

Mid-Atlantic Diesel Collaborative



www.dieselmidatlantic.org

A Snapshot of the Regional Emission Inventory

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A Snapshot of the Regional Emission Inventory

- What are emission inventories
- How are they used in air quality analysis
- Where are “on-road” and “non-road” diesel emissions in the MANE-VU Region
- A look at air monitoring data for one site, Elizabeth, NJ

What are Emission Inventories?

- Emission inventories are compilations of source emissions for a geographical area
- Typically, they are compiled by:
 - Year
 - Source type
 - Pollutant
- For many emission sources, emissions are estimated or modeled, not measured

What are Emission Inventories?

- Emission inventories include several general categories of emission sources
 - Point sources
 - Area sources
 - Mobile sources
 - Biogenic sources

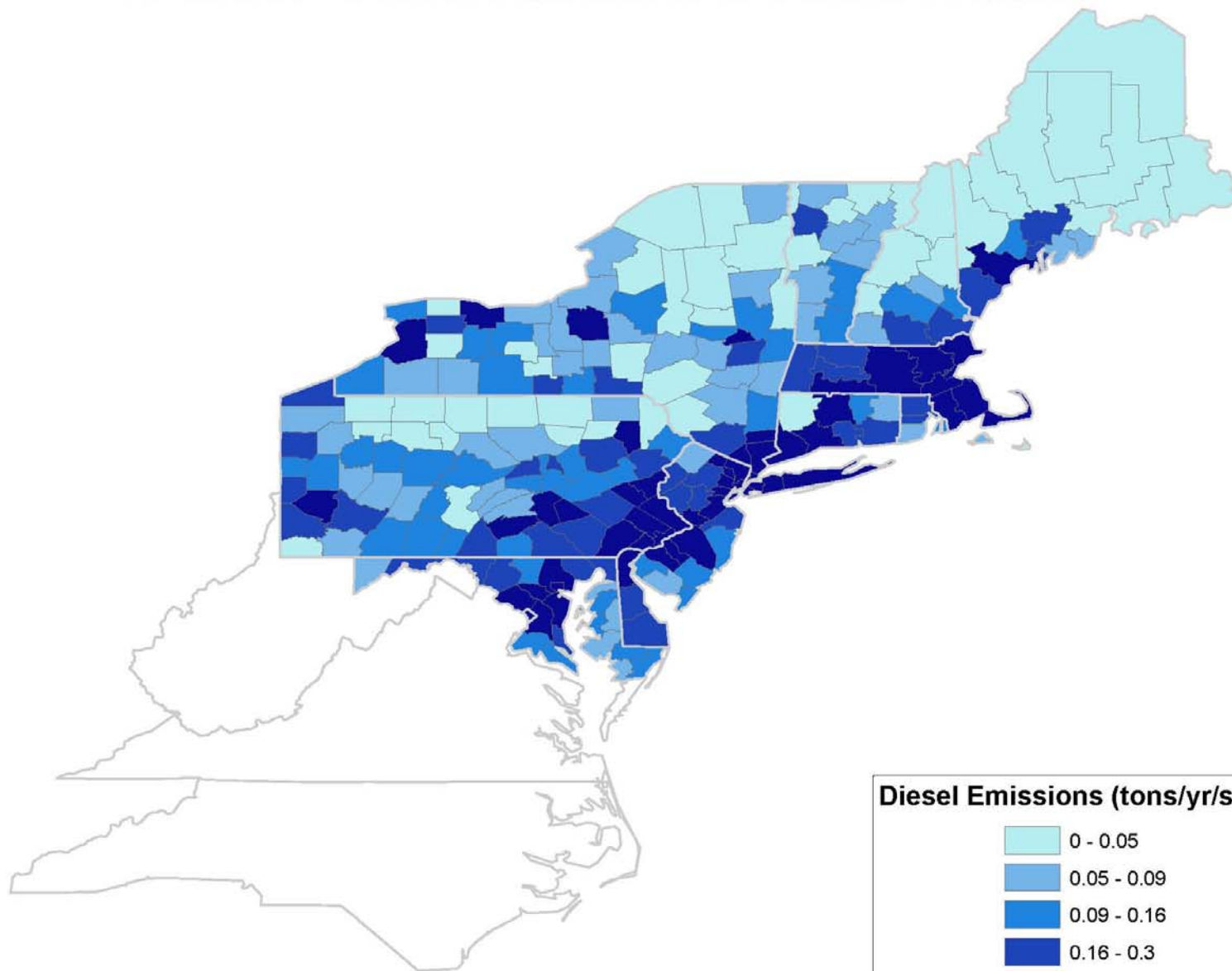
How are Emission Inventories Used in Air Quality Analyses

- In the air quality field, emission inventories are the basis for numerous efforts including:
 - trends analysis
 - regional and local scale air quality modeling
 - regulatory impact assessments
 - human exposure modeling

On-Road Emissions

- On-road emissions are part of the mobile source inventory
- On-road emissions come from on-road vehicles including:
 - Cars
 - Trucks
 - Anything that runs on a road...
- On-road emissions are estimated by computer models

2002 MANE-VU Annual Onroad Diesel PM-PRI Emissions

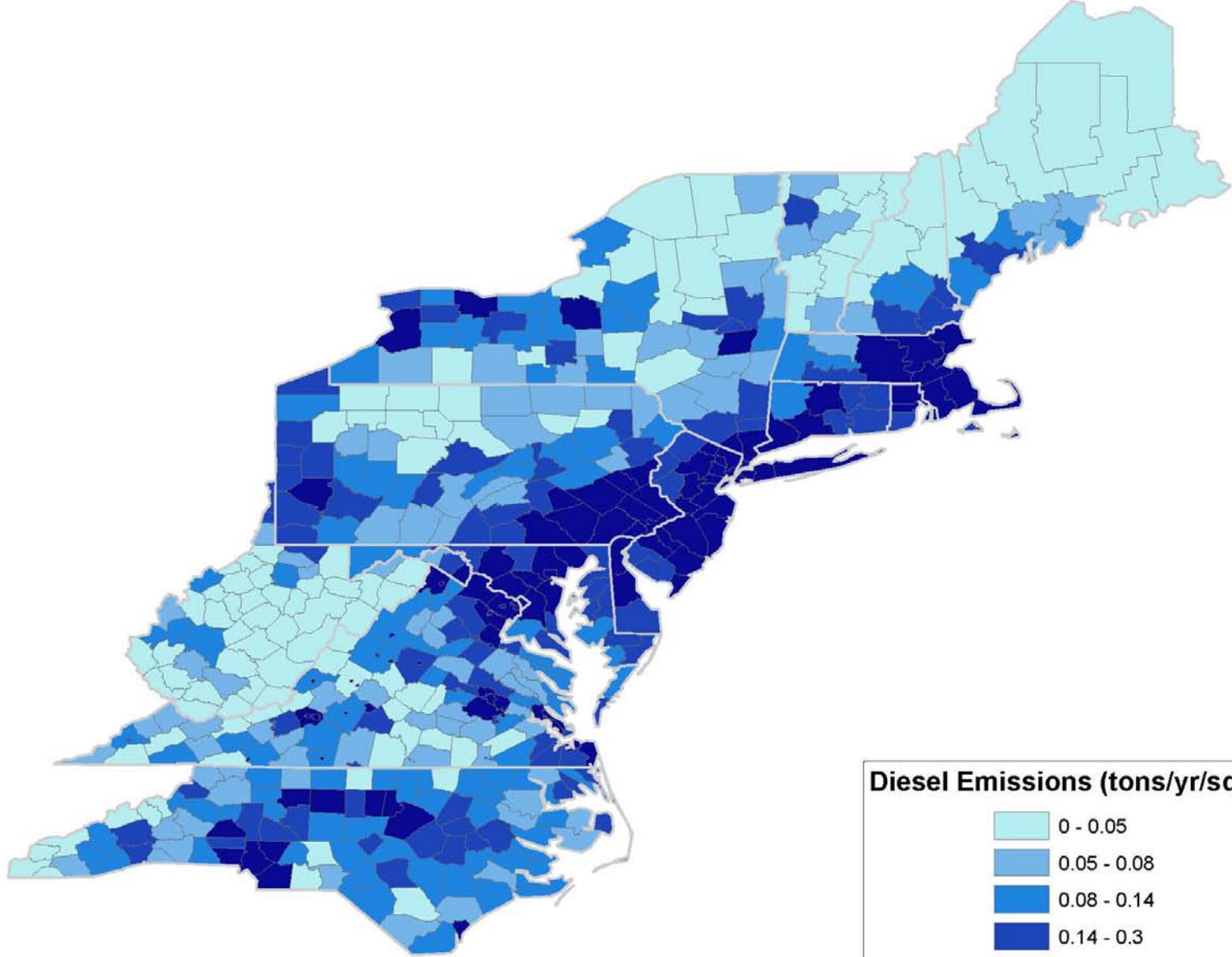


Prepared: August, 2006

Non-Road Emissions

- Non-road emissions are also part of the mobile source inventory
- Non-road emissions come from mobile sources that operate off-road including:
 - Farm and construction equipment
 - Aircraft
 - Locomotives
 - Commercial Marine Vessels
 - Other off-road mobile sources...
- Non-road emissions are estimated by computer models

2002 MANE-VU Annual Nonroad Diesel PM-PRI Emissions



Diesel Emissions (tons/yr/sqmi)

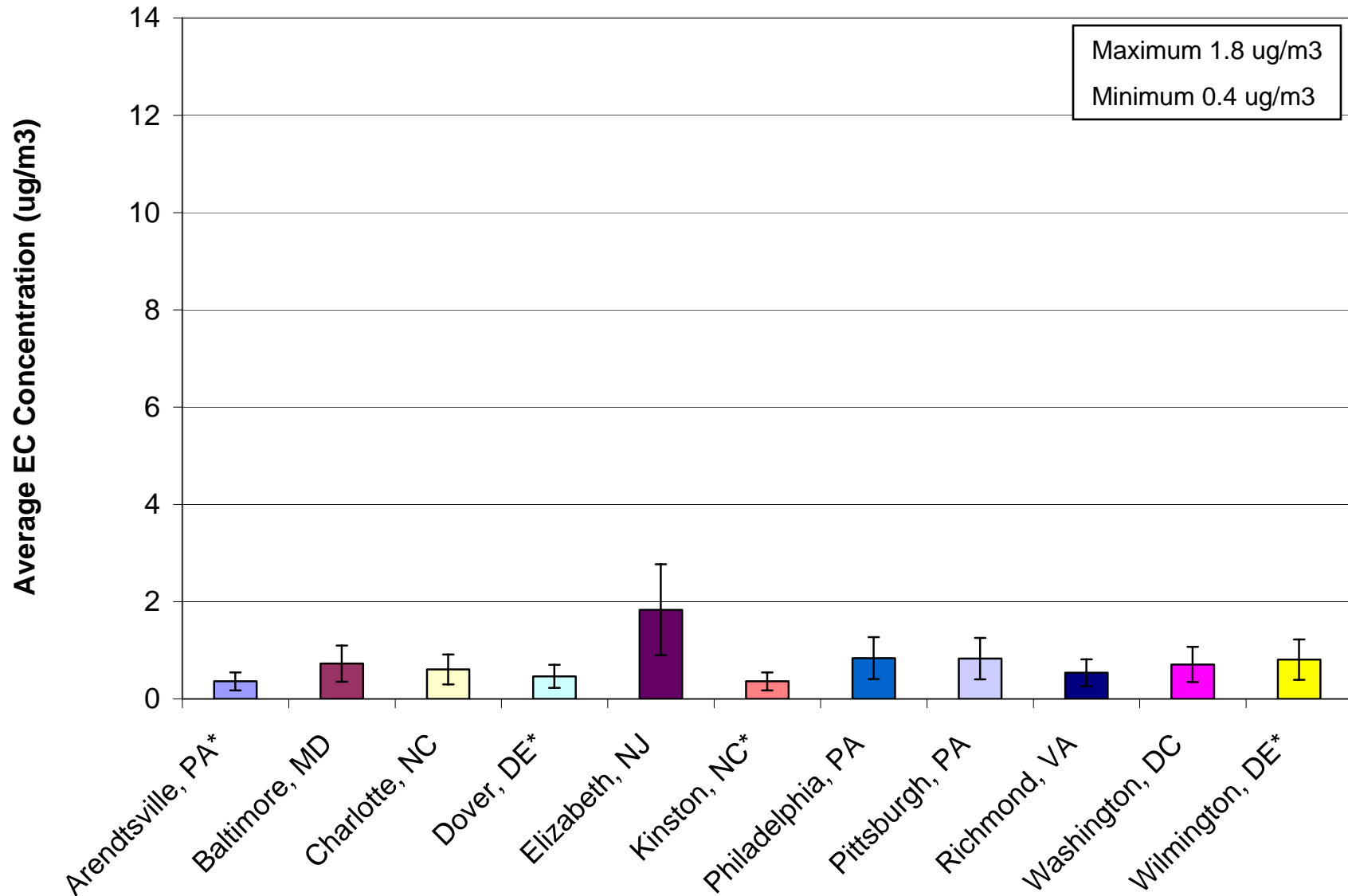
- 0 - 0.05
- 0.05 - 0.08
- 0.08 - 0.14
- 0.14 - 0.3
- 0.3 - 48.0

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Air Monitoring Data for Elizabeth, NJ

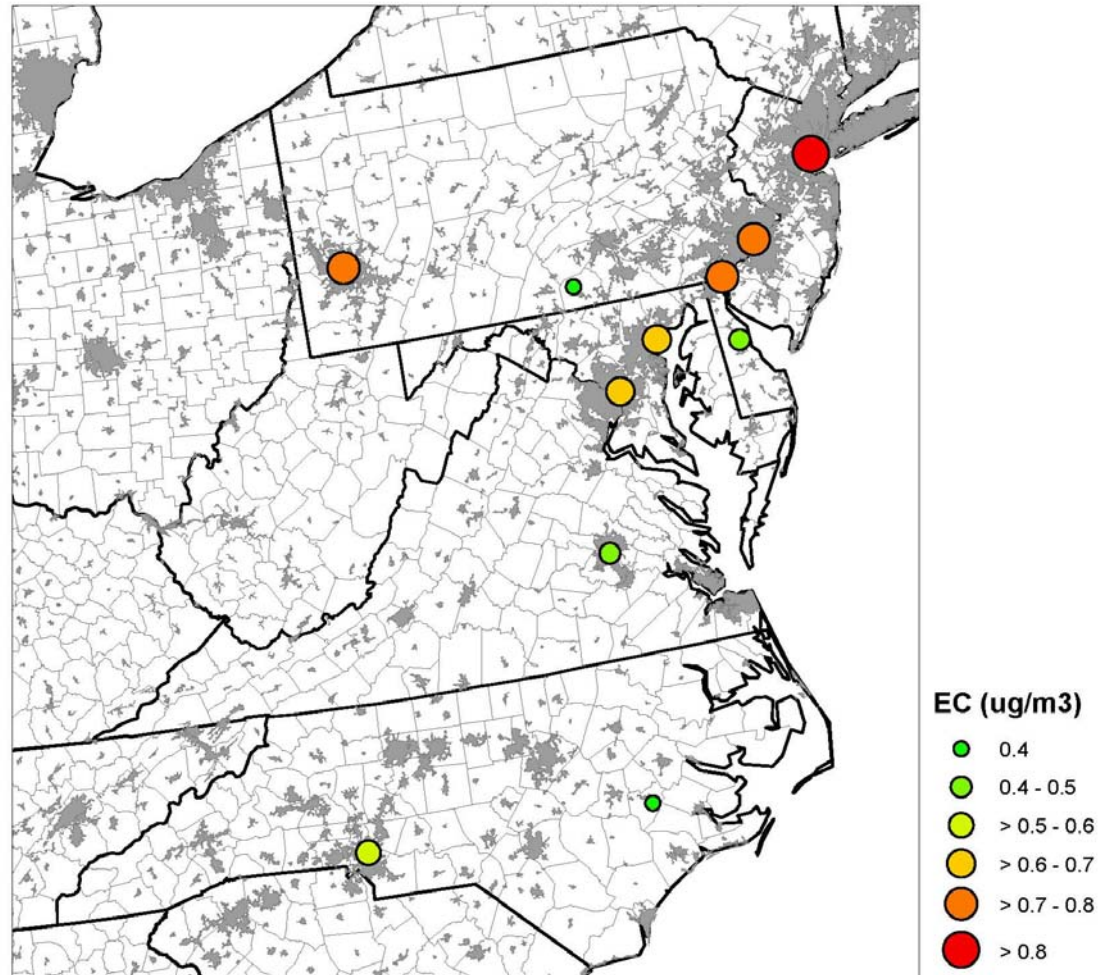
- Air monitoring data can provide important information about air quality problems at a particular site or across broad areas
- An analysis of speciated fine particle data at Elizabeth, NJ is revealing...

MARAMA's Analysis of Speciated PM_{2.5} Data Elemental Carbon, 2001-2003



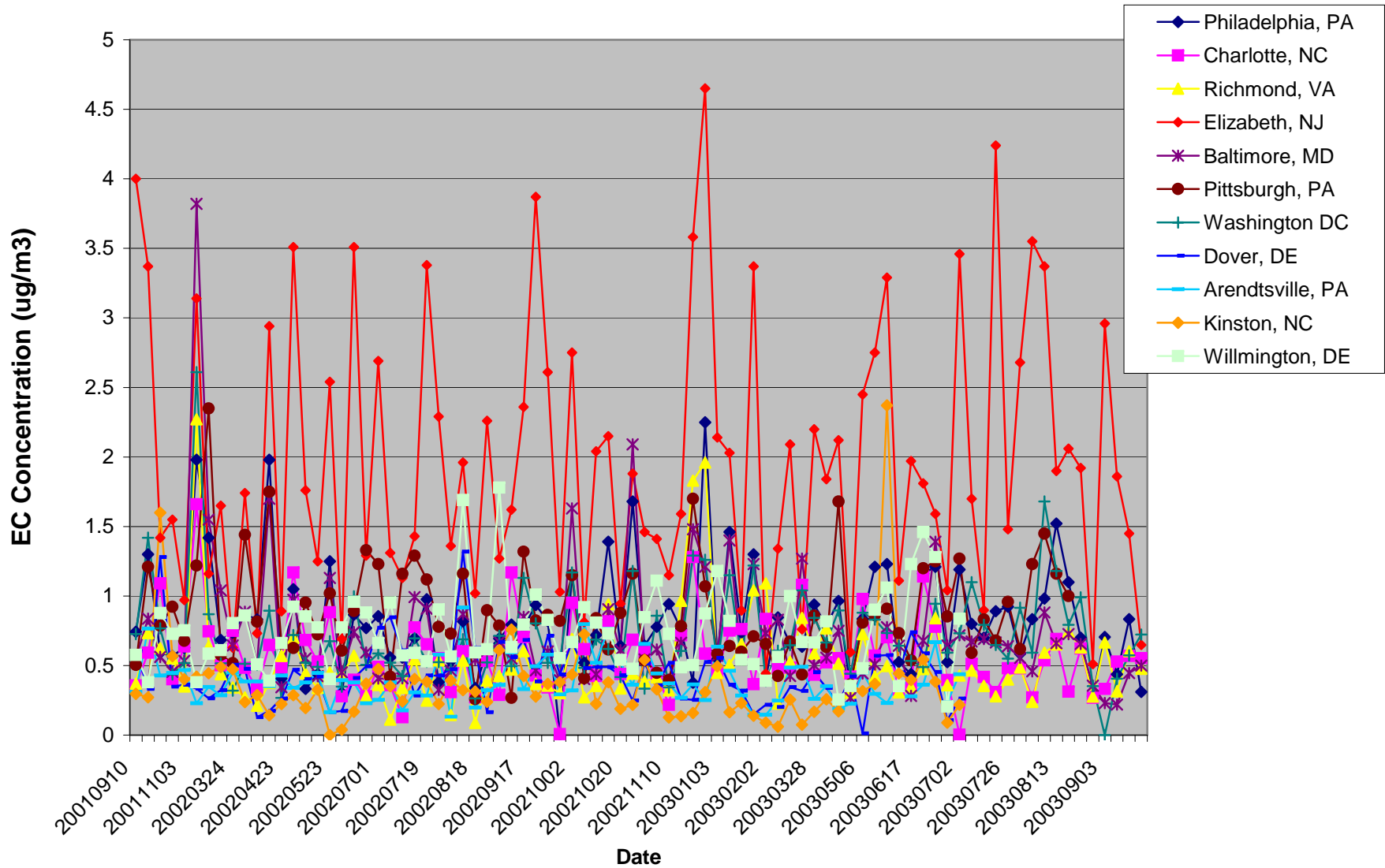
MARAMA's Analysis of Speciated PM_{2.5} Data Elemental Carbon, 2001-2003

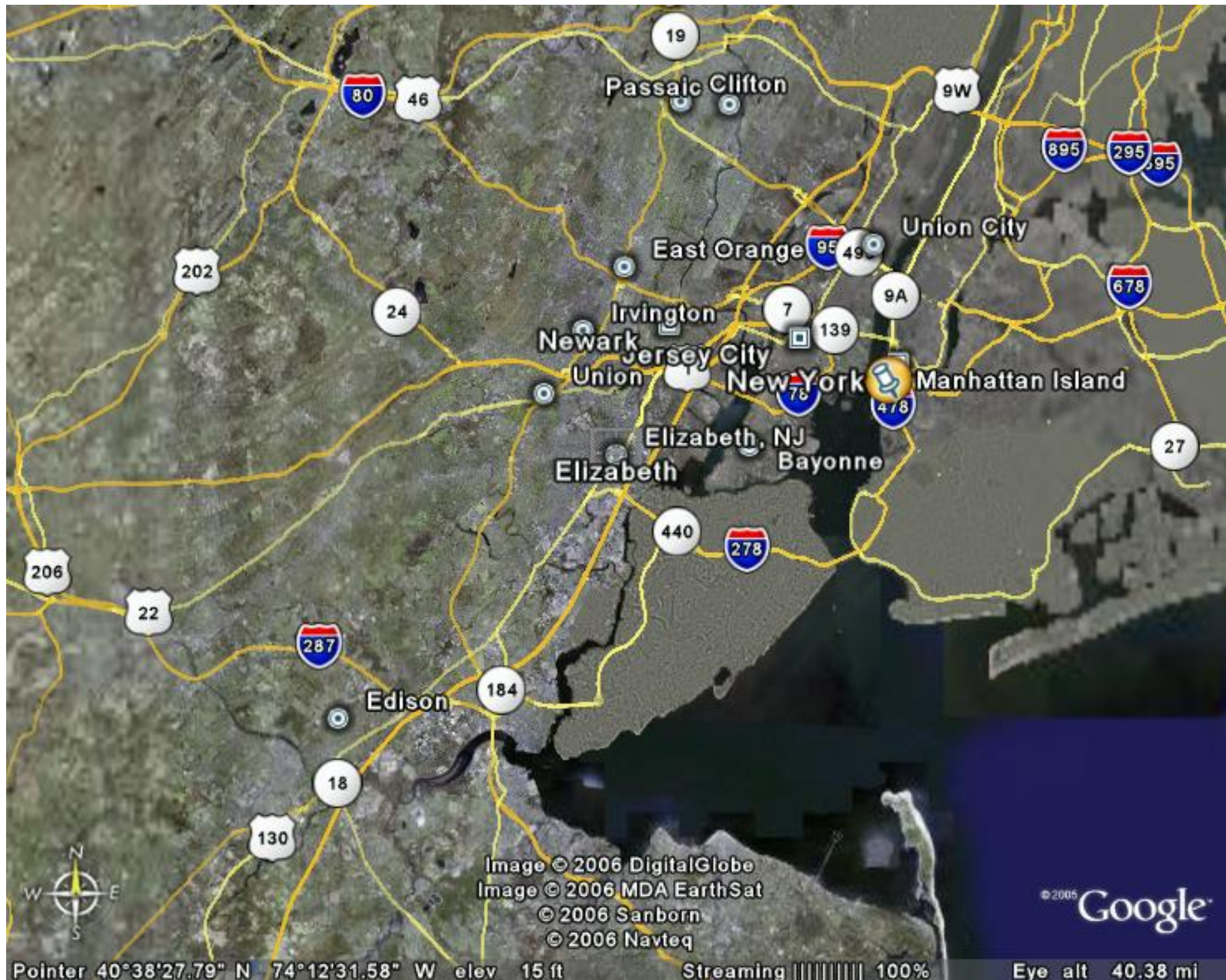
Site Name & State	Average Elemental Carbon
Arendtsville, PA*	0.4
Baltimore, MD	0.7
Charlotte, NC	0.6
Dover, DE*	0.5
Elizabeth, NJ	1.8
Kinston, NC*	0.4
Philadelphia, PA	0.8
Pittsburgh, PA	0.8
Richmond, VA	0.5
Washington, DC	0.7
Wilmington, DE*	0.8
Average	0.7
* = 1-in-6 monitor	



Elemental Carbon Time Series, 2001-2003

Elizabeth, NJ





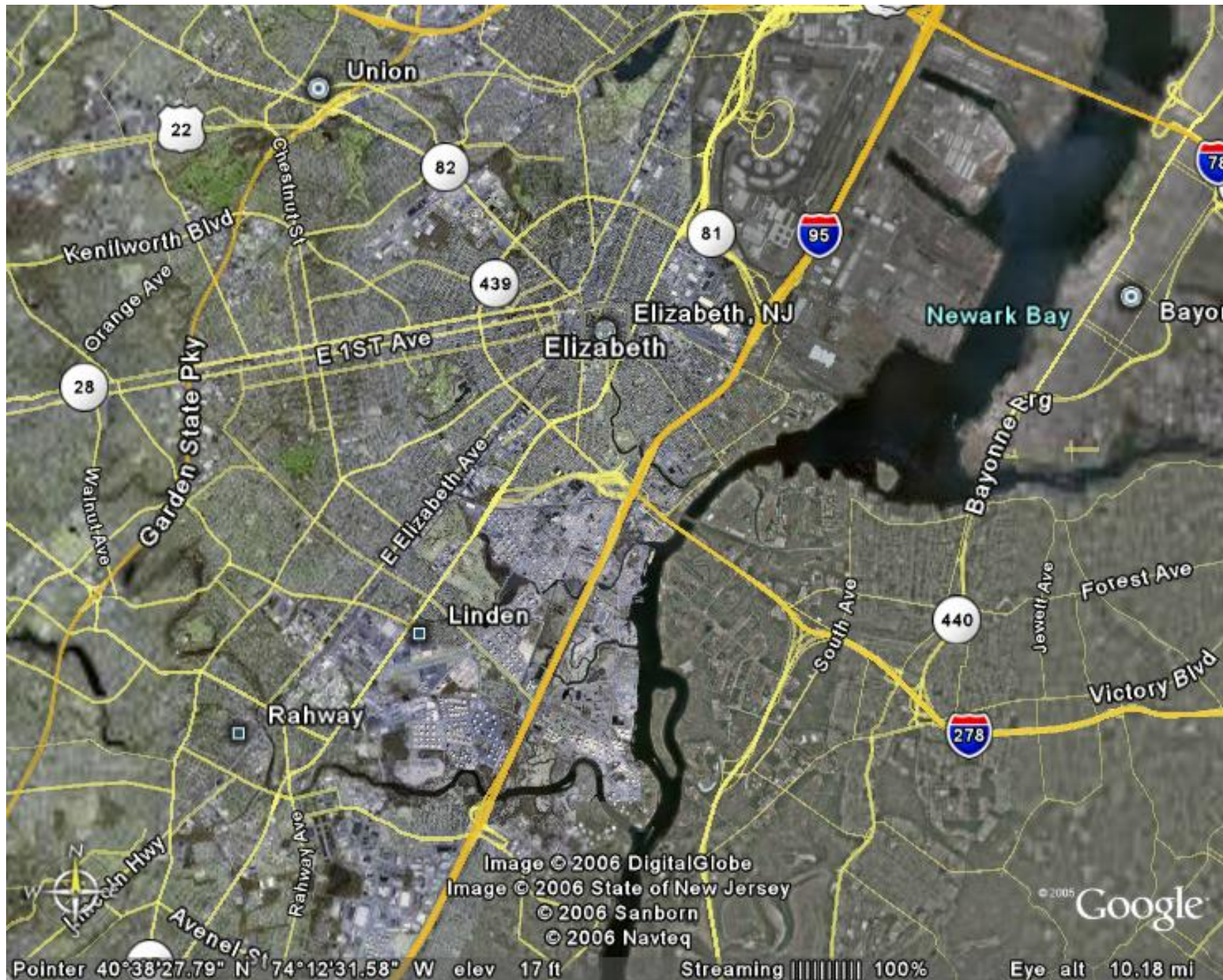


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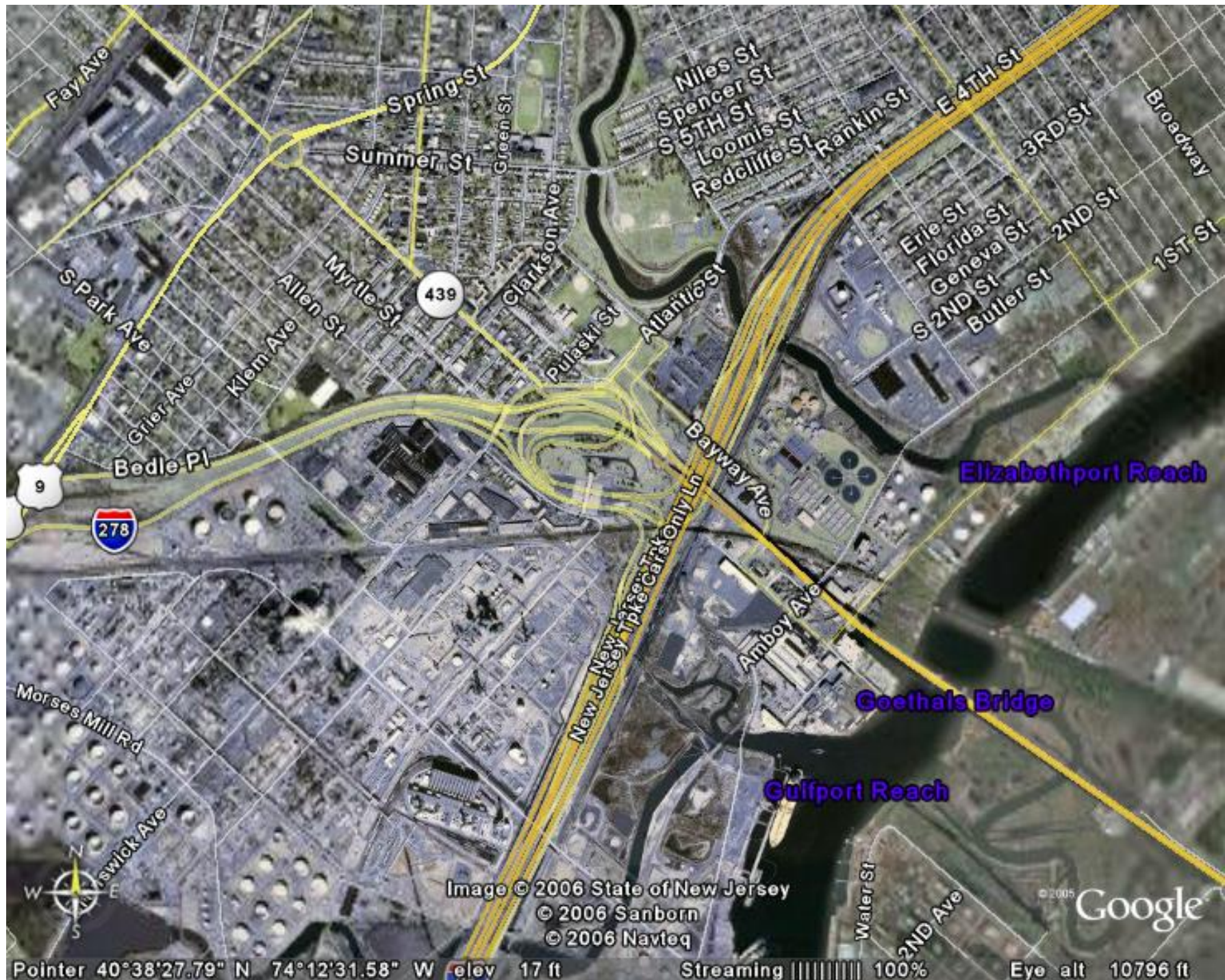


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Pointer 40°38'27.79" N 74°12'31.58" W Elevation 17 ft Streaming 100% Eye alt 10796 ft



Allen St

Bayway Ave

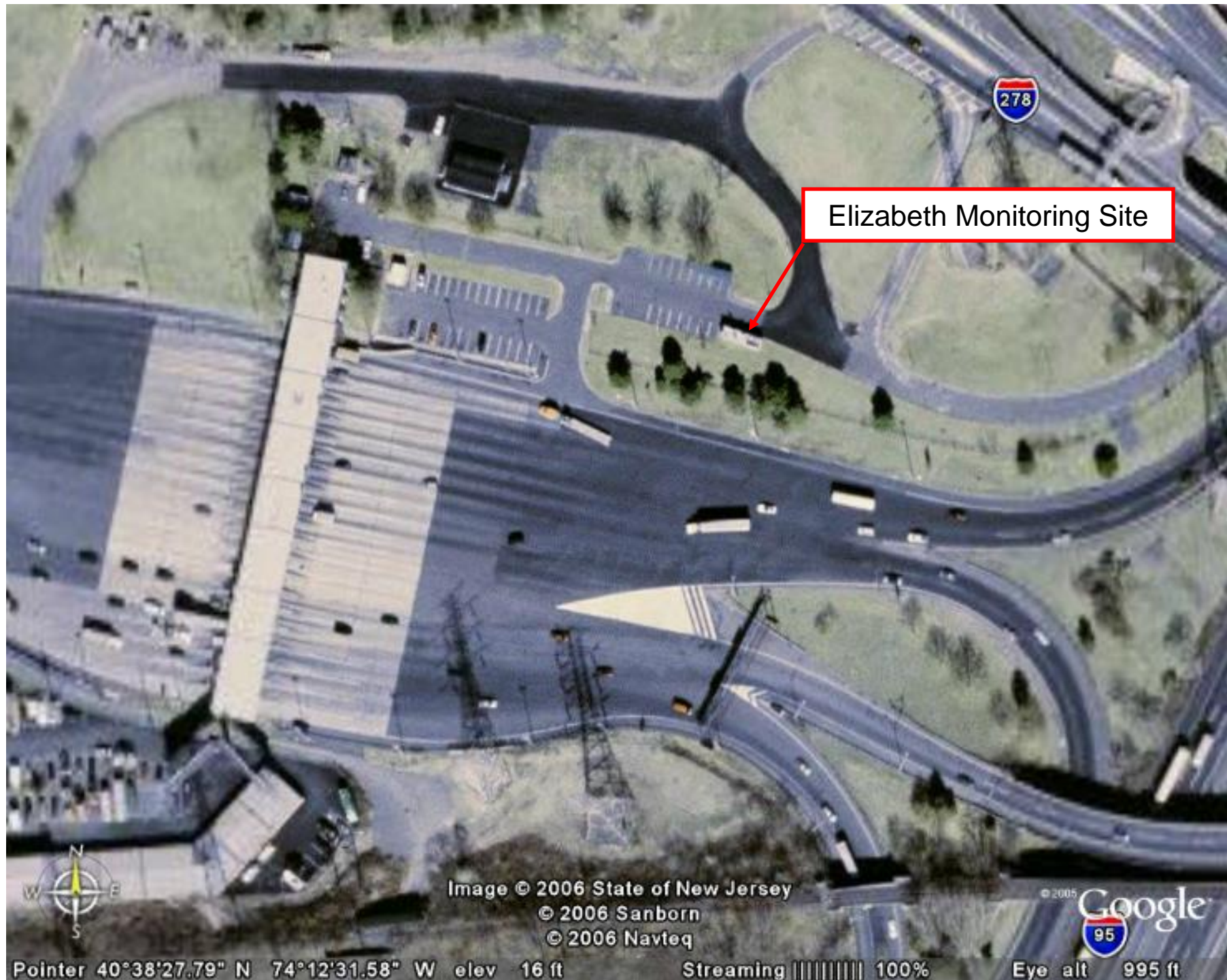


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Pointer 40°38'27.79" N 74°12'31.58" W elev 16 ft Streaming 100% Eye alt 2195 ft



Elizabeth Monitoring Site



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Pointer 40°38'27.79" N 74°12'31.58" W elev 16 ft

Streaming ||||| 100%

Eye alt 995 ft

Elizabeth, NJ

Speciated PM_{2.5} Data

Average summer elemental carbon (EC) concentration at Elizabeth is:

- more than twice the concentration of other major urban areas
- and about 6 to 9 times the concentration of rural locations

2001 - 2003 Average: Summer					
Site	OCM	Sulfate	Ammonium	Nitrate	EC
Arendtsville, PA*	6.2	8.3	2.6	0.9	0.3
Baltimore, MD	9.9	8.4	2.6	0.9	0.7
Charlotte, NC	7.9	6.8	2.0	0.5	0.4
Dover, DE*	8.3	7.9	2.7	0.9	0.4
Elizabeth, NJ	10.6	6.9	2.7	1.5	1.9
Kinston, NC*	6.9	4.5	1.5	0.7	0.2
Philadelphia, PA	8.7	7.5	2.8	1.3	0.8
Pittsburgh, PA	8.8	10.2	3.1	0.9	0.9
Richmond, VA	10.0	7.1	2.4	0.5	0.4
Washington, DC	9.1	8.6	2.6	0.8	0.6
Wilmington, DE*	9.5	8.6	3.1	1.4	0.7
Average	8.7	7.7	2.6	0.9	0.7
Maximum Value	10.6	10.2	3.1	1.5	1.9
Minimum Value	6.2	4.5	1.5	0.5	0.2