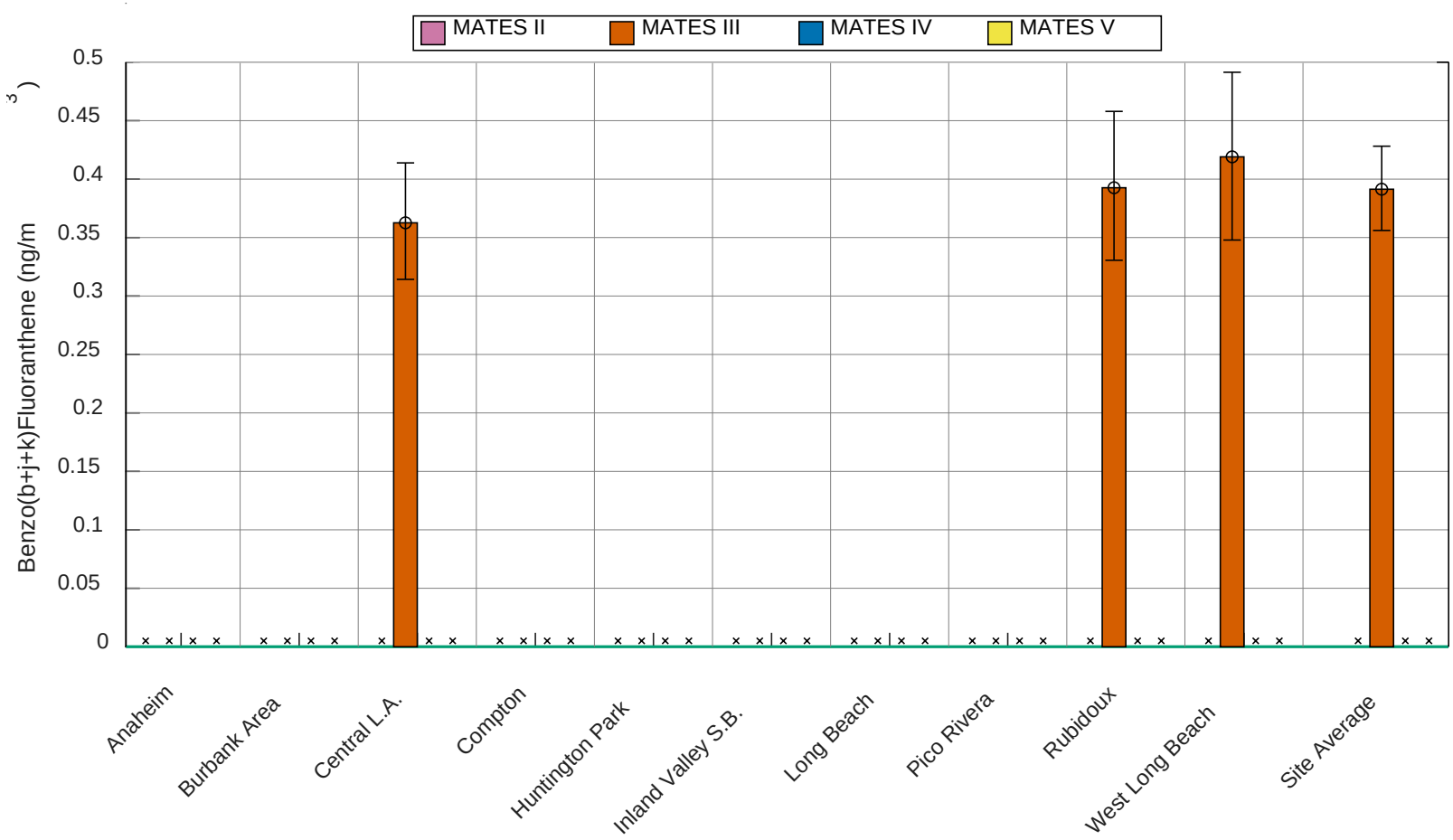


Figure IV-164. Annual Average Concentrations of Benzo(b+j+k)Fluoranthene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

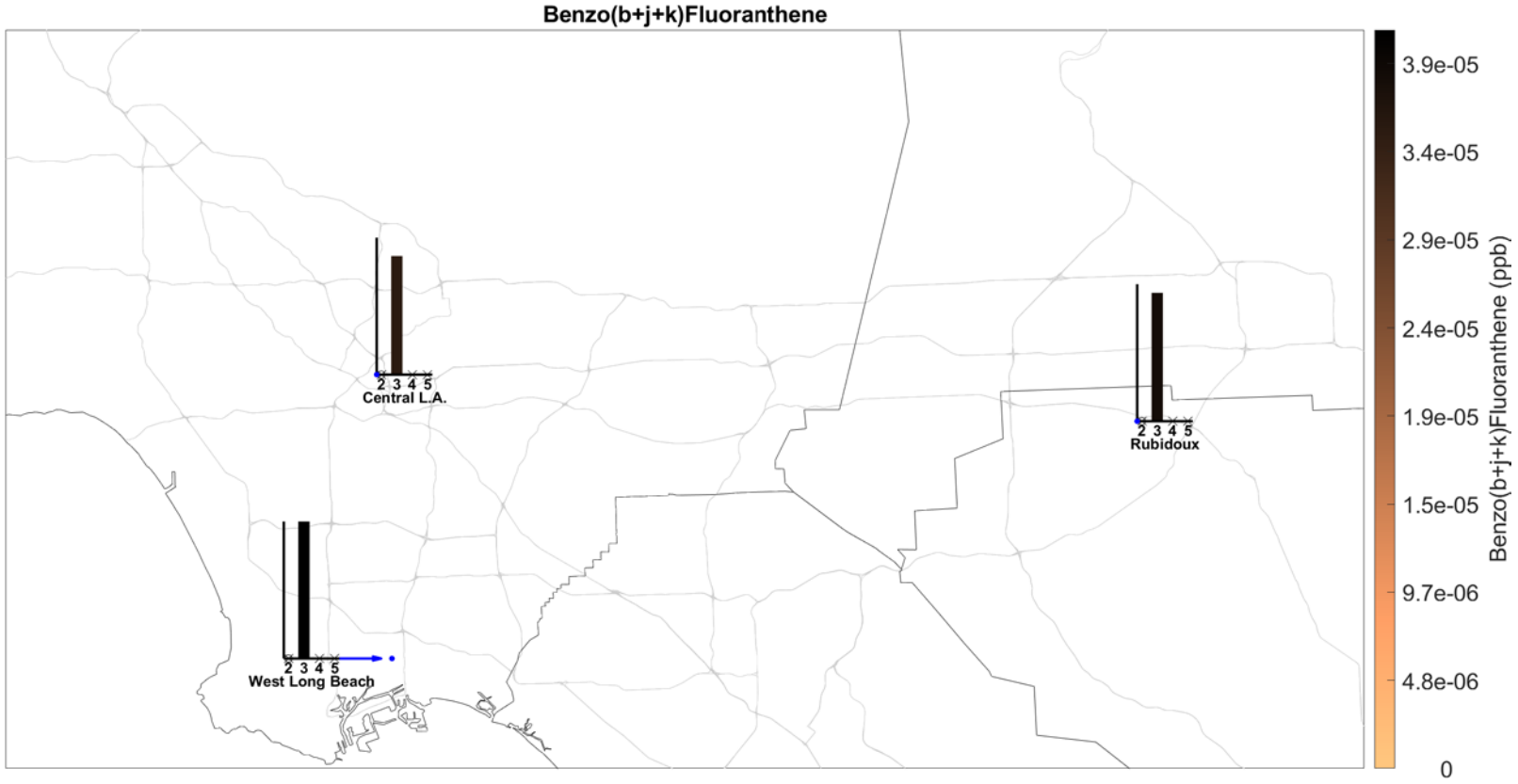


Figure IV-165. Geographic distribution of Benzo(b+j+k)Fluoranthene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Benzo(e)pyrene

Table IV-85. Ambient Concentrations (ng/m^3) of Benzo(e)pyrene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average						0.11	0.0671		0.0744	
95% CI LB						0.0707	0.0548		0.0647	
95% CI UB						0.164	0.0814		0.09	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						62.7	65.5		70.7	
Max						1.13	0.307		0.341	
MATES V										
Average							0.0951		0.0866	
95% CI LB							0.0653		0.0611	
95% CI UB							0.135		0.118	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		0	
Max							0.914		0.641	

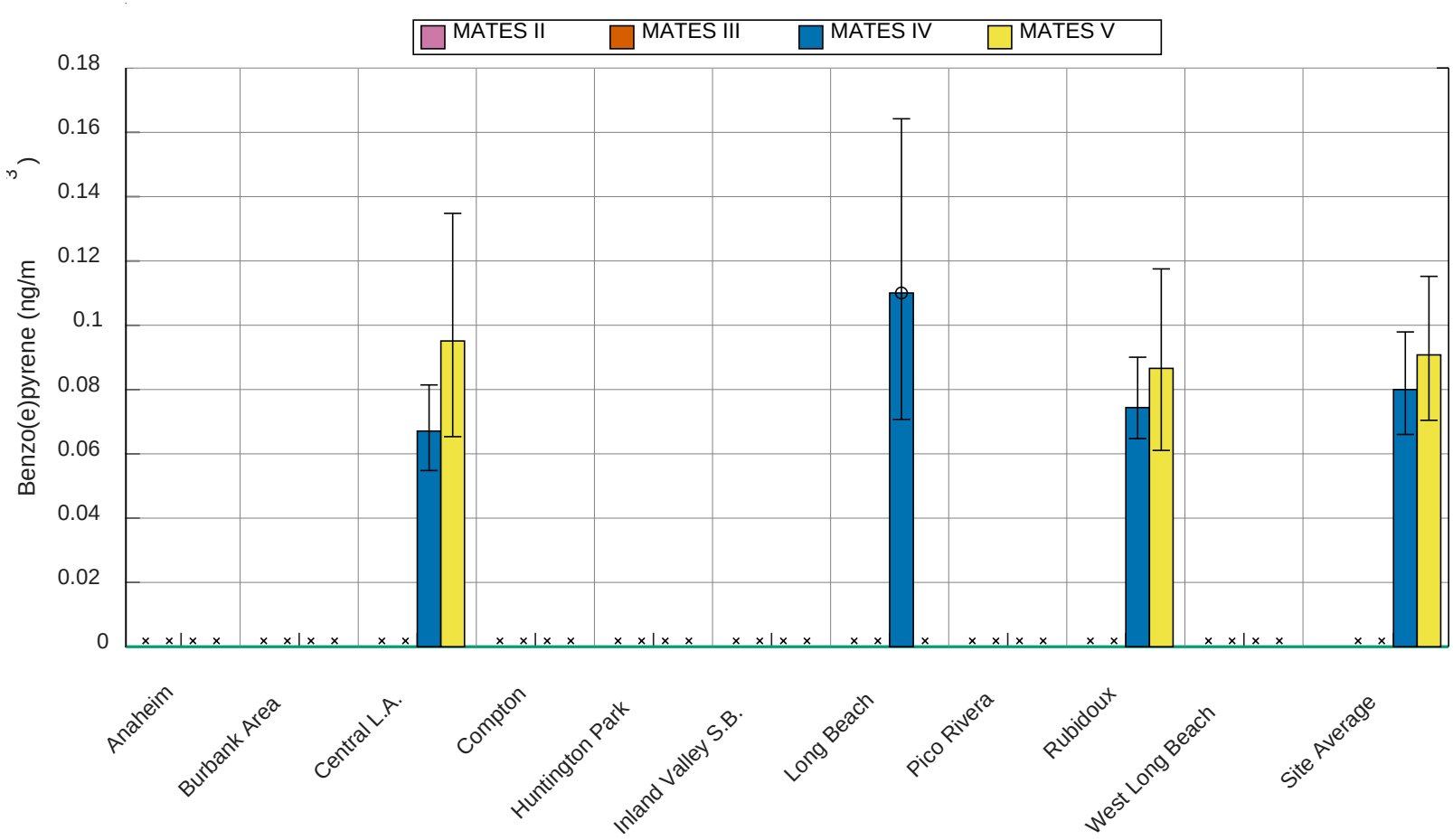


Figure IV-166. Annual Average Concentrations of Benzo(e)pyrene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

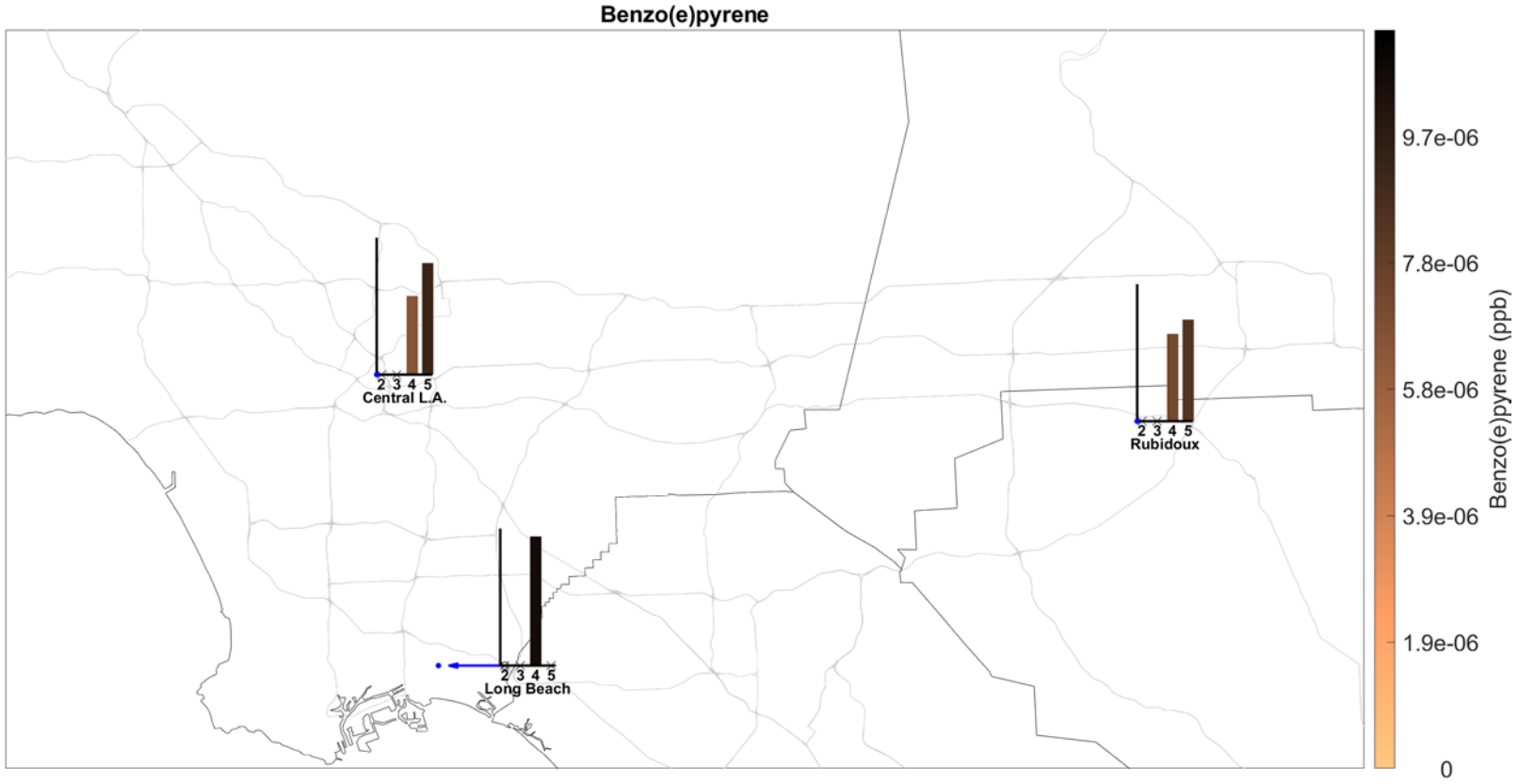


Figure IV-167. Geographic distribution of Benzo(e)pyrene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Benzo(g,h,i)perylene

Table IV-86. Ambient Concentrations (ng/m^3) of Benzo(g,h,i)perylene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.456	0.884		0.339	1.31	0.613	0.629	0.82	0.384	
95% CI LB	0.282	0.573		0.256	0.801	0.383	0.454	0.512	0.238	
95% CI UB	0.662	1.23		0.433	1.87	0.881	0.822	1.17	0.555	
N	31	31	0	31	24	31	31	22	30	0
% < MDL	3.2	0		3.2	0	0	0	0	6.7	
Max	2.4	3.7		1.1	4.3	3	2	3.2	2.2	
MATES III										
Average							0.397		0.34	0.45
95% CI LB							0.347		0.288	0.377
95% CI UB							0.445		0.395	0.526
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							1.38		1.33	1.98
MATES IV										
Average						0.117	0.0841		0.0767	
95% CI LB						0.0761	0.0669		0.0624	
95% CI UB						0.168	0.105		0.0932	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						52.9	32.8		55.2	
Max						0.79	0.39		0.327	
MATES V										
Average							0.122		0.101	
95% CI LB							0.0871		0.0707	
95% CI UB							0.164		0.136	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		1.7	
Max							0.772		0.694	

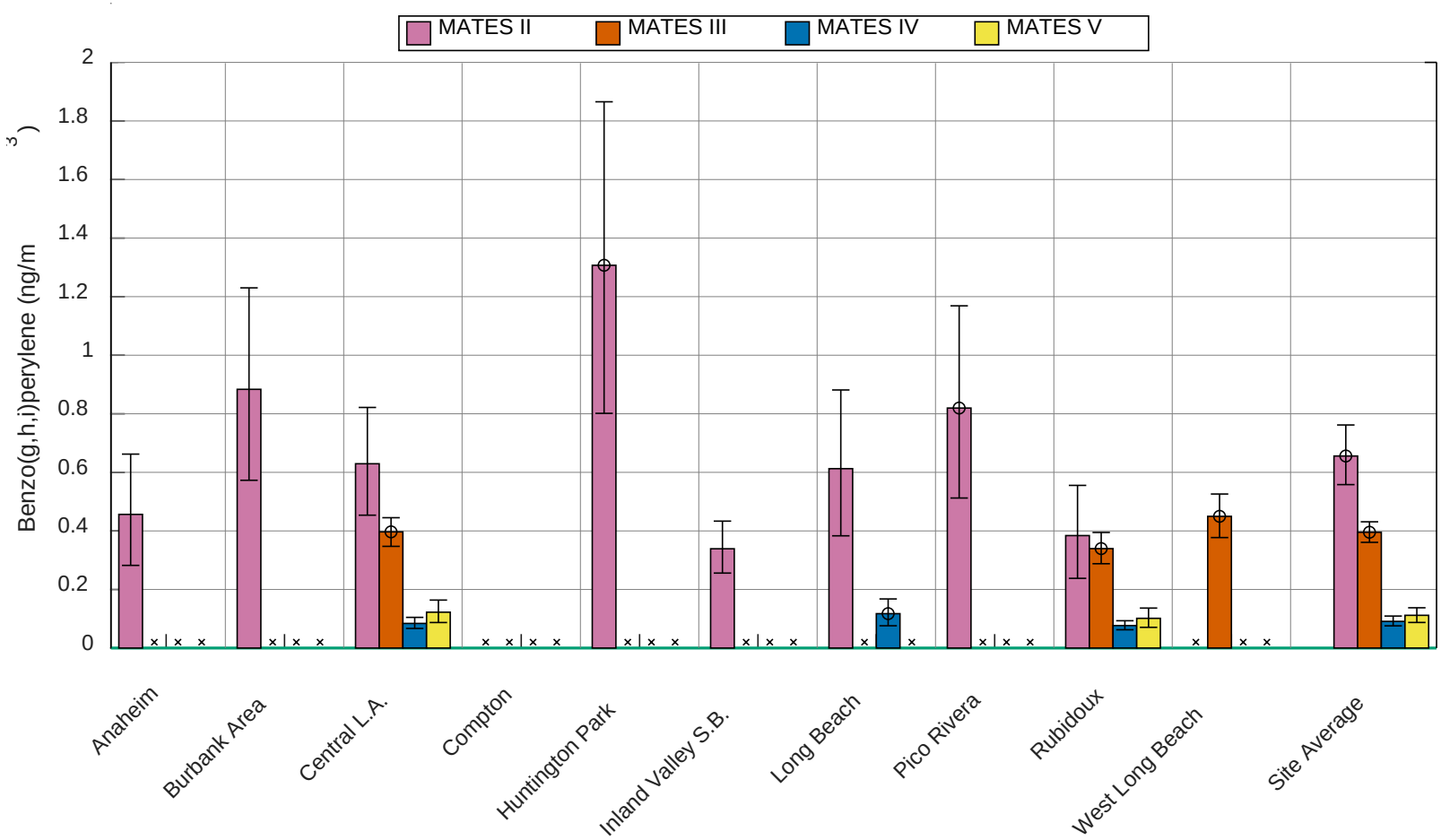


Figure IV-168. Annual Average Concentrations of Benzo(g,h,i)perylene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

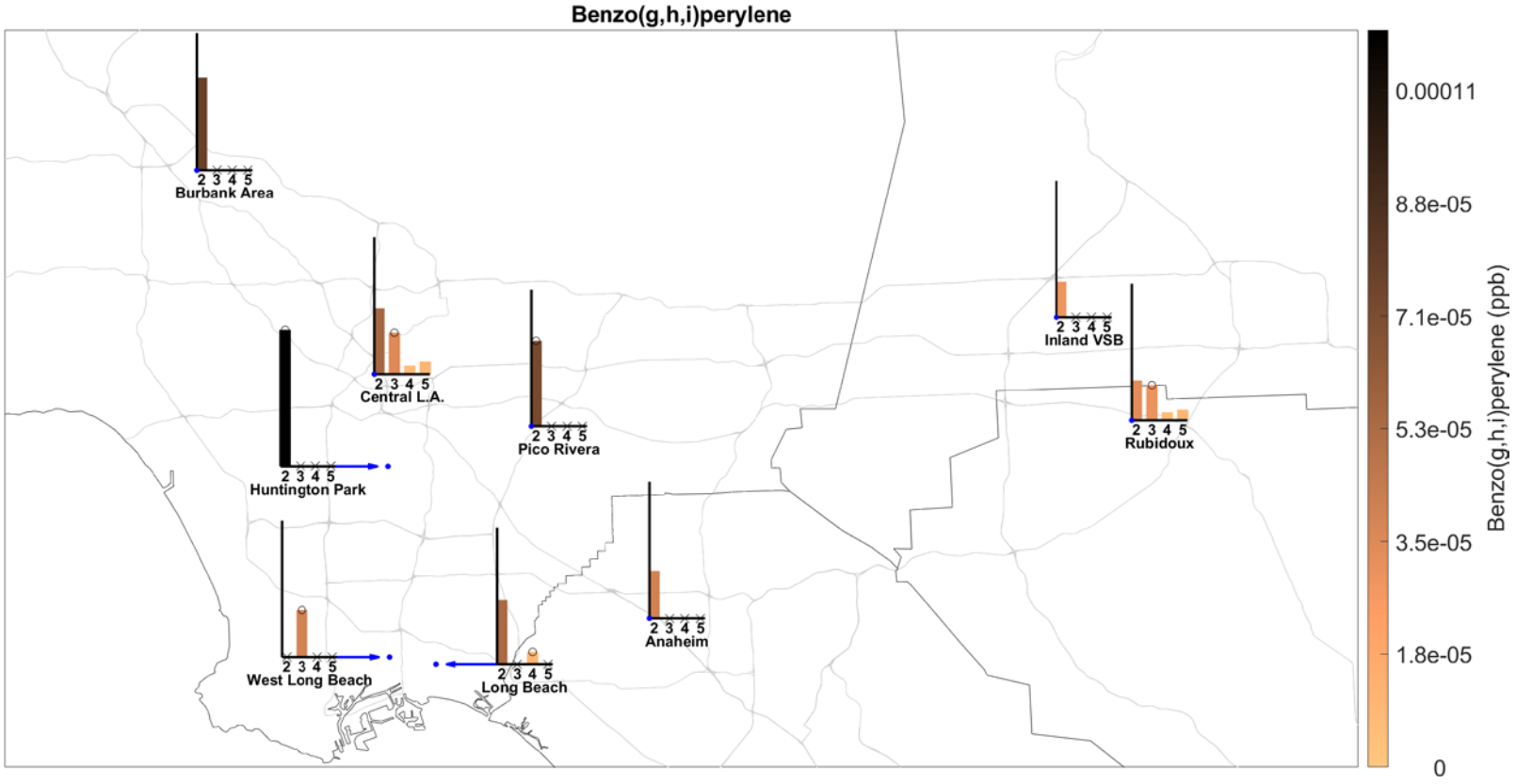


Figure IV-169. Geographic distribution of Benzo(g,h,i)perylene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Benzo(k)fluoranthene

Table IV-87. Ambient Concentrations (ng/m^3) of Benzo(k)fluoranthene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.0771	0.117		0.0613	0.162	0.0971	0.0961	0.142	0.0831	
95% CI LB	0.0571	0.0813		0.0539	0.0992	0.0655	0.074	0.0864	0.0582	
95% CI UB	0.107	0.163		0.07	0.254	0.14	0.122	0.213	0.117	
N	31	31	0	31	24	31	31	22	30	0
% < MDL	67.7	54.8		61.3	37.5	58.1	41.9	45.5	56.7	
Max	0.45	0.65		0.15	0.83	0.65	0.37	0.74	0.515	
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average						0.0311, 0.0818[a]	0.00903, 0.0628[a]		0.0125, 0.0721[a]	
95% CI LB						0.0074[a]	0.00299[a]		0.00363[a]	
95% CI UB						0.114[a]	0.0789[a]		0.0805[a]	
N	0	0	0	0	0	51[a]	58[a]	0	58[a]	0
% < MDL						84.3[a]	87.9[a]		87.9[a]	
Max						0.783[a]	0.14[a]		0.254[a]	
MATES V										
Average							0.0442		0.0434	
95% CI LB							0.0284		0.0286	
95% CI UB							0.0657		0.0615	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							15.5		21.7	
Max							0.479		0.37	

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

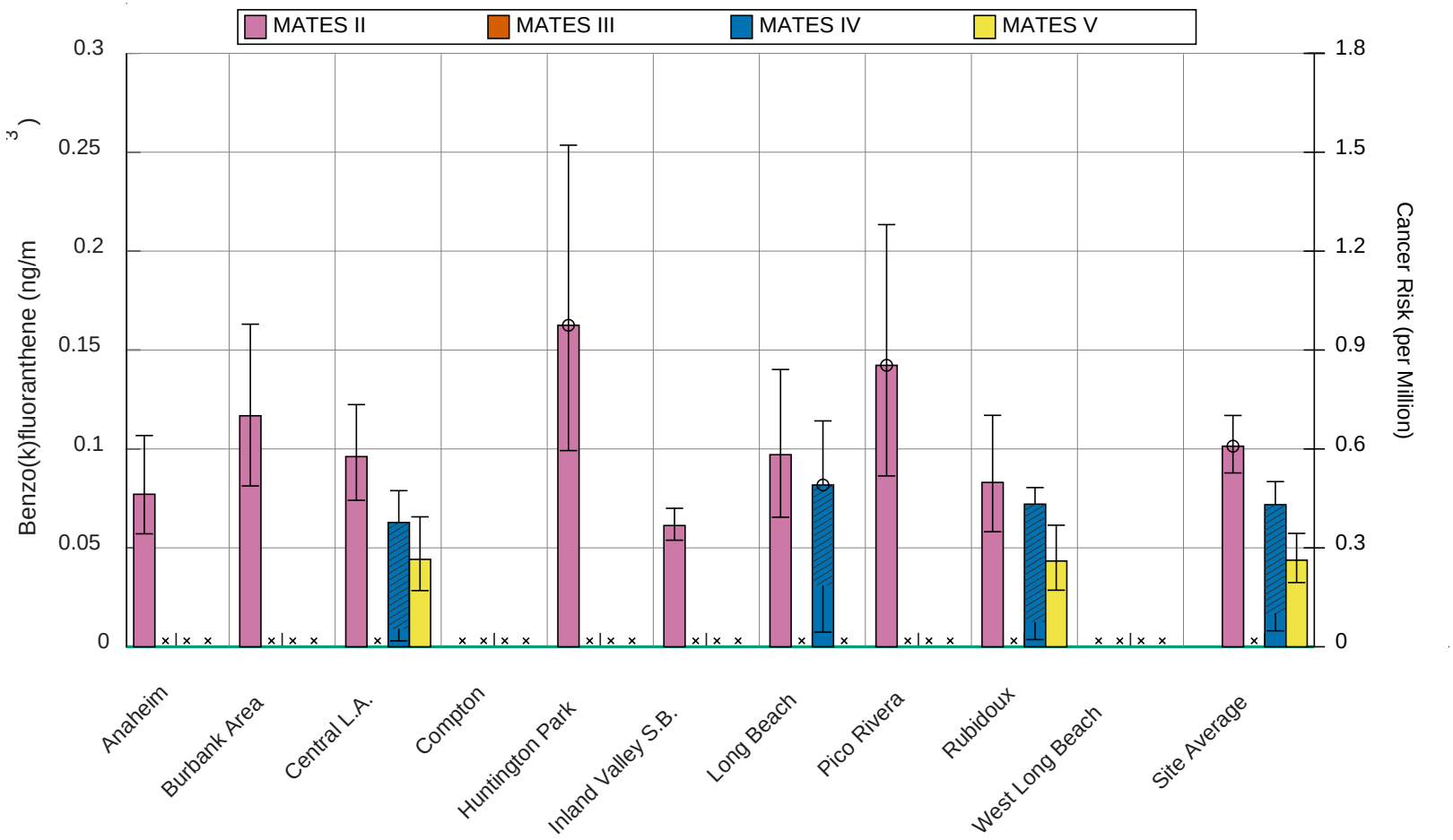


Figure IV-170. Annual Average Concentrations of Benzo(k)fluoranthene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

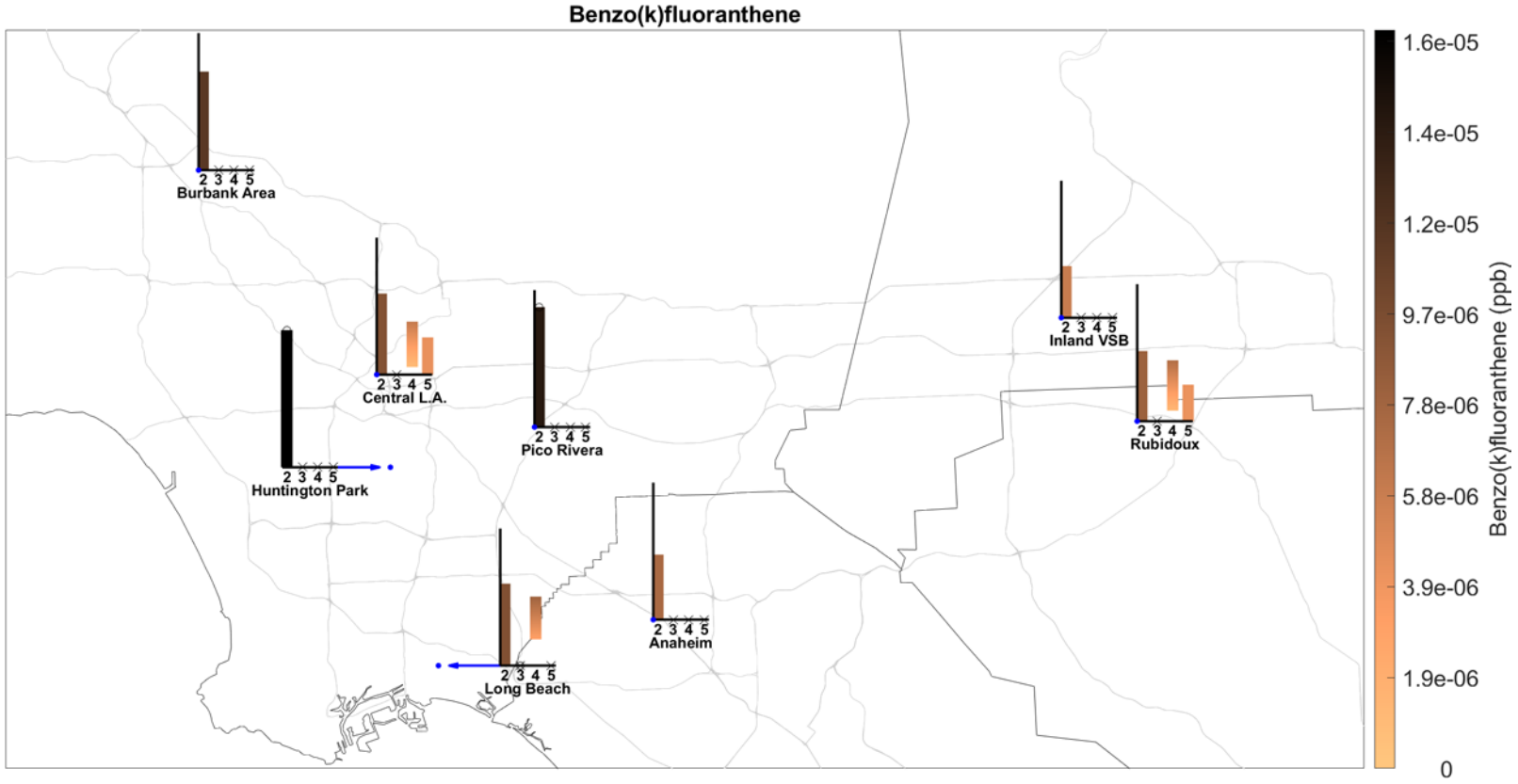


Figure IV-171. Geographic distribution of Benzo(k)fluoranthene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Chrysene

Table IV-88. Ambient Concentrations (ng/m^3) of Chrysene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							0.323		0.341	0.427
95% CI LB							0.29		0.293	0.372
95% CI UB							0.358		0.392	0.482
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							1.04		1.4	1.53
MATES IV										
Average						0.172	0.119		0.125	
95% CI LB						0.107	0.0998		0.1	
95% CI UB						0.264	0.14		0.158	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						9.8	5.2		6.9	
Max						2	0.434		0.781	
MATES V										
Average							0.156		0.121	
95% CI LB							0.111		0.0922	
95% CI UB							0.221		0.153	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		0	
Max							1.61		0.727	

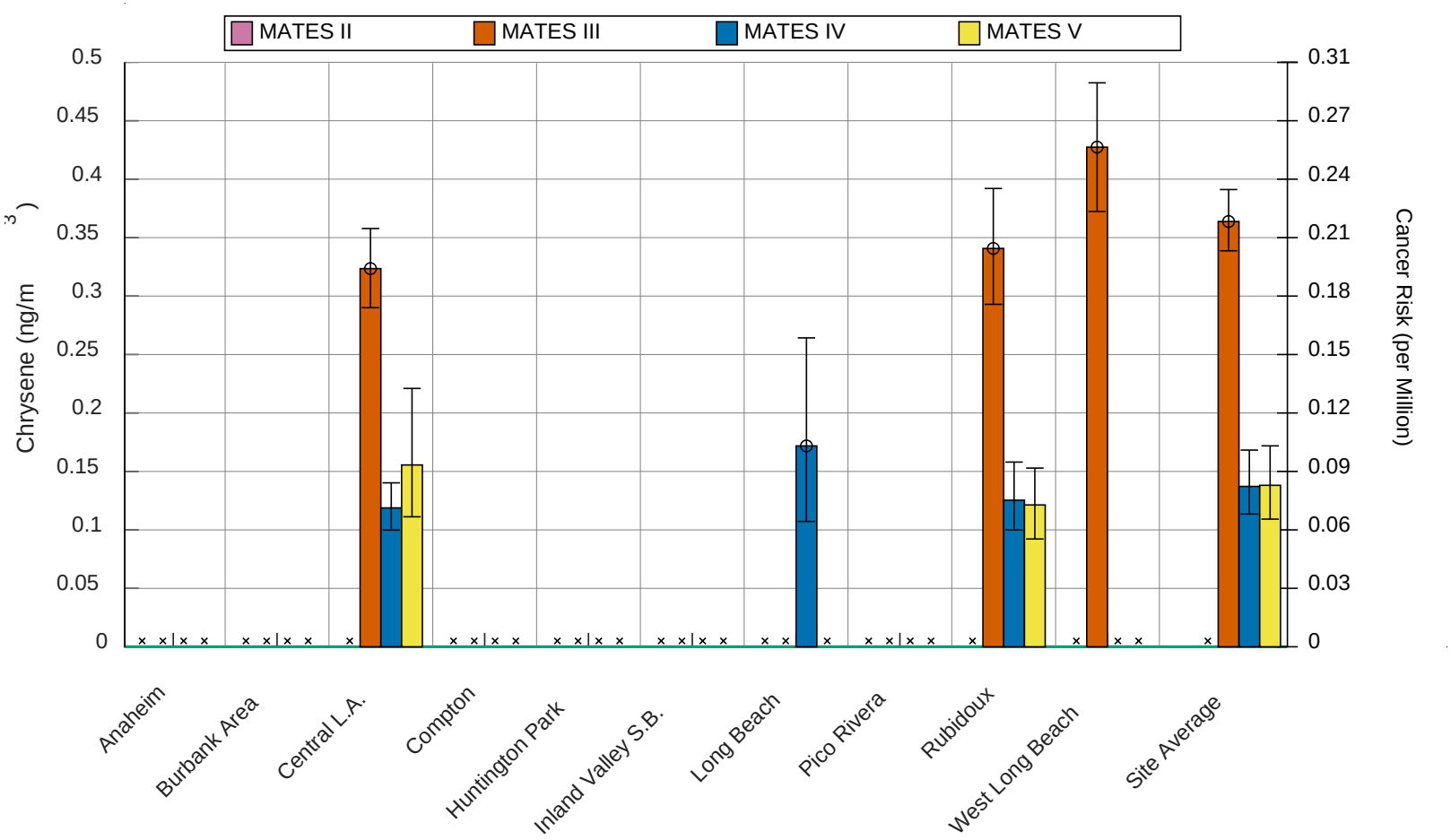


Figure IV-172. Annual Average Concentrations of Chrysene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

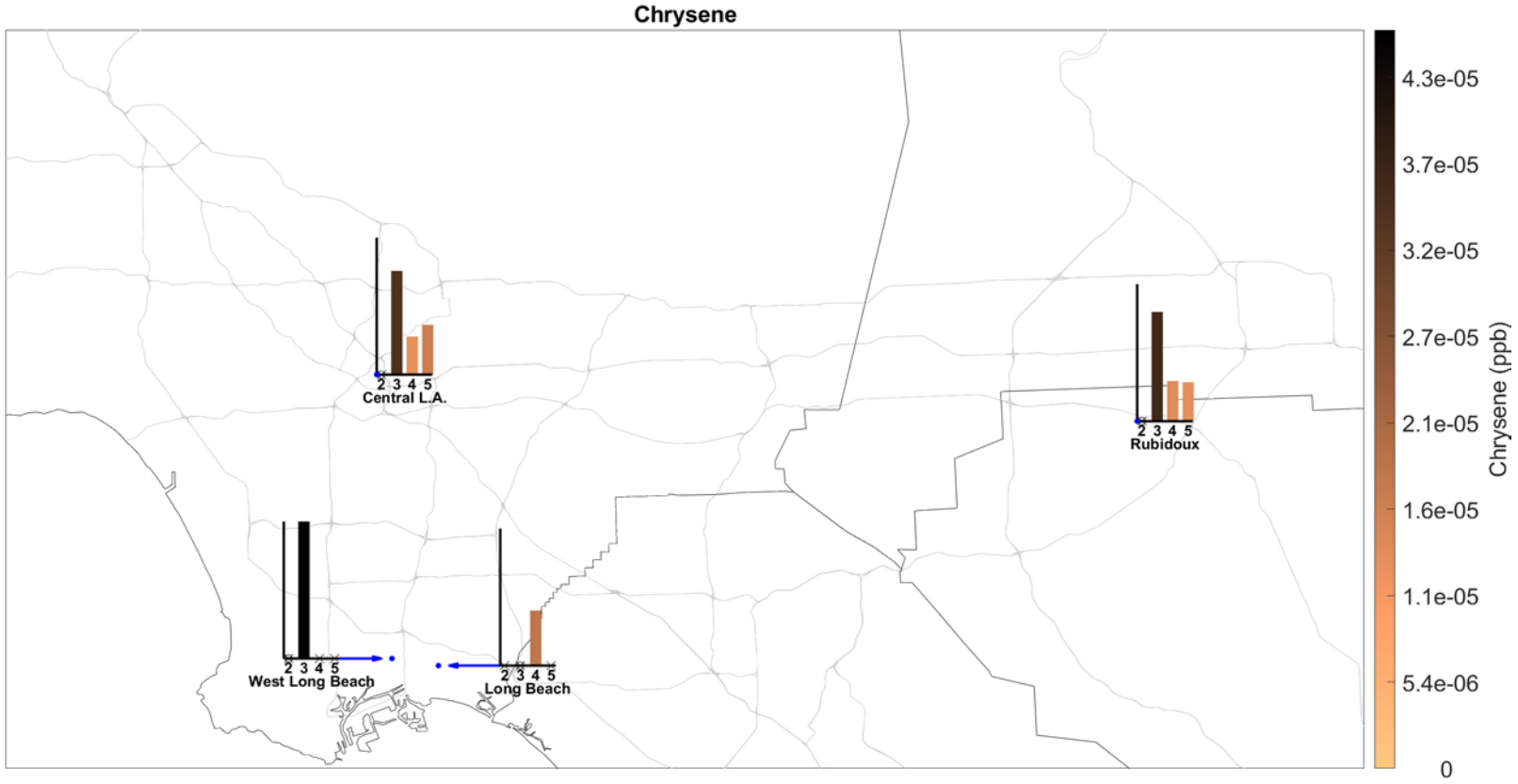


Figure IV-173. Geographic distribution of Chrysene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Coronene

Table IV-89. Ambient Concentrations (ng/m^3) of Coronene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average						0.0684	0.0533		0.0136, 0.0685[a]	
95% CI LB						0.0614	0.0485		0.00605[a]	
95% CI UB						0.0833	0.0709		0.0727[a]	
N	0	0	0	0	0	51	58	0	58[a]	0
% < MDL						76.5	72.4		82.8[a]	
Max						0.253	0.177		0.125[a]	
MATES V										
Average							0.0941		0.0745	
95% CI LB							0.0718		0.0563	
95% CI UB							0.118		0.0955	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		0	
Max							0.445		0.419	

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

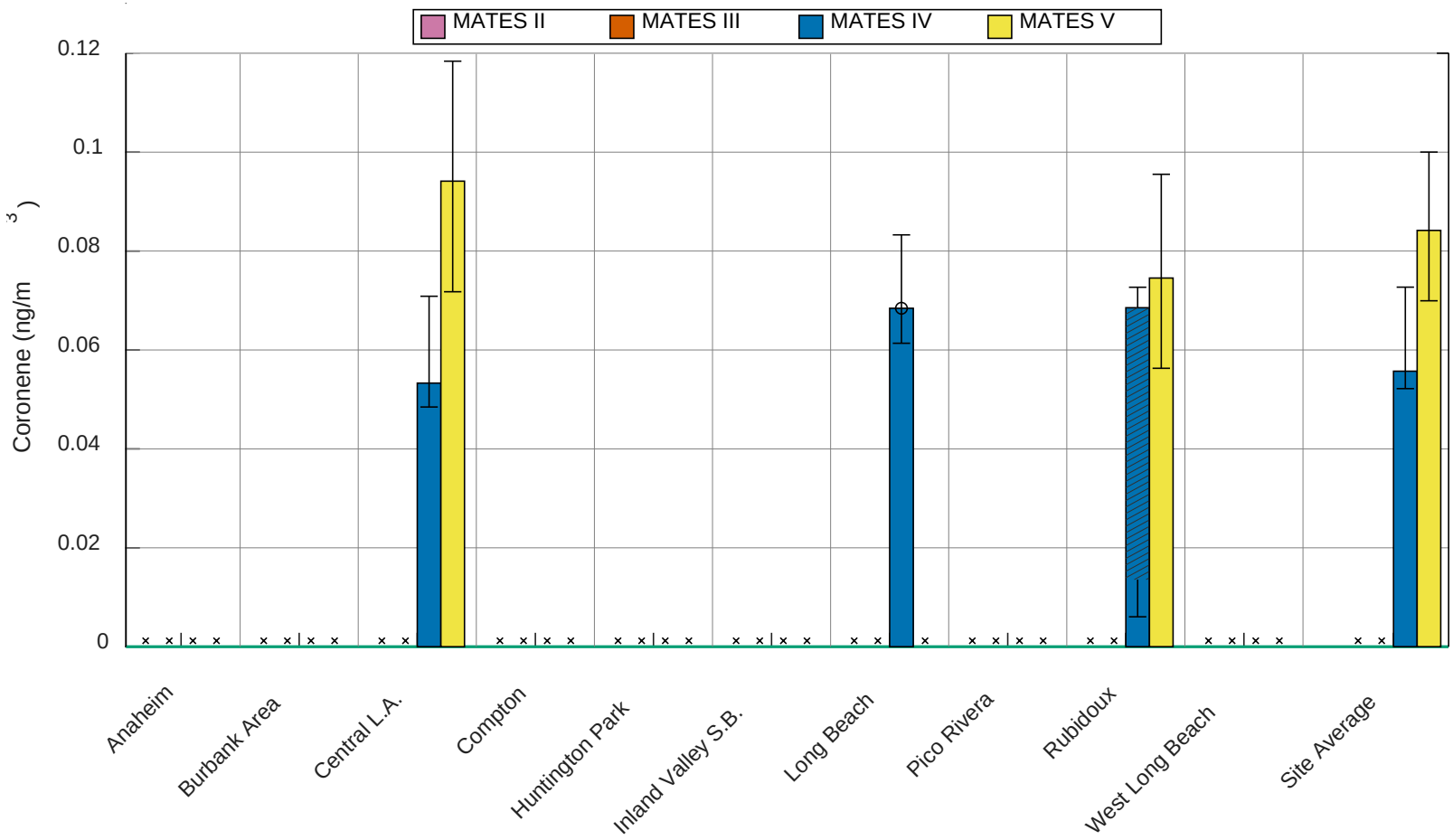


Figure IV-174. Annual Average Concentrations of Coronene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

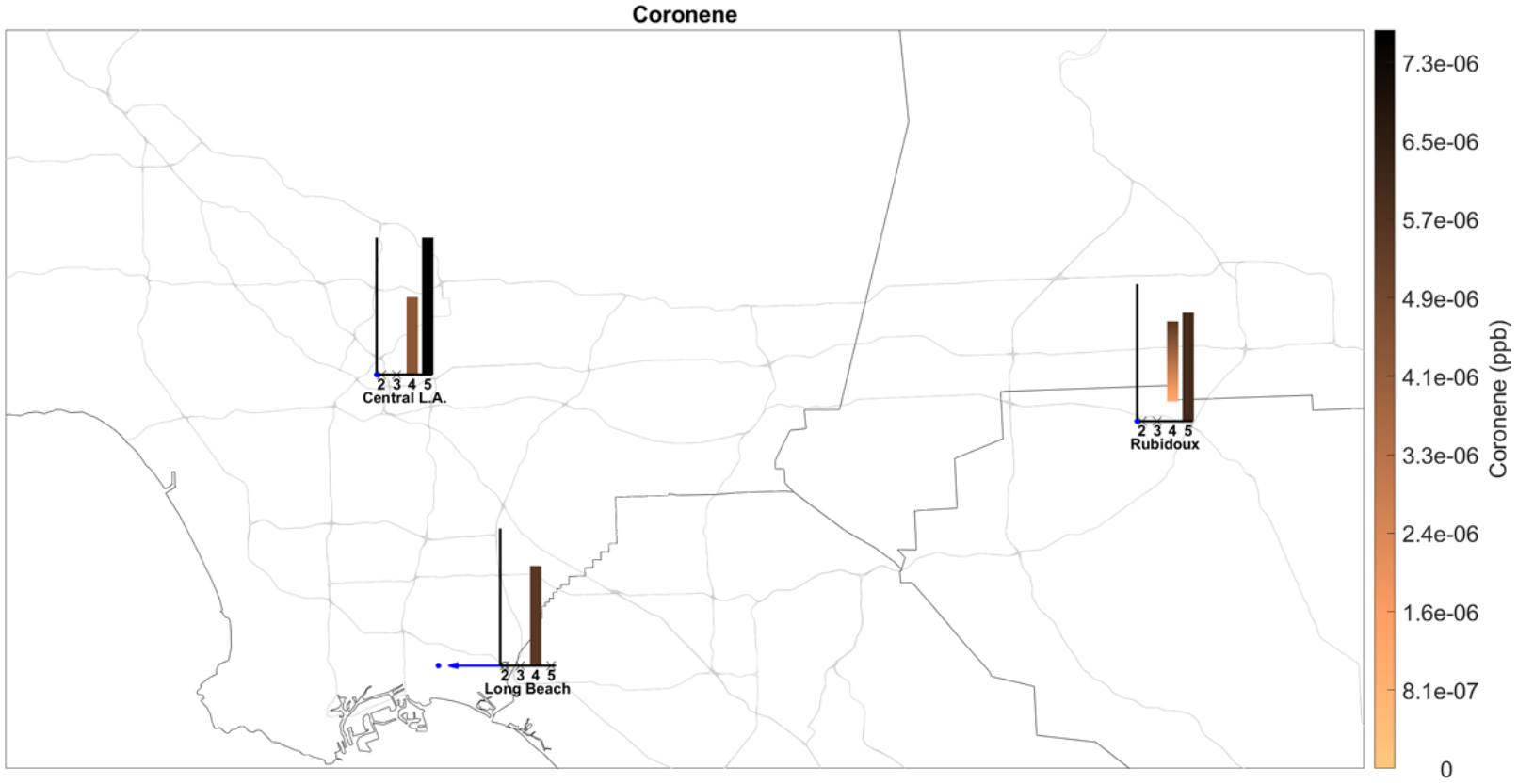


Figure IV-175. Geographic distribution of Coronene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Cyclopenta(c,d)pyrene

Table IV-90. Ambient Concentrations (ng/m^3) of Cyclopenta(c,d)pyrene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average						0.0207, 0.078[a]	0.00988, 0.0673[a]		0.00632, 0.0731[a]	
95% CI LB						0.00247[a]	0.00297[a]		0[a]	
95% CI UB						0.103[a]	0.089[a]		0.0807[a]	
N	0	0	0	0	0	51[a]	58[a]	0	58[a]	0
% < MDL						90.2[a]	87.9[a]		94.8[a]	
Max						0.586[a]	0.166[a]		0.17[a]	
MATES V										
Average							0.0432		0.0456	
95% CI LB							0.0243		0.023	
95% CI UB							0.0669		0.0767	
N	0	0	0	0	0	0	57	0	59	0
% < MDL							24.6		28.8	
Max							0.411		0.701	

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

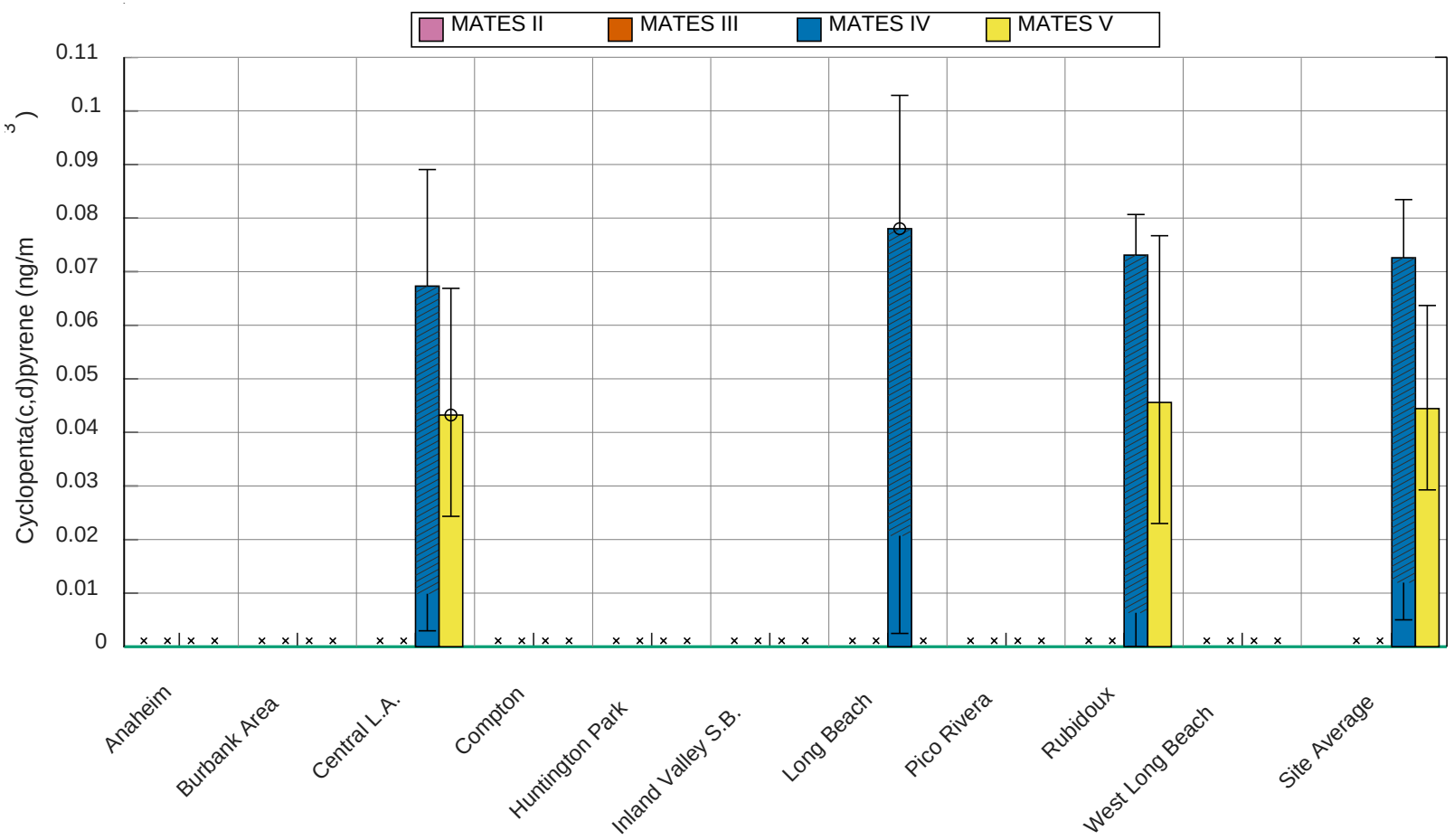


Figure IV-176. Annual Average Concentrations of Cyclopenta(c,d)pyrene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

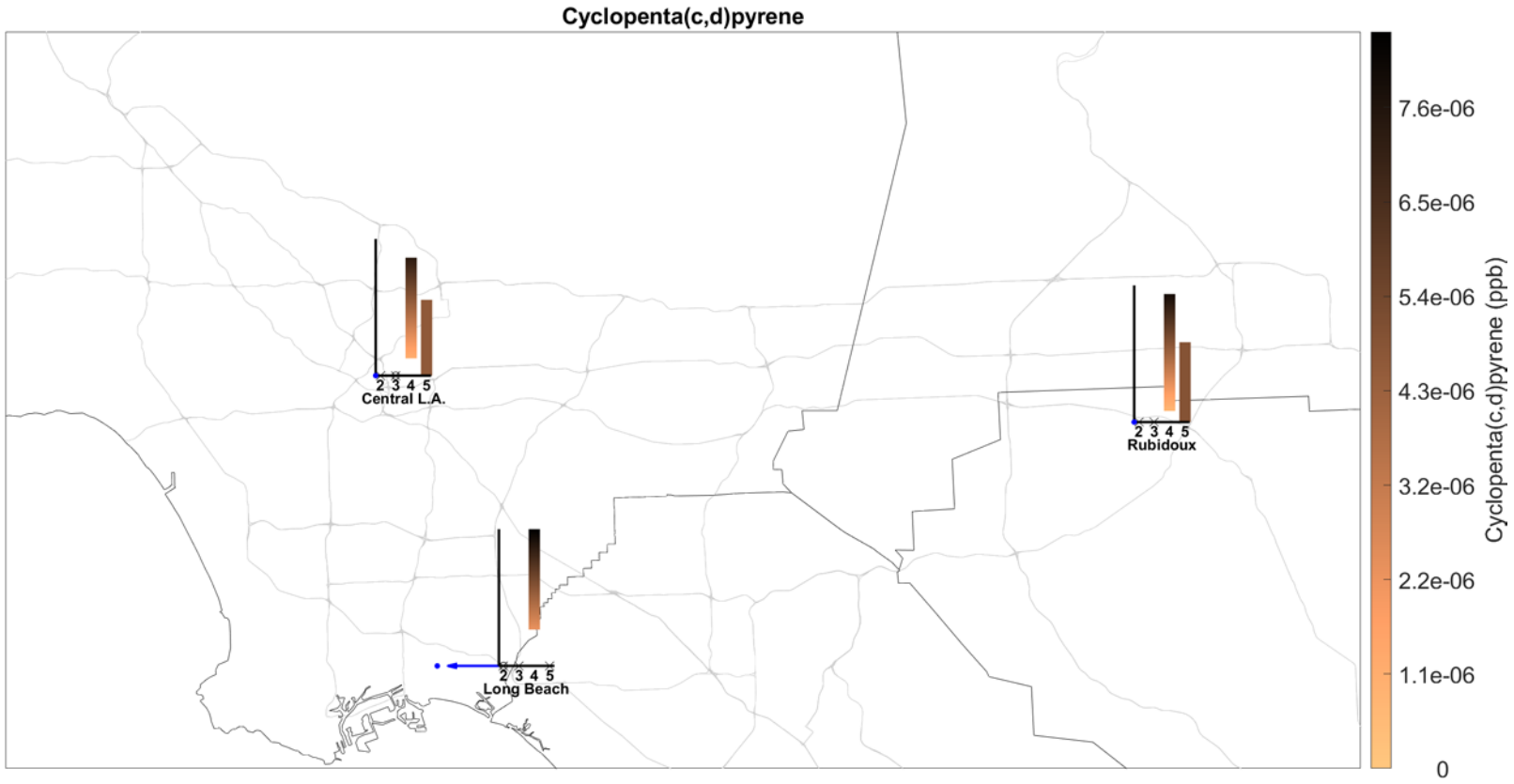


Figure IV-177. Geographic distribution of Cyclopenta(c,d)pyrene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Dibenz(a,h)anthracene

Table IV-91. Ambient Concentrations (ng/m^3) of Dibenz(a,h)anthracene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.00323, 0.0516[a]	0.0242, 0.0661[a]		0.00226, 0.0506[a]	0.0754	0.0123, 0.0558[a]	0.00161, 0.05[a]	0.0177, 0.0586[a]	0.0113, 0.058[a]	
95% CI LB	0[a]	0.00581[a]		0[a]	0.0521	0.00161[a]	0[a]	0.00364[a]	0[a]	
95% CI UB	0.0548[a]	0.0823[a]		0.0519[a]	0.119	0.0632[a]	0.05[a]	0.0677[a]	0.073[a]	
N	31[a]	31[a]	0	31[a]	24	31[a]	31[a]	22[a]	30[a]	0
% < MDL	96.8[a]	83.9[a]		96.8[a]	75	87.1[a]	96.8[a]	81.8[a]	93.3[a]	
Max	0.1[a]	0.2[a]		0.07[a]	0.49	0.14[a]	0.05[a]	0.12[a]	0.26[a]	
MATES III										
Average							0.0271		0.0345	0.0532
95% CI LB							0.0232		0.027	0.0441
95% CI UB							0.0315		0.0437	0.0646
N	0	0	0	0	0	0	129	0	128	128
% < MDL							1.6		2.3	0
Max							0.13		0.396	0.529
MATES IV										
Average						0.00629, 0.0514[a]	0.000664, 0.0477[a]		0.000903, 0.0533[a]	
95% CI LB						0[a]	0[a]		0[a]	
95% CI UB						0.0595[a]	0.0607[a]		0.0566[a]	
N	0	0	0	0	0	51[a]	58[a]	0	58[a]	0
% < MDL						94.1[a]	98.3[a]		98.3[a]	
Max						0.217[a]	0.0385[a]		0.0524[a]	
MATES V										
Average							0.0187		0.0193	
95% CI LB							0.0148		0.0157	
95% CI UB							0.024		0.0235	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							63.8		61.7	
Max							0.121		0.101	

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

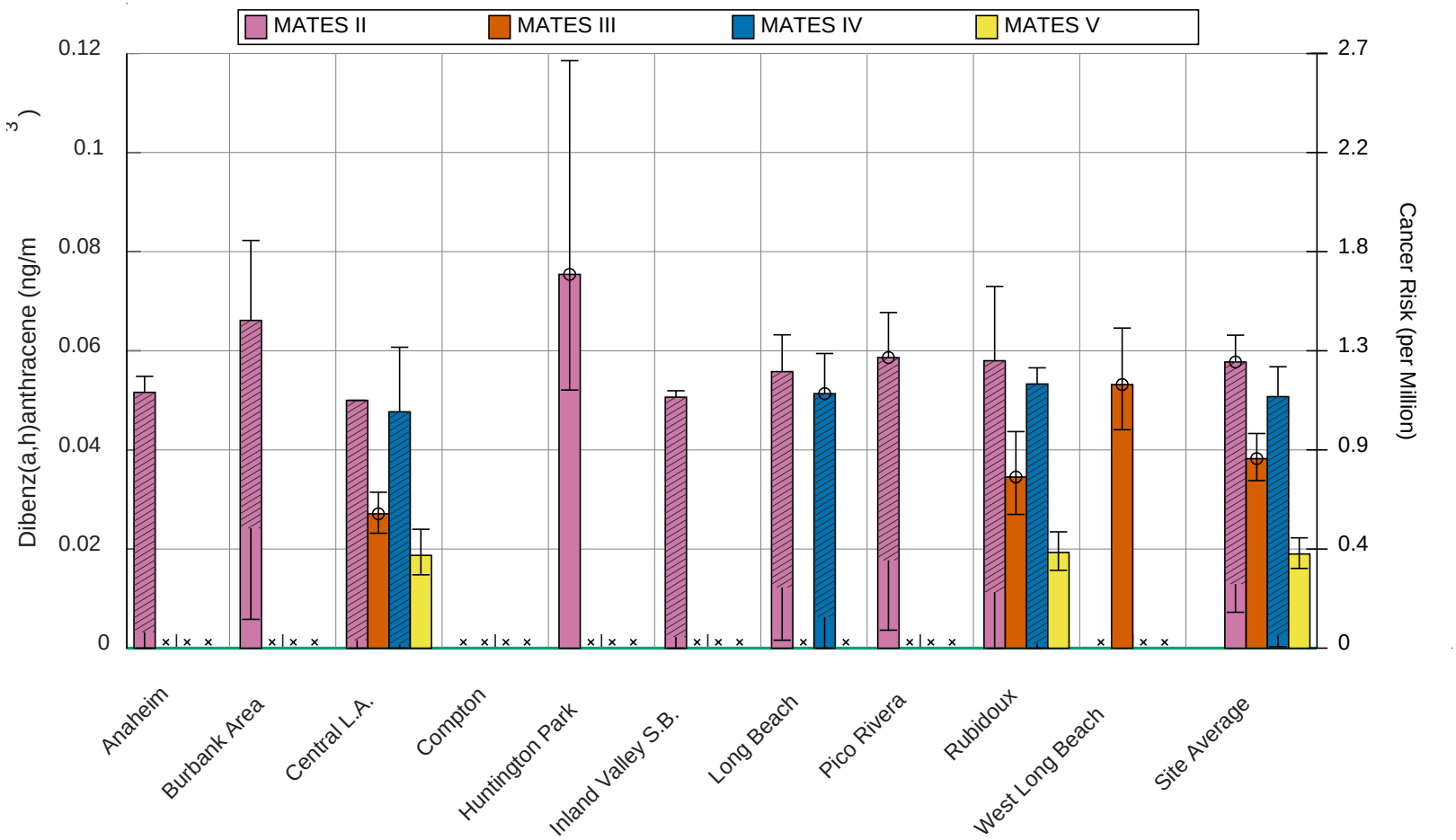


Figure IV-178. Annual Average Concentrations of Dibenz(a,h)anthracene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

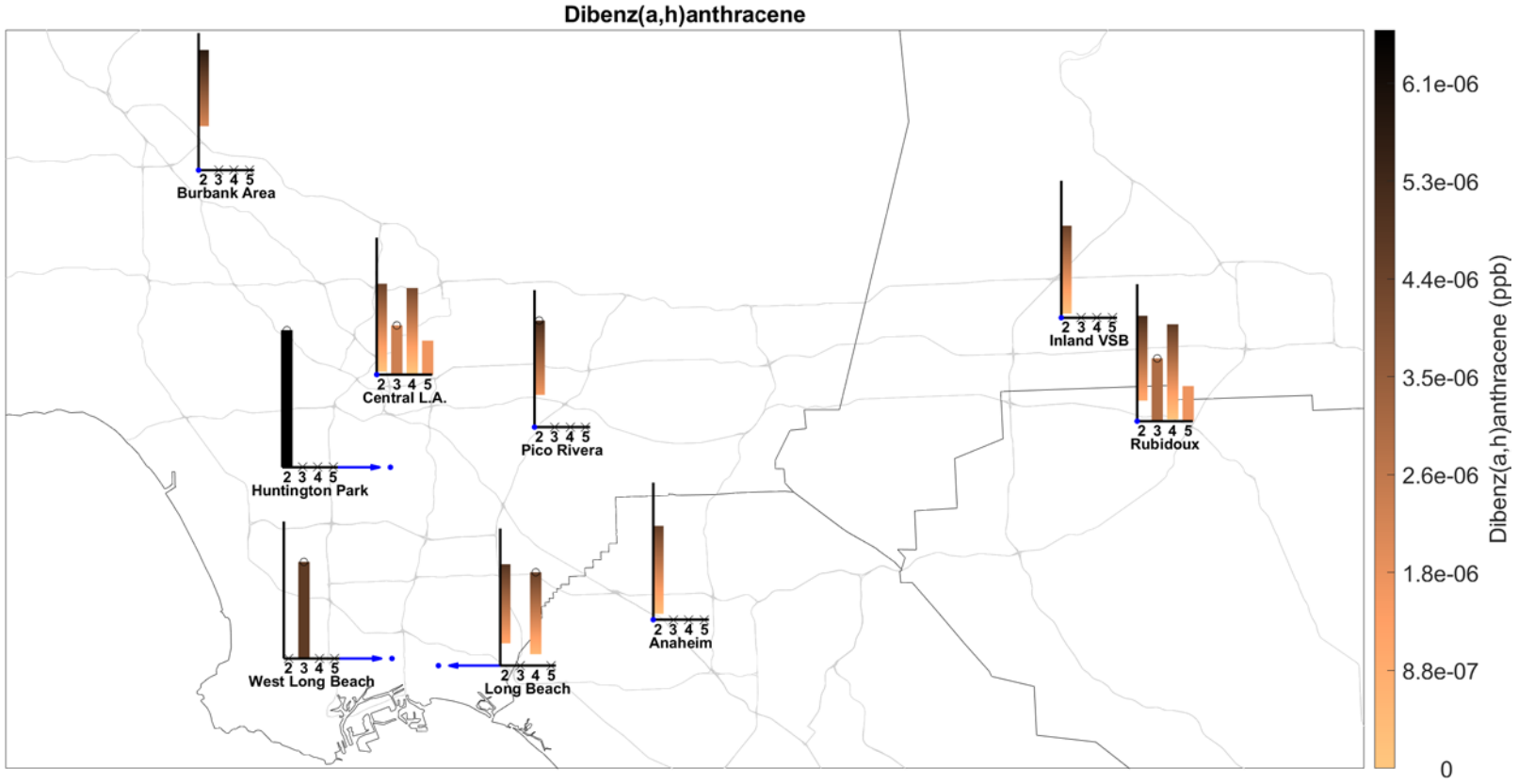


Figure IV-179. Geographic distribution of Dibenz(a,h)anthracene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Fluoranthene

Table IV-92. Ambient Concentrations (ng/m^3) of Fluoranthene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							2.15		1.41	1.88
95% CI LB							2		1.28	1.69
95% CI UB							2.29		1.52	2.08
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							4.64		3.09	4.92
MATES IV										
Average						1.14	1.92		1.21	
95% CI LB						0.948	1.7		1.07	
95% CI UB						1.39	2.16		1.36	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						0	0		0	
Max						5.71	4.56		3.31	
MATES V										
Average							2.05		0.882	
95% CI LB							1.69		0.767	
95% CI UB							2.51		1.01	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		0	
Max							11.1		2.88	

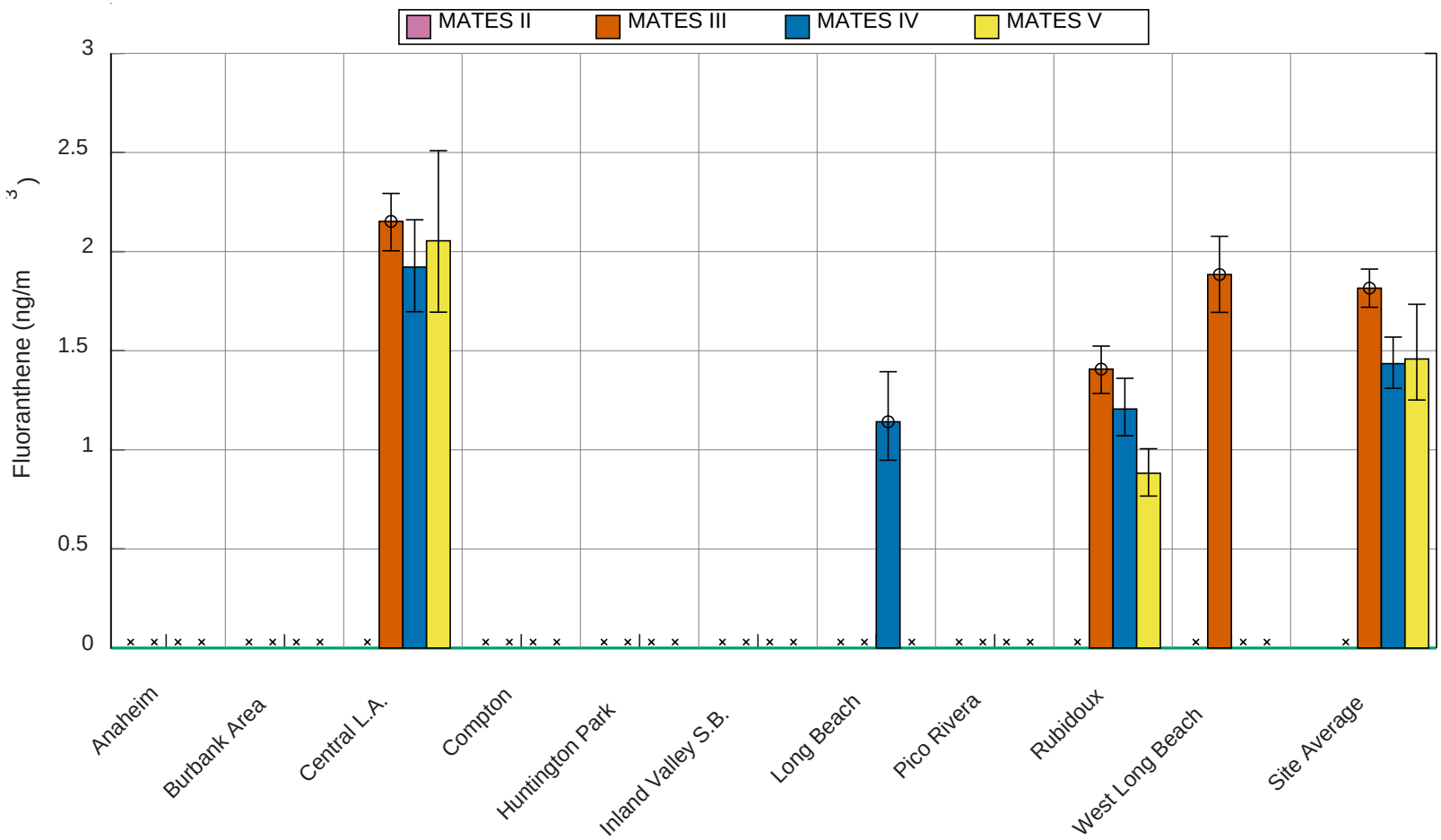


Figure IV-180. Annual Average Concentrations of Fluoranthene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

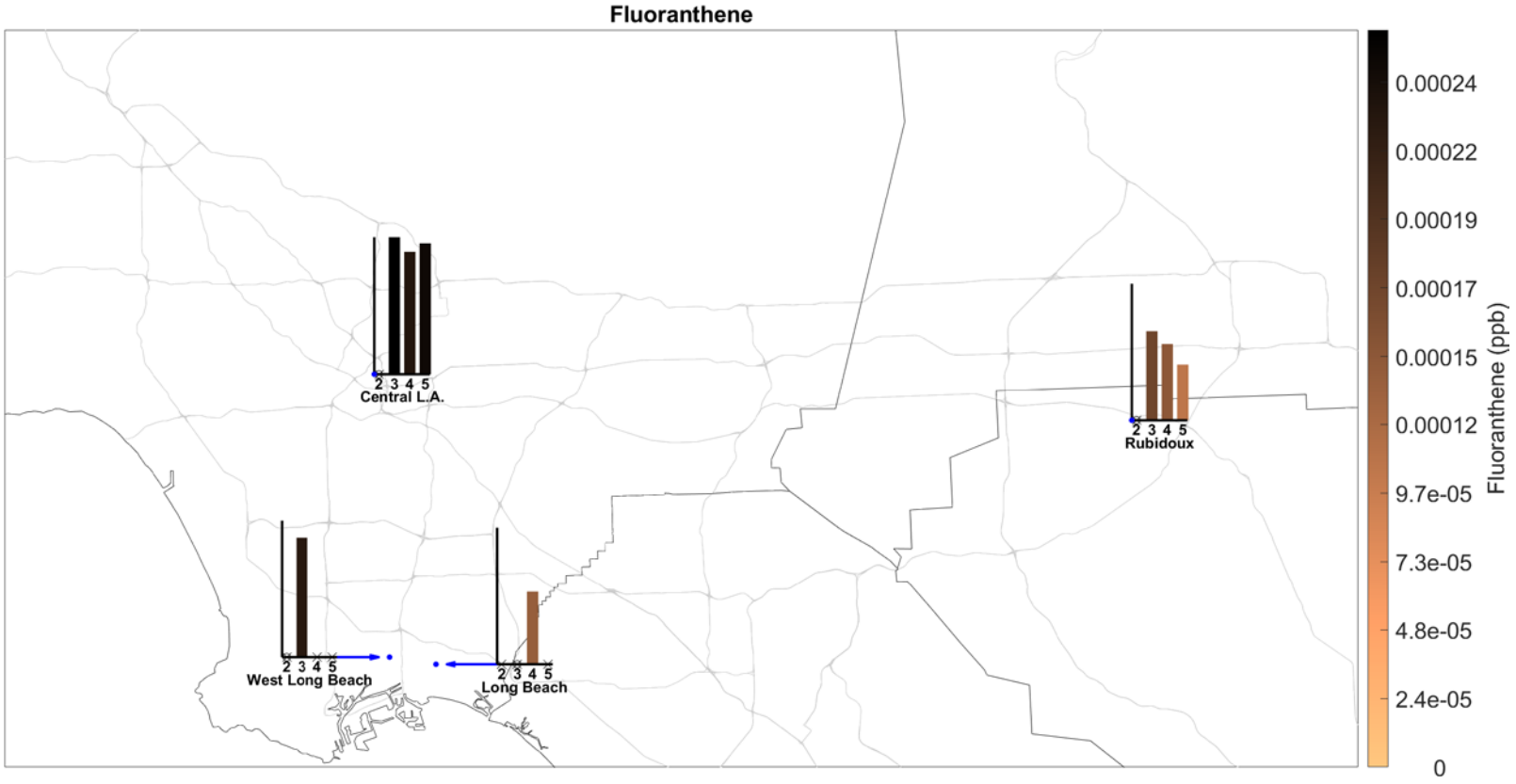


Figure IV-181. Geographic distribution of Fluoranthene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Fluorene

Table IV-93. Ambient Concentrations (ng/m^3) of Fluorene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							7.89		5.5	8.4
95% CI LB							7.18		4.93	7.4
95% CI UB							8.65		6.05	9.46
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							25.8		15.1	27.9
MATES IV										
Average						2.87	7.26		3.42	
95% CI LB						2.47	6.19		2.88	
95% CI UB						3.25	8.41		3.98	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						5.9	1.7		13.8	
Max						5.4	19.3		8.67	
MATES V										
Average							6.4		2.44	
95% CI LB							5.35		2.11	
95% CI UB							7.66		2.83	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		0	
Max							29.5		9.79	

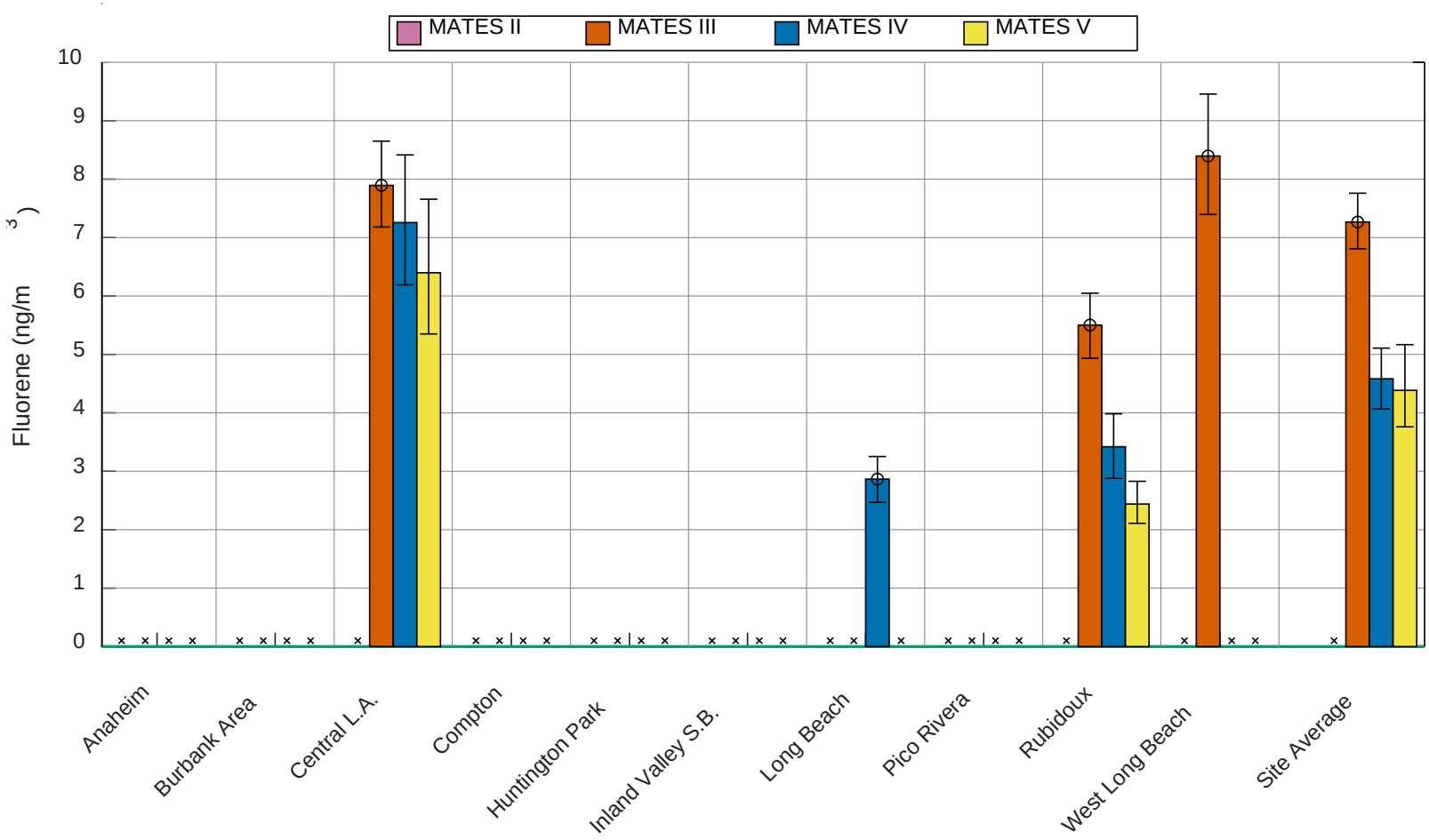


Figure IV-182. Annual Average Concentrations of Fluorene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

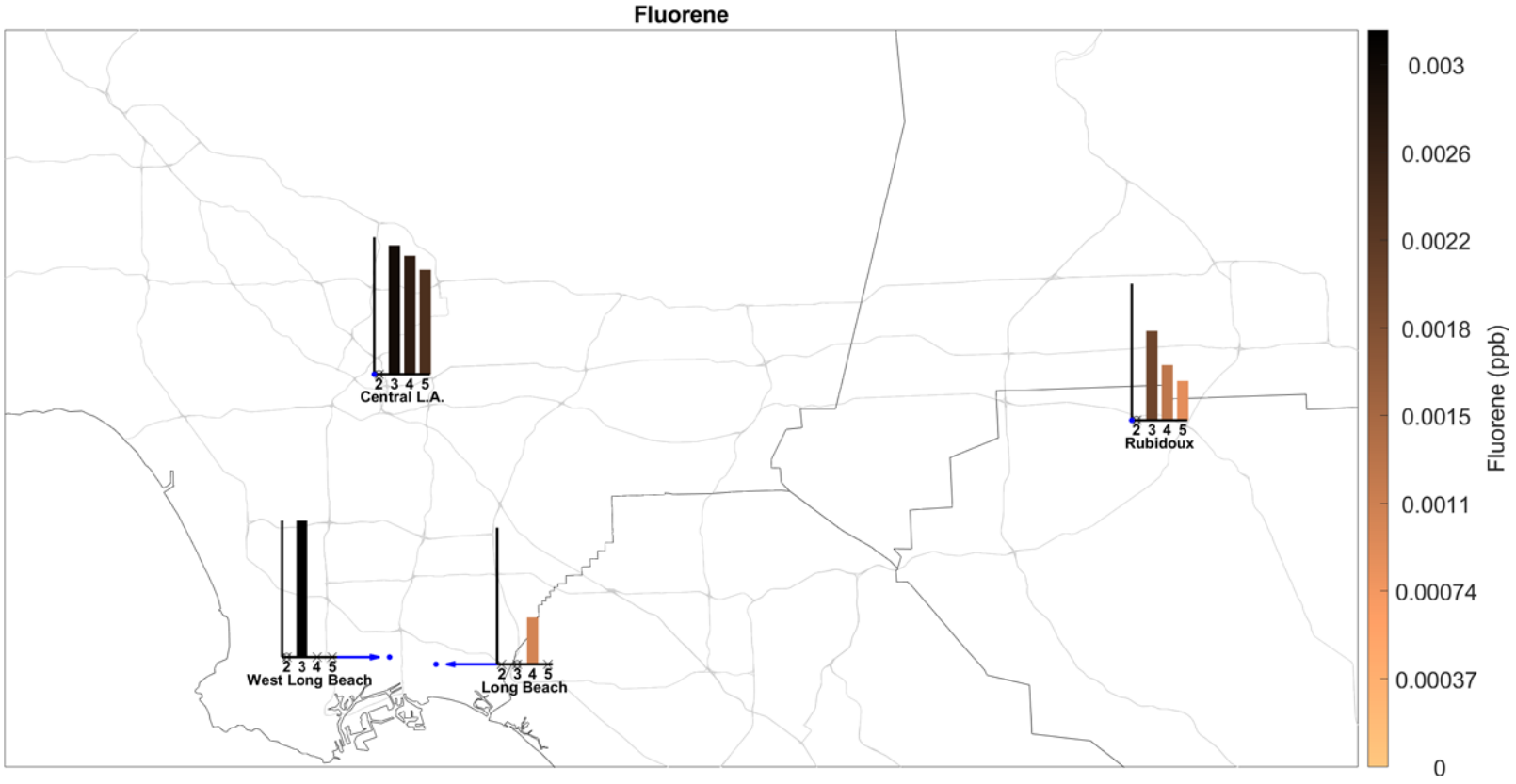


Figure IV-183. Geographic distribution of Fluorene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

9-Fluorenone

Table IV-94. Ambient Concentrations (ng/m^3) of 9-Fluorenone from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average						1.36	2.64		1.81	
95% CI LB						1.17	2.24		1.58	
95% CI UB						1.57	3.08		2.07	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						0	0		0	
Max						3.31	8.14		4.61	
MATES V										
Average							2.43		1.47	
95% CI LB							1.96		1.2	
95% CI UB							2.94		1.73	
N	0	0	0	0	0	0	57	0	59	0
% < MDL							10.5		13.6	
Max							10.3		5.33	

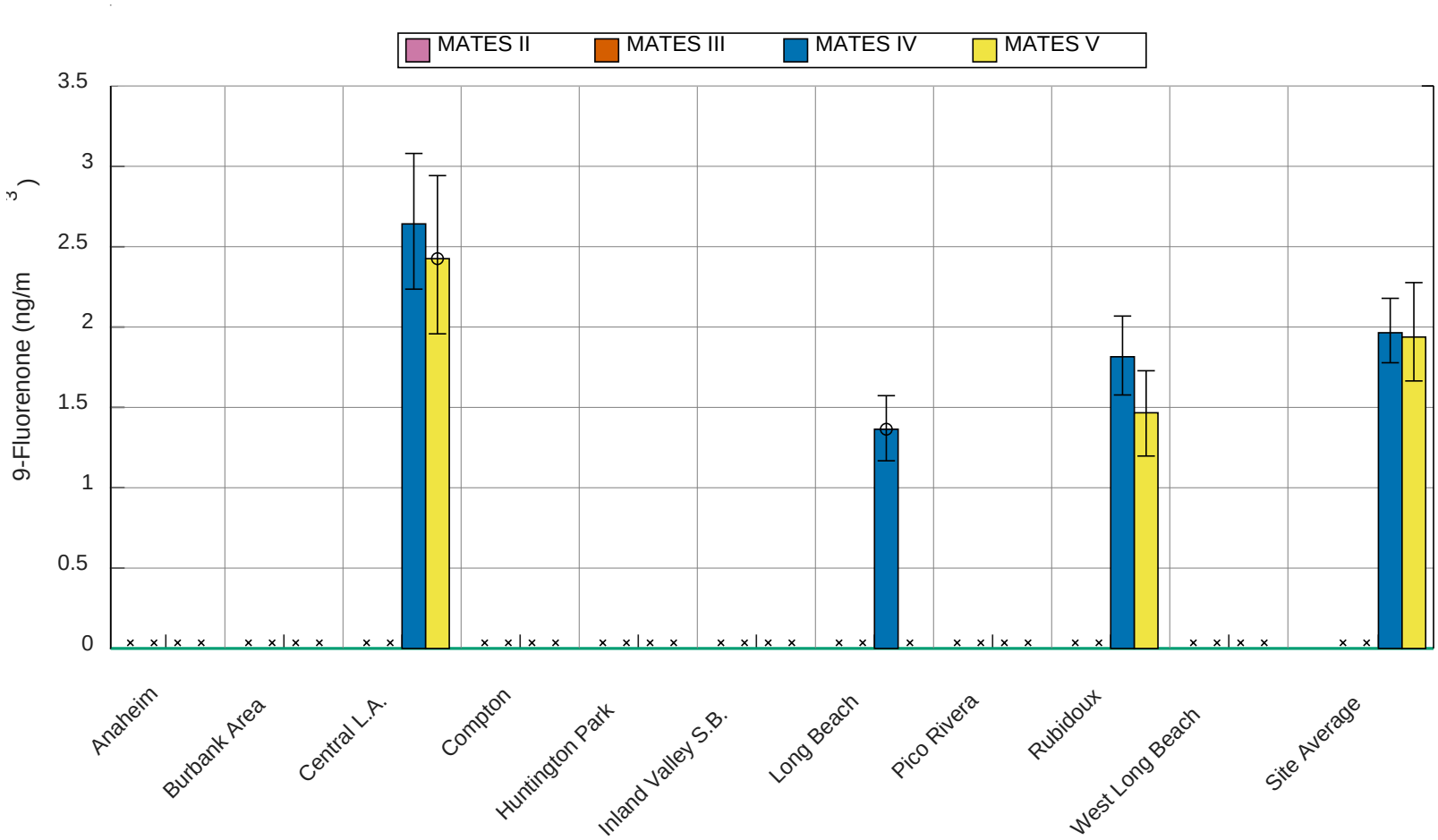


Figure IV-184. Annual Average Concentrations of 9-Fluorenone in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

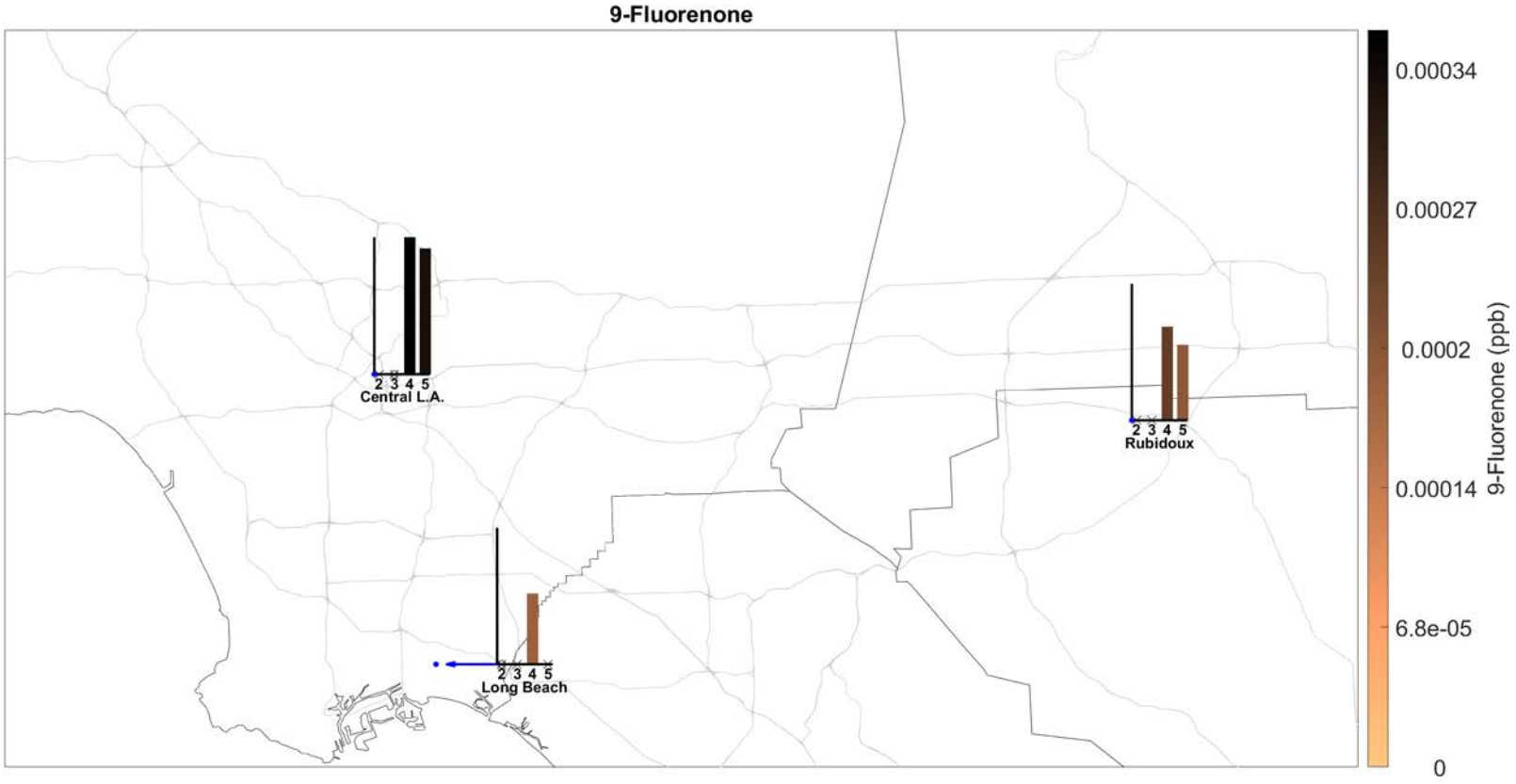


Figure IV-185. Geographic distribution of 9-Fluorenone from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Indeno(1,2,3-c,d)pyrene

Table IV-95. Ambient Concentrations (ng/m^3) of Indeno(1,2,3-c,d)pyrene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	0.228	0.445		0.171	0.575	0.309	0.31	0.446	0.232	
95% CI LB	0.13	0.283		0.132	0.333	0.18	0.214	0.258	0.137	
95% CI UB	0.351	0.64		0.218	0.87	0.477	0.426	0.682	0.351	
N	31	31	0	31	24	31	31	22	30	0
% < MDL	29	6.5		9.7	0	19.4	12.9	4.5	23.3	
Max	1.7	2.5		0.52	2.9	2.2	1.5	2.3	1.65	
MATES III										
Average							0.191		0.191	0.214
95% CI LB							0.166		0.161	0.177
95% CI UB							0.217		0.224	0.253
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							0.884		1.11	1.25
MATES IV										
Average						0.0892	0.0538		0.0642	
95% CI LB						0.0575	0.0414		0.0518	
95% CI UB						0.139	0.0691		0.0796	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						66.7	65.5		63.8	
Max						0.966	0.302		0.316	
MATES V										
Average							0.0941		0.0891	
95% CI LB							0.0625		0.0608	
95% CI UB							0.135		0.123	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							5.2		8.3	
Max							0.89		0.687	

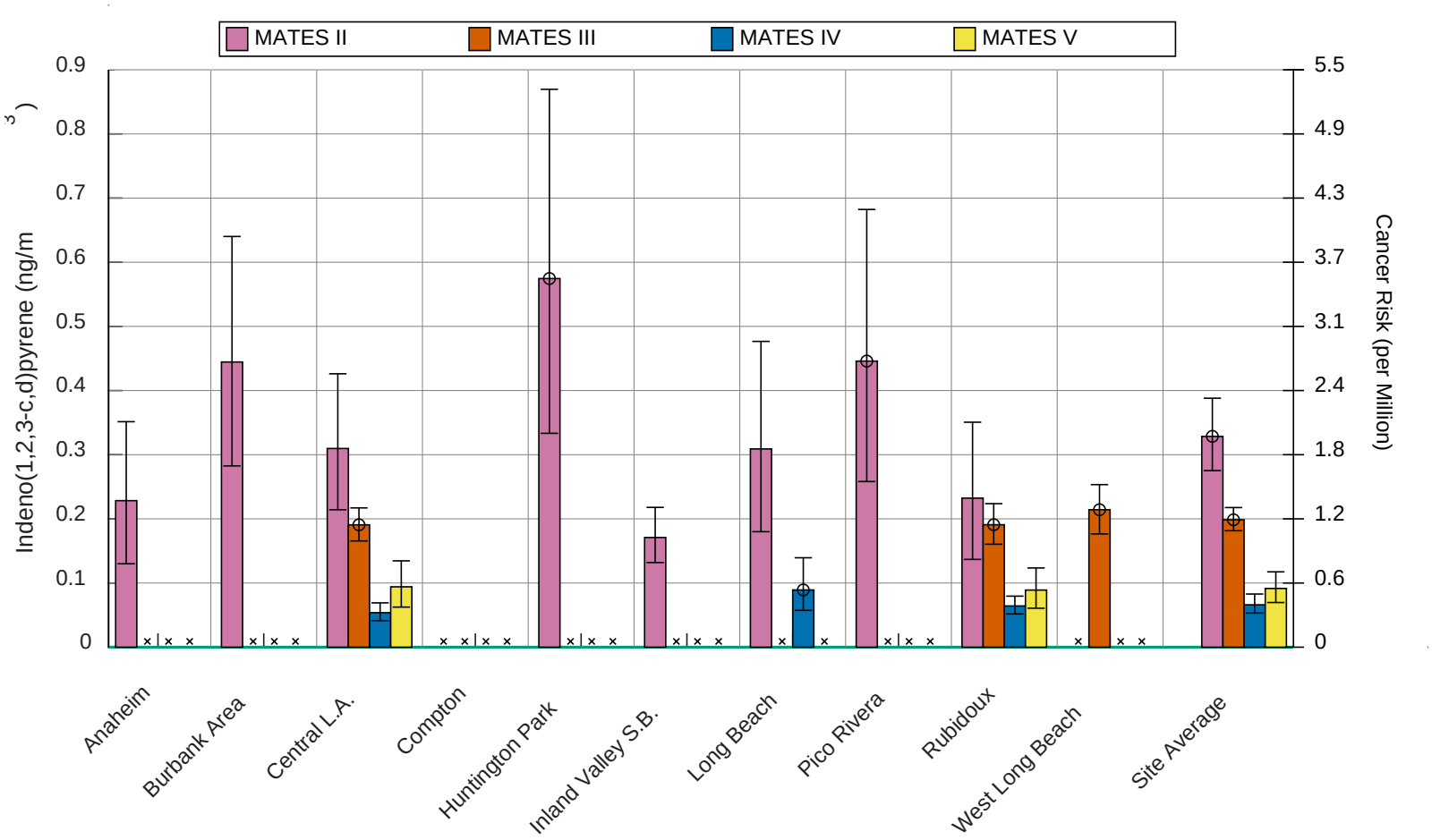


Figure IV-186. Annual Average Concentrations of Indeno(1,2,3-c,d)pyrene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

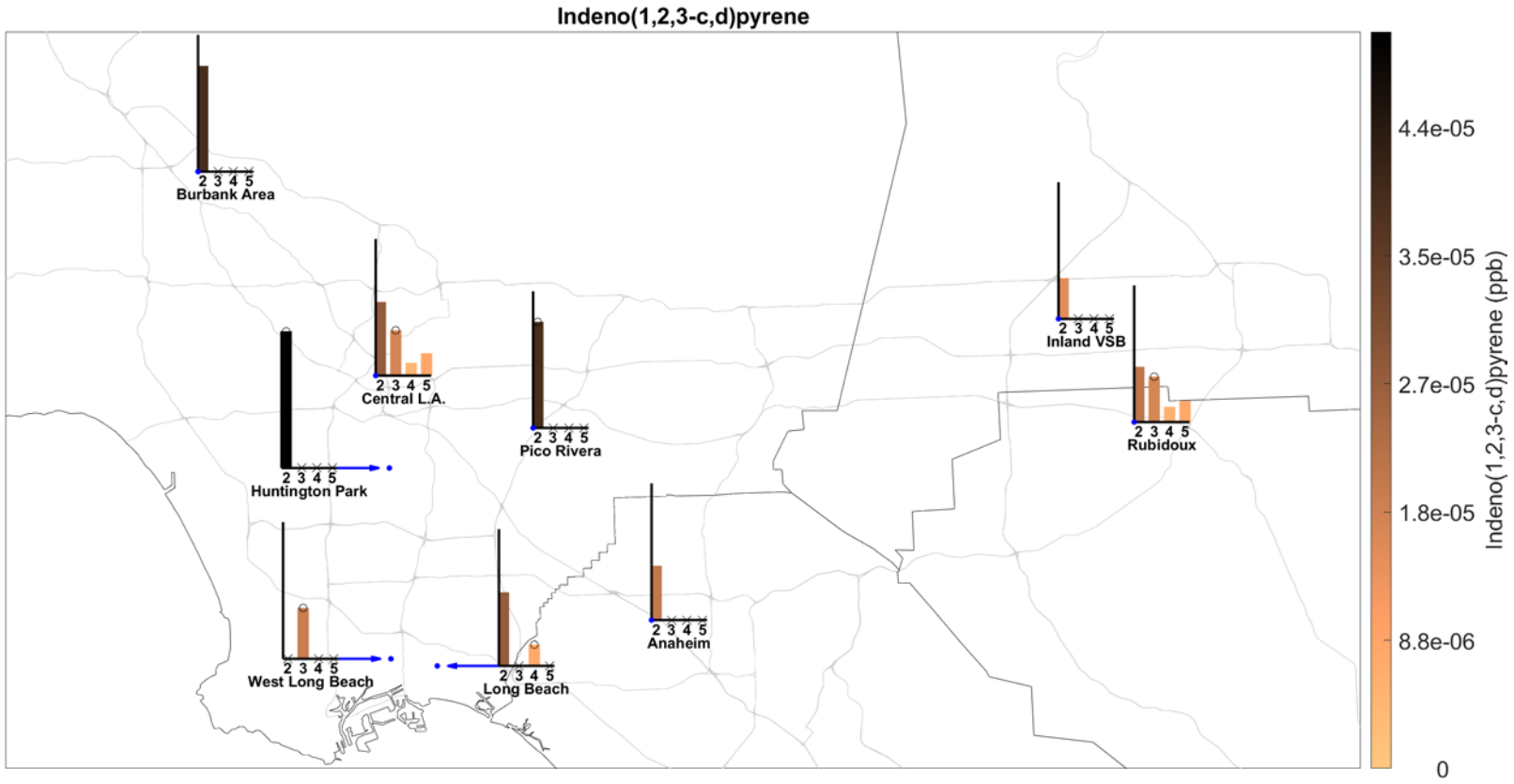


Figure IV-187. Geographic distribution of Indeno(1,2,3-c,d)pyrene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Naphthalene

Table IV-96. Ambient Concentrations (ng/m^3) of Naphthalene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							221		162	204
95% CI LB							199		142	174
95% CI UB							244		184	233
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							701		534	817
MATES IV										
Average						76.6	152		83.1	
95% CI LB						60.6	130		70.5	
95% CI UB						94.5	176		96.9	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						0	0		0	
Max						270	338		245	
MATES V										
Average							77		45.8	
95% CI LB							64.2		37.7	
95% CI UB							90.6		54.7	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		0	
Max							195		181	

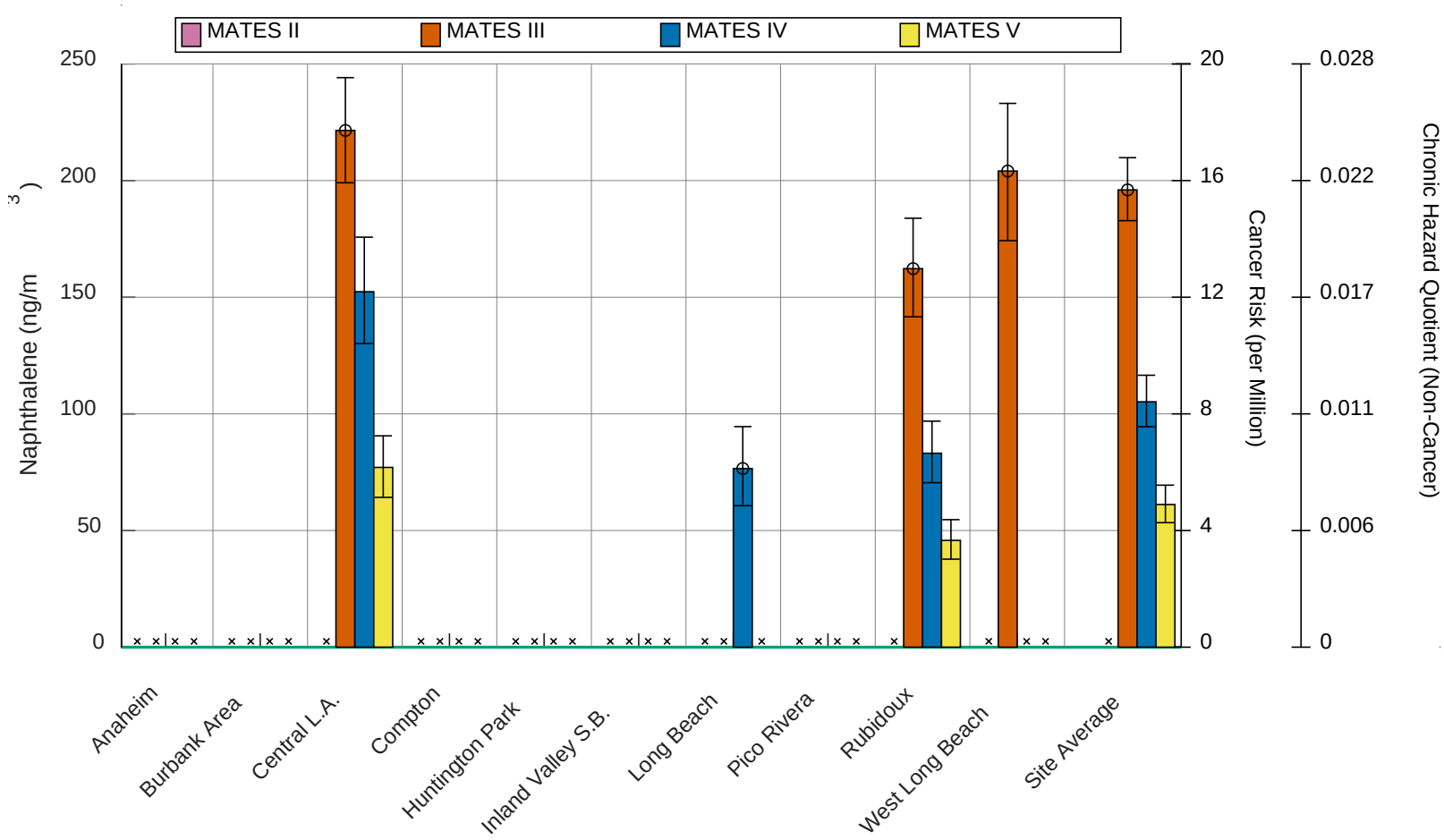


Figure IV-188. Annual Average Concentrations of Naphthalene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

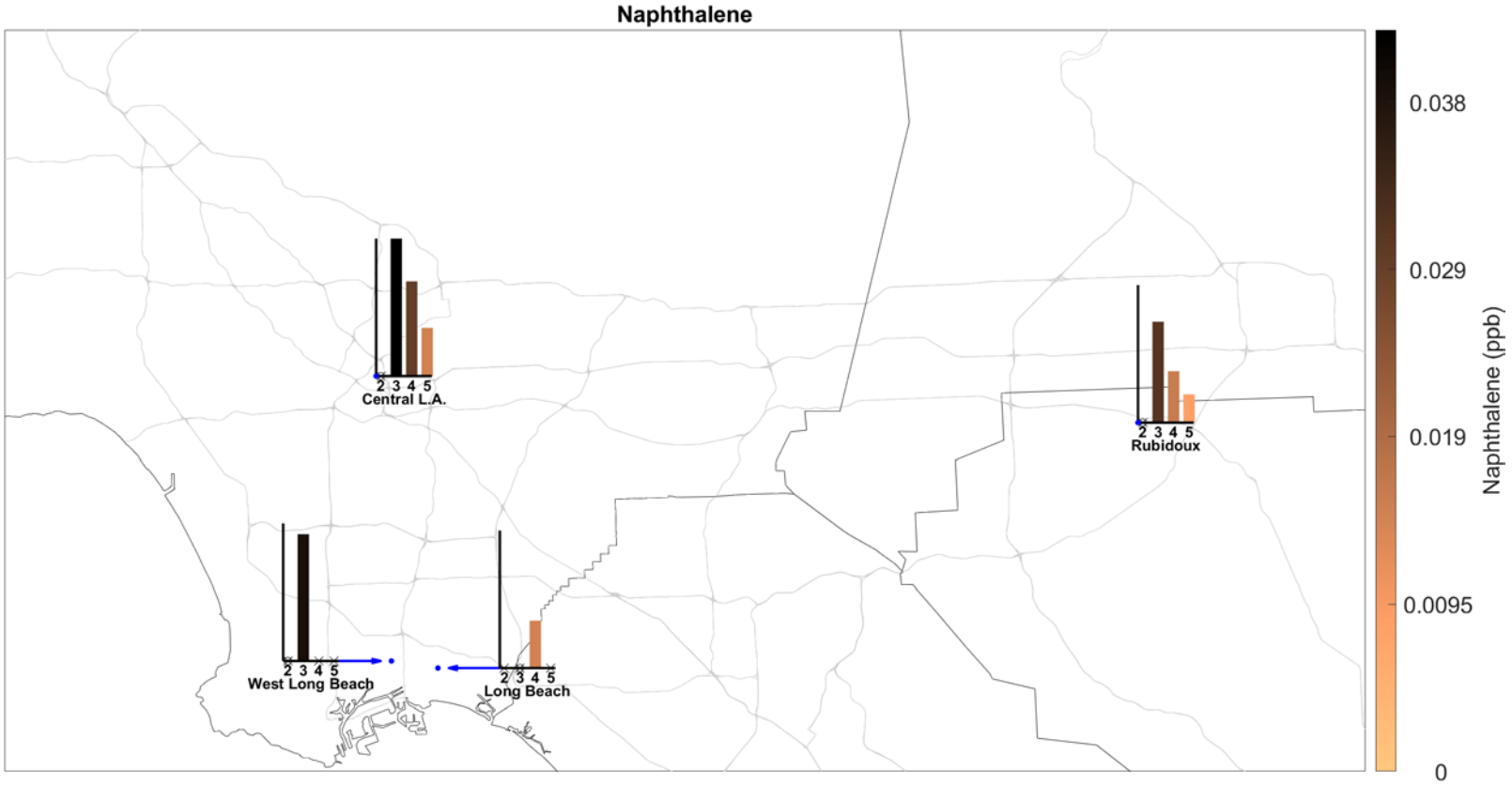


Figure IV-189. Geographic distribution of Naphthalene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Perylene

Table IV-97. Ambient Concentrations (ng/m^3) of Perylene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average						0.0109, 0.0603[a]	0.000631, 0.0533[a]		0.00188, 0.0602[a]	
95% CI LB						0.000945[a]	0[a]		0[a]	
95% CI UB						0.076[a]	0.0693[a]		0.0651[a]	
N	0	0	0	0	0	51[a]	58[a]	0	58[a]	0
% < MDL						92.2[a]	98.3[a]		98.3[a]	
Max						0.388[a]	0.0366[a]		0.109[a]	
MATES V										
Average							0.0131		0.0132	
95% CI LB							0.0102		0.0105	
95% CI UB							0.017		0.0174	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							75.9		75	
Max							0.0789		0.103	

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

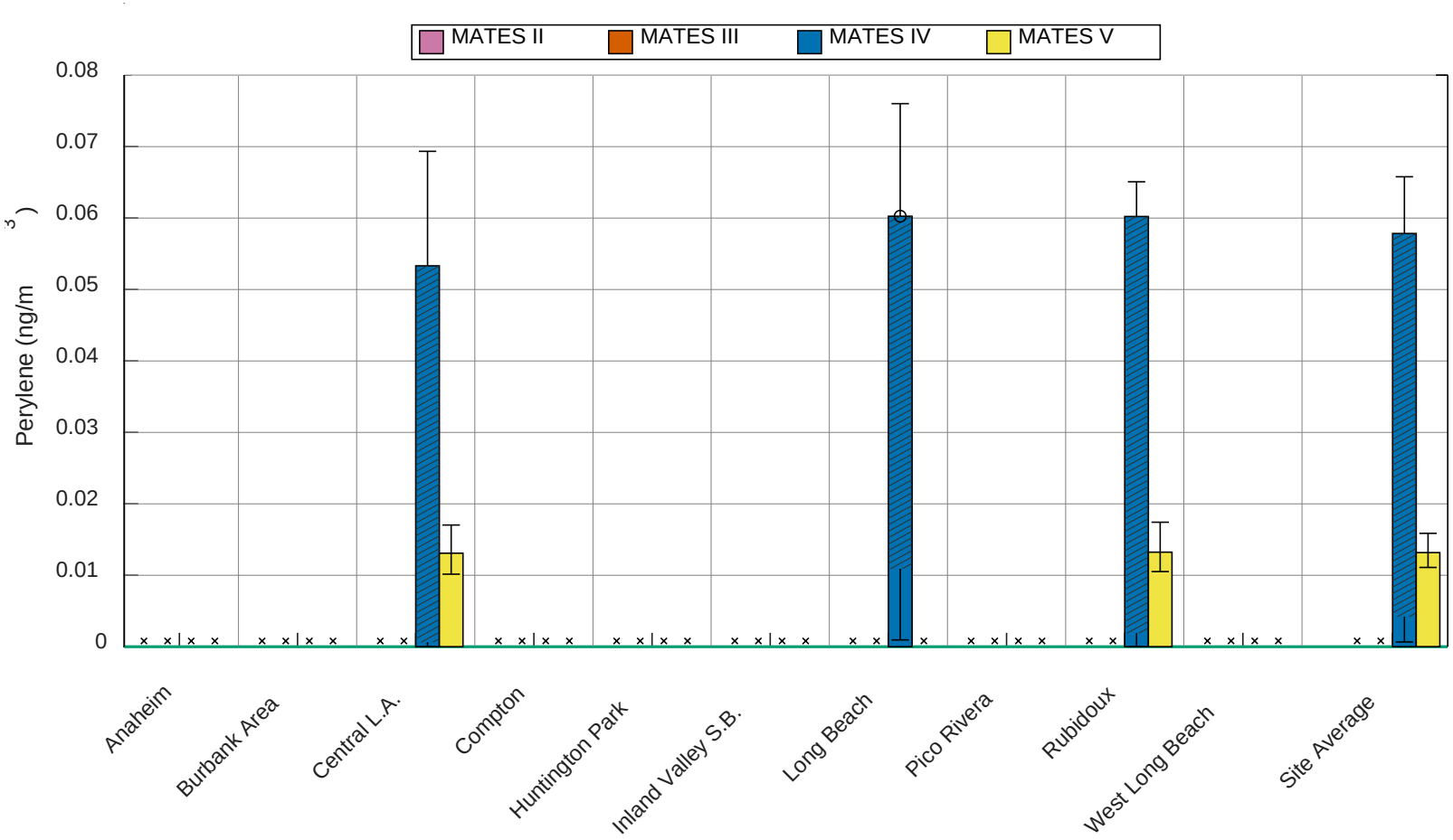


Figure IV-190. Annual Average Concentrations of Perylene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

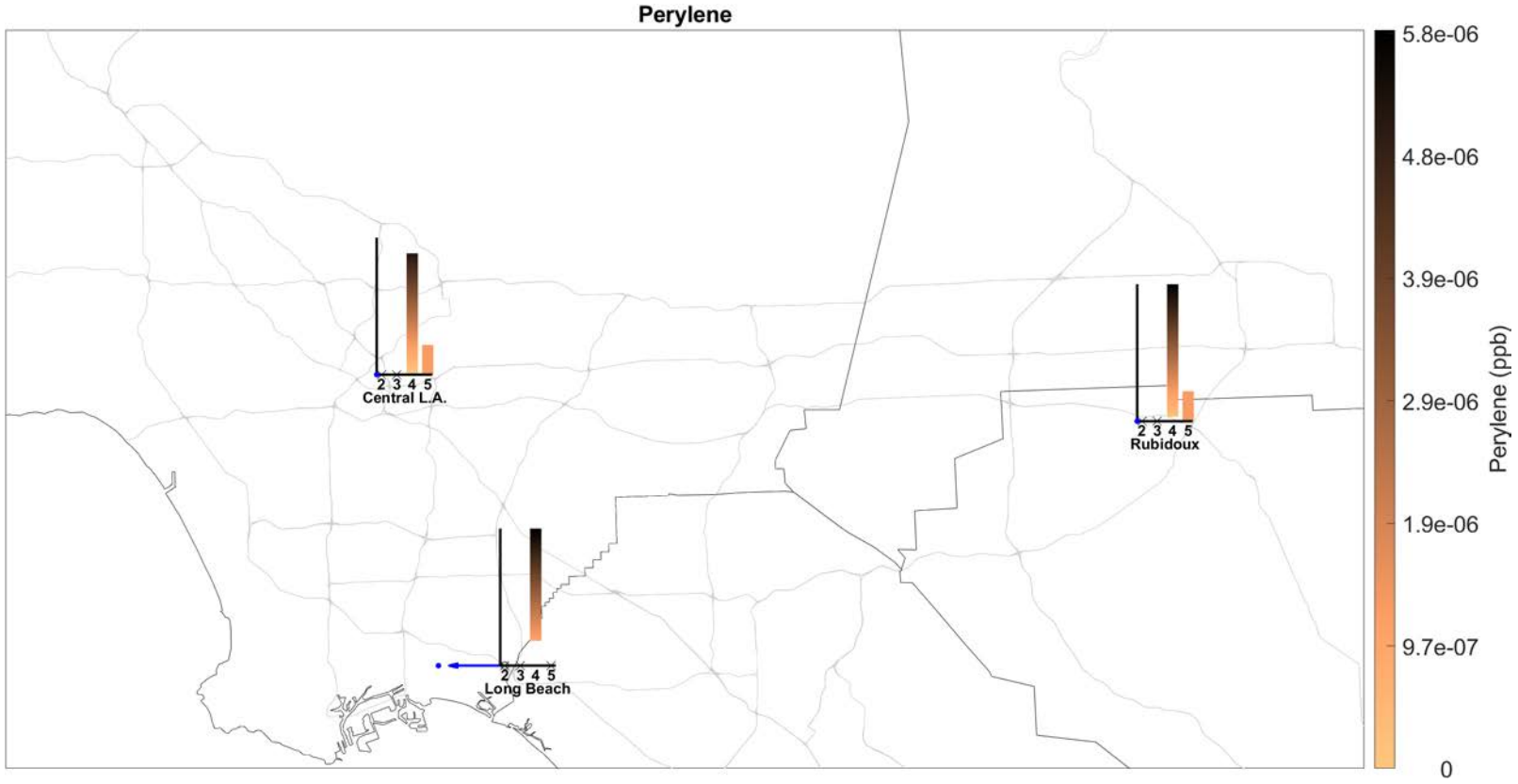


Figure IV-191. Geographic distribution of Perylene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Phenanthrene

Table IV-98. Ambient Concentrations (ng/m^3) of Phenanthrene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							14.7		9.15	13.6
95% CI LB							13.5		8.33	12
95% CI UB							16.1		10	15.4
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							43.4		27.6	58.8
MATES IV										
Average						5.76	13.9		6.06	
95% CI LB						5.02	11.9		5.31	
95% CI UB						6.52	16		6.87	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						0	0		0	
Max						13.9	35.6		15.3	
MATES V										
Average							10.5		3.94	
95% CI LB							8.86		3.4	
95% CI UB							12.4		4.55	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		0	
Max							44.9		14.9	

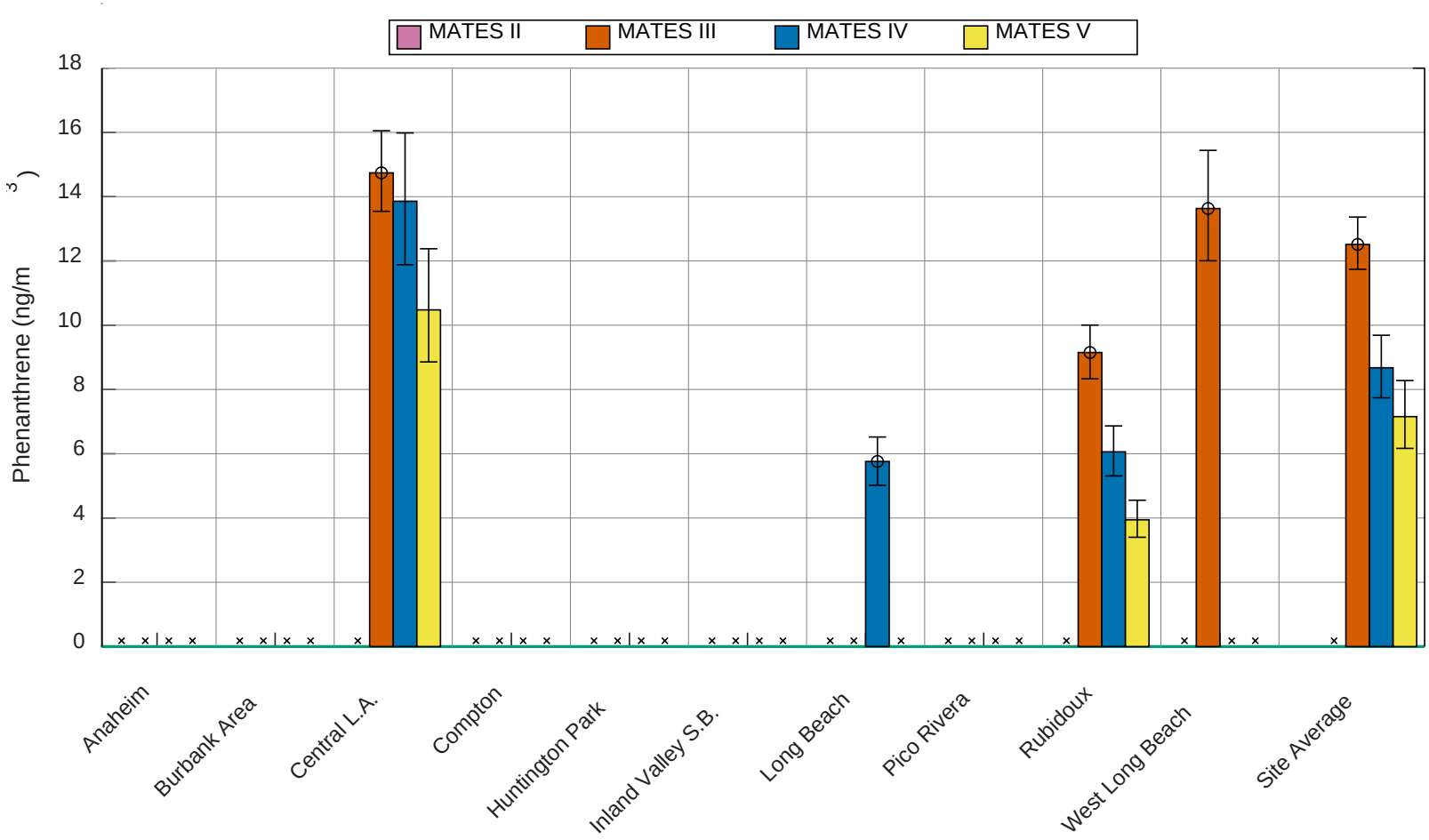


Figure IV-192. Annual Average Concentrations of Phenanthrene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

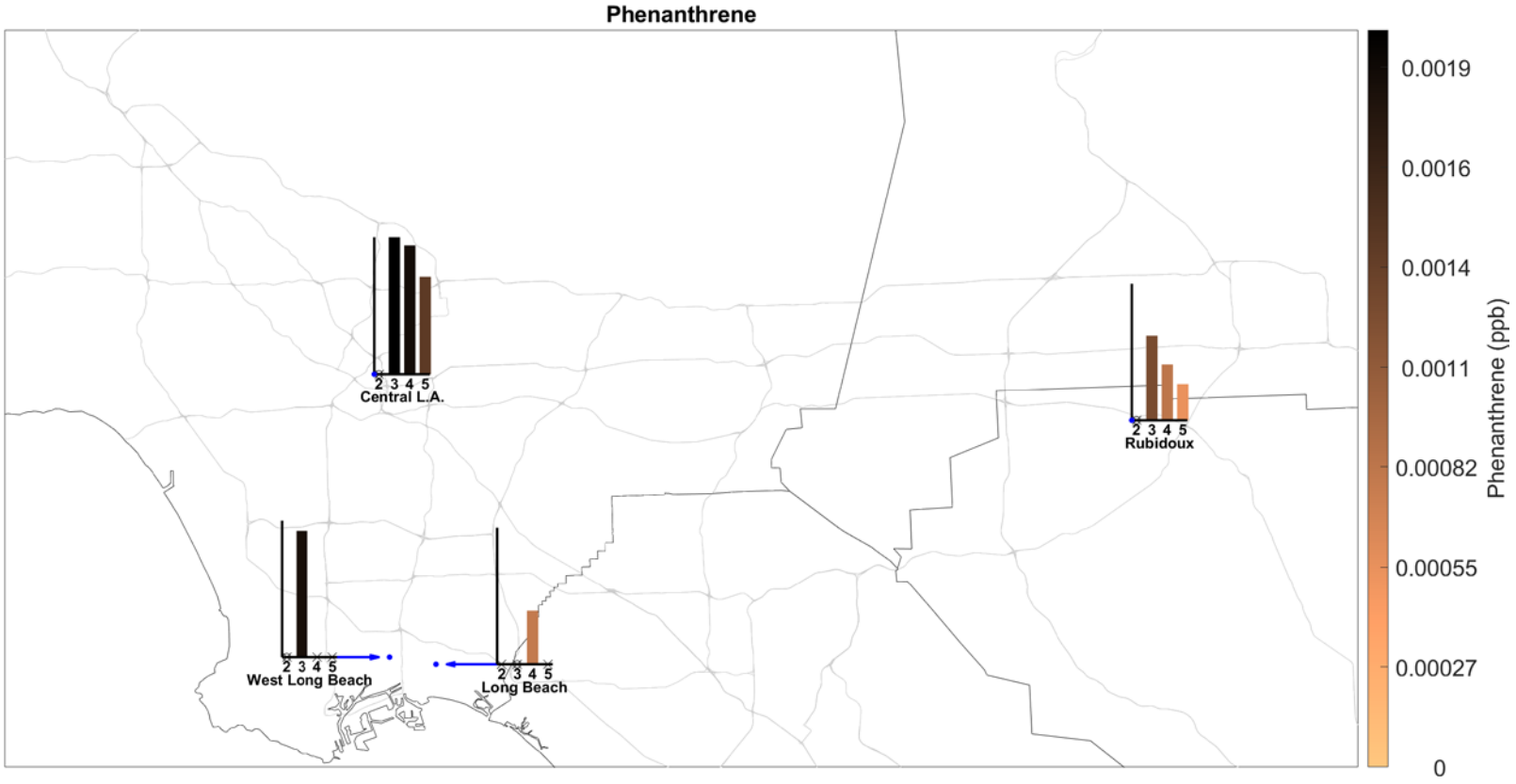


Figure IV-193. Geographic distribution of Phenanthrene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Pyrene

Table IV-99. Ambient Concentrations (ng/m^3) of Pyrene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average							1.71		1.22	1.7
95% CI LB							1.58		1.1	1.52
95% CI UB							1.83		1.34	1.87
N	0	0	0	0	0	0	129	0	128	128
% < MDL							0		0	0
Max							3.82		3.56	5.09
MATES IV										
Average						0.857	1.12		0.732	
95% CI LB						0.692	0.999		0.644	
95% CI UB						1.05	1.25		0.829	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						0	0		0	
Max						3.73	2.34		2.11	
MATES V										
Average							1.16		0.564	
95% CI LB							0.981		0.478	
95% CI UB							1.37		0.657	
N	0	0	0	0	0	0	58	0	60	0
% < MDL							0		0	
Max							4.73		2.09	

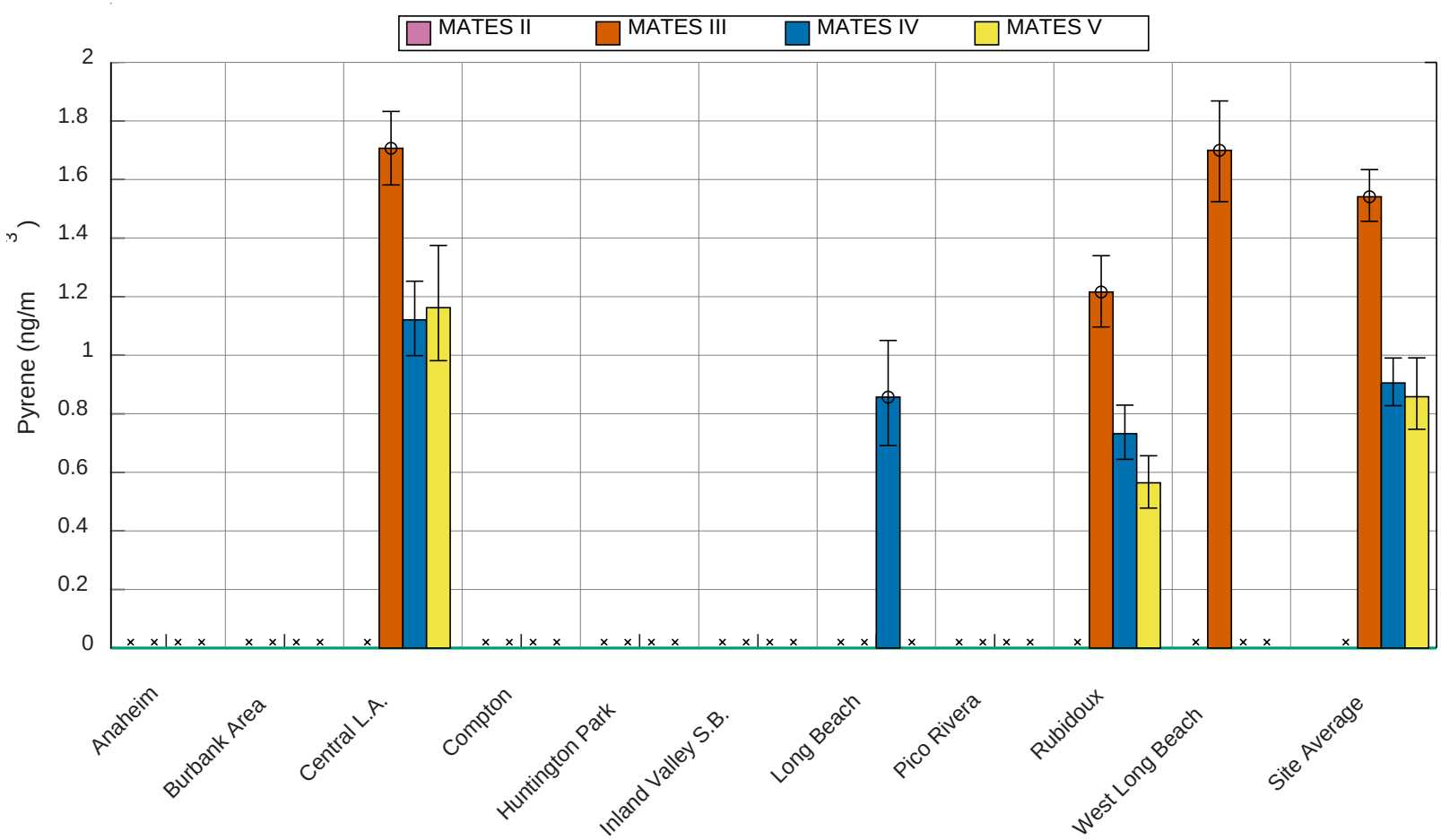


Figure IV-194. Annual Average Concentrations of Pyrene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

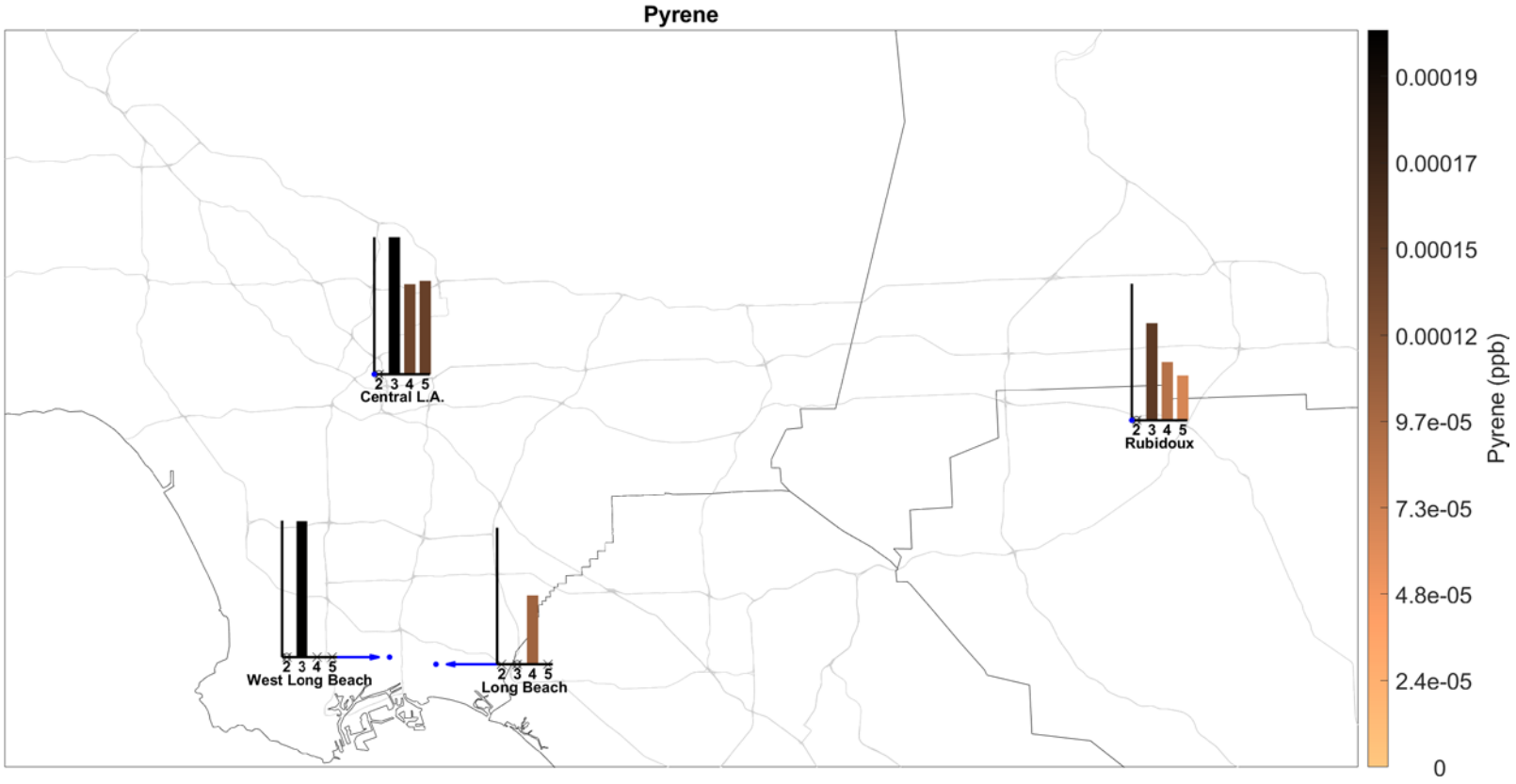


Figure IV-195. Geographic distribution of Pyrene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Retene

Table IV-100. Ambient Concentrations (ng/m^3) of Retene from the PAH analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average						0.65	0.269		0.273	
95% CI LB						0.402	0.191		0.215	
95% CI UB						0.957	0.364		0.334	
N	0	0	0	0	0	51	58	0	58	0
% < MDL						31.4	43.1		36.2	
Max						5.17	1.7		1.19	
MATES V										
Average							0.411		0.491	
95% CI LB							0.286		0.362	
95% CI UB							0.548		0.642	
N	0	0	0	0	0	0	57	0	59	0
% < MDL							14		16.9	
Max							2.67		2.84	

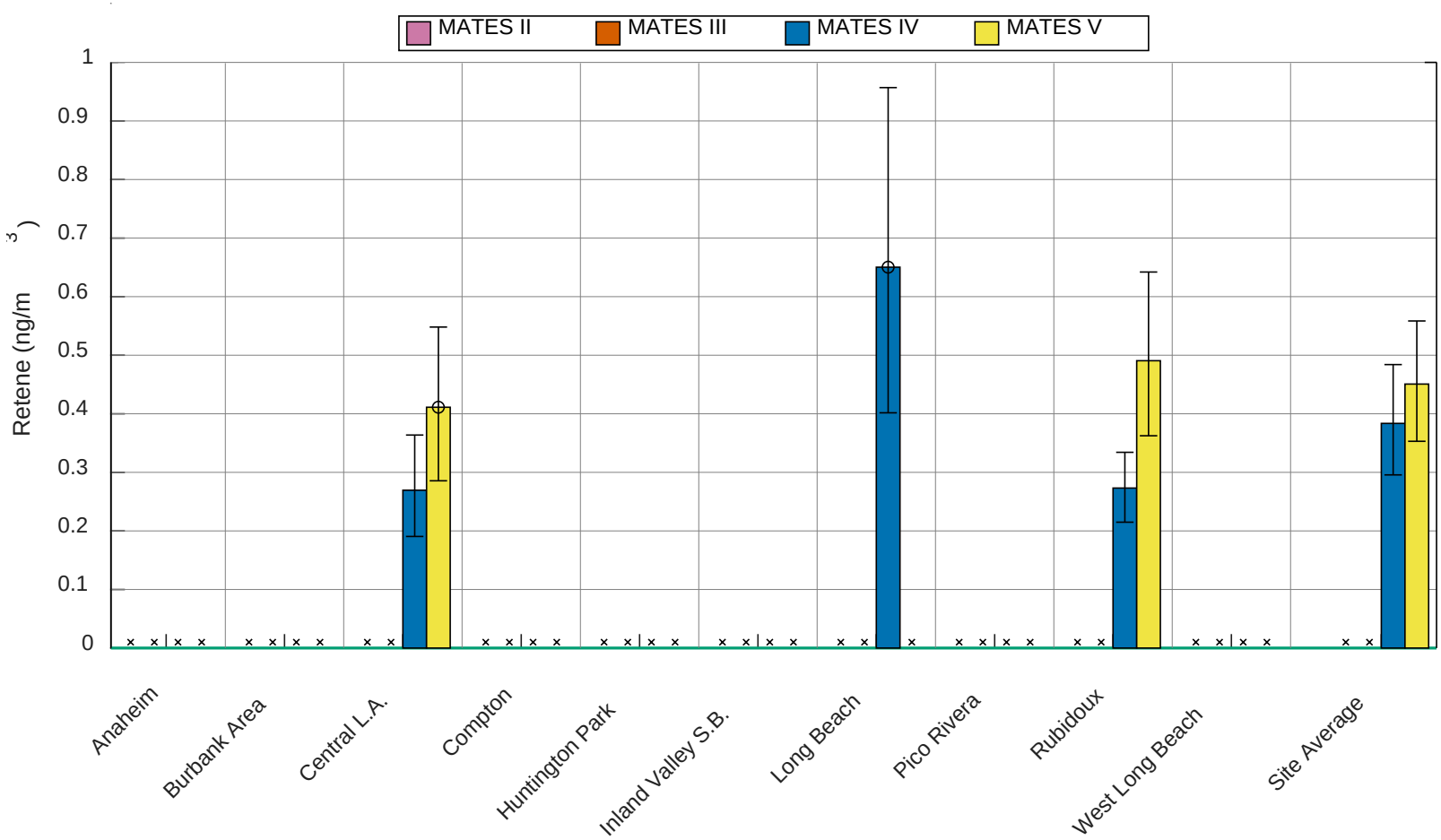


Figure IV-196. Annual Average Concentrations of Retene in the PAH Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

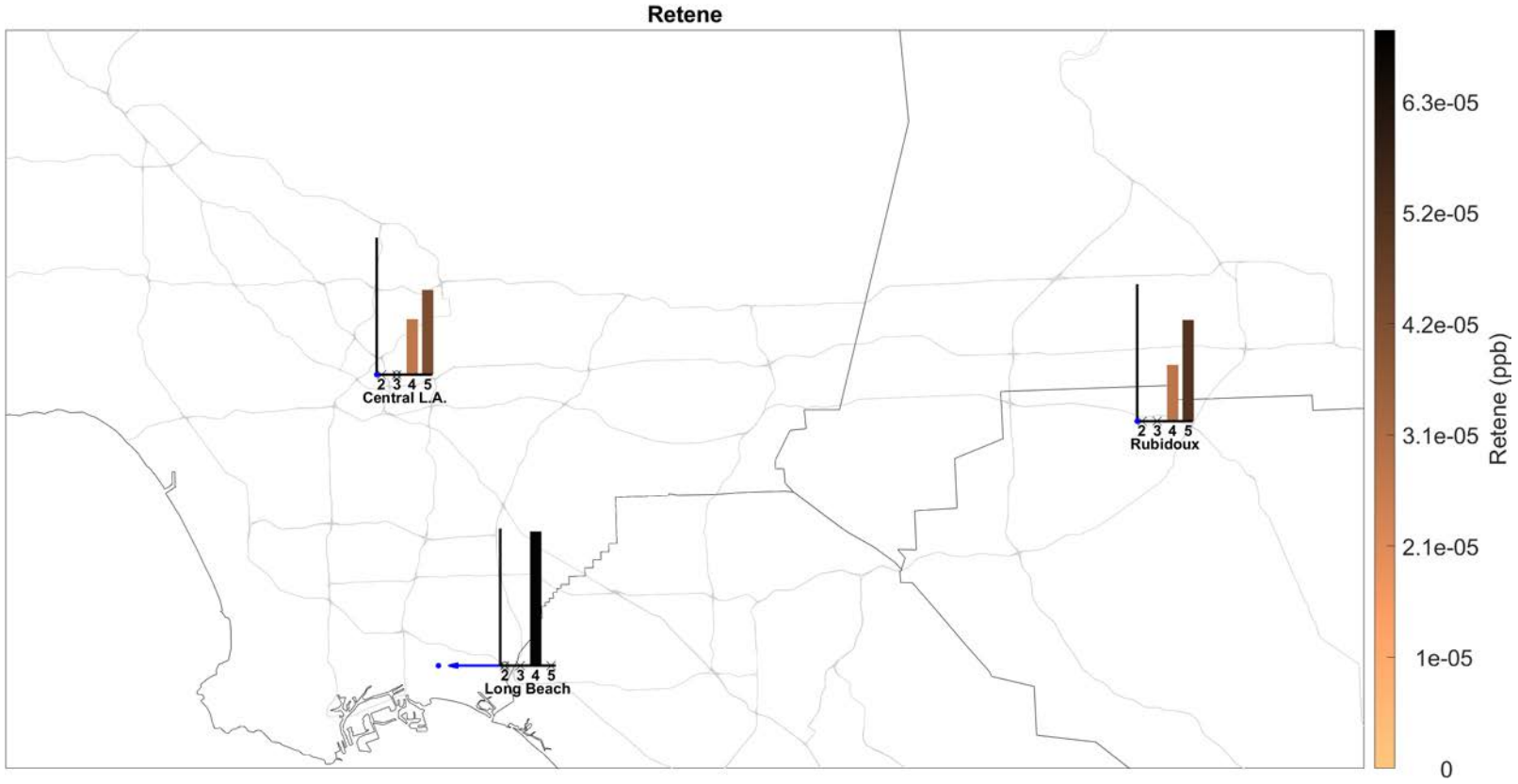


Figure IV-197. Geographic distribution of Retene from the PAH Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

PM2.5 Mass (SASS) Analysis

PM2.5 Mass

Table IV-101. Ambient Concentrations (µg/m) of PM2.5 Mass from the PM2.5 Mass (SASS) analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	17.6	20.9	18.9	21.5	22.4	17.8	19.6	20.7	22.9	18.3
95% CI LB	16.3	19.3	17.5	20	20.2	16.6	18.3	18.7	21	17.1
95% CI UB	18.8	22.6	20.3	23.3	24.7	19.2	21.1	22.9	24.8	19.6
N	235	233	230	229	113	219	236	109	235	227
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	64	80.8	57.5	112	77.9	61.1	73.2	64.9	110	60.3
MATES IV										
Average	12.4	14.4	12.9	14.3	14.4	12.9	14.1	14.2	13.8	13.2
95% CI LB	11.3	13.1	11.7	12.8	13.1	11.9	13	13	12.4	12.1
95% CI UB	13.5	15.6	14.2	15.8	15.8	14.1	15.4	15.4	15.2	14.5
N	59	59	61	60	57	61	59	58	61	60
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	31.6	27.9	29.6	34.1	35.4	27.1	27.4	29.5	30.3	28.1
MATES V										
Average	10.6	10.8	12.9	12.6	12.7	10.9	12.5	12.8	12.8	11.9
95% CI LB	9.31	9.25	11.2	11.2	11.1	9.67	10.8	11.3	11.4	10.5
95% CI UB	12.1	12.6	14.7	14	14.6	12.2	14.5	14.4	14.3	13.3
N	56	58	61	61	59	61	61	59	60	57
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	28.6	28.1	32.2	27.9	36.9	27.8	45.2	38.6	34.1	29.1

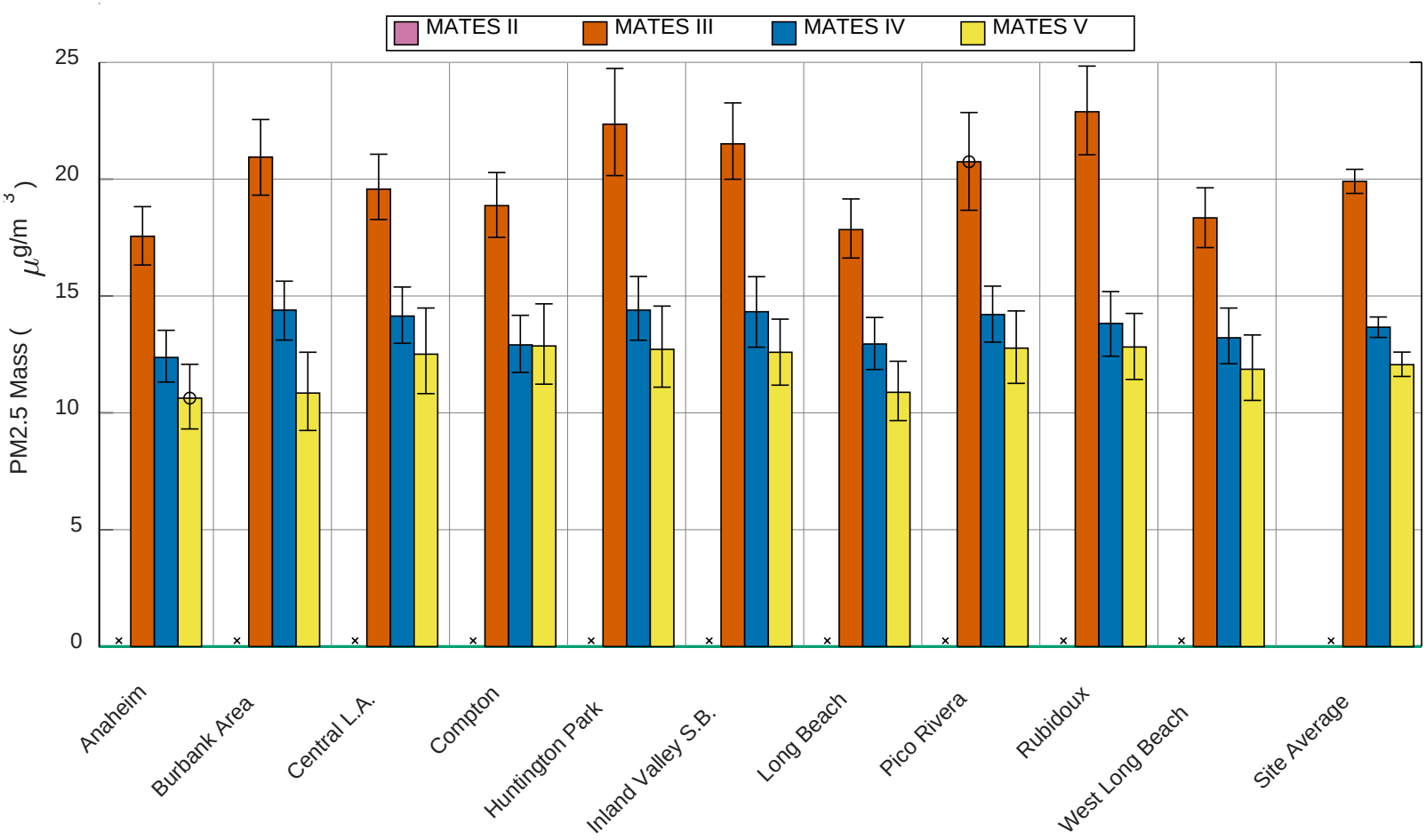


Figure IV-198. Annual Average Concentrations of PM2.5 Mass in the PM2.5 Mass (SASS) Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

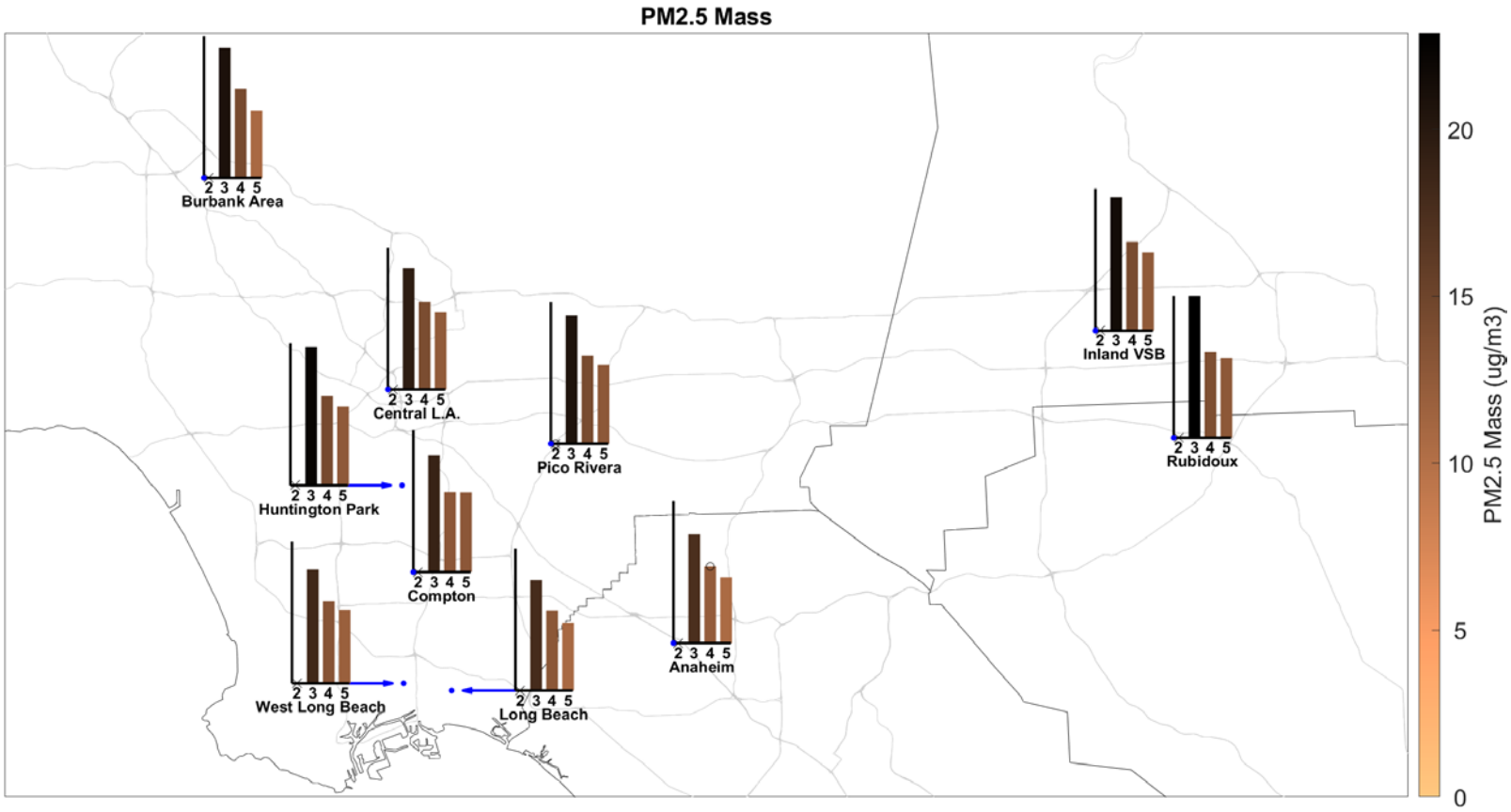


Figure IV-199. Geographic distribution of PM2.5 Mass from the PM2.5 Mass (SASS) Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

PM2.5 Carbon Analysis

EC1

Table IV-102. Ambient Concentrations (ng/m^3) of EC1 from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	342	462	593	614	544	383	563	569	555	482
95% CI LB	240	337	384	484	394	253	404	408	414	312
95% CI UB	457	606	823	752	710	541	758	763	712	686
N	56	59	61	60	60	61	61	59	59	55
% < MDL	12.5	16.9	9.8	8.3	8.3	19.7	9.8	6.8	8.5	14.5
Max	1800	3000	4800	2300	2500	2500	4300	3800	2700	3400

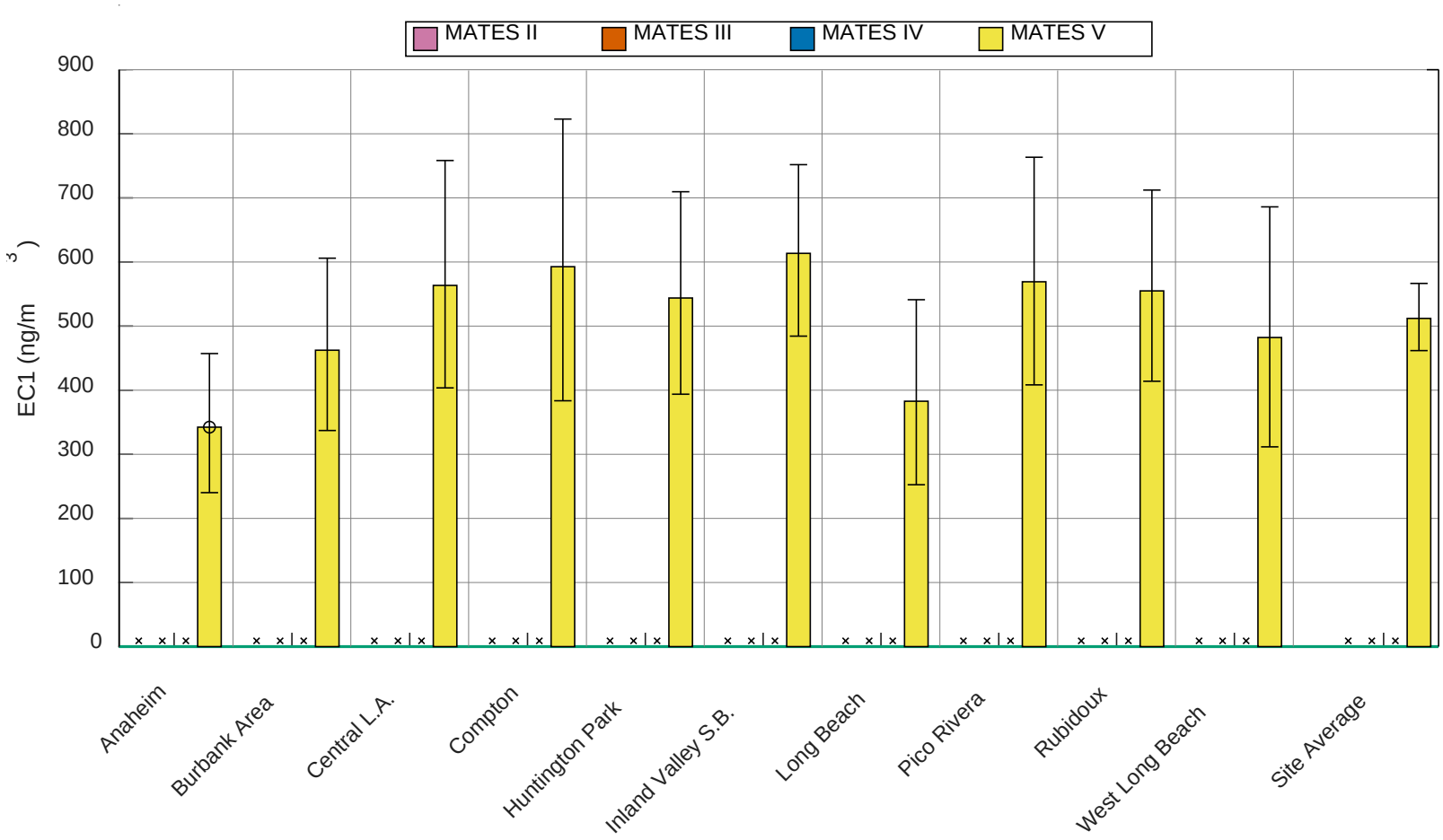


Figure IV-200. Annual Average Concentrations of EC1 in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

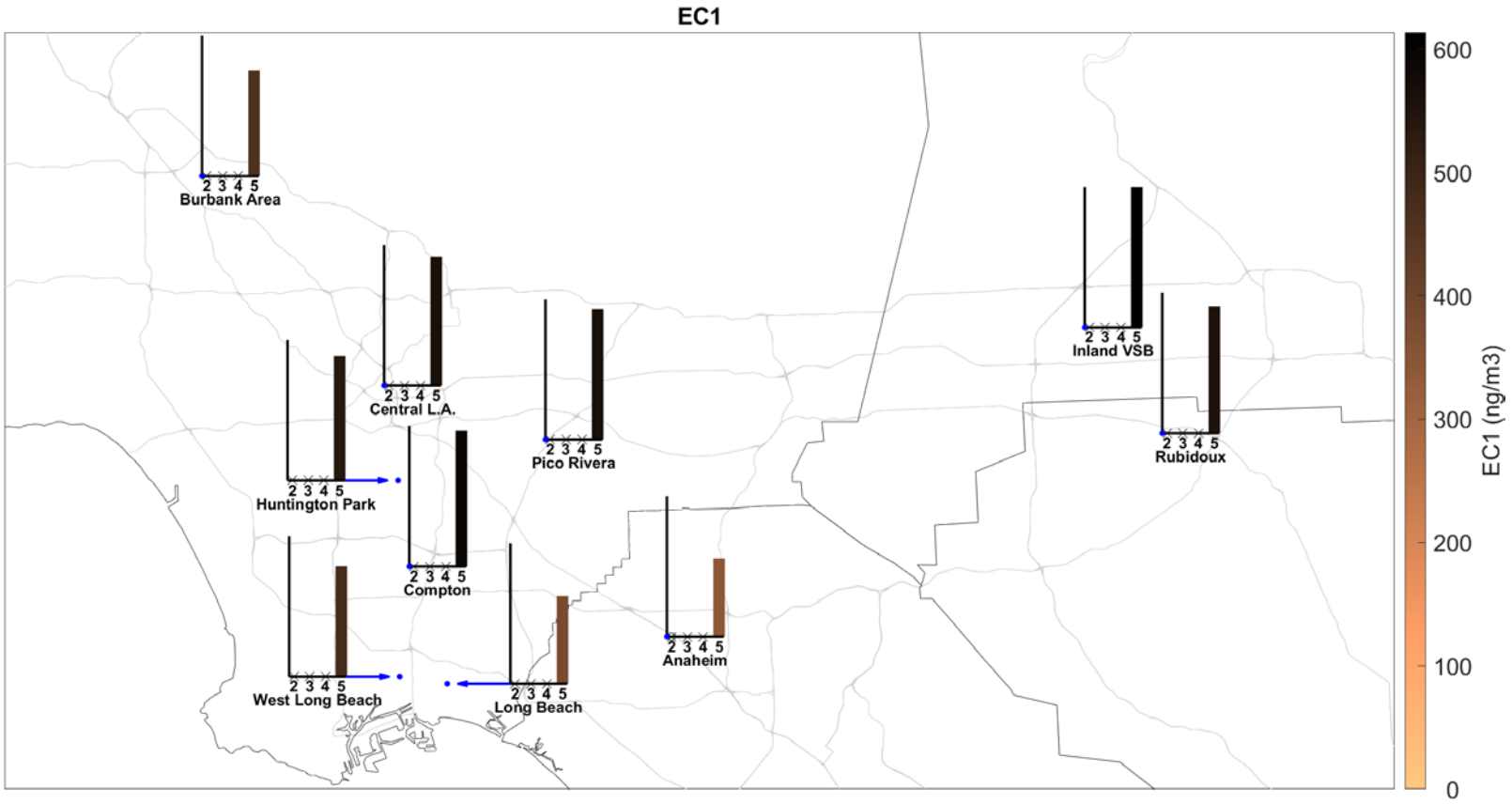


Figure IV-201. Geographic distribution of EC1 from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

EC2

Table IV-103. Ambient Concentrations (ng/m^3) of EC2 from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	325	338	434	500	450	330	451	494	460	475
95% CI LB	244	279	337	420	364	246	375	406	365	371
95% CI UB	417	402	540	586	540	418	534	590	567	588
N	56	59	61	60	60	61	61	59	59	55
% < MDL	5.4	3.4	6.6	5	1.7	8.2	1.6	1.7	3.4	1.8
Max	1700	1200	1500	1500	1400	1600	1350	1500	2100	1600

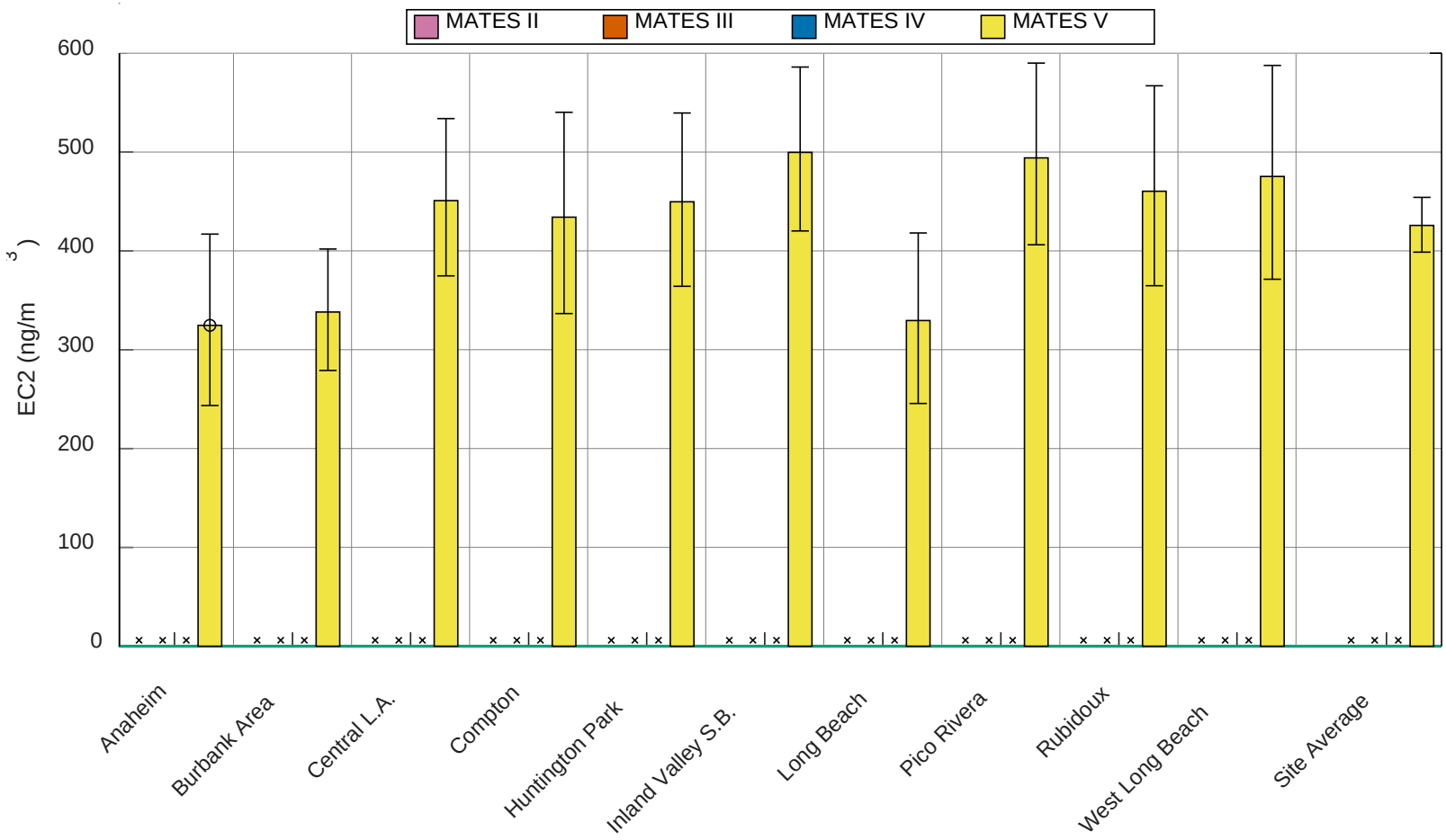


Figure IV-202. Annual Average Concentrations of EC2 in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

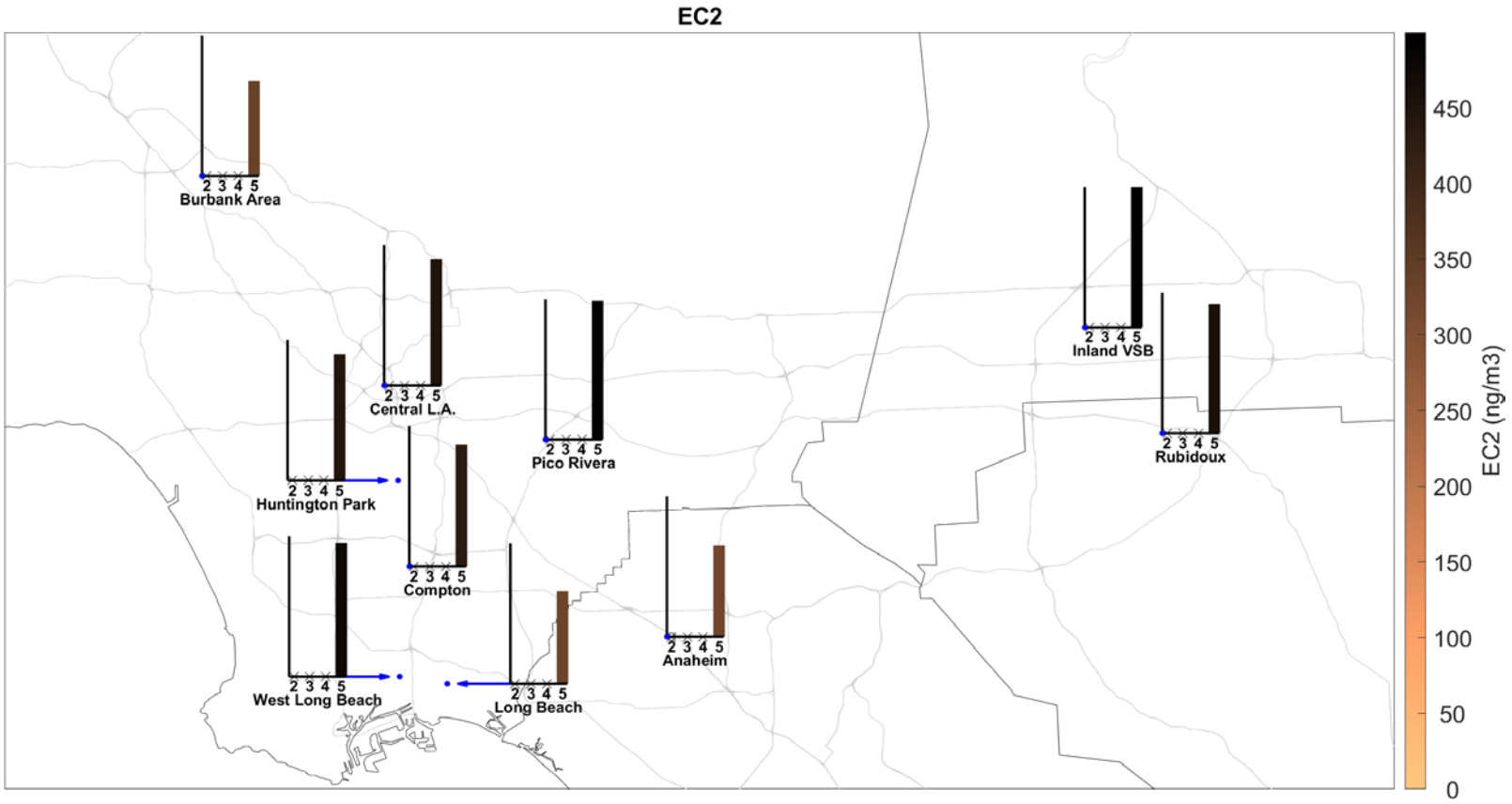


Figure IV-203. Geographic distribution of EC2 from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

EC3

Table IV-104. Ambient Concentrations (ng/m^3) of EC3 from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	0.893, 40.2[a]	5.08, 41.7[a]	6.89, 42.3[a]	7.67, 43[a]	4, 41.3[a]	4.59, 41.3[a]	10.3, 44.4[a]	11.7, 44.2[a]	10.5, 44.4[a]	7.09, 42.7[a]
95% CI LB	0[a]	1.19[a]	2.46[a]	2.33[a]	0.667[a]	0.82[a]	4.18[a]	5.59[a]	4.07[a]	2[a]
95% CI UB	40.5[a]	43.6[a]	44.6[a]	47.3[a]	43.2[a]	42.8[a]	48[a]	47.3[a]	49.5[a]	45.6[a]
N	56[a]	59[a]	61[a]	60[a]	60[a]	61[a]	61[a]	59[a]	59[a]	55[a]
% < MDL	98.2[a]	91.5[a]	88.5[a]	88.3[a]	93.3[a]	91.8[a]	85.2[a]	81.4[a]	84.7[a]	89.1[a]
Max	50[a]	80[a]	90[a]	150[a]	70[a]	70[a]	95[a]	110[a]	140[a]	90[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

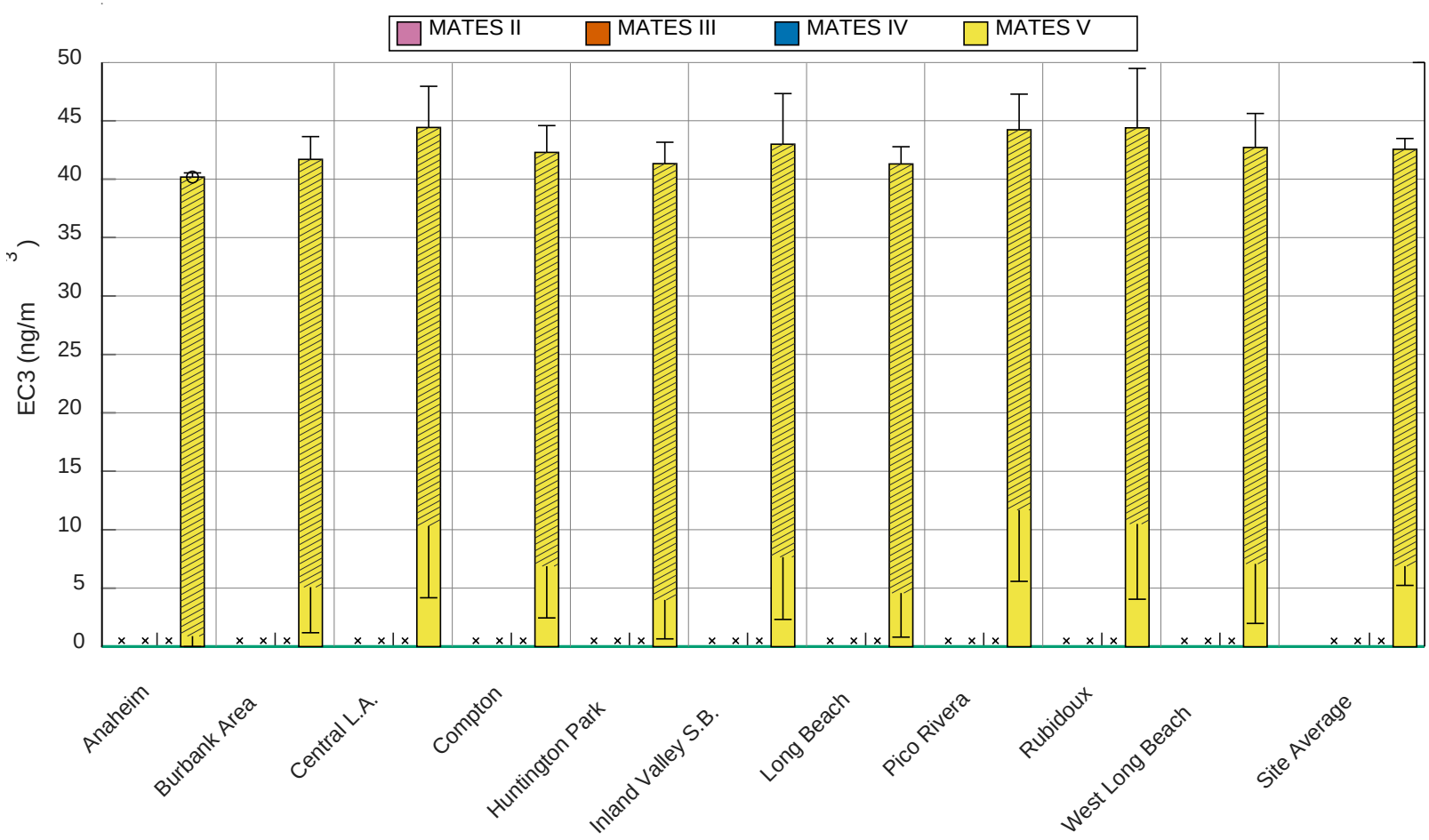


Figure IV-204. Annual Average Concentrations of EC3 in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

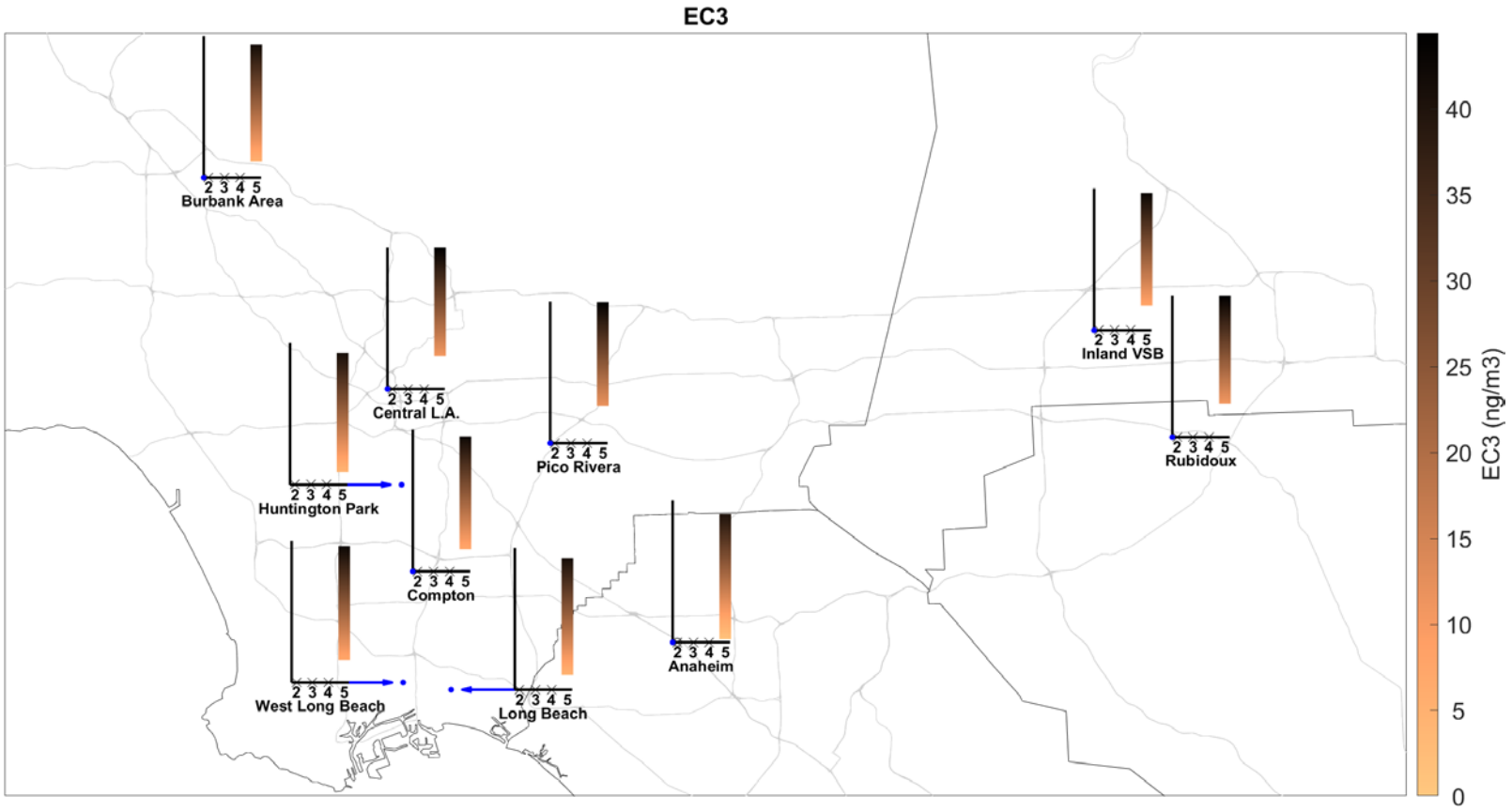


Figure IV-205. Geographic distribution of EC3 from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Elemental Carbon

Table IV-105. Ambient Concentrations (ng/m^3) of Elemental Carbon from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	1360	1960	1700	2040	2200	1470	1850	1970	1650	2080
95% CI LB	1220	1820	1530	1890	1910	1340	1720	1770	1510	1870
95% CI UB	1490	2110	1890	2210	2510	1610	1990	2180	1800	2320
N	242	241	235	236	118	228	240	116	235	228
% < MDL	0.4	0	0.4	0.8	0.8	0.4	0	0	0.4	0.4
Max	6440	6280	7180	7100	9080	5990	5300	5180	5700	8780
MATES IV										
Average	901	1290	1060	1360	1280	898	1230	1400	1110	1130
95% CI LB	688	1040	783	1150	1030	668	1030	1160	946	845
95% CI UB	1140	1580	1360	1590	1560	1150	1470	1670	1290	1460
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	1.7	0	1.7	0	1.6	0	0	0	0
Max	3900	4600	4700	5000	5400	3500	3800	4700	3400	4900
MATES V										
Average	458	467	734	746	679	481	686	732	669	708
95% CI LB	333	371	520	614	521	342	534	568	497	519
95% CI UB	605	570	977	881	850	636	861	916	870	926
N	56	59	61	60	60	61	61	59	59	55
% < MDL	3.6	6.8	6.6	5	0	8.2	1.6	1.7	3.4	1.8
Max	2600	1900	4700	2300	2600	2400	2850	3200	4200	2900

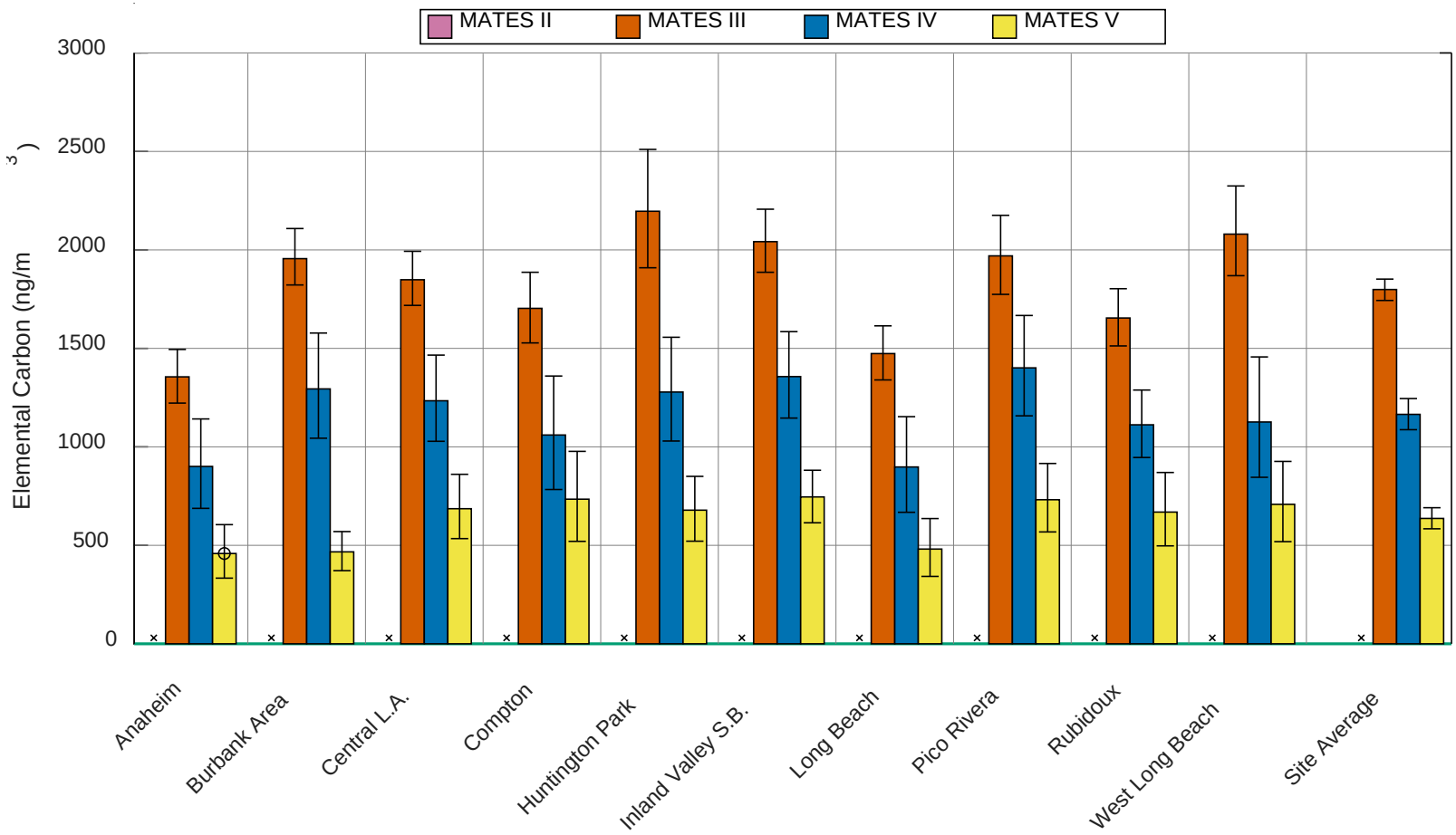


Figure IV-206. Annual Average Concentrations of Elemental Carbon in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

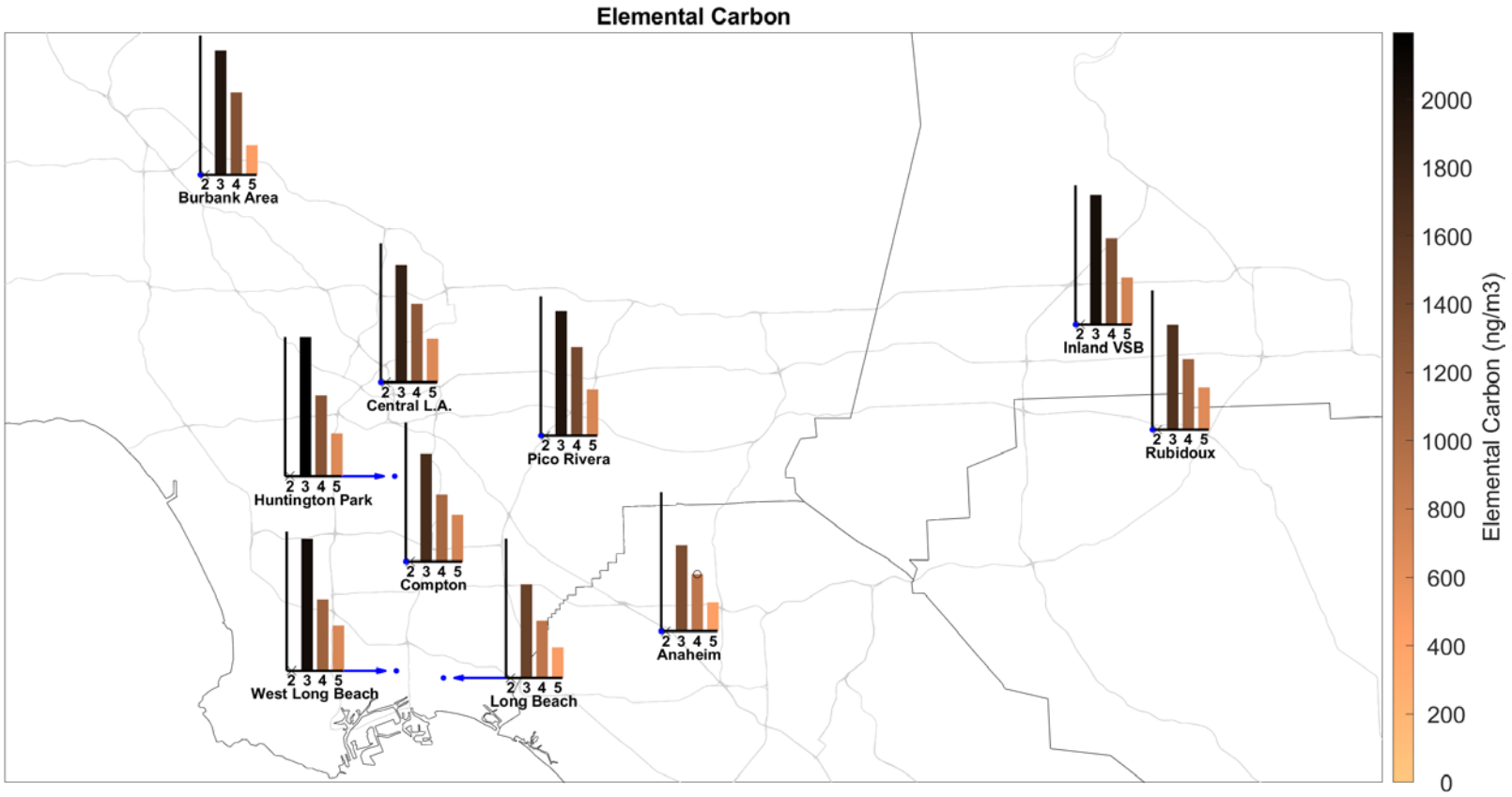


Figure IV-207. Geographic distribution of Elemental Carbon from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

OC1

Table IV-106. Ambient Concentrations (ng/m^3) of OC1 from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	45.5, 509[a]	74.9, 523[a]	92, 523[a]	536	64.2, 514[a]	8.69, 497[a]	93.7, 523[a]	103, 531[a]	103, 526[a]	24.7, 504[a]
95% CI LB	10.4[a]	21.9[a]	35.4[a]	515	19.3[a]	0[a]	36.3[a]	38.2[a]	43.1[a]	0[a]
95% CI UB	522[a]	549[a]	554[a]	563	529[a]	499[a]	549[a]	562[a]	548[a]	517[a]
N	56[a]	59[a]	61[a]	60	60[a]	61[a]	61[a]	59[a]	59[a]	55[a]
% < MDL	92.9[a]	89.8[a]	86.9[a]	75	90[a]	98.4[a]	86.9[a]	86.4[a]	84.7[a]	96.4[a]
Max	760[a]	1000[a]	1200[a]	1000	830[a]	530[a]	1000[a]	1100[a]	850[a]	800[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

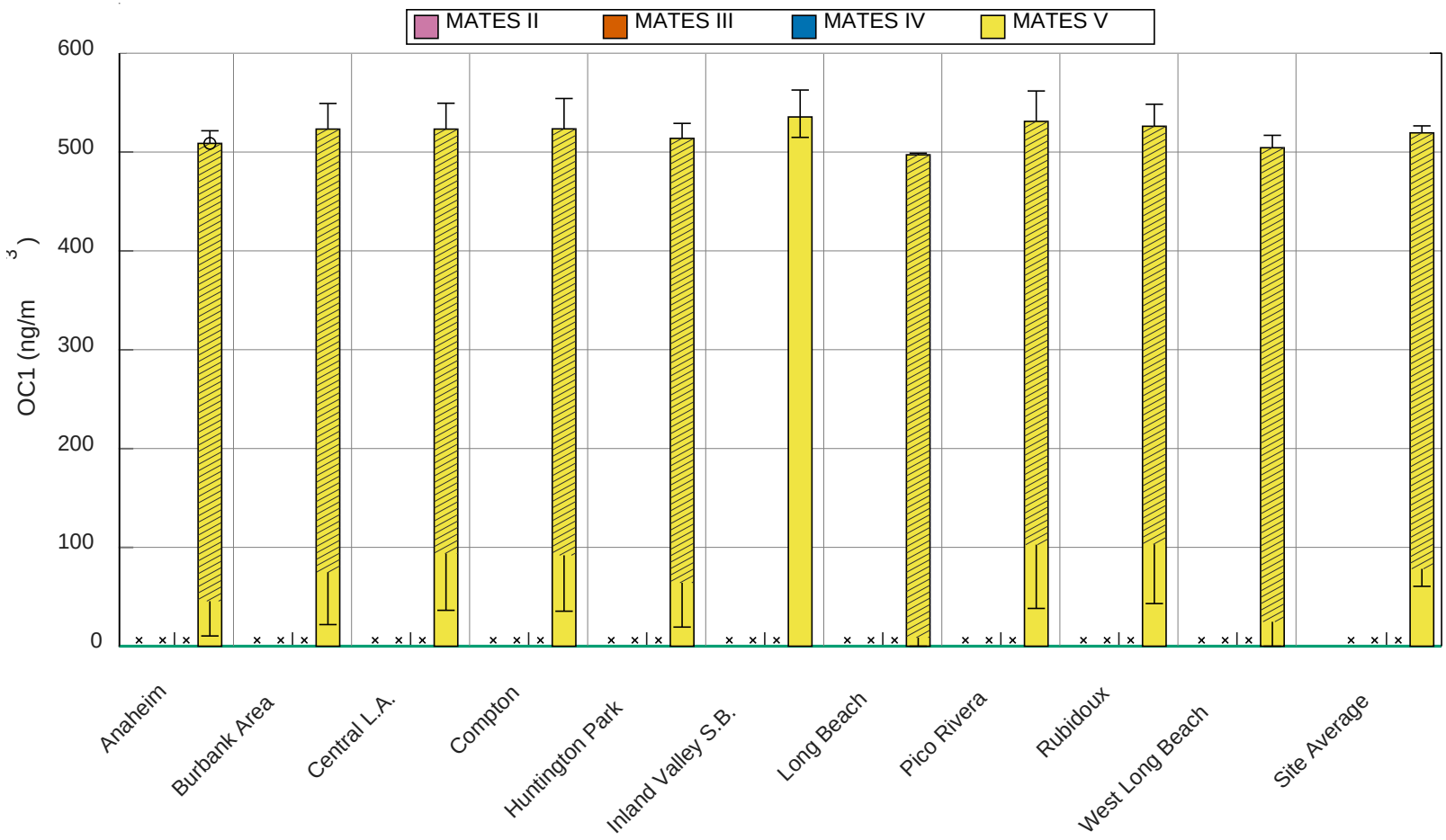


Figure IV-208. Annual Average Concentrations of OC1 in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

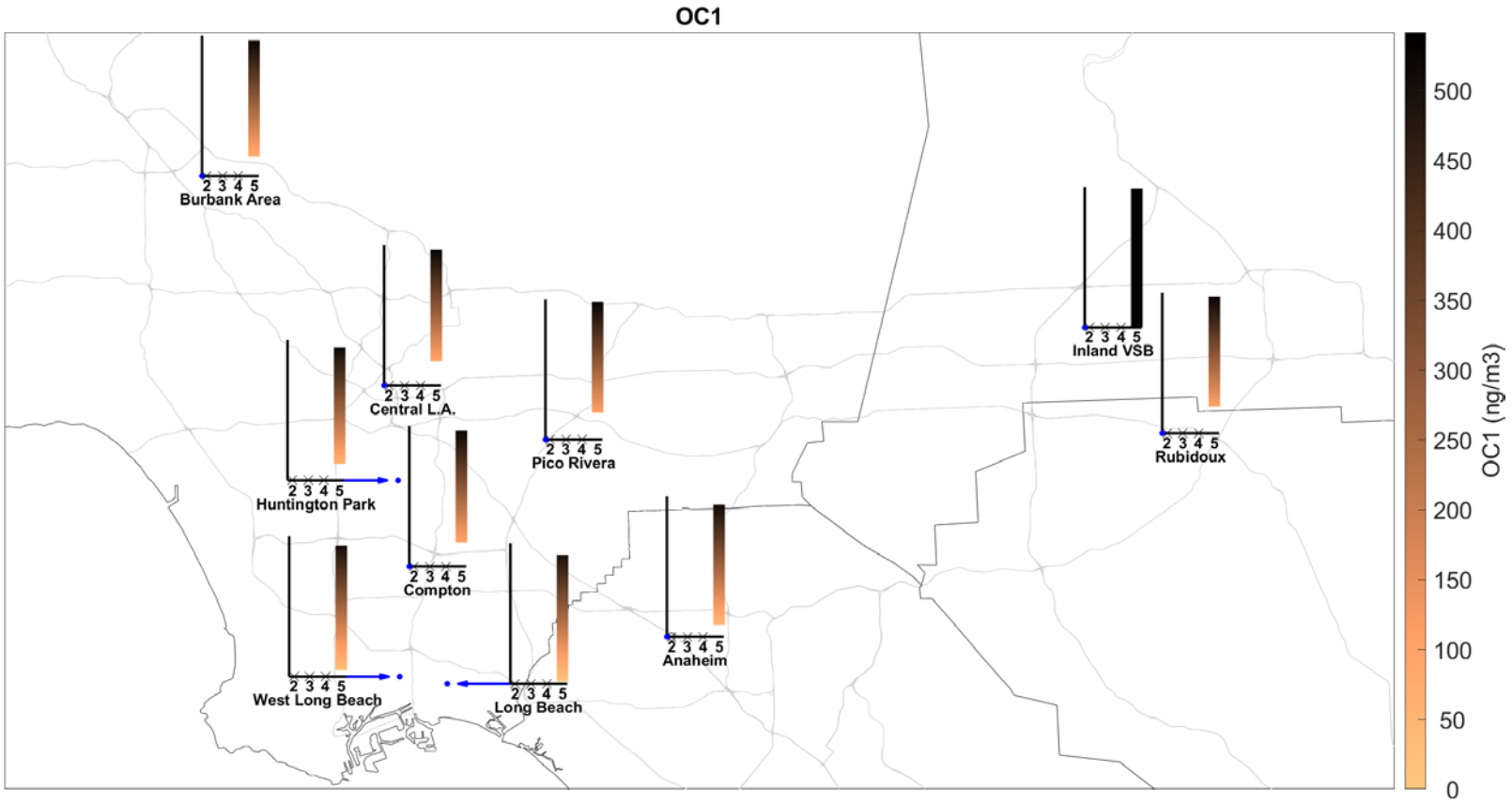


Figure IV-209. Geographic distribution of OC1 from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

OC2

Table IV-107. Ambient Concentrations (ng/m^3) of OC2 from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	915	1100	1100	1340	1150	864	1190	1210	1180	971
95% CI LB	818	984	965	1210	1040	769	1080	1100	1060	852
95% CI UB	1020	1230	1230	1470	1270	970	1320	1330	1300	1100
N	56	59	61	60	60	61	61	59	59	55
% < MDL	5.4	10.2	3.3	8.3	3.3	16.4	1.6	0	5.1	9.1
Max	2100	2300	2600	2500	2300	2400	3000	2700	2300	2500

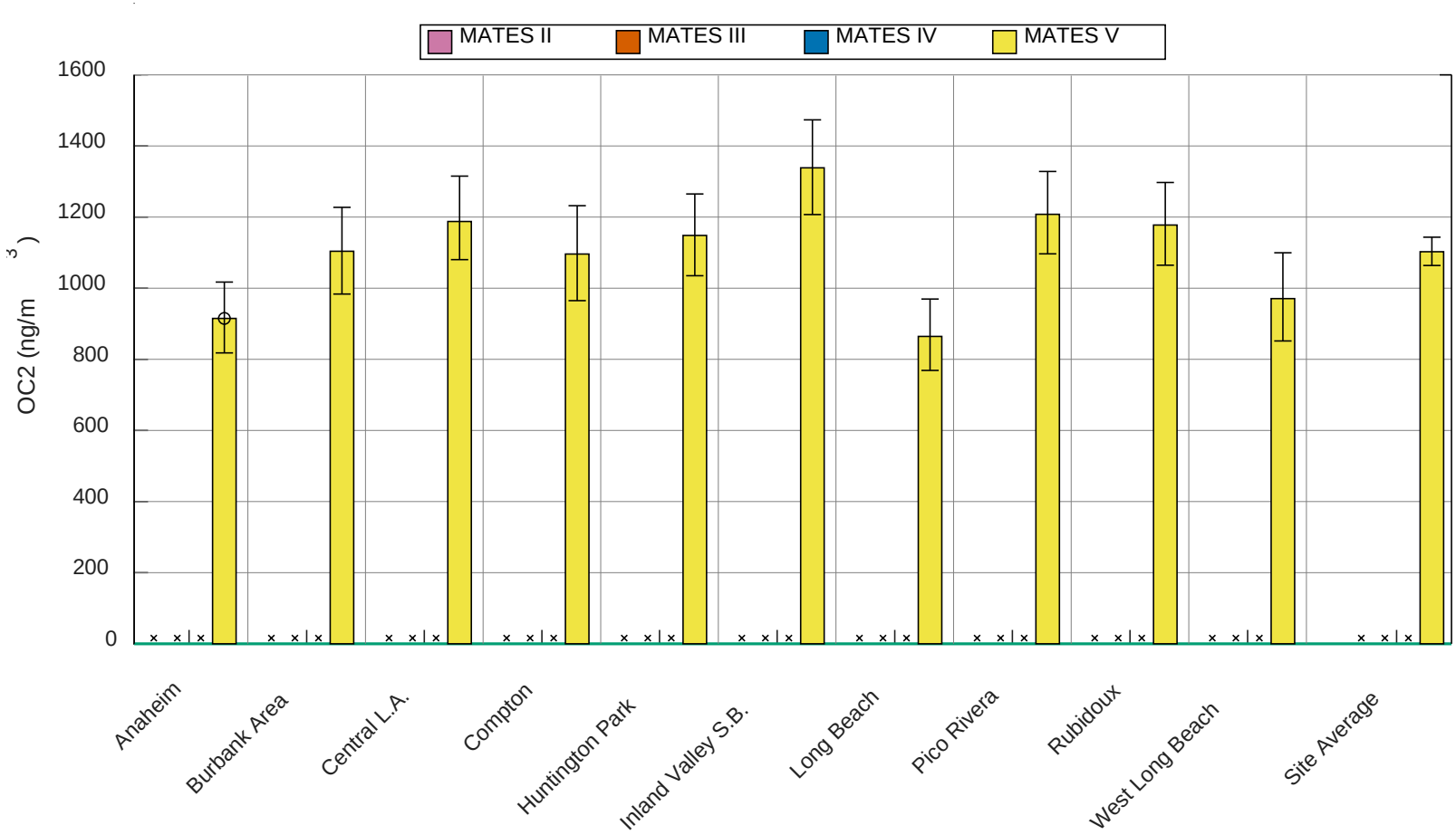


Figure IV-210. Annual Average Concentrations of OC2 in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

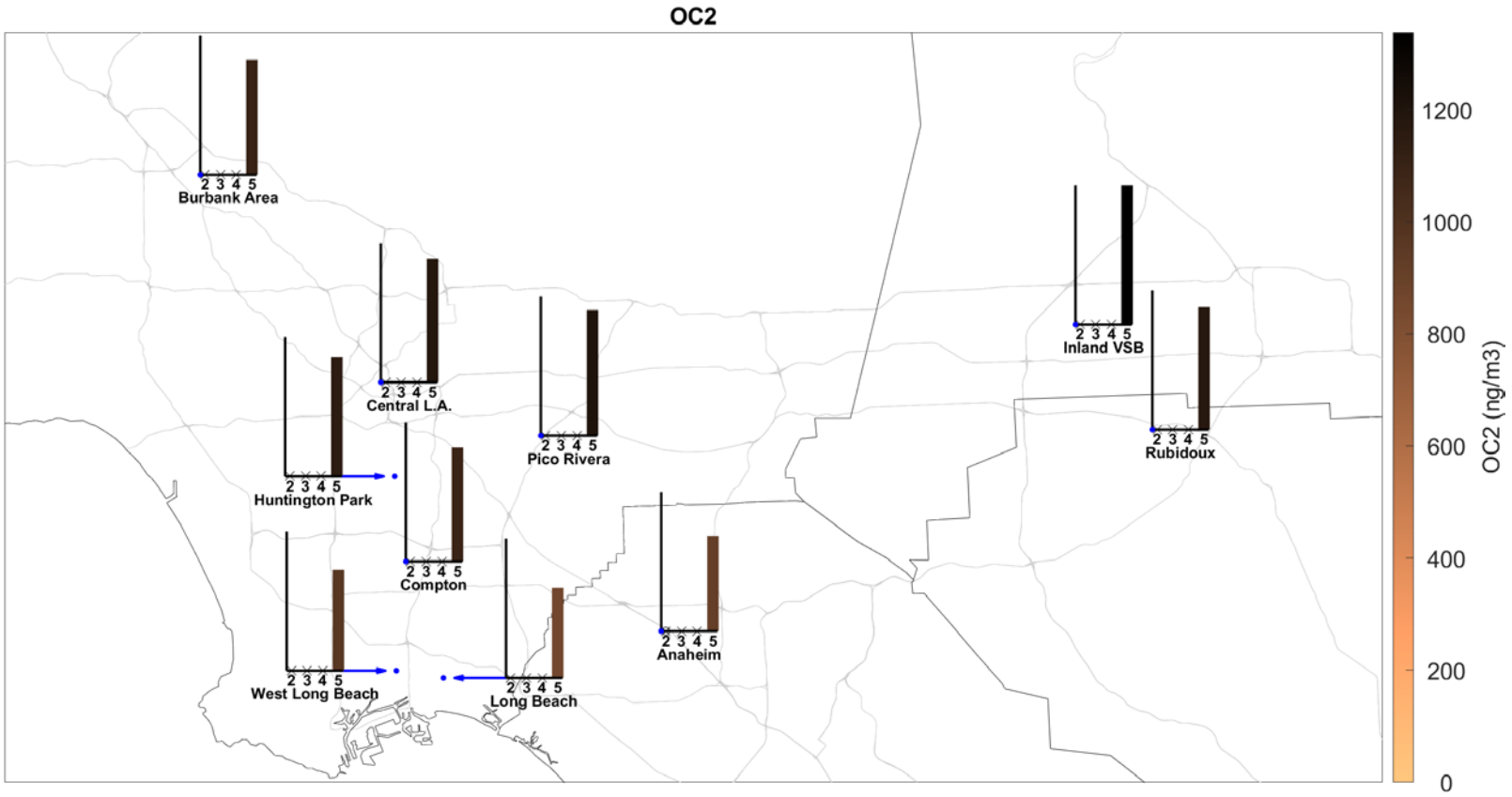


Figure IV-211. Geographic distribution of OC2 from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

OC3

Table IV-108. Ambient Concentrations (ng/m^3) of OC3 from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	1550	1790	1840	2030	1830	1450	1880	1890	1870	1630
95% CI LB	1380	1580	1590	1820	1630	1260	1680	1690	1660	1400
95% CI UB	1720	2000	2130	2260	2060	1670	2120	2100	2100	1890
N	56	59	61	60	60	61	61	59	59	55
% < MDL	0	0	0	0	0	0	0	0	1.7	0
Max	3600	4900	5300	4900	5200	4900	5150	4700	4200	5500

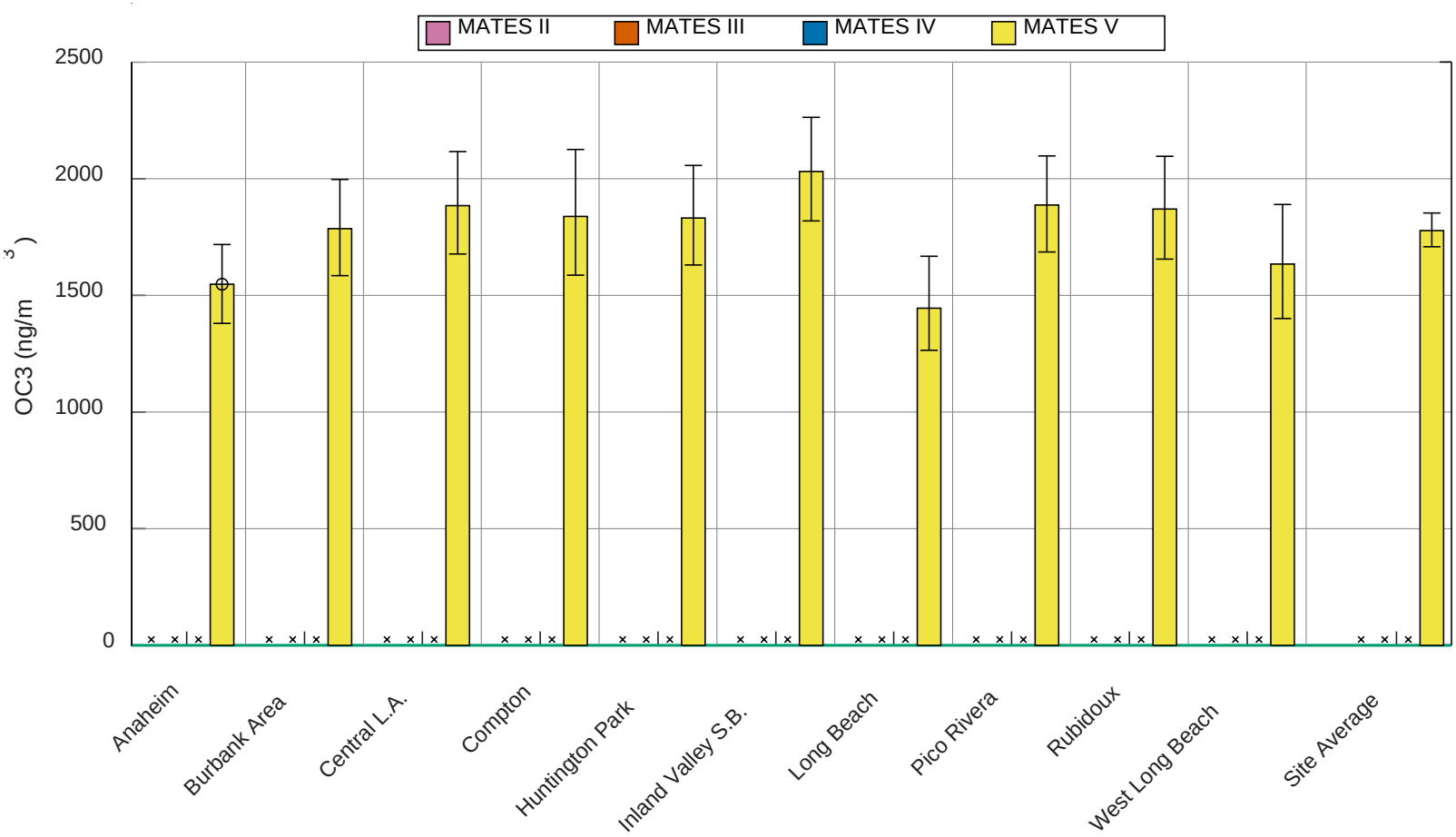


Figure IV-212. Annual Average Concentrations of OC3 in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

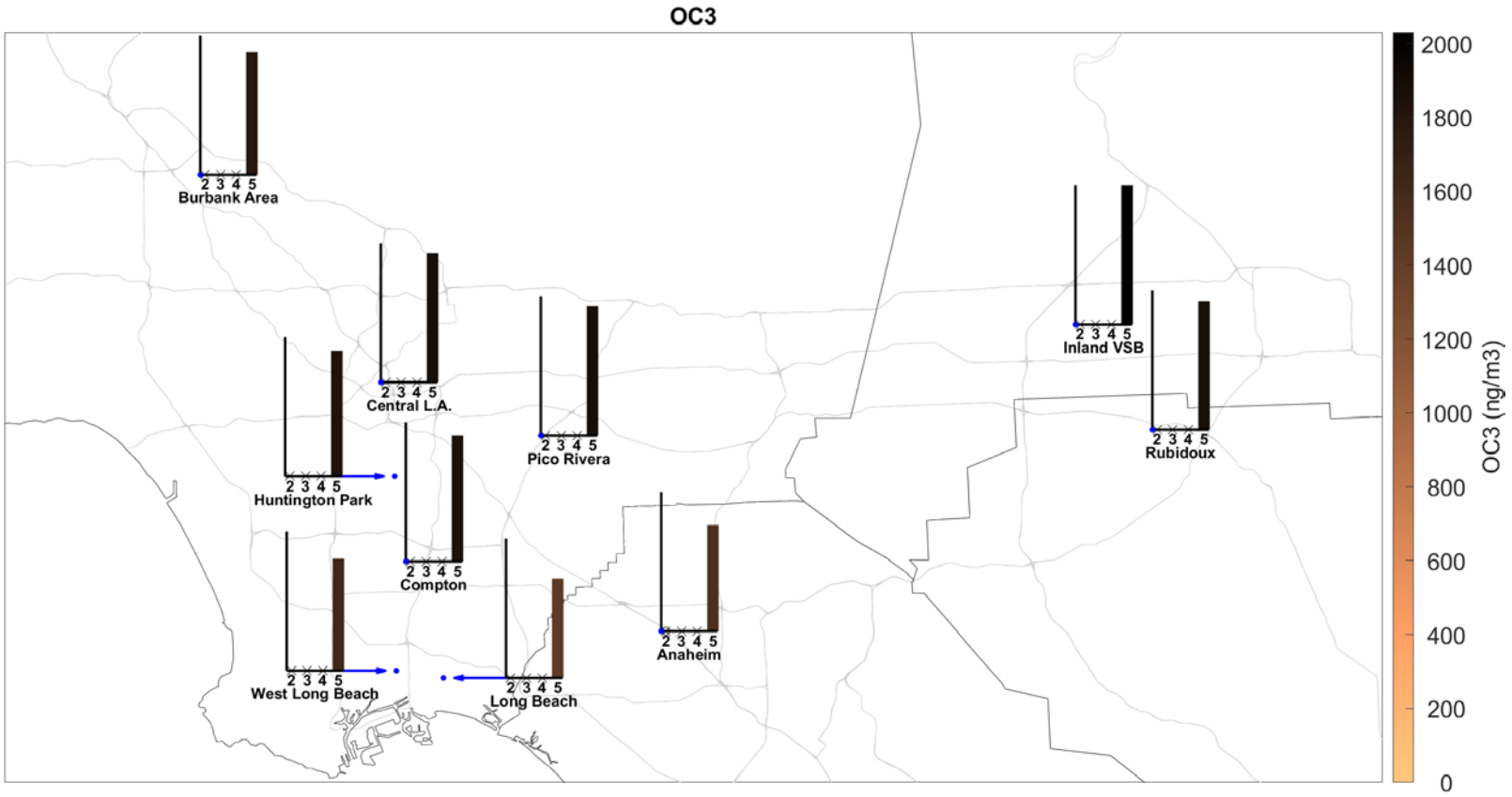


Figure IV-213. Geographic distribution of OC3 from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

OC4

Table IV-109. Ambient Concentrations (ng/m^3) of OC4 from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	598	678	702	743	675	604	690	691	682	642
95% CI LB	542	609	600	666	605	540	611	611	611	556
95% CI UB	669	759	813	828	761	690	782	776	765	737
N	56	59	61	60	60	61	61	59	59	55
% < MDL	69.6	50.8	63.9	36.7	56.7	75.4	52.5	50.8	42.4	69.1
Max	1900	2000	2600	2000	1800	1900	2000	1900	1800	2000

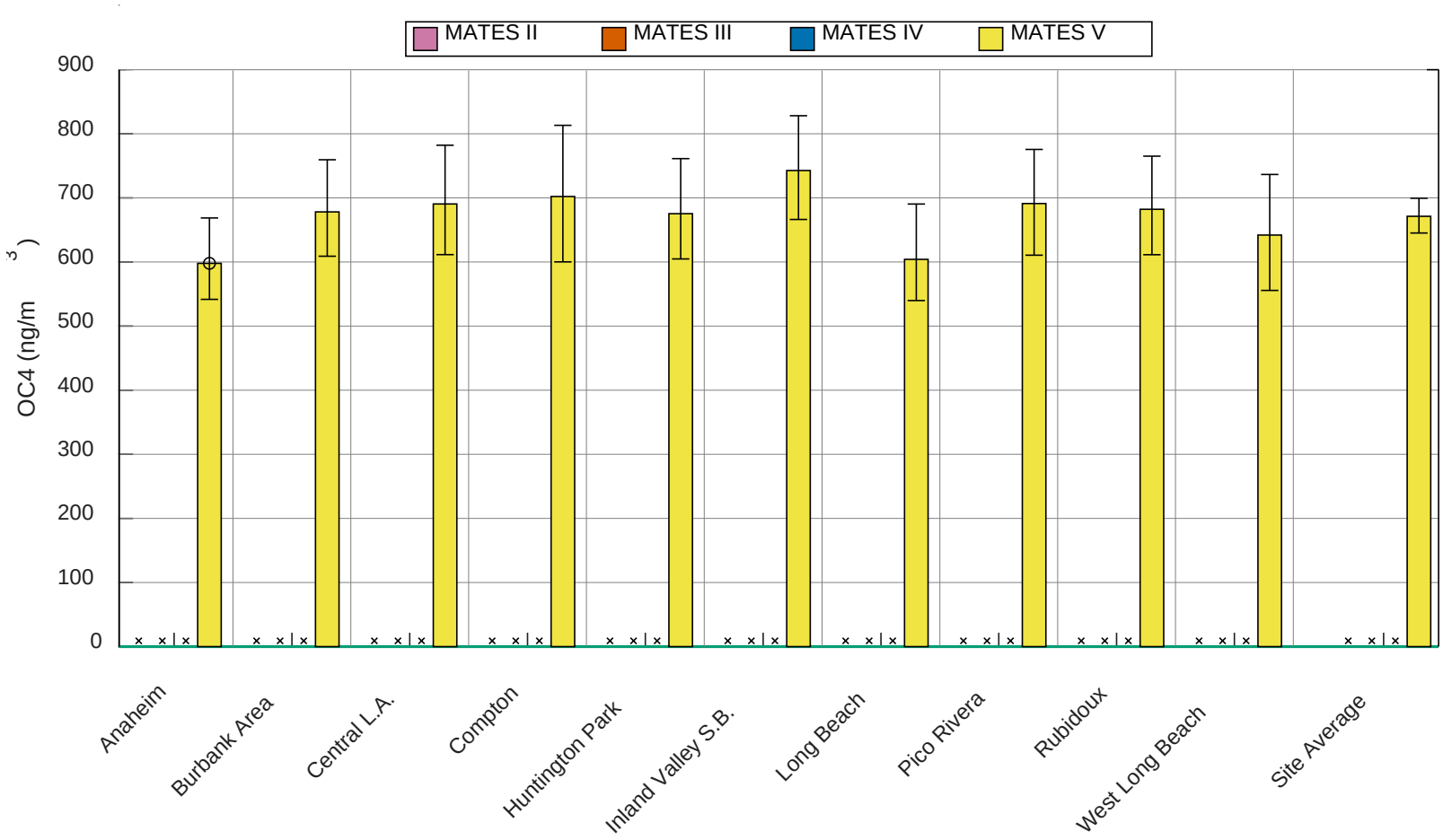


Figure IV-214. Annual Average Concentrations of OC4 in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

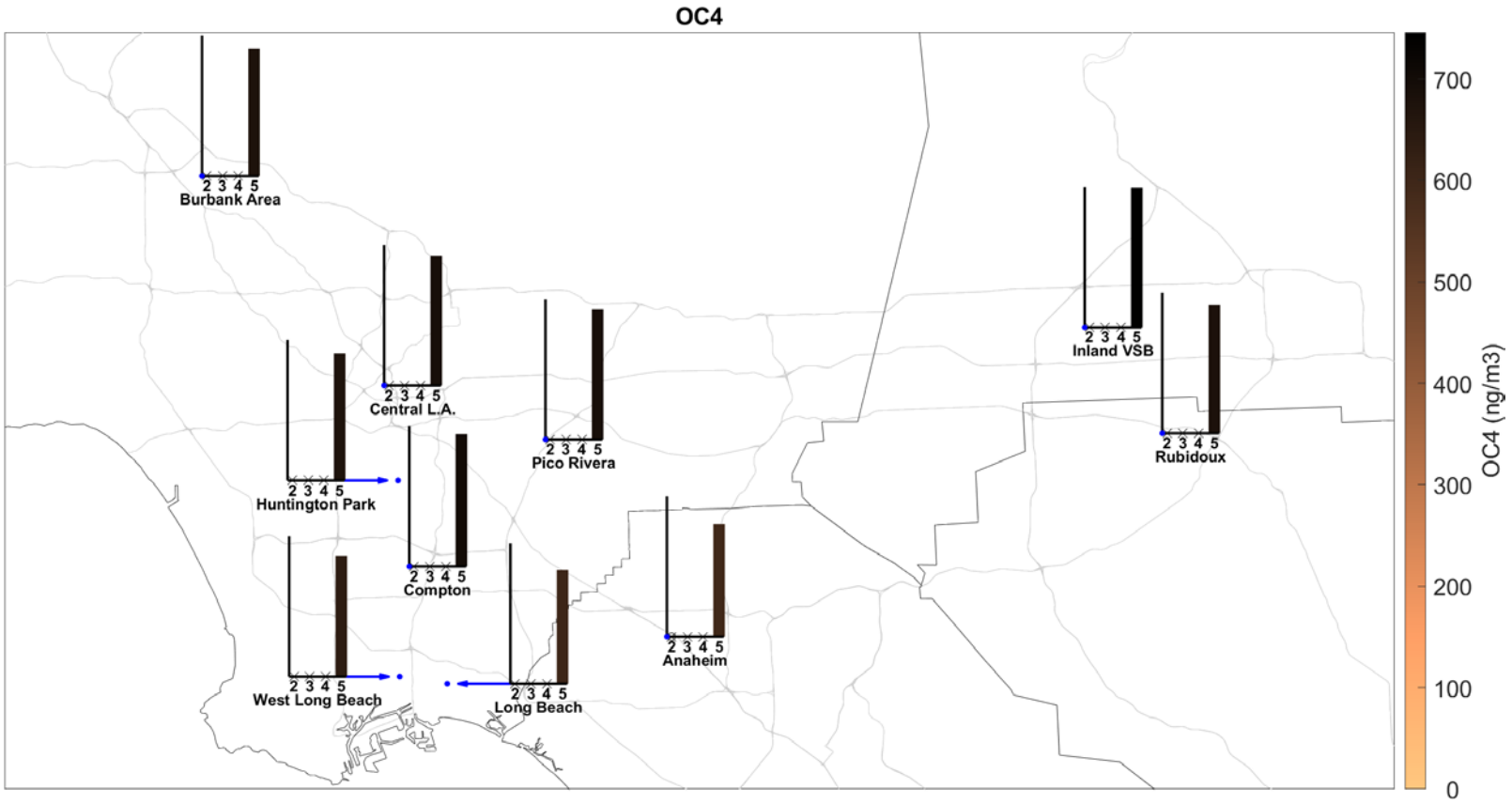


Figure IV-215. Geographic distribution of OC4 from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Organic Carbon

Table IV-110. Ambient Concentrations (ng/m^3) of Organic Carbon from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	6190	8140	7010	7990	8330	6500	7480	7060	6920	6600
95% CI LB	5830	7740	6590	7580	7590	6070	7130	6640	6490	6140
95% CI UB	6560	8540	7460	8380	9120	6960	7860	7540	7350	7140
N	242	241	235	236	118	228	240	116	235	228
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	17700	22300	23700	18000	25500	19800	22300	13800	22400	20000
MATES IV										
Average	3740	4740	4000	4840	4680	3590	4470	4680	4620	3670
95% CI LB	3360	4310	3530	4390	4240	3140	4100	4260	4250	3210
95% CI UB	4110	5180	4510	5310	5160	4060	4850	5090	4970	4180
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	1.7	0	0	0	0	0	0	0	0
Max	8000	9500	10000	11000	10000	11000	8100	10000	9800	9900
MATES V										
Average	3230	4000	4000	4720	4050	3020	4230	4240	4240	3430
95% CI LB	2810	3450	3390	4170	3540	2570	3700	3740	3710	2880
95% CI UB	3680	4560	4660	5290	4590	3550	4840	4810	4780	4050
N	56	59	61	60	60	61	61	59	59	55
% < MDL	0	0	0	0	0	0	0	0	1.7	0
Max	8800	11000	12000	11000	11000	11000	13500	12000	9900	11000

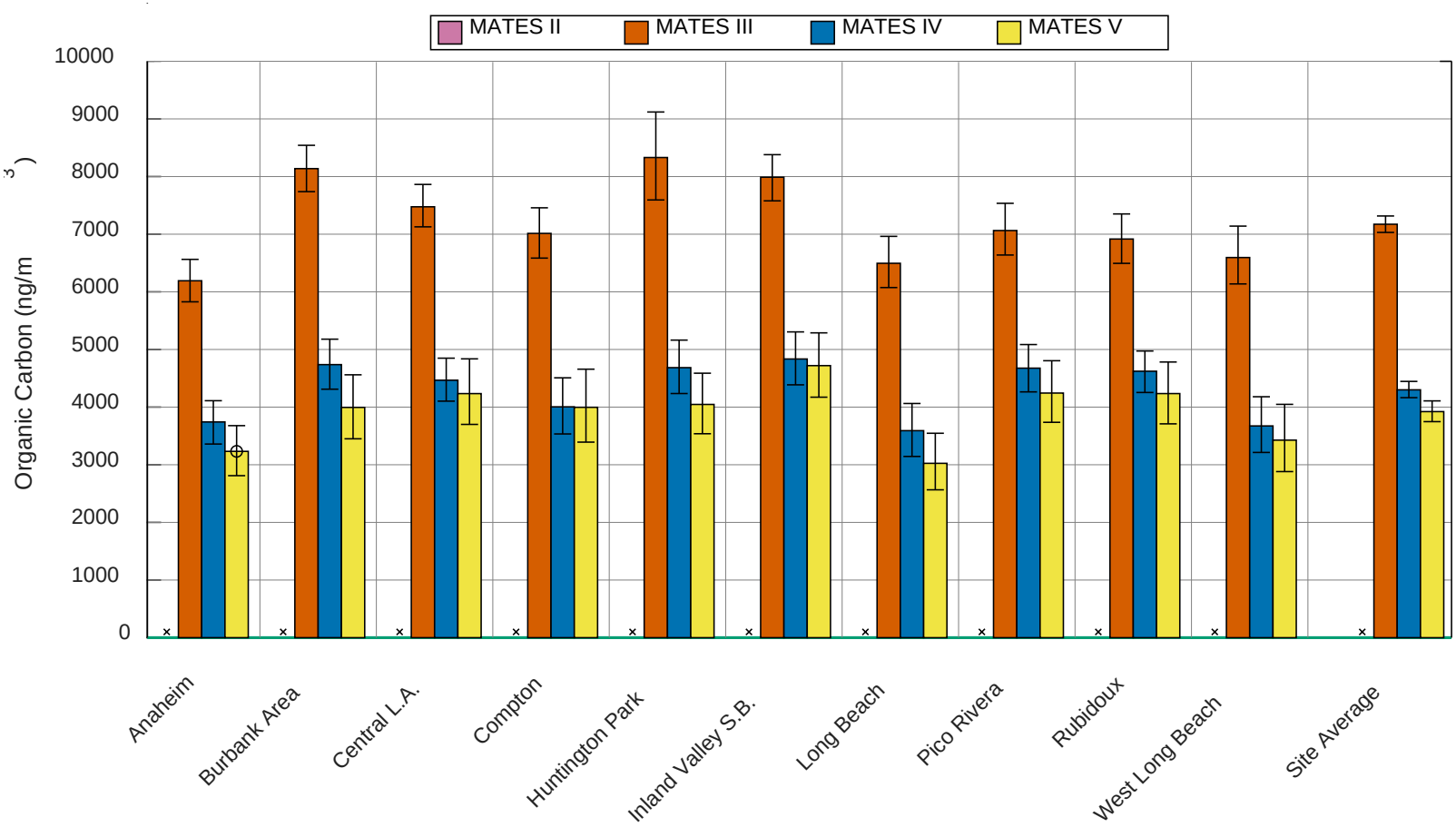


Figure IV-216. Annual Average Concentrations of Organic Carbon in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

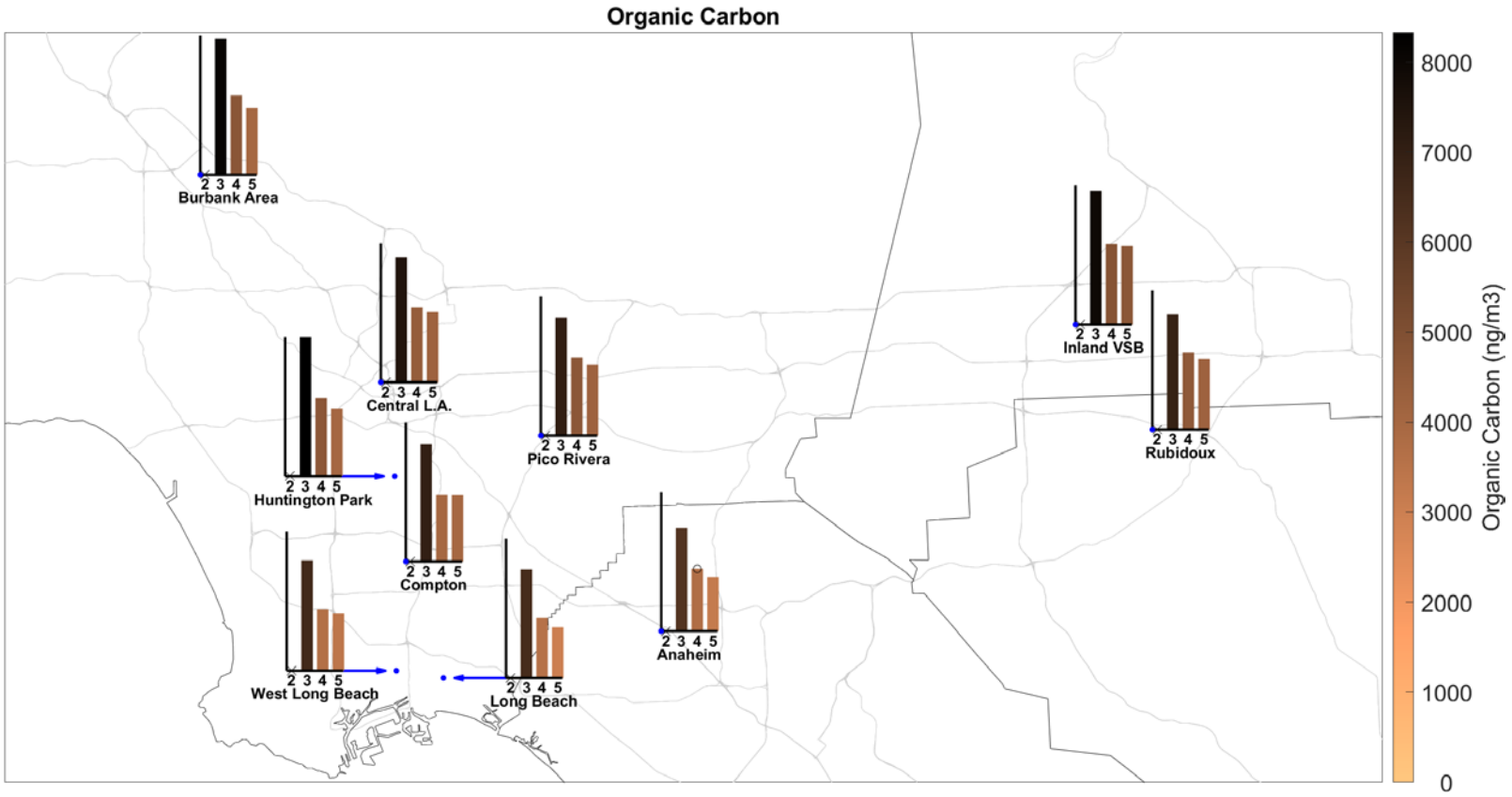


Figure IV-217. Geographic distribution of Organic Carbon from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Total Carbon

Table IV-111. Ambient Concentrations (ng/m^3) of Total Carbon from the PM2.5 Carbon analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	7550	10100	8720	10000	10500	7970	9320	9030	8570	8680
95% CI LB	7080	9570	8160	9500	9490	7430	8870	8430	8060	8040
95% CI UB	8030	10600	9310	10500	11500	8510	9790	9660	9100	9380
N	242	241	235	236	118	228	240	116	235	228
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	22600	28600	30800	21400	34000	24800	24500	18200	24600	26900
MATES IV										
Average	4640	6020	5060	6200	5970	4470	5700	6060	5750	4820
95% CI LB	4070	5330	4340	5580	5300	3810	5150	5470	5270	4070
95% CI UB	5240	6720	5860	6870	6710	5170	6270	6690	6230	5670
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	1.7	0	0	0	0	0	0	0	0
Max	12000	14000	15000	17000	15000	14000	12000	14000	12000	15000
MATES V										
Average	3680	4460	4720	5460	4730	3510	4920	4990	4890	4130
95% CI LB	3150	3840	3930	4790	4090	2930	4250	4330	4230	3420
95% CI UB	4230	5100	5630	6150	5400	4210	5690	5720	5610	4930
N	56	59	61	60	60	61	61	59	59	55
% < MDL	0	0	0	0	0	0	0	0	1.7	0
Max	11000	13000	17000	13000	12000	12000	16500	15000	14000	14000

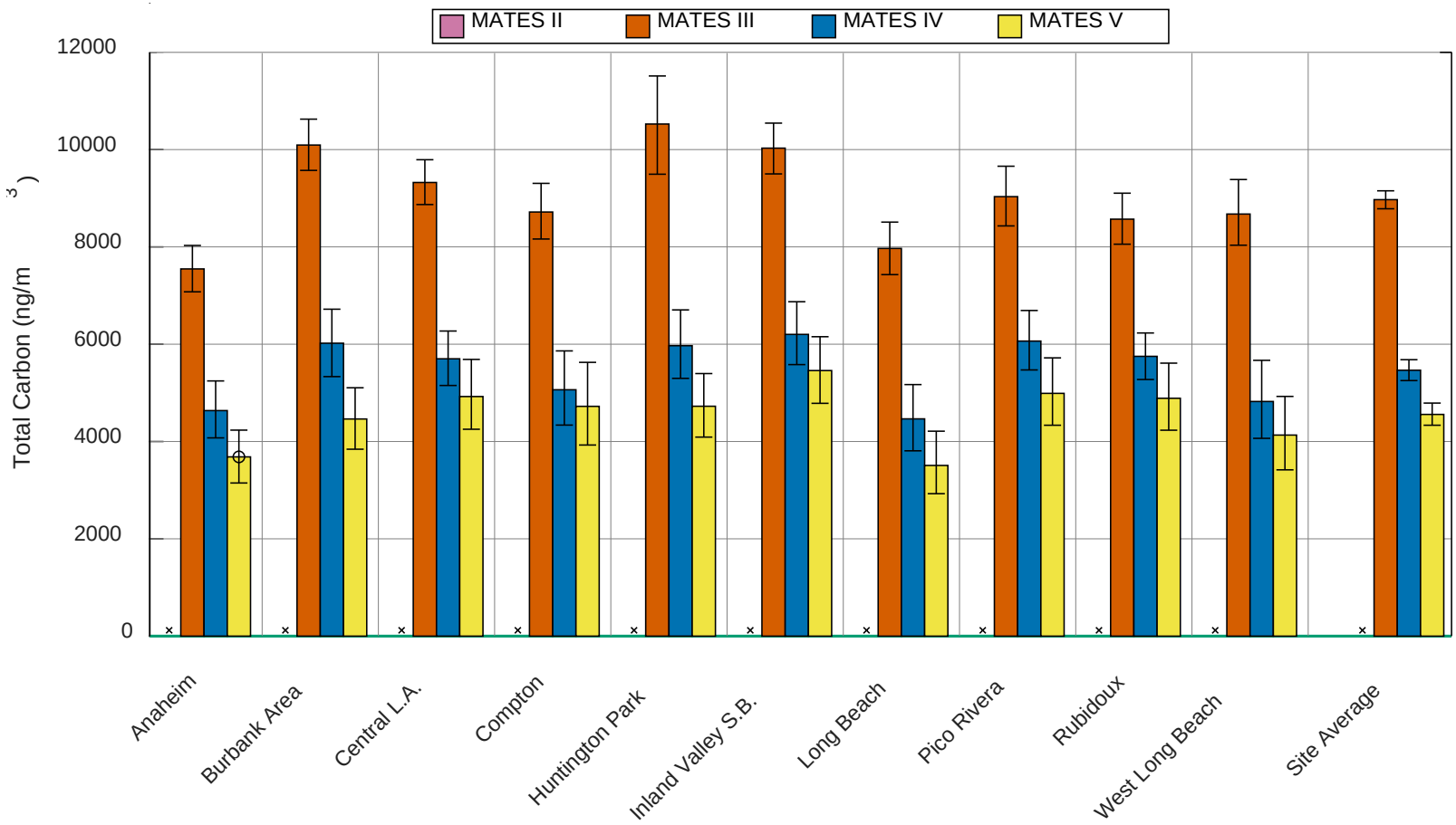


Figure IV-218. Annual Average Concentrations of Total Carbon in the PM2.5 Carbon Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

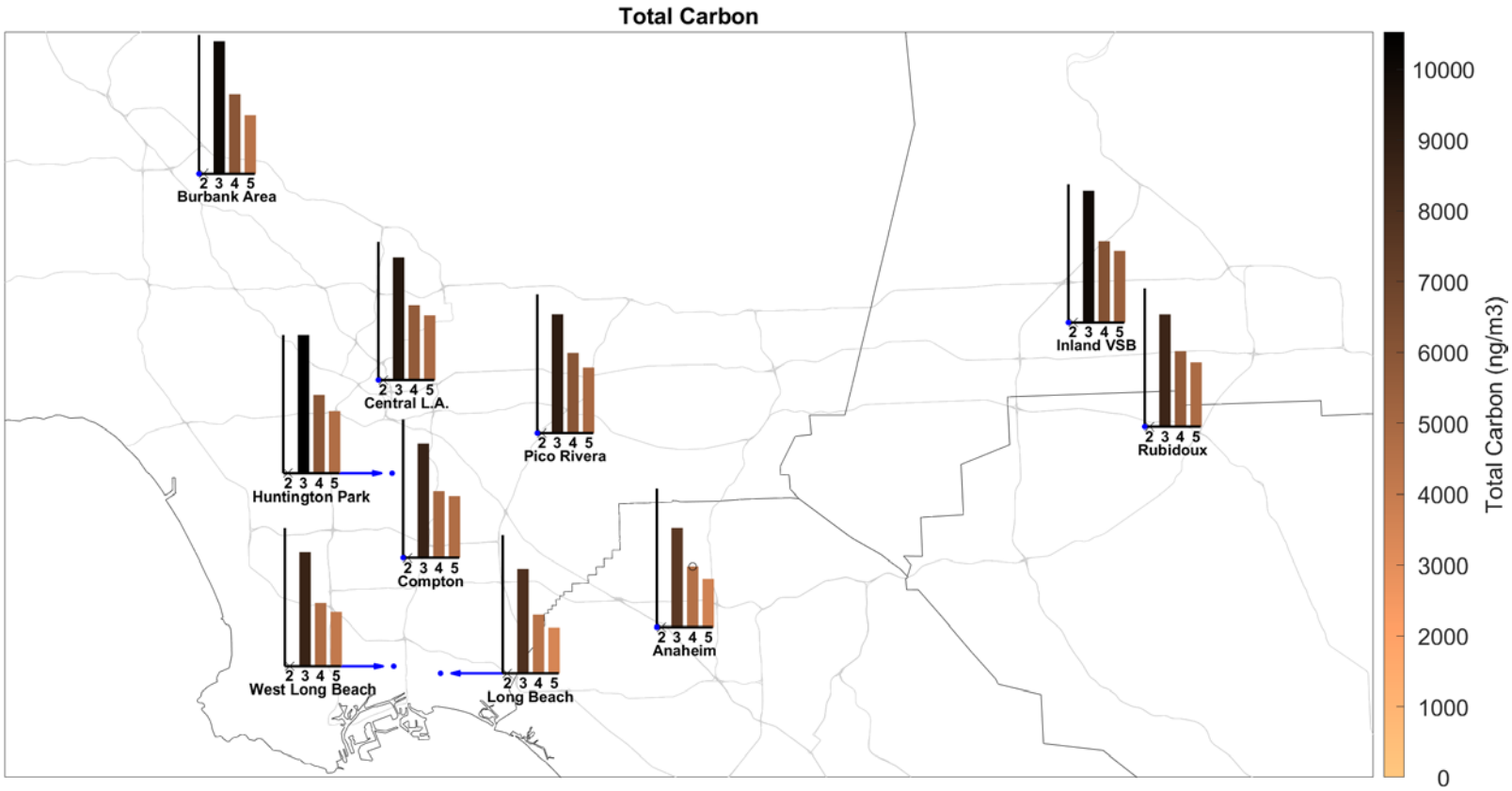


Figure IV-219. Geographic distribution of Total Carbon from the PM2.5 Carbon Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

PM2.5 Ions Analysis

Ammonium Ion

Table IV-112. Ambient Concentrations (ng/m^3) of Ammonium Ion from the PM2.5 Ions analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	1690	2100	1810	2300	1790	1780	2160	1730	2690	1690
95% CI LB	1450	1820	1580	2010	1440	1550	1880	1410	2370	1480
95% CI UB	1940	2390	2080	2620	2160	2050	2450	2060	3040	1910
N	242	241	234	236	118	228	239	116	234	226
% < MDL	9.5	7.9	8.5	7.6	12.7	10.5	9.2	9.5	11.1	8
Max	11300	11400	10300	21900	10300	11000	12200	9080	20600	9280
MATES IV										
Average	888	1300	1190	1210	1300	930	1310	1360	1400	888
95% CI LB	728	1060	978	967	1040	754	1050	1110	1160	722
95% CI UB	1060	1540	1400	1450	1580	1130	1560	1660	1660	1080
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	3.4	1.6	0	0	0	3.3	0	1.6	1.6
Max	3020	5330	4510	5180	4660	3430	4340	4930	4330	3360
MATES V										
Average	857			1050		727	1040		1080	
95% CI LB	690			879		589	809		918	
95% CI UB	1040			1230		863	1310		1270	
N	56	0	0	60	0	61	61	0	60	0
% < MDL	0			0		0	0		0	
Max	3190			3540		2500	6330		3780	

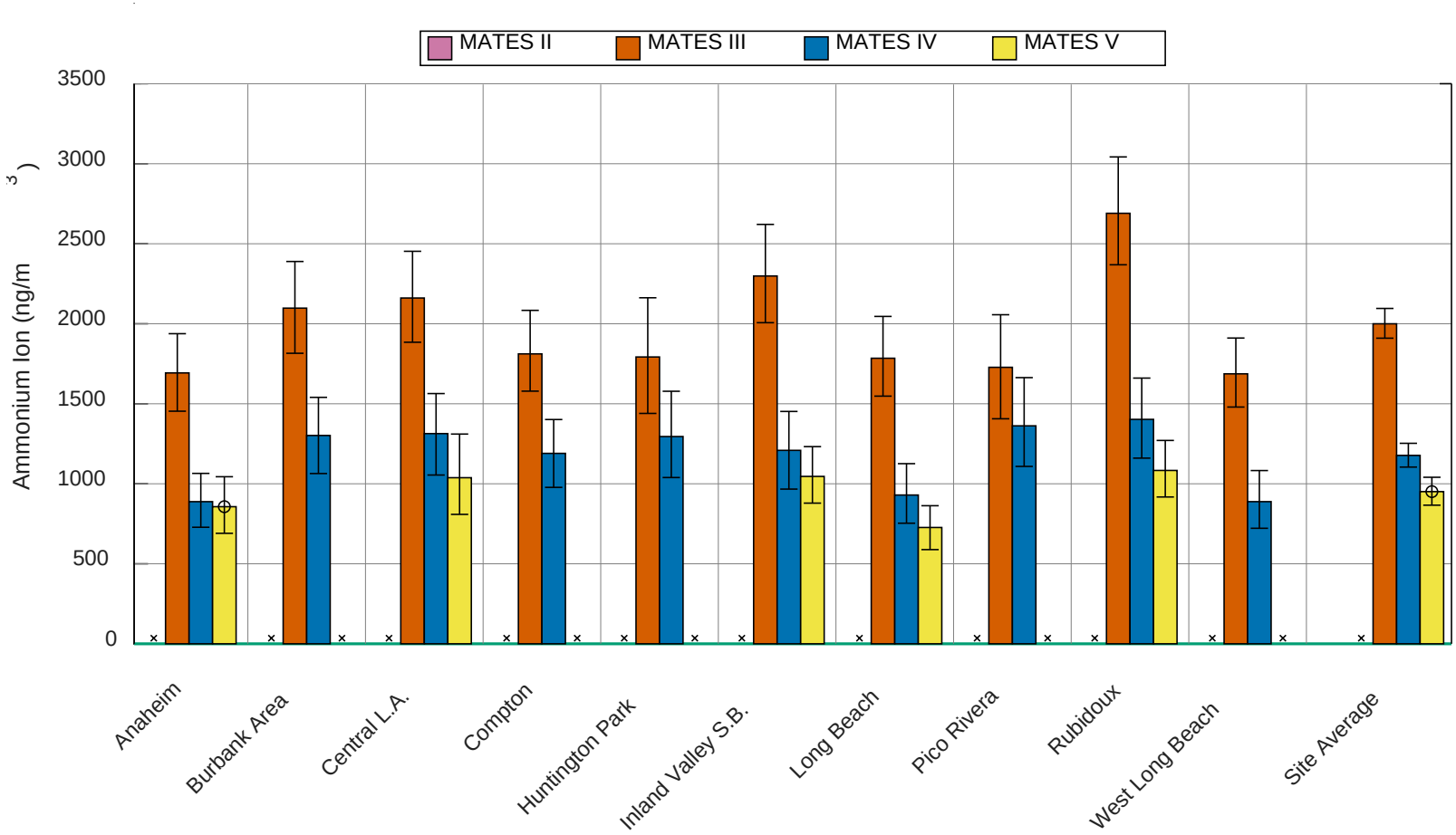


Figure IV-220. Annual Average Concentrations of Ammonium Ion in the PM2.5 Ions Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

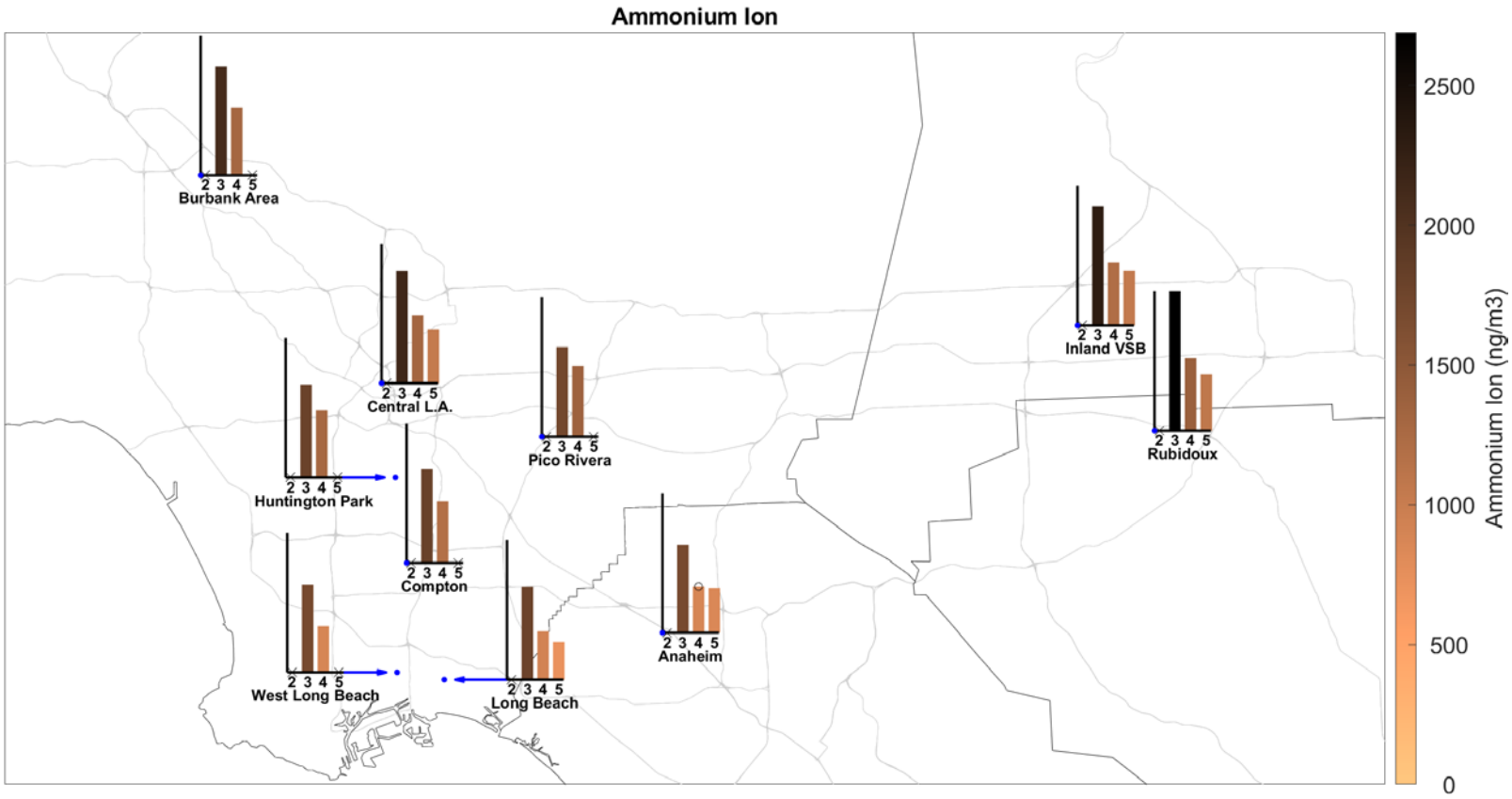


Figure IV-221. Geographic distribution of Ammonium Ion from the PM2.5 Ions Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Chloride

Table IV-113. Ambient Concentrations (ng/m^3) of Chloride from the PM2.5 Ions analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	466	383	532	358	551	540	427	545	403	487
95% CI LB	428	354	490	326	497	497	398	480	369	448
95% CI UB	505	411	578	395	607	589	456	610	439	532
N	236	238	230	232	115	226	236	115	229	224
% < MDL	9.3	11.3	5.2	23.3	5.2	4.9	7.2	4.3	19.7	5.4
Max	2090	1230	2400	2340	1700	2870	1330	1850	1570	2590
MATES IV										
Average	187	185	241	169	234	212	189	323	166	236
95% CI LB	169	163	197	157	202	184	170	212	154	187
95% CI UB	211	214	299	182	273	244	213	473	182	306
N	59	59	61	60	59	61	60	59	61	61
% < MDL	62.7	66.1	47.5	80	39	52.5	51.7	49.2	78.7	52.5
Max	650	840	1370	400	890	680	640	3260	490	1820
MATES V										
Average	194			163		226	187		166	
95% CI LB	173			157		200	172		160	
95% CI UB	218			173		256	205		173	
N	56	0	0	60	0	61	61	0	60	0
% < MDL	57.1			76.7		36.1	50.8		65	
Max	540			310		840	420		270	

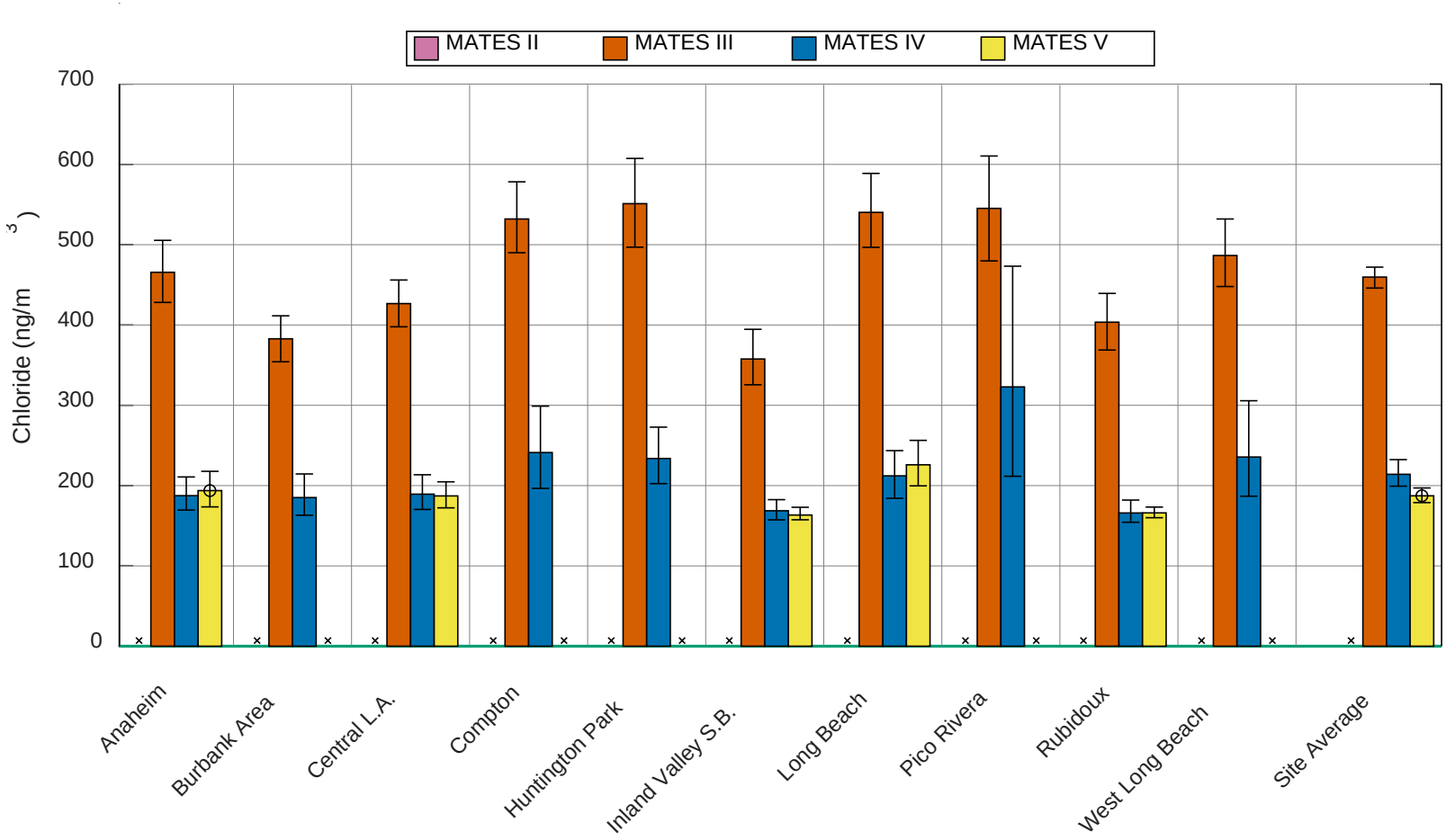


Figure IV-222. Annual Average Concentrations of Chloride in the PM2.5 Ions Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

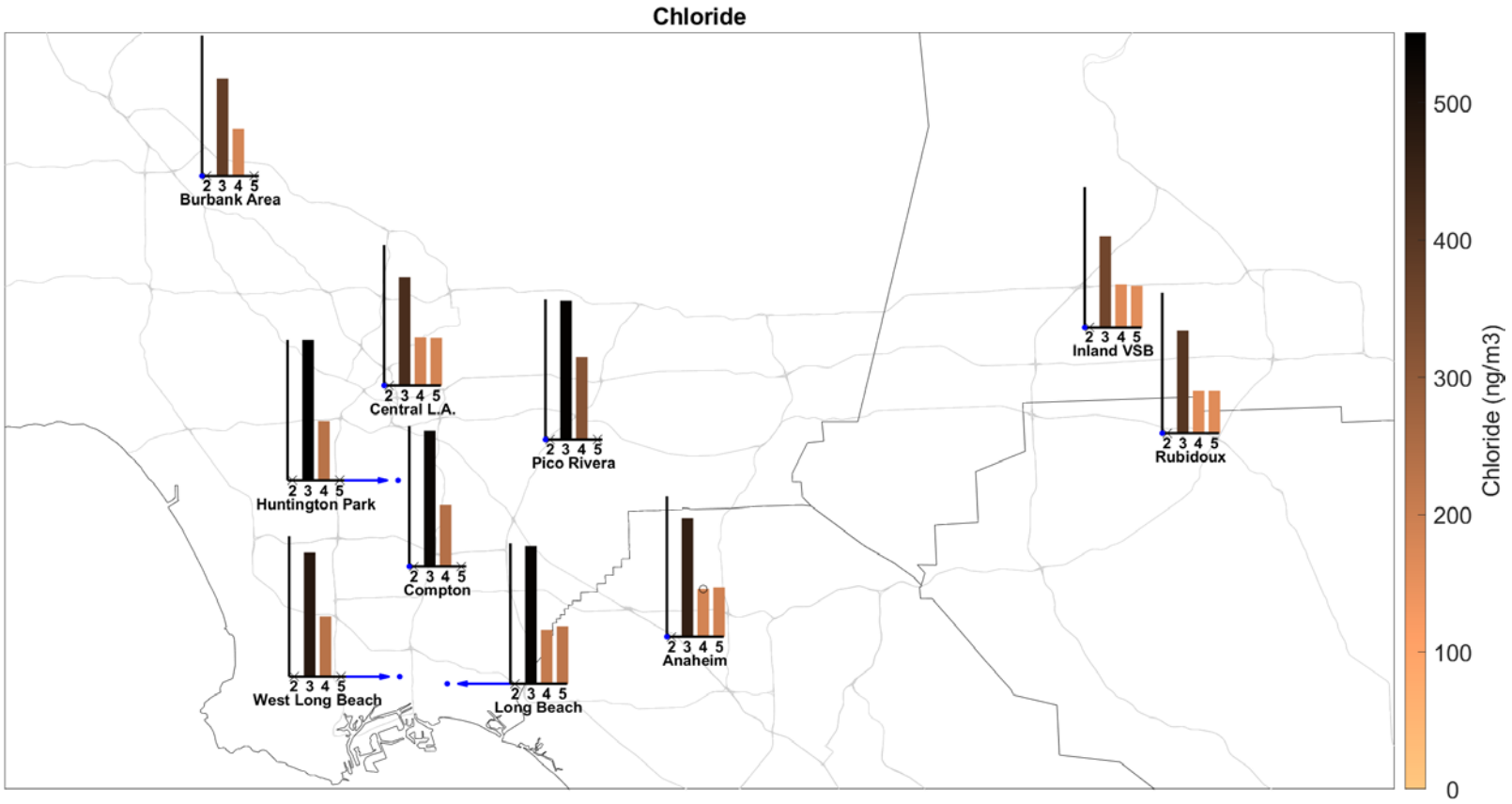


Figure IV-223. Geographic distribution of Chloride from the PM2.5 Ions Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Nitrate

Table IV-114. Ambient Concentrations (ng/m^3) of Nitrate from the PM2.5 Ions analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	4360	5520	4400	6650	5420	3990	5620	5450	7950	3480
95% CI LB	3870	4960	3920	5910	4620	3580	5000	4670	7080	3110
95% CI UB	4900	6230	4930	7450	6260	4450	6300	6310	8880	3890
N	236	238	230	232	115	226	236	115	229	224
% < MDL	0.4	1.7	0.4	0	0.9	0.9	0	0.9	0.4	0.4
Max	29000	28900	25500	52800	24100	26200	30400	25900	55600	21400
MATES IV										
Average	1640	2510	1950	2510	2430	1650	2460	2240	2730	1500
95% CI LB	1320	2030	1570	1940	1940	1350	1970	1830	2200	1210
95% CI UB	2010	3010	2380	3160	2990	1990	2980	2680	3280	1830
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	1.7	1.6	0	0	1.6	3.3	0	1.6	1.6
Max	6630	11000	9300	11500	10200	6360	8550	7350	9950	5970
MATES V										
Average	1860			2590		1640	2430		2580	
95% CI LB	1420			2010		1240	1760		2030	
95% CI UB	2400			3240		2120	3230		3190	
N	56	0	0	60	0	61	61	0	60	0
% < MDL	0			0		0	0		0	
Max	9480			12900		11300	17000		10700	

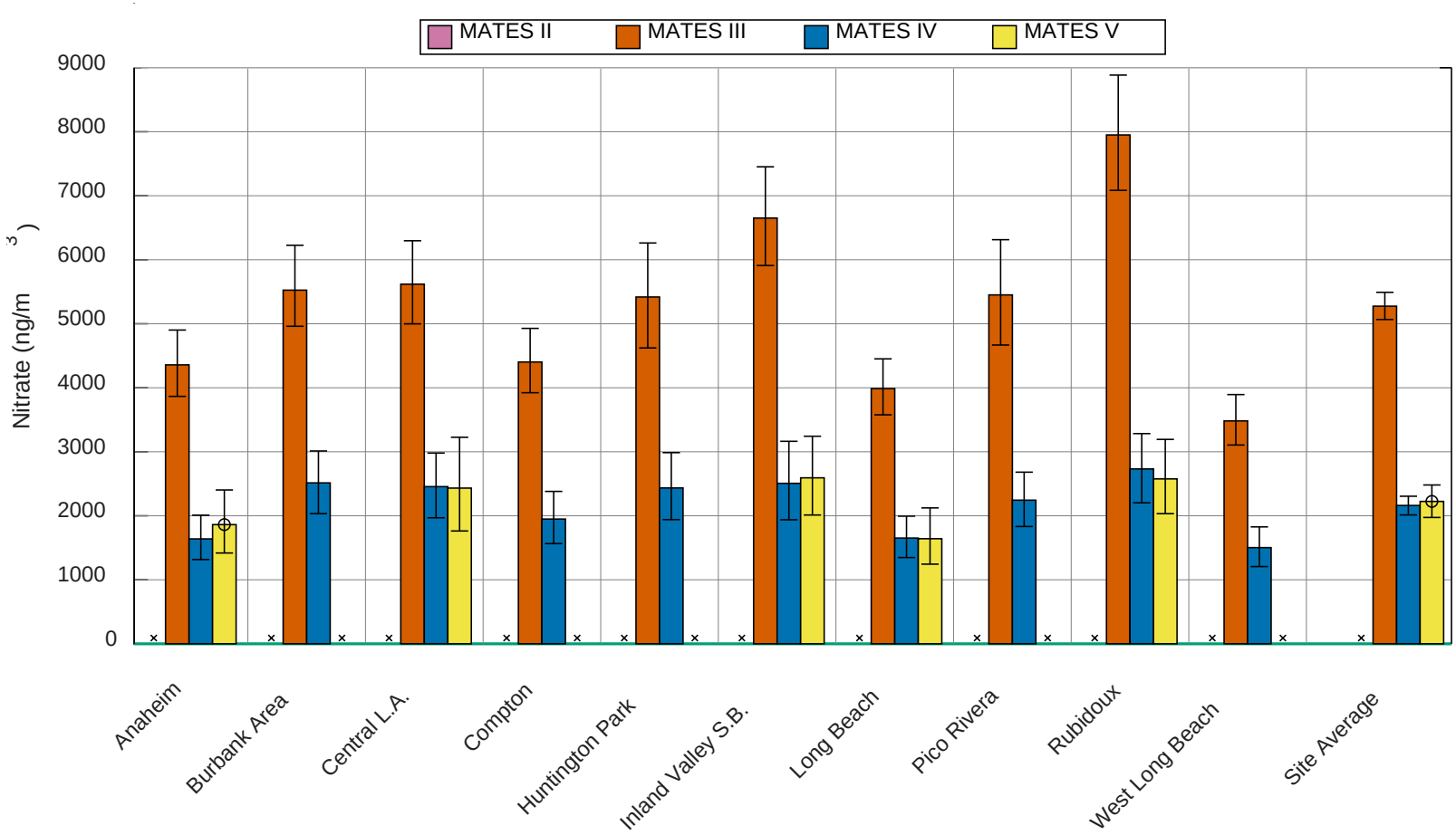


Figure IV-224. Annual Average Concentrations of Nitrate in the PM2.5 Ions Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

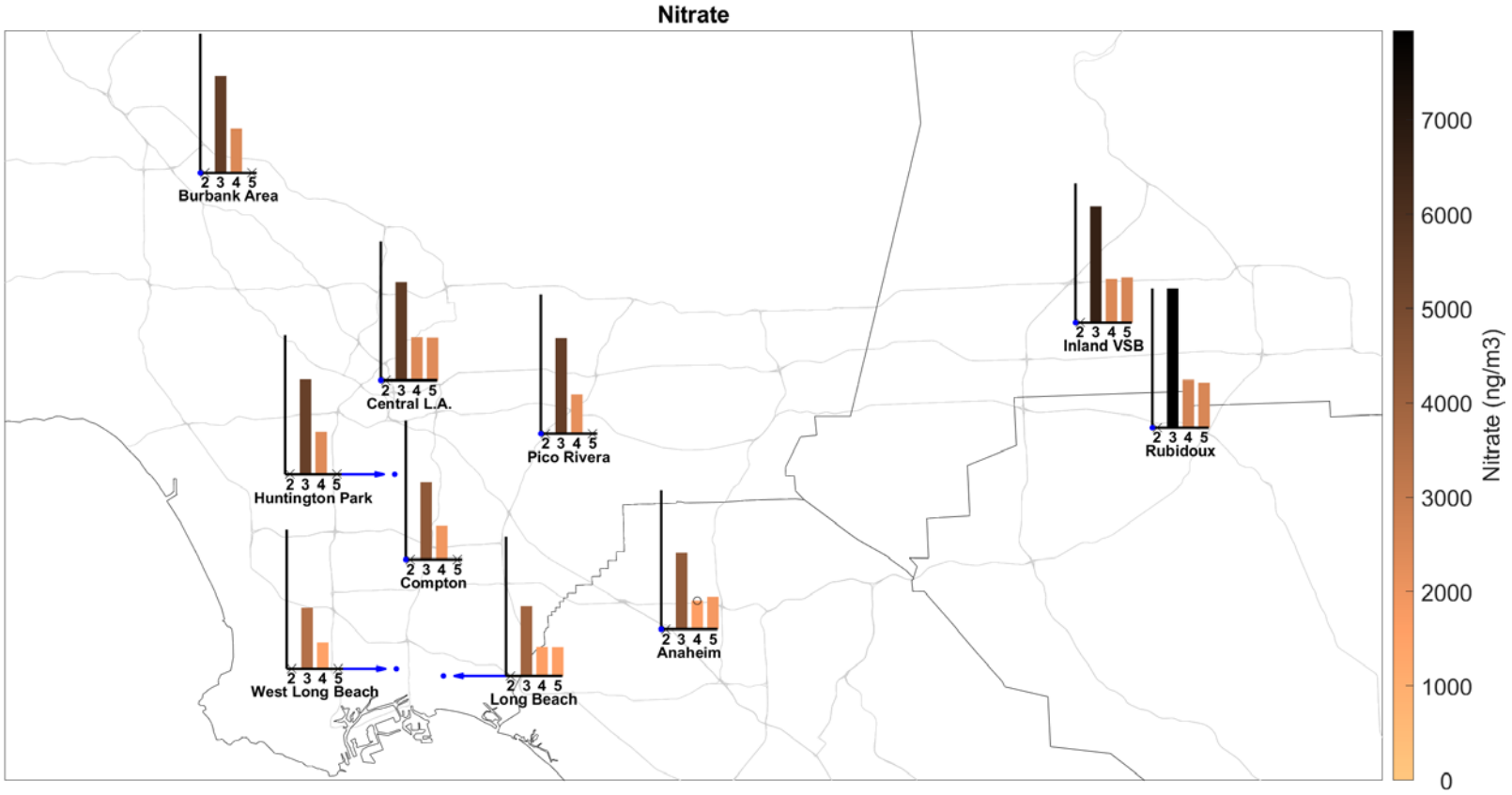


Figure IV-225. Geographic distribution of Nitrate from the PM2.5 Ions Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Potassium Ion

Table IV-115. Ambient Concentrations (ng/m^3) of Potassium Ion from the PM2.5 Ions analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	138			97		89.7	95.5		128	
95% CI LB	120			88.6		84.2	86.1		115	
95% CI UB	157			107		96.3	108		142	
N	56	0	0	60	0	61	61	0	60	0
% < MDL	19.6			63.3		78.7	77		33.3	
Max	460			310		200	310		330	

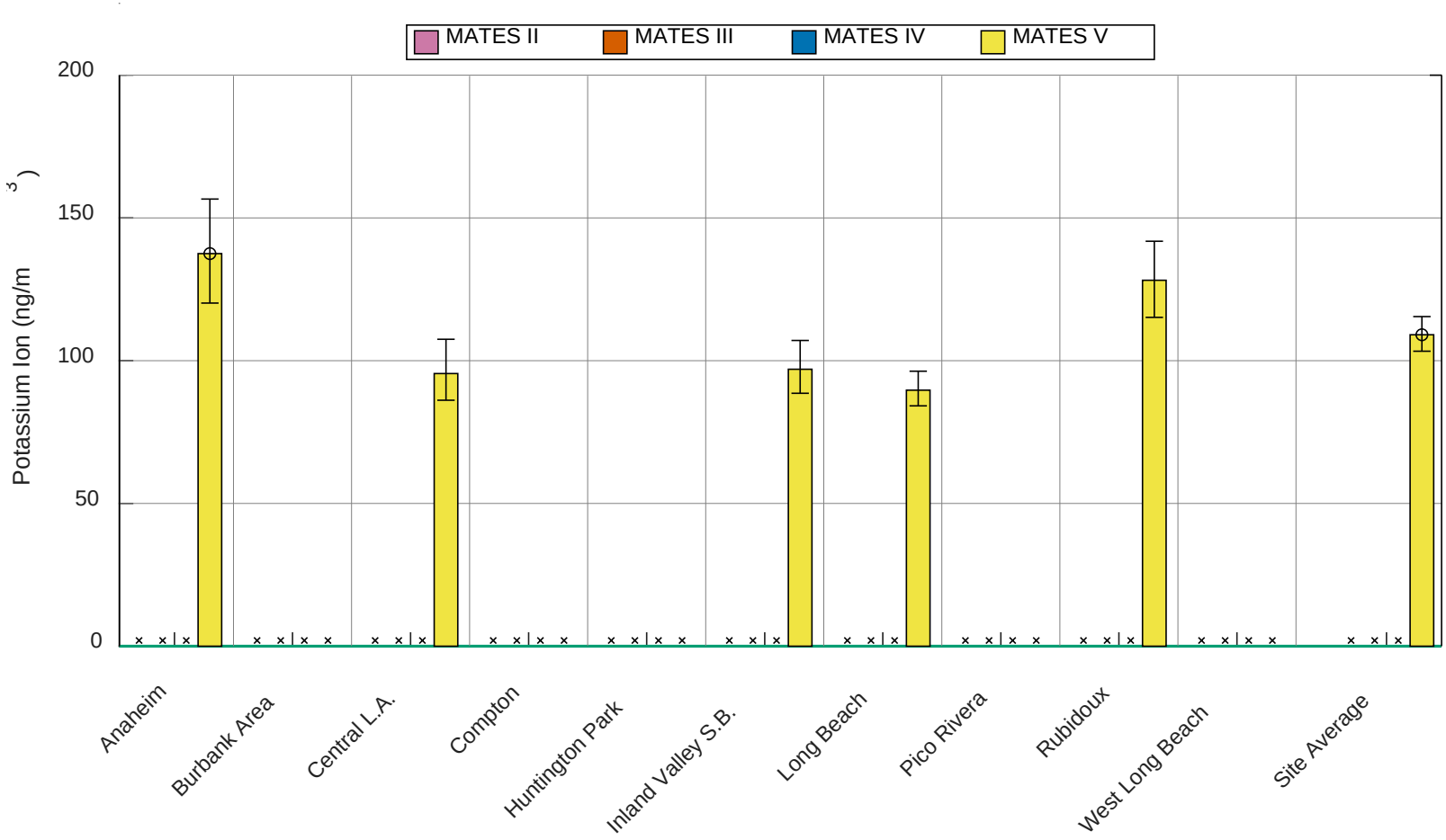


Figure IV-226. Annual Average Concentrations of Potassium Ion in the PM2.5 Ions Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

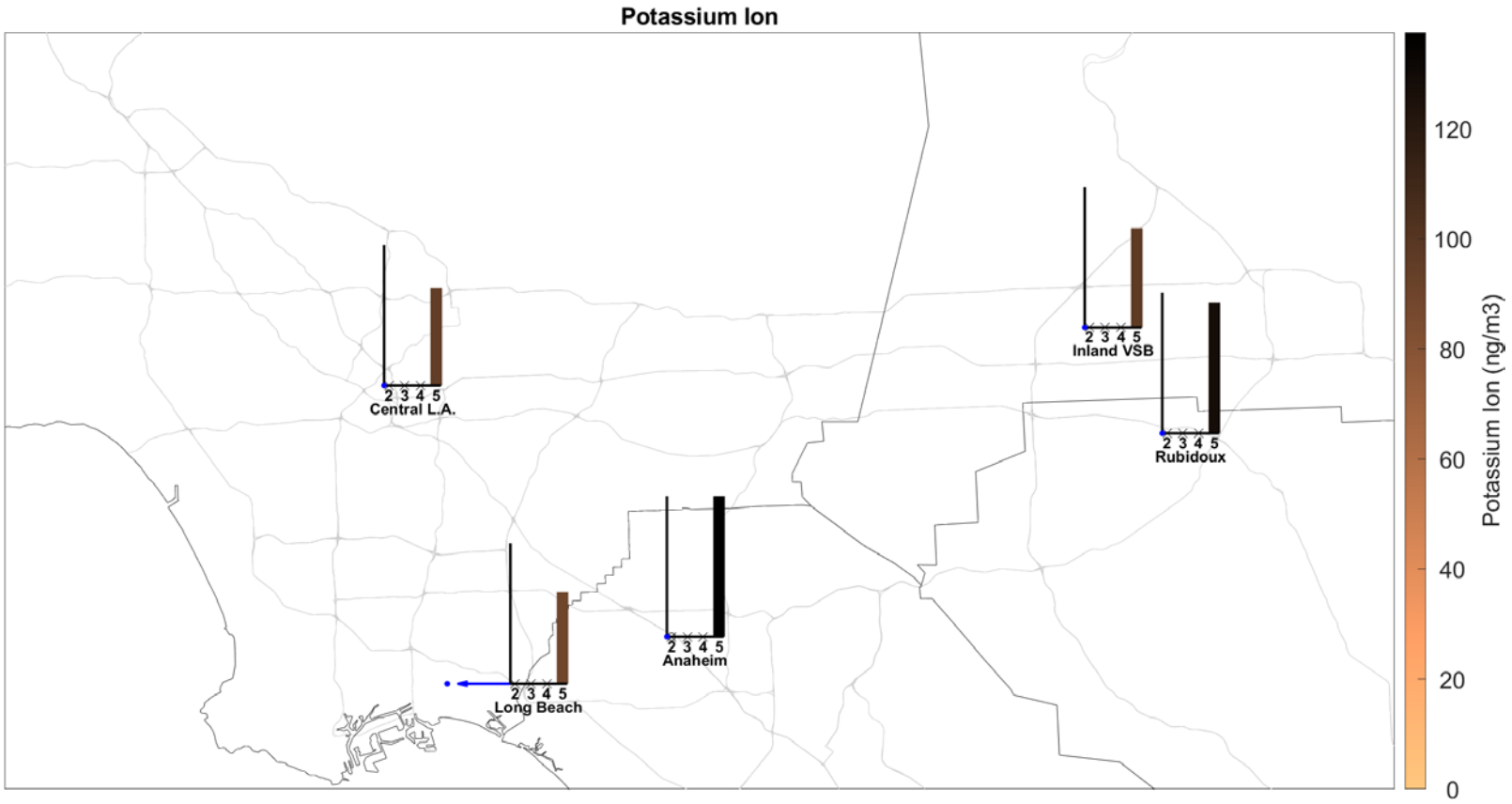


Figure IV-227. Geographic distribution of Potassium Ion from the PM2.5 Ions Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Sodium

Table IV-116. Ambient Concentrations (ng/m^3) of Sodium from the PM2.5 Ions analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	487	410	445	381	705	516	429	700	378	545
95% CI LB	411	335	372	309	598	441	362	596	307	460
95% CI UB	568	489	517	458	818	599	498	809	467	634
N	242	241	234	236	118	228	239	116	234	226
% < MDL	40.1	43.6	38	50	11.9	32	38.5	12.9	51.7	33.6
Max	3600	3210	2710	3040	2680	3430	2360	2560	3870	3820
MATES IV										
Average	593	548	487	431	583	650	474	550	416	611
95% CI LB	496	455	393	346	468	538	377	441	336	507
95% CI UB	694	644	583	520	706	768	579	666	500	721
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	3.4	1.6	0	0	0	3.3	0	1.6	1.6
Max	1710	1480	1700	1470	1910	2150	1720	1670	1530	1680
MATES V										
Average	689			280		467	357		414	
95% CI LB	617			222		382	292		349	
95% CI UB	765			344		552	426		480	
N	56	0	0	60	0	61	61	0	60	0
% < MDL	0			1.7		0	0		0	
Max	1680			1020		1710	1180		1050	

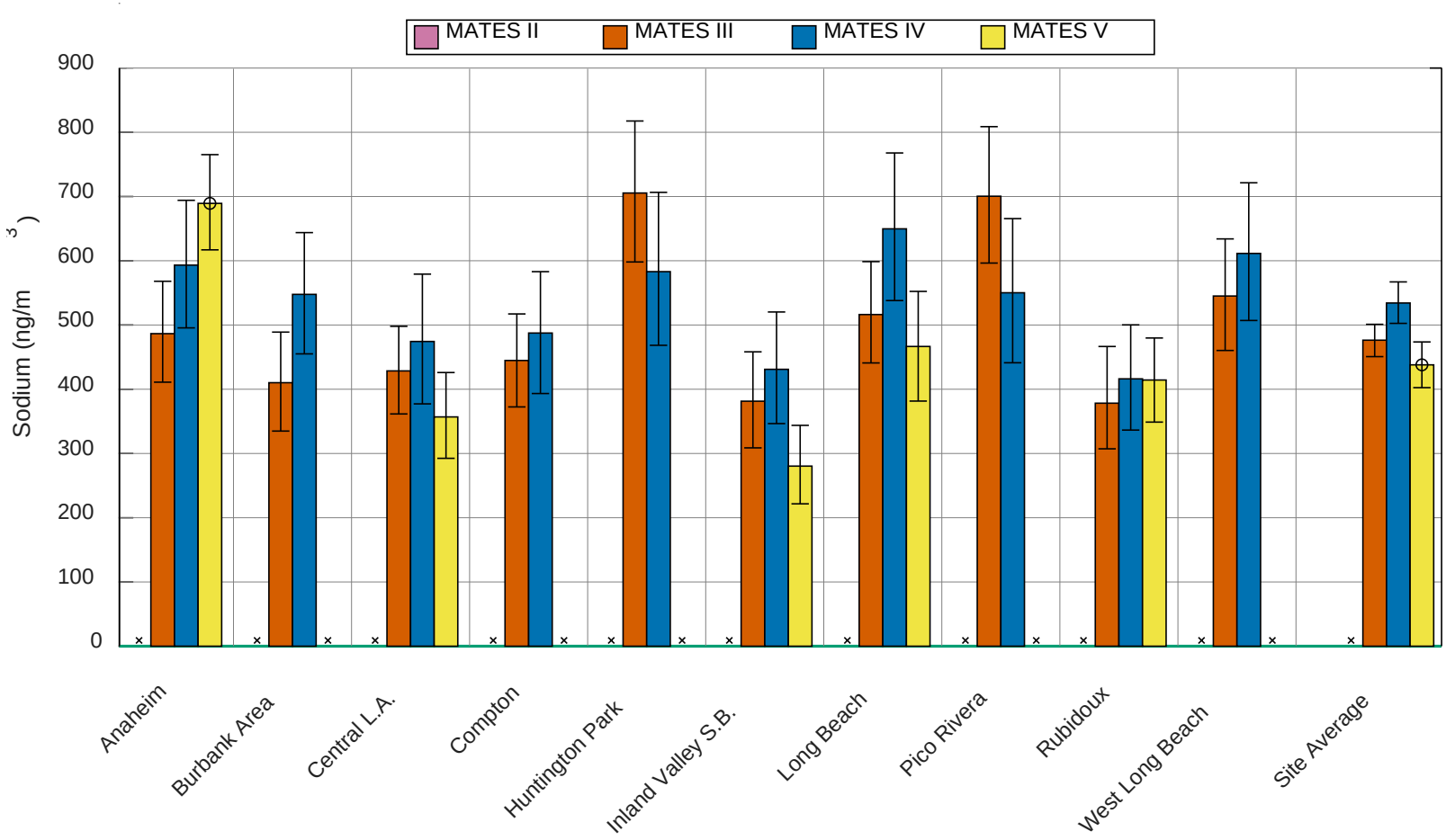


Figure IV-228. Annual Average Concentrations of Sodium in the PM2.5 Ions Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

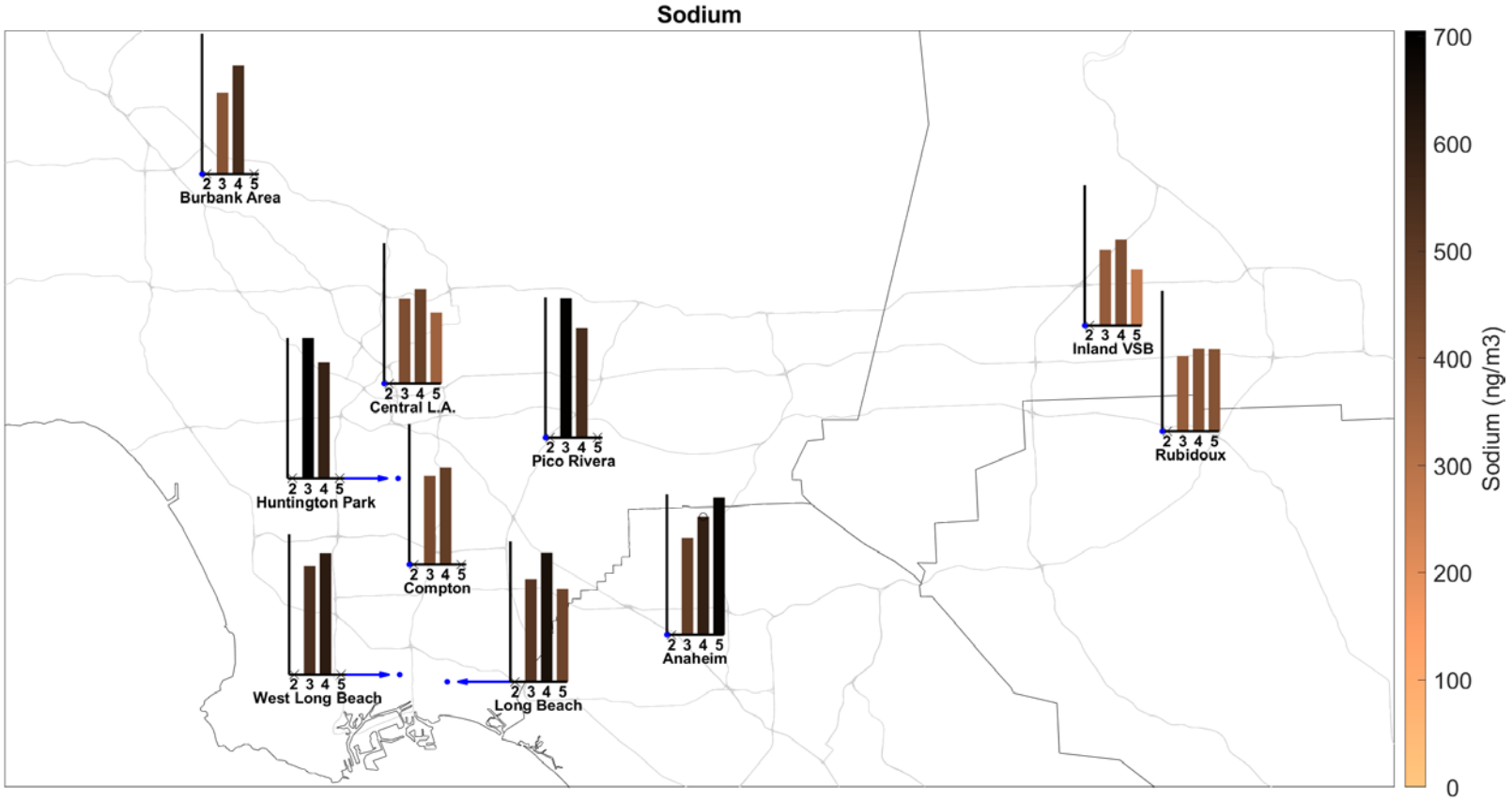


Figure IV-229. Geographic distribution of Sodium from the PM2.5 Ions Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Sulfate

Table IV-117. Ambient Concentrations (ng/m^3) of Sulfate from the PM2.5 Ions analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	3620	3560	4060	3410	4560	4470	3960	4300	3310	4710
95% CI LB	3270	3190	3660	3020	3960	4040	3560	3740	2940	4240
95% CI UB	3980	3920	4470	3830	5190	4890	4380	4870	3740	5170
N	236	238	230	232	115	226	236	115	229	224
% < MDL	5.9	7.1	4.8	4.7	0.9	2.7	3	1.7	4.4	4.9
Max	14300	13300	15800	30800	15200	18100	18300	16500	27900	20100
MATES IV										
Average	1460	1530	1540	1410	1660	1600	1500	1550	1300	1610
95% CI LB	1220	1270	1290	1170	1360	1350	1230	1290	1070	1370
95% CI UB	1700	1810	1790	1670	1950	1870	1790	1840	1540	1880
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	1.7	1.6	1.7	0	0	3.3	0	1.6	1.6
Max	3600	3810	4160	3790	4580	3950	4240	4230	3050	3980
MATES V										
Average	1130			1150		1270	1290		1060	
95% CI LB	946			967		1070	1050		887	
95% CI UB	1330			1350		1470	1530		1240	
N	56	0	0	60	0	61	61	0	60	0
% < MDL	0			1.7		0	0		3.3	
Max	2740			2790		3360	3780		2480	

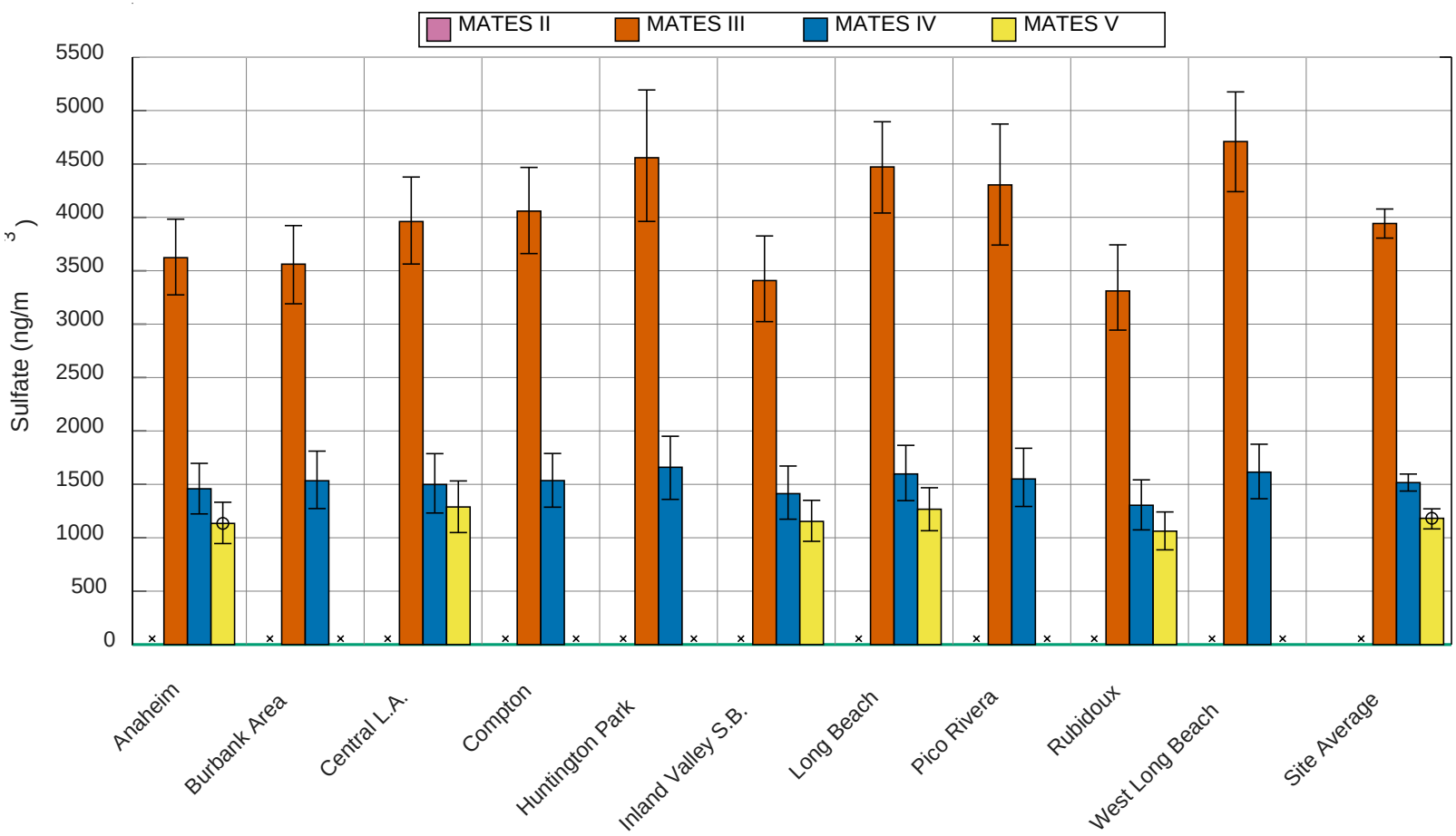


Figure IV-230. Annual Average Concentrations of Sulfate in the PM2.5 Ions Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

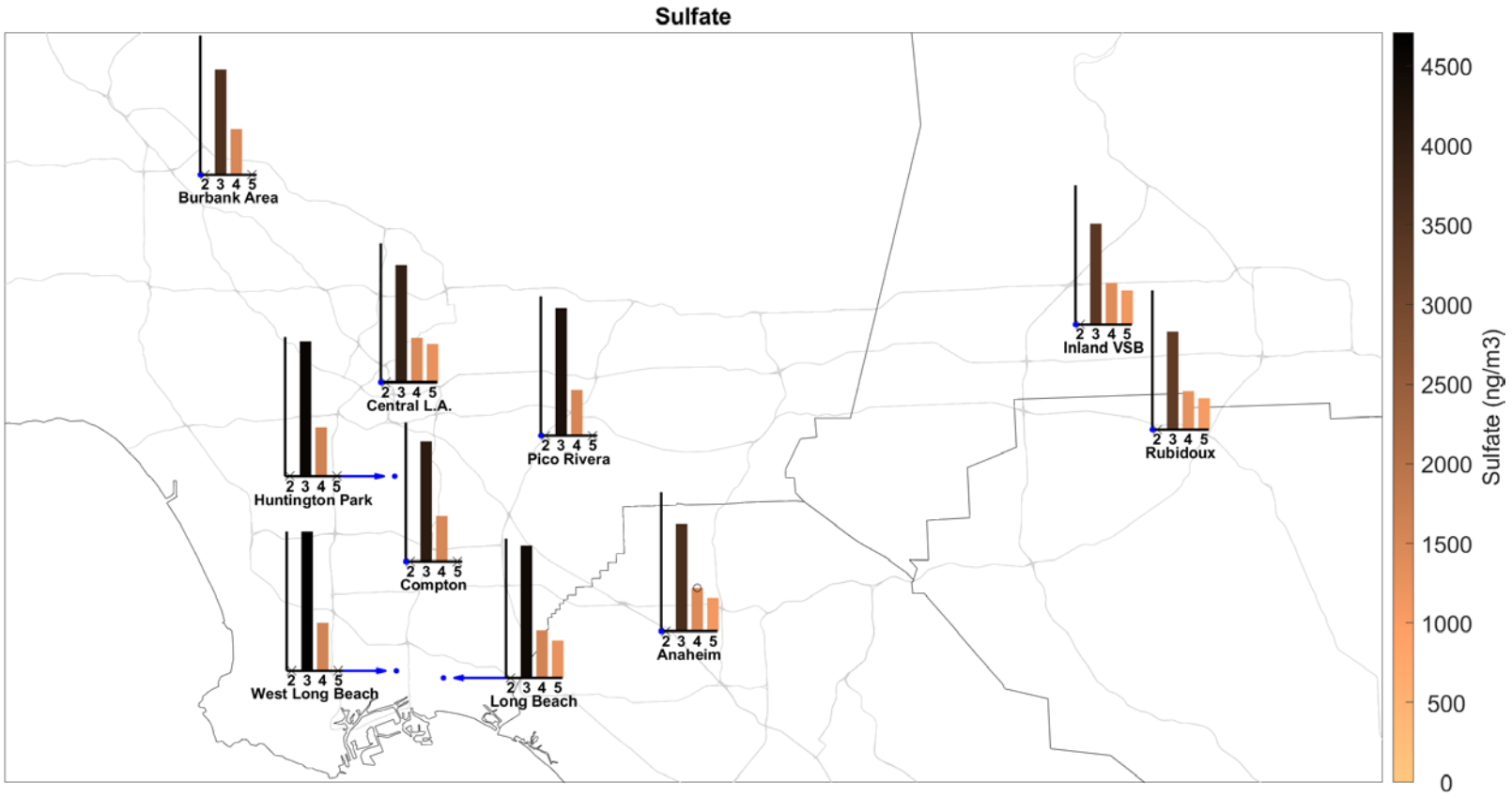


Figure IV-231. Geographic distribution of Sulfate from the PM2.5 Ions Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

PM2.5 Metals Analysis

Aluminum

Table IV-118. Ambient Concentrations (ng/m^3) of Aluminum from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	61.1	100	75.3	121	55.8	92.2	79.8	61.2	81.3	107
95% CI LB	47.5	67.9	58.3	98.2	37.8	73.4	61.3	41.3	63.1	85.4
95% CI UB	76.4	143	94.1	146	76.6	113	101	84.9	102	130
N	240	239	234	238	117	228	237	116	236	228
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	773	4360	1100	926	673	898	1130	786	1300	951
MATES IV										
Average	56.8	53.9	54.1	75.7	59	57.7	59.2	59.3	65	73.7
95% CI LB	50.3	49	46.4	65.4	50.4	49.5	50.9	53.1	57.8	62
95% CI UB	64.1	59.2	64.2	87.8	71.9	67	68.9	65.5	73.3	87.2
N	59	59	61	60	59	61	60	59	61	61
% < MDL	61	50.8	67.2	26.7	59.3	54.1	56.7	49.2	42.6	50.8
Max	176	119	286	286	317	285	214	130	161	290
MATES V										
Average	48.7	49.1	49.6	62.9	52.9	13.2, 47[a]	46.5	54.5	76.2	54.8
95% CI LB	45.1	44.9	45.9	55.2	46.1	6.21[a]	43.9	49.3	60.2	48.3
95% CI UB	53.1	54.3	54.1	72.2	60.8	52.8[a]	49.6	60.4	99.2	62.1
N	54	59	61	60	60	61[a]	61	59	56	57
% < MDL	72.2	67.8	70.5	43.3	70	80.3[a]	75.4	49.2	42.9	54.4
Max	113	144	114	242	171	185[a]	99	157	566	148

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

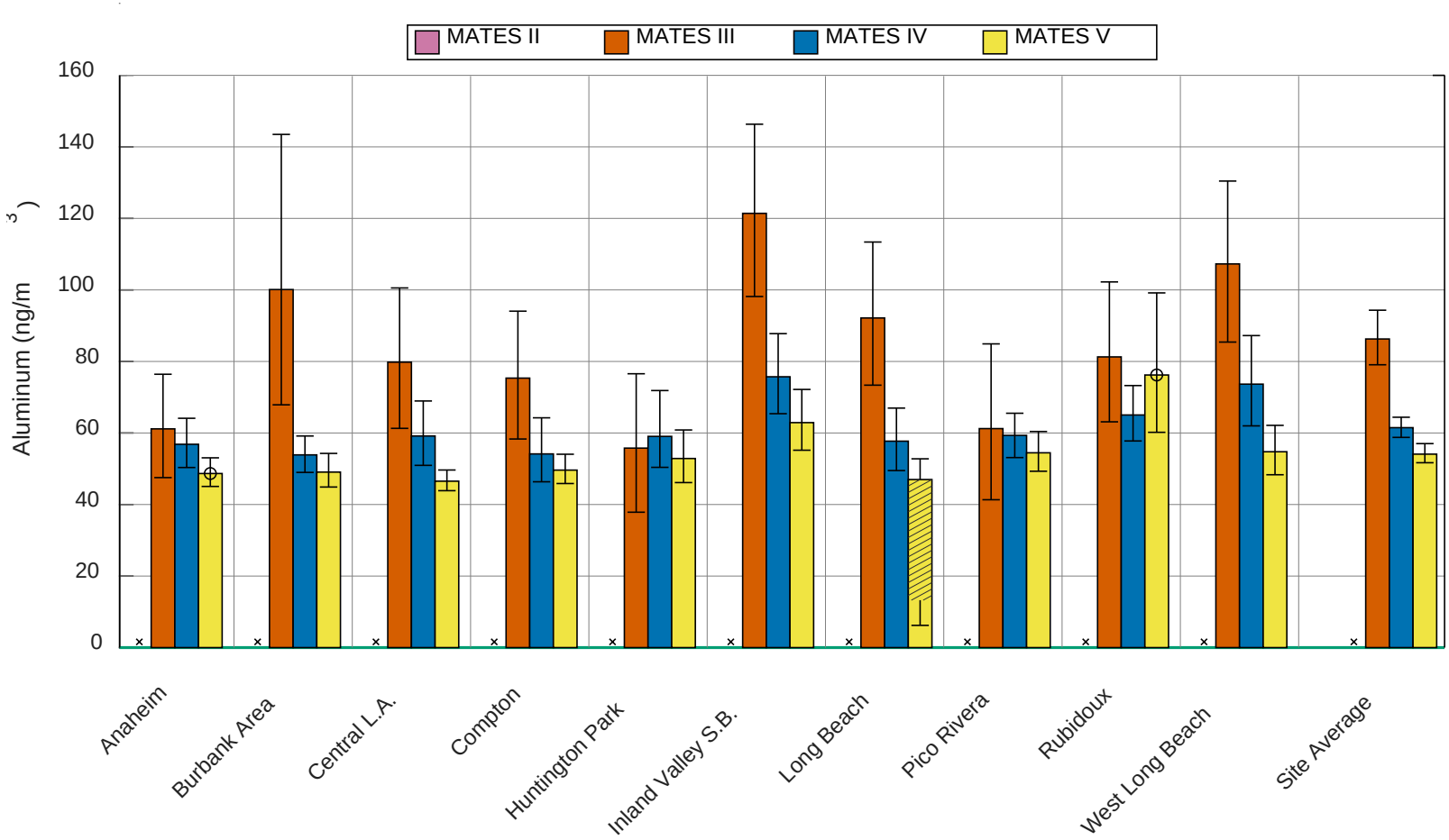


Figure IV-232. Annual Average Concentrations of Aluminum in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

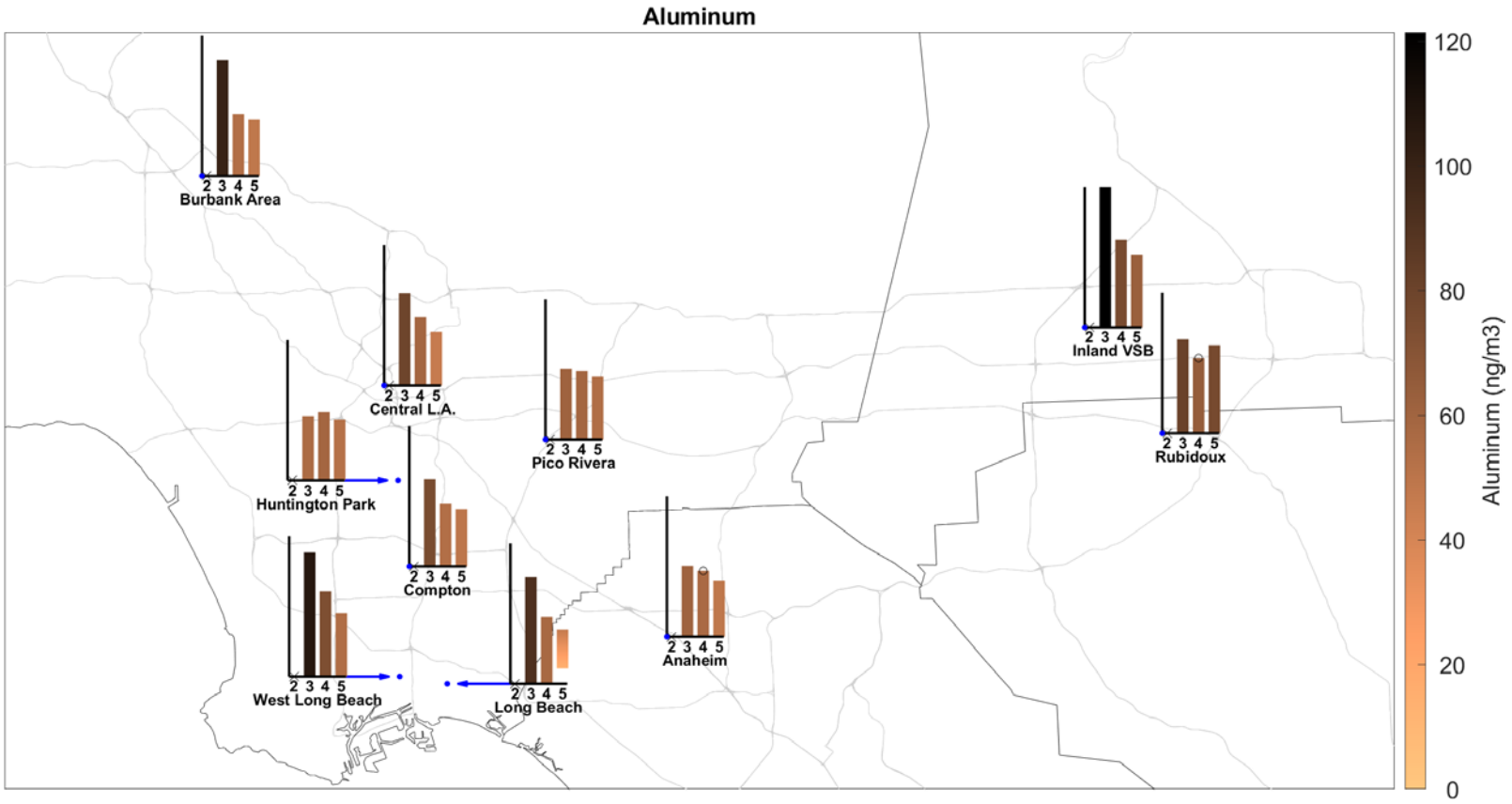


Figure IV-233. Geographic distribution of Aluminum from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Antimony

Table IV-119. Ambient Concentrations (ng/m^3) of Antimony from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	8.17, 9.38[a]	7.82, 4.18[b]	6.21, 7.43[a]	8.53, 9.69[a]	0, 1.4[a]	4.18, 5.43[a]	6.67, 3.54[b]	0, 3.16[b]	6.57, 7.82[a]	5.95, 7.19[a]
95% CI LB	4.92[a]	4.64[b]	3.34[a]	5.22[a]	0[a]	1.9[a]	3.76[b]	0[b]	3.73[a]	3.19[a]
95% CI UB	13[a]	4.7[b]	10.7[a]	13.4[a]	1.4[a]	8.18[a]	3.88[b]	3.57[b]	11.1[a]	10.4[a]
N	240[a]	239[b]	234[a]	238[a]	117[a]	228[a]	237[b]	116[b]	236[a]	228[a]
% < MDL	86.3[a]	85.8[b]	86.8[a]	83.2[a]	100[a]	89[a]	86.1[b]	100[b]	89.4[a]	88.6[a]
Max	132[a]	132[b]	127[a]	133[a]	< MDL[a]	139[a]	123[b]	< MDL[b]	122[a]	138[a]
MATES IV										
Average	1.22, 2.45[b]	2.32, 5.07[b]	0, 3.97[b]	0, 4.5[b]	0, 4.95[b]	1, 3.28[b]	0, 6.06[b]	0, 6.09[b]	1.07, 3.98[b]	2.07, 2.76[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	3.04[b]	6.09[b]	4.92[b]	5.03[b]	5.9[b]	4.1[b]	7.22[b]	7.3[b]	4.94[b]	3.43[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	98.3[b]	96.6[b]	100[b]	100[b]	100[b]	98.4[b]	100[b]	100[b]	98.4[b]	96.7[b]
Max	72[b]	69[b]	< MDL[b]	< MDL[b]	< MDL[b]	61[b]	< MDL[b]	< MDL[b]	65[b]	63[b]
MATES V										
Average	0, 4.49[b]	0, 3.54[b]	0, 4.76[b]	0, 5.37[b]	0, 4.43[b]	0, 3.26[b]	0, 5.41[b]	0, 5.3[b]	0, 4.84[b]	0, 3.48[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	5.71[b]	4.06[b]	5.93[b]	6.13[b]	5.5[b]	4.14[b]	6.29[b]	6.29[b]	5.66[b]	4.43[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

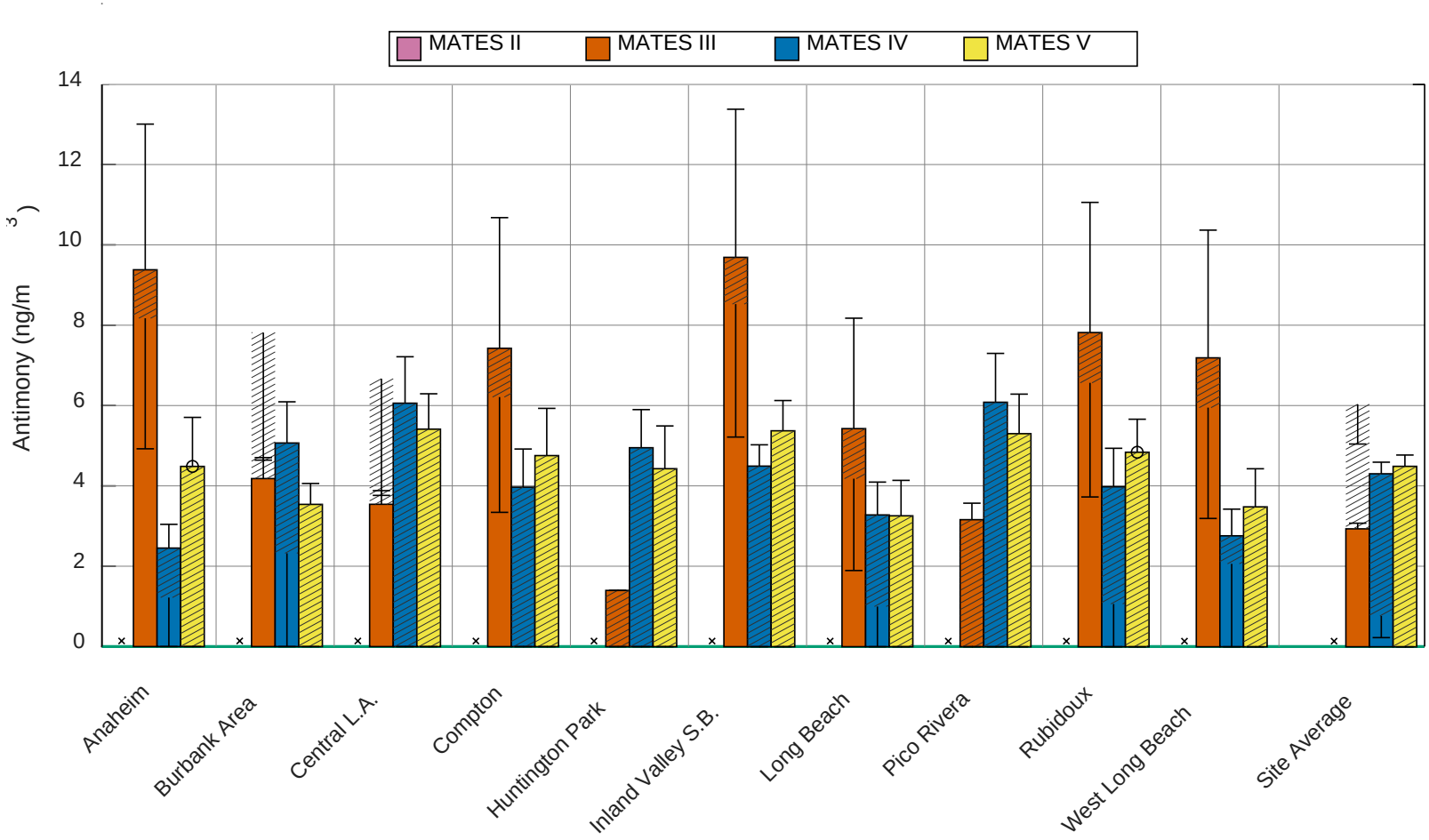


Figure IV-234. Annual Average Concentrations of Antimony in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

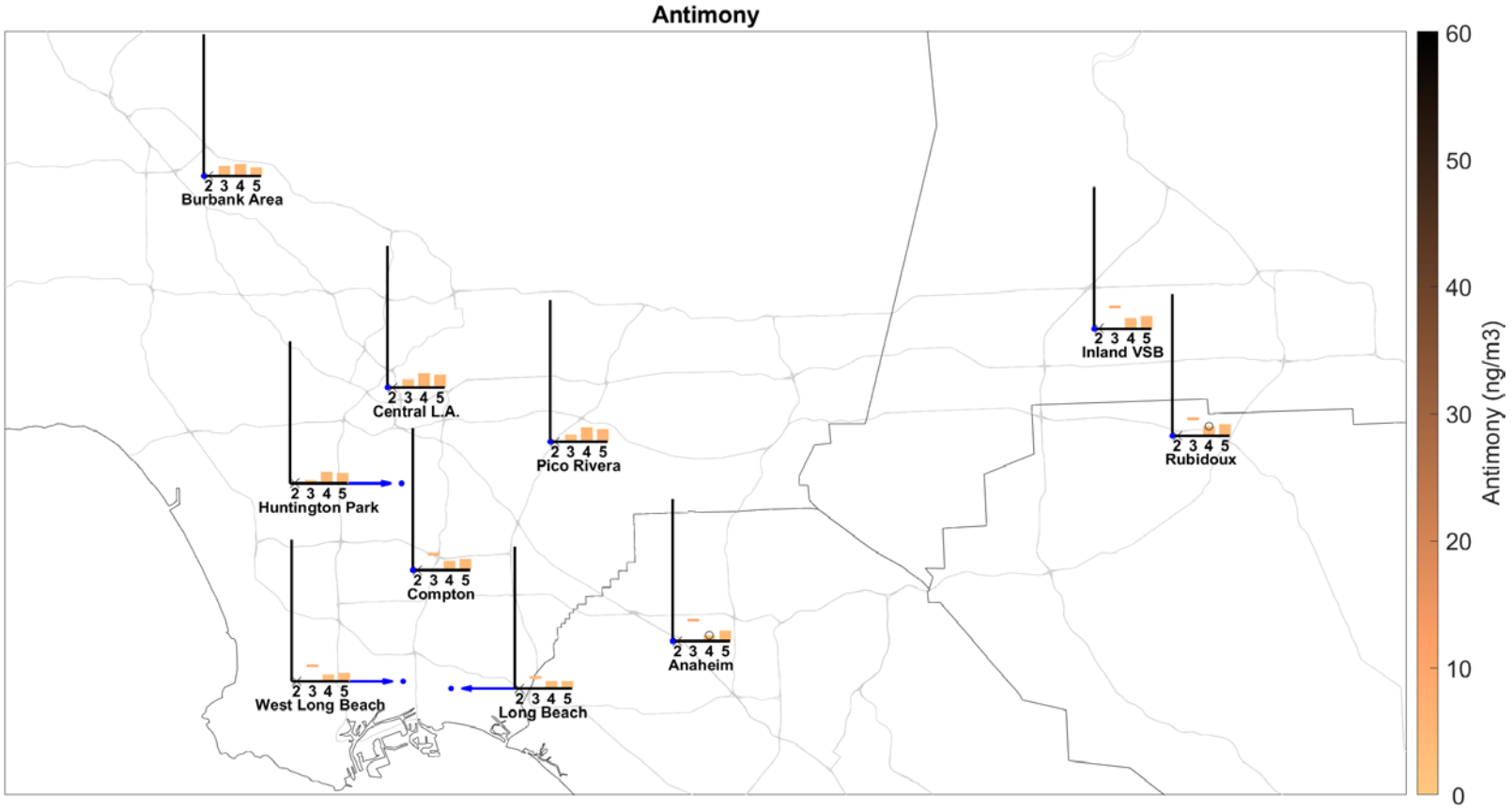


Figure IV-235. Geographic distribution of Antimony from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Arsenic

Table IV-120. Ambient Concentrations (ng/m^3) of Arsenic from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	0.611	0.572	0.555	0.652	0.822	0.553	0.544	0.847	0.58	0.625
95% CI LB	0.538	0.499	0.483	0.56	0.707	0.475	0.478	0.699	0.487	0.541
95% CI UB	0.696	0.649	0.628	0.752	0.939	0.642	0.613	1.01	0.666	0.716
N	240	239	234	238	117	228	237	116	236	228
% < MDL	65.8	68.6	68.8	63.4	46.2	70.6	64.6	50	69.5	65.4
Max	3.71	2.48	3.7	7.42	2.48	3.71	3.1	4.96	4.97	3.72
MATES IV										
Average	0, 0.238[b]	0, 0.447[b]	0, 0.502[b]	0, 0.909[b]	0, 0.557[b]	0, 0.396[b]	0, 0.637[b]	0, 0.566[b]	0, 0.757[b]	0, 0.497[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.271[b]	0.502[b]	0.596[b]	1.03[b]	0.653[b]	0.458[b]	0.745[b]	0.629[b]	0.993[b]	0.583[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]
MATES V										
Average	0, 0.36[b]	0, 0.459[b]	0, 0.441[b]	0, 0.885[b]	0, 0.413[b]	0, 0.376[b]	0, 0.412[b]	0, 0.663[b]	0, 0.663[b]	0, 0.466[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.414[b]	0.524[b]	0.528[b]	1.04[b]	0.489[b]	0.452[b]	0.477[b]	0.759[b]	0.743[b]	0.561[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

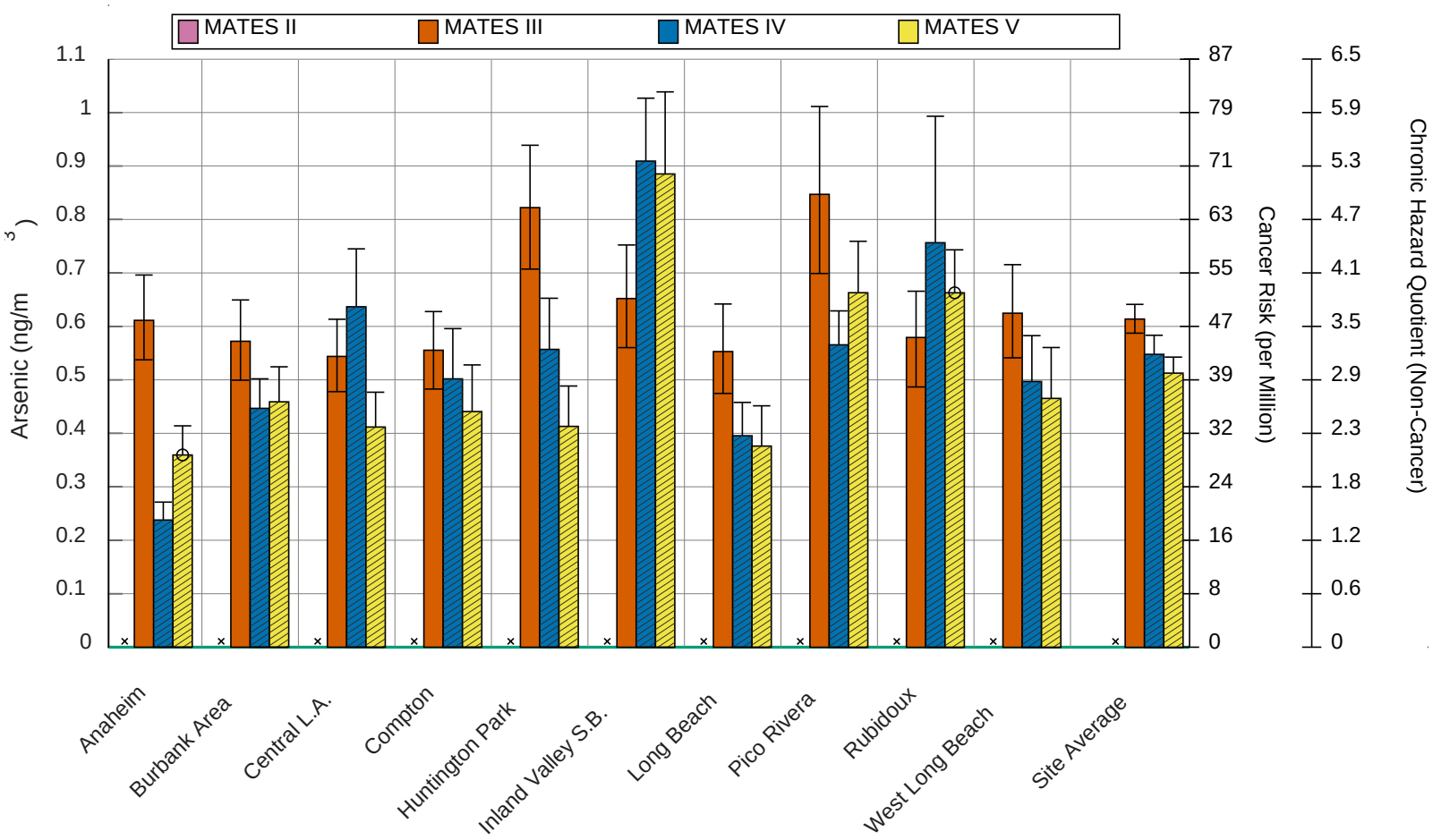


Figure IV-236. Annual Average Concentrations of Arsenic in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

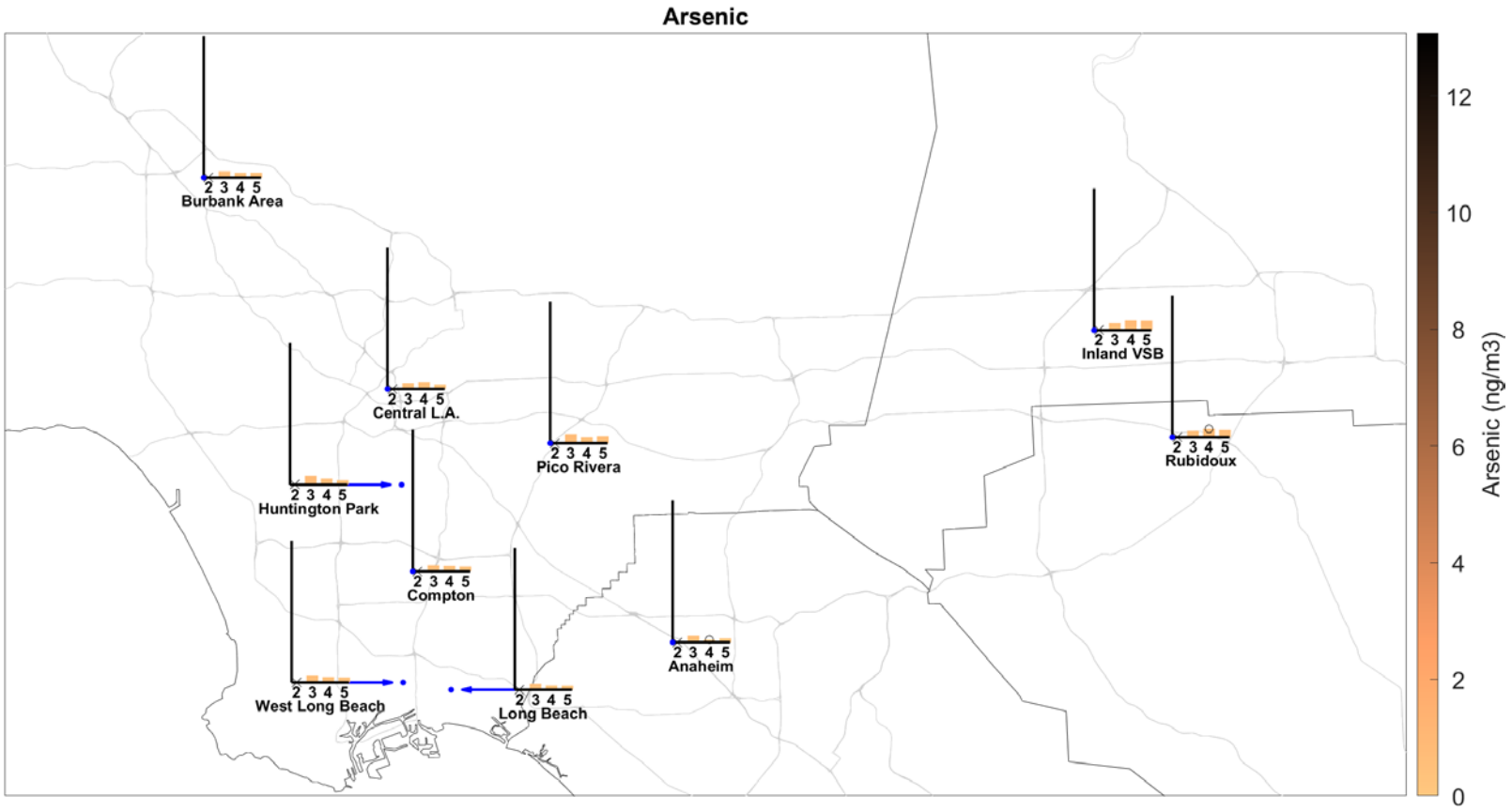


Figure IV-237. Geographic distribution of Arsenic from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Barium

Table IV-121. Ambient Concentrations (ng/m^3) of Barium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	30.1	33.4	28.7	36.1	26.2	26.8	31.1	29.4	28.5	24.7
95% CI LB	26.6	29.9	25.5	27.9	22.9	24.3	28	23.4	22.5	22.3
95% CI UB	34.4	37.5	32.1	49.8	30.3	29.5	34.4	38.8	38.1	27.2
N	240	239	234	238	117	228	237	116	236	228
% < MDL	22.1	20.1	27.4	23.9	23.9	23.7	17.7	19.8	31.4	34.6
Max	355	316	211	1450	144	121	244	486	999	129
MATES IV										
Average	3.49, 29.4[b]	2.93, 57.3[b]	0, 46.3[b]	0, 69.7[b]	0, 55.6[b]	0, 43.4[b]	4.32, 67.1[b]	0, 61.1[b]	0, 58.5[b]	0, 57[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	36.6[b]	68.1[b]	54.1[b]	85.5[b]	66[b]	51.3[b]	79.8[b]	70.7[b]	73.6[b]	67.6[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	98.3[b]	98.3[b]	100[b]	100[b]	100[b]	100[b]	96.7[b]	100[b]	100[b]	100[b]
Max	206[b]	173[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	135[b]	< MDL[b]	< MDL[b]	< MDL[b]
MATES V										
Average	0, 48.6[b]	0, 46.4[b]	0, 57.7[b]	0, 75[b]	0, 50.7[b]	0, 40[b]	1.27, 60.6[b]	0, 67.9[b]	0, 60[b]	0, 54.6[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	59[b]	52.9[b]	71.1[b]	86.2[b]	61.5[b]	49.8[b]	71.1[b]	78.1[b]	69.9[b]	66.5[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	98.4[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	77.5[b]	< MDL[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

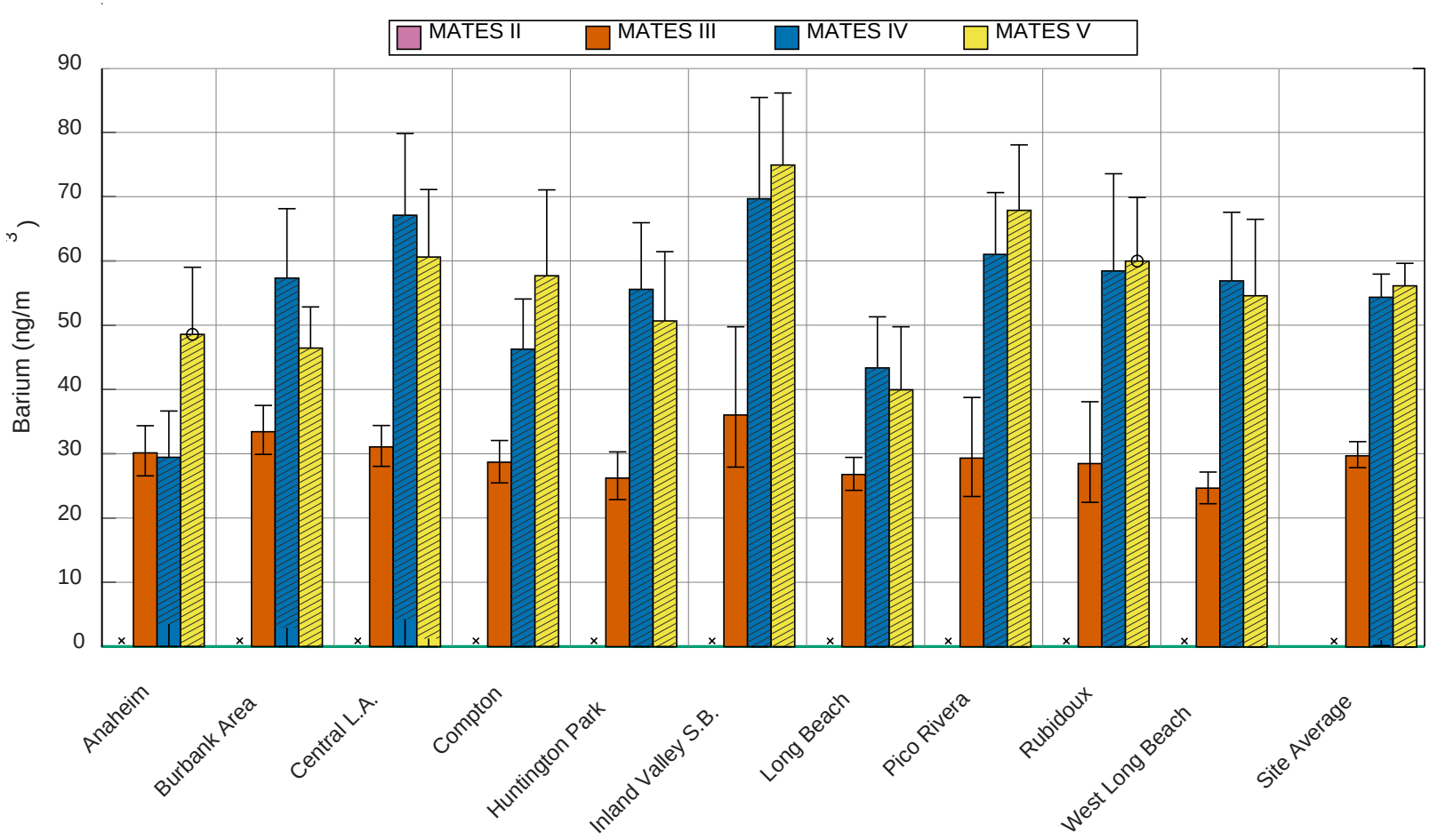


Figure IV-238. Annual Average Concentrations of Barium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

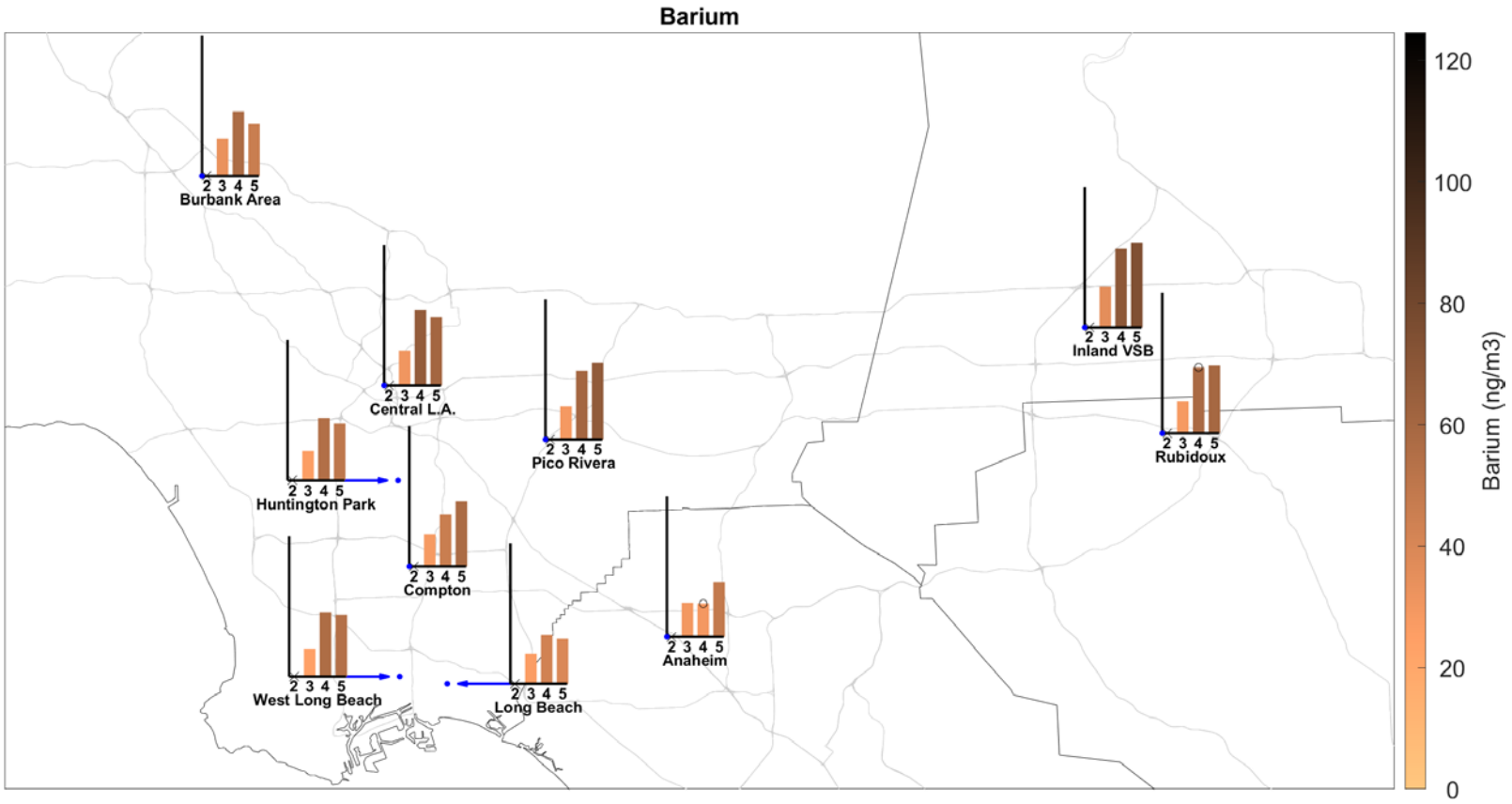


Figure IV-239. Geographic distribution of Barium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Cadmium

Table IV-122. Ambient Concentrations (ng/m^3) of Cadmium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	2.18	1.78	1.93	1.85	2.02	1.81	1.75	2.07	1.83	1.91
95% CI LB	1.74	1.54	1.68	1.64	1.69	1.53	1.58	1.51	1.61	1.68
95% CI UB	2.83	2.05	2.21	2.06	2.39	2.17	1.92	2.96	2.07	2.16
N	240	239	234	238	117	228	237	116	236	228
% < MDL	52.1	59.8	54.3	52.1	39.3	55.3	53.2	41.4	50.4	53.9
Max	65.6	16.1	17.2	9.91	12.4	32	10.5	44.6	11.2	11.1
MATES IV										
Average	0, 0.0876[b]	0, 0.134[b]	0, 0.168[b]	0, 0.283[b]	0, 0.181[b]	0, 0.227[b]	0, 0.26[b]	0, 0.124[b]	0, 0.131[b]	0, 0.127[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.0947[b]	0.164[b]	0.211[b]	0.346[b]	0.222[b]	0.36[b]	0.491[b]	0.148[b]	0.164[b]	0.152[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]
MATES V										
Average	0, 0.244[b]	0, 0.69[b]	0, 0.249[b]	0, 0.311[b]	0, 0.449[b]	0, 0.088[b]	0, 0.15[b]	0, 0.144[b]	0, 0.588[b]	0, 0.771[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.306[b]	1.76[b]	0.359[b]	0.394[b]	0.751[b]	0.129[b]	0.219[b]	0.214[b]	1.04[b]	1.05[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

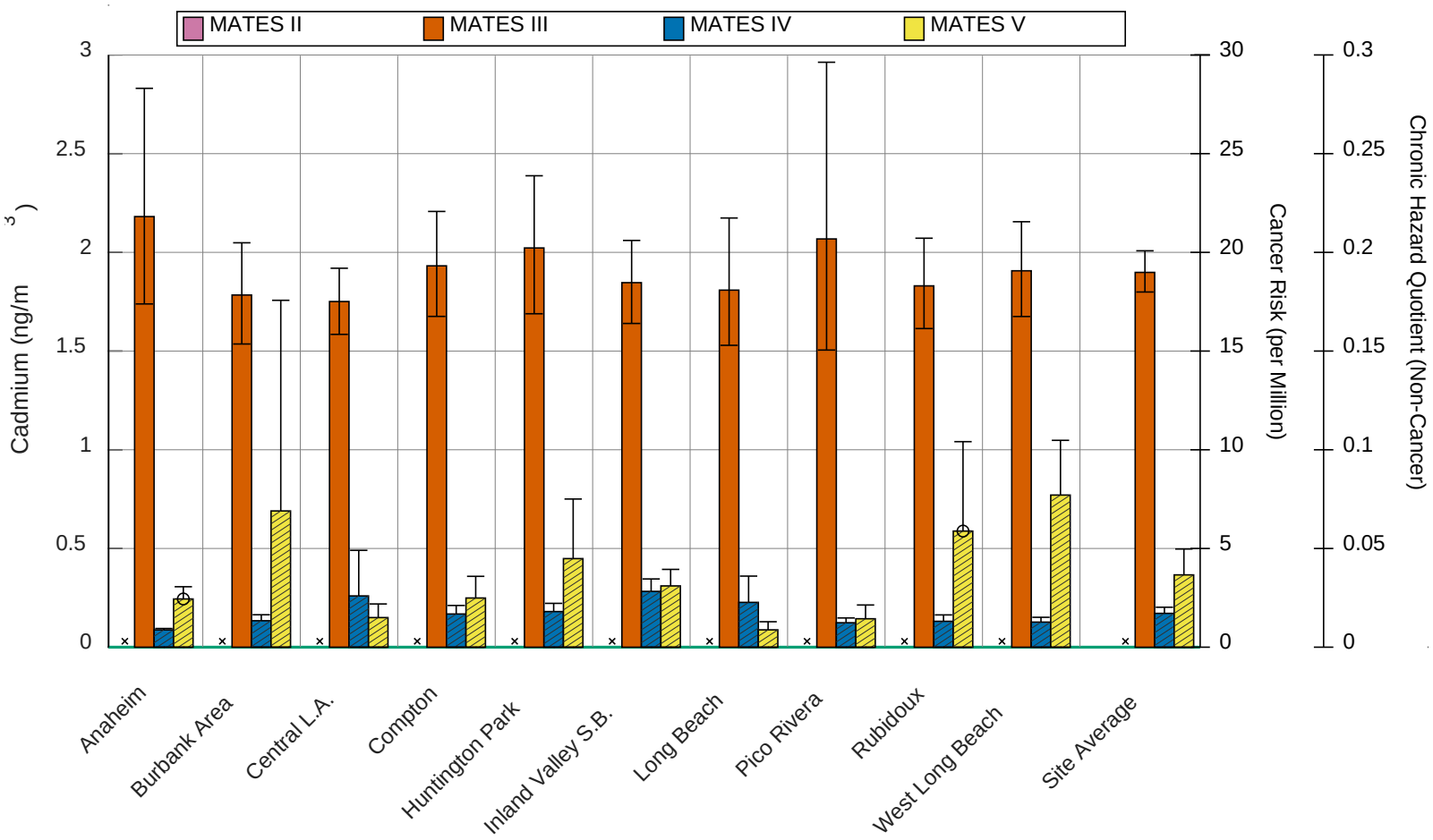


Figure IV-240. Annual Average Concentrations of Cadmium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

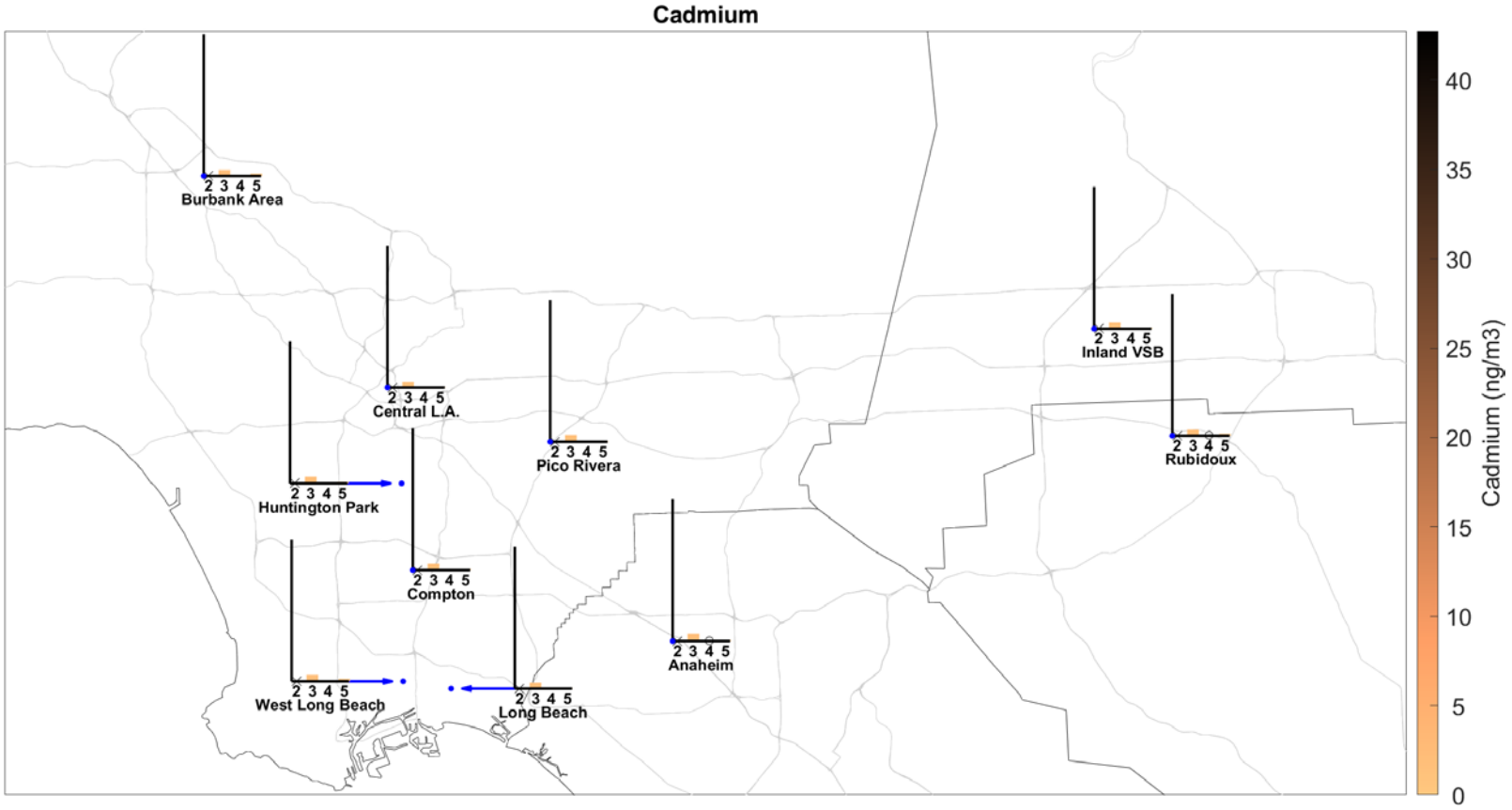


Figure IV-241. Geographic distribution of Cadmium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Calcium

Table IV-123. Ambient Concentrations (ng/m^3) of Calcium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	96.6	124	94	199	105	89.7	109	103	194	118
95% CI LB	87.2	109	86.3	182	89.5	83.9	99.3	92.7	174	110
95% CI UB	107	143	102	219	125	96	120	113	215	128
N	240	239	234	238	117	228	237	116	236	228
% < MDL	0	0	0	0	0.9	0	0	0	0	0
Max	740	1890	619	1560	948	298	601	328	817	574
MATES IV										
Average	46.1	55.4	44.2	92.5	50.6	47	53.5	51.1	72.5	80.1
95% CI LB	39	47.5	35.4	75.2	42.8	39.8	43.8	43.3	60.5	64.9
95% CI UB	53.9	63.7	54.7	112	59.1	55.3	65.6	59.2	85.5	96.7
N	59	59	61	60	59	61	60	59	61	61
% < MDL	10.2	10.2	24.6	8.3	15.3	13.1	11.7	10.2	8.2	6.6
Max	166	132	259	424	142	194	298	138	260	288
MATES V										
Average	46.3	44.4	52.2	85.1	55.6	44.1	53.9	59.3	83.3	61.2
95% CI LB	39.7	38.4	45.9	72.4	48	38.4	47.2	51.1	68.3	53.6
95% CI UB	53.4	50.8	58.6	98.3	63.5	50.5	60.8	68.5	99.9	68.9
N	54	59	61	60	60	61	61	59	56	57
% < MDL	7.4	8.5	3.3	0	1.7	8.2	6.6	0	3.6	1.8
Max	125	121	126	236	145	156	130	189	313	129

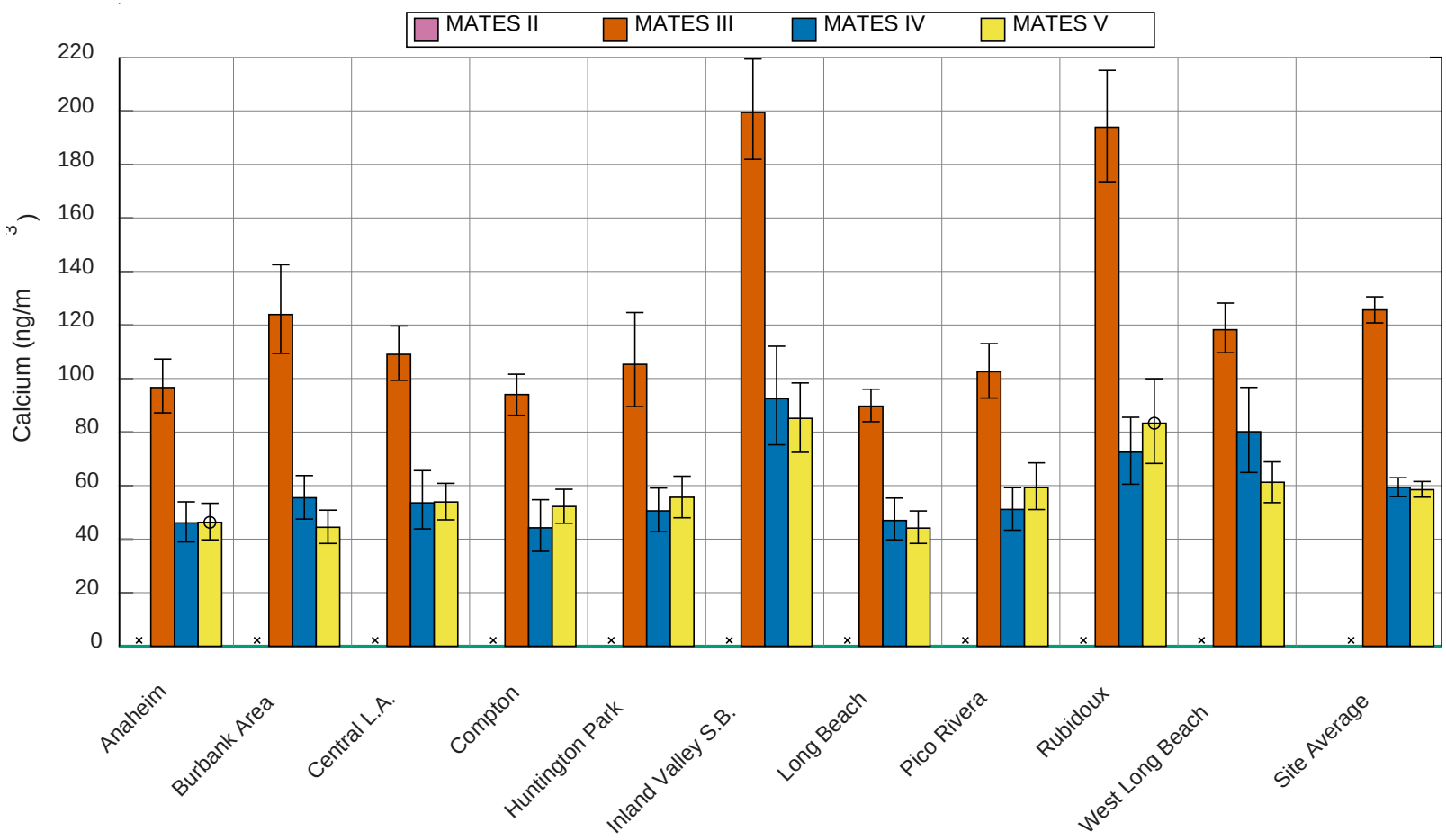


Figure IV-242. Annual Average Concentrations of Calcium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

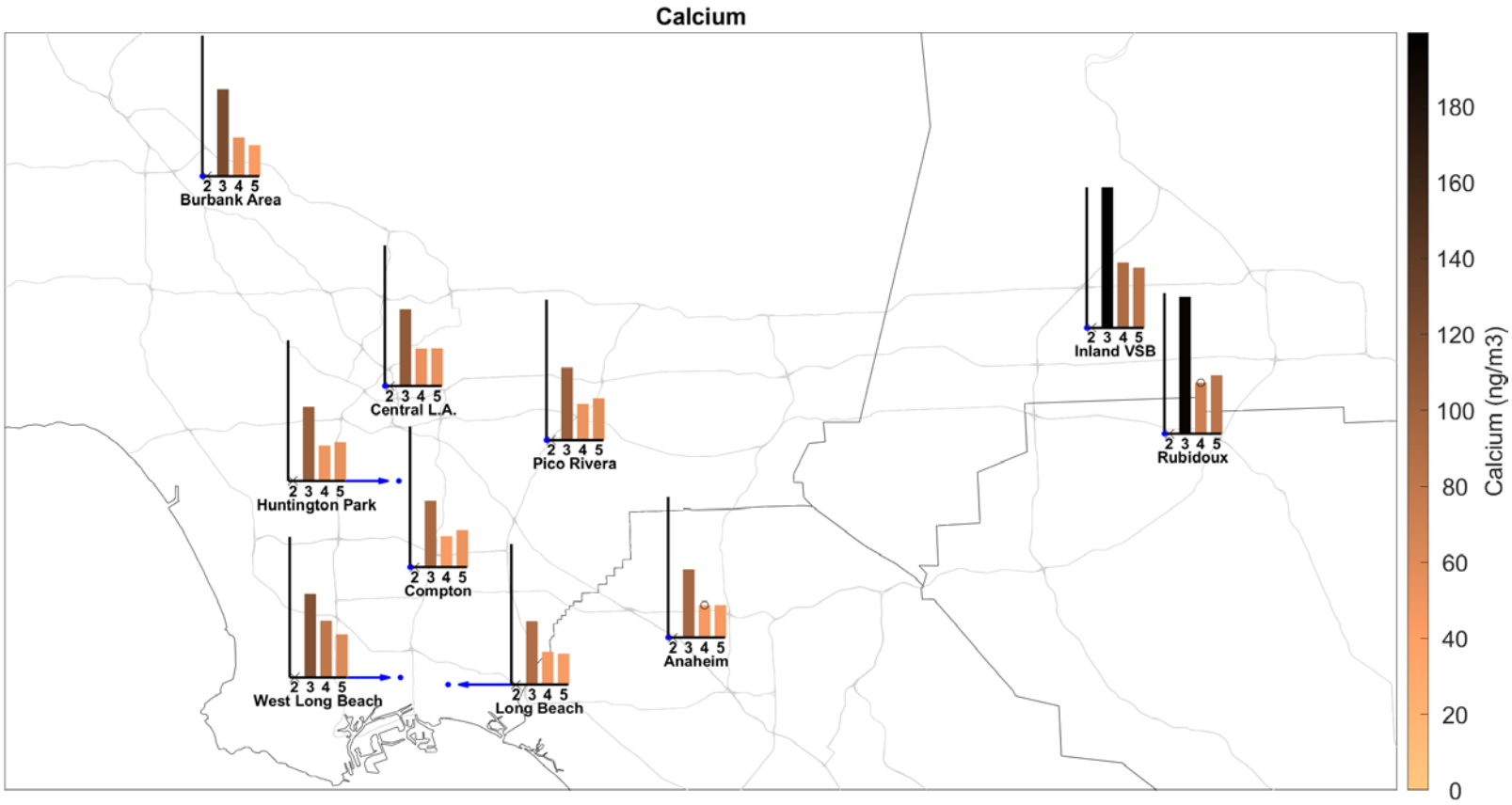


Figure IV-243. Geographic distribution of Calcium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Cesium

Table IV-124. Ambient Concentrations (ng/m^3) of Cesium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	2.64, 155[a]	0, 154[a]	0, 154[a]	0, 154[a]	5.37, 155[a]	2.62, 155[a]	0, 154[a]	0, 154[a]	0, 154[a]	0, 154[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	155[a]	154[a]	154[a]	154[a]	155[a]	155[a]	154[a]	154[a]	154[a]	154[a]
N	59[a]	59[a]	61[a]	60[a]	59[a]	61[a]	60[a]	59[a]	61[a]	61[a]
% < MDL	98.3[a]	100[a]	100[a]	100[a]	96.6[a]	98.4[a]	100[a]	100[a]	100[a]	100[a]
Max	156[a]	< MDL[a]	< MDL[a]	< MDL[a]	160[a]	160[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES V										
Average	0, 0.0757[b]	0, 0.0773[b]	0, 0.0644[b]	0, 0.148[b]	0, 0.0551[b]	0, 0.0581[b]	0, 0.0604[b]	0, 0.109[b]	0, 0.162[b]	0, 0.0746[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.0907[b]	0.0905[b]	0.0788[b]	0.179[b]	0.0671[b]	0.0742[b]	0.0699[b]	0.126[b]	0.188[b]	0.0954[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

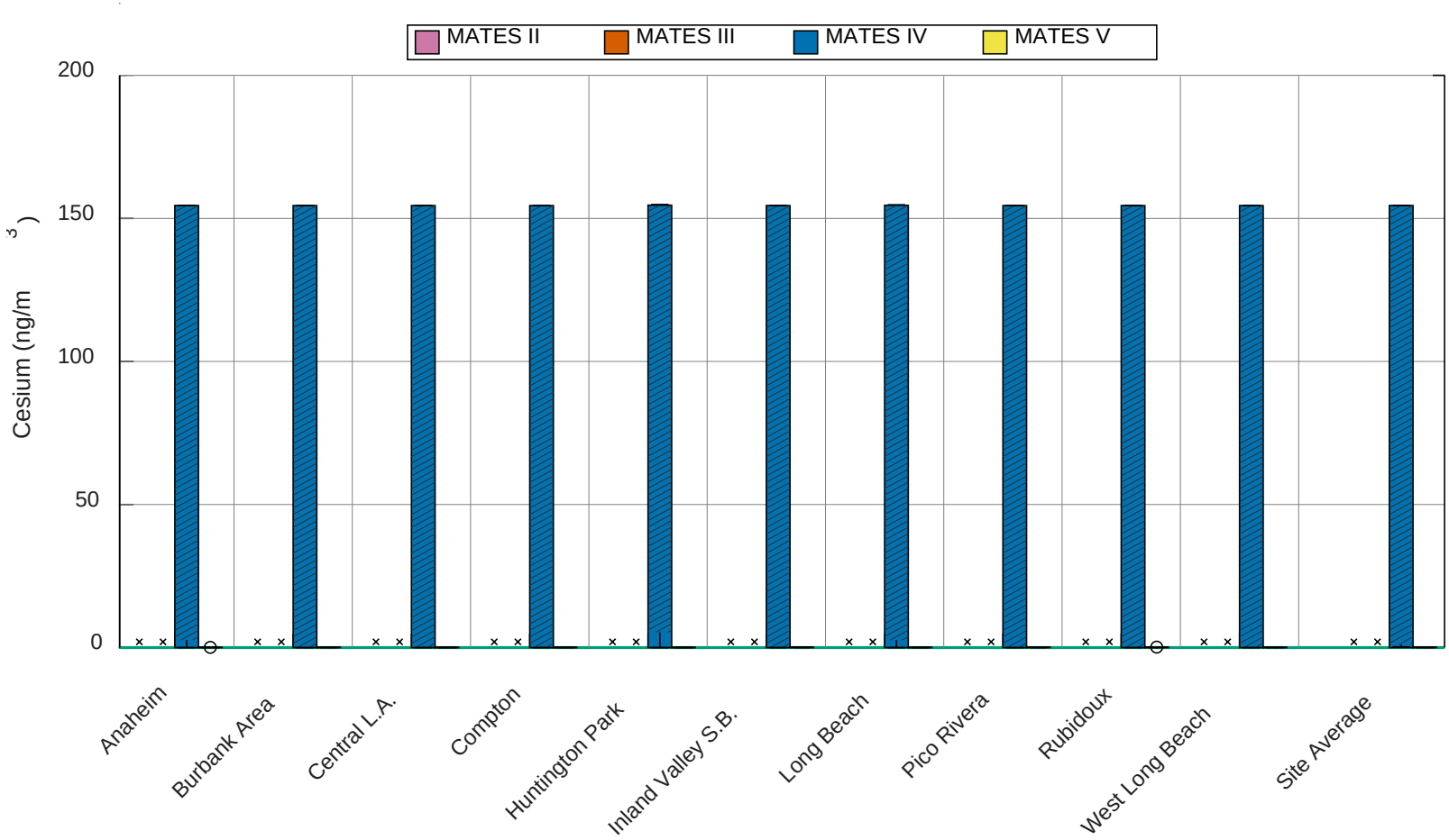


Figure IV-244. Annual Average Concentrations of Cesium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

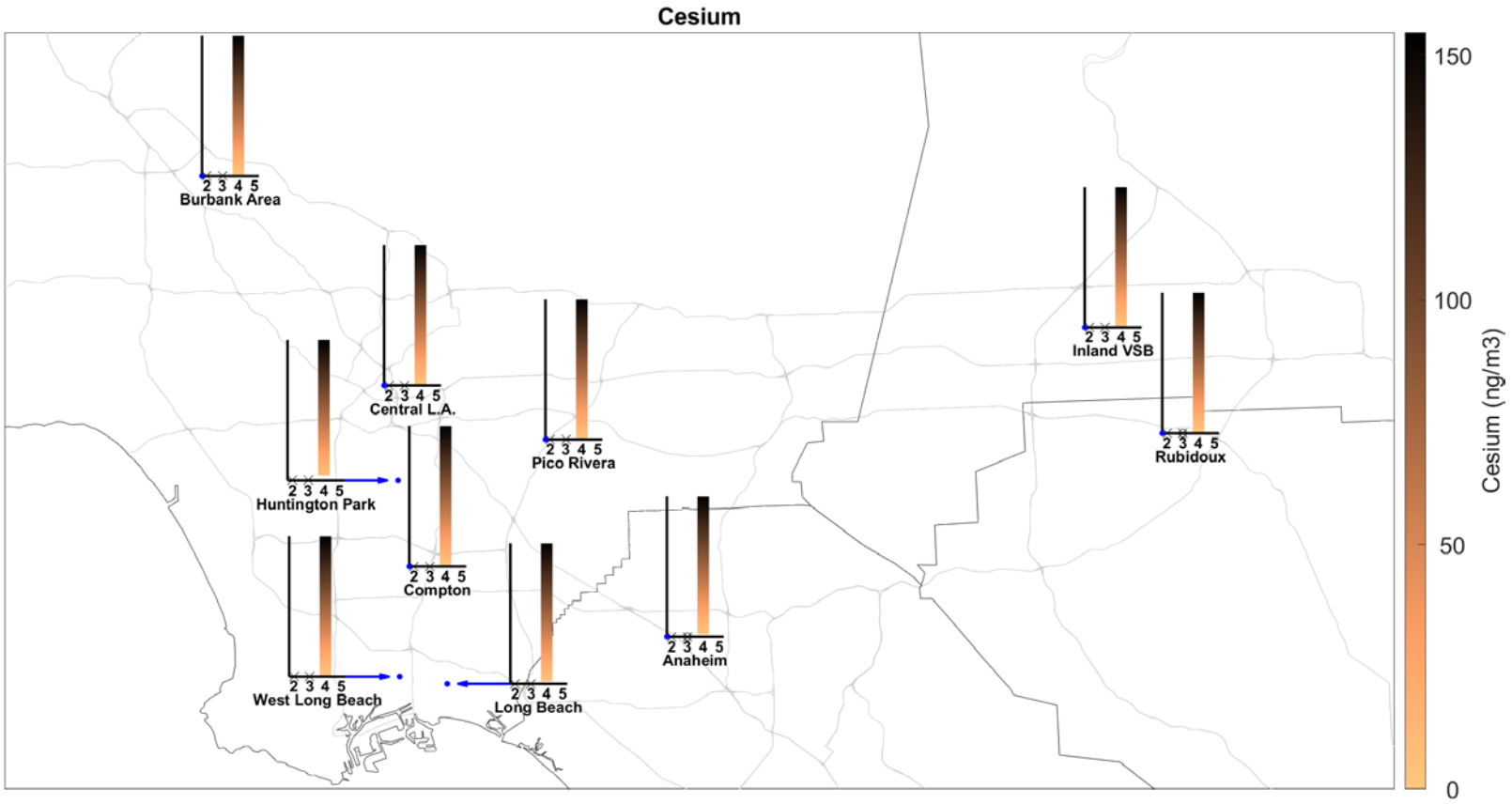


Figure IV-245. Geographic distribution of Cesium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Chlorine

Table IV-125. Ambient Concentrations (ng/m^3) of Chlorine from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	78.7	26.9	88.9	20.5	72.3	128	48	120	17.7	231
95% CI LB	42.3	17	45.7	15.9	38.3	72.5	25.3	43.9	14.5	125
95% CI UB	126	41.5	146	27	118	196	77.5	230	22.1	360
N	59	59	61	60	59	61	60	59	61	61
% < MDL	40.7	59.3	44.3	55	50.8	39.3	53.3	44.1	67.2	45.9
Max	977	357	1250	161	995	1150	609	2460	116	2580
MATES V										
Average	44.2	20.2	53.2	18	40.1	78.6	24.1	28.4	17.9	77
95% CI LB	28.5	15.3	36.1	15.9	27.2	42.7	17.5	19.6	15.3	49
95% CI UB	62.2	26.3	73.7	20.5	56.3	124	34	39.7	21.5	109
N	54	59	61	60	60	61	61	59	56	57
% < MDL	38.9	76.3	32.8	46.7	43.3	41	54.1	45.8	60.7	28.1
Max	278	129	383	63	320	932	252	228	103	486

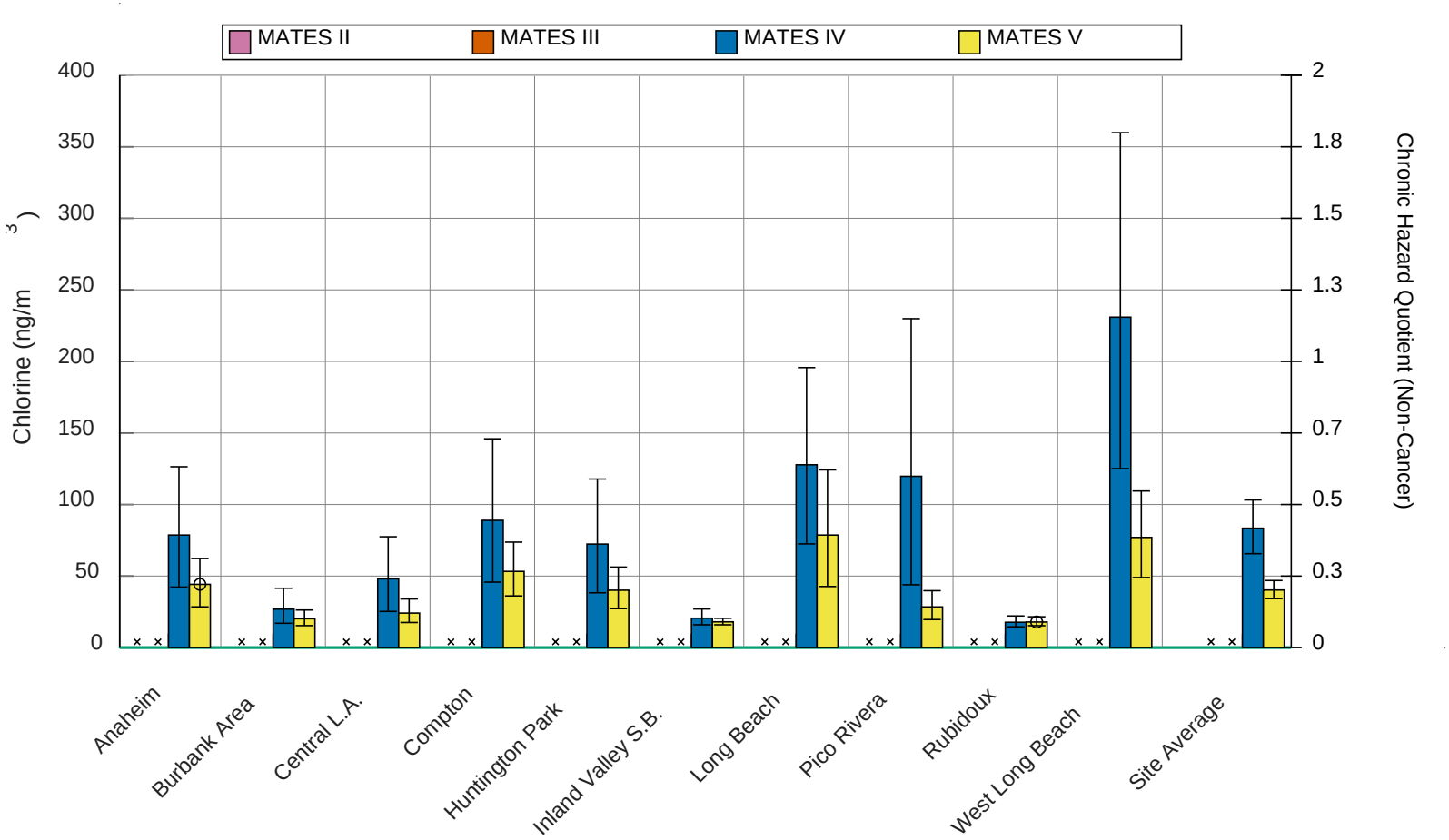


Figure IV-246. Annual Average Concentrations of Chlorine in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

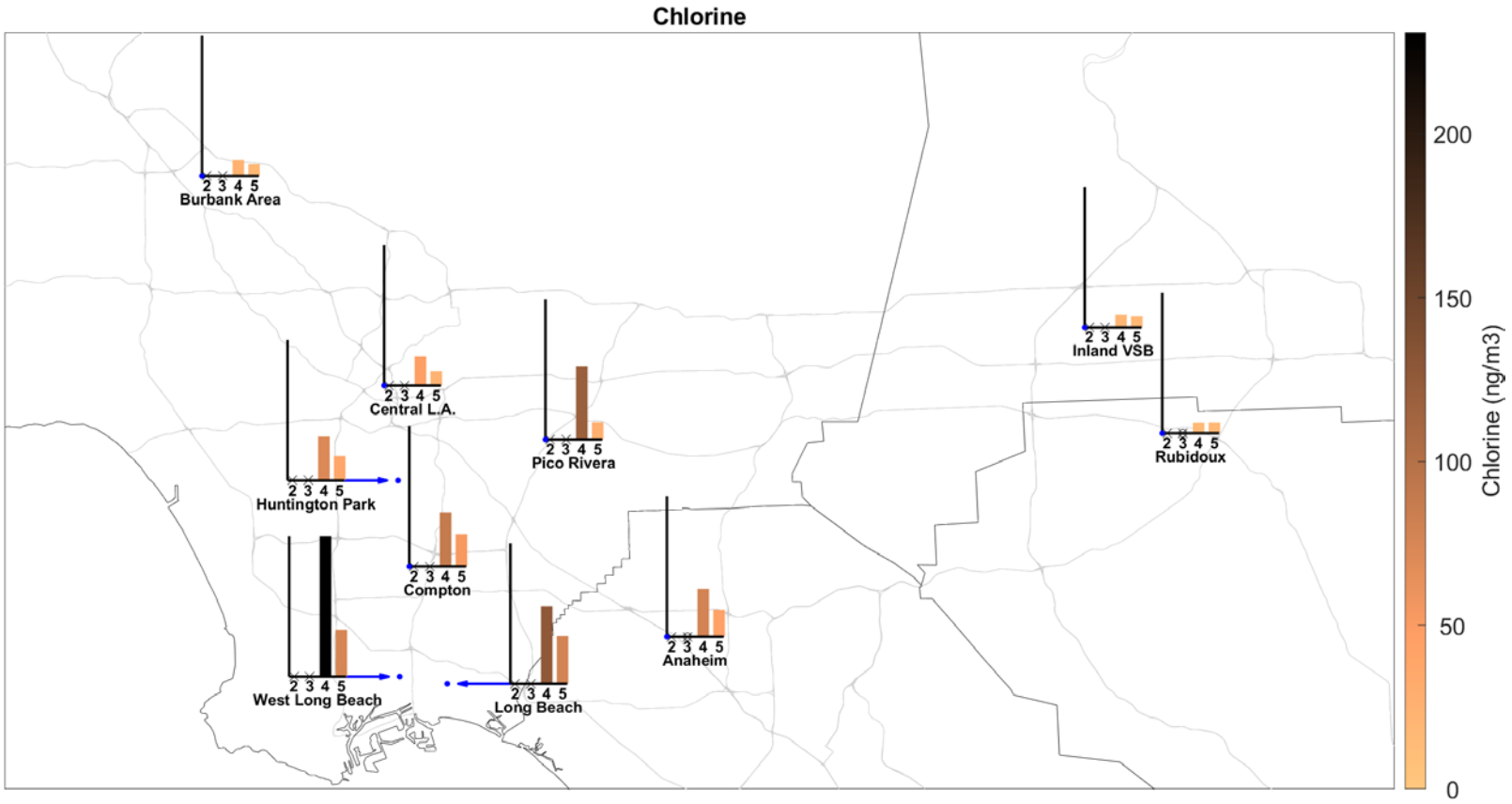


Figure IV-247. Geographic distribution of Chlorine from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Chromium

Table IV-126. Ambient Concentrations (ng/m^3) of Chromium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	2.88	2.71	2.76	3.29	4.57	1.61	2.68	1.86	3.28	3.31
95% CI LB	1.81	1.64	1.82	1.84	3.18	1.43	1.84	1.44	1.82	1.82
95% CI UB	4.35	4.24	4.09	5.43	6.14	1.82	3.94	2.37	5.13	5.26
N	240	239	234	238	117	228	237	116	236	228
% < MDL	55.4	53.6	50	51.3	35	56.1	49.8	45.7	57.2	53.1
Max	111	117	122	192	43.3	9.9	117	17.3	118	121
MATES IV										
Average	0, 1.97[b]	0.186, 3.15[b]	0, 3.66[b]	0, 5.54[b]	3.36, 5.28[b]	1.69, 3.74[b]	0.483, 3.76[b]	0.305, 3.53[b]	0.164, 4.21[b]	0.377, 3.37[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0.89[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	2.21[b]	3.56[b]	4.29[b]	6.46[b]	7.49[b]	5.48[b]	4.14[b]	3.93[b]	5.4[b]	3.84[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	100[b]	98.3[b]	100[b]	100[b]	88.1[b]	95.1[b]	96.7[b]	98.3[b]	98.4[b]	96.7[b]
Max	< MDL[b]	11[b]	< MDL[b]	< MDL[b]	68[b]	76[b]	20[b]	18[b]	10[b]	14[b]
MATES V										
Average	1.17, 2.31[b]	0, 2.69[b]	0.213, 3.32[b]	0, 5.83[b]	0.383, 3.14[b]	0.0984, 2.95[b]	0, 3.03[b]	0.373, 4.19[b]	0, 3.6[b]	0, 3.63[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	2.66[b]	3.03[b]	4.01[b]	6.83[b]	3.92[b]	3.66[b]	3.41[b]	4.71[b]	4.12[b]	4.38[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	98.1[b]	100[b]	96.7[b]	100[b]	98.3[b]	98.4[b]	100[b]	96.6[b]	100[b]	100[b]
Max	63[b]	< MDL[b]	7[b]	< MDL[b]	23[b]	6[b]	< MDL[b]	13[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

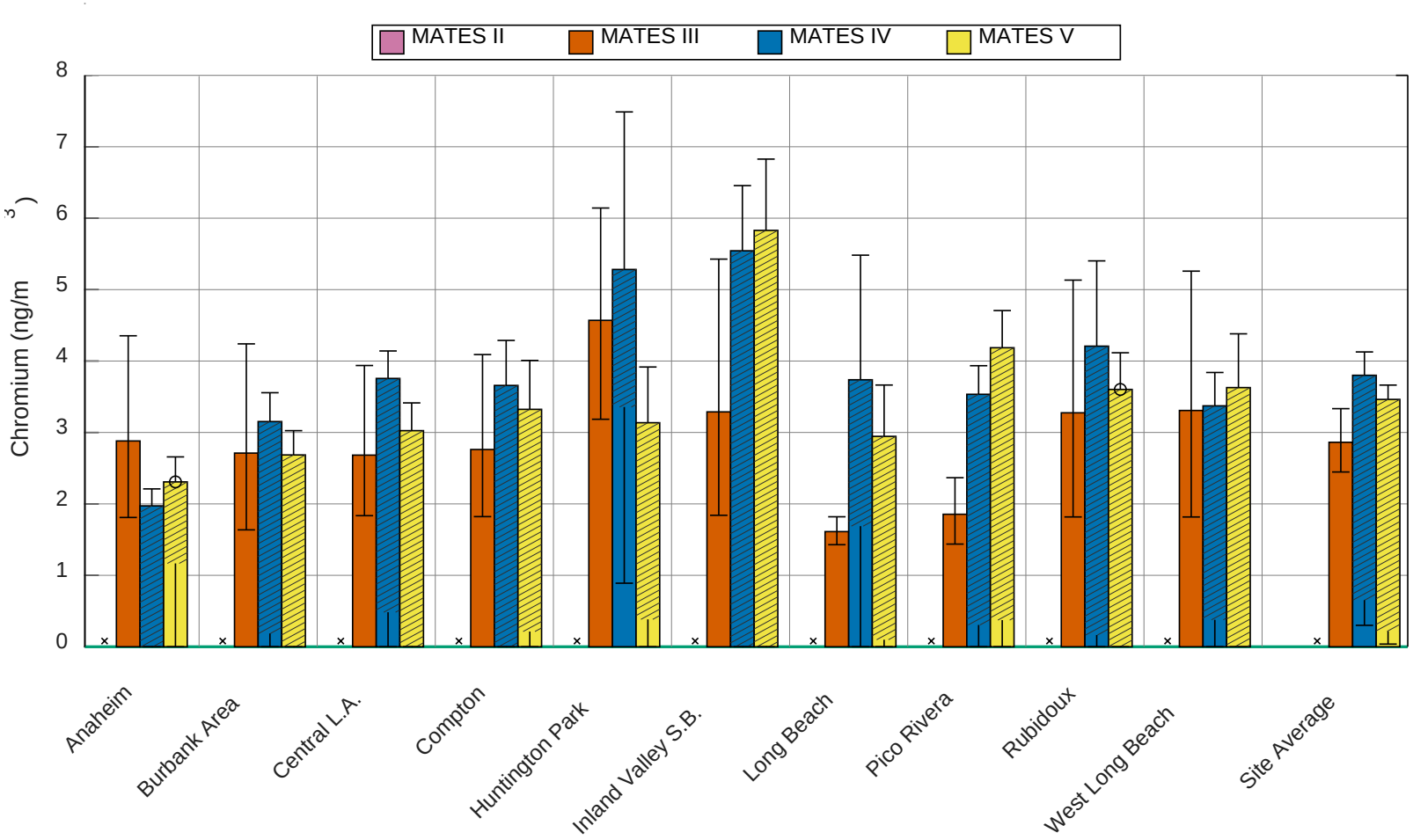


Figure IV-248. Annual Average Concentrations of Chromium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

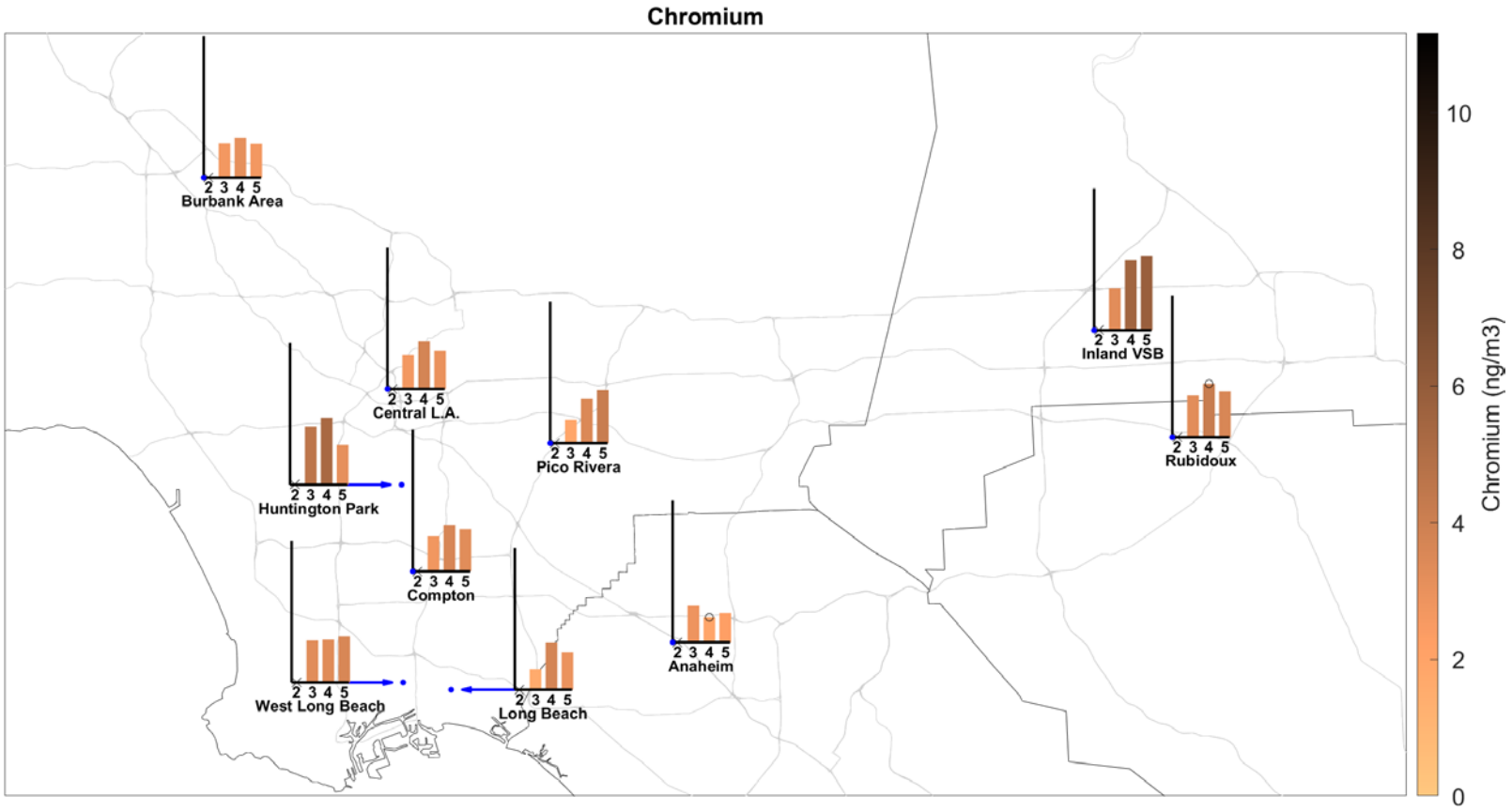


Figure IV-249. Geographic distribution of Chromium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Cobalt

Table IV-127. Ambient Concentrations (ng/m^3) of Cobalt from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	1.06	1.14	1.08	1.2	1.32	1.09	1.17	1.26	1.16	1.24
95% CI LB	0.969	1.03	0.983	1.11	1.18	0.999	1.08	1.11	1.07	1.13
95% CI UB	1.16	1.26	1.17	1.31	1.48	1.19	1.26	1.4	1.25	1.37
N	240	239	234	238	117	228	237	116	236	228
% < MDL	42.1	40.6	41	34	25.6	40.4	24.5	31	36.9	32.9
Max	3.72	6.2	3.72	4.94	3.72	3.71	4.95	4.95	3.72	6.16
MATES IV										
Average	0, 0.217[b]	0, 0.482[b]	0, 0.414[b]	0, 0.792[b]	0, 0.458[b]	0, 0.367[b]	0, 0.426[b]	0, 0.461[b]	0, 0.646[b]	0, 0.562[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.252[b]	0.572[b]	0.477[b]	0.904[b]	0.543[b]	0.425[b]	0.478[b]	0.522[b]	0.791[b]	0.716[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]
MATES V										
Average	0, 0.329[b]	0, 0.454[b]	0, 0.452[b]	0, 0.804[b]	0, 0.366[b]	0, 0.751[b]	0, 0.4[b]	0, 0.674[b]	0, 0.594[b]	0, 0.636[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.38[b]	0.519[b]	0.527[b]	0.96[b]	0.431[b]	1.01[b]	0.455[b]	0.784[b]	0.675[b]	0.79[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

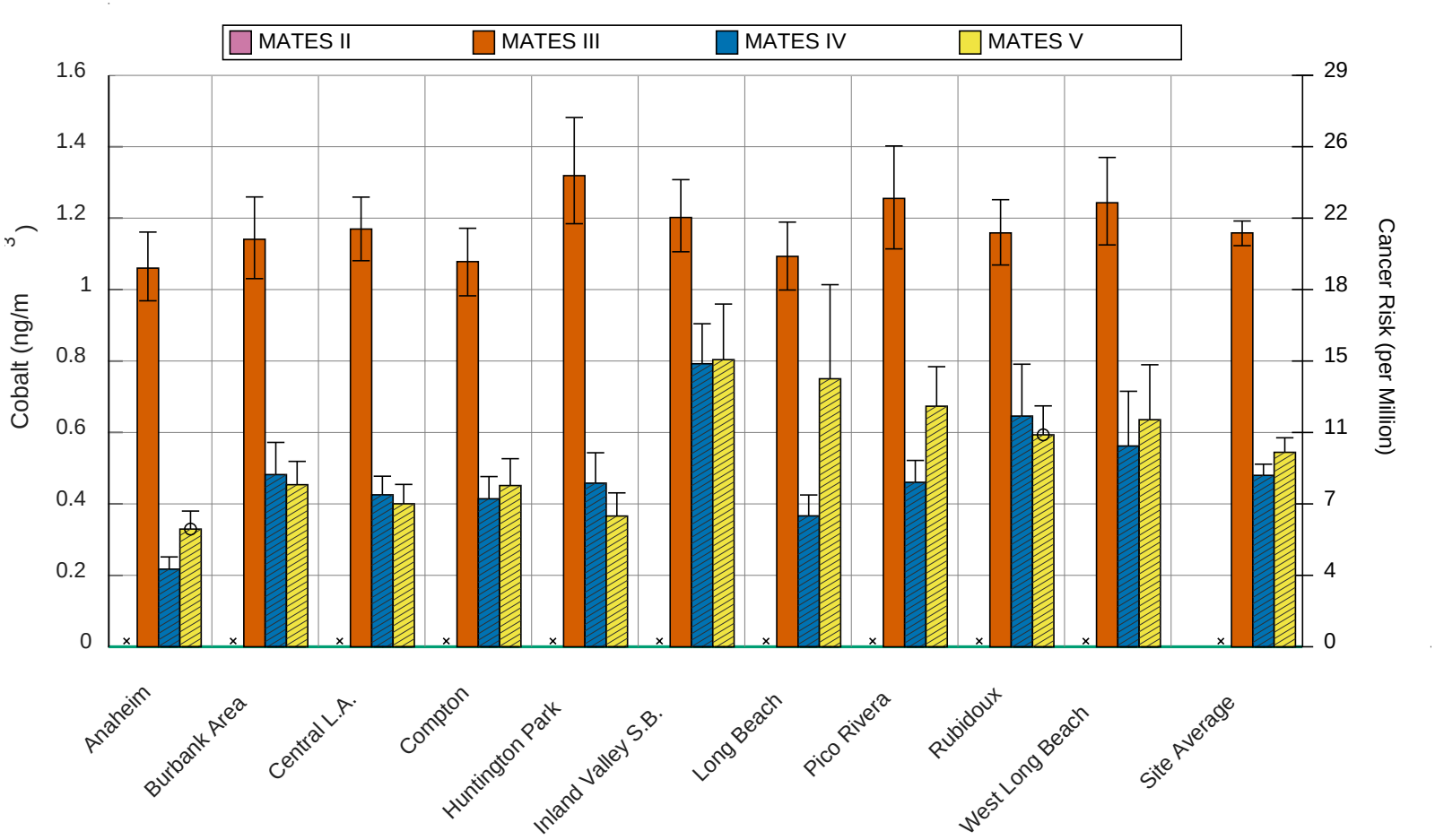


Figure IV-250. Annual Average Concentrations of Cobalt in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

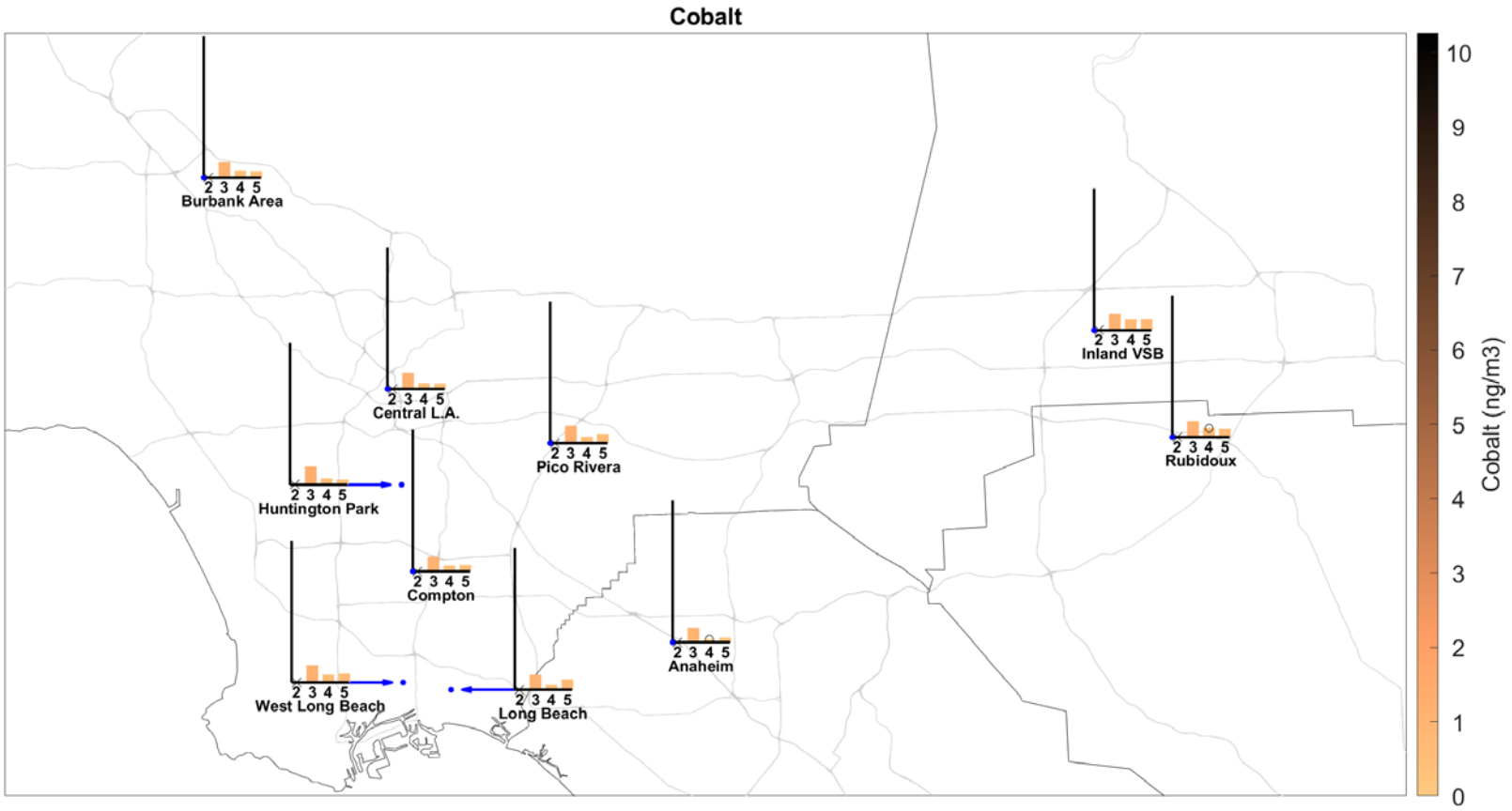


Figure IV-251. Geographic distribution of Cobalt from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Copper

Table IV-128. Ambient Concentrations (ng/m^3) of Copper from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	11	27.1	12.4	29.6	53.9	19.4	20.6	15.8	19	14.6
95% CI LB	9.61	25.5	11.2	19	50	18.1	18.7	12.9	15.9	13.2
95% CI UB	12.8	28.9	13.8	46.7	57.9	20.8	22.6	20.6	24.1	16.2
N	240	239	234	238	117	228	237	116	236	228
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	188	181	108	1640	146	54.4	143	266	544	122
MATES IV										
Average	2.32, 17.3[b]	3.83, 38[b]	2.56, 29.6[b]	13.2	17.8	2.25, 32[b]	13.5	15.1	1.18, 33.4[b]	3.61, 31.6[b]
95% CI LB	0.627[b]	1.83[b]	0.918[b]	12.2	13.8	0.852[b]	12.5	13.9	0.246[b]	1.64[b]
95% CI UB	21.5[b]	45.1[b]	34.8[b]	14.8	24.4	49[b]	14.8	16.5	40.8[b]	42[b]
N	59[b]	59[b]	61[b]	60	59	61[b]	60	59	61[b]	61[b]
% < MDL	89.8[b]	81.4[b]	86.9[b]	68.3	72.9	86.9[b]	70	49.2	91.8[b]	82[b]
Max	35[b]	28[b]	33[b]	51	175	24[b]	30	29	21[b]	44[b]
MATES V										
Average	9.56	7.97	9.84	8.47	10.1	8.69	9.84	9.61	9.93	9.05
95% CI LB	8.41	7.49	8.74	7.82	8.79	7.77	8.65	8.53	8.21	8.16
95% CI UB	10.7	8.49	11.1	9.27	11.6	9.75	11.2	10.9	12.2	10.1
N	54	59	61	60	60	61	61	59	56	57
% < MDL	57.4	59.3	57.4	50	53.3	67.2	55.7	50.8	66.1	56.1
Max	26	14	24	20	32	22	27	29	63	22

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

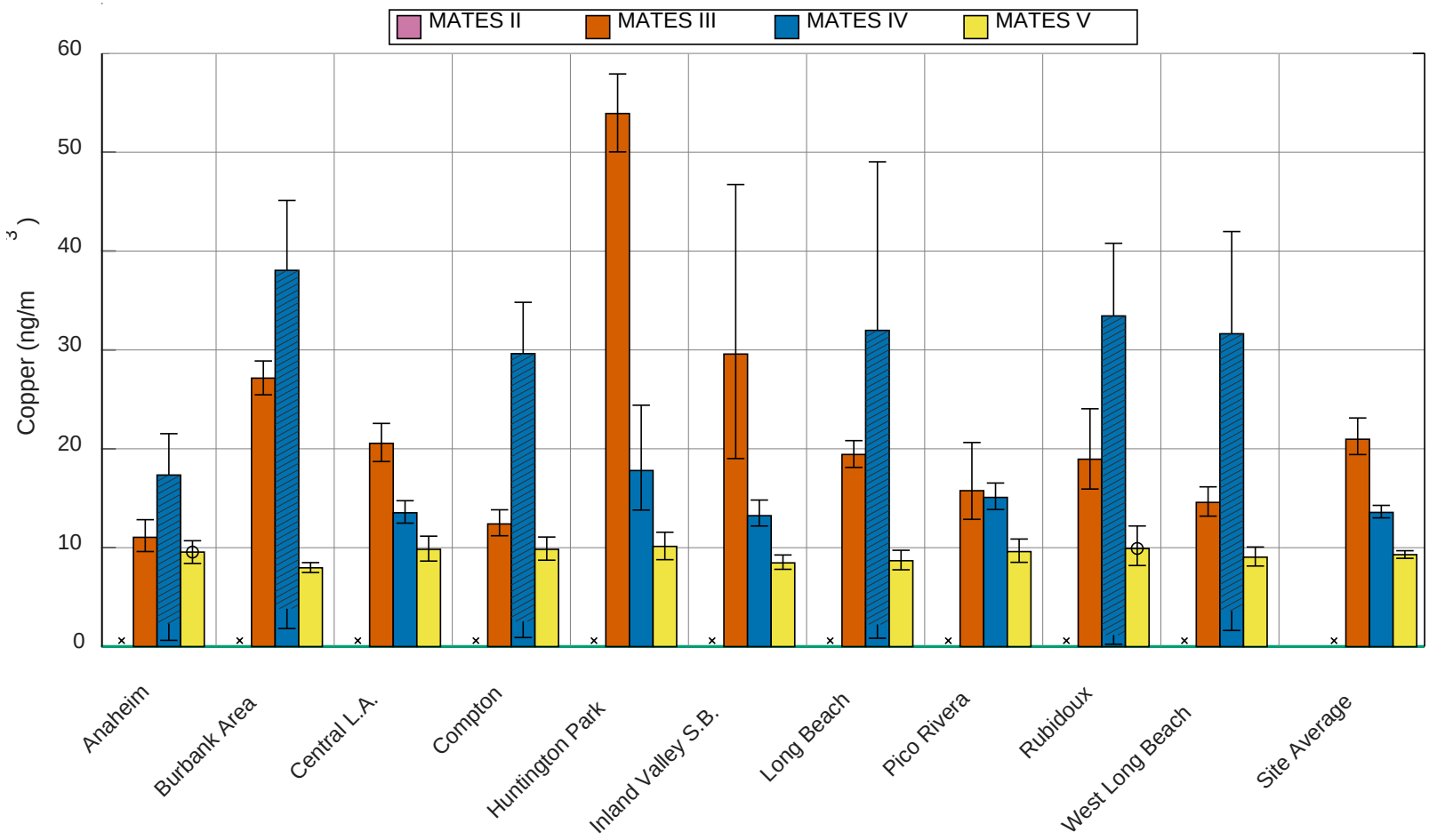


Figure IV-252. Annual Average Concentrations of Copper in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

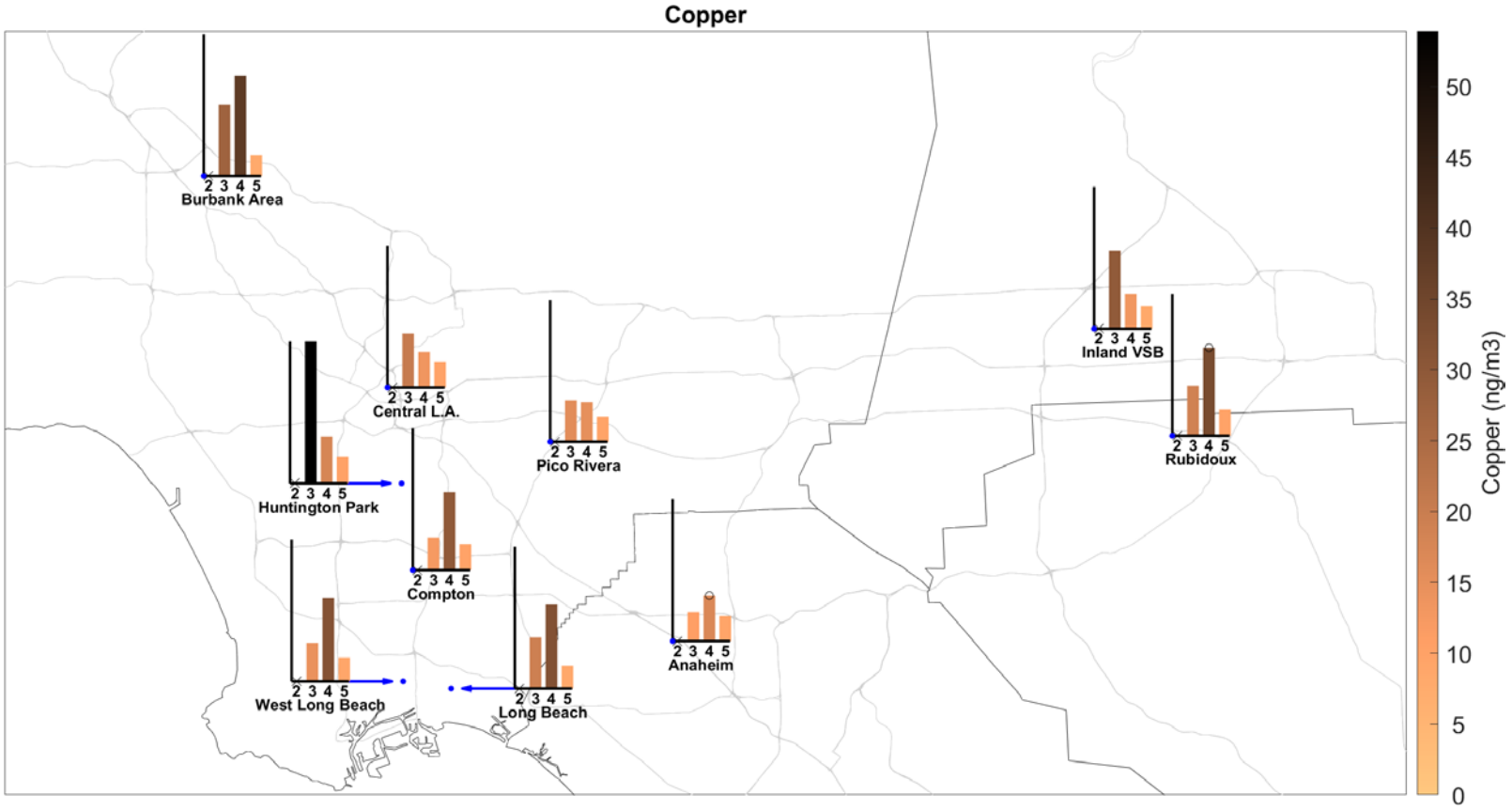


Figure IV-253. Geographic distribution of Copper from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Indium

Table IV-129. Ambient Concentrations (ng/m^3) of Indium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	4.37	4.24	3.89	4.45	2.46	3.25	3.85	2.7	3.6	3.77
95% CI LB	3.61	3.56	3.25	3.68	2.07	2.71	3.24	2.3	2.96	3.14
95% CI UB	5.18	4.89	4.55	5.27	2.9	3.85	4.53	3.21	4.31	4.45
N	240	239	234	238	117	228	237	116	236	228
% < MDL	36.3	36	38.9	32.8	33.3	39.5	32.1	31.9	42.4	35.1
Max	35.8	29.6	30.8	35.8	11.1	33.4	29.1	11.1	33.5	28.3
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

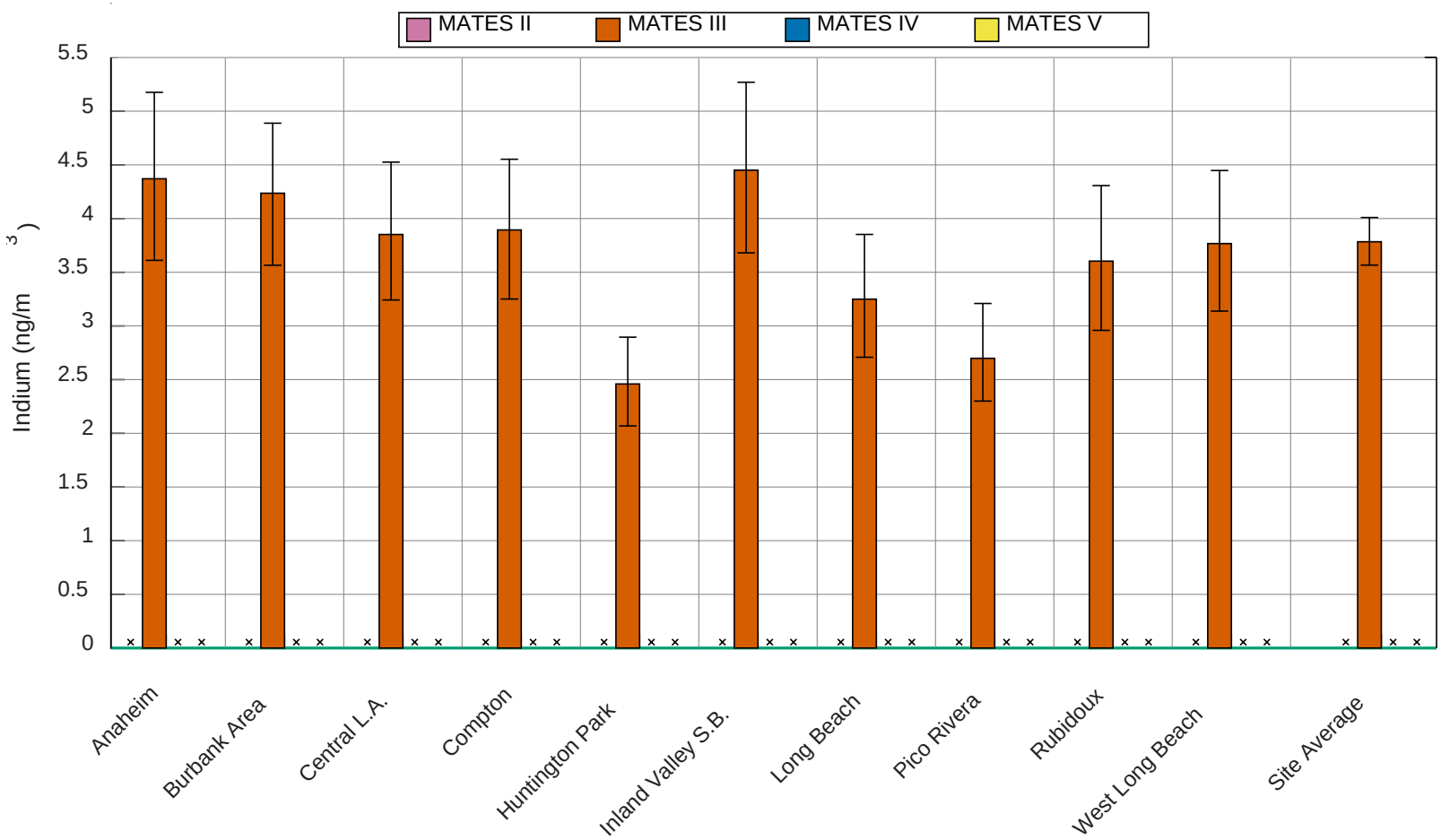


Figure IV-254. Annual Average Concentrations of Indium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

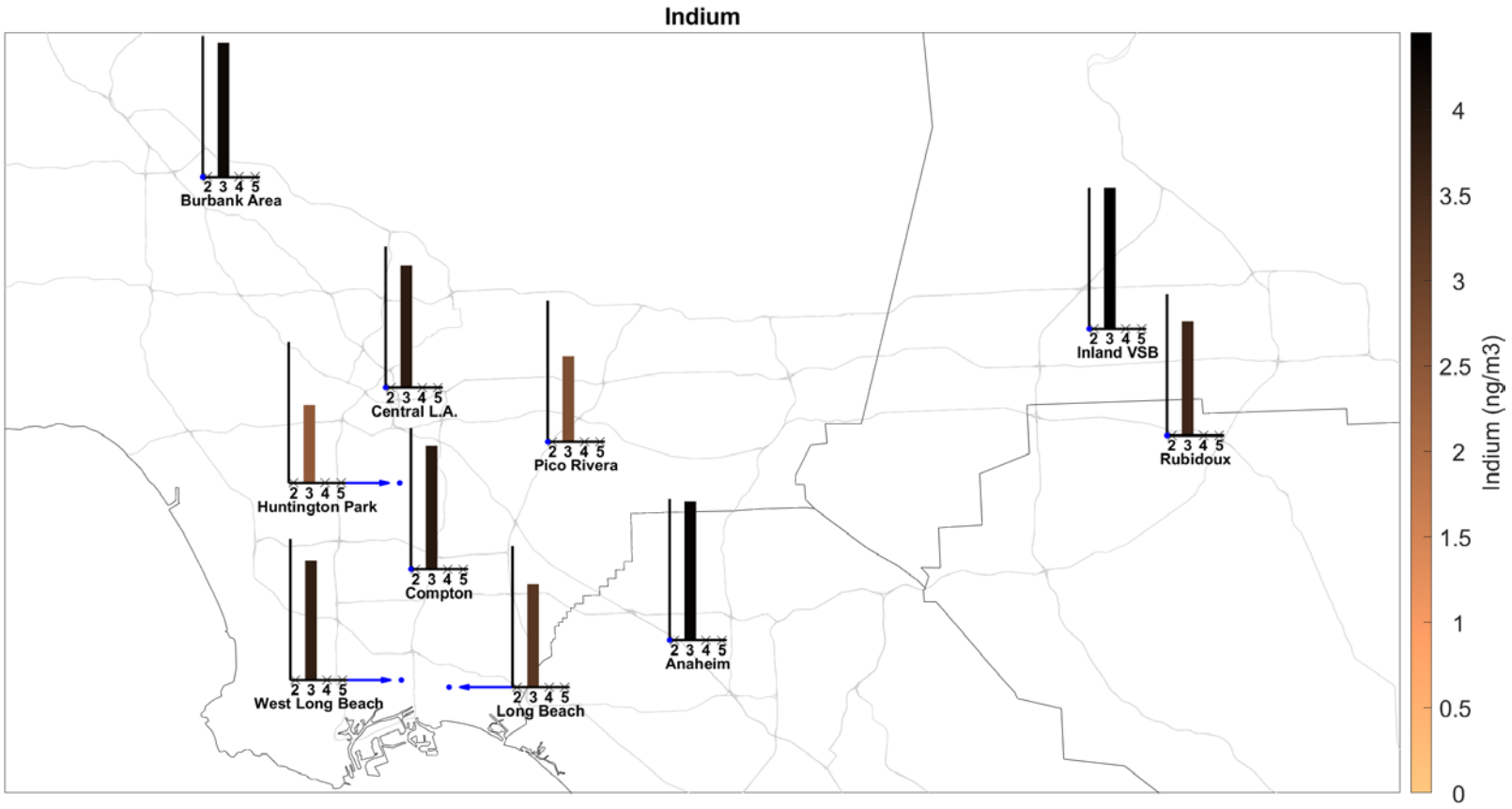


Figure IV-255. Geographic distribution of Indium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Iron

Table IV-130. Ambient Concentrations (ng/m^3) of Iron from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	74	128	76.3	164	95.4	76.2	131	109	84.4	77.2
95% CI LB	63.2	113	65.1	151	75.1	66.3	118	91.9	74.5	63.9
95% CI UB	85.3	146	88.8	179	118	87.7	146	126	94.3	91.5
N	240	239	234	238	117	228	237	116	236	228
% < MDL	6.7	0.8	5.1	0.8	0.9	0.9	0.8	0	3	10.5
Max	561	1500	817	823	816	441	687	398	539	651
MATES IV										
Average	99.1	145	91.3	184	135	96.2	153	136	117	148
95% CI LB	74.5	123	65.4	157	103	75.6	125	113	97.8	113
95% CI UB	129	172	126	214	175	120	185	160	138	188
N	59	59	61	60	59	61	60	59	61	61
% < MDL	5.1	1.7	1.6	0	3.4	0	1.7	1.7	1.6	0
Max	608	472	716	657	612	399	653	379	474	1060
MATES V										
Average	100	90.4	107	166	107	76.2	124	137	136	132
95% CI LB	80.8	79.8	87.3	145	89.8	62.7	109	118	114	112
95% CI UB	121	101	128	189	126	91.3	141	159	158	152
N	54	59	61	60	60	61	61	59	56	57
% < MDL	0	3.4	0	0	0	1.6	1.6	0	0	1.8
Max	346	189	374	394	329	247	362	436	429	371

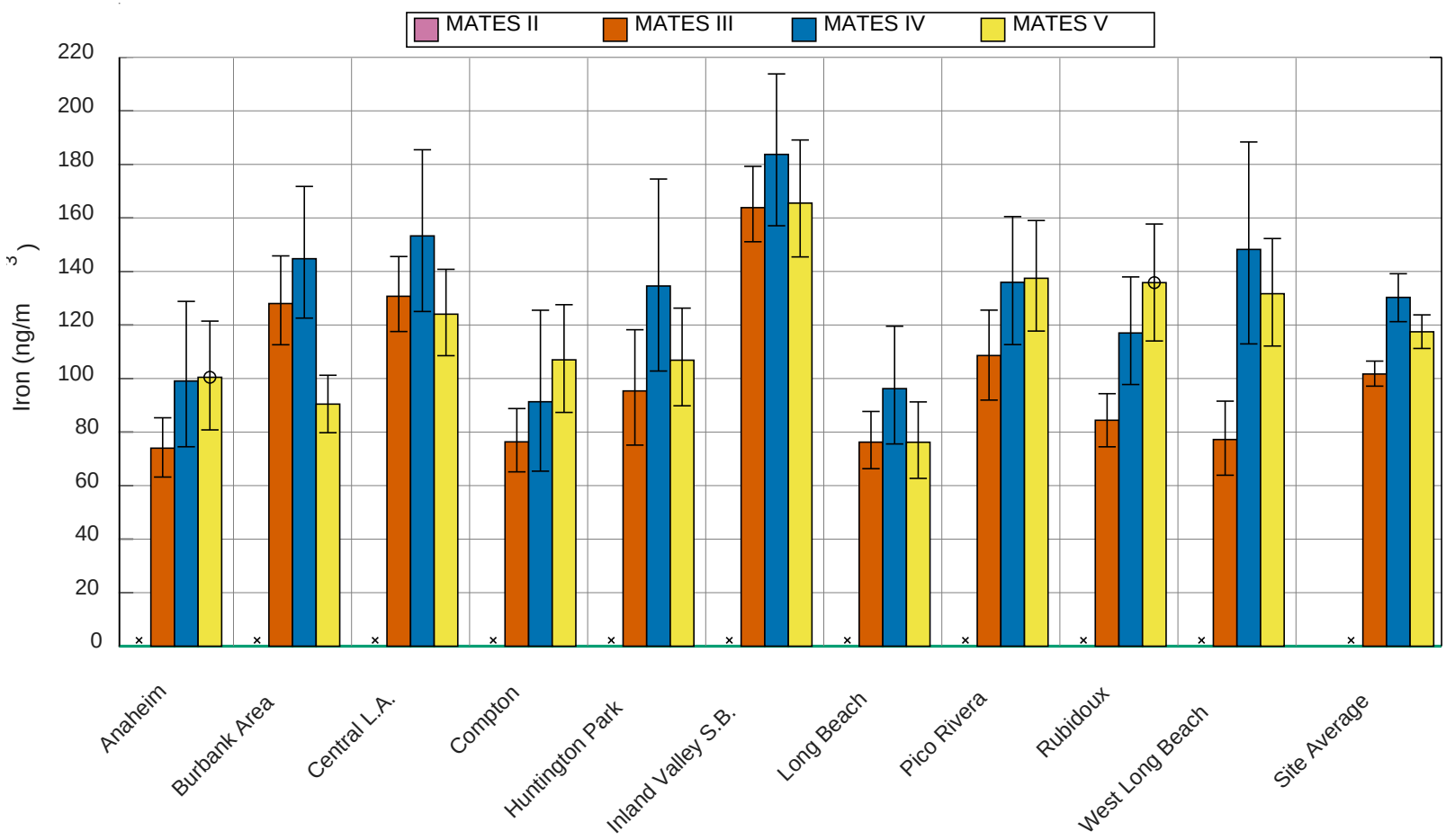


Figure IV-256. Annual Average Concentrations of Iron in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

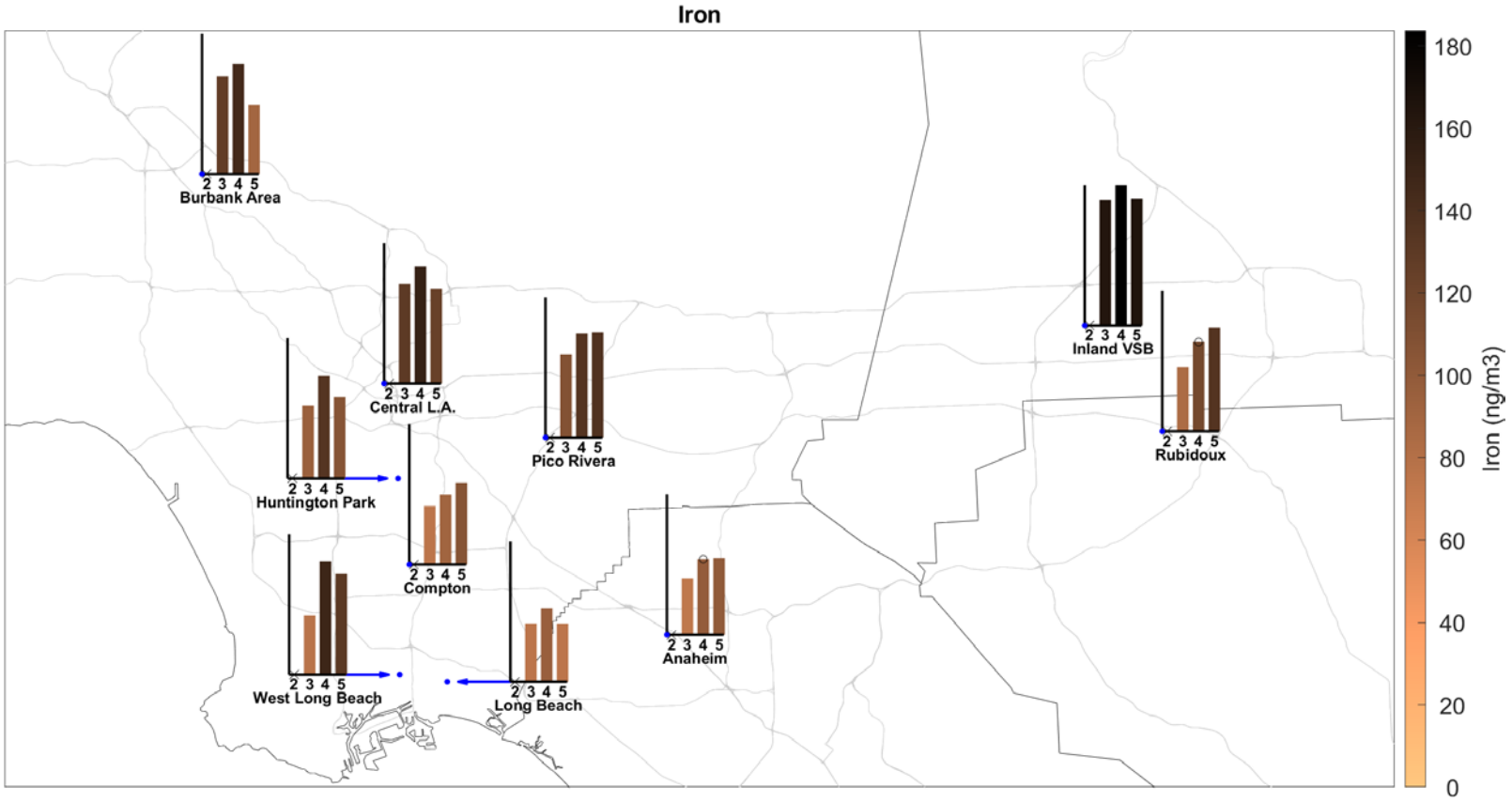


Figure IV-257. Geographic distribution of Iron from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Lead

Table IV-131. Ambient Concentrations (ng/m^3) of Lead from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	4.59	5.54	7.19	10.3	9.47	5.57	5.98	7.33	7.08	8.8
95% CI LB	4.24	5.14	6.42	8.87	7.71	5.09	5.6	6.36	6.26	5.52
95% CI UB	4.98	5.99	8.06	12	11.9	6.09	6.39	8.47	8.05	14.8
N	240	239	234	238	117	228	237	116	236	228
% < MDL	47.9	36.4	34.2	21	18.8	43	20.3	19	28	41.7
Max	33.4	34.7	57	132	113	24.7	19.8	54.4	77	646
MATES IV										
Average	0, 2.12[b]	0, 5.27[b]	0, 6.24[b]	0, 9.8[b]	0, 9.46[b]	0, 4.4[b]	0, 7.34[b]	0, 5.89[b]	0, 6.21[b]	0.541, 5.83[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	2.44[b]	6.02[b]	7.42[b]	11[b]	12.8[b]	5.02[b]	8.19[b]	6.51[b]	7.46[b]	7.57[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	98.4[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	33[b]
MATES V										
Average	0, 2.72[b]	0.593, 6.87[b]	0, 4.81[b]	1.07, 7.66[b]	0, 5.75[b]	0, 3.19[b]	0.262, 4.97[b]	0.271, 4.73[b]	0, 4.46[b]	0, 4.02[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	3.19[b]	7.75[b]	5.83[b]	8.89[b]	9.35[b]	3.96[b]	5.83[b]	5.46[b]	5.17[b]	5.17[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	96.6[b]	100[b]	95[b]	100[b]	100[b]	98.4[b]	98.3[b]	100[b]	100[b]
Max	< MDL[b]	18[b]	< MDL[b]	31[b]	< MDL[b]	< MDL[b]	16[b]	16[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

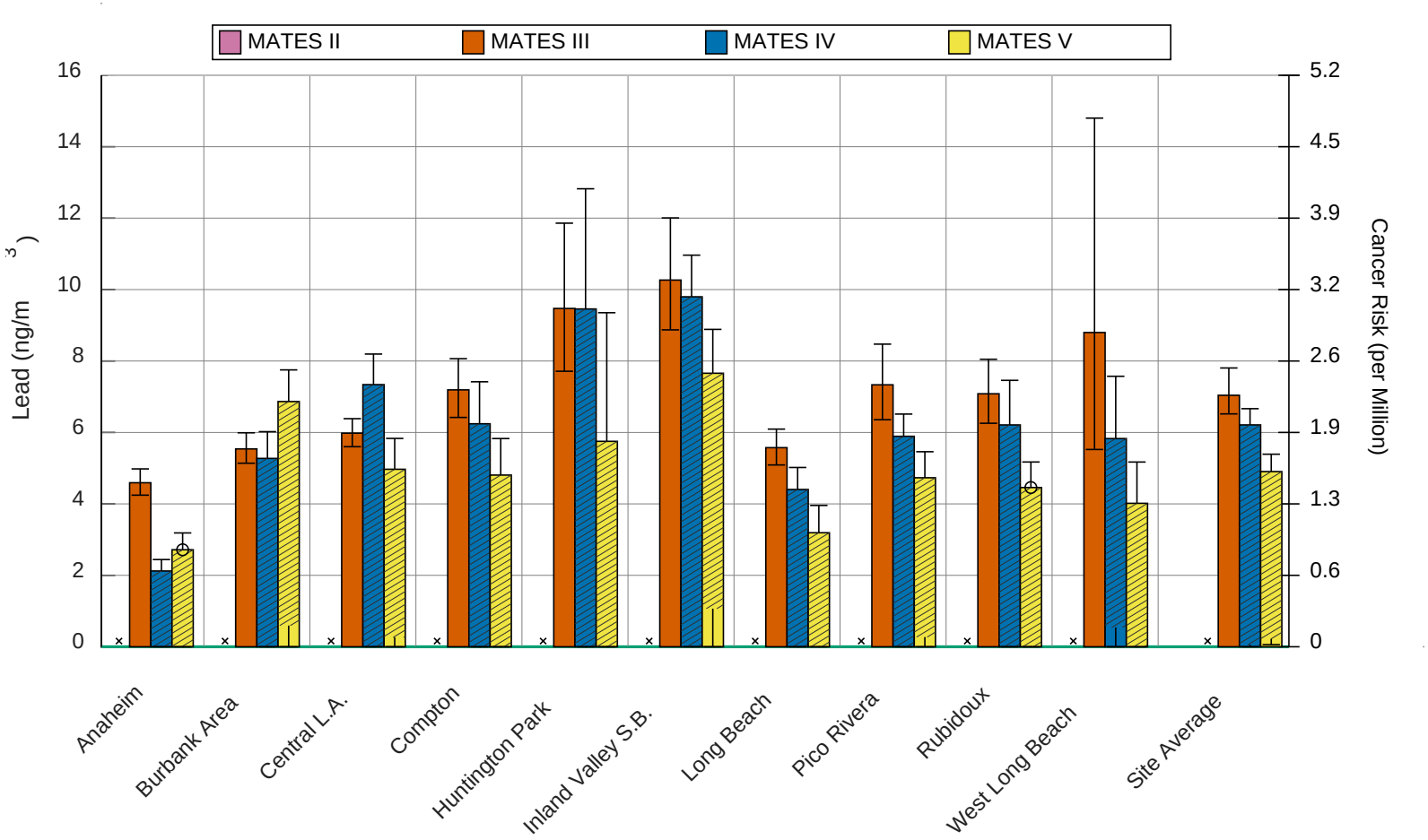


Figure IV-258. Annual Average Concentrations of Lead in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

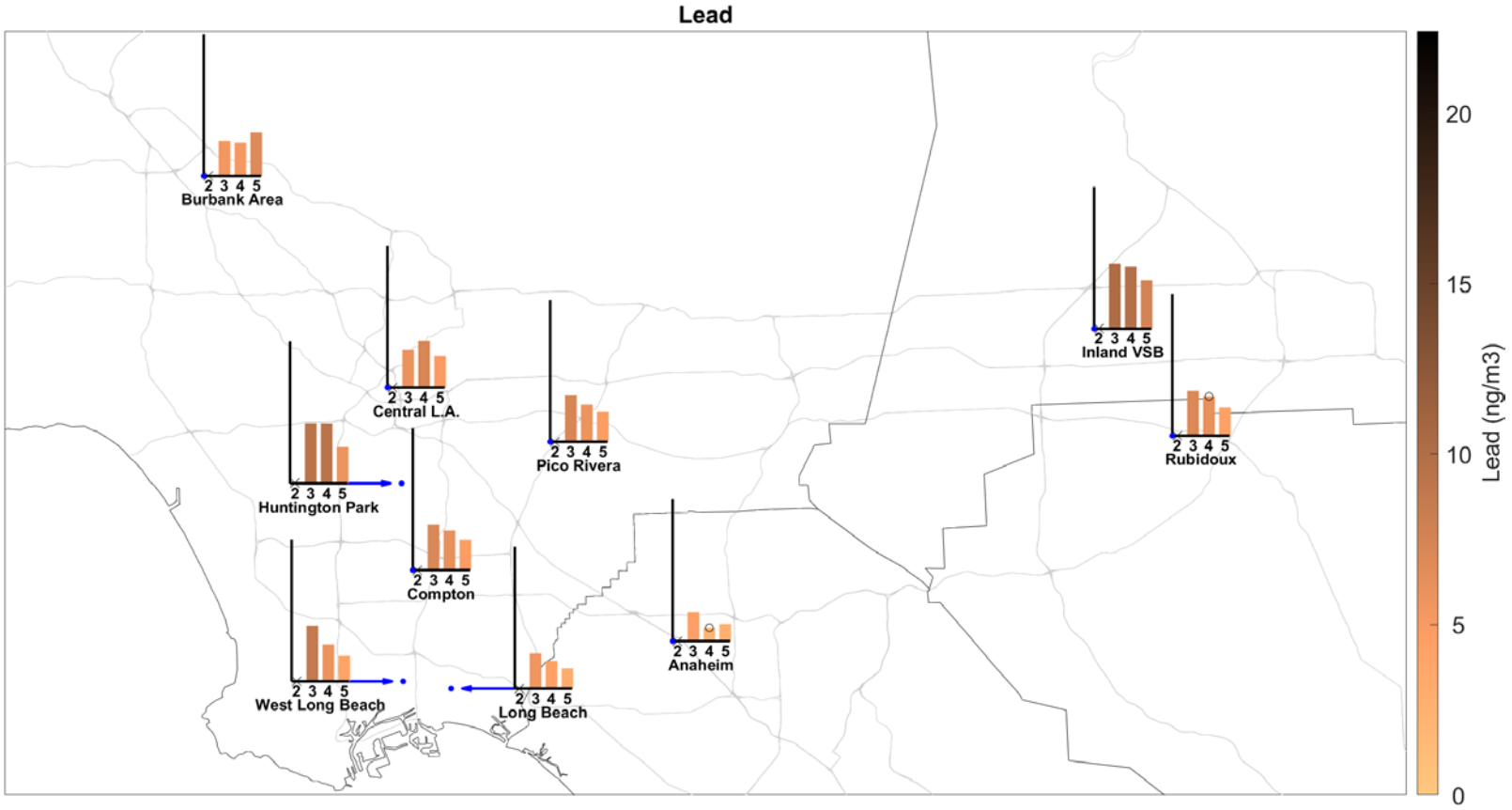


Figure IV-259. Geographic distribution of Lead from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Magnesium

Table IV-132. Ambient Concentrations (ng/m^3) of Magnesium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	83.7	79.4	90.7	85.8	86.1	93.5	86.8	86.2	87.1	92.1
95% CI LB	77.1	74.6	82.9	79.2	79.3	85.5	80.5	80.1	79.7	84.2
95% CI UB	91.5	84.5	99	93.2	94.1	102	93.2	93	95.2	100
N	54	59	61	60	60	61	61	59	56	57
% < MDL	48.1	55.9	45.9	46.7	51.7	41	49.2	50.8	44.6	42.1
Max	194	138	184	199	214	259	181	189	219	199

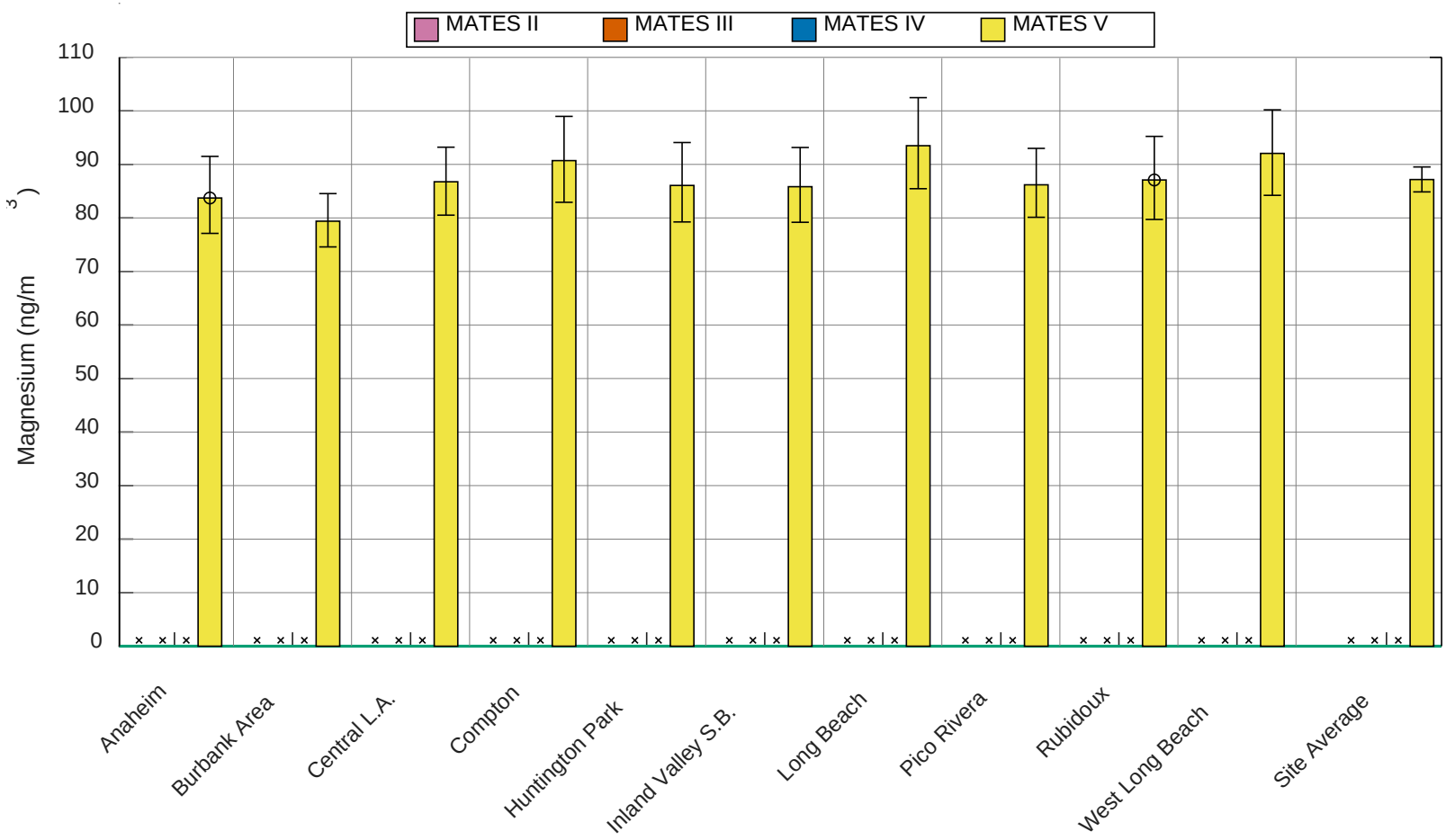


Figure IV-260. Annual Average Concentrations of Magnesium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

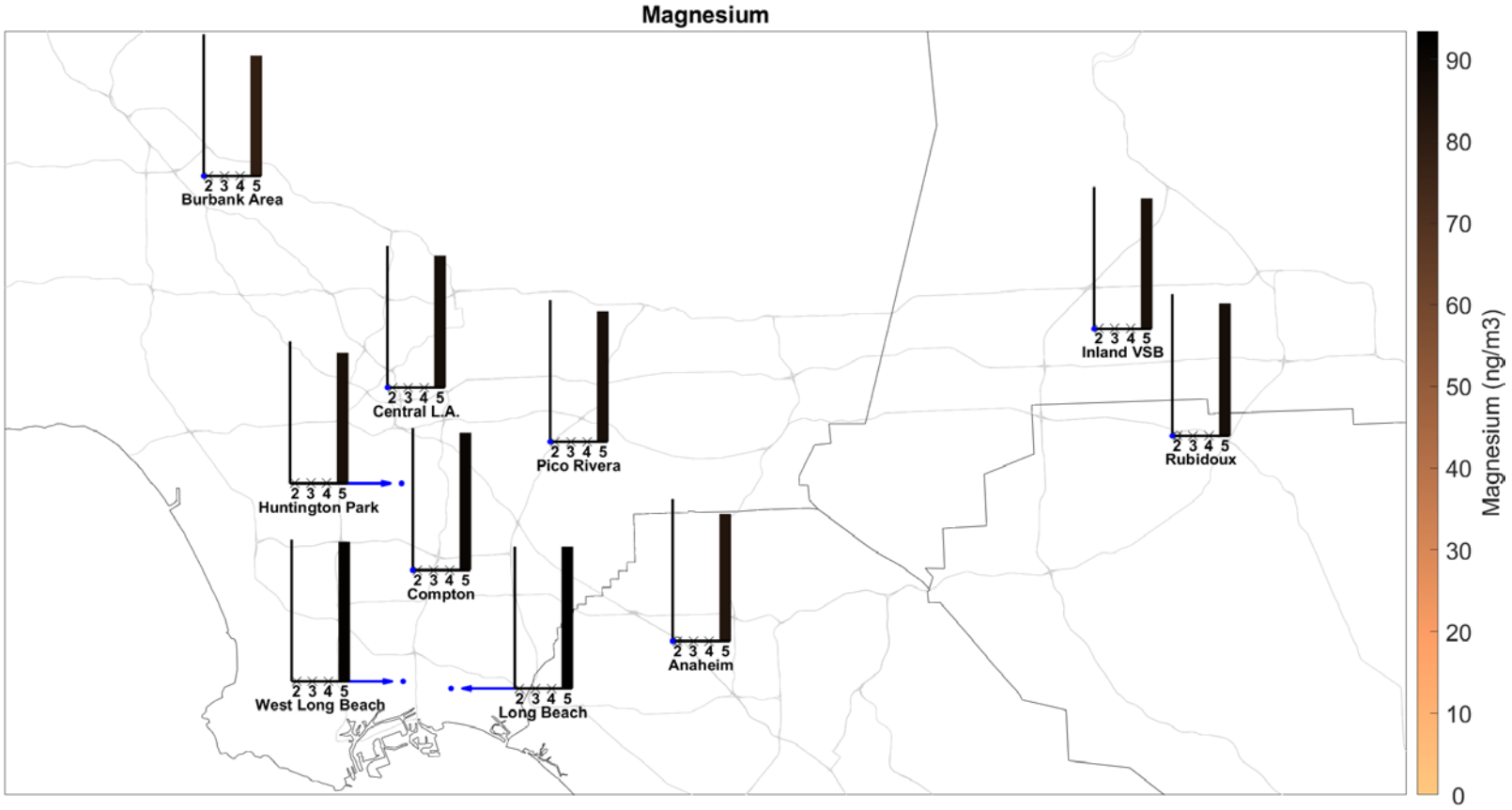


Figure IV-261. Geographic distribution of Magnesium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Manganese

Table IV-133. Ambient Concentrations (ng/m^3) of Manganese from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	2.88	3.3	3.99	6.84	6.55	2.56	5.02	4.16	3.8	3.41
95% CI LB	2.46	2.79	3.41	6.13	5.07	2.23	4.43	3.62	3.24	2.83
95% CI UB	3.4	3.92	4.63	7.6	8.22	2.93	5.64	4.75	4.5	4.1
N	240	239	234	238	117	228	237	116	236	228
% < MDL	29.6	23.4	21.8	14.3	6.8	30.7	14.3	6.9	19.9	26.3
Max	37	40.8	52.9	46.9	44.5	12.4	43.7	13.6	43.2	41.9
MATES IV										
Average	0.915, 8.32[b]	0, 15.2[b]	0, 18.6[b]	3.65, 52[b]	4.42, 22.7[b]	0.525, 14.4[b]	1.7, 19.2[b]	1.76, 21.2[b]	0.279, 33[b]	0.869, 21.3[b]
95% CI LB	0[b]	0[b]	0[b]	1.77[b]	1.34[b]	0[b]	0.533[b]	0.542[b]	0[b]	0[b]
95% CI UB	9.73[b]	17.3[b]	22[b]	60.1[b]	28.6[b]	16.5[b]	21.5[b]	23.8[b]	40.1[b]	24.9[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	94.9[b]	100[b]	100[b]	81.7[b]	88.1[b]	96.7[b]	90[b]	89.8[b]	98.4[b]	95.1[b]
Max	23[b]	< MDL[b]	< MDL[b]	32[b]	82[b]	16[b]	22[b]	23[b]	17[b]	18[b]
MATES V										
Average	0.167, 14.3[b]	0, 19.3[b]	0, 17.8[b]	0.7, 54.1[b]	0, 14.7[b]	0.148, 13.8[b]	0.418, 16.7[b]	0, 29.4[b]	0.232, 31.7[b]	0, 20.2[b]
95% CI LB	0[b]	0[b]	0[b]	0.167[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	16.9[b]	22.3[b]	21.3[b]	64.4[b]	17.3[b]	17.4[b]	19[b]	33.5[b]	36.5[b]	25.1[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	98.1[b]	100[b]	100[b]	93.3[b]	100[b]	98.4[b]	96.7[b]	100[b]	98.2[b]	100[b]
Max	9[b]	< MDL[b]	< MDL[b]	11[b]	< MDL[b]	9[b]	13.5[b]	< MDL[b]	13[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

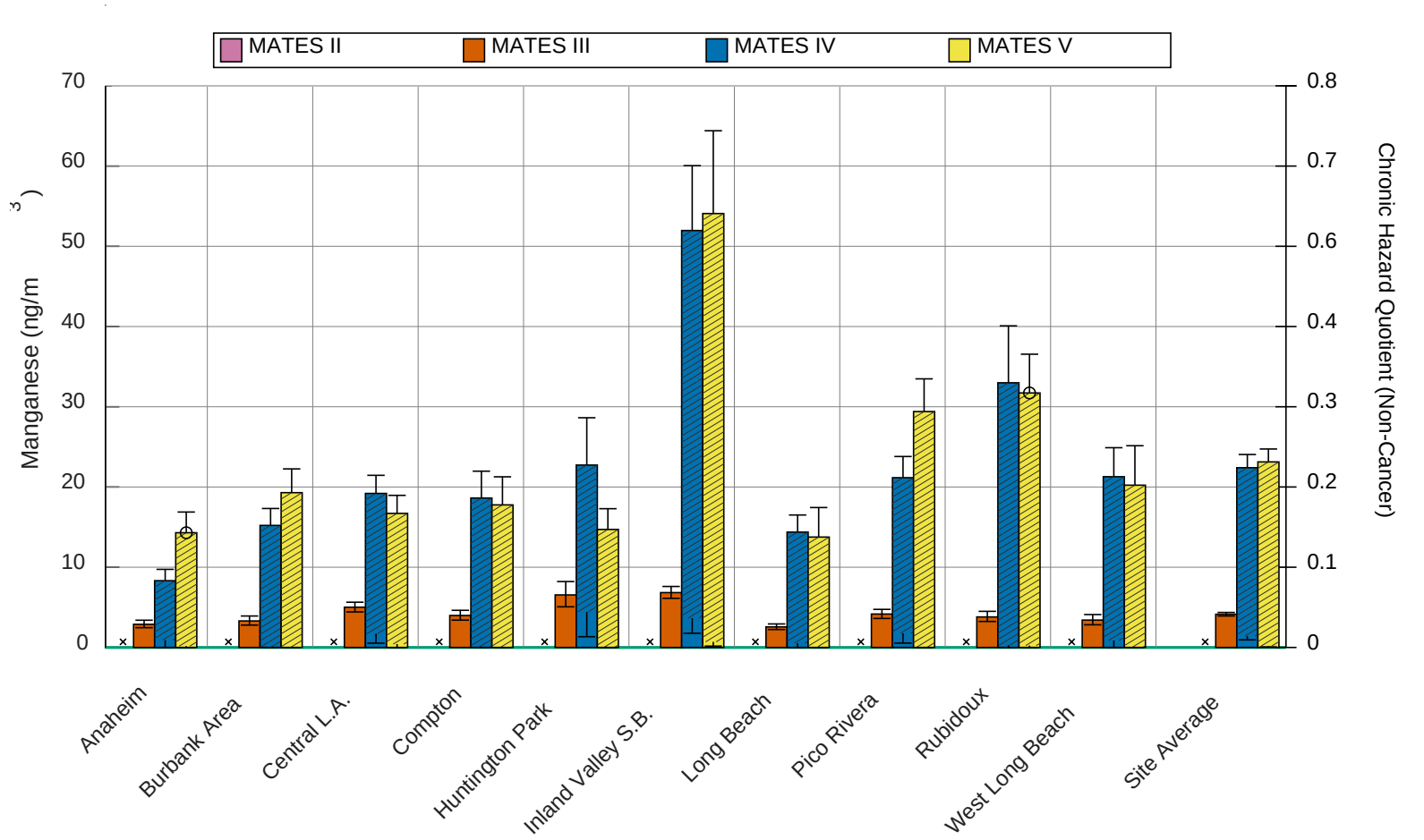


Figure IV-262. Annual Average Concentrations of Manganese in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

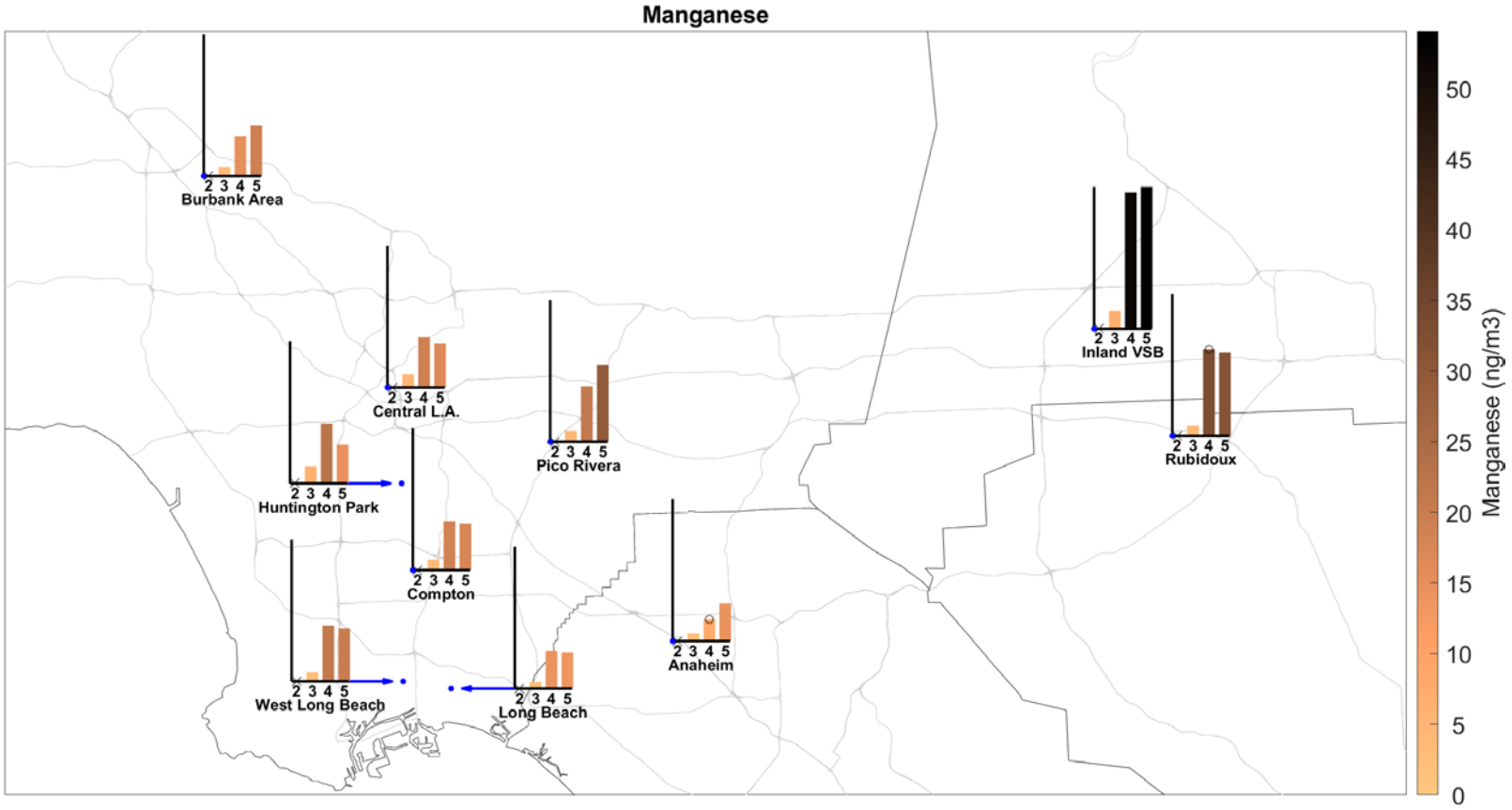


Figure IV-263. Geographic distribution of Manganese from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Molybdenum

Table IV-134. Ambient Concentrations (ng/m^3) of Molybdenum from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	4.27	4.64	4.81	4.68	5.16	4.36	4.72	4.46	4.5	4.61
95% CI LB	4	4.35	4.51	4.35	4.64	4.05	4.51	4.07	4.23	4.32
95% CI UB	4.53	4.96	5.11	5.07	5.75	4.7	4.94	4.83	4.78	4.89
N	240	239	234	238	117	228	237	116	236	228
% < MDL	2.9	1.3	2.6	2.1	1.7	3.5	0	1.7	0.8	0.4
Max	13.6	19.8	14.8	33.5	23.5	16.1	12.3	9.9	12.3	14.8
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	0, 0.793[b]	0, 0.852[b]	0, 1.31[b]	0.3, 1.52[b]	0, 1.25[b]	0, 1[b]	0, 2.45[b]	0, 1.07[b]	0, 0.766[b]	0, 1.17[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.97[b]	0.981[b]	1.61[b]	2.08[b]	1.64[b]	1.35[b]	2.82[b]	1.23[b]	0.873[b]	1.46[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	100[b]	100[b]	98.3[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	18[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

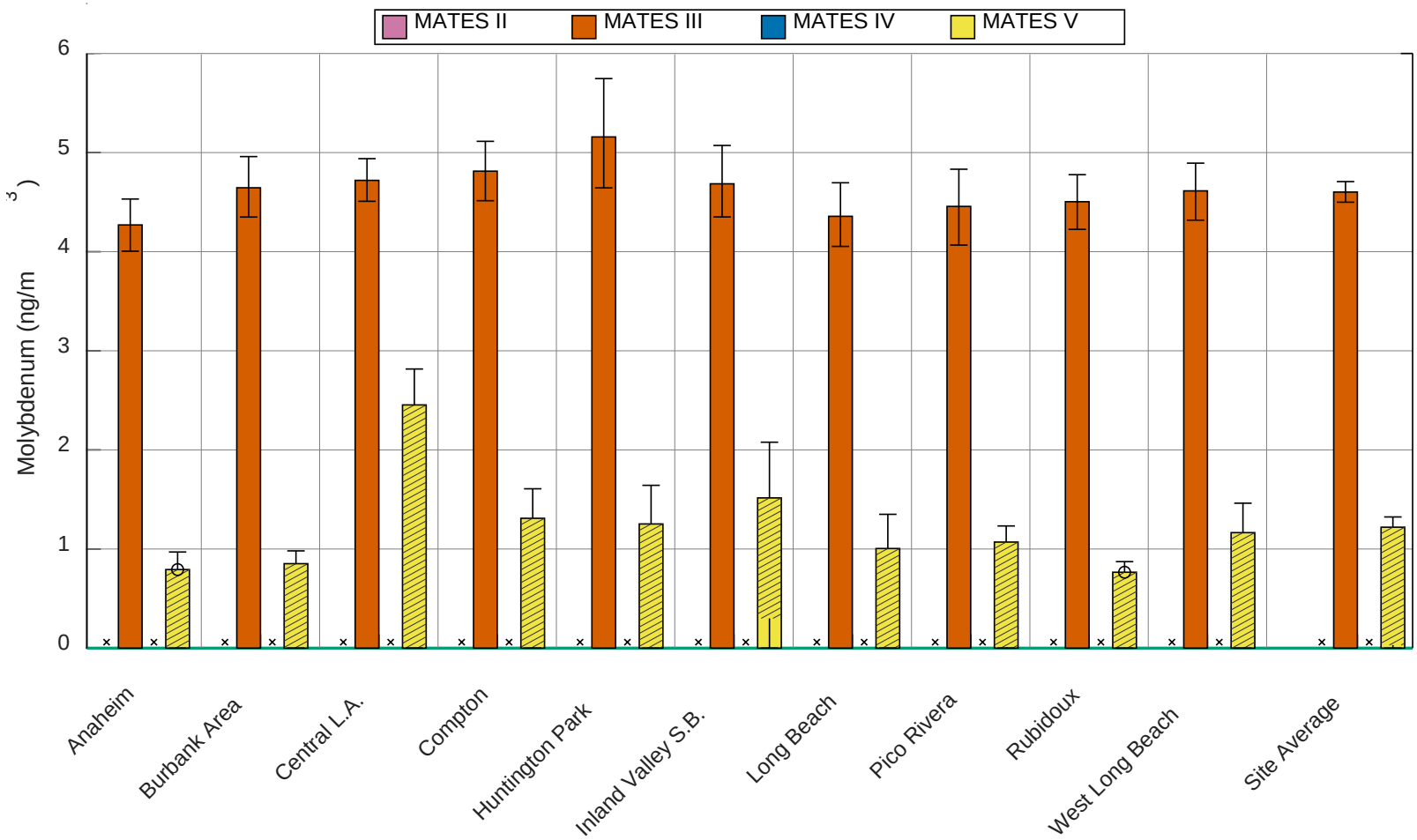


Figure IV-264. Annual Average Concentrations of Molybdenum in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

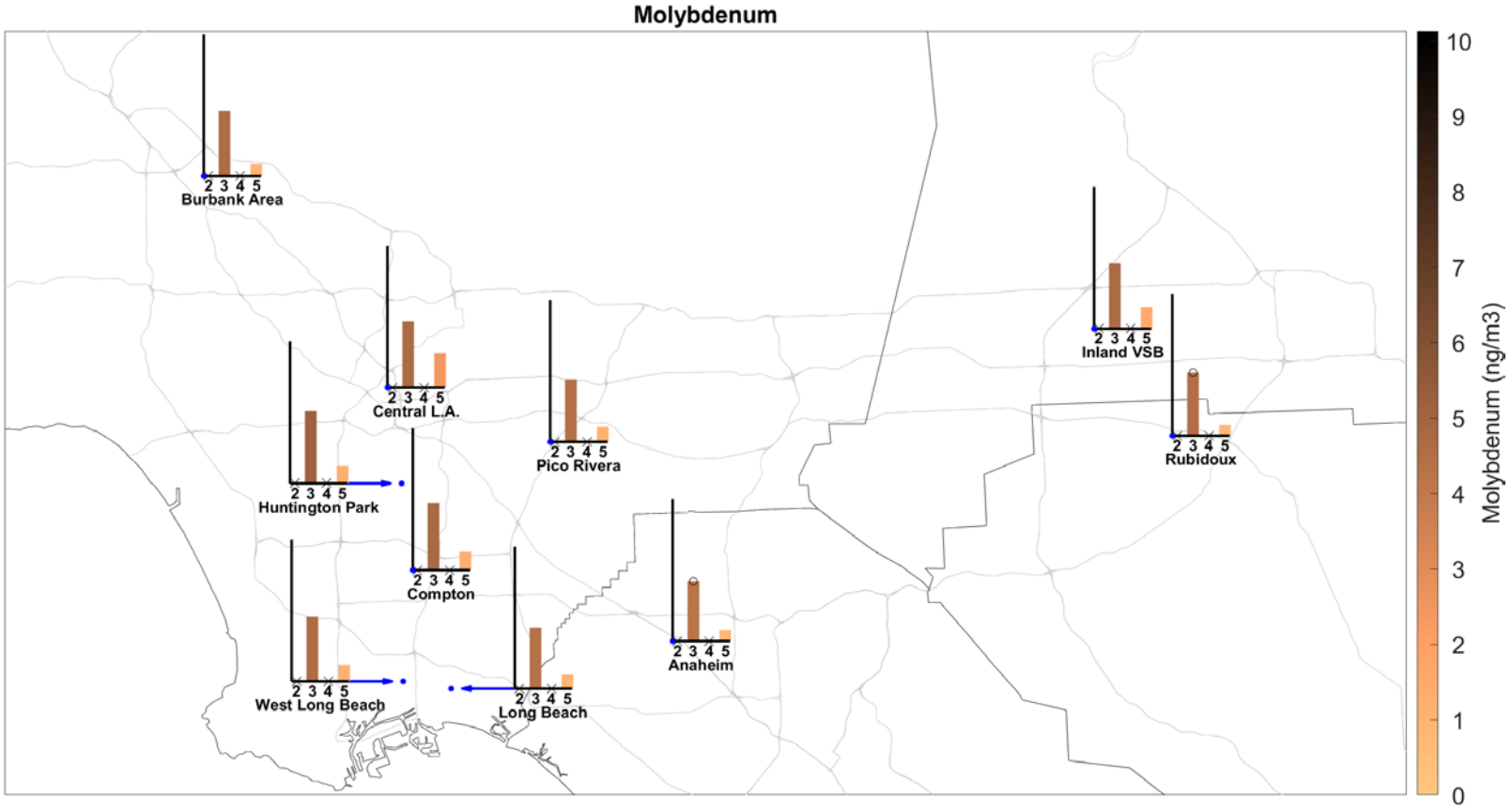


Figure IV-265. Geographic distribution of Molybdenum from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Nickel

Table IV-135. Ambient Concentrations (ng/m^3) of Nickel from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	3.77	2.91	3.85	3.33	4.04	4.39	3.44	2.93	2.77	7.37
95% CI LB	3.29	2.49	3.37	2.52	3.51	3.96	3.01	2.54	2.29	6.66
95% CI UB	4.31	3.37	4.38	4.55	4.61	4.84	3.92	3.37	3.29	8.12
N	240	239	234	238	117	228	237	116	236	228
% < MDL	7.5	14.2	7.7	17.6	3.4	6.1	6.3	6.9	16.9	2.6
Max	33.3	28.4	34.5	120	16.1	18.5	28.3	12.4	32.1	38.2
MATES IV										
Average	0, 1.78[b]	0.22, 3.9[b]	0, 4.06[b]	0, 4.06[b]	0.729, 5.4[b]	0.393, 3.6[b]	0, 3.37[b]	0, 4.47[b]	0, 3.36[b]	0.475, 3.73[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	2.03[b]	6.2[b]	4.75[b]	4.68[b]	7.5[b]	4.34[b]	4.44[b]	5.19[b]	4.02[b]	4.3[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	100[b]	98.3[b]	100[b]	100[b]	96.6[b]	98.4[b]	100[b]	100[b]	100[b]	96.7[b]
Max	< MDL[b]	13[b]	< MDL[b]	< MDL[b]	32[b]	24[b]	< MDL[b]	< MDL[b]	< MDL[b]	20[b]
MATES V										
Average	0.389, 2.17[b]	0, 2.01[b]	0.0656, 2.93[b]	0, 6.31[b]	0.283, 2.64[b]	0, 3.64[b]	0, 2[b]	0, 3[b]	0, 2.41[b]	0.246, 3.74[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	2.58[b]	2.28[b]	3.49[b]	9.66[b]	3.53[b]	4.6[b]	2.26[b]	3.33[b]	2.79[b]	4.48[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	98.1[b]	100[b]	98.4[b]	100[b]	98.3[b]	100[b]	100[b]	100[b]	100[b]	96.5[b]
Max	21[b]	< MDL[b]	4[b]	< MDL[b]	17[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	10[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

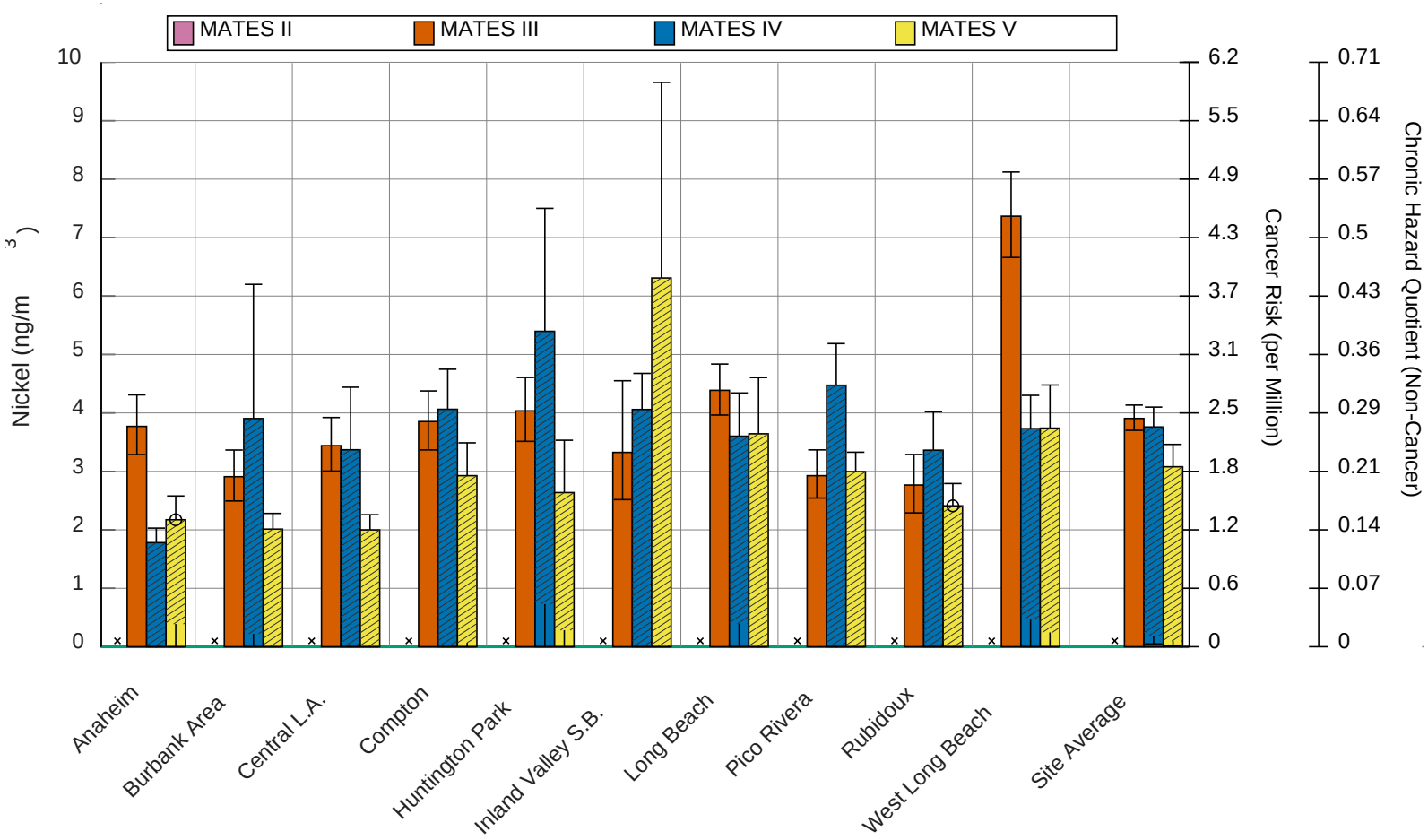


Figure IV-266. Annual Average Concentrations of Nickel in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

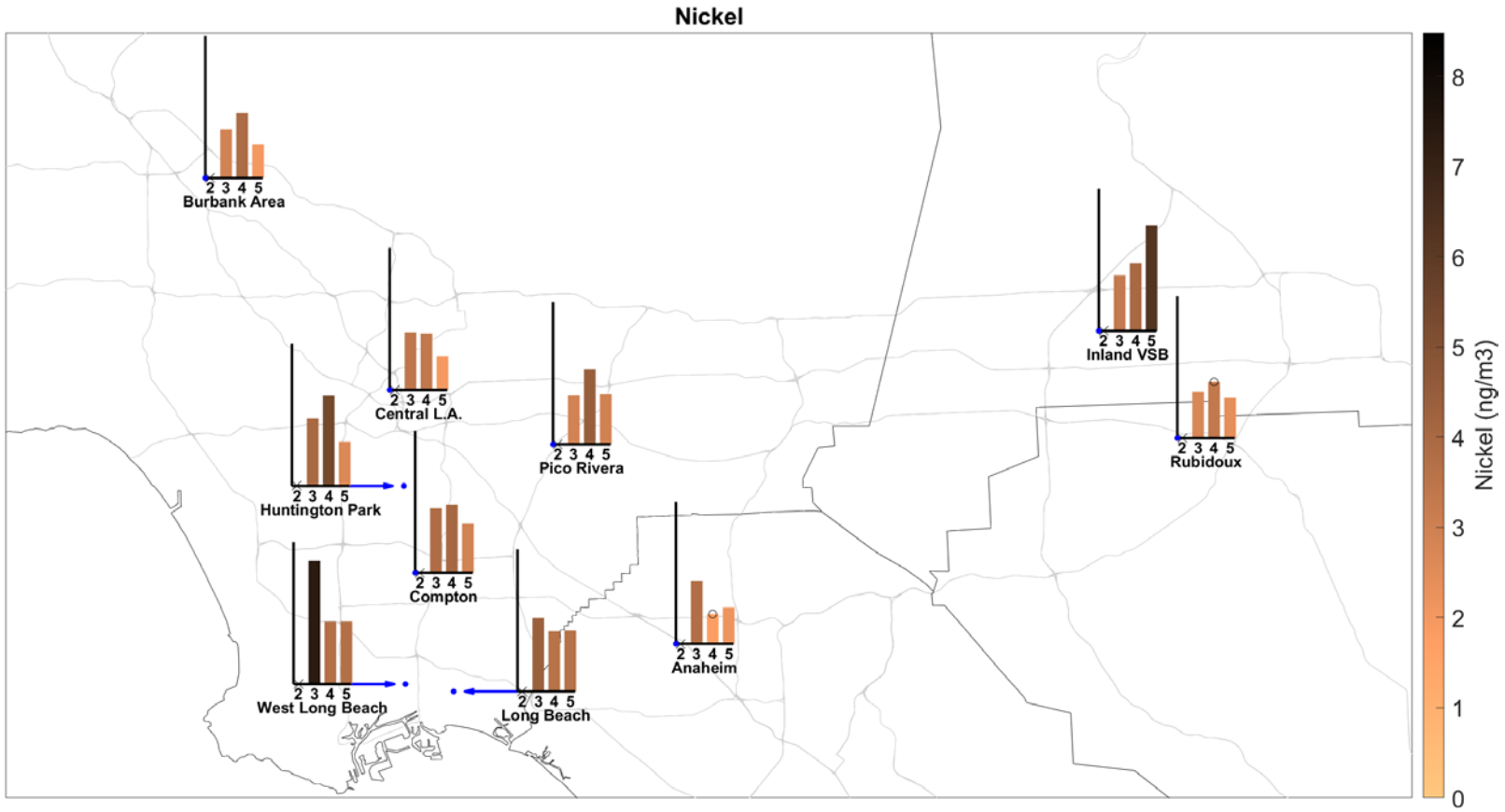


Figure IV-267. Geographic distribution of Nickel from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Palladium

Table IV-136. Ambient Concentrations (ng/m^3) of Palladium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	0.799, 2.04[a]	0.616, 1.85[a]	0.682, 1.92[a]	0.624, 1.88[a]	0.603, 1.85[a]	0.618, 1.9[a]	1.85	0.523, 1.8[a]	0.854, 2.09[a]	0.673, 1.92[a]
95% CI LB	0.557[a]	0.44[a]	0.481[a]	0.432[a]	0.349[a]	0.417[a]	1.75	0.288[a]	0.613[a]	0.467[a]
95% CI UB	2.24[a]	1.98[a]	2.08[a]	2.04[a]	2.05[a]	2.06[a]	1.97	1.98[a]	2.28[a]	2.07[a]
N	240[a]	239[a]	234[a]	238[a]	117[a]	228[a]	237	116[a]	236[a]	228[a]
% < MDL	82.9[a]	82.4[a]	82.5[a]	83.6[a]	82.9[a]	85.5[a]	77.6	85.3[a]	82.2[a]	83.3[a]
Max	13.6[a]	9.91[a]	8.66[a]	12.4[a]	8.65[a]	9.87[a]	8.66	7.42[a]	8.68[a]	7.43[a]
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

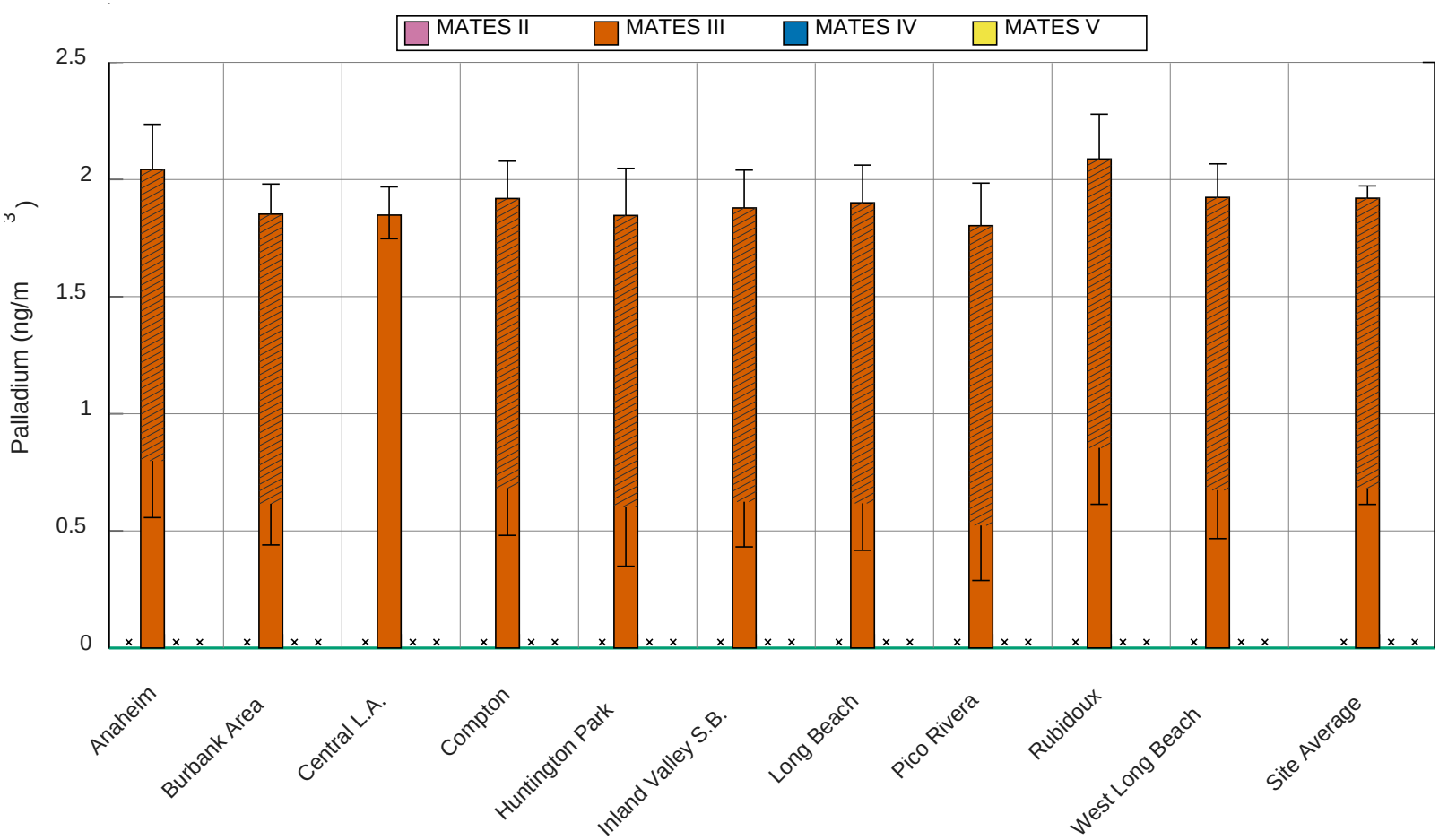


Figure IV-268. Annual Average Concentrations of Palladium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

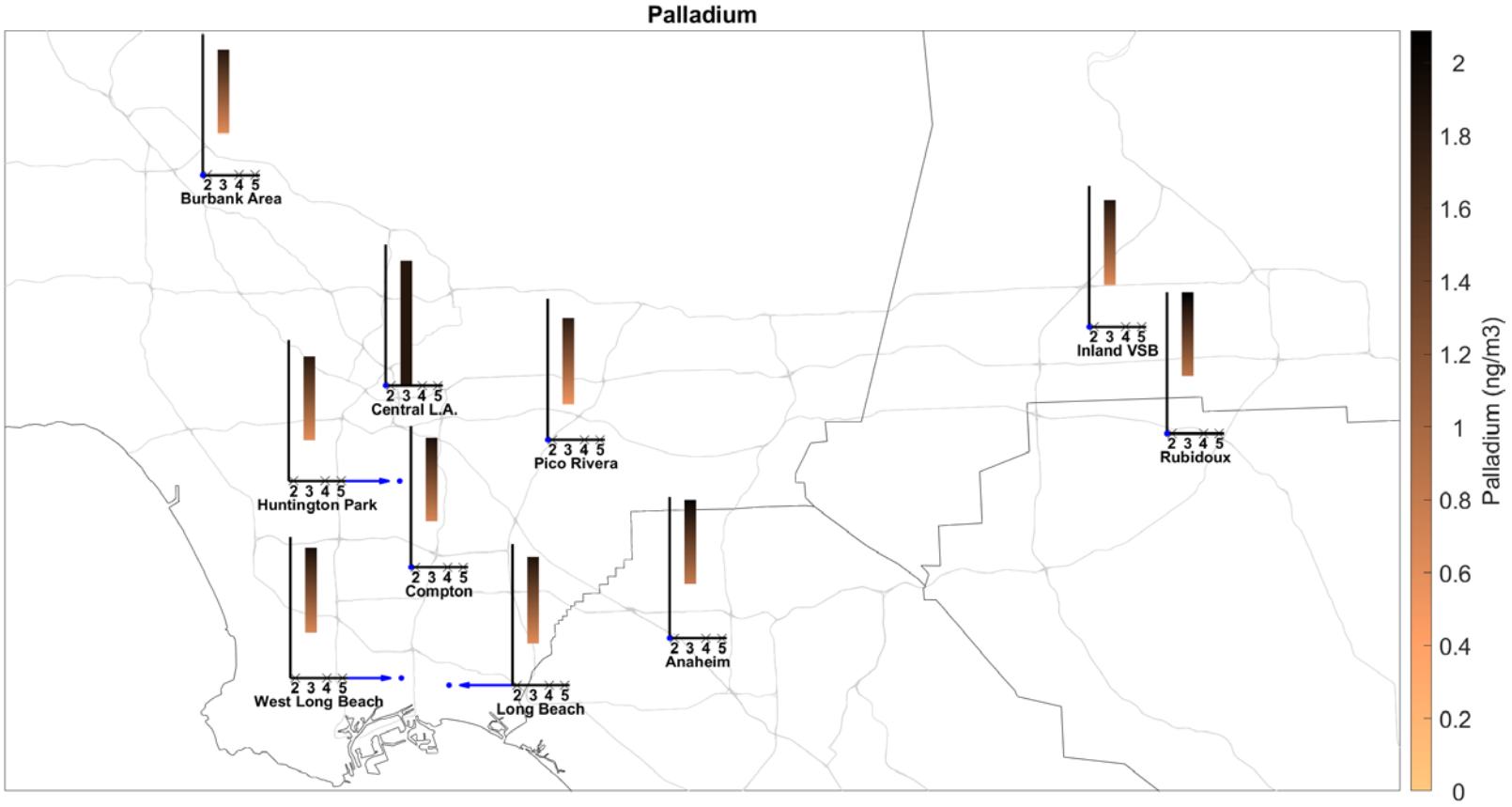


Figure IV-269. Geographic distribution of Palladium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Phosphorus

Table IV-137. Ambient Concentrations (ng/m^3) of Phosphorus from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	25.6	27.4	32.3	28.6	35.3	34.6	28.3	32.8	25.6	36.8
95% CI LB	22.6	23.6	28	24.6	29	29.8	24.9	26.4	22.5	31.8
95% CI UB	28.9	31.6	37.6	32.8	42.3	39.7	32.1	39.7	28.9	42.7
N	240	239	234	238	117	228	237	116	236	228
% < MDL	59.6	62.8	56.8	58	46.2	54.8	51.5	48.3	63.6	49.6
Max	152	214	217	236	184	204	186	222	164	315
MATES IV										
Average	20.6	22.8	22.2	23.4	24	21.3	23.5	22.2	22.1	20.9
95% CI LB	18.5	19.9	19.6	20.9	20.9	19	20.3	19.7	19.7	18.7
95% CI UB	22.8	25.9	24.9	26.2	27.4	23.9	26.6	24.6	24.6	23.2
N	59	59	61	60	59	61	60	59	61	61
% < MDL	61	57.6	52.5	51.7	49.2	55.7	53.3	50.8	52.5	52.5
Max	48	64	54	55	74	60	69	46	52	49
MATES V										
Average	16	16.4	16.9	16.7	17.7	16.5	17.8	16.7	16.6	16.5
95% CI LB	15.4	15.7	15.8	16	16.2	15.6	16.5	15.9	15.9	15.6
95% CI UB	16.6	17.3	18.1	17.5	19.4	17.5	19.4	17.6	17.4	17.6
N	54	59	61	60	60	61	61	59	56	57
% < MDL	77.8	79.7	73.8	66.7	70	73.8	67.2	72.9	67.9	75.4
Max	25	28	35	27	40	32	37.5	28	25	33

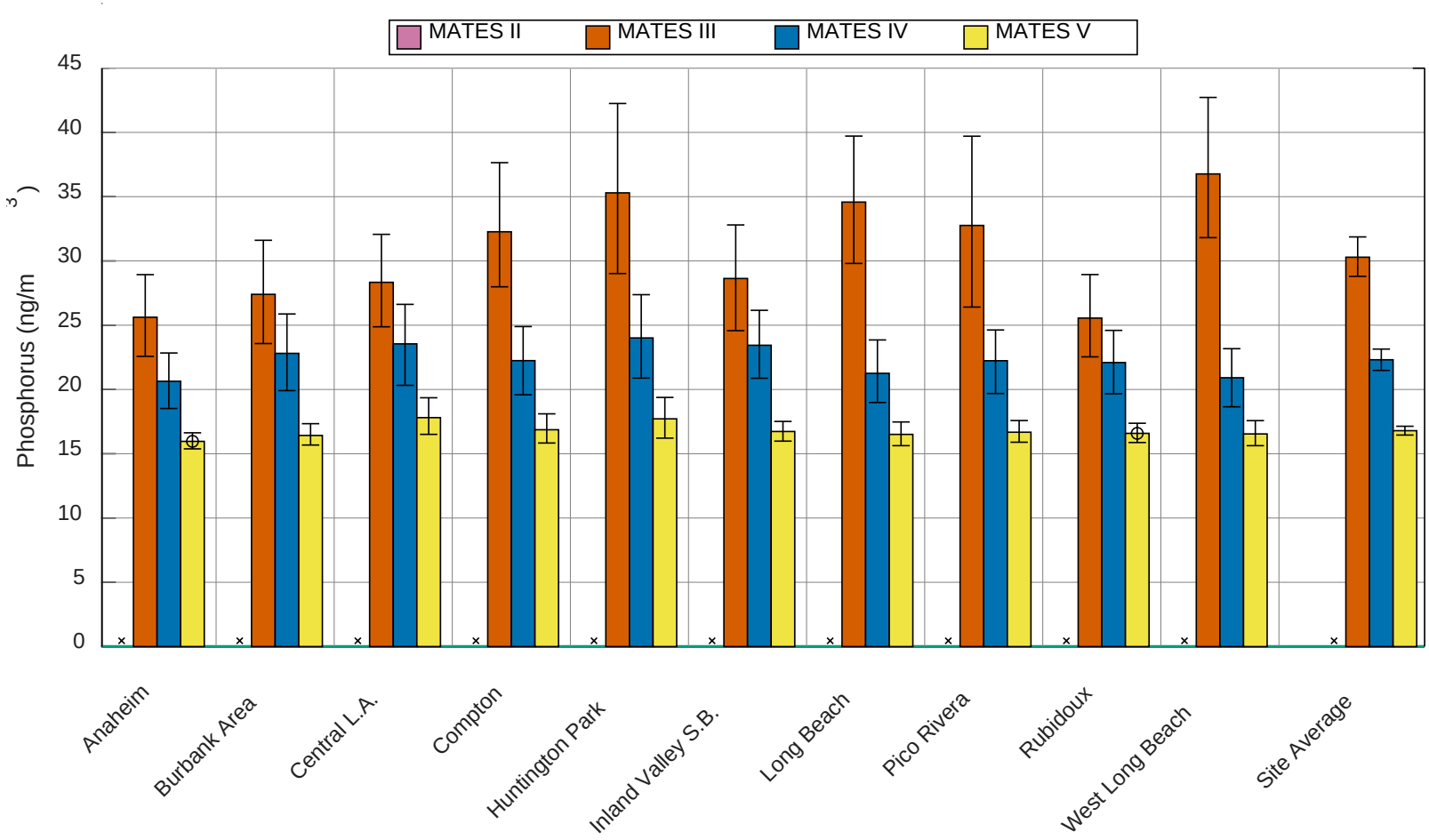


Figure IV-270. Annual Average Concentrations of Phosphorus in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

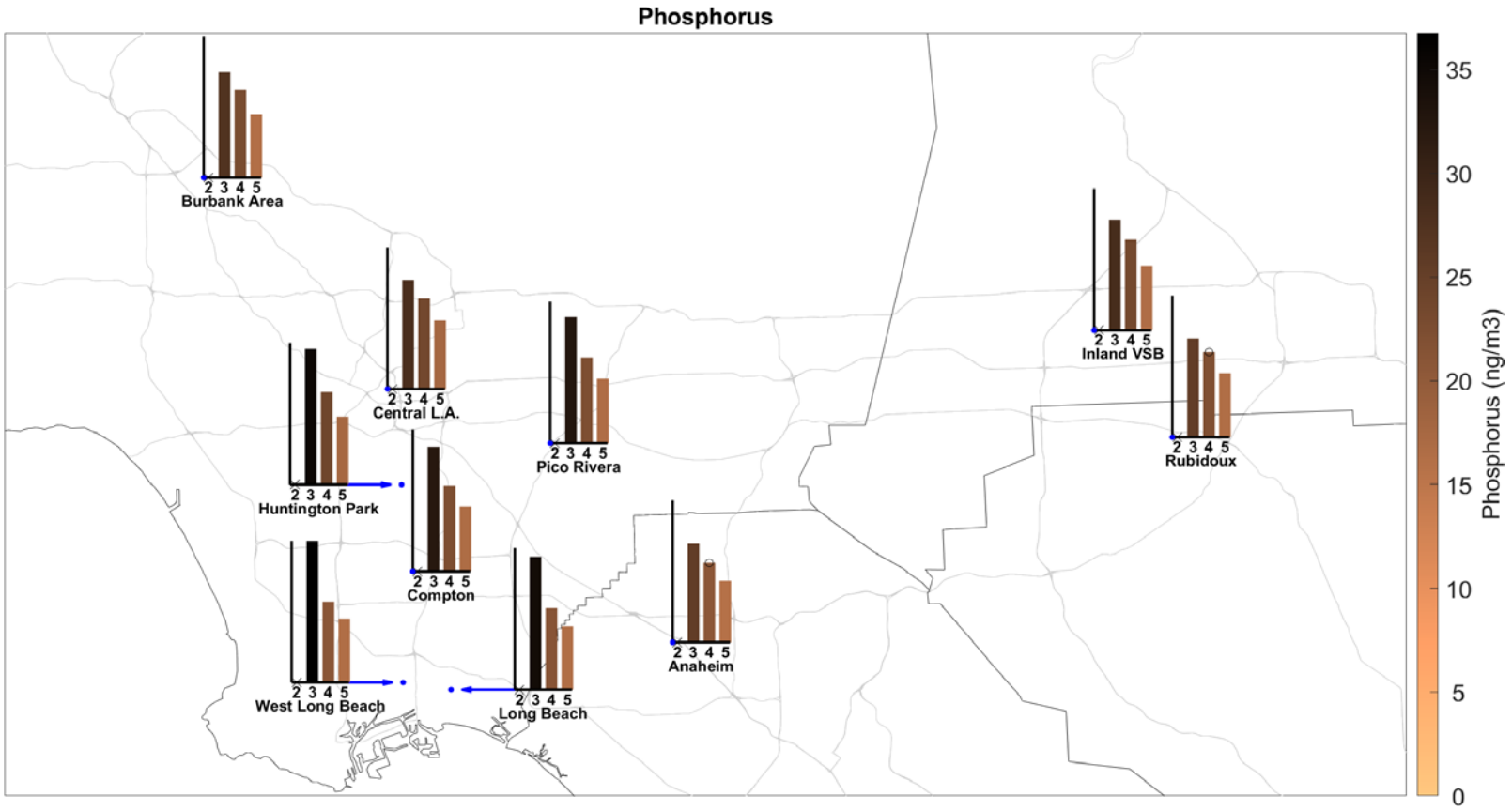


Figure IV-271. Geographic distribution of Phosphorus from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Potassium

Table IV-138. Ambient Concentrations (ng/m^3) of Potassium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	81.6	97.1	84	167	122	62.5	73.4	136	136	59.4
95% CI LB	51.3	68.3	58.4	70.4	77	46.2	48.9	57.9	61.5	45.5
95% CI UB	134	144	120	353	190	83.2	114	279	275	77.8
N	240	239	234	238	117	228	237	116	236	228
% < MDL	3.3	1.7	3.4	2.9	2.6	4.4	1.7	1.7	3.4	6.1
Max	5530	4770	2990	21500	2980	1600	4080	7850	14900	1550
MATES IV										
Average	68.5	73.9	71.1	74.4	68.2	61.2	69	72.6	73.7	71.8
95% CI LB	58.3	64.5	59.2	64.5	58.4	53.1	60.5	63.8	65.3	61.7
95% CI UB	80.5	83.7	83.9	84.8	78.8	69.8	79.4	81.7	82.5	82.9
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	1.7	0	0	3.4	0	1.7	1.7	1.6	0
Max	290	191	229	187	203	152	213	176	183	245
MATES V										
Average	64.6	53.2	74.3	73.9	63.5	52.3	60.5	67.4	85.4	59.7
95% CI LB	48.7	41.9	59.1	61.5	52.1	43.2	47.8	55.6	68.6	48.6
95% CI UB	84.2	66.5	91.7	87.8	76.6	62.6	76.4	82.3	105	72.8
N	54	59	61	60	60	61	61	59	56	57
% < MDL	1.9	0	0	0	0	0	0	0	0	1.8
Max	399	304	335	267	269	209	375	385	383	272

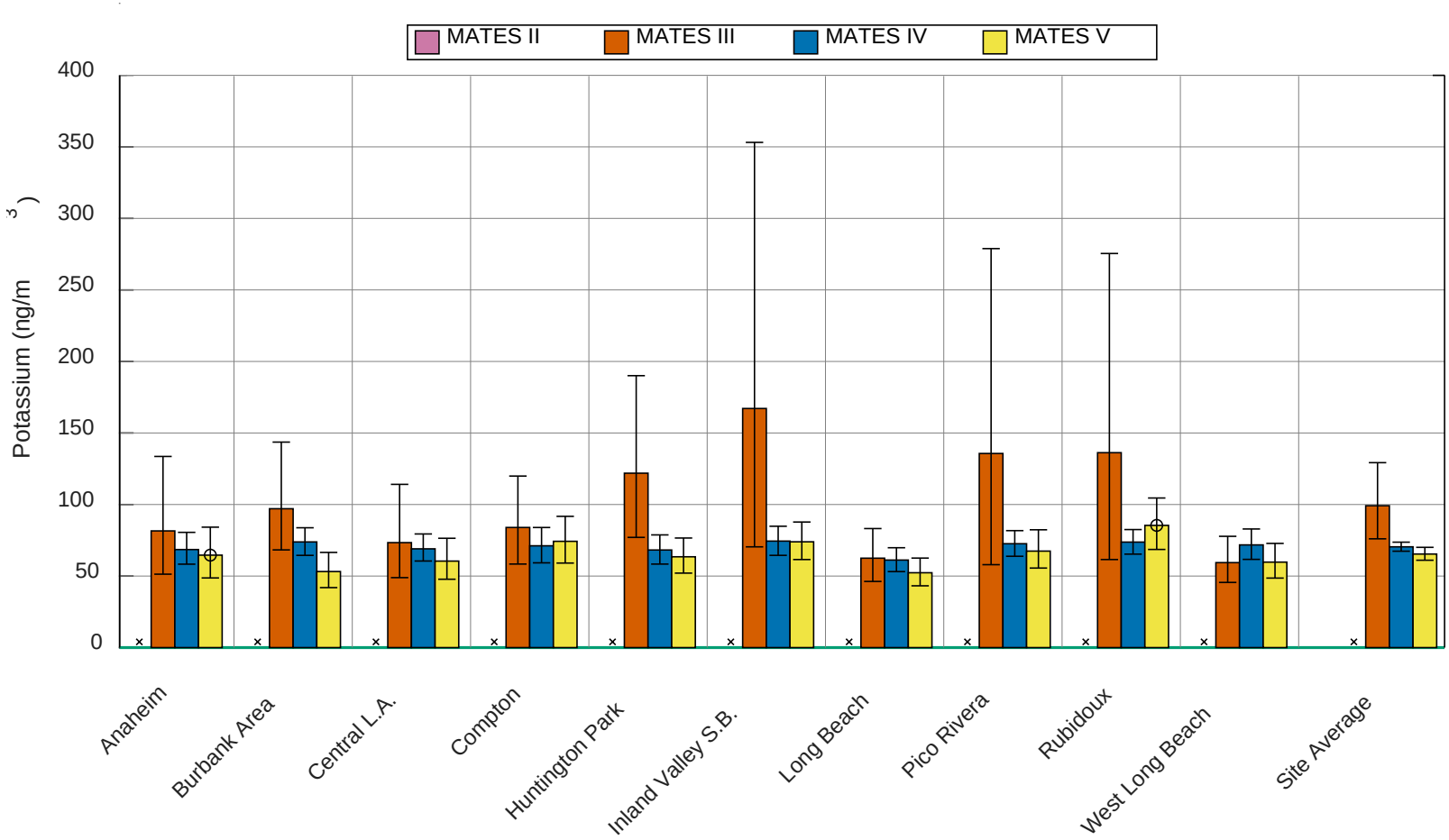


Figure IV-272. Annual Average Concentrations of Potassium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

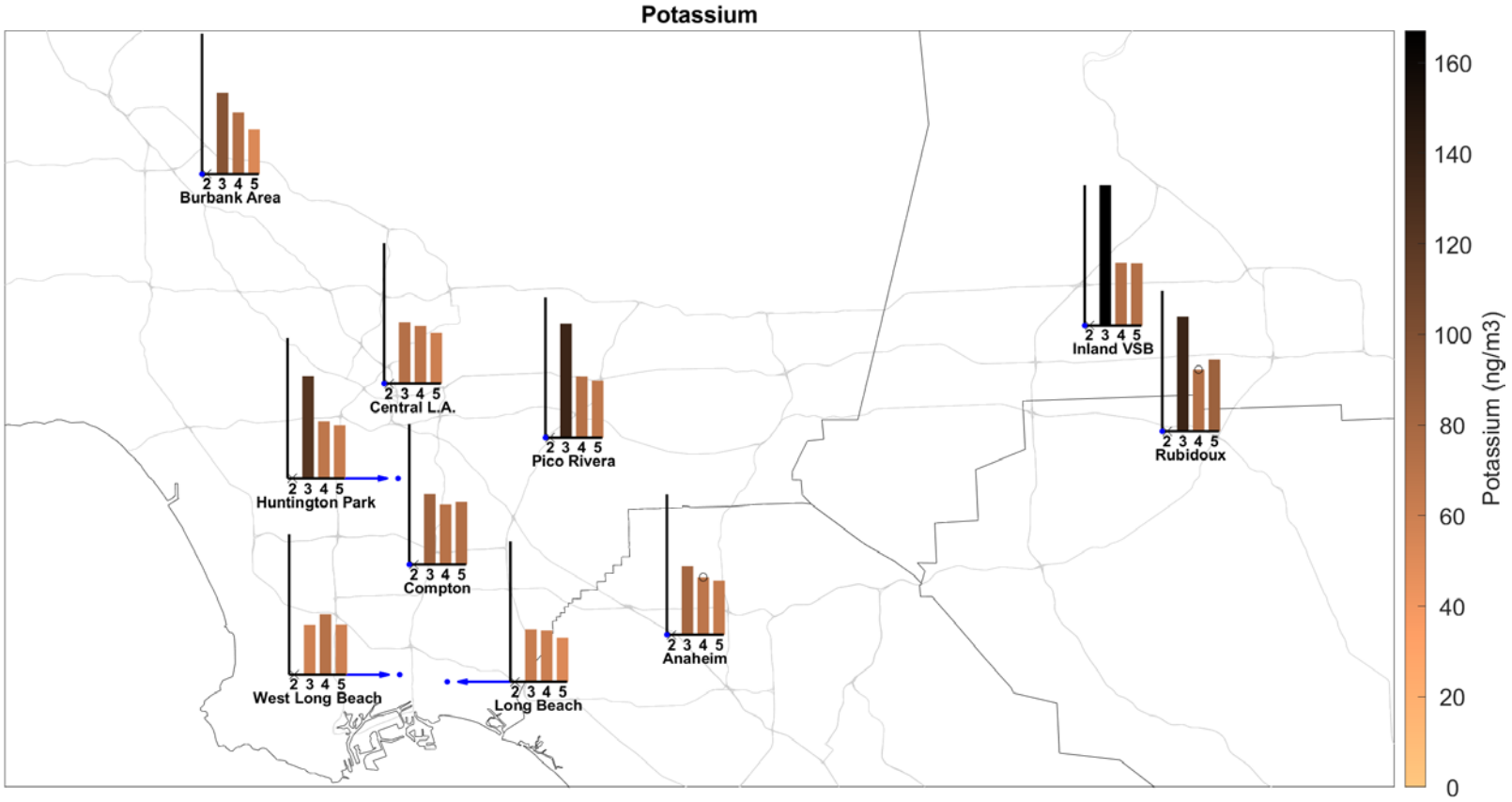


Figure IV-273. Geographic distribution of Potassium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Rubidium

Table IV-139. Ambient Concentrations (ng/m^3) of Rubidium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	0.575	0.572	0.586	0.569	0.737	0.58	0.564	0.74	0.588	0.591
95% CI LB	0.533	0.53	0.54	0.527	0.665	0.536	0.524	0.667	0.546	0.547
95% CI UB	0.618	0.616	0.633	0.615	0.808	0.627	0.607	0.812	0.631	0.639
N	240	239	234	238	117	228	237	116	236	228
% < MDL	79.2	79.5	77.8	79.8	59.8	78.5	79.3	59.5	77.5	77.2
Max	1.24	1.24	1.24	1.24	1.24	1.24	1.24	1.25	1.24	1.27
MATES IV										
Average	0, 0.643[b]	0, 1.14[b]	0, 1.17[b]	0, 2.24[b]	0, 1.14[b]	0, 0.948[b]	0, 1.12[b]	0, 1.25[b]	0, 2.18[b]	0, 1.45[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.758[b]	1.36[b]	1.39[b]	2.68[b]	1.36[b]	1.12[b]	1.31[b]	1.46[b]	2.61[b]	1.78[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]
MATES V										
Average	0, 1.33[b]	0, 1.53[b]	0, 1.38[b]	0, 3.01[b]	0, 1.1[b]	0, 1.18[b]	0, 1.18[b]	0, 2.38[b]	0, 3.16[b]	0, 1.58[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	1.57[b]	1.78[b]	1.68[b]	3.67[b]	1.3[b]	1.53[b]	1.36[b]	2.75[b]	3.63[b]	2.03[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

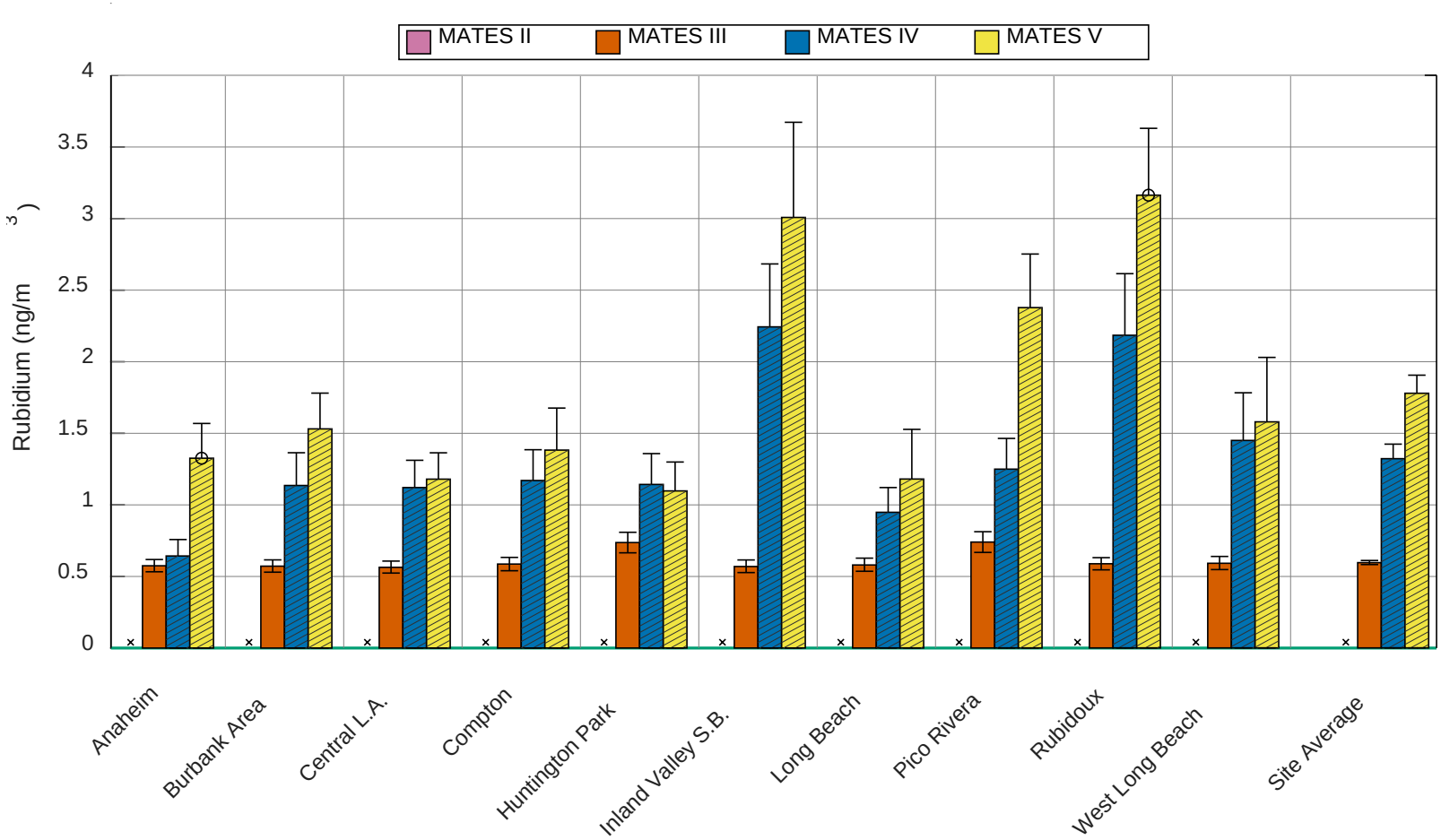


Figure IV-274. Annual Average Concentrations of Rubidium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

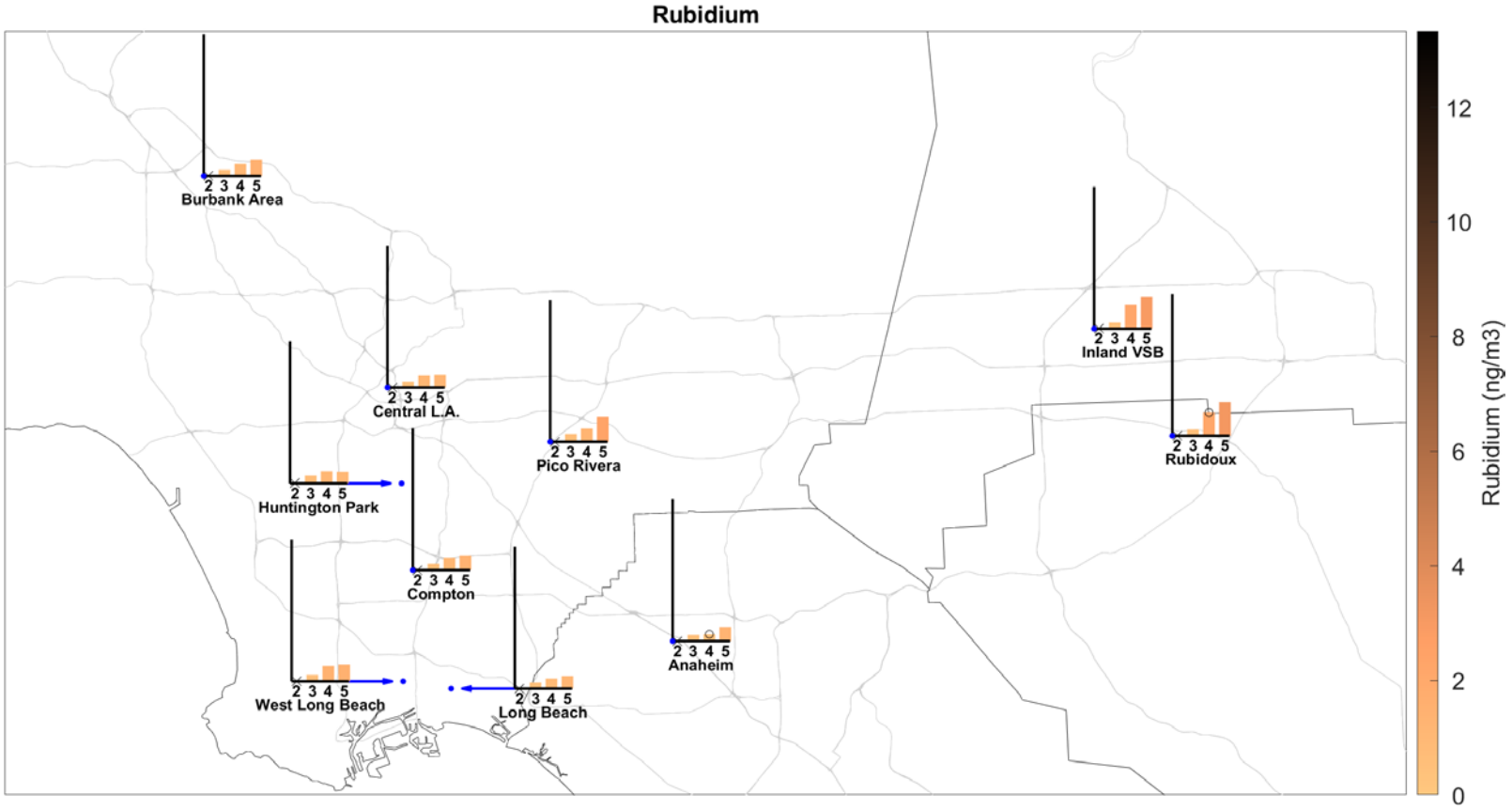


Figure IV-275. Geographic distribution of Rubidium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Samarium

Table IV-140. Ambient Concentrations (ng/m^3) of Samarium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	0, 124[a]	0, 124[a]	0, 124[a]	0, 124[a]	0, 124[a]	0, 124[a]	0, 124[a]	0, 124[a]	0, 124[a]	0, 124[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	124[a]	124[a]	124[a]	124[a]	124[a]	124[a]	124[a]	124[a]	124[a]	124[a]
N	54[a]	59[a]	61[a]	60[a]	60[a]	61[a]	61[a]	59[a]	56[a]	57[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

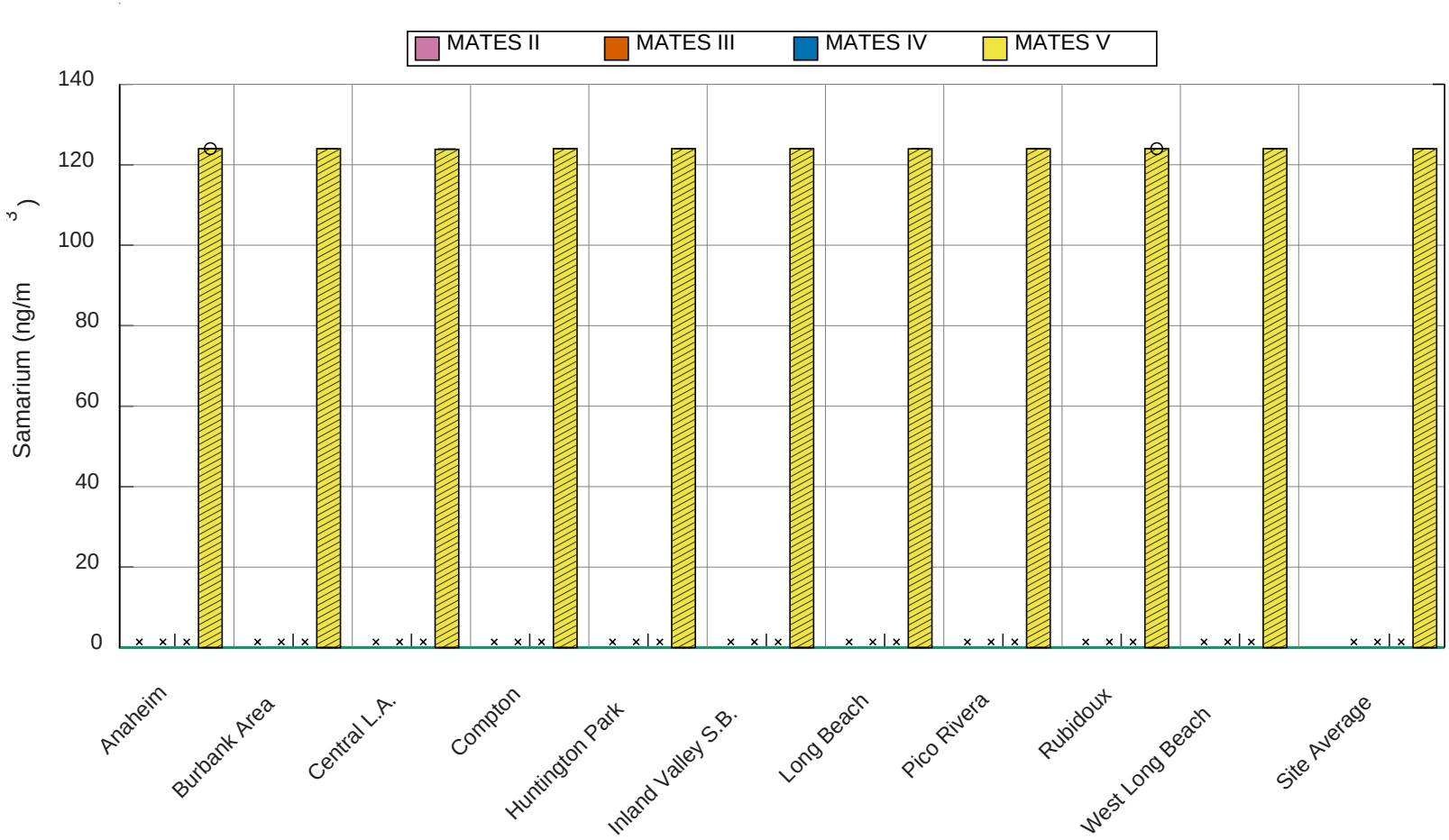


Figure IV-276. Annual Average Concentrations of Samarium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

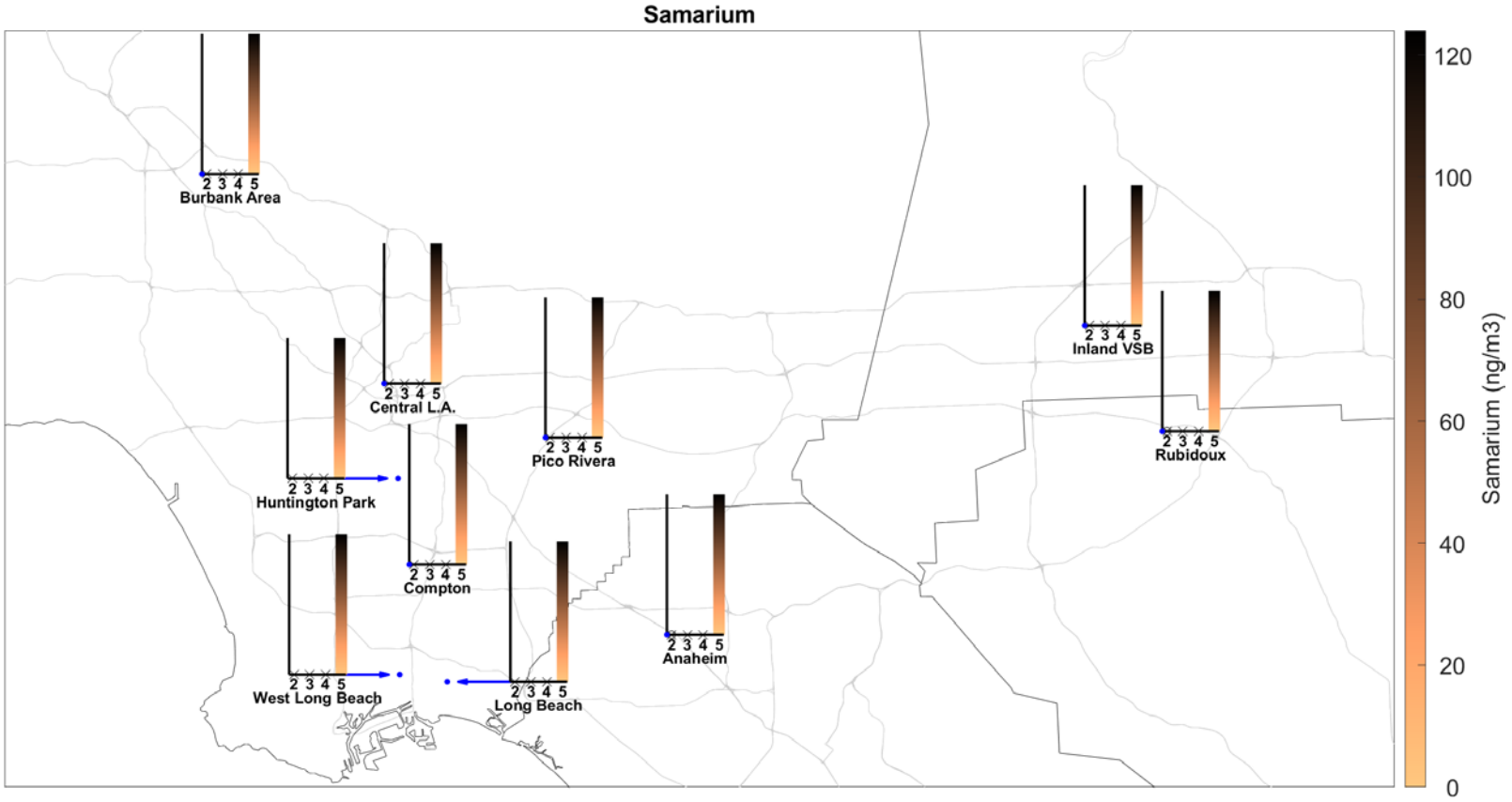


Figure IV-277. Geographic distribution of Samarium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Selenium

Table IV-141. Ambient Concentrations (ng/m^3) of Selenium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	1.05	1.05	1.05	1.05	1.1	1.05	0.235, 1.05[a]	1.09	1.05	1.05
95% CI LB	1.04	1.04	1.04	1.04	1.08	1.04	0.178[a]	1.07	1.04	1.04
95% CI UB	1.06	1.06	1.07	1.06	1.12	1.06	1.06[a]	1.12	1.06	1.07
N	240	239	234	238	117	228	237[a]	116	236	228
% < MDL	79.2	79.5	77.8	79.8	59.8	78.9	81[a]	60.3	78.8	77.2
Max	1.24	1.24	1.24	1.24	1.24	1.24	1.24[a]	1.25	1.24	1.27
MATES IV										
Average	0, 25.6[a]	0, 25.6[a]	0, 1.04[b]	0, 1[b]	0, 1.79[b]	0, 1.08[b]	0, 1.17[b]	0, 1.17[b]	0, 1.02[b]	0, 25.6[a]
95% CI LB	0[a]	0[a]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[a]
95% CI UB	25.6[a]	25.6[a]	1.24[b]	1.07[b]	2.33[b]	1.4[b]	1.3[b]	1.3[b]	1.17[b]	25.6[a]
N	59[a]	59[a]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[a]
% < MDL	100[a]	100[a]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[a]
MATES V										
Average	0, 25[a]	0, 25[a]	0, 0.614[b]	0, 0.681[b]	0, 0.697[b]	0, 25[a]	0, 0.637[b]	0, 0.691[b]	0, 25[a]	0, 0.591[b]
95% CI LB	0[a]	0[a]	0[b]	0[b]	0[b]	0[a]	0[b]	0[b]	0[a]	0[b]
95% CI UB	25[a]	25[a]	0.638[b]	0.723[b]	0.817[b]	25[a]	0.681[b]	0.771[b]	25[a]	0.608[b]
N	54[a]	59[a]	61[b]	60[b]	60[b]	61[a]	61[b]	59[b]	56[a]	57[b]
% < MDL	100[a]	100[a]	100[b]	100[b]	100[b]	100[a]	100[b]	100[b]	100[a]	100[b]
Max	< MDL[a]	< MDL[a]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[a]	< MDL[b]	< MDL[b]	< MDL[a]	< MDL[b]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

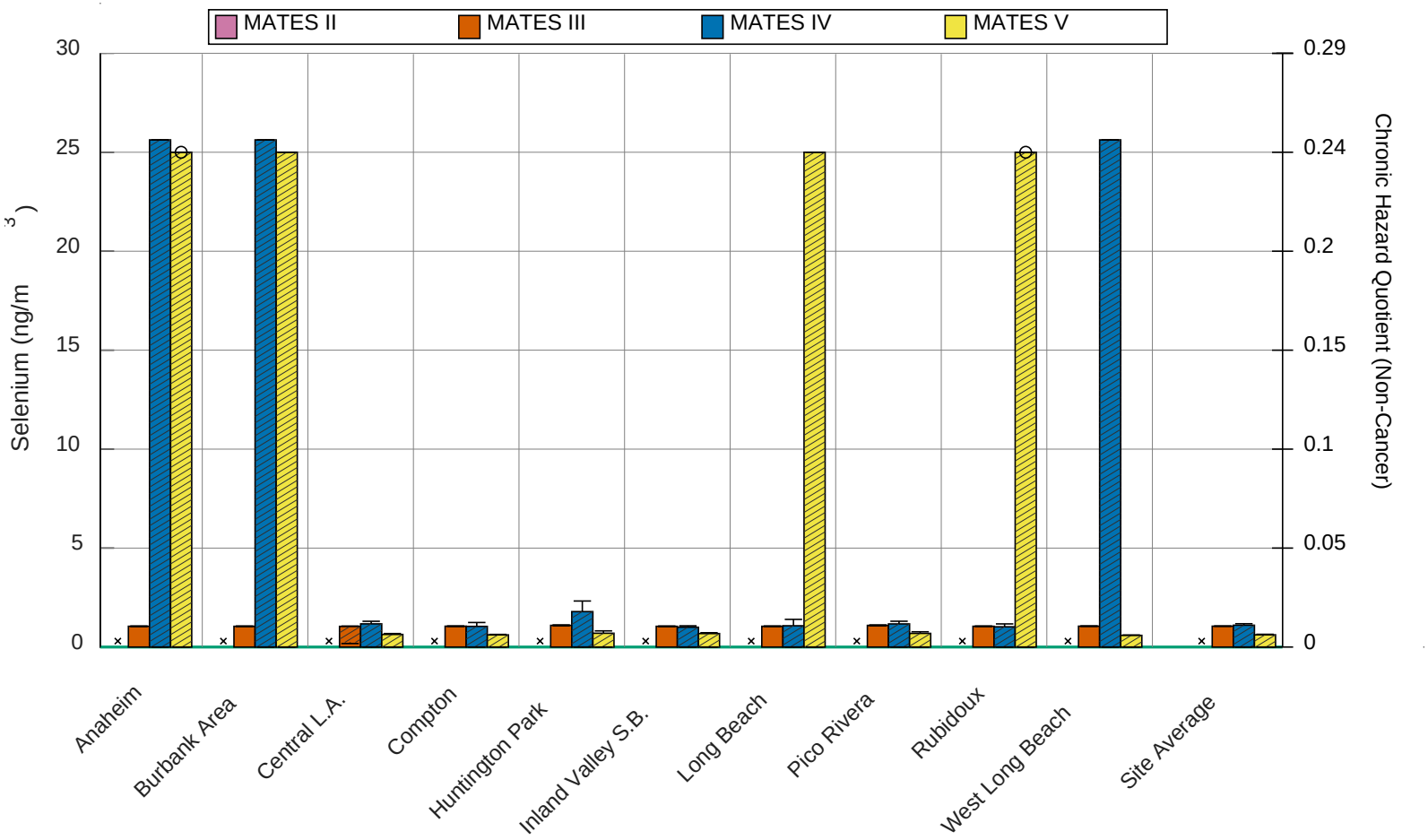


Figure IV-278. Annual Average Concentrations of Selenium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

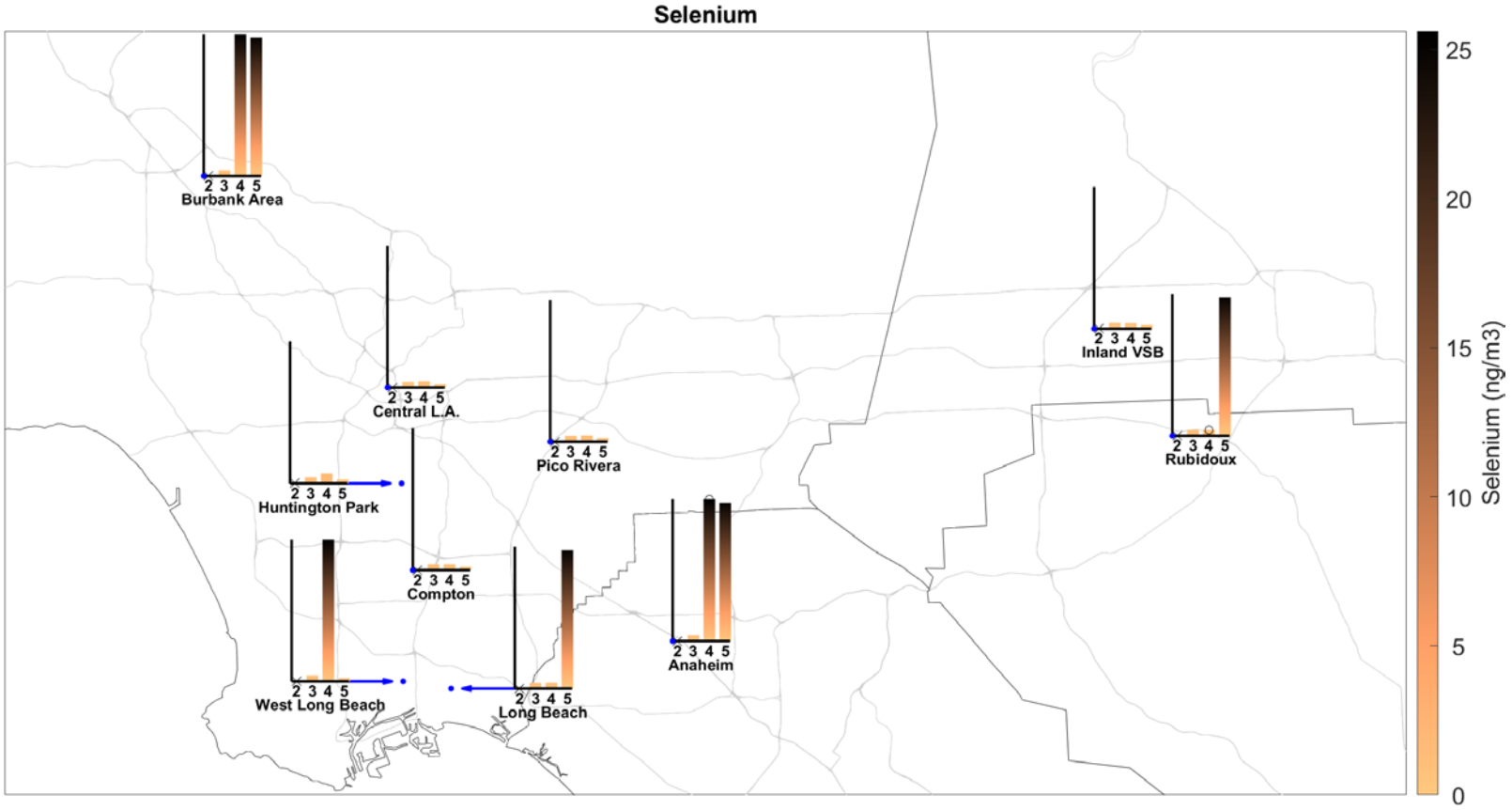


Figure IV-279. Geographic distribution of Selenium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Silicon

Table IV-142. Ambient Concentrations (ng/m^3) of Silicon from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	55.6, 5130[b]	244	56.1, 5790[b]	271	223	211	74.4, 5870[b]	236	206	236
95% CI LB	36.5[b]	210	37.3[b]	244	195	195	50.8[b]	202	193	213
95% CI UB	5550[b]	290	6170[b]	300	256	229	6200[b]	275	222	260
N	240[b]	239	234[b]	238	117	228	237[b]	116	236	228
% < MDL	86.7[b]	76.2	85[b]	65.1	78.6	79.8	83.1[b]	73.3	79.7	75.9
Max	1120[b]	4300	1120[b]	1720	1620	1010	1430[b]	1440	924	1800
MATES IV										
Average	82.5	102	82	162	101	83.8	101	94.8	129	135
95% CI LB	66.5	86.9	61.1	135	81.8	64.4	83.1	79.8	110	107
95% CI UB	100	118	109	191	123	108	122	110	149	165
N	59	59	61	60	59	61	60	59	61	61
% < MDL	10.2	10.2	19.7	5	8.5	13.1	15	11.9	11.5	4.9
Max	300	268	664	615	398	552	399	223	352	567
MATES V										
Average	97.3	116	114	167	114	94.6	104	142	171	134
95% CI LB	82.8	103	99	143	99.1	81	92.9	124	142	114
95% CI UB	113	130	131	193	130	111	116	163	205	156
N	54	59	61	60	60	61	61	59	56	57
% < MDL	0	0	0	0	0	0	0	0	1.8	0
Max	285	321	369	583	360	435	259	458	819	411

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

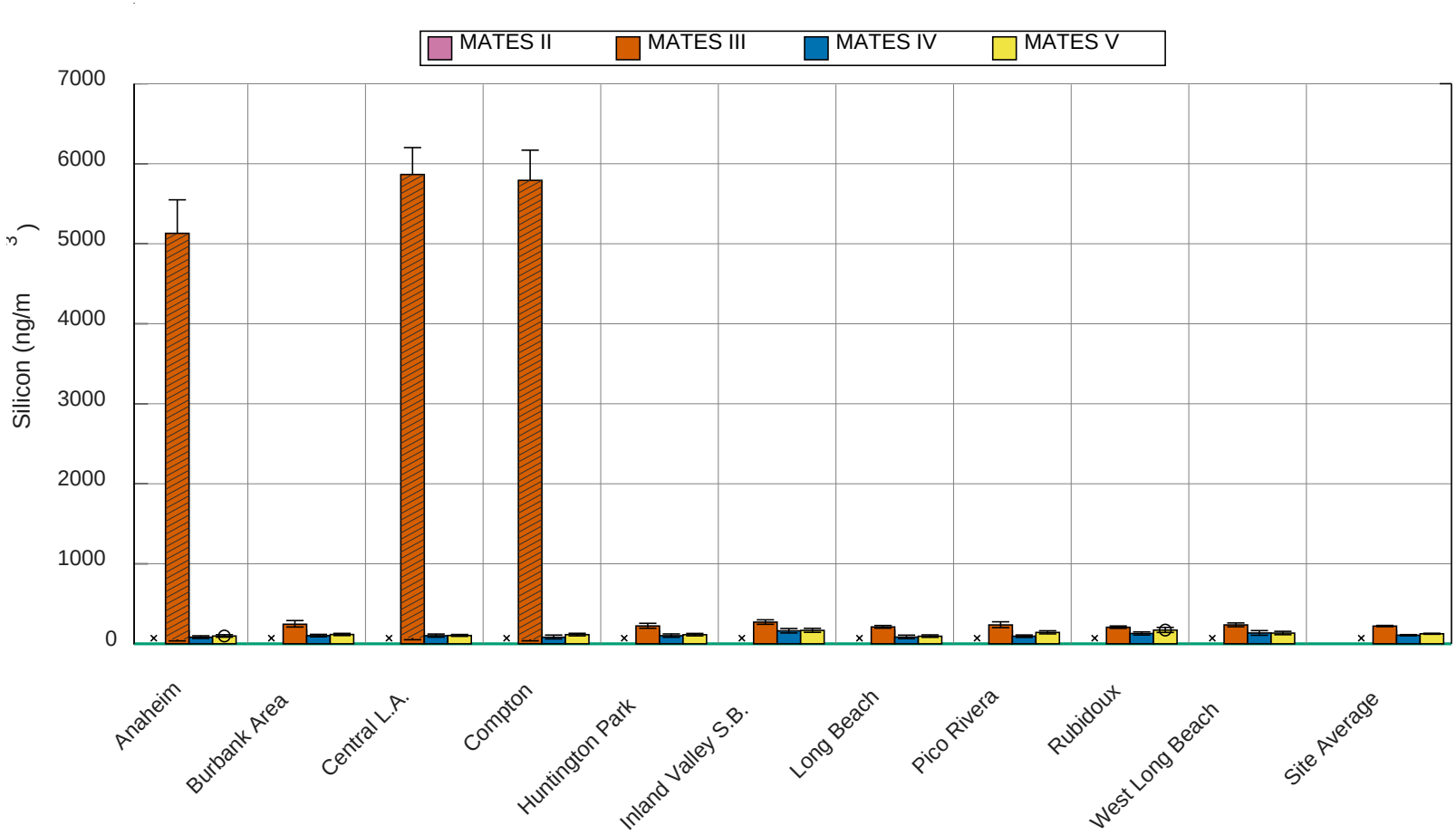


Figure IV-280. Annual Average Concentrations of Silicon in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

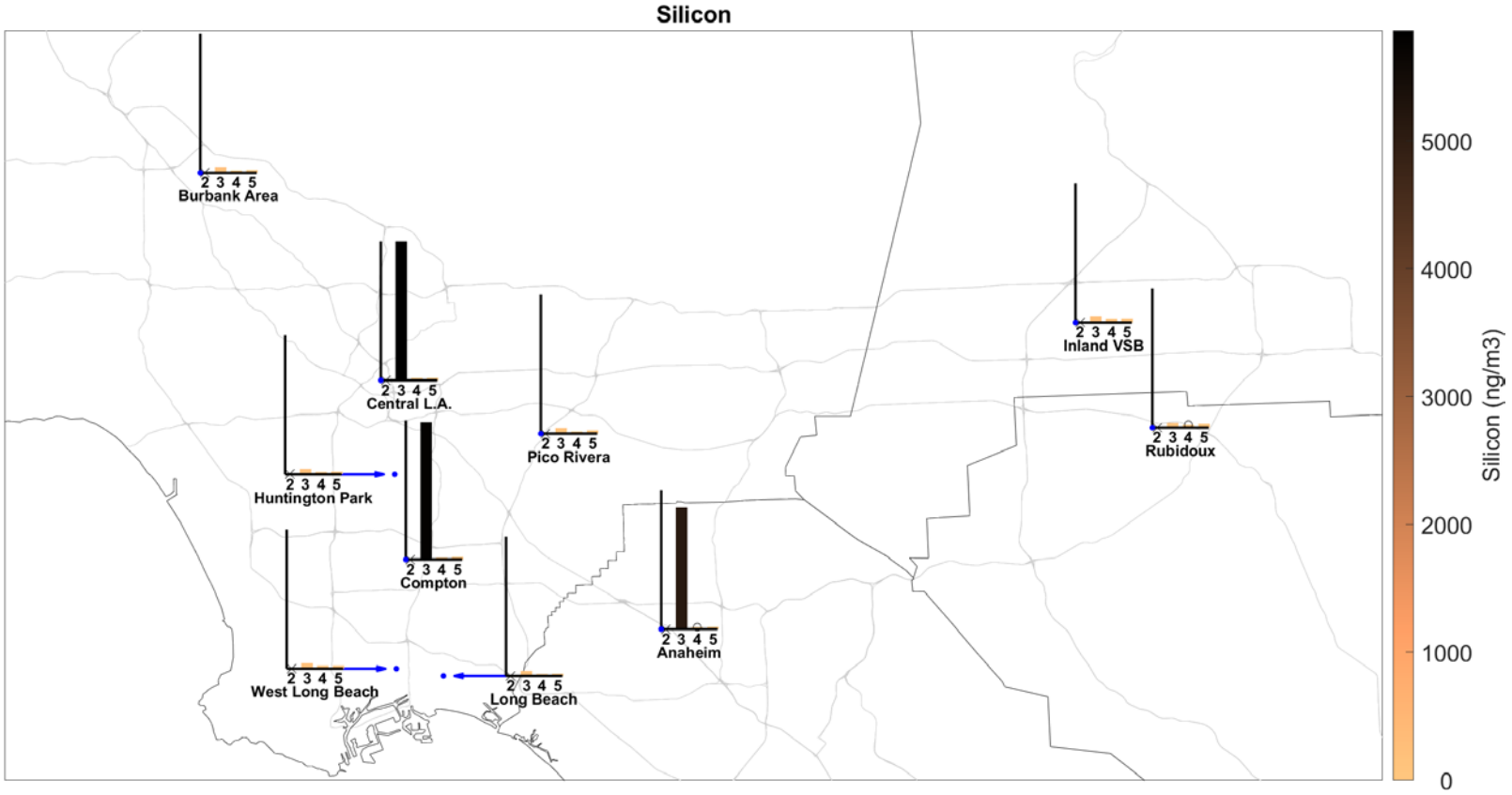


Figure IV-281. Geographic distribution of Silicon from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Silver

Table IV-143. Ambient Concentrations (ng/m^3) of Silver from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	1.44	1.33	1.39	2.25	1.37	1.32	1.28	1.38	1.36	1.37
95% CI LB	1.33	1.25	1.3	1.27	1.26	1.26	1.24	1.28	1.29	1.29
95% CI UB	1.57	1.41	1.5	4.15	1.53	1.42	1.34	1.5	1.45	1.46
N	240	239	234	238	117	228	237	116	236	228
% < MDL	67.9	69.9	64.5	68.5	51.3	68.9	71.7	50	69.5	68
Max	8.65	7.43	8.67	222	7.42	7.42	6.18	6.18	6.17	7.43
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										

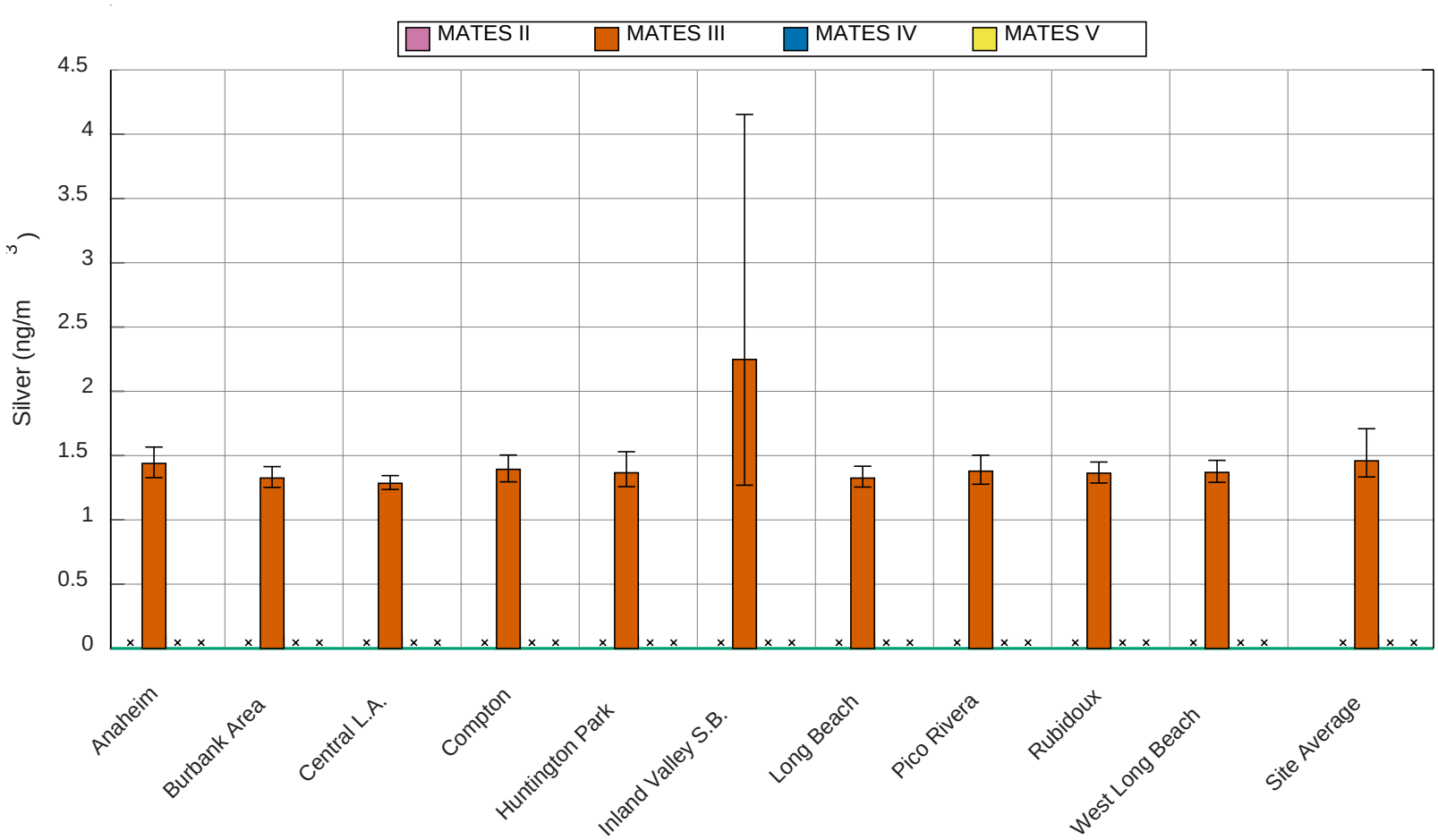


Figure IV-282. Annual Average Concentrations of Silver in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

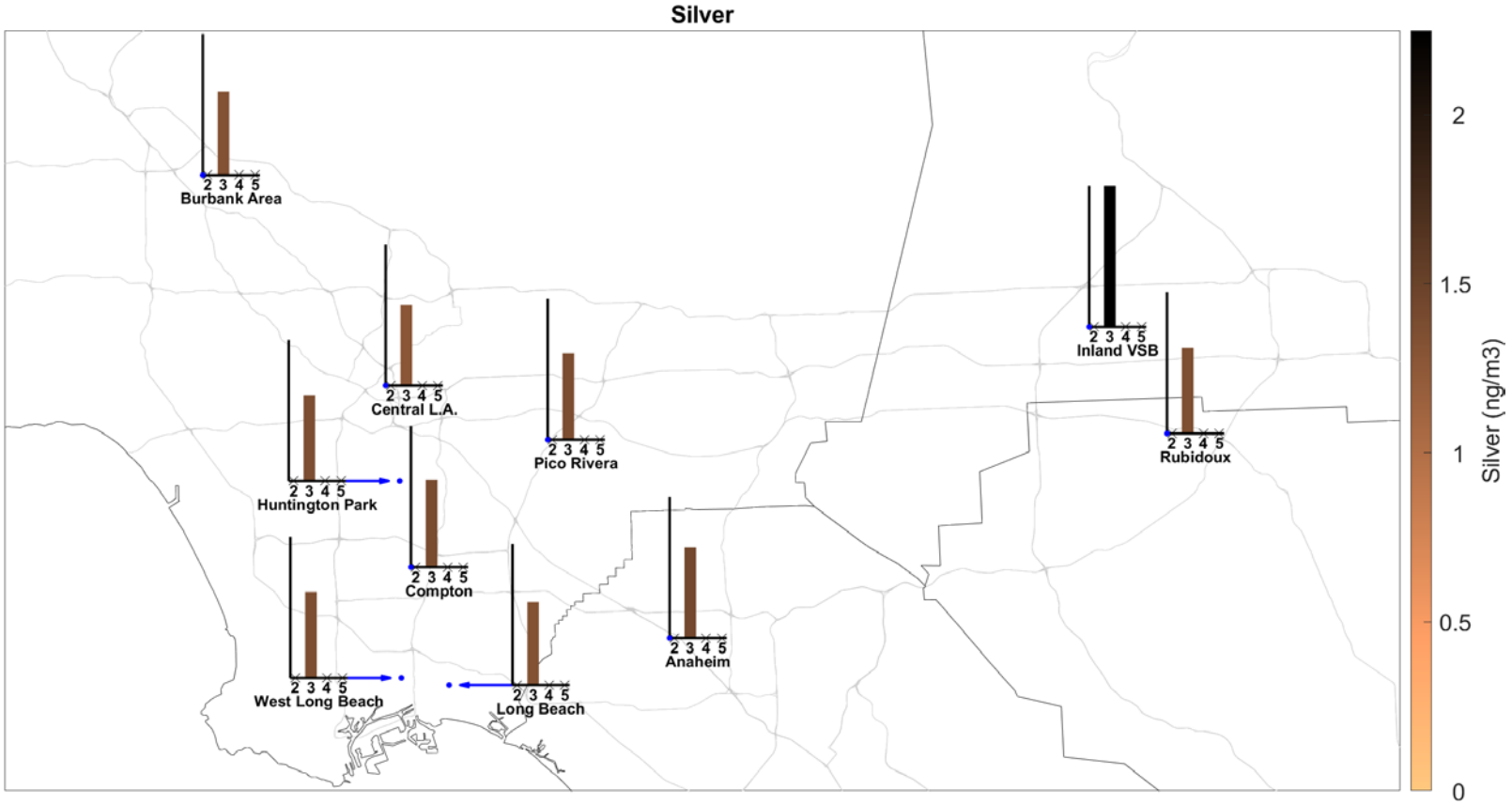


Figure IV-283. Geographic distribution of Silver from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Strontium

Table IV-144. Ambient Concentrations (ng/m^3) of Strontium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	2.34	1.97	1.68	3.16	1.96	1.56	1.94	2.89	2.48	1.61
95% CI LB	1.44	1.48	1.32	1.33	1.36	1.32	1.47	1.38	1.25	1.38
95% CI UB	3.56	2.79	2.25	6.71	3.09	1.84	2.7	5.66	4.86	1.88
N	240	239	234	238	117	228	237	116	236	228
% < MDL	57.1	52.3	53	53.8	41	58.8	55.3	41.4	56.4	48.2
Max	101	82.9	54.5	414	52	19.8	74.2	148	276	21.1
MATES IV										
Average	0.407, 7.27[b]	0, 10.9[b]	0, 10.9[b]	0, 17.8[b]	0, 11.9[b]	0, 9.6[b]	0.417, 16.1[b]	0, 12.7[b]	0, 20.1[b]	0.574, 15.6[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	9.01[b]	12.7[b]	12.5[b]	22.2[b]	13.9[b]	11.3[b]	19.2[b]	14.8[b]	24.7[b]	18.8[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	98.3[b]	100[b]	100[b]	100[b]	100[b]	100[b]	98.3[b]	100[b]	100[b]	98.4[b]
Max	24[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	25[b]	< MDL[b]	< MDL[b]	35[b]
MATES V										
Average	0.704, 9.54[b]	0, 10.2[b]	0.213, 11.1[b]	0, 16.1[b]	0, 10.4[b]	0, 8.22[b]	0.205, 12.5[b]	0, 14.6[b]	0, 17.6[b]	0, 11.9[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	11.3[b]	11.8[b]	13.2[b]	19.3[b]	12.2[b]	10.2[b]	14.5[b]	17[b]	20.4[b]	14.7[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	94.4[b]	100[b]	98.4[b]	100[b]	100[b]	100[b]	98.4[b]	100[b]	100[b]	100[b]
Max	16[b]	< MDL[b]	13[b]	< MDL[b]	< MDL[b]	< MDL[b]	12.5[b]	< MDL[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

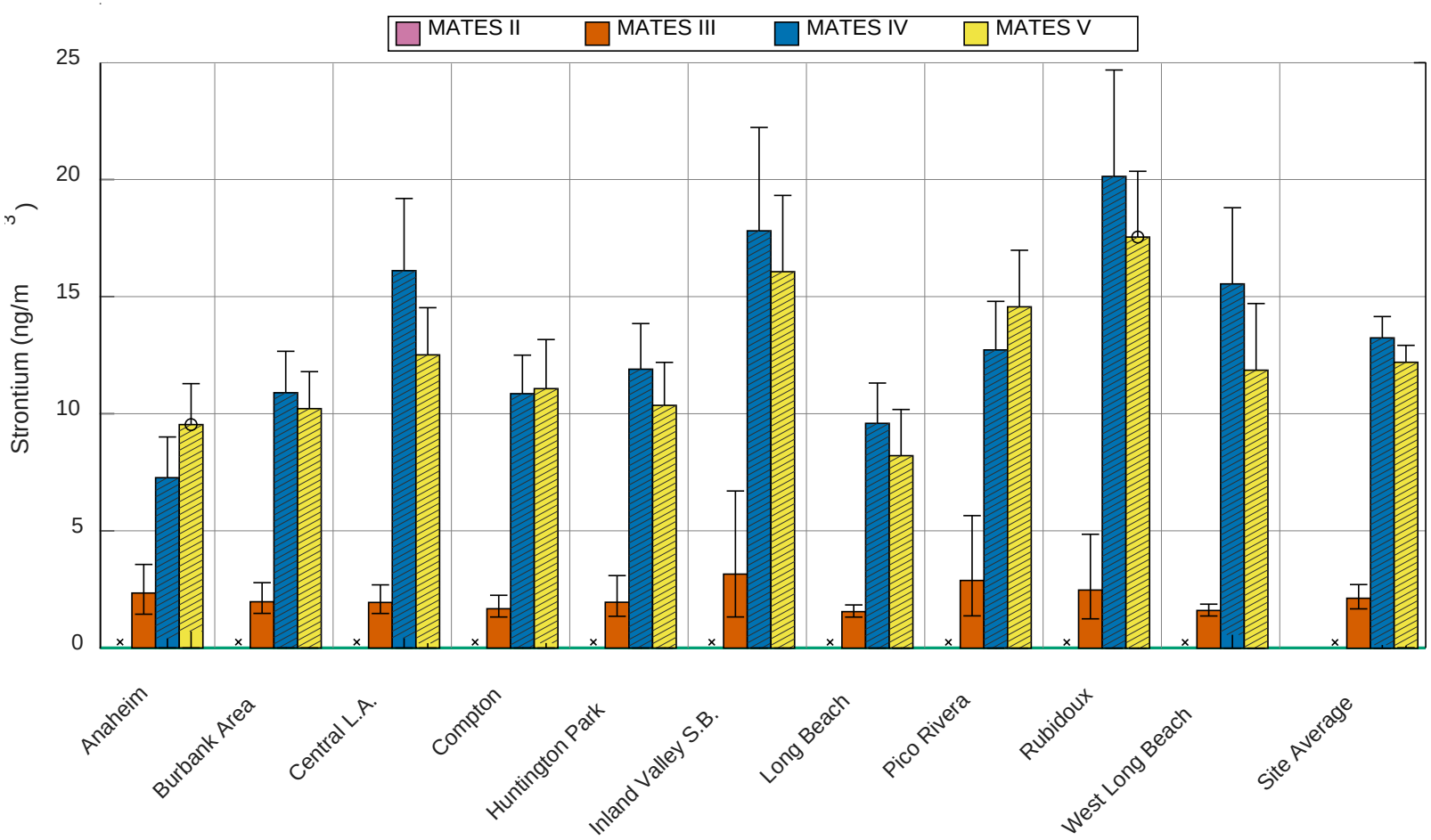


Figure IV-284. Annual Average Concentrations of Strontium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

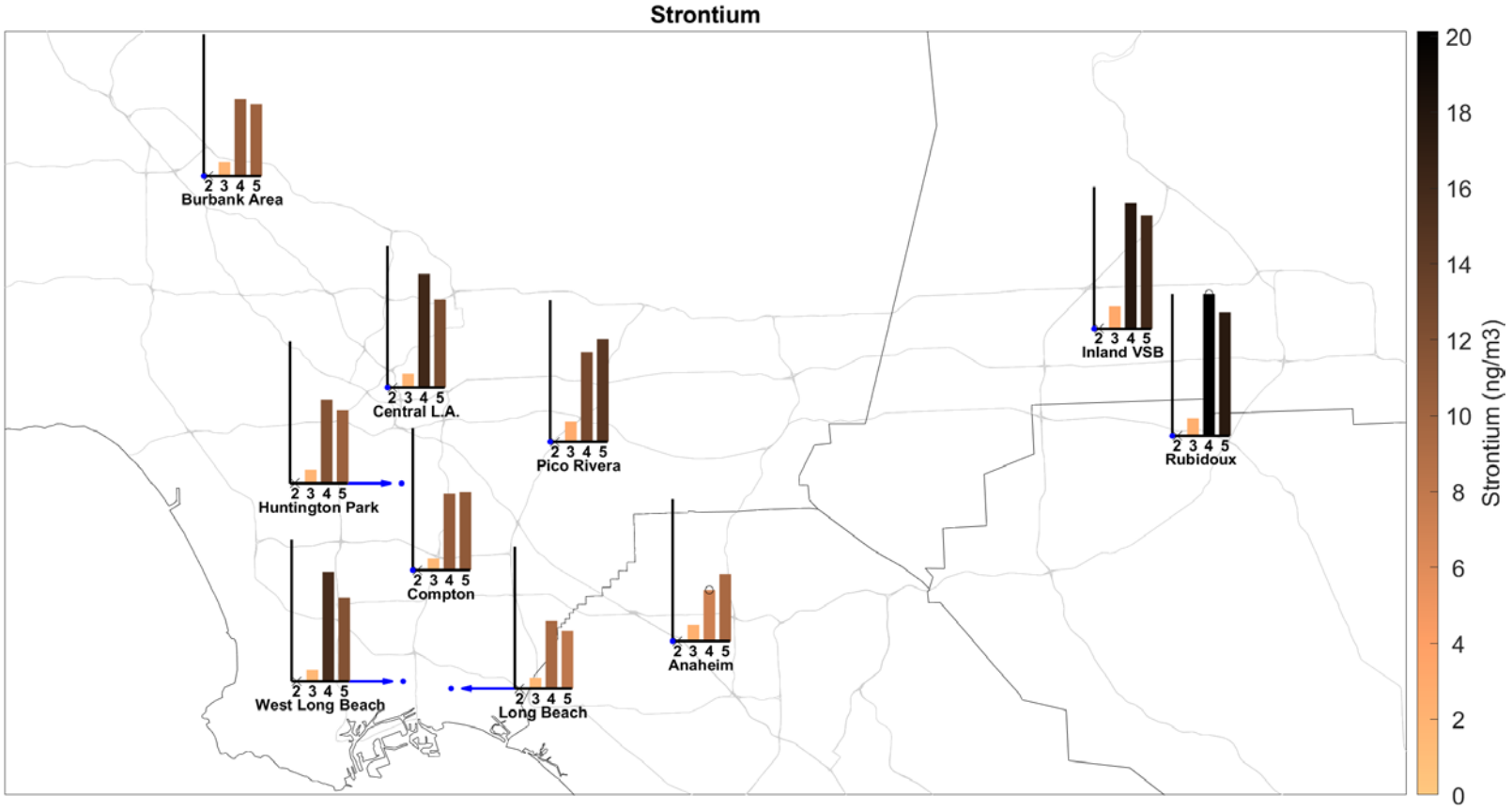


Figure IV-285. Geographic distribution of Strontium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Sulfur

Table IV-145. Ambient Concentrations (ng/m^3) of Sulfur from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	1410	1430	1530	1240	1710	1700	1450	1580	1190	1780
95% CI LB	1260	1260	1360	1080	1420	1510	1250	1310	1060	1590
95% CI UB	1580	1600	1730	1410	2020	1900	1640	1860	1330	1990
N	240	239	234	238	117	228	237	116	236	228
% < MDL	0.8	1.3	0.9	2.5	2.6	0.4	1.3	0.9	5.5	0
Max	6090	5810	6340	10500	6930	7920	7680	6860	8480	9070
MATES IV										
Average	520	510	547	501	572	558	545	537	467	595
95% CI LB	440	426	464	416	475	472	458	451	392	510
95% CI UB	602	594	639	587	669	646	644	625	548	682
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	1.7	0	0	3.4	0	1.7	1.7	1.6	0
Max	1320	1260	1480	1350	1640	1470	1720	1510	1100	1670
MATES V										
Average	238	247	288	246	300	279	279	278	231	293
95% CI LB	188	197	234	198	236	228	222	226	185	241
95% CI UB	285	303	343	292	360	328	338	331	277	348
N	54	59	61	60	60	61	61	59	56	57
% < MDL	11.1	15.3	3.3	11.7	8.3	8.2	13.1	6.8	10.7	5.3
Max	649	766	858	641	928	759	841	731	649	812

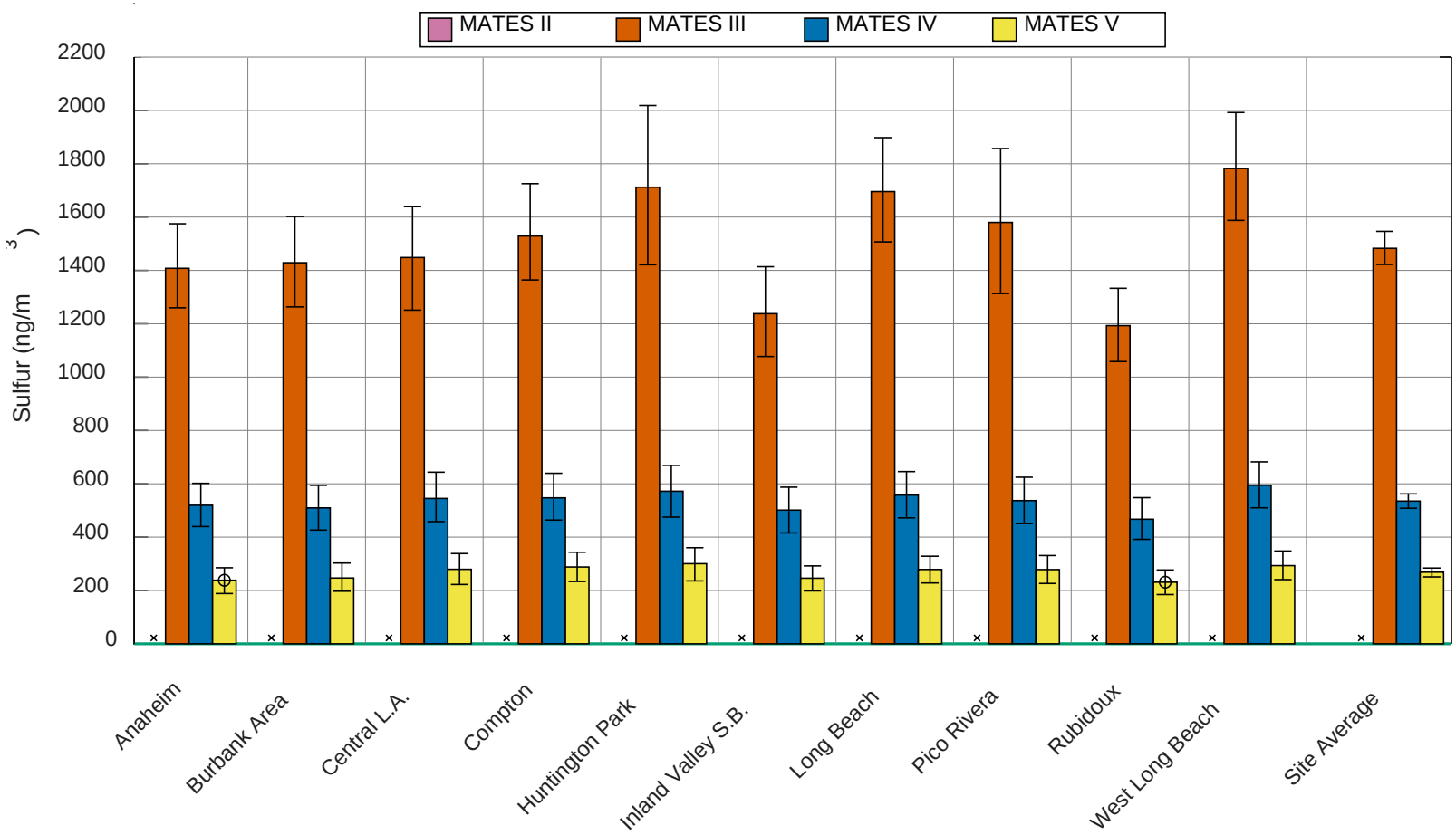


Figure IV-286. Annual Average Concentrations of Sulfur in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

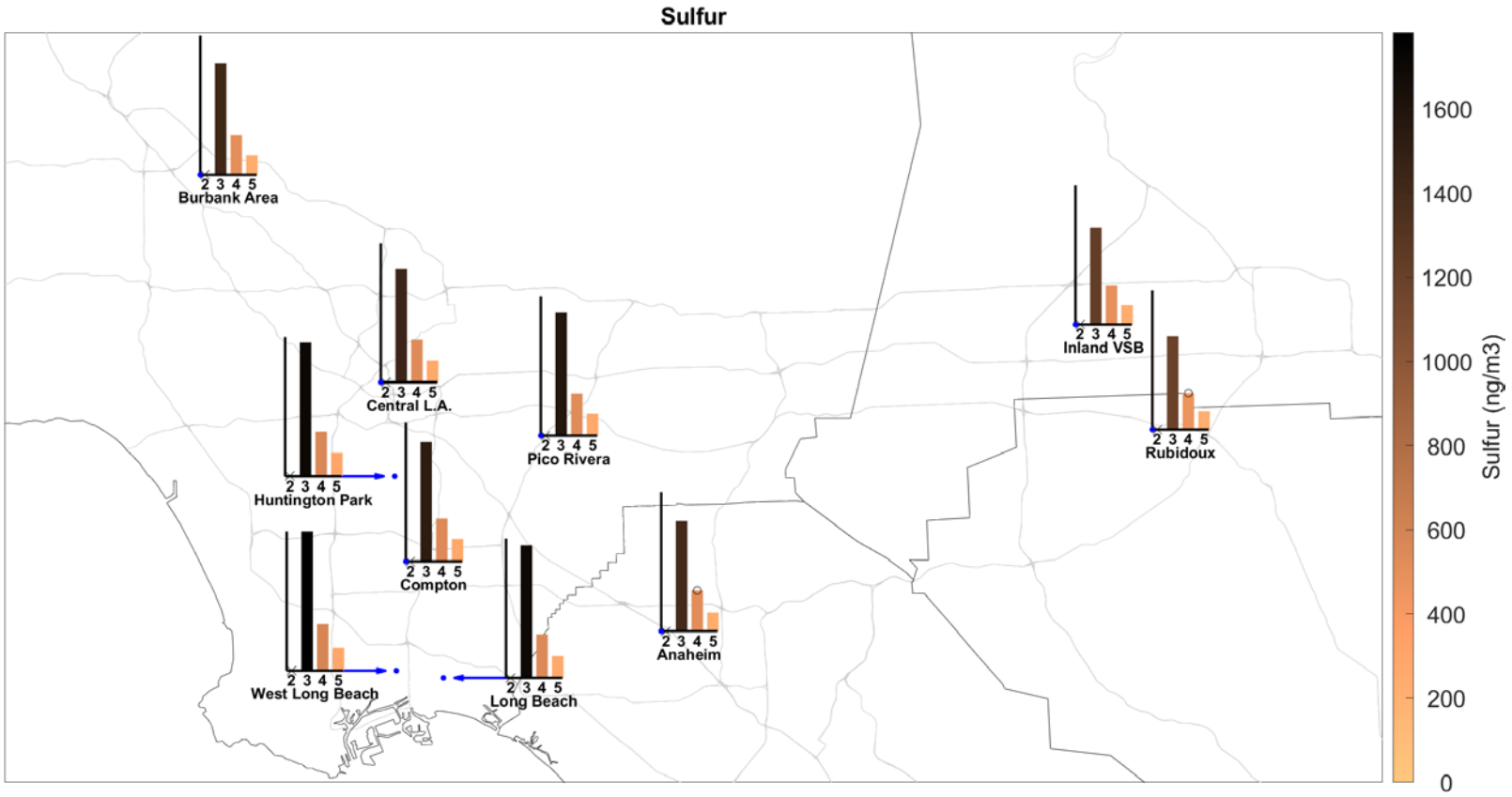


Figure IV-287. Geographic distribution of Sulfur from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Thallium

Table IV-146. Ambient Concentrations (ng/m^3) of Thallium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	0, 25[a]	0, 25[a]	0, 25[a]	0, 25[a]	0, 25[a]	0, 25[a]	0, 25[a]	0, 25[a]	0, 25[a]	0, 25[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	25[a]	25[a]	25[a]	25[a]	25[a]	25[a]	25[a]	25[a]	25[a]	25[a]
N	54[a]	59[a]	61[a]	60[a]	60[a]	61[a]	61[a]	59[a]	56[a]	57[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

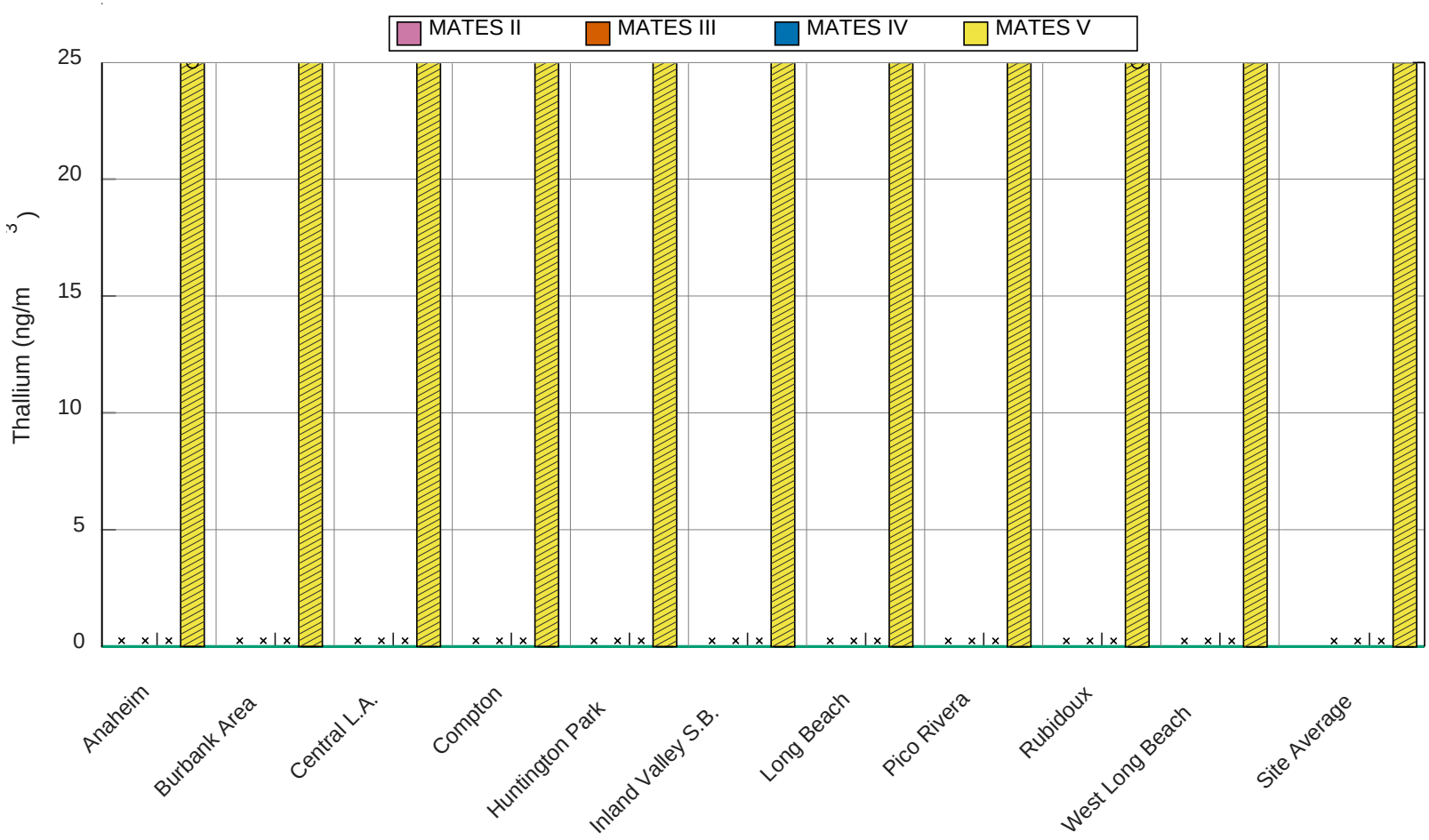


Figure IV-288. Annual Average Concentrations of Thallium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

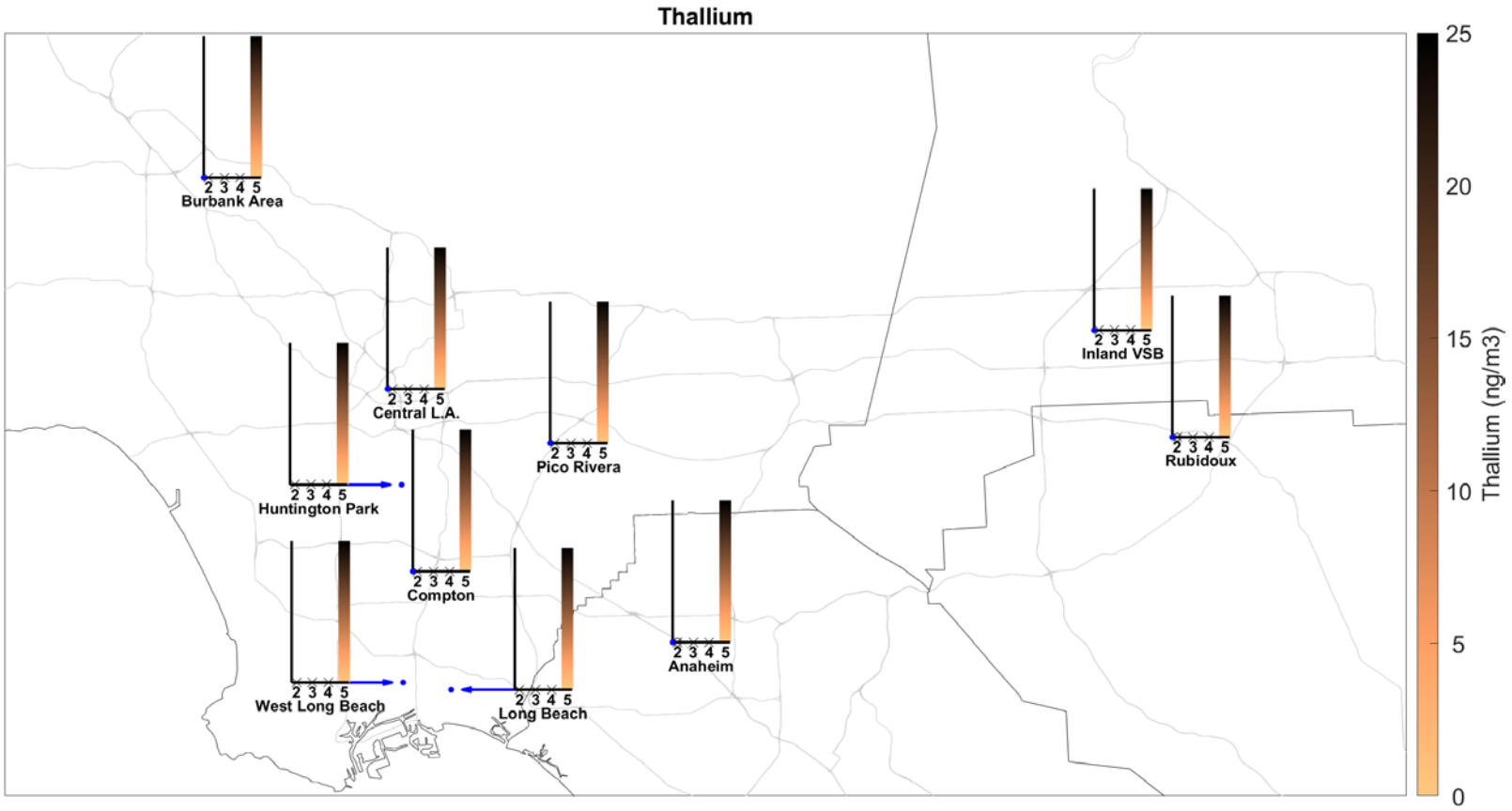


Figure IV-289. Geographic distribution of Thallium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Tin

Table IV-147. Ambient Concentrations (ng/m^3) of Tin from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	1.3, 3.51[b]	1.63, 4.75[b]	1.42, 4.18[b]	1.46, 3.58[b]	0.793, 5.47[b]	1.02, 4.31[b]	2.61	8.47	0.963, 3.31[b]	1.57, 4.16[b]
95% CI LB	0.777[b]	1.04[b]	0.846[b]	0.899[b]	0.444[b]	0.558[b]	2.18	5.23	0.518[b]	0.935[b]
95% CI UB	3.67[b]	5.1[b]	4.52[b]	3.76[b]	6.23[b]	4.7[b]	3.09	12.6	3.41[b]	4.56[b]
N	240[b]	239[b]	234[b]	238[b]	117[b]	228[b]	237	116	236[b]	228[b]
% < MDL	88.3[b]	84.5[b]	86.3[b]	85.3[b]	84.6[b]	89.5[b]	78.9	71.6	90.7[b]	86.4[b]
Max	27.1[b]	29.6[b]	36.9[b]	29.6[b]	9.9[b]	27.1[b]	25.2	116	26[b]	33.3[b]
MATES IV										
Average	1.03, 1.9[b]	2.03, 5.26[b]	6.48, 2.86[b]	0.967, 3.98[b]	5.07, 5.83[b]	0.852, 3.25[b]	2.75, 6.5[b]	26, 20[b]	0.869, 2.89[b]	2.59, 2.55[b]
95% CI LB	0[b]	0[b]	2[b]	0[b]	1.14[b]	0[b]	0[b]	4.76[b]	0[b]	0[b]
95% CI UB	2.27[b]	6.17[b]	3.38[b]	4.87[b]	7.62[b]	4.55[b]	7.95[b]	40.3[b]	3.55[b]	3.07[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	98.3[b]	96.6[b]	90.2[b]	98.3[b]	91.5[b]	98.4[b]	95[b]	86.4[b]	98.4[b]	95.1[b]
Max	61[b]	63[b]	81[b]	58[b]	77[b]	52[b]	59[b]	966[b]	53[b]	55[b]
MATES V										
Average	0, 2.92[b]	0.576, 3.5[b]	0.41, 3.25[b]	0.467, 4.17[b]	2.15, 3.72[b]	0.82, 2.44[b]	0, 5.16[b]	0.915, 4.63[b]	0, 2.69[b]	0, 2.54[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0.45[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	3.68[b]	3.99[b]	4.12[b]	4.73[b]	4.78[b]	3.07[b]	6.05[b]	5.45[b]	3.13[b]	3.23[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	98.3[b]	98.4[b]	98.3[b]	93.3[b]	96.7[b]	100[b]	96.6[b]	100[b]	100[b]
Max	< MDL[b]	34[b]	25[b]	28[b]	42[b]	25[b]	< MDL[b]	28[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

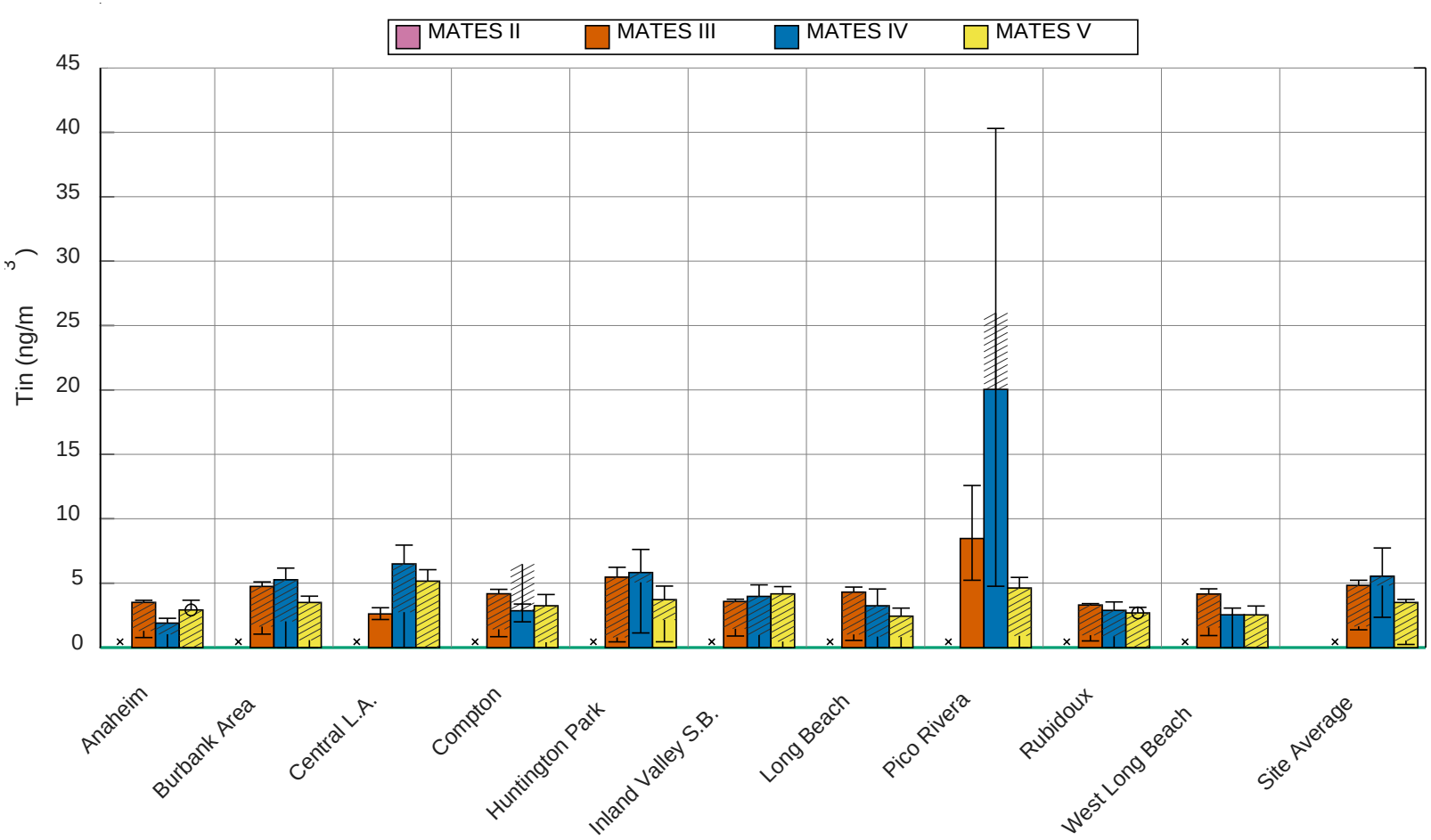


Figure IV-290. Annual Average Concentrations of Tin in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

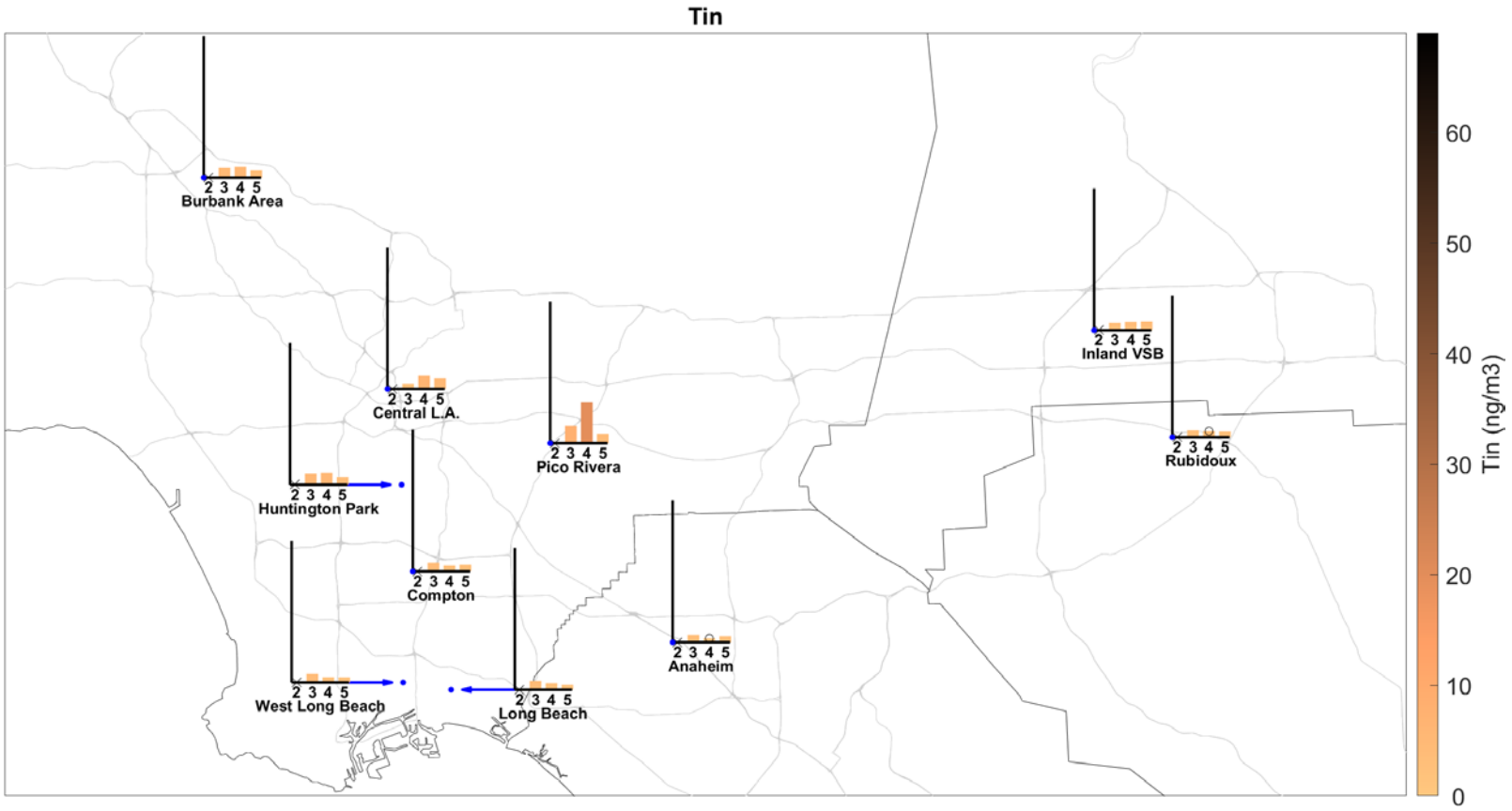


Figure IV-291. Geographic distribution of Tin from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Titanium

Table IV-148. Ambient Concentrations (ng/m^3) of Titanium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	18.2	24.2	25.5	24.6	19	22.9	21.6	20.8	18.4	20.3
95% CI LB	16.9	20	23.2	22.9	17.4	20	20.2	18.9	17.2	17.7
95% CI UB	19.5	30.7	28.1	26.4	20.6	26.1	23.1	22.9	19.8	23
N	240	239	234	238	117	228	237	116	236	228
% < MDL	0.4	0.4	0	0	0.9	0.4	0	0	0	0.4
Max	57	629	175	136	49.3	120	87.9	63.1	96.9	148
MATES IV										
Average	0.898, 30[b]	1.07, 53.9[b]	1.87, 58.8[b]	1.8, 146[b]	1.69, 56.2[b]	4.82, 51.6[b]	2.02, 59.7[b]	2.34, 71.5[b]	0.426, 133[b]	5.21, 73.1[b]
95% CI LB	0[b]	0[b]	0[b]	0.367[b]	0.339[b]	1.62[b]	0.483[b]	0.678[b]	0[b]	1.84[b]
95% CI UB	38[b]	62.4[b]	67.8[b]	183[b]	65.7[b]	63.2[b]	71.3[b]	84.5[b]	165[b]	89.6[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	96.6[b]	94.9[b]	95.1[b]	93.3[b]	93.2[b]	88.5[b]	91.7[b]	89.8[b]	98.4[b]	86.9[b]
Max	32[b]	24[b]	45[b]	34[b]	29[b]	55[b]	30[b]	30[b]	26[b]	77[b]
MATES V										
Average	1.61, 52.5[b]	0, 66.3[b]	1.02, 62[b]	0.733, 134[b]	0, 49.7[b]	0, 49[b]	0, 54.8[b]	1.47, 103[b]	1.04, 112[b]	0, 65.2[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0.339[b]	0[b]	0[b]
95% CI UB	61.3[b]	76.7[b]	75.2[b]	163[b]	58.2[b]	64.3[b]	62.1[b]	119[b]	127[b]	84.5[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	94.4[b]	100[b]	95.1[b]	96.7[b]	100[b]	100[b]	100[b]	93.2[b]	96.4[b]	100[b]
Max	37[b]	< MDL[b]	22[b]	24[b]	< MDL[b]	< MDL[b]	< MDL[b]	25[b]	36[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

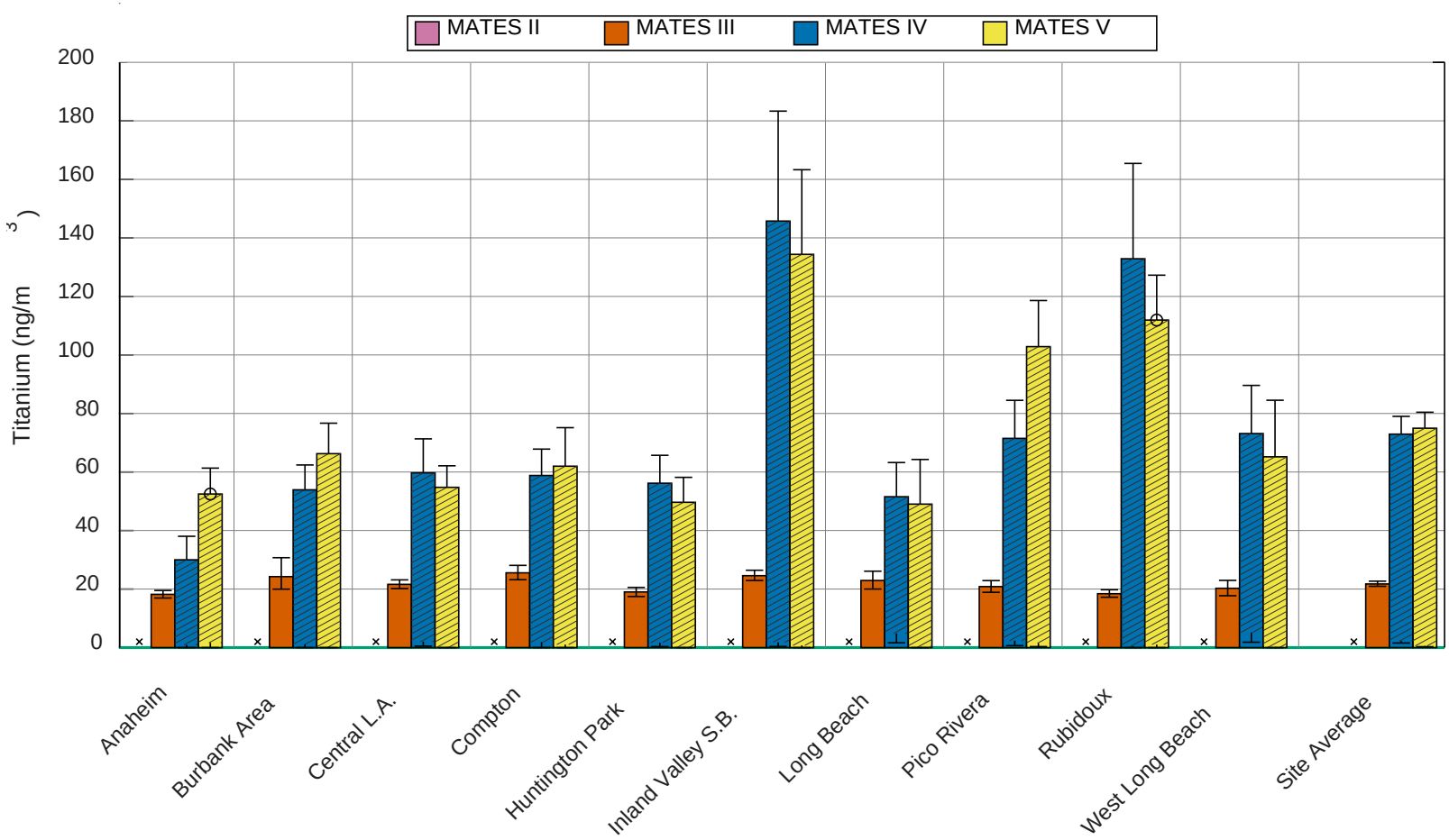


Figure IV-292. Annual Average Concentrations of Titanium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

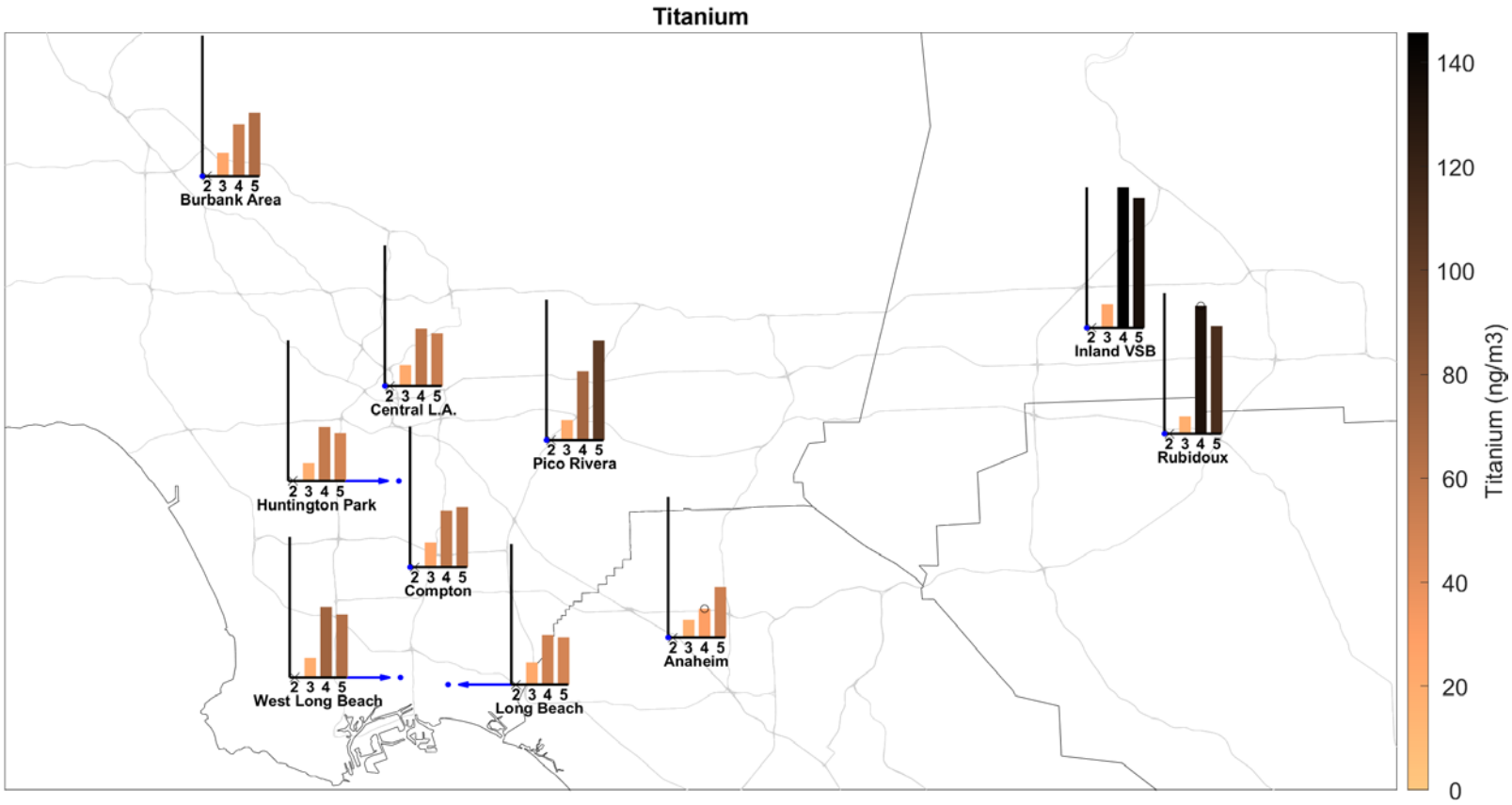


Figure IV-293. Geographic distribution of Titanium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Uranium

Table IV-149. Ambient Concentrations (ng/m^3) of Uranium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average	1.41, 23.6[a]	1, 23.6[a]	1.9, 23.8[a]	1.85, 0.122[b]	1.71, 23.5[a]	3.03, 23.8[a]	1.7, 23.5[a]	2.76, 23.8[a]	2.26, 0.123[b]	1.92, 23.8[a]
95% CI LB	0[a]	0[a]	0.393[a]	0.4[b]	0.407[a]	0.918[a]	0.4[a]	0.864[a]	0.492[b]	0.459[a]
95% CI UB	24[a]	24[a]	24.3[a]	0.145[b]	23.7[a]	24.1[a]	23.7[a]	24.2[a]	0.147[b]	24.2[a]
N	59[a]	59[a]	61[a]	60[b]	59[a]	61[a]	60[a]	59[a]	61[b]	61[a]
% < MDL	94.9[a]	96.6[a]	93.4[a]	93.3[b]	93.2[a]	88.5[a]	93.3[a]	89.8[a]	91.8[b]	93.4[a]
Max	32[a]	31[a]	33[a]	34[b]	29[a]	31[a]	27[a]	32[a]	33[b]	31[a]
MATES V										
Average	0, 0.0561[b]	0, 0.0577[b]	0, 0.0453[b]	0, 0.0944[b]	0, 0.0376[b]	0, 0.036[b]	0, 0.0465[b]	0, 0.0664[b]	0, 0.0908[b]	0, 0.0475[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	0.0658[b]	0.0675[b]	0.0571[b]	0.114[b]	0.0459[b]	0.0472[b]	0.0542[b]	0.0781[b]	0.105[b]	0.0647[b]
N	54[b]	55[b]	56[b]	60[b]	56[b]	61[b]	61[b]	54[b]	56[b]	52[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

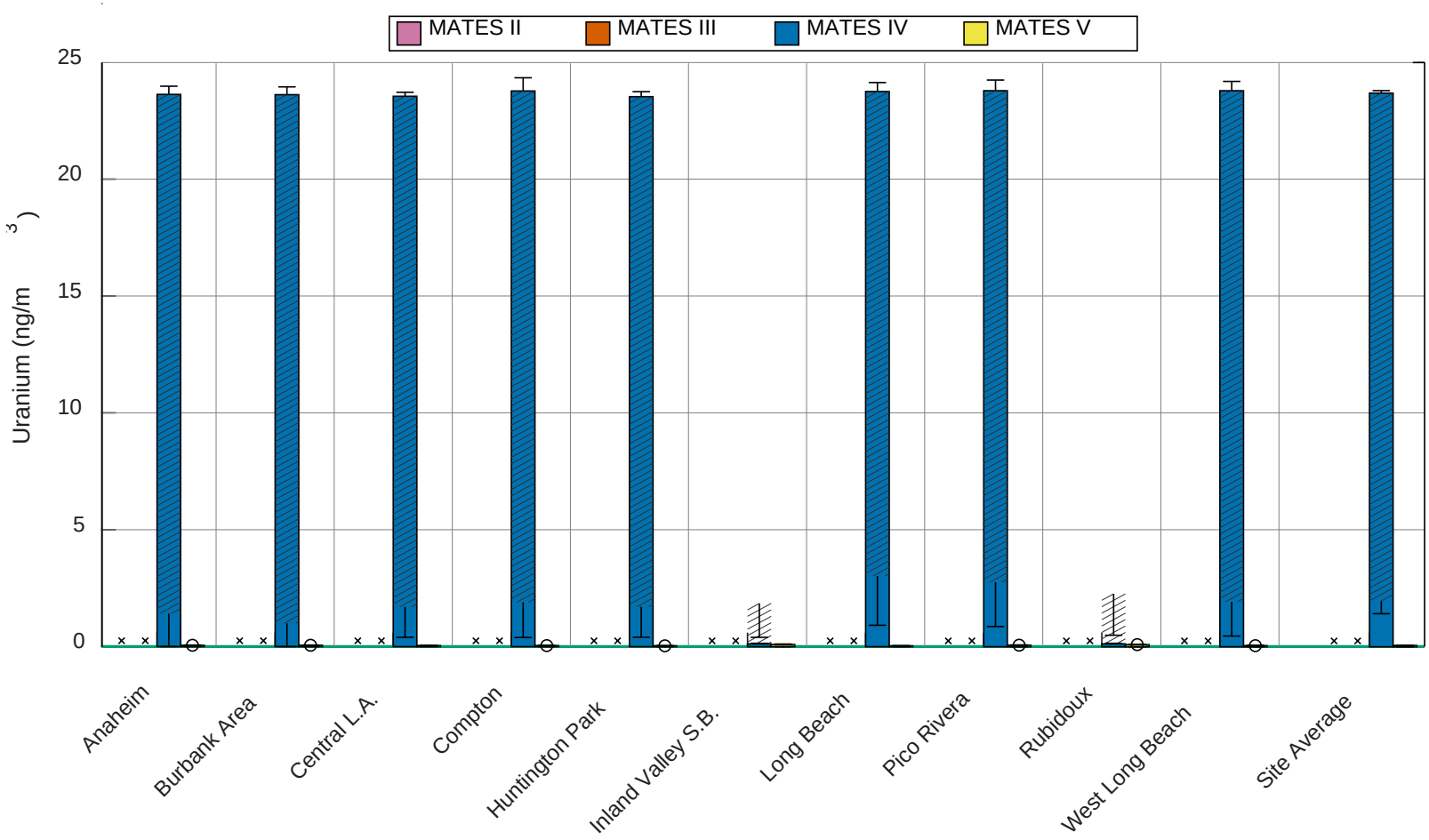


Figure IV-294. Annual Average Concentrations of Uranium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

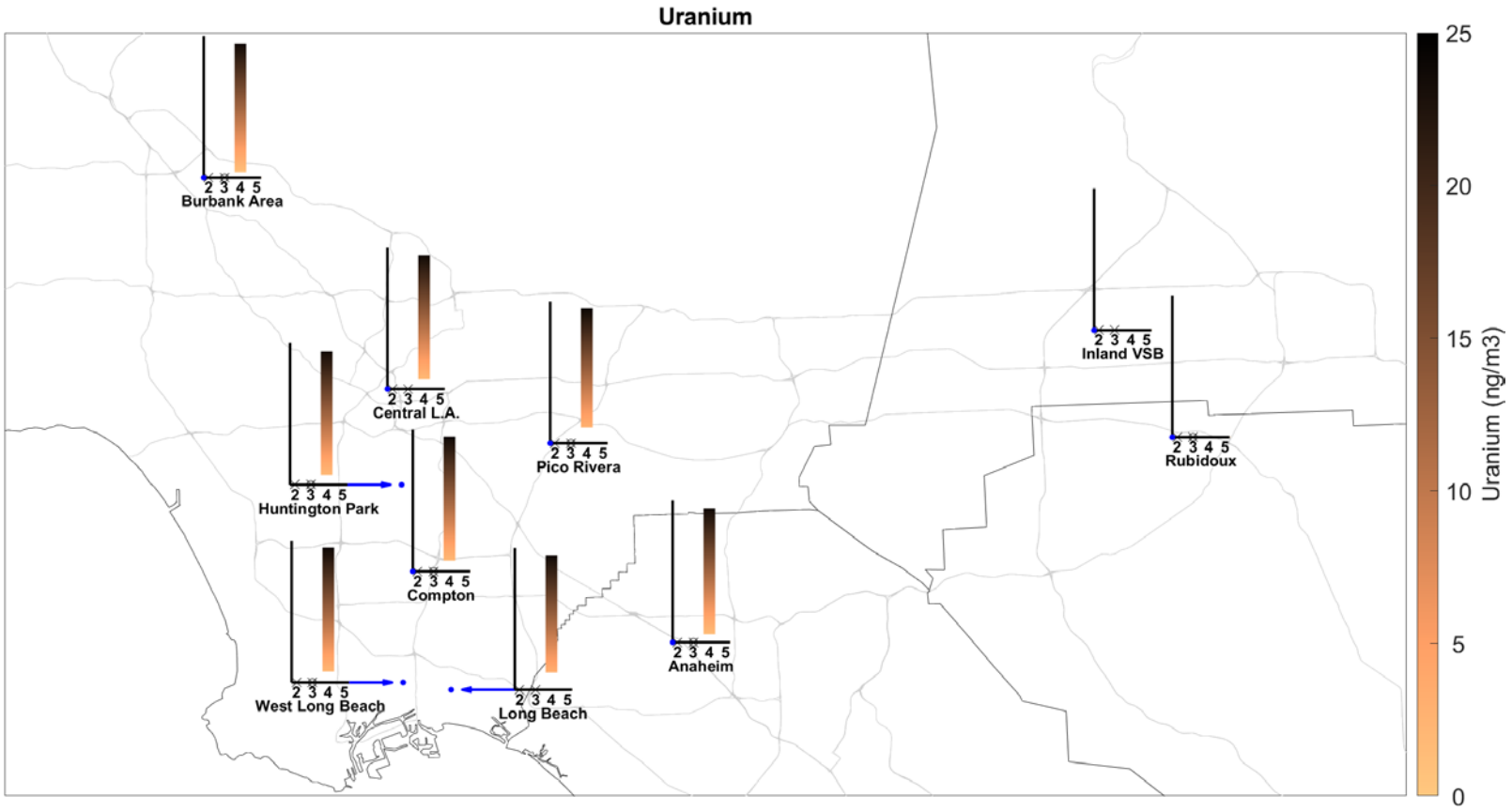


Figure IV-295. Geographic distribution of Uranium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Vanadium

Table IV-150. Ambient Concentrations (ng/m^3) of Vanadium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	6.9	4.34	7.54	3.89	6.03	11.5	4.83	5.65	4.03	19.5
95% CI LB	6.17	3.88	6.81	3.48	5.09	10.4	4.31	4.83	3.61	17.6
95% CI UB	7.66	4.83	8.31	4.34	7.03	12.6	5.38	6.53	4.48	21.5
N	240	239	234	238	117	228	237	116	236	228
% < MDL	7.1	18.4	6.4	20.2	5.1	4.4	17.7	8.6	18.2	2.6
Max	28.5	22.3	34.6	19.8	28.5	50.7	22.9	26	23.5	87.5
MATES IV										
Average	0, 1.82[b]	0, 2.1[b]	0, 3.14[b]	0, 5.63[b]	0, 2.67[b]	0, 3.53[b]	0, 2.64[b]	0, 3.11[b]	0, 4.72[b]	0, 4.58[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	2.64[b]	2.43[b]	3.59[b]	7.16[b]	3.08[b]	4.34[b]	3.16[b]	3.73[b]	5.94[b]	5.49[b]
N	59[b]	59[b]	61[b]	60[b]	59[b]	61[b]	60[b]	59[b]	61[b]	61[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]
MATES V										
Average	0, 1.94[b]	0, 2.22[b]	0, 2.4[b]	0, 4.78[b]	0, 1.85[b]	0, 2.21[b]	0, 1.9[b]	0, 3.41[b]	0, 3.66[b]	0, 3.06[b]
95% CI LB	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]	0[b]
95% CI UB	2.19[b]	2.57[b]	2.78[b]	5.83[b]	2.16[b]	2.54[b]	2.16[b]	4.04[b]	4.24[b]	3.55[b]
N	54[b]	59[b]	61[b]	60[b]	60[b]	61[b]	61[b]	59[b]	56[b]	57[b]
% < MDL	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]	100[b]
Max	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]	< MDL[b]

[b]More than 80% of data are < MDL. Values based on zero substitutions and TSP KM mean.

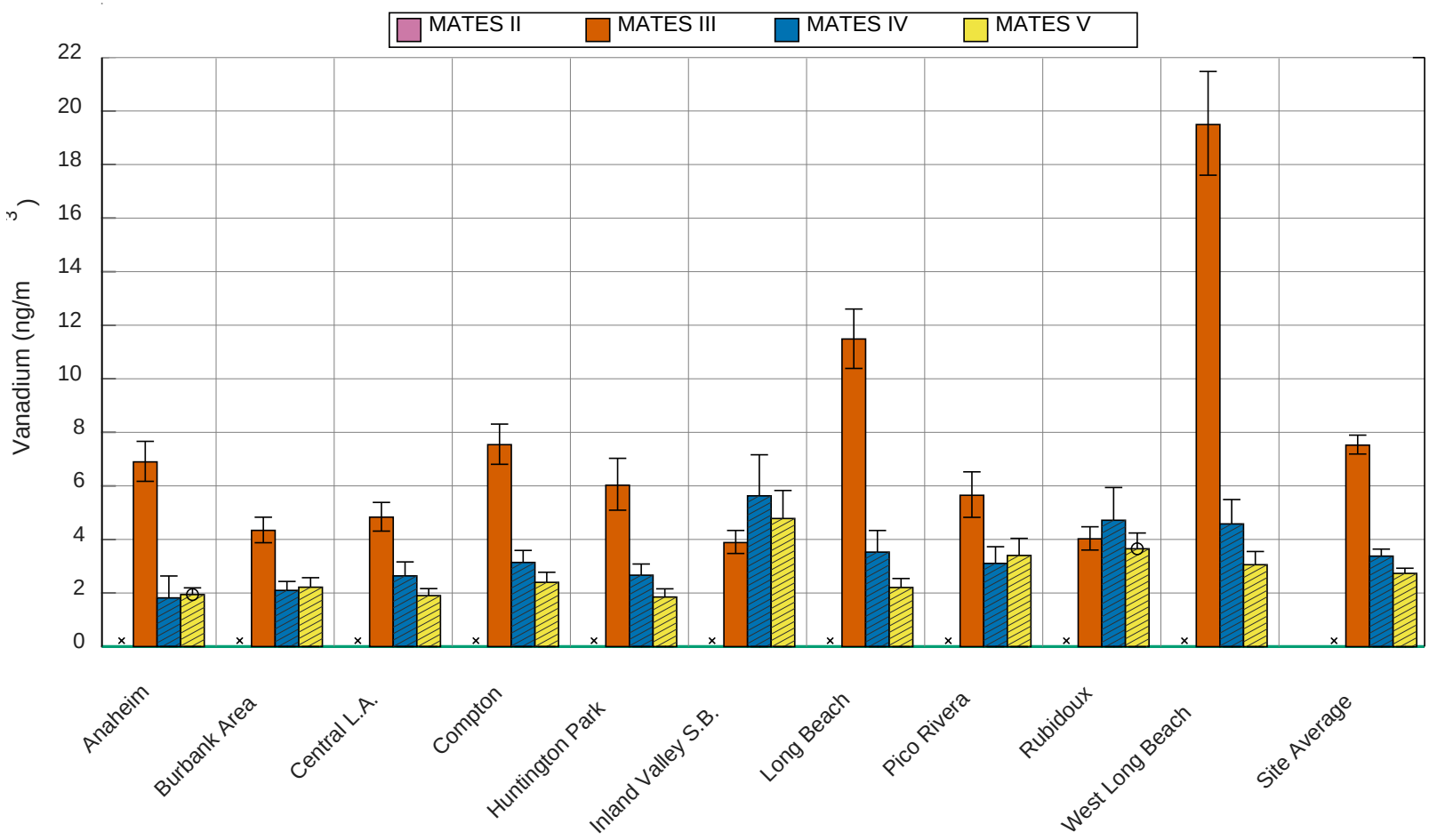


Figure IV-296. Annual Average Concentrations of Vanadium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

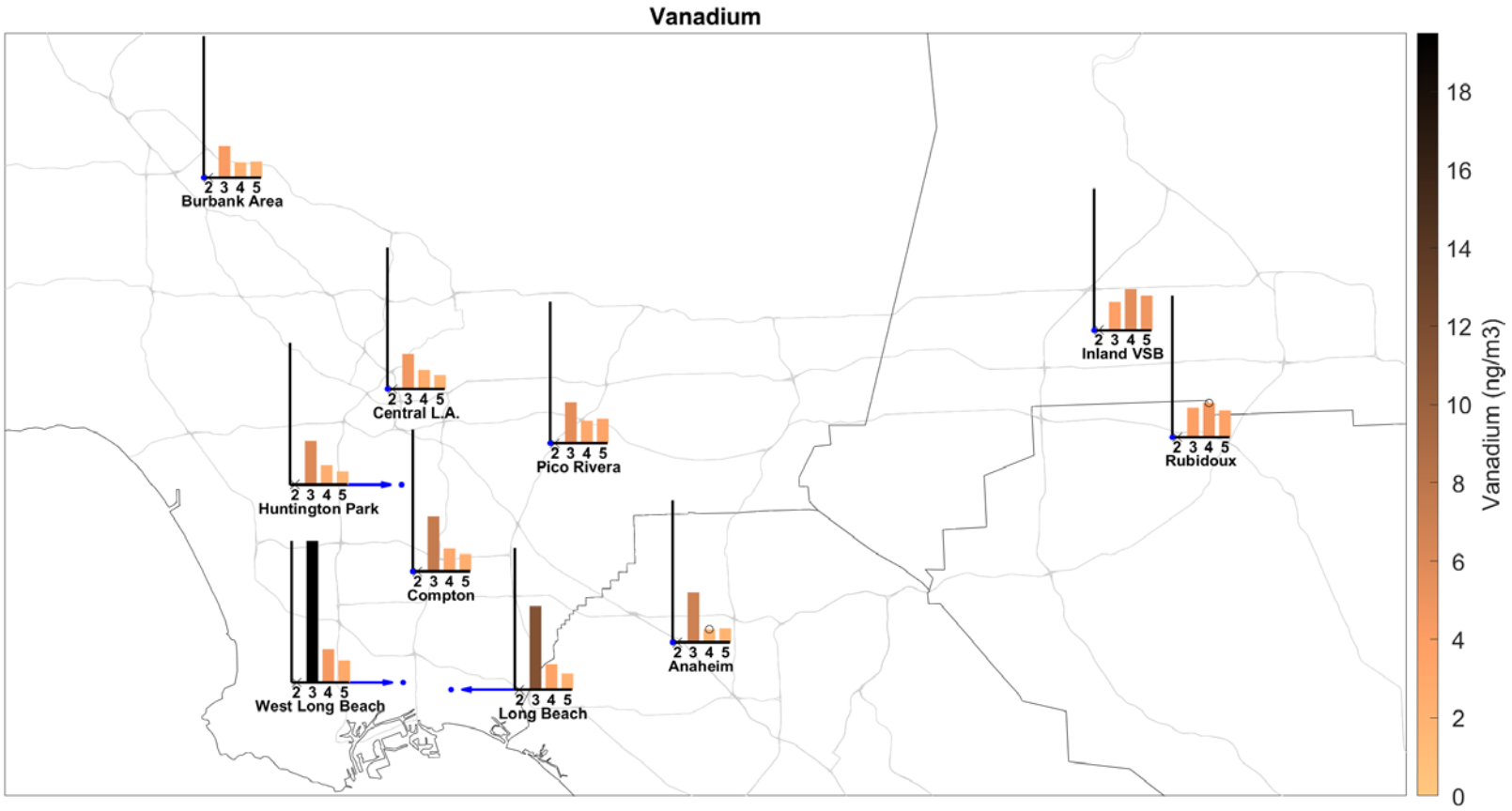


Figure IV-297. Geographic distribution of Vanadium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Yttrium

Table IV-151. Ambient Concentrations (ng/m^3) of Yttrium from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	1.1	1.12	1.18	0.947	1.32	1.21	1.04	1.23	1.07	1.19
95% CI LB	0.989	0.99	1.06	0.843	1.17	1.08	0.947	1.1	0.946	1.08
95% CI UB	1.21	1.25	1.31	1.05	1.47	1.34	1.15	1.36	1.19	1.3
N	240	239	234	238	117	228	237	116	236	228
% < MDL	37.1	41	34.6	44.5	21.4	32.5	32.1	21.6	41.5	30.3
Max	4.95	3.72	4.95	4.93	3.72	6.17	3.1	3.72	6.16	3.72
MATES IV										
Average	0, 15.7[a]	0, 15.7[a]	0, 15.7[a]	0, 15.7[a]	0, 15.7[a]	0, 15.7[a]	0, 15.7[a]	0, 15.7[a]	0, 15.7[a]	0, 15.7[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	15.7[a]	15.7[a]	15.7[a]	15.7[a]	15.7[a]	15.7[a]	15.7[a]	15.7[a]	15.7[a]	15.7[a]
N	59[a]	59[a]	61[a]	60[a]	59[a]	61[a]	60[a]	59[a]	61[a]	61[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]
MATES V										
Average	0, 12[a]	0, 12[a]	0, 12[a]	0, 12[a]	0, 12[a]	0, 12[a]	0, 12[a]	0, 12[a]	0, 12[a]	0, 12[a]
95% CI LB	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]	0[a]
95% CI UB	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]	12[a]
N	54[a]	59[a]	61[a]	60[a]	60[a]	61[a]	61[a]	59[a]	56[a]	57[a]
% < MDL	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]	100[a]
Max	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]	< MDL[a]

[a]More than 80% of data are < MDL. Values based on zero and MDL substitutions.

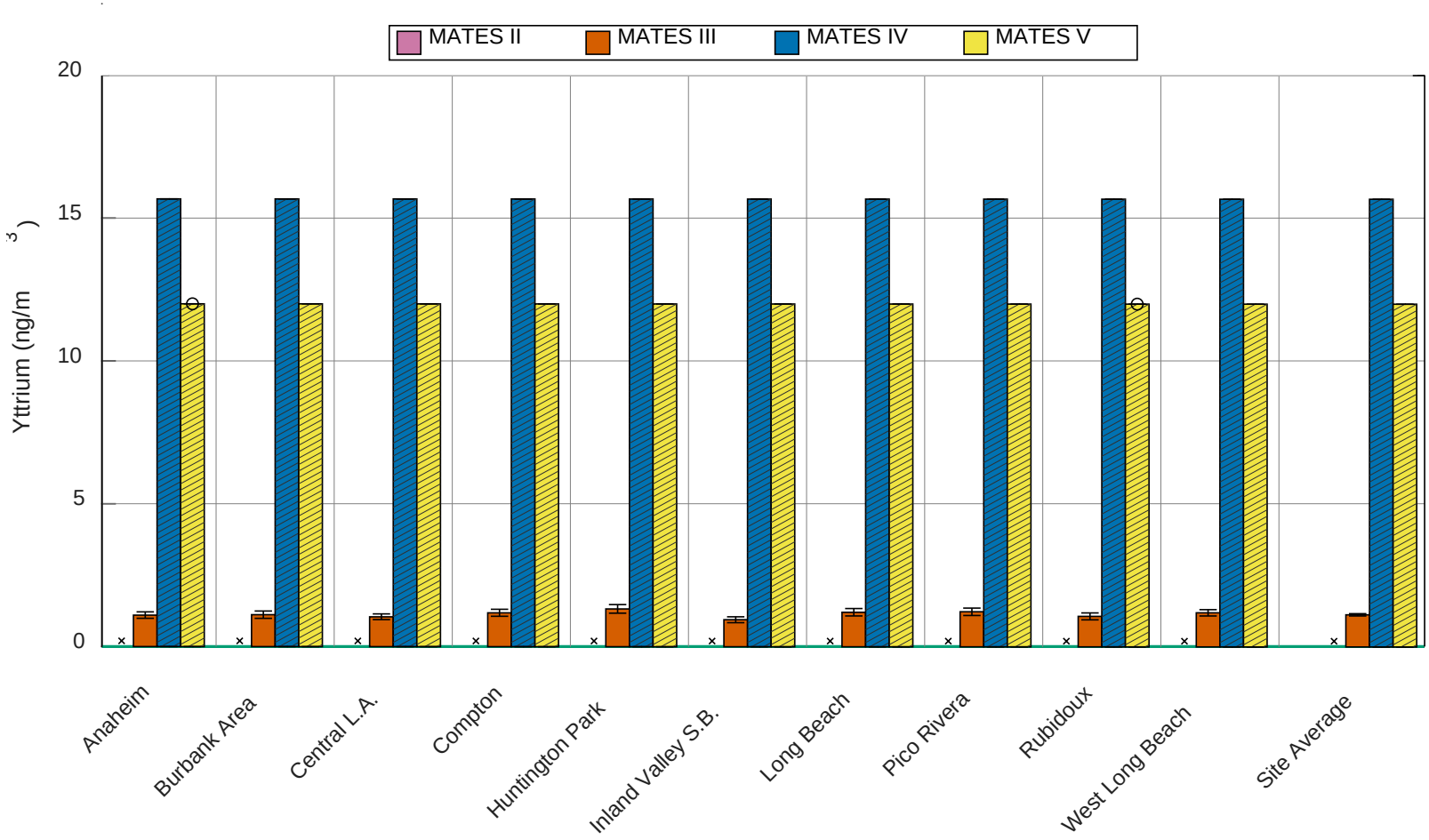


Figure IV-298. Annual Average Concentrations of Yttrium in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

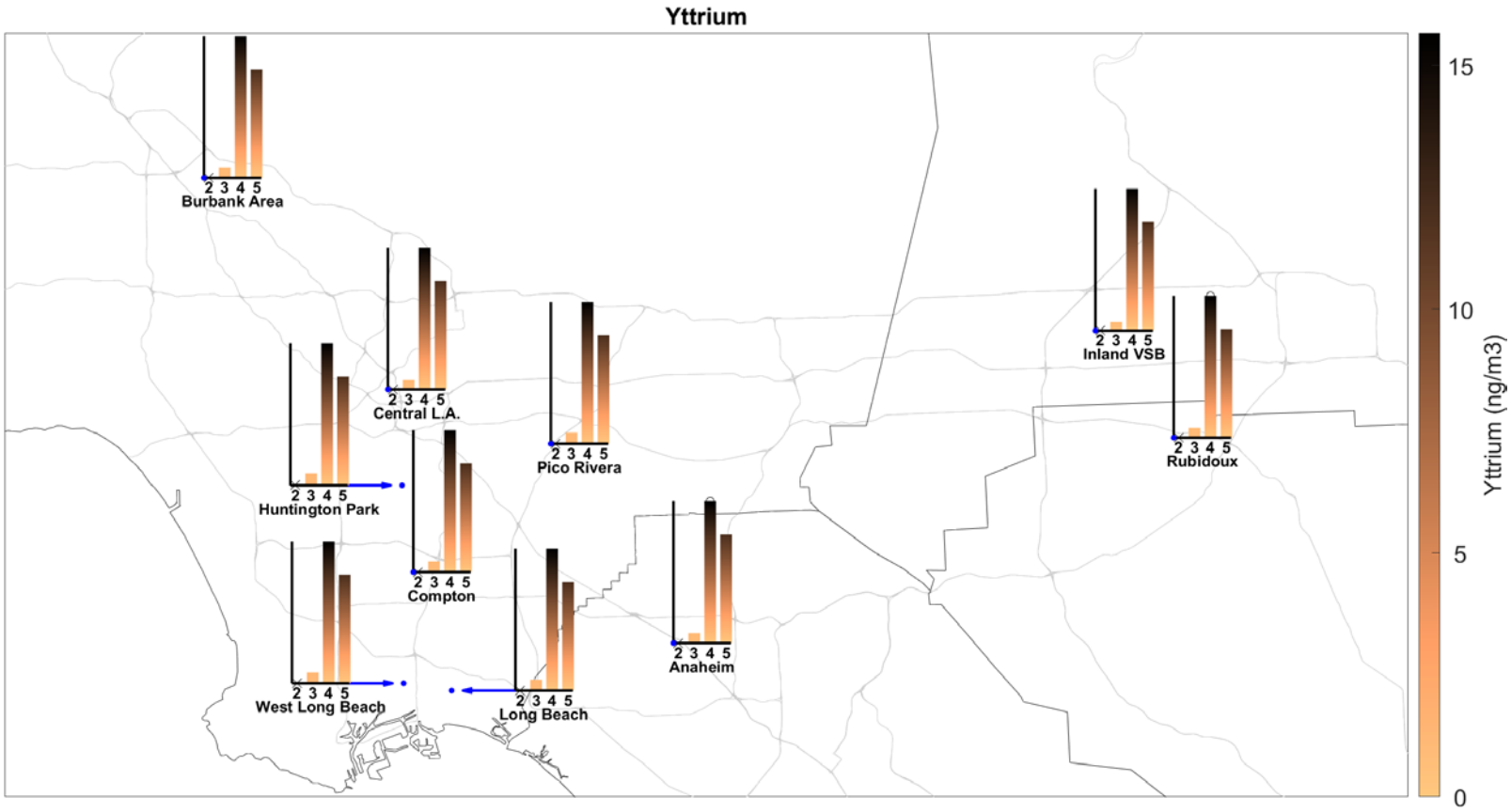


Figure IV-299. Geographic distribution of Yttrium from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

Zinc

Table IV-152. Ambient Concentrations (ng/m^3) of Zinc from the PM2.5 Metals analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average	21	21.4	29.2	56.7	36.5	26.8	36.2	40.7	31.9	27.1
95% CI LB	19.2	19.8	25.5	49.2	30.3	23.9	23.3	31.6	27.6	23.5
95% CI UB	22.8	23	33.5	67.6	43.6	29.9	60	51.5	36.5	31.1
N	240	239	234	238	117	228	237	116	236	228
% < MDL	0	0	0	0	0	0	0	0	0	0
Max	75.5	79.3	237	1050	224	181	2620	362	262	189
MATES IV										
Average	24.4	11.5	13.2	25	21.1	16.2	13.4	19.8	12.6	15.2
95% CI LB	15.1	10.1	10.7	20.9	14.5	12.9	11.2	12	10.4	12
95% CI UB	35.3	13.1	16.3	29.3	29.6	19.8	16	32.4	15.2	18.7
N	59	59	61	60	59	61	60	59	61	61
% < MDL	59.3	59.3	67.2	16.7	50.8	50.8	53.3	49.2	60.7	50.8
Max	210	36	61	72	189	72	58	332	56	64
MATES V										
Average	39.1	10.7	14.7	25.4	15.9	13	12.3	15	12.3	18
95% CI LB	18.6	9.22	12.4	22.1	12.7	11	10.4	12.6	10.4	13.8
95% CI UB	66.9	12.6	17.2	28.8	19.4	15.2	15.1	17.7	14.3	23
N	54	59	61	60	60	61	61	59	56	57
% < MDL	33.3	33.9	21.3	1.7	16.7	39.3	19.7	13.6	21.4	15.8
Max	525	55	45	71	88	51	79	69	43	97

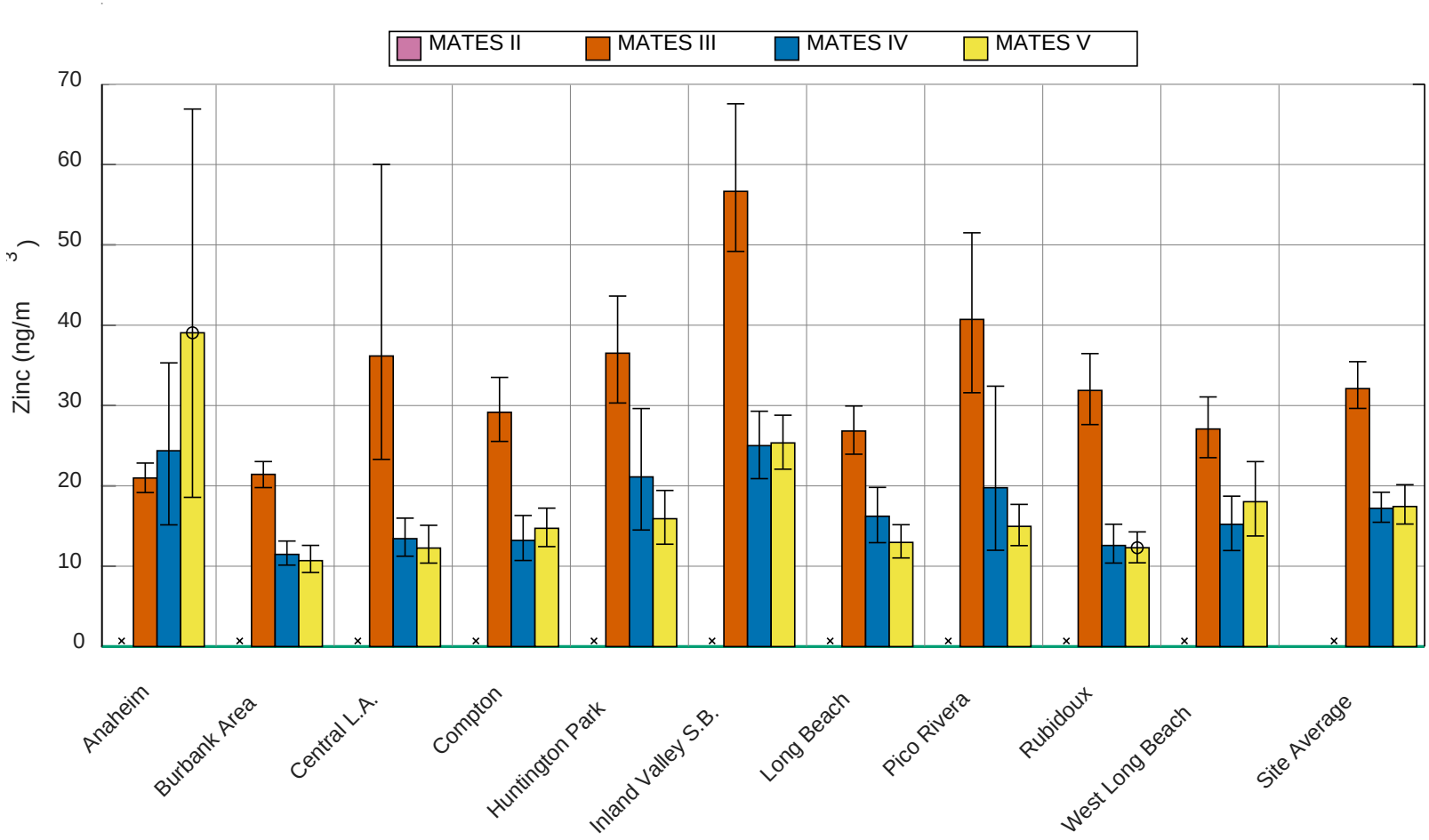


Figure IV-300. Annual Average Concentrations of Zinc in the PM2.5 Metals Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

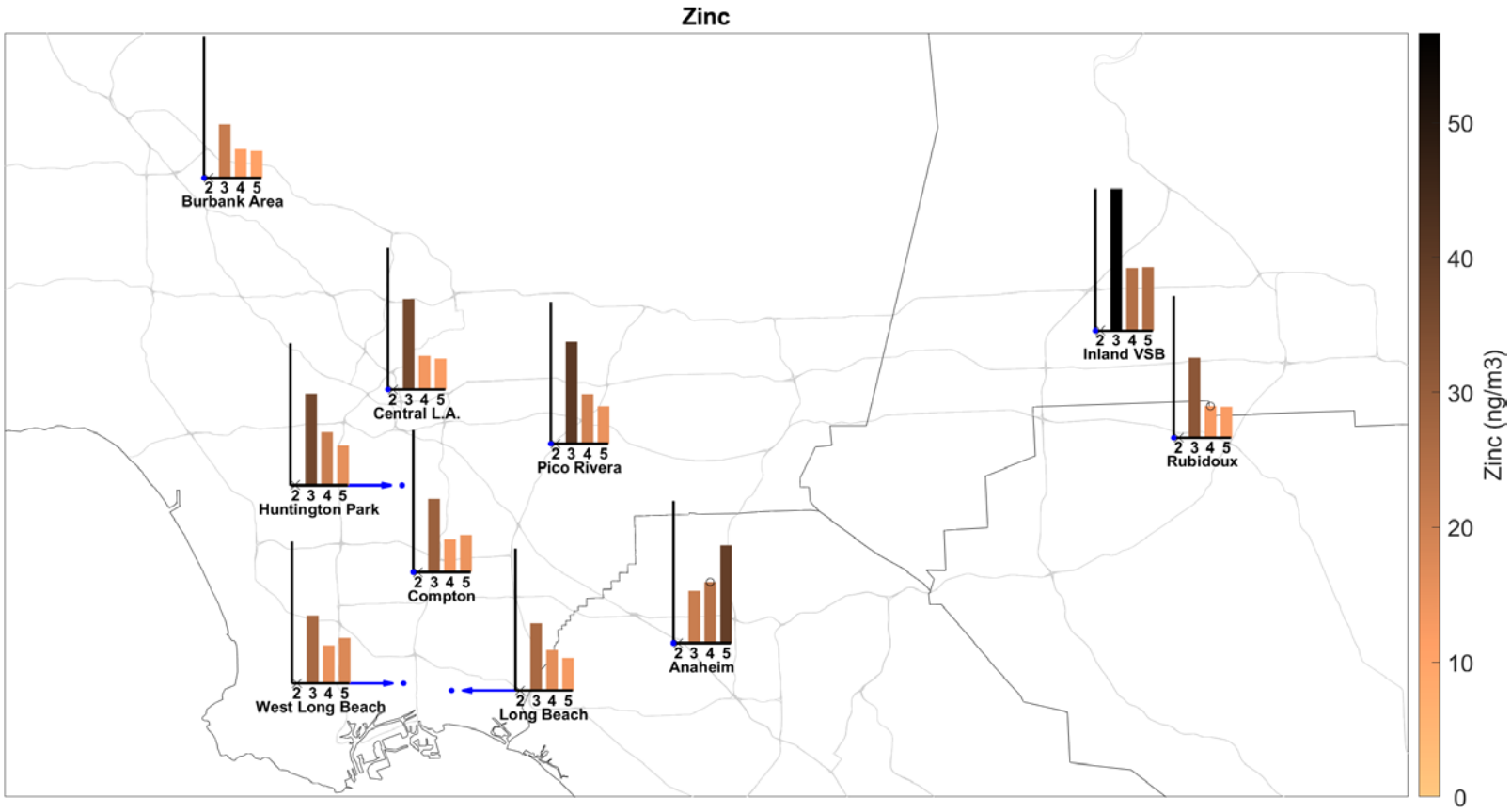


Figure IV-301. Geographic distribution of Zinc from the PM2.5 Metals Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. “x” indicates that there is no data for a given station/MATES iteration.

PM2.5 Levoglucosan Analysis

Galactosan

Table IV-153. Ambient Concentrations (ng/m^3) of Galactosan from the PM2.5 Levoglucosan analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	4.25	3.17	7.03	3.48	4.03	3.85	3.65	4.67	5.11	4.3
95% CI LB	3.04	2.4	4.47	2.74	3.03	2.87	3.02	3.36	3.96	2.97
95% CI UB	5.71	4.15	10.3	4.43	5.24	5.08	4.37	6.26	6.42	6.1
N	56	58	60	61	59	61	110	58	113	56
% < MDL	30.4	37.9	45	31.1	44.1	49.2	35.5	34.5	31.9	57.1
Max	24	25	75	22	21	28	23.5	32	40	42

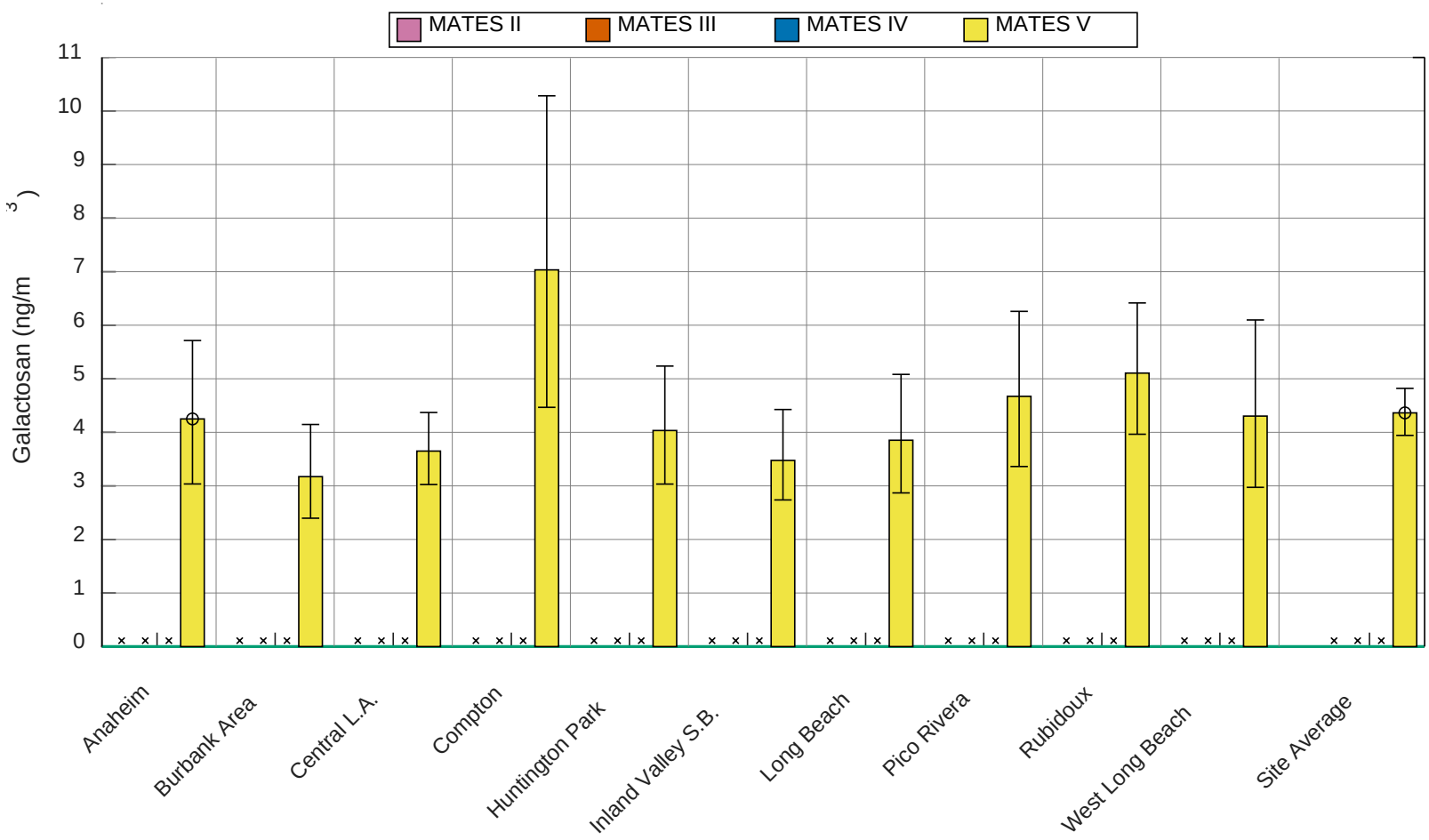


Figure IV-302. Annual Average Concentrations of Galactosan in the PM2.5 Levoglucosan Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

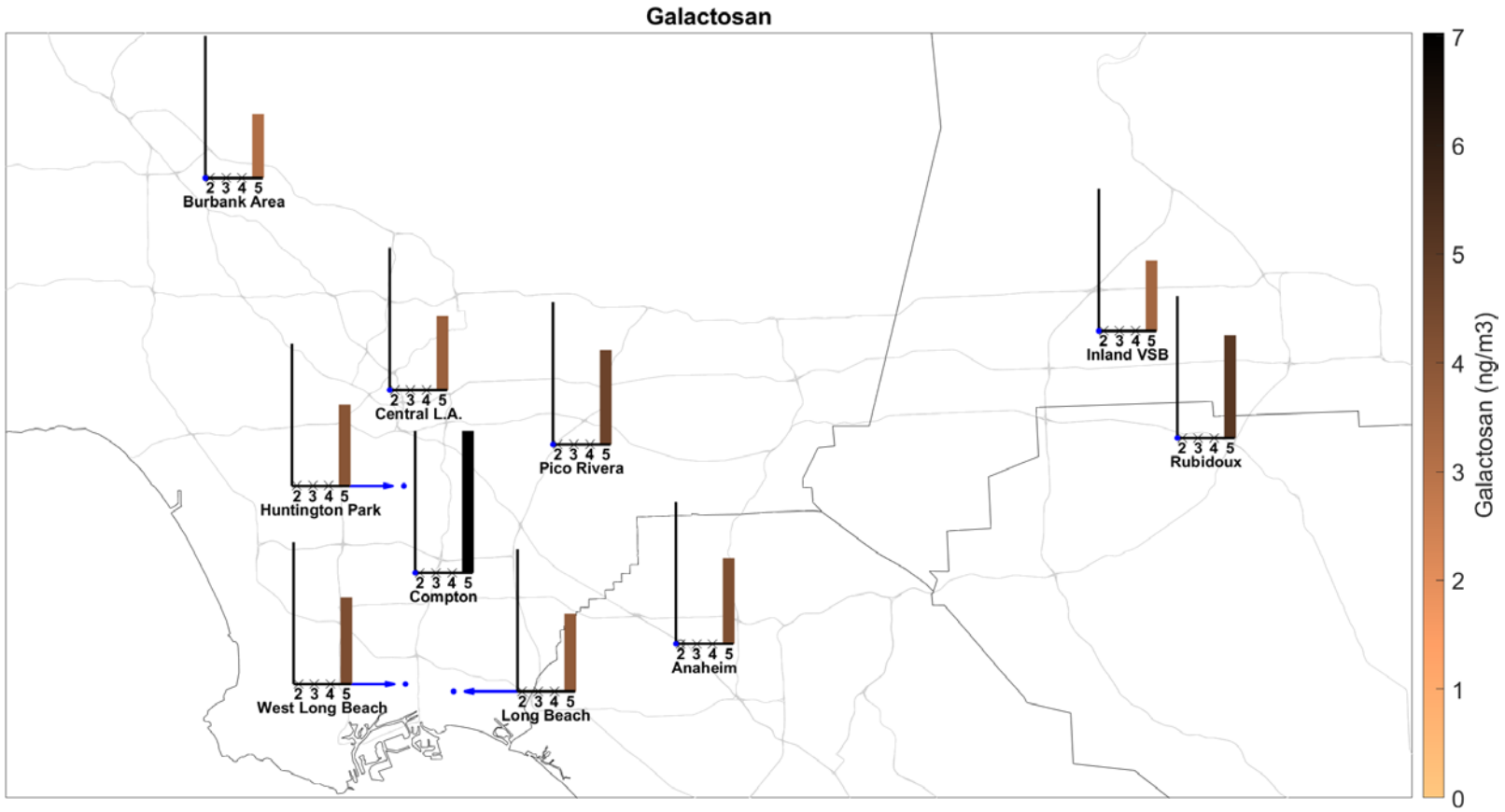


Figure IV-303. Geographic distribution of Galactosan from the PM2.5 Levoglucosan Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Levoglucosan

Table IV-154. Ambient Concentrations (ng/m^3) of Levoglucosan from the PM2.5 Levoglucosan analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	56.3	36.8	113	49	58.2	52.7	53.2	73.6	76.2	62.8
95% CI LB	36.6	24.7	65.6	34.8	39.3	32.9	41.2	49	57.8	35.3
95% CI UB	80.1	52.8	171	65.8	80.2	76.6	67.4	102	97.3	96.7
N	56	58	60	60	59	60	109	58	112	55
% < MDL	0	1.7	0	0	0	0	0	1.7	0	3.6
Max	400	370	1220	348	389	491	434	480	646	635

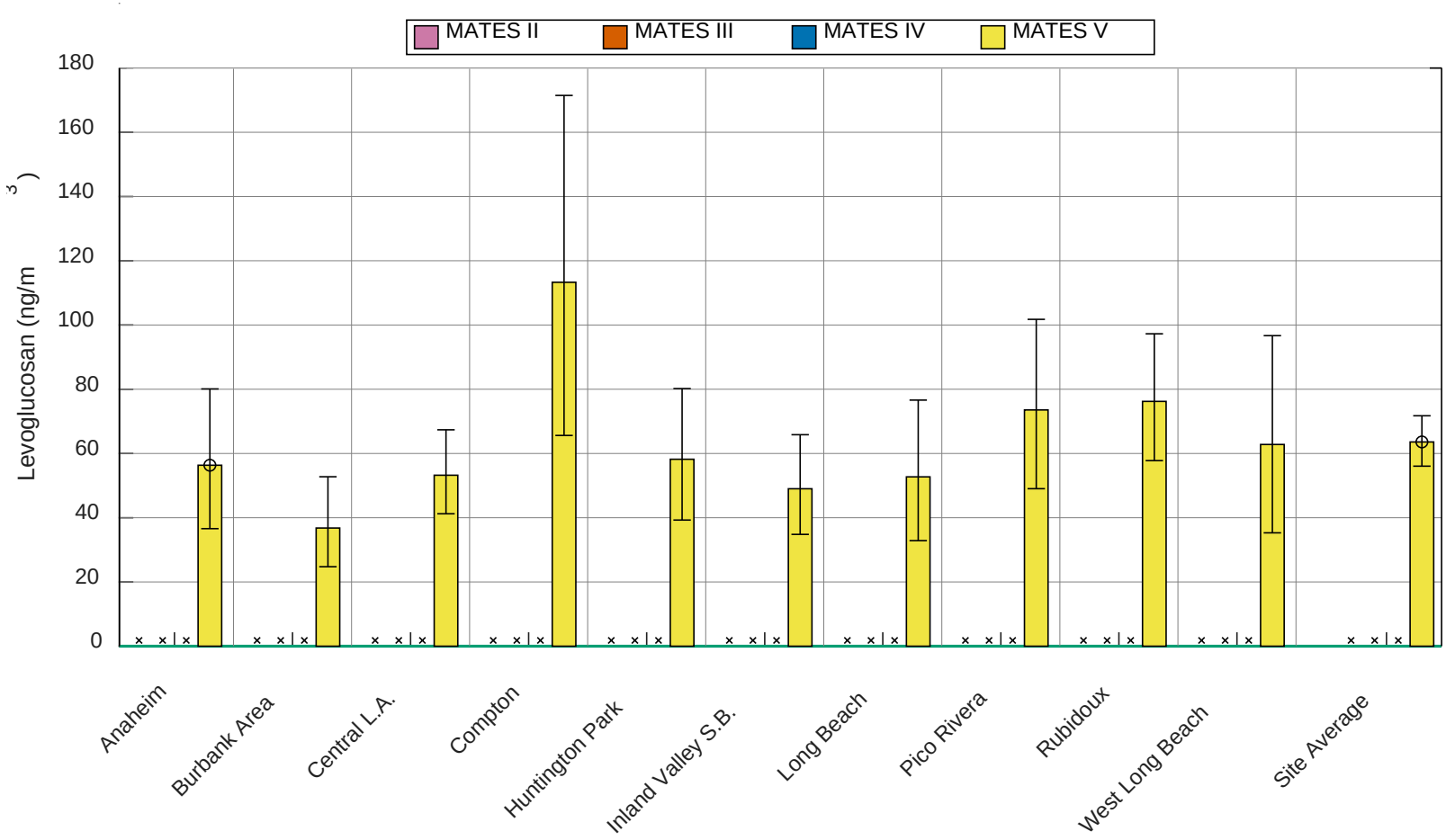


Figure IV-304. Annual Average Concentrations of Levoglucosan in the PM2.5 Levoglucosan Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

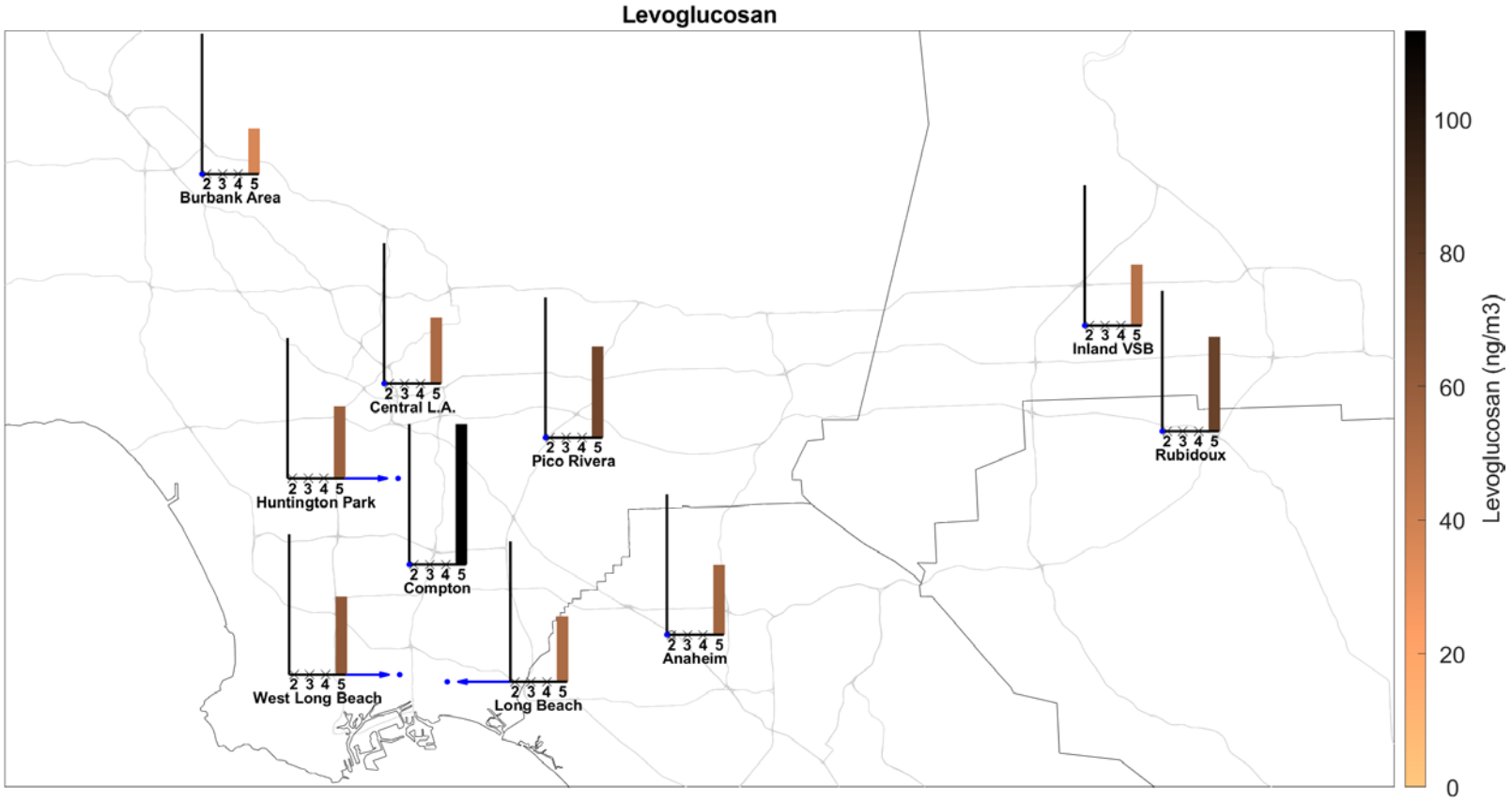


Figure IV-305. Geographic distribution of Levoglucosan from the PM2.5 Levoglucosan Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Mannosan

Table IV-155. Ambient Concentrations (ng/m^3) of Mannosan from the PM2.5 Levoglucosan analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES III										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES IV										
Average										
95% CI LB										
95% CI UB										
N	0	0	0	0	0	0	0	0	0	0
% < MDL										
Max										
MATES V										
Average	10.8	6.93	21.7	8.48	11.3	10.5	9.32	13.1	13	11.7
95% CI LB	7.32	4.97	13.3	6.03	7.58	7.04	7.39	9.06	10.1	7.18
95% CI UB	14.6	9.36	31.7	11.5	16.1	14.8	11.5	17.9	16.4	17.5
N	55	58	60	60	59	60	110	58	113	55
% < MDL	7.3	10.3	6.7	13.3	6.8	15	10.9	6.9	0.9	25.5
Max	67	45	210	64	76	95	56.5	78	101	122

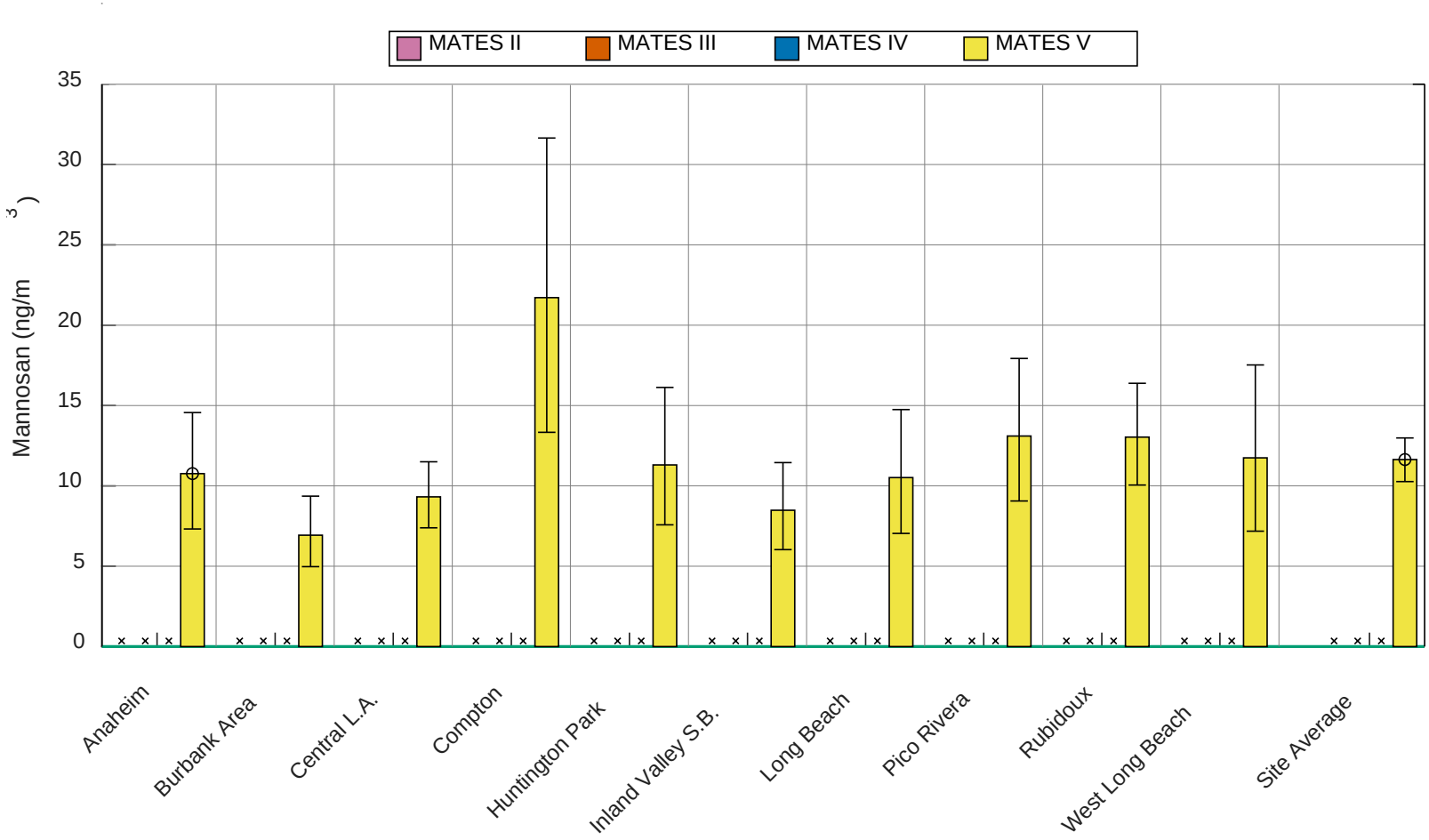


Figure IV-306. Annual Average Concentrations of Mannosan in the PM2.5 Levoglucosan Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

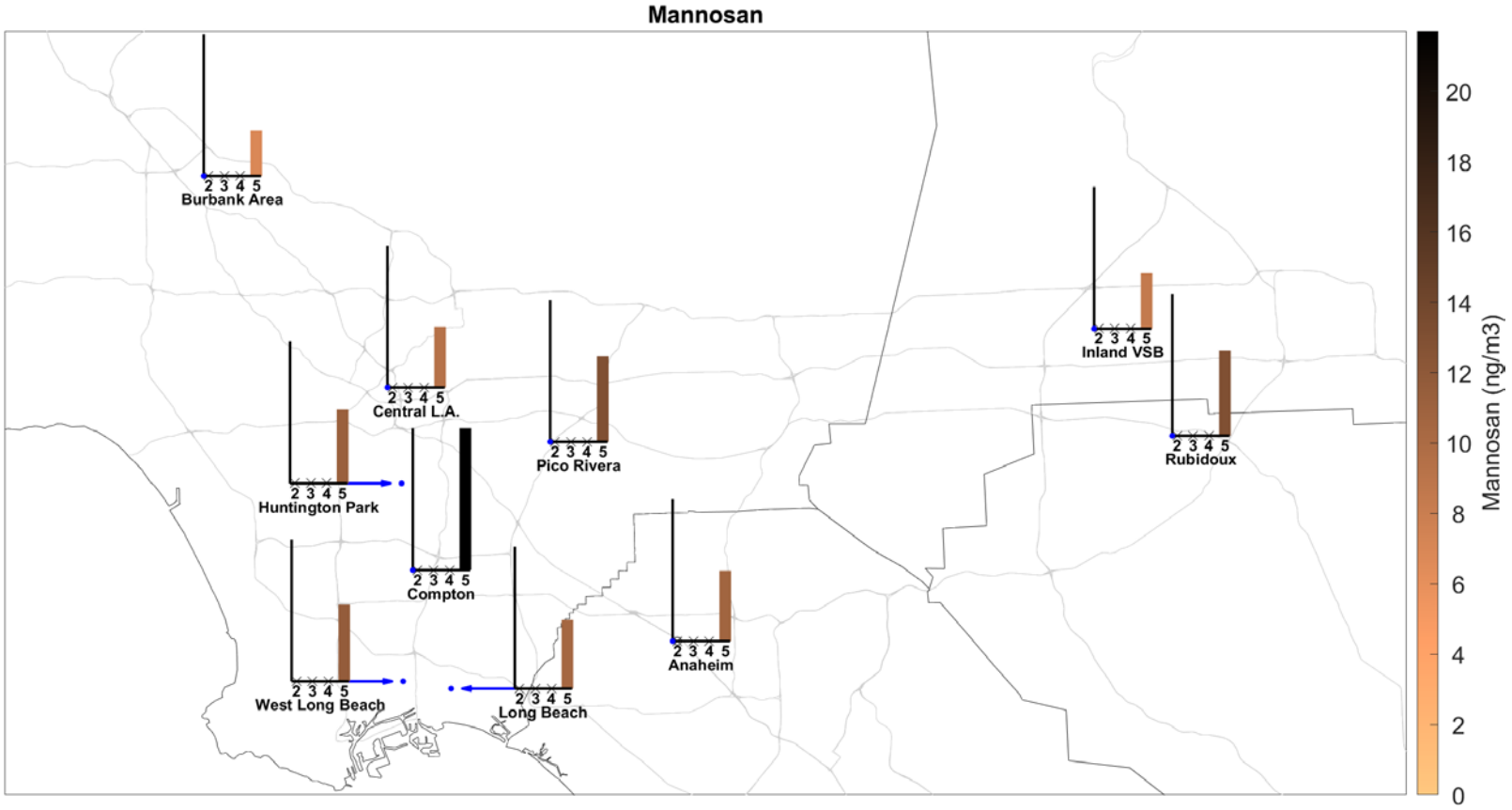


Figure IV-307. Geographic distribution of Mannosan from the PM2.5 Levoglucosan Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

Diesel PM Analysis

Diesel PM

Table IV-156. Ambient Concentrations (ng/m^3) of Diesel PM from the Diesel PM analysis at the Fixed Sites.

	Measurement Site									
Statistic	**AN**	**BU**	**CP**	**SB**	**HP**	**LB**	**LA**	**PR**	**RU**	**WLB**
MATES II										
Average	2420	3310		3230	4720	2680	3670	4530	3560	
95% CI LB										
95% CI UB										
N	58	53	0	59	46	58	59	38	62	0
% < MDL	12.1	3.8		5.1	0	20.7	1.7	0	12.9	
Max										
MATES III										
Average	2640	3810	3320	3980	4280	2870	3600	3840	3230	4060
95% CI LB										
95% CI UB										
N	242	241	235	236	118	228	240	116	235	228
% < MDL	0.4	0	0.4	0.8	0.8	0.4	0	0	0.4	0.4
Max										
MATES IV										
Average	774	1120	878	1120	957	777	1080	1230	1060	1070
95% CI LB	591	901	649	947	771	578	904	1020	903	803
95% CI UB	982	1360	1130	1310	1170	998	1290	1470	1230	1380
N	59	59	61	60	59	61	60	59	61	61
% < MDL	0	1.7	0	1.7	0	1.6	0	0	0	0
Max										
MATES V										
Average	327	352	518	574	498	338	529	524	579	543
95% CI LB	238	280	367	473	383	241	412	407	430	398
95% CI UB	431	430	689	679	625	448	664	656	753	710
N	56	59	61	60	60	61	61	59	59	55
% < MDL	3.6	6.8	6.6	5	0	8.2	1.6	1.7	3.4	1.8
Max										

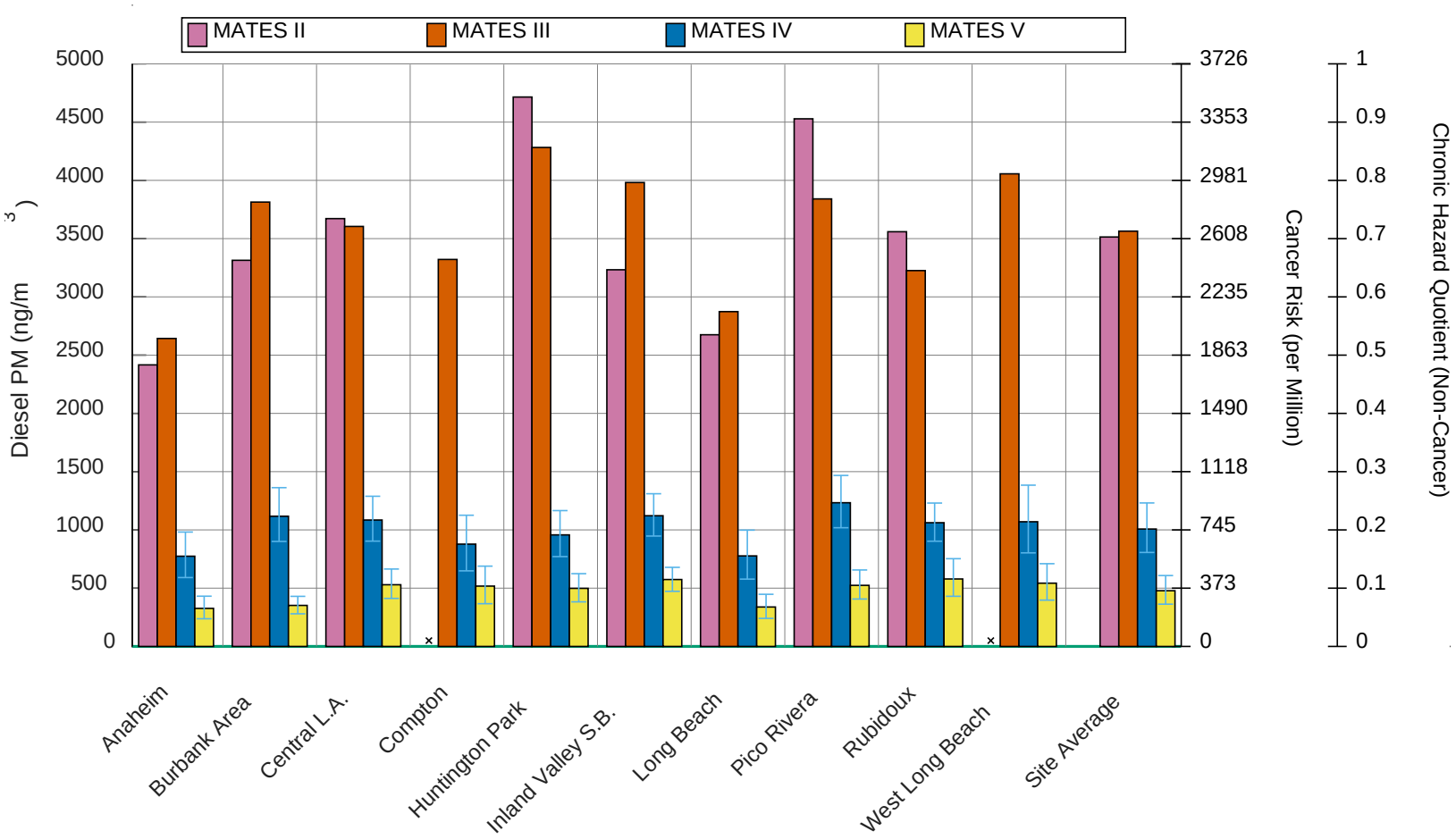


Figure IV-308. Annual Average Concentrations of Diesel PM in the Diesel PM Analysis. The diagonal lines (shading) on the bars indicate that more than 80% of the measurements for those stations were below the method detection limits (MDLs). The lower edge of the shading shows the mean with zero substituted for all measurements below the MDL. The upper edge of the shading shows the mean with the MDL substituted for all measurements below the MDL. All other averages are calculated using the KM mean. “o” indicates that valid measurements do not exist for at least 75% of the sampling days in each quarter. “x” indicates that there is no data for a given station/MATES iteration.

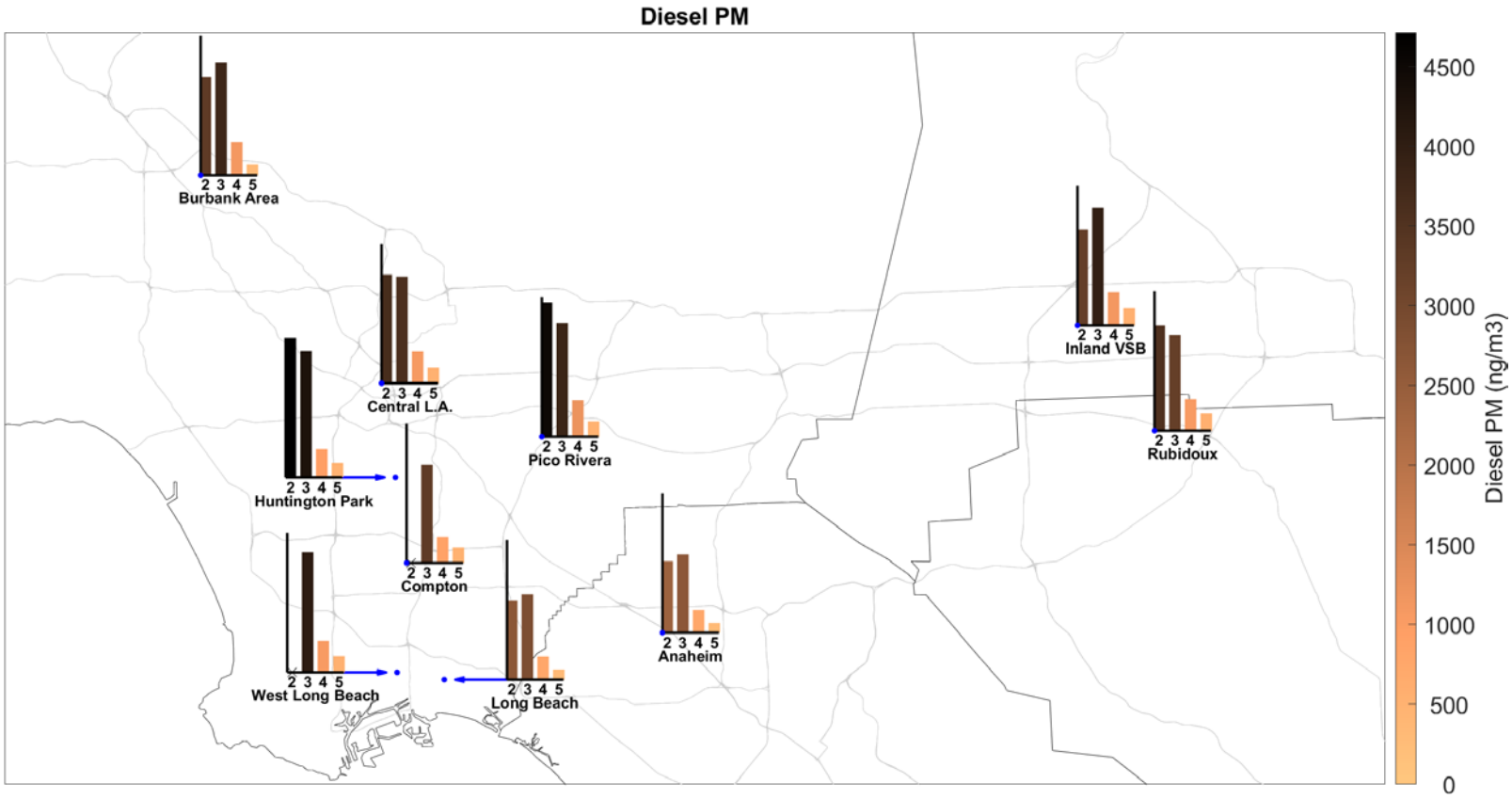


Figure IV-309. Geographic distribution of Diesel PM from the Diesel PM Analysis. The blue dots represent the locations of the MATES V stations. A circle at the top of a bar indicates that at least one quarter has less than 75% data completeness. "x" indicates that there is no data for a given station/MATES iteration.

IV.2 Methods for Aggregate Risk Calculations

As mentioned in Chapter 2, calculated cumulative risks would be artificially low if some analytes are missing, which would lead to inaccurate comparisons between stations or across MATES studies. To address this issue, missing analytes were substituted to fill in gaps. The method used for substituting data creates additional uncertainty. To address this uncertainty, five different methods were used to calculate cumulative risks to determine if the results are sensitive to the method chosen. For descriptive purposes, these methods are called: Missing Data, Interpolate Trends, Adjacent MATES, Min MATES, and Max MATES. These substitutions are only used for discussions and figures related to aggregate risk, e.g., Figure ES-2 through Figure ES-5 in the Executive Summary and Figure 2-44 through Figure 2-55 in Chapter 2, and not elsewhere in the MATES V report. The results from all five methods are shown in Figure IV-298 through Figure IV-301.

The Missing Data method simply ignores any data that is missing. In other words, this method it does not make any estimates to fill in any missing data, and therefore shows unrealistically low cumulative risks. As a result, we do not rely on this method, and it is shown for comparison purposes only.

The Interpolate Trends, Adjacent MATES, Min MATES, and Max MATES methods all substitute the basin wide average from the same MATES study if it is available. For example, as discussed in Chapter 2, carbonyl and VOC pollutant data were not available due to equipment issues at Anaheim for MATES V. Since these pollutants were measured at other stations during MATES V, the basin-wide averages from MATES V are substituted for the missing carbonyl and VOC data. The results presented in Figure ES-2 through Figure ES-5 in the Executive Summary and Figure 2-44 through Figure 2-55 in Chapter 2 use the Interpolate Trends method.

The Interpolate Trends, Adjacent MATES, Min MATES, and Max MATES methods differ in how they handle missing data when a pollutant is not available for any stations in a given MATES study. For example, as shown in Figure 2-33 in Chapter 2, Total Suspended Particle (TSP) Beryllium was only measured during MATES IV and MATES V. In order to make a fair comparison of trends over time, some substitution of beryllium data needs to be made for MATES II and MATES III. The Missing Data method shows artificially low risks in MATES II and MATES III due to the lack of beryllium data.

For the Interpolate Trends method, if a pollutant has no data for one or more MATES studies, the percent change in basin-wide concentration for that pollutant is calculated for the MATES studies that are available, and then the largest percent change is applied to the highest of any available basin average. For example, if the basin-wide average for a pollutant decreased 83% from MATES III to MATES IV and 34% from MATES IV to MATES V, and the pollutant was not measured in MATES II, the highest basin wide average (i.e., the MATES III basin-wide average in this example) would be multiplied by 1.83. This value would be used for all stations for the MATES study missing that pollutant. These numbers were only provided as an example.

The calculations are done separately for each pollutant. The Interpolate Trends method estimates the higher concentrations we would expect in older MATES projects based on observed trends.

For the Adjacent MATES method, if a pollutant has no data for one or more MATES studies, the basin-wide average from the preceding MATES study is used for substitution, if available (e.g., MATES II data would be used for MATES III data if possible). If data for the preceding MATES study are not available (or MATES II is the study missing data), the basin-wide average from the subsequent MATES study is used, if available. If no data is available from an adjacent MATES study, then data is substituted from the remaining MATES study.

For the Min MATES method, if a pollutant has no data for one or more MATES studies, the minimum value of the basin-wide values from the MATES studies that do have data is used to substitute for the missing data. This method is likely to be an underestimate, particularly if the missing data is from earlier MATES studies, when concentrations were likely higher. In contrast, for the Max MATES method, the maximum value of the basin-wide values from the MATES studies that do have data is used to substitute for the missing data.

Figure IV-298 shows the results for all five methods used to calculate the aggregate cancer risk for the MATES V data. From left to right for each station, the results are shown for the Missing Data, Adjacent MATES, Min MATES, Max MATES, and Interpolate Trends methods. This order is the same for Figure IV-298 through Figure IV-301. The left-most bar for each station is for the Missing Data method and shows the artificially low aggregate risk estimates if no substitutions are made for missing data, which is particularly noticeable for Anaheim. The other four methods in Figure IV-298 are indistinguishable.

Figure IV-299 shows the results for all five methods used to calculate the aggregate chronic hazard index for the MATES V data. The left-most bar (Missing Data method) for Anaheim is much shorter than the bars for the other methods and shows that the cumulative hazard index estimates are artificially low if nothing is substituted for missing data. The other four methods are indistinguishable in Figure IV-299.

Figure IV-300 and Figure IV-301 are similar to Figure IV-298 and Figure IV-299, respectively, except that they show the data for MATES II through MATES V. Note also that Bromomethane is excluded since it was only measured in MATES V and trends cannot be inferred with data for only one MATES study. The five left-most bars in Figure IV-300 show the results for all five methods for MATES II at Anaheim. The next five bars show the results for MATES III at Anaheim, and so on. The Missing Data method is known to show aggregate risks that are artificially low. The other methods show slight variations in aggregate risks in Figure IV-300 and Figure IV-301, particularly for MATES II and MATES III. These variations, however, do not change conclusions about which MATES study had higher or lower aggregate risks relative to other MATES studies at a given station. The highest aggregate risk estimates are found using the Interpolate Trends method, which are the results presented in Figure ES-2 through Figure ES-5 in the Executive Summary and Figure 2-44 through Figure 2-55 in Chapter 2.

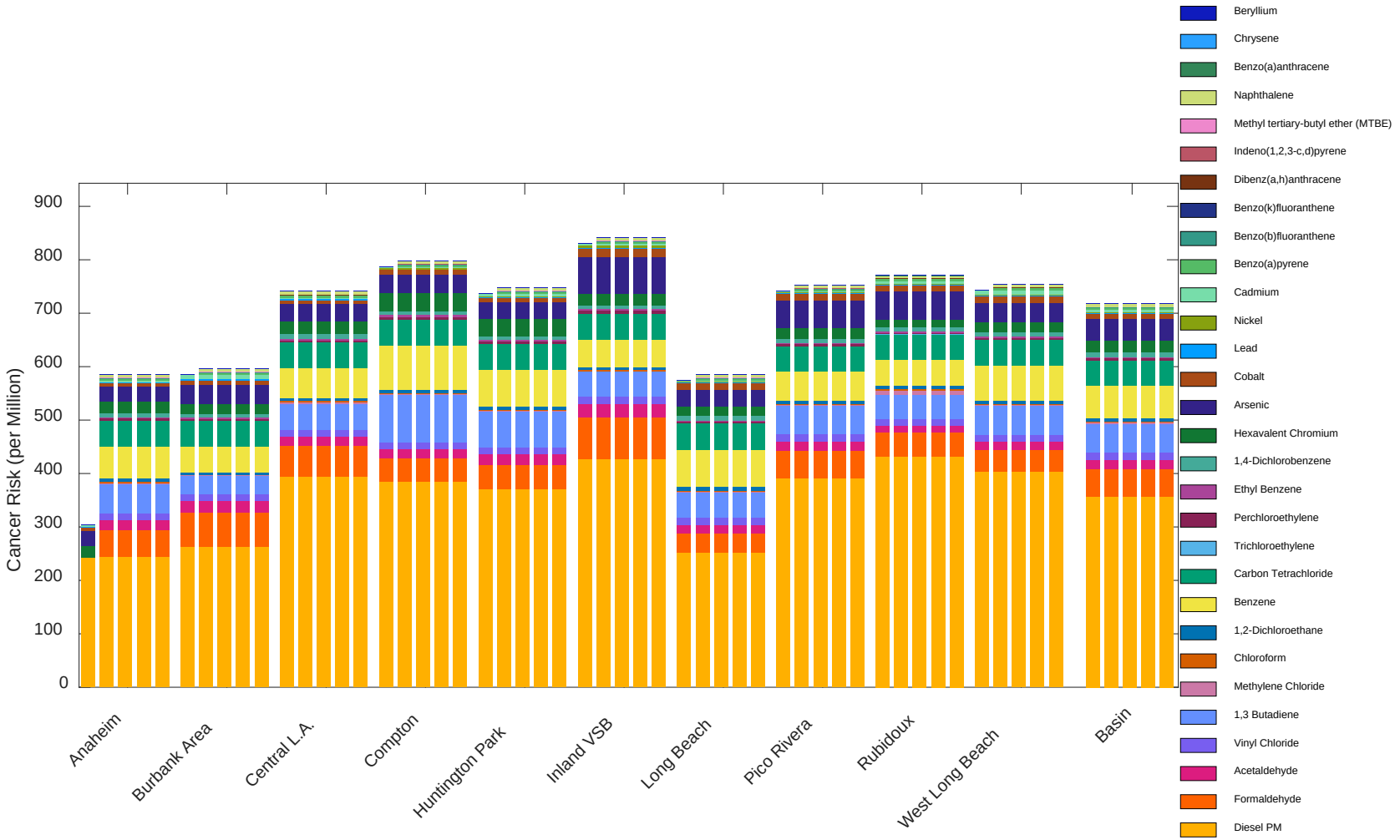


Figure IV-310 Aggregate cancer risks for all stations and for MATES V only using five methods for substituting for missing data. From left to right for each station, the results are shown for the Missing Data, Adjacent MATES, Min MATES, Max MATES, and Interpolate Trends methods.

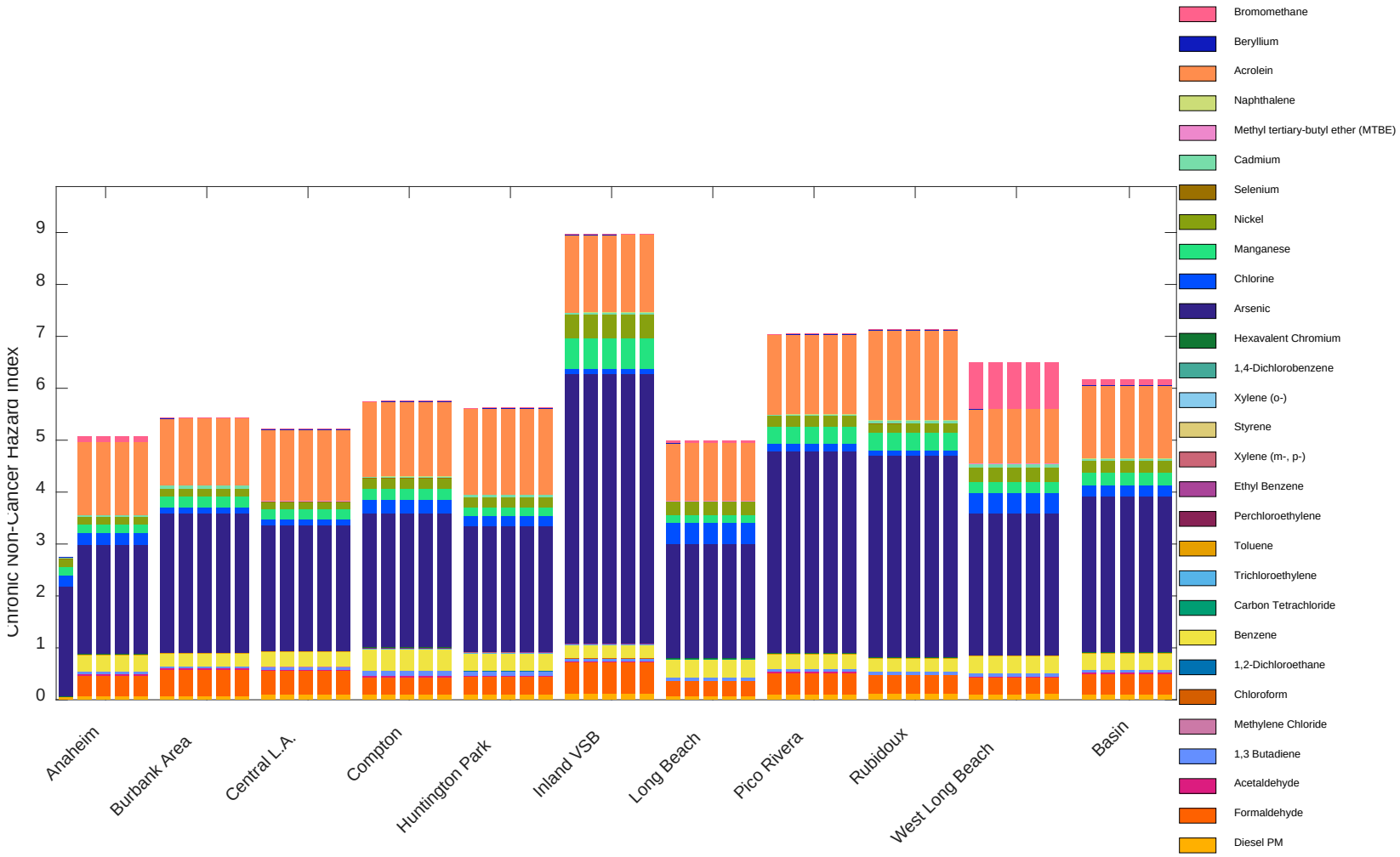


Figure IV-311 Aggregate chronic hazard index for all stations for MATES V only using five methods for substituting for missing data. From left to right for each station, the results are shown for the Missing Data, Adjacent MATES, Min MATES, Max MATES, and Interpolate Trends methods.

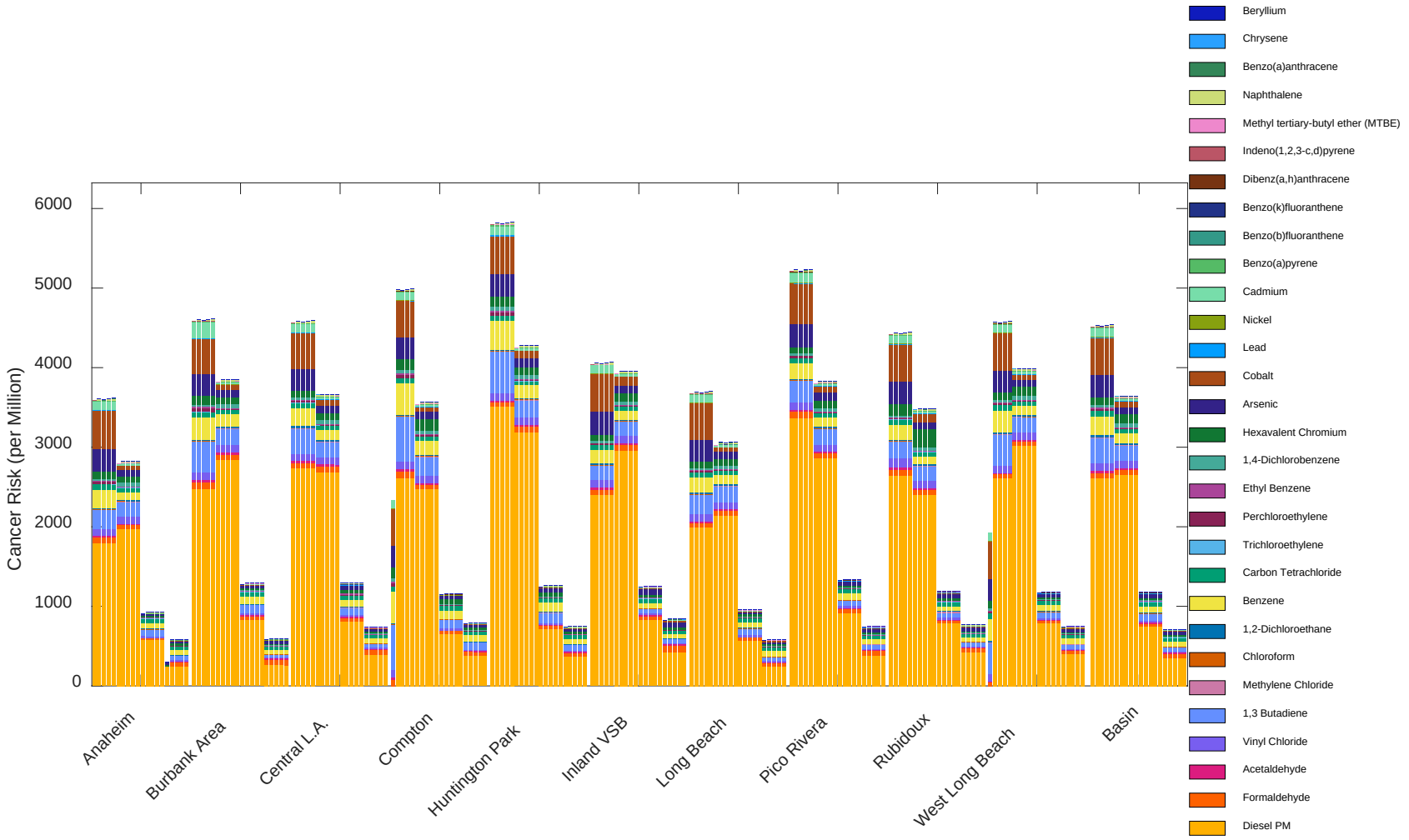


Figure IV-312 Aggregate cancer risks for all stations and all MATES studies using five methods for substituting for missing data. From left to right for each station, the results are shown for the Missing Data, Adjacent MATES, Min MATES, Max MATES, and Interpolate Trends methods. The five left-most bars show the results for all five methods for MATES II at Anaheim. The next five bars show the results for MATES III at Anaheim, and so on.

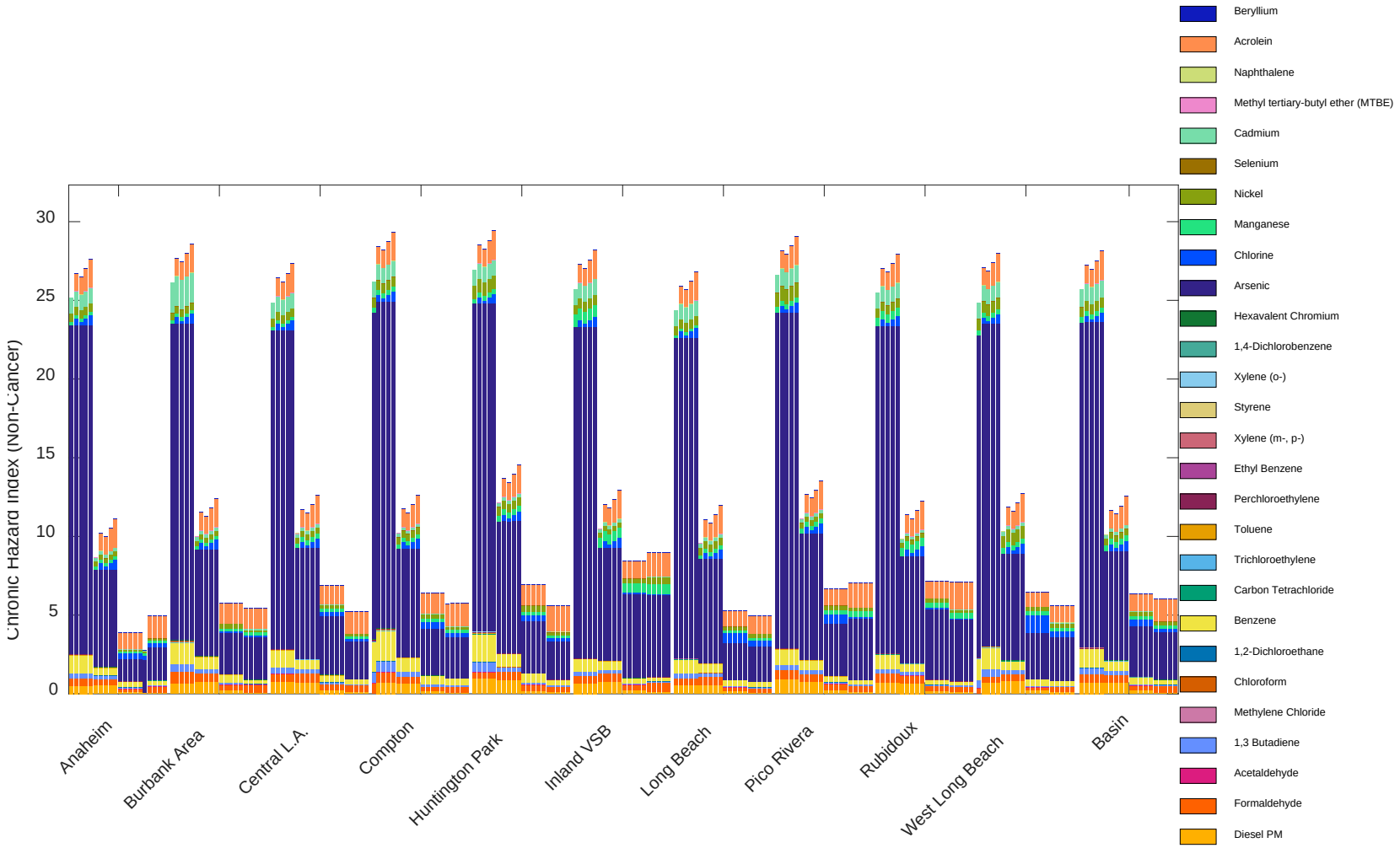


Figure IV-313 Aggregate chronic hazard index for all stations and all MATES studies using five methods for substituting for missing data. From left to right for each station, the results are shown for the Missing Data, Adjacent MATES, Min MATES, Max MATES, and Interpolate Trends methods. The five left-most bars show the results for all five methods for MATES II at Anaheim. The next five bars show the results for MATES III at Anaheim, and so on. Bromomethane is excluded since it was only measured in MATES V and trends cannot be inferred with data for only one MATES study.