

New Sites Analysis

A sensitivity analysis was performed for PM_{2.5} using EPA's new sites tool:

<http://www.epa.gov/ttn/amtic/network-assessment.html>. The results are summarized in the following slides.

Slide 1: For the default case, a new site is indicated for nearest neighbor sites that (1) have a correlation of less than 0.5; (2) are more than 100 km apart; (3) have an average concentration difference of 0 ug/m³ or more; and (4) are located where the probability of exceeding the 85% of the NAAQS is 80% or more. Thus, the tool will only locate sites in the dark red to magenta parts of the map (those meeting the 85% NAAQS criteria). In this case, the average concentration difference between sites is irrelevant, because the 0 ug/m³ criteria will include all sites.

Increasing the correlation criteria draws more sites in, but one could argue that there's not much point in adding more sites between neighboring sites that have correlations as high as 0.8.

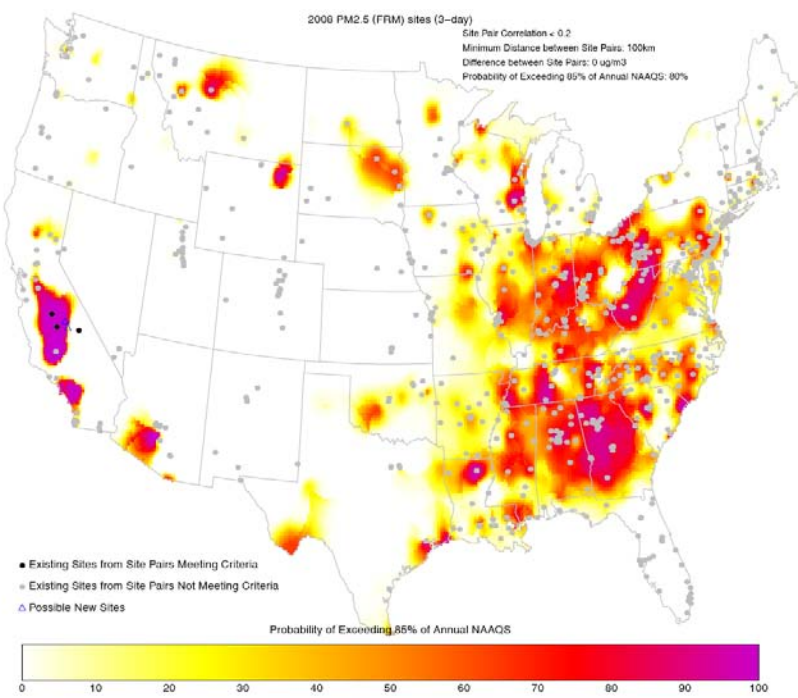
Slide 2: The default selection of sites that have an 80% chance of exceeding 85% of the NAAQS is shown on the upper right. Narrowing the criteria to sites that have a 90% chance eliminates all new sites, because there are few places that have such consistently high concentrations and also have sites that meet the other criteria. Loosening the criteria to sites that have less of a chance of exceeding the NAAQS adds a few sites, but not many in R5

Slide 3: This criterion is not very influential, no matter what the parameter is set at.

Slide 4: This criterion is also not very influential

Slide 5: This plot combines the two parameters that had the biggest impact on new site placement, selecting all sites with correlations <0.8 AND the probability of exceeding 85% of the NAAQS at 40%.

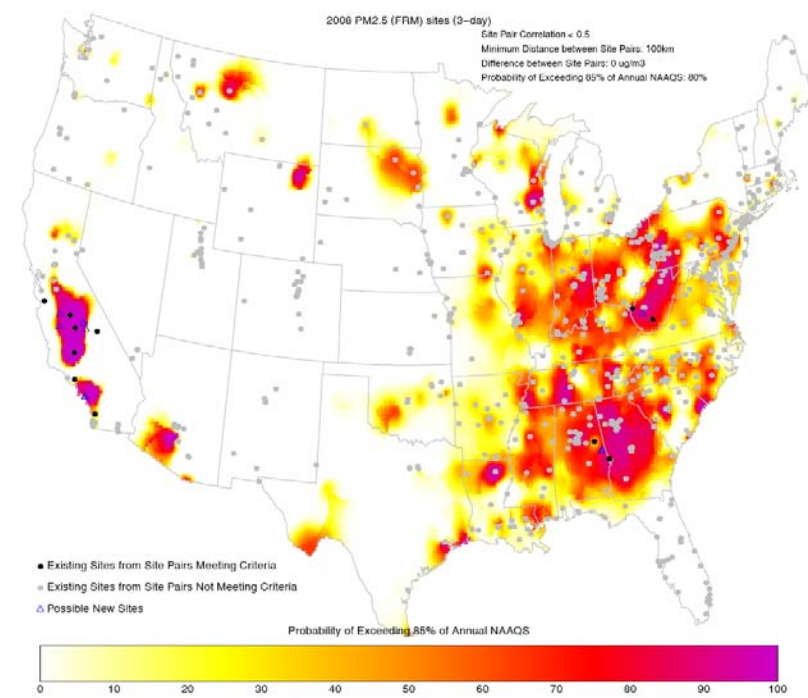
New sites appear primarily in Indiana, with a few in Illinois and Ohio



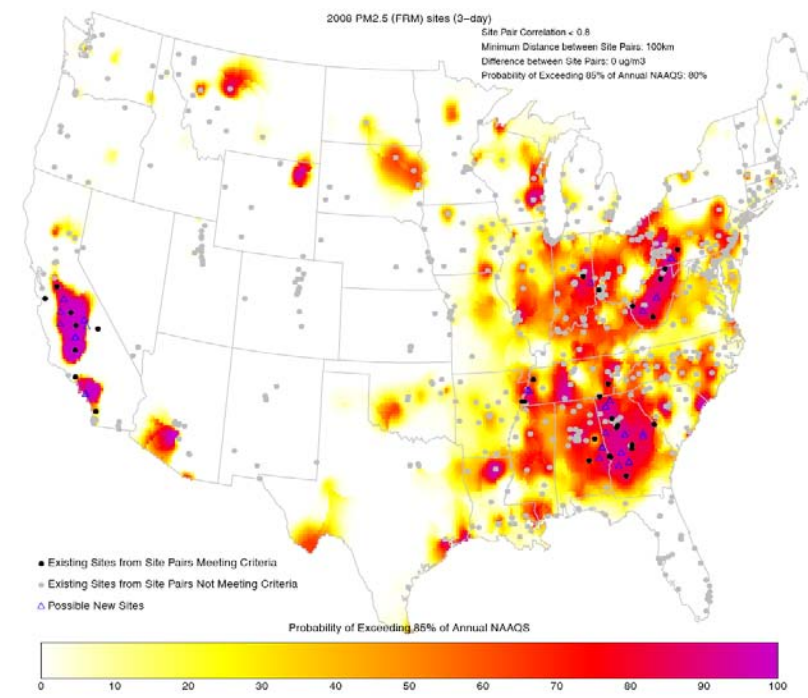
Correlation
between
site pairs

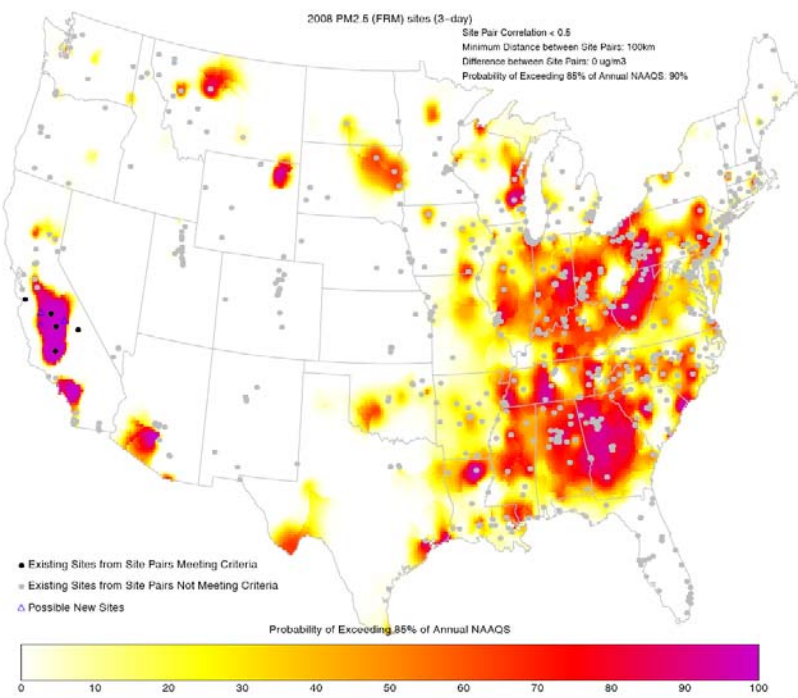
<0.5 →
(default)

←<0.2



<0.8→

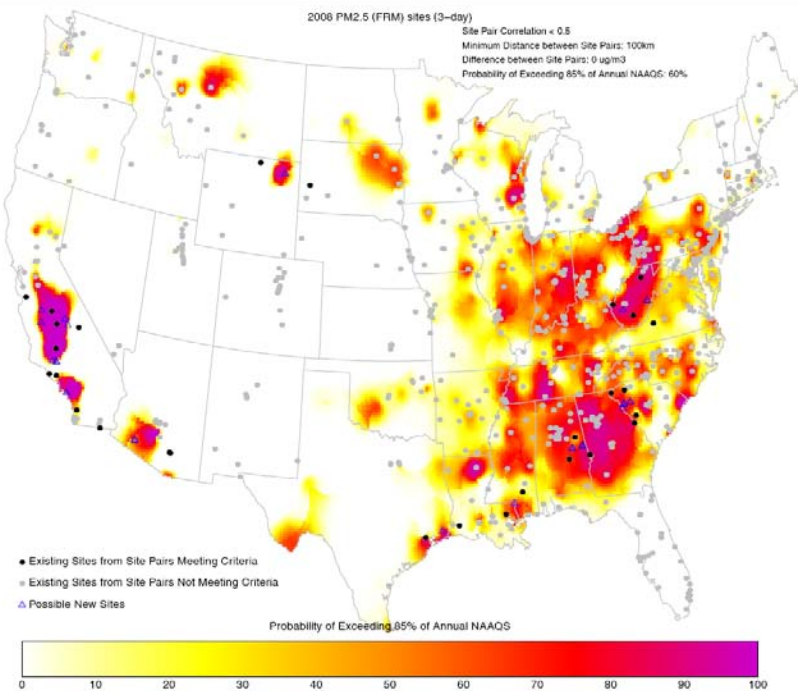
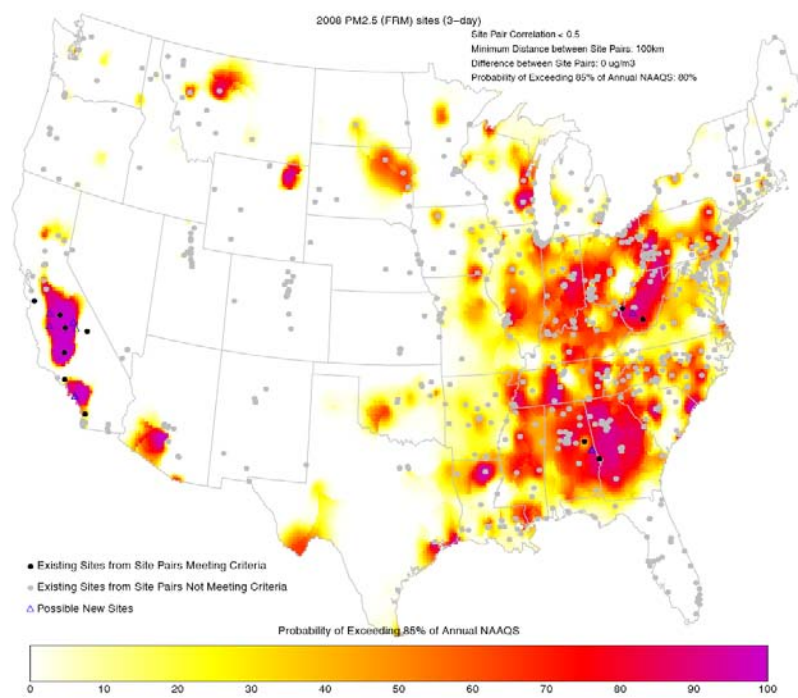




prob. of
 exceeding
 NAAQS

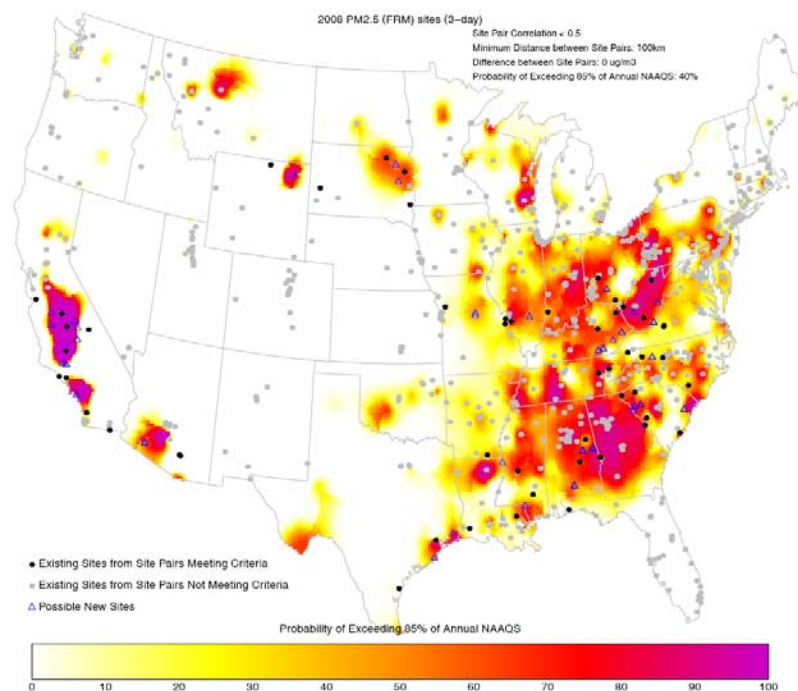
80%→
 (default)

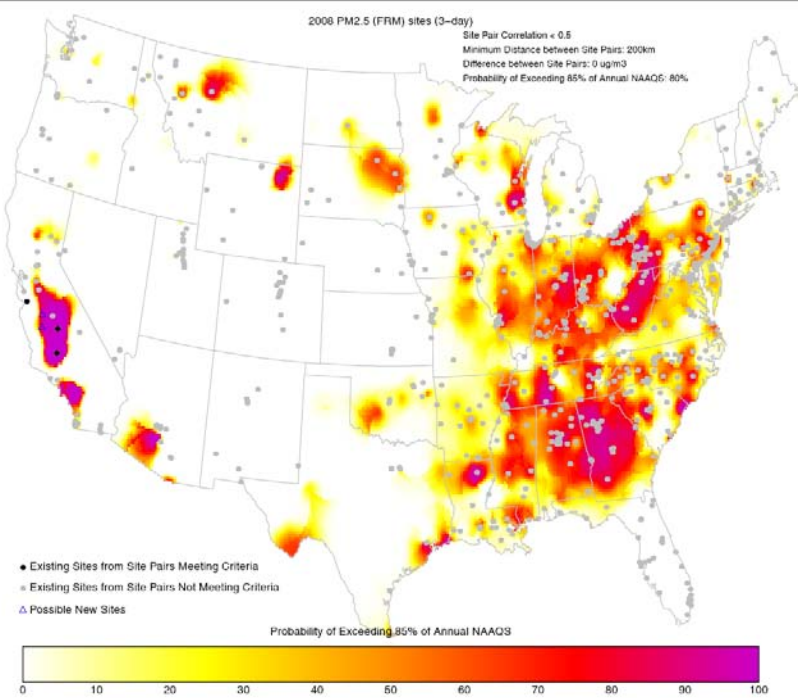
←90%



←60%

40%→

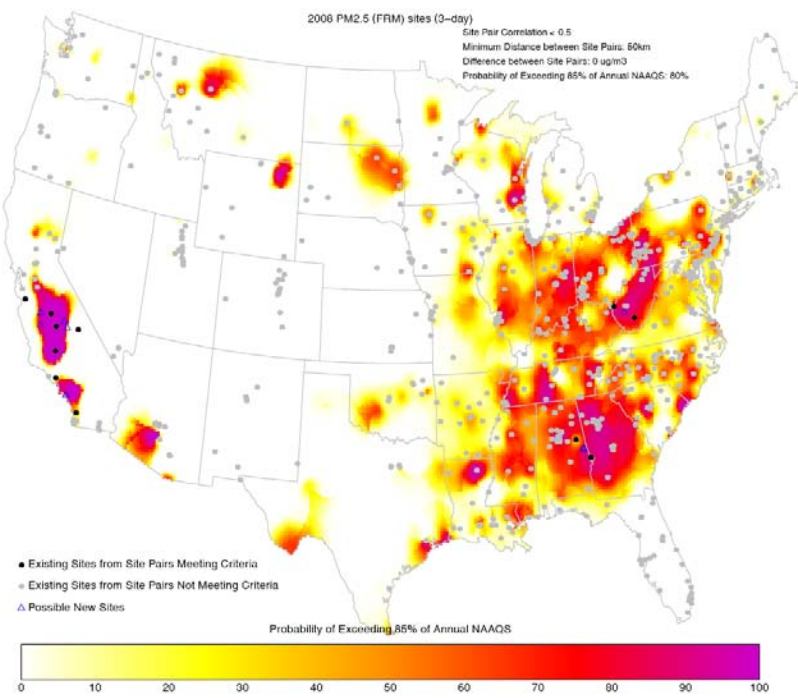
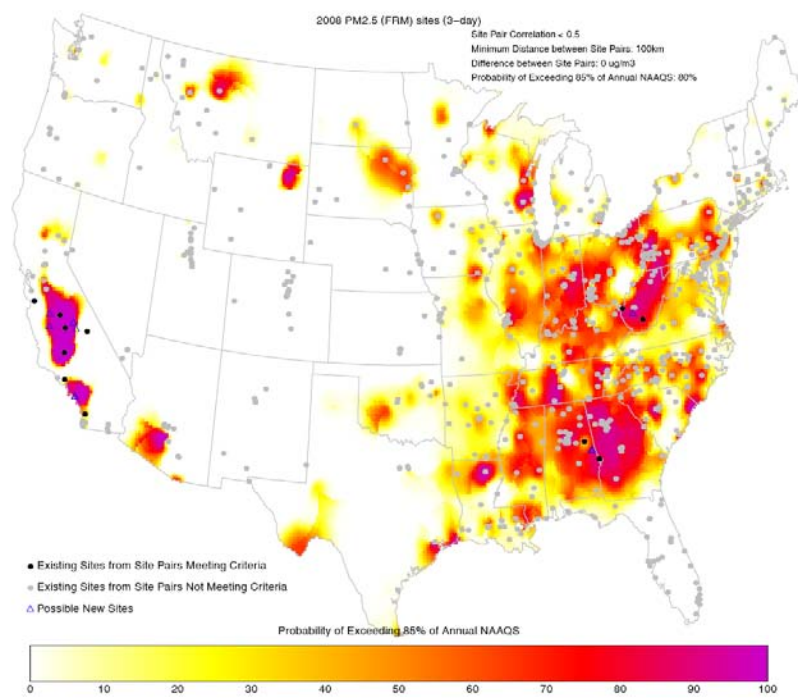




Minimum distance between sites

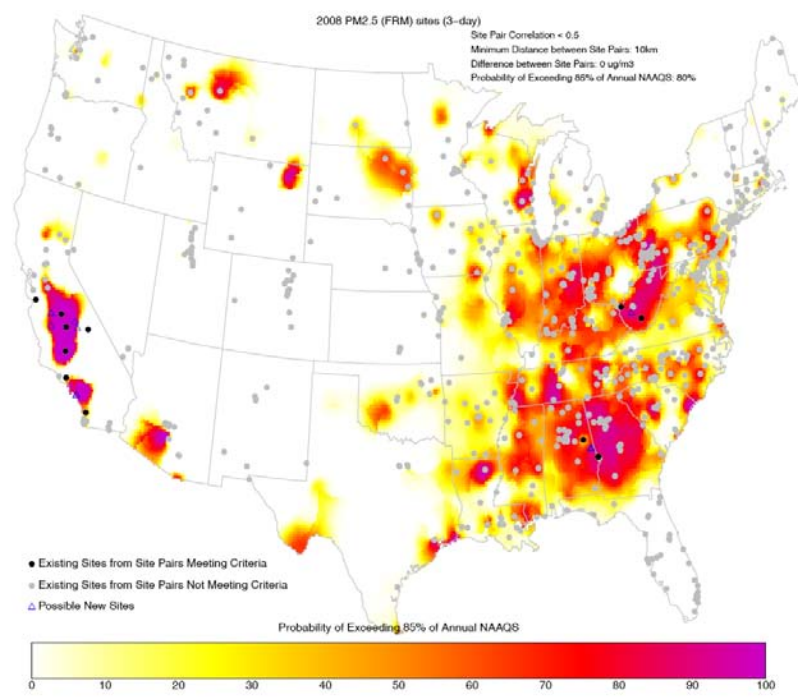
100 km →
(default)

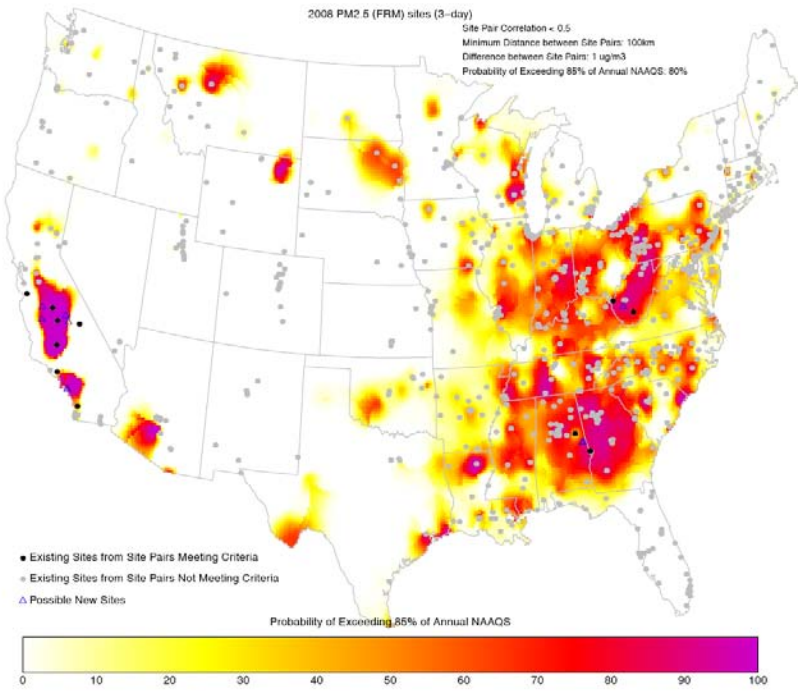
← 200 km



← 50 km

10 km →

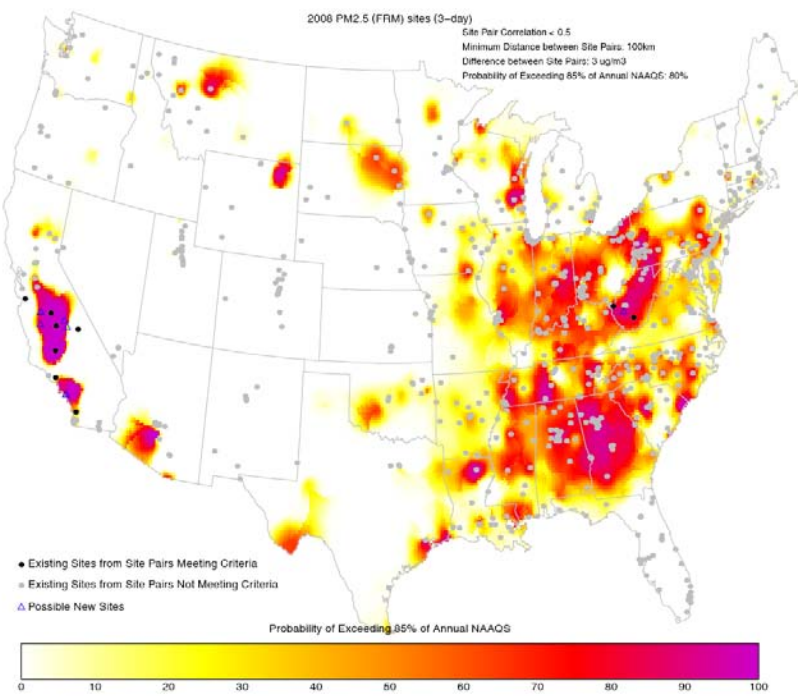
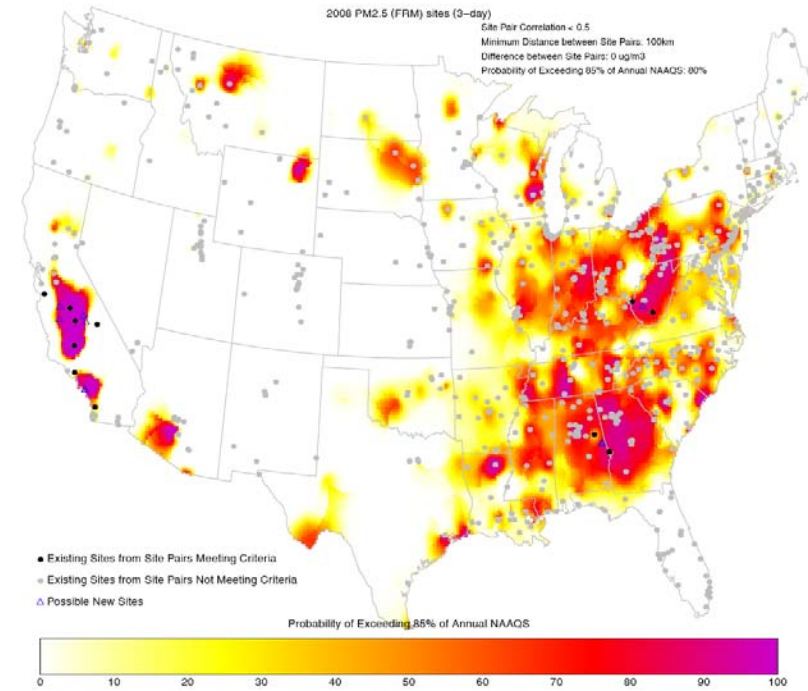




Difference
 between
 site pairs
 (ug/m3)

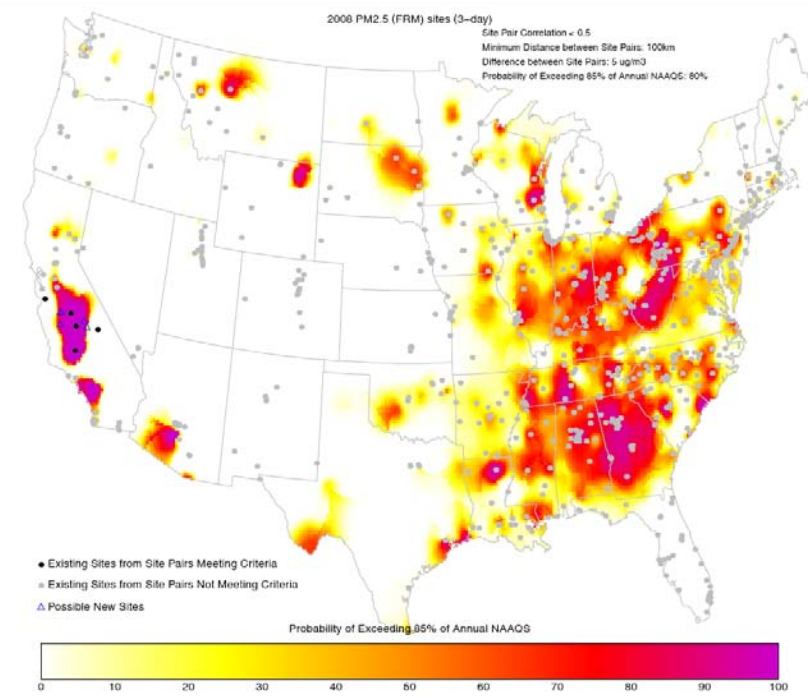
0 →
 (default)

← 1



← 3

5 →



2008 PM2.5 (FRM) sites (3-day)

Site Pair Correlation < 0.8
Minimum Distance between Site Pairs: 100km
Difference between Site Pairs: 0 ug/m3
Probability of Exceeding 85% of Annual NAAQS: 40%

