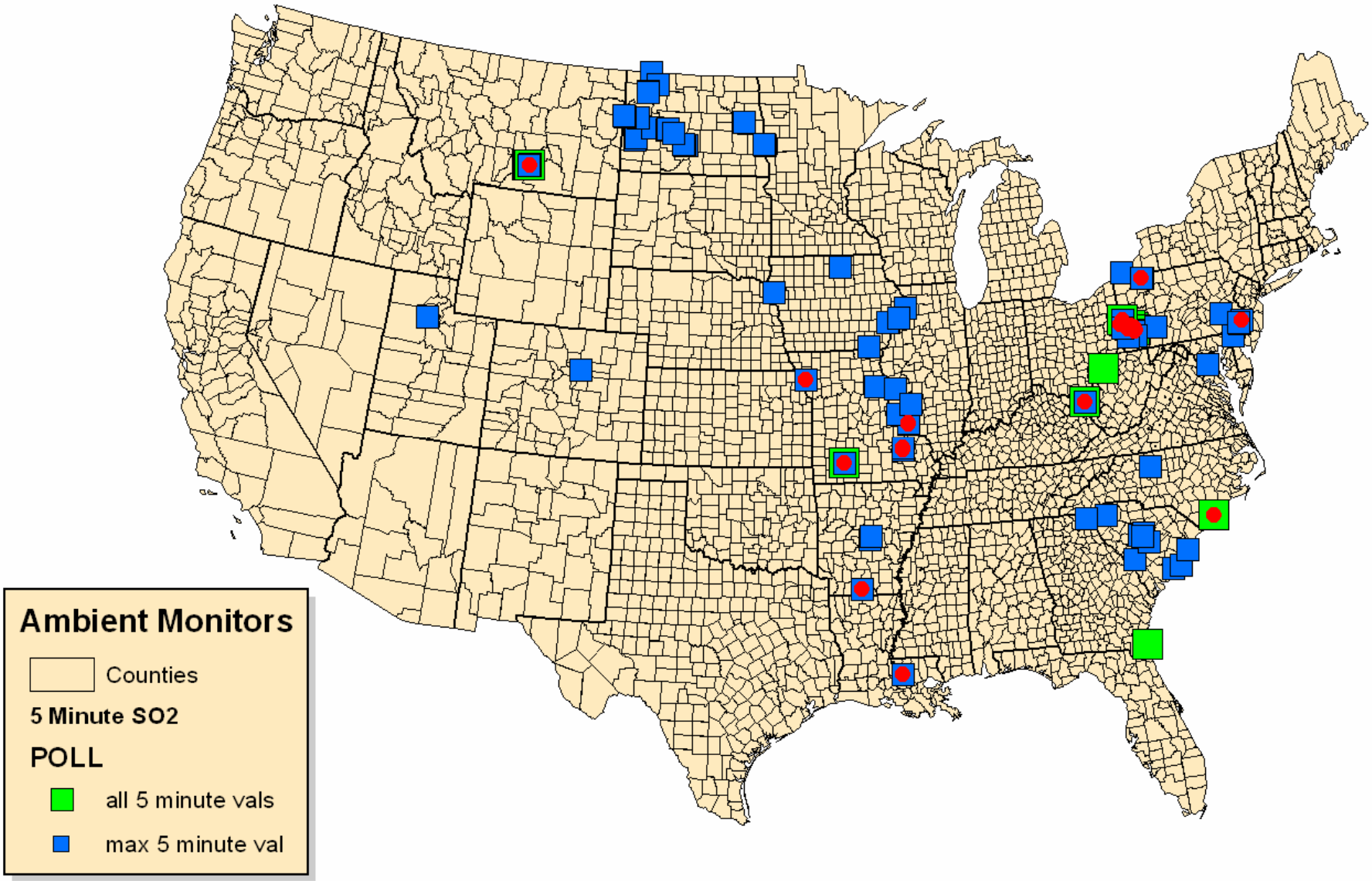
How I Have Been Using AQS Data for SO2 and NO2 to Support The NAAQS Review

Rhonda Thompson
OAQPS/AQAD/AQAG

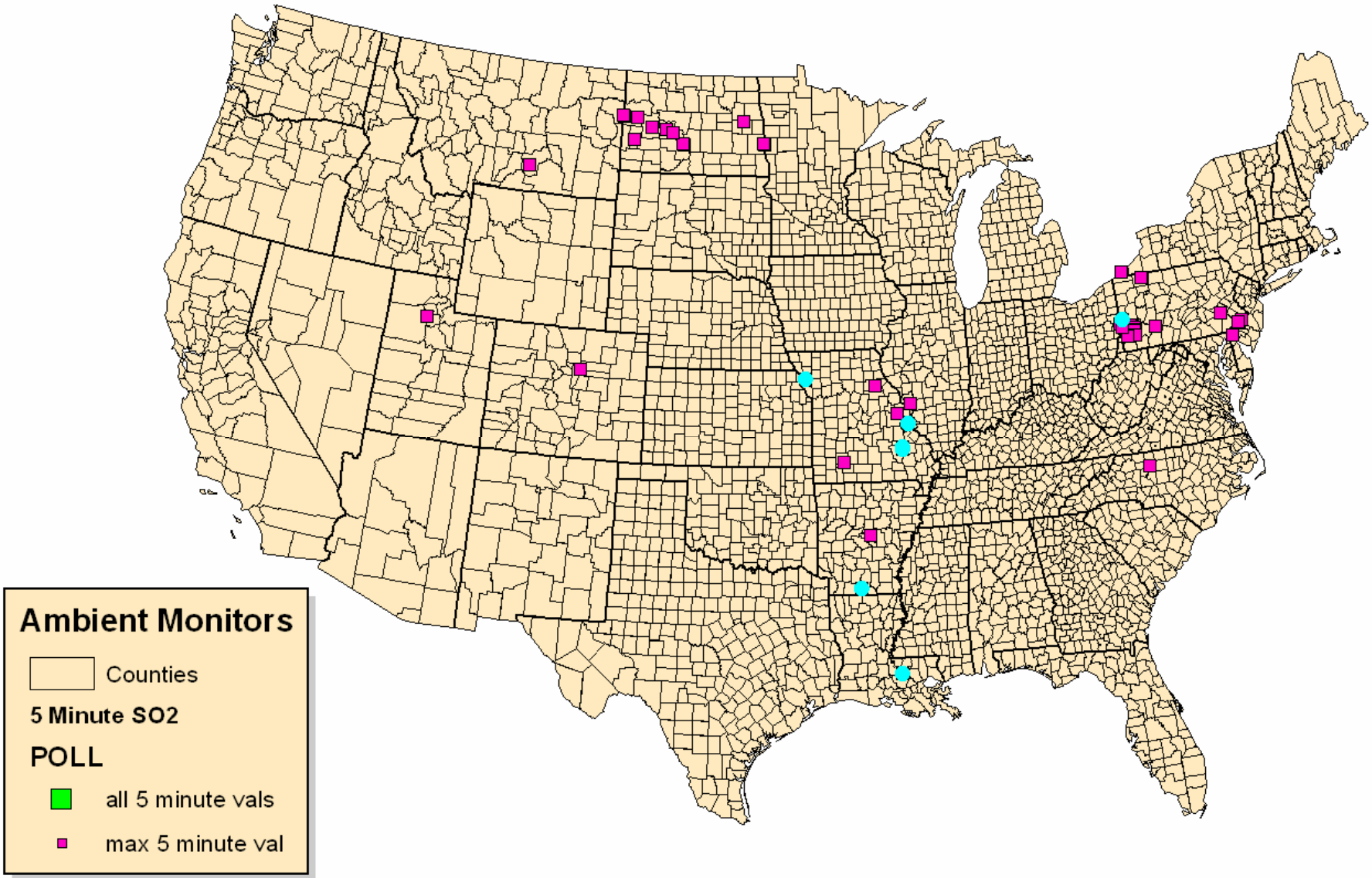
AQS Conference 8/20/2008

AQS SO2 5 Minute Ambient Monitors 1997 – 2006



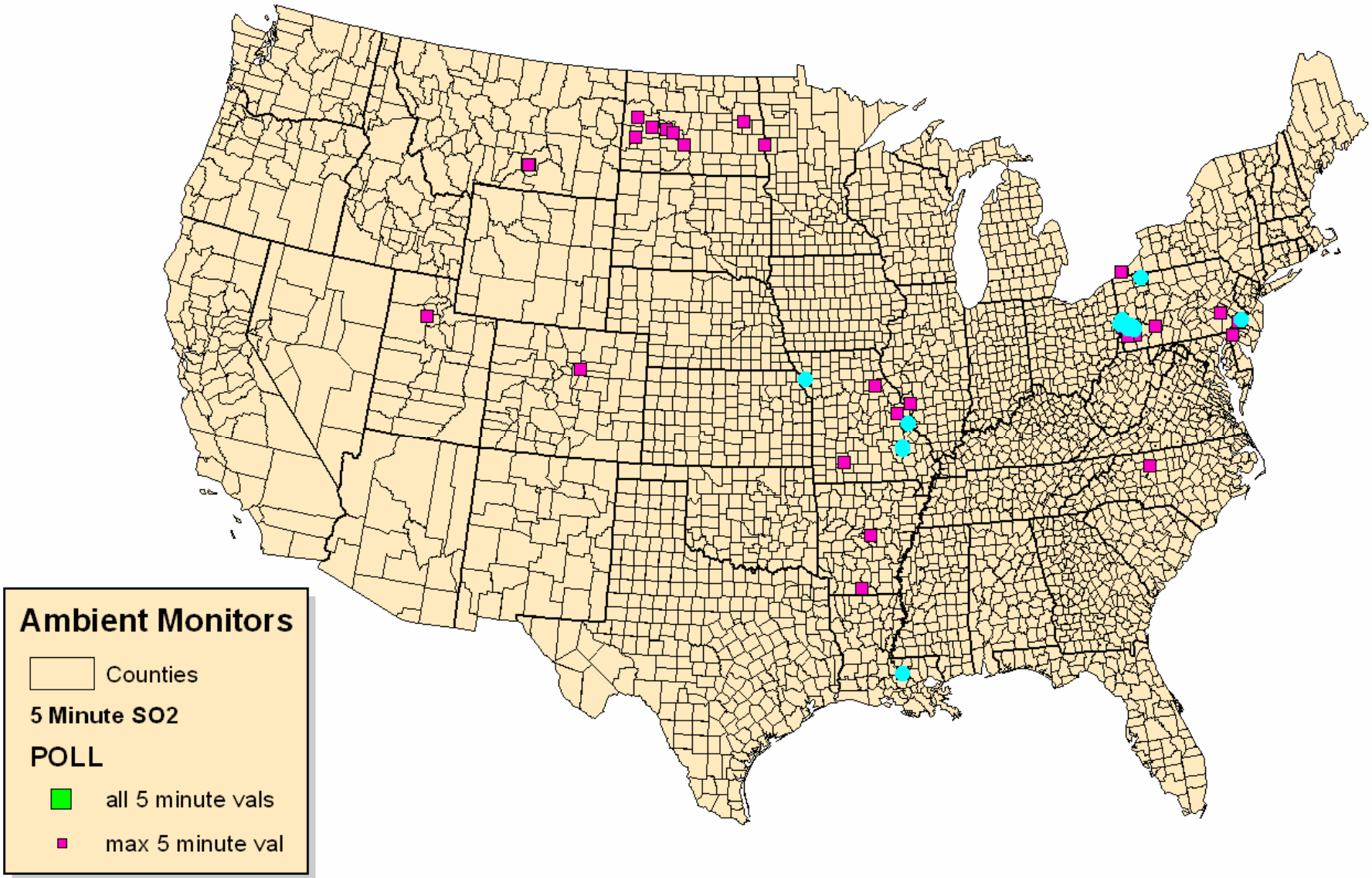
- Concentrations greater than or equal to 0.6 ppm

1997



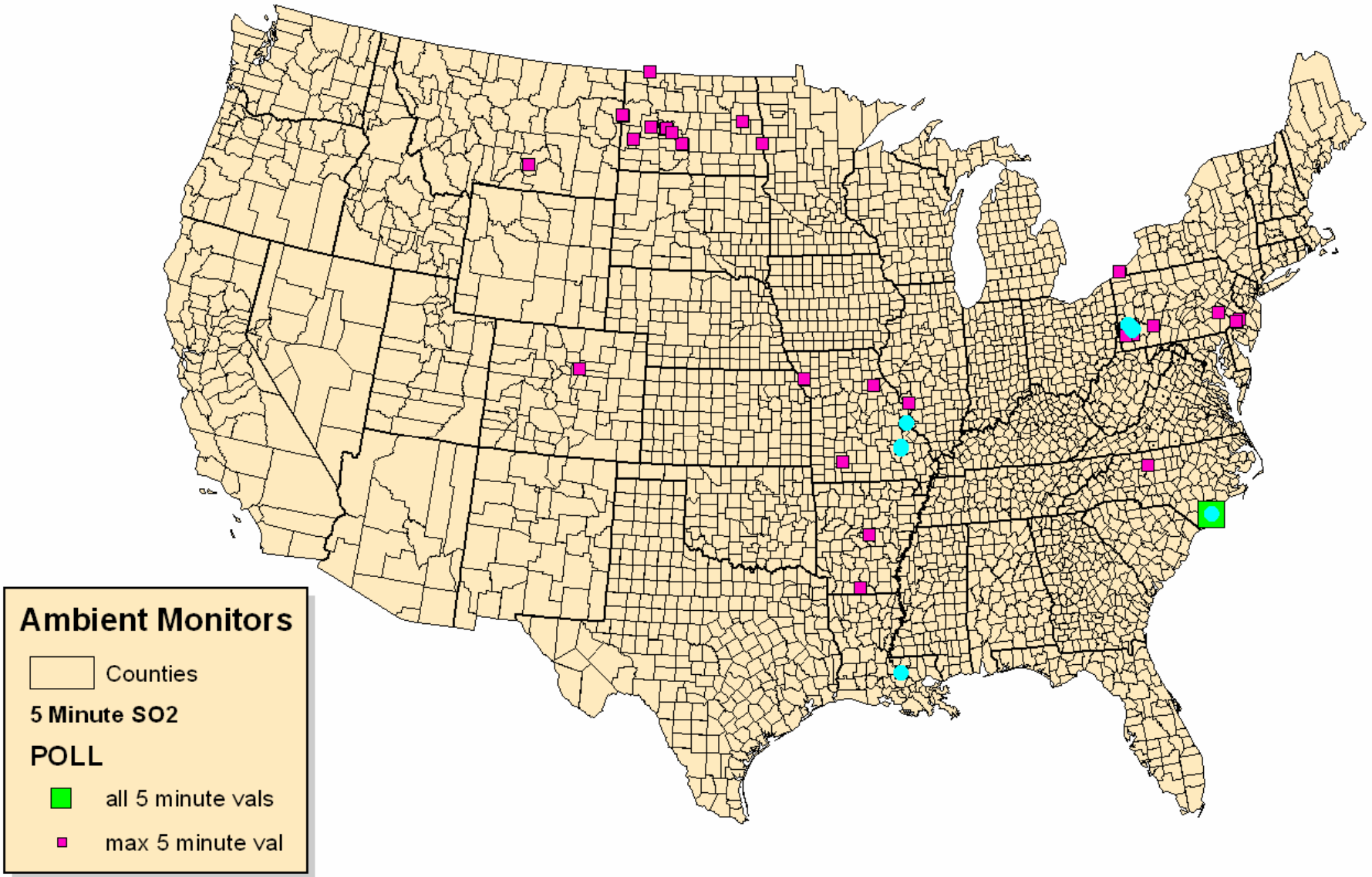
- Concentrations greater than or equal to 0.6 ppm

1998



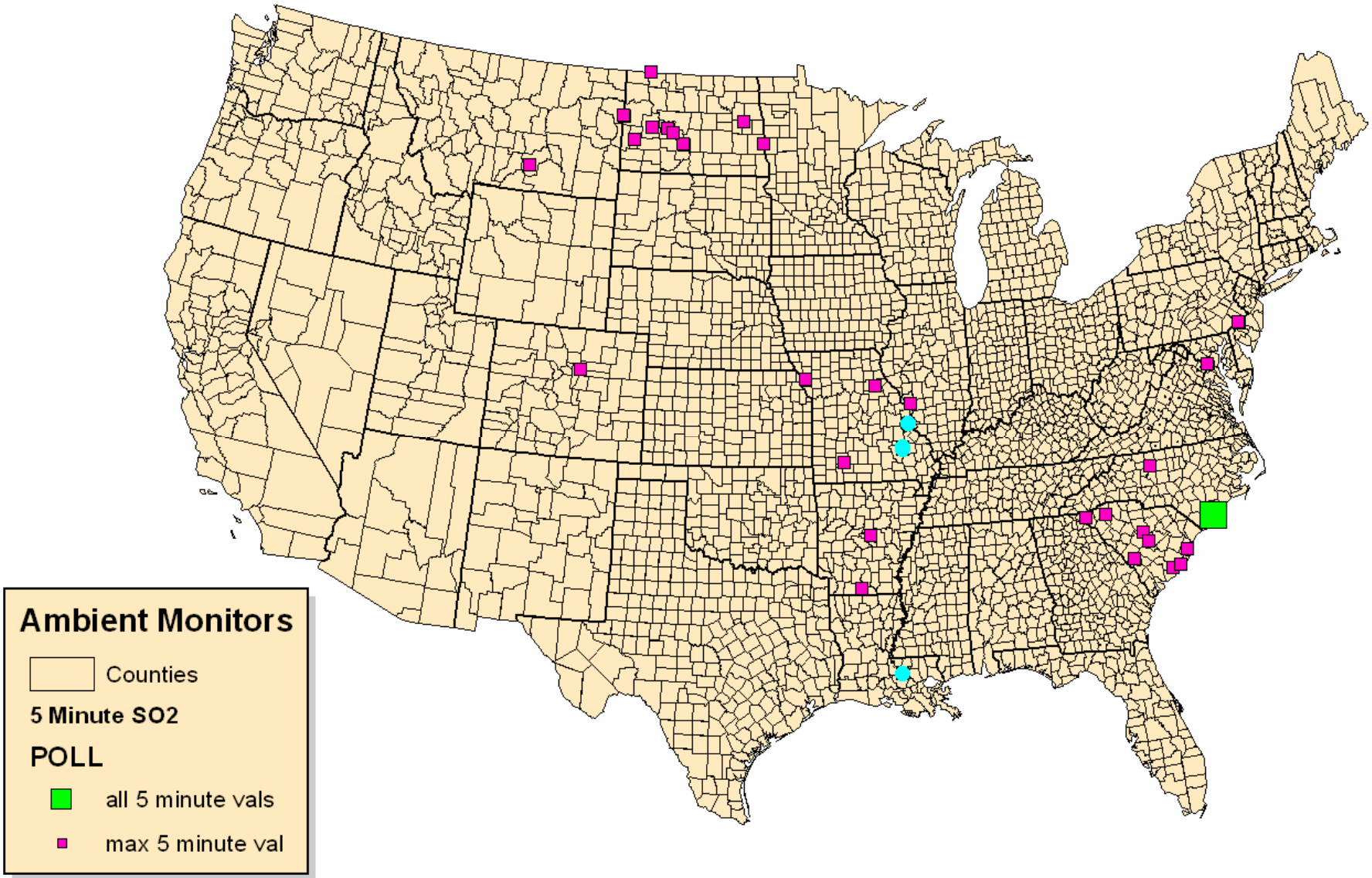
- Concentrations greater than or equal to 0.6 ppm

1999



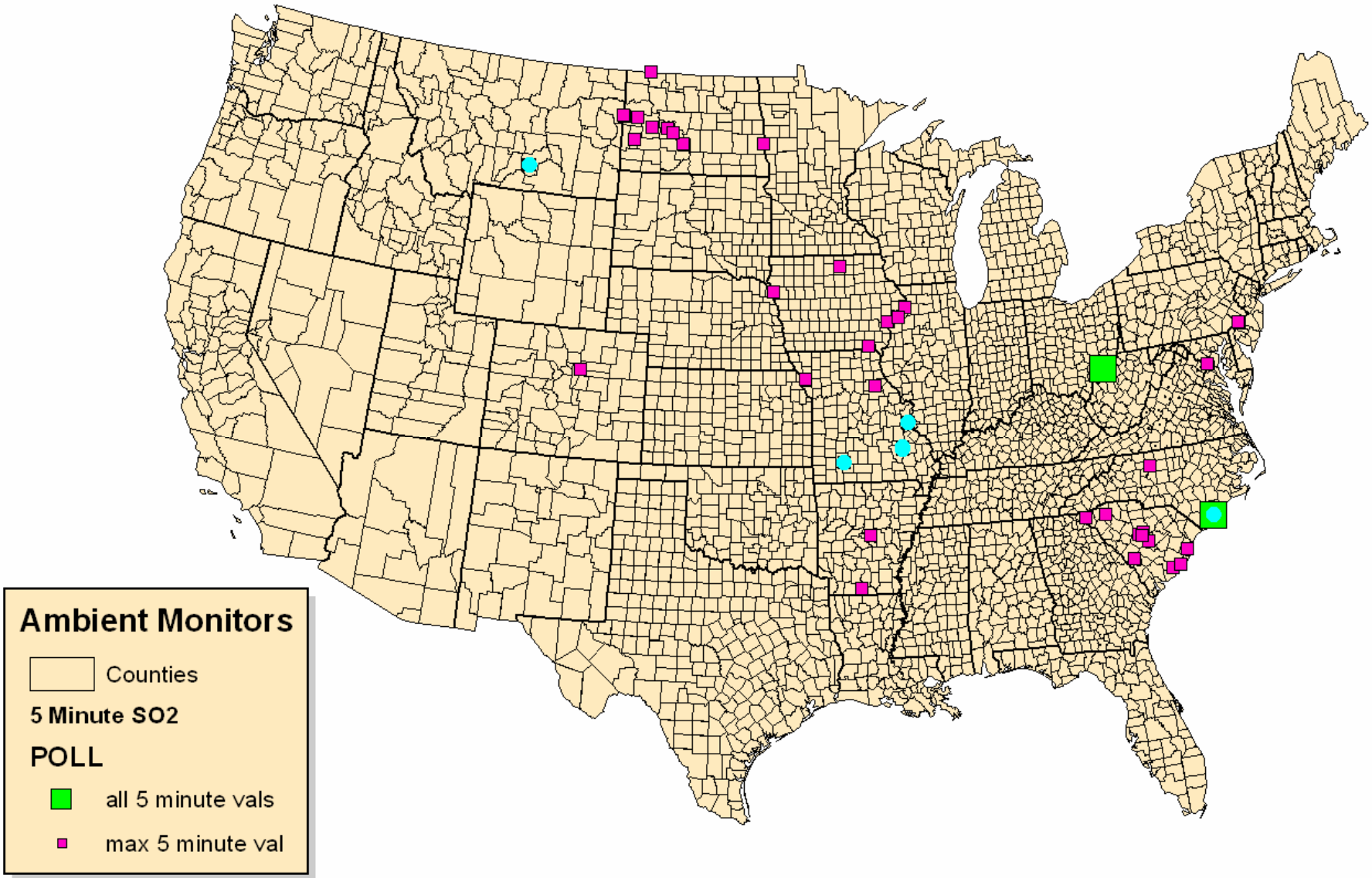
- Concentrations greater than or equal to 0.6 ppm

2000



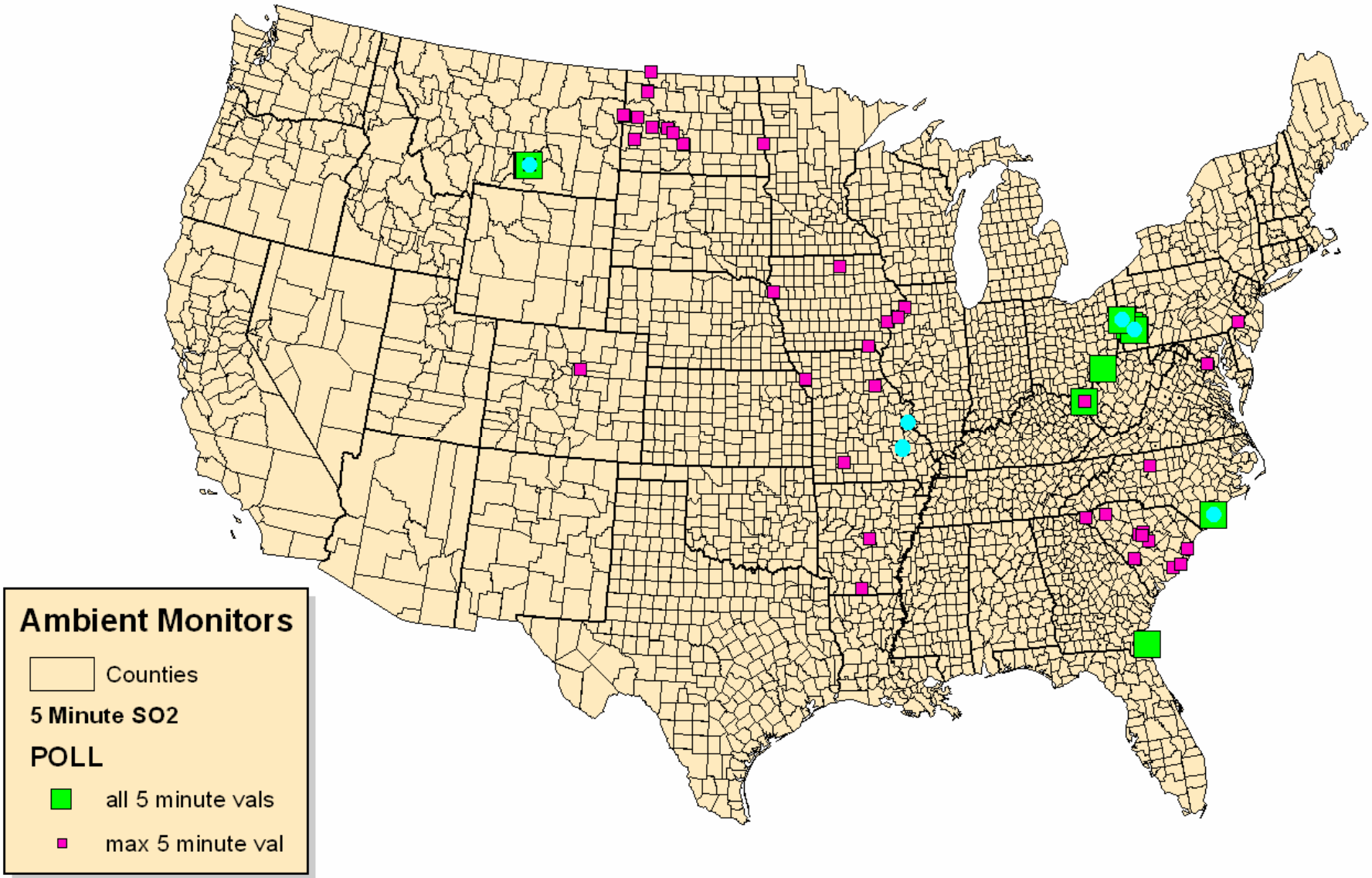
- Concentrations greater than or equal to 0.6 ppm

2001



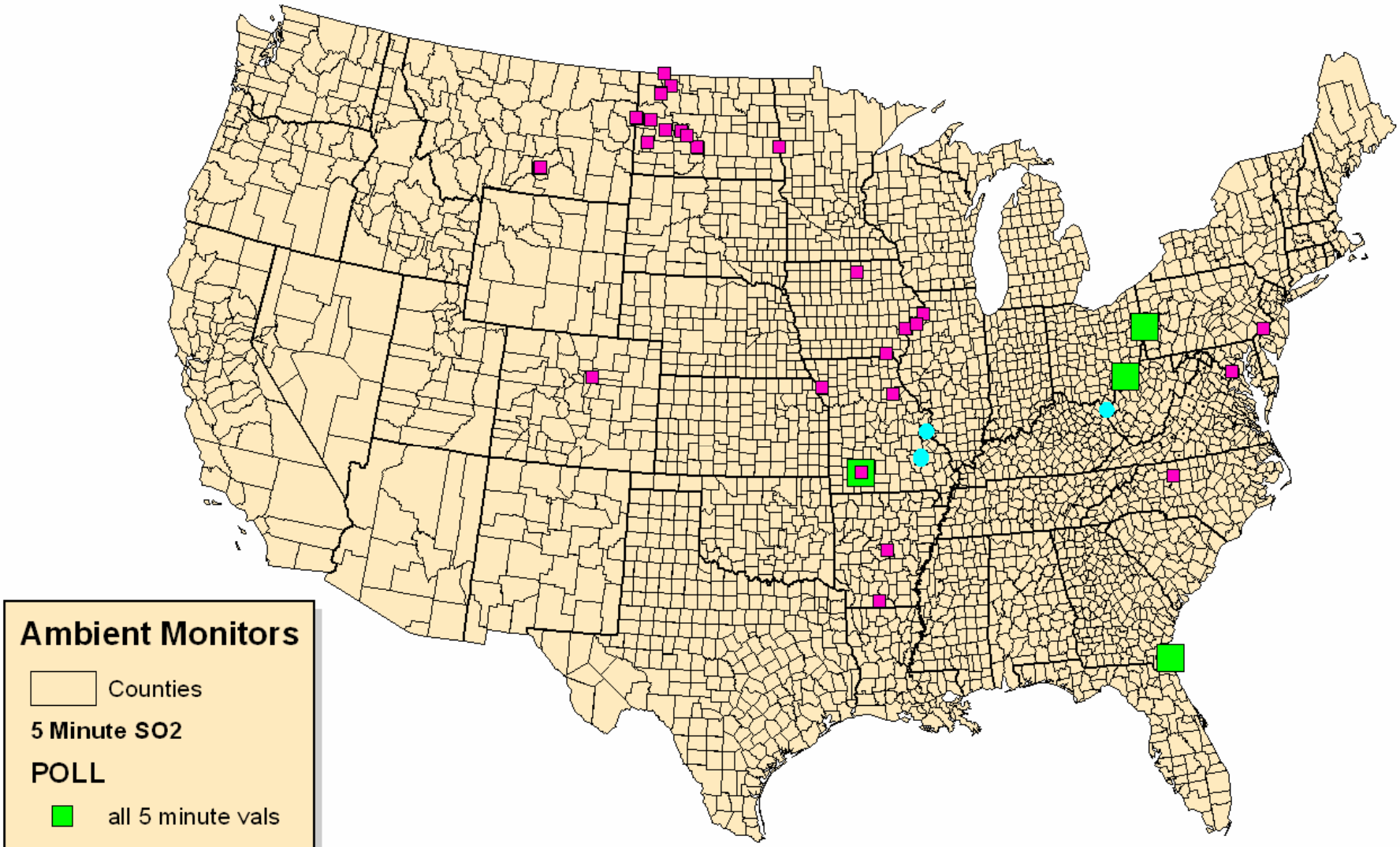
- Concentrations greater than or equal to 0.6 ppm

2002



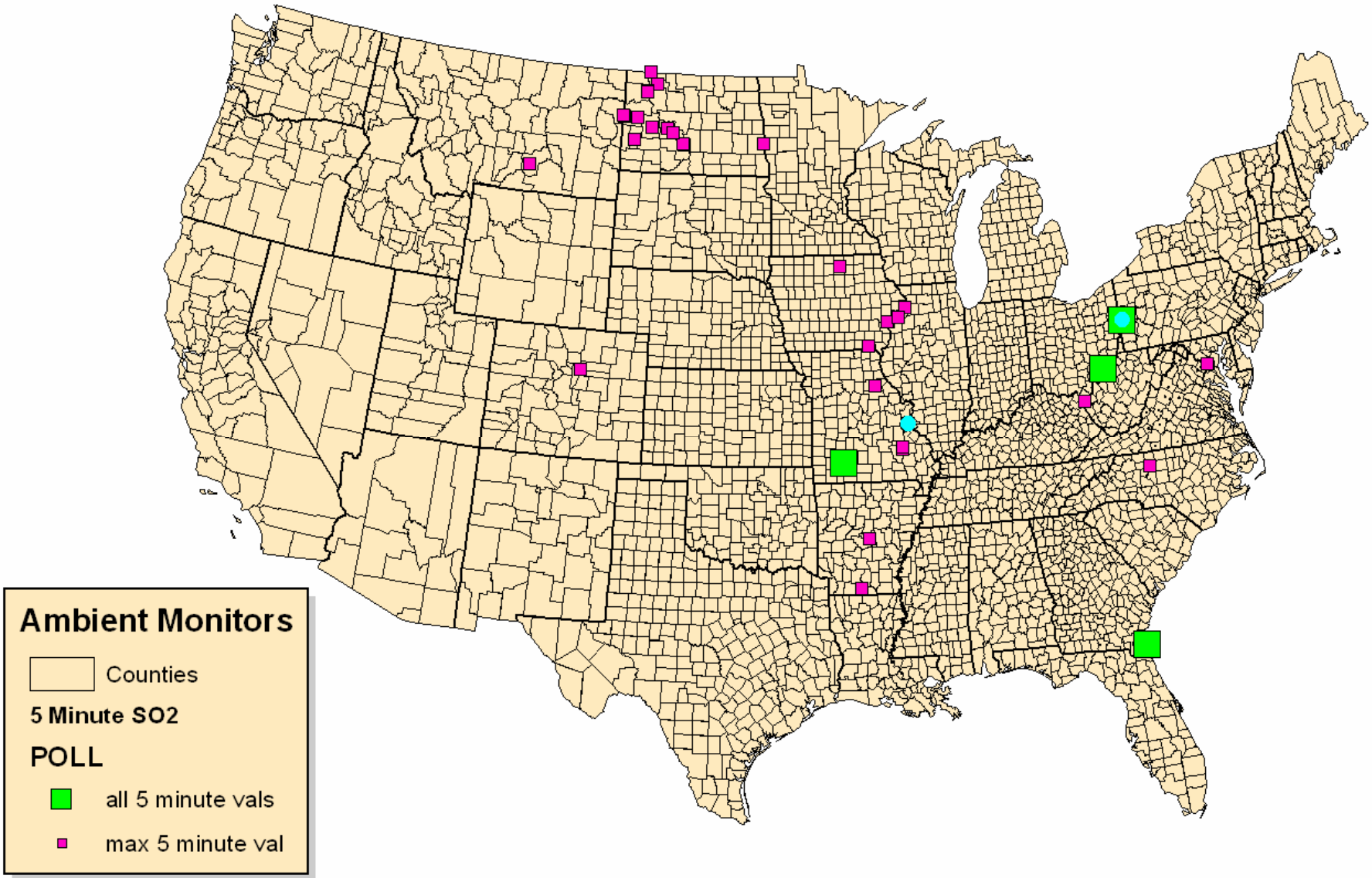
- Concentrations greater than or equal to 0.6 ppm

2003



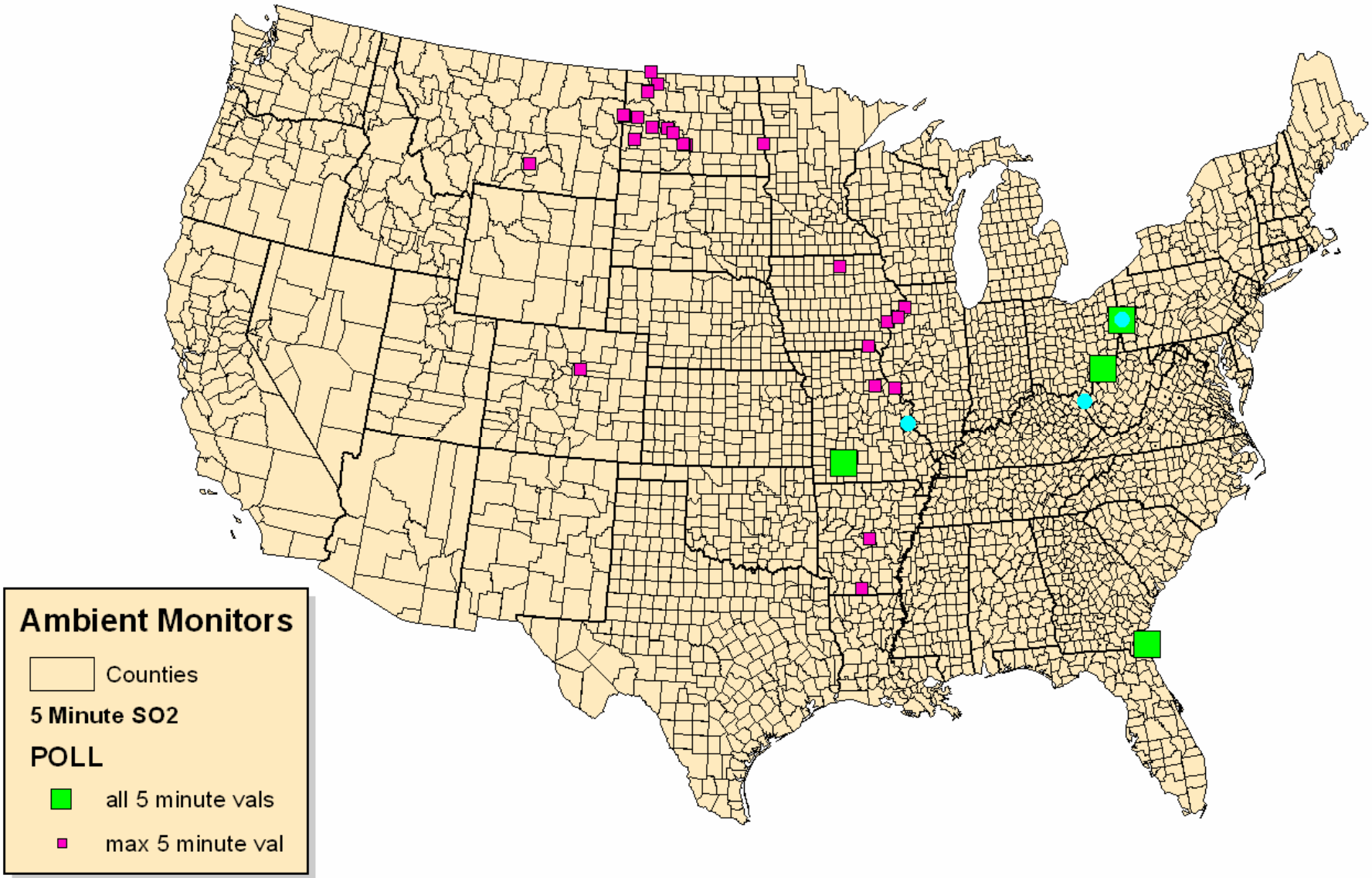
- Concentrations greater than or equal to 0.6 ppm

2004



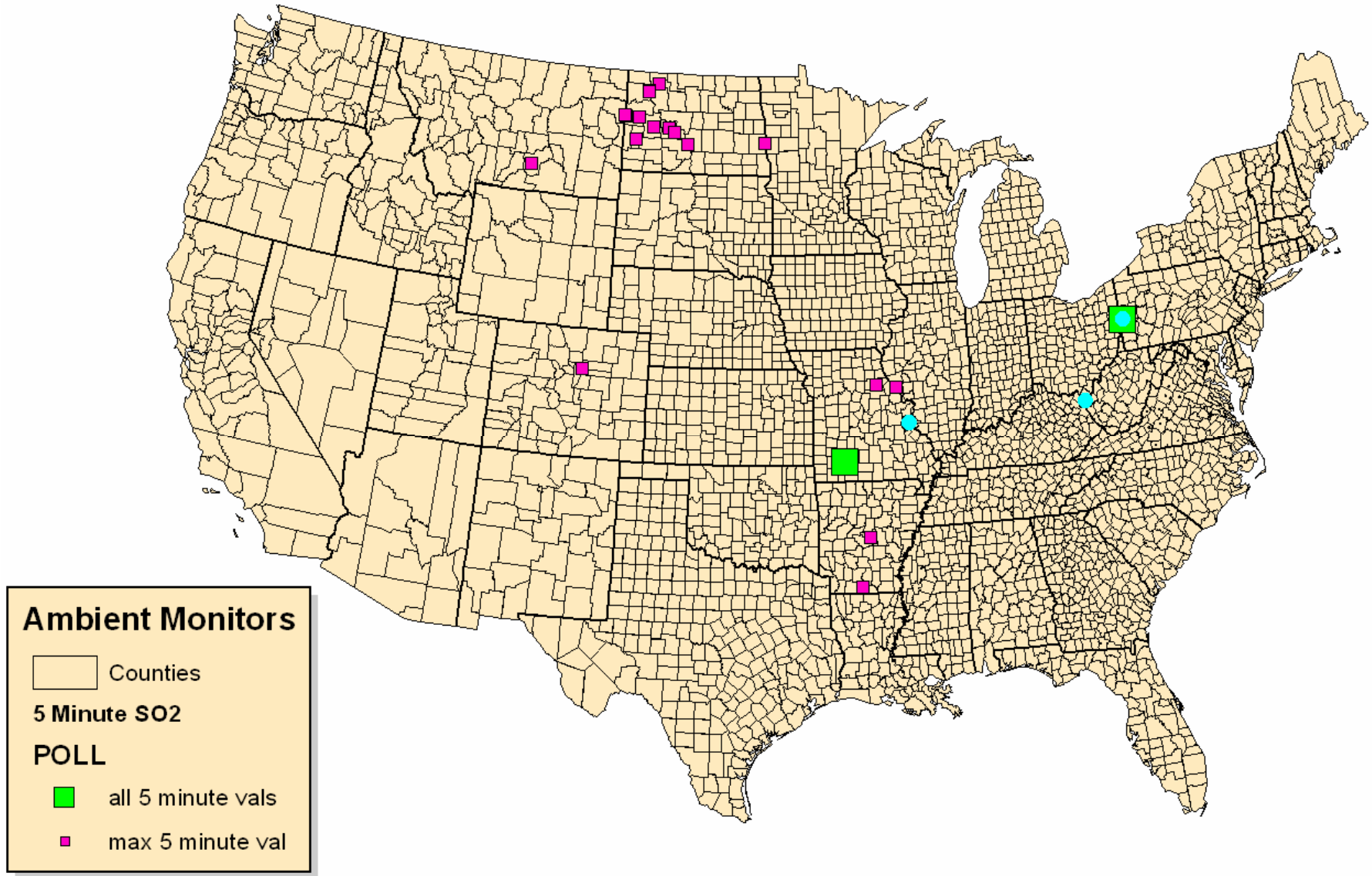
- Concentrations greater than or equal to 0.6 ppm

2005



- Concentrations greater than or equal to 0.6 ppm

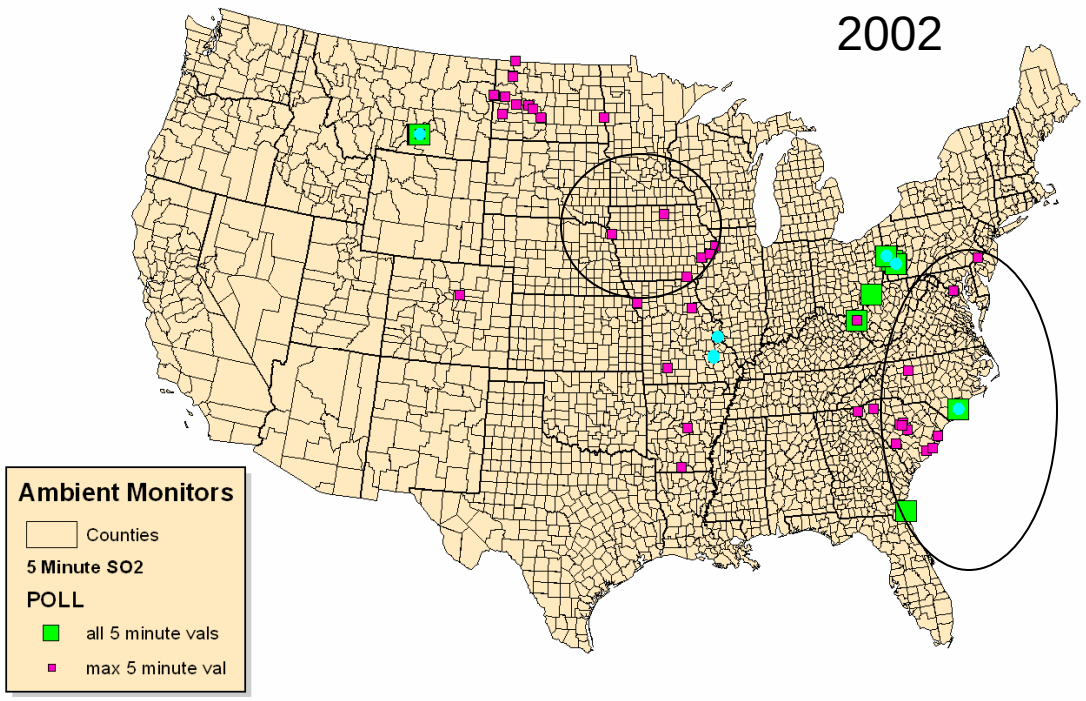
2006



- Concentrations greater than or equal to 0.6 ppm

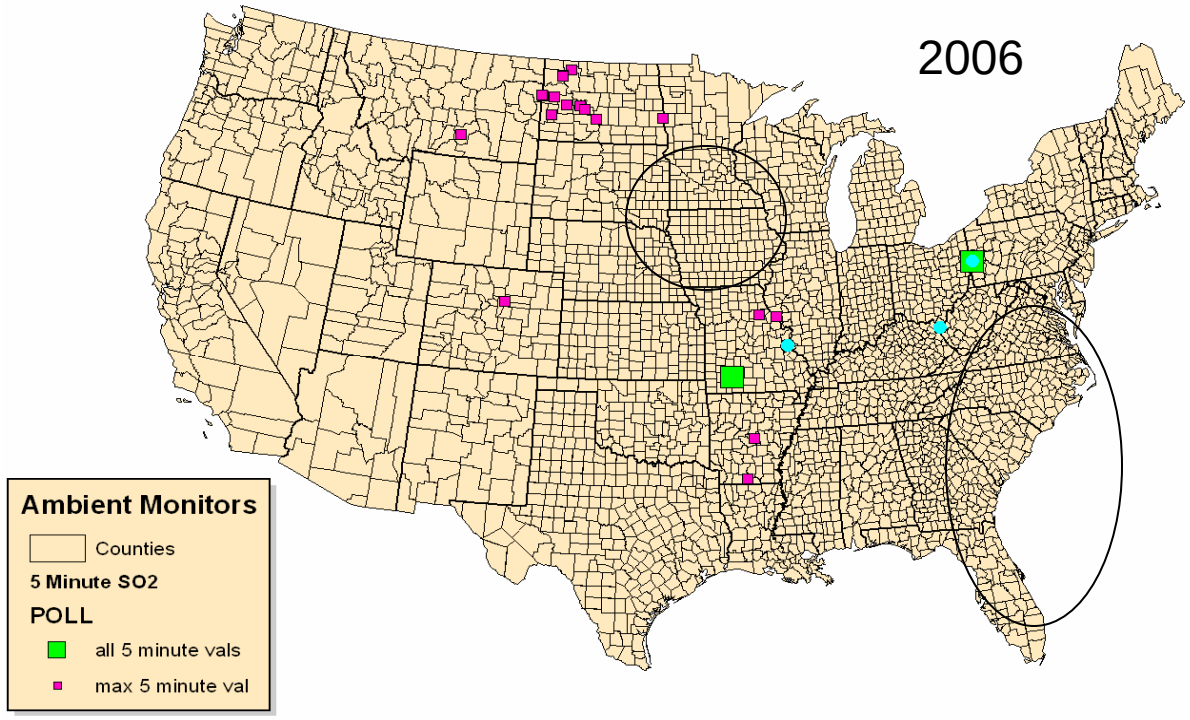
2002

Here Today …

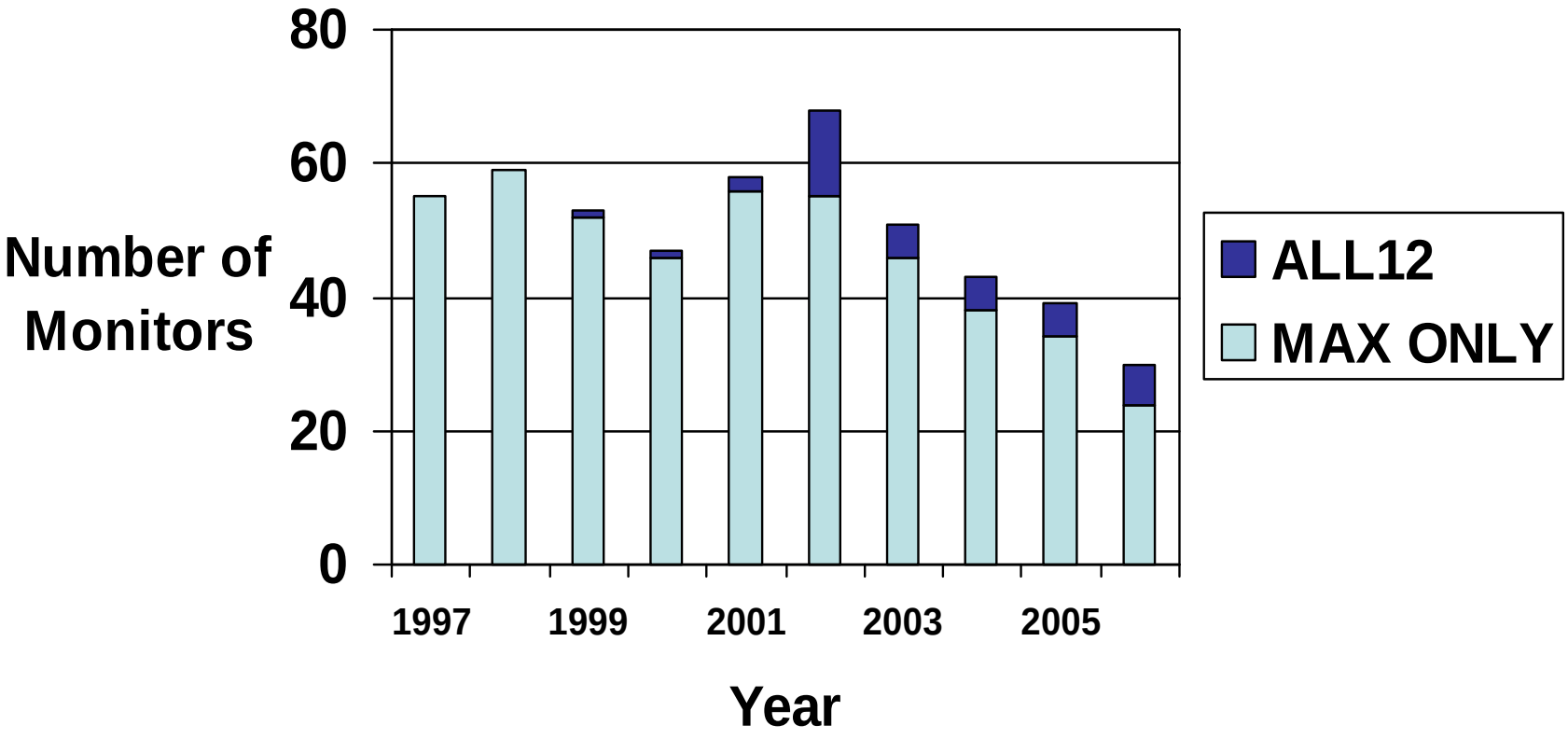


Gone Tomorrow

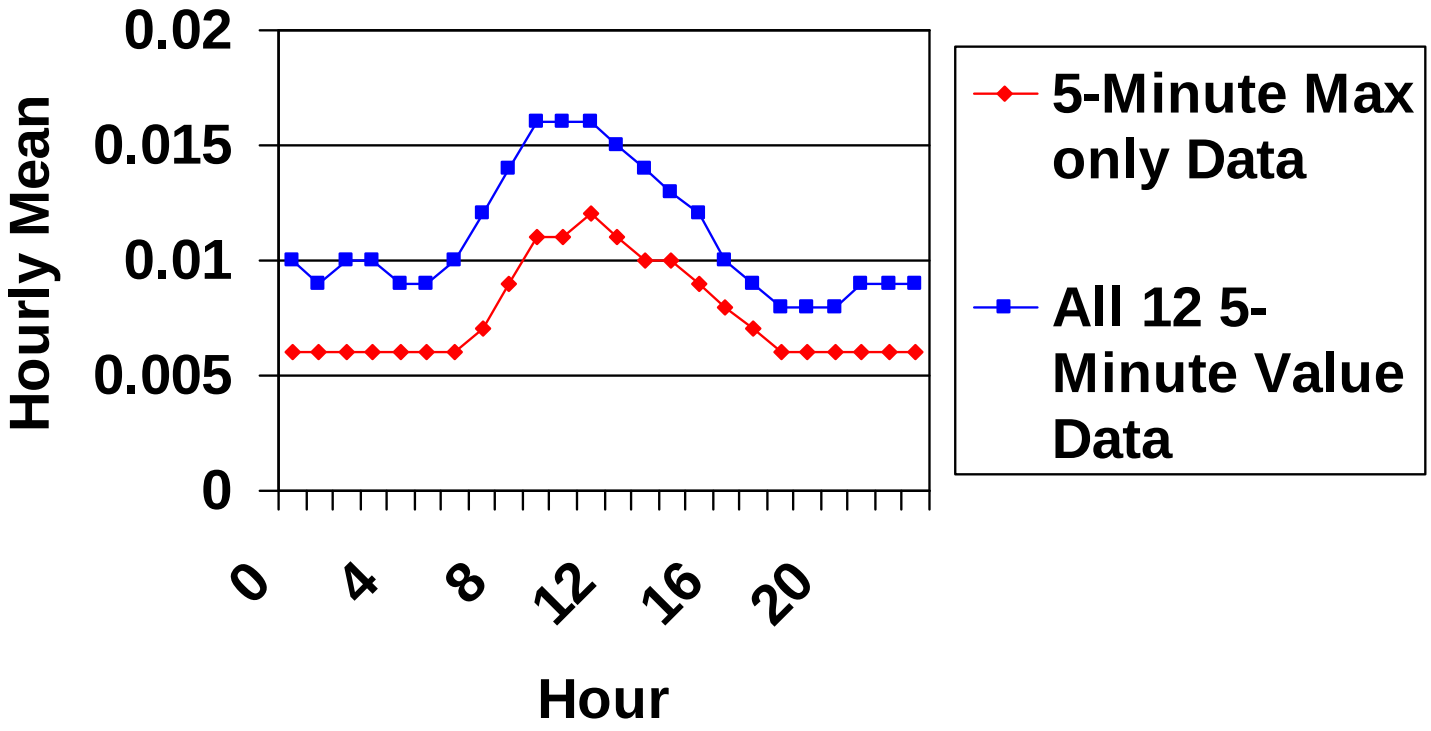
2006

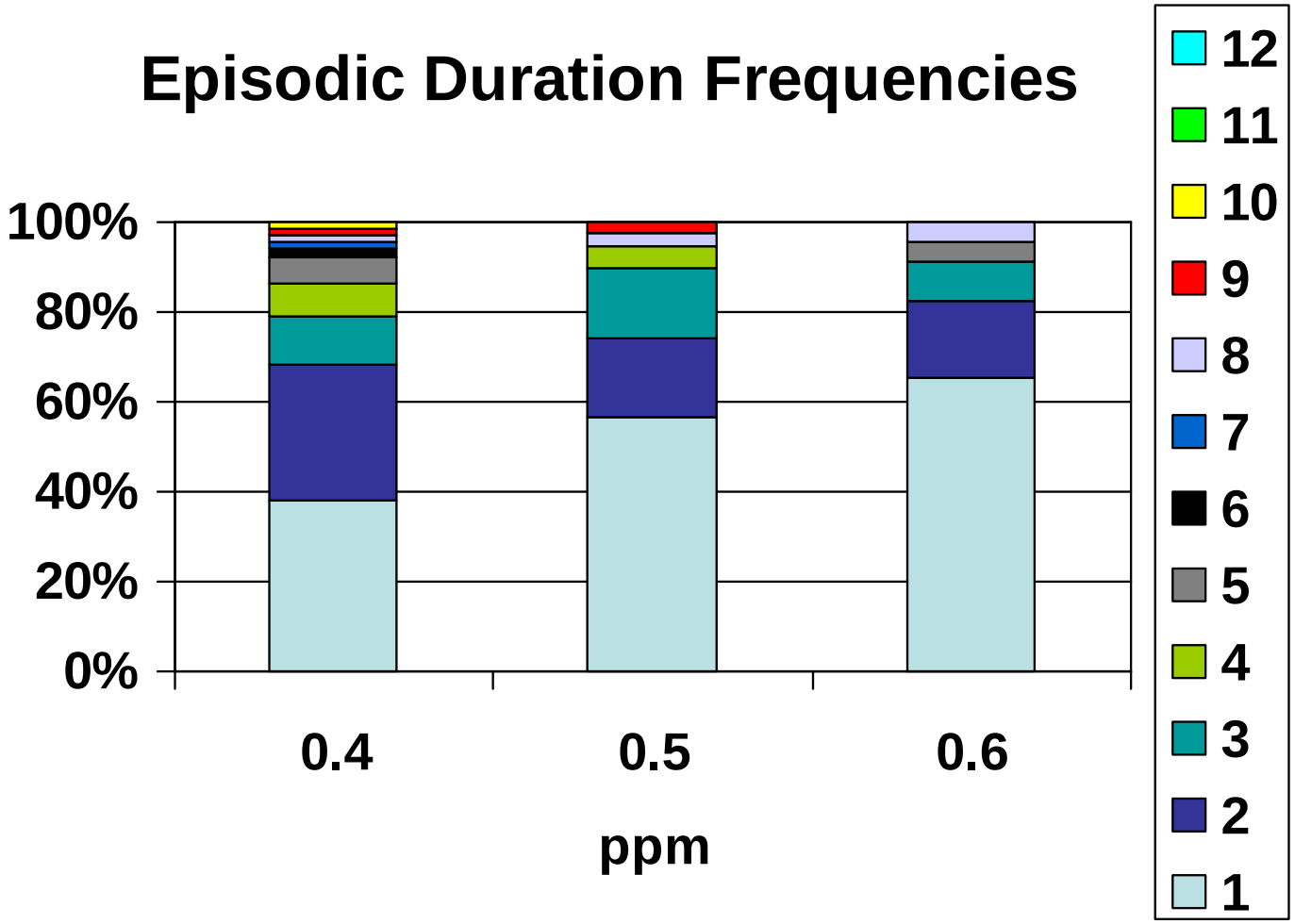


Number of Monitors By Type and Year



Diurnal Trend





There are up to 12 Possible Number of values >= X ppm in an Hour

8 of the 23 hourly periods (35% of the time) with any 5-minute Value >= 0.6ppm had more than 1 of these in the same hour.

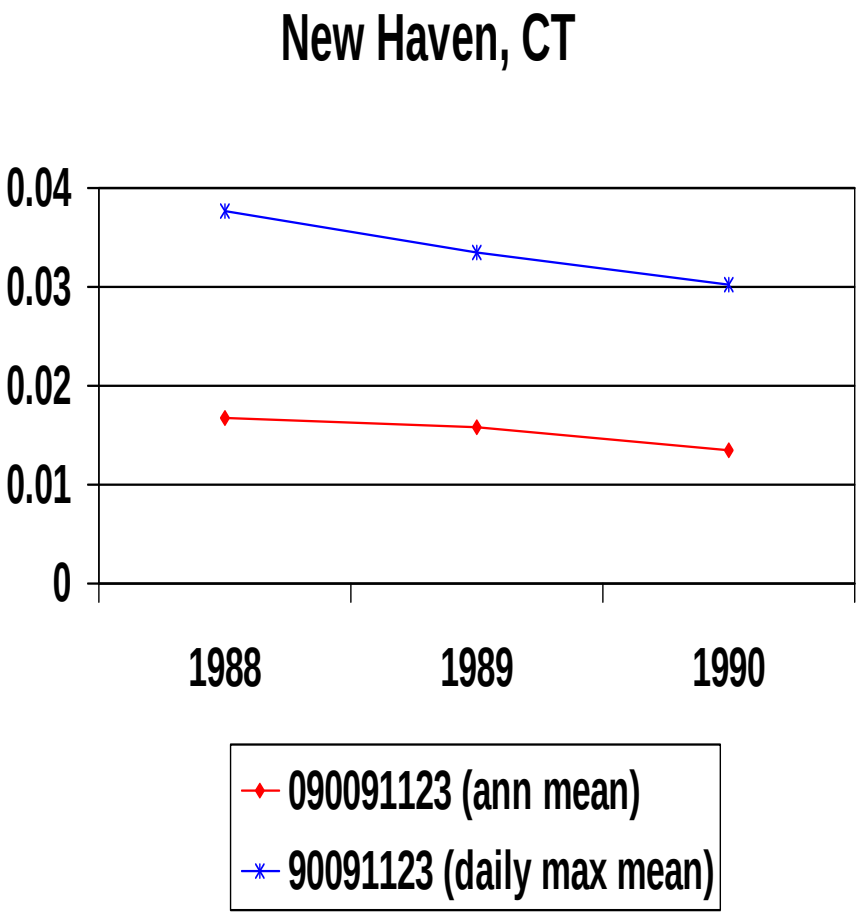
17 of the 39 hourly periods (44% of the time) with any 5-minute Value >= 0.5 ppm had more than 1 of these in the same hour.

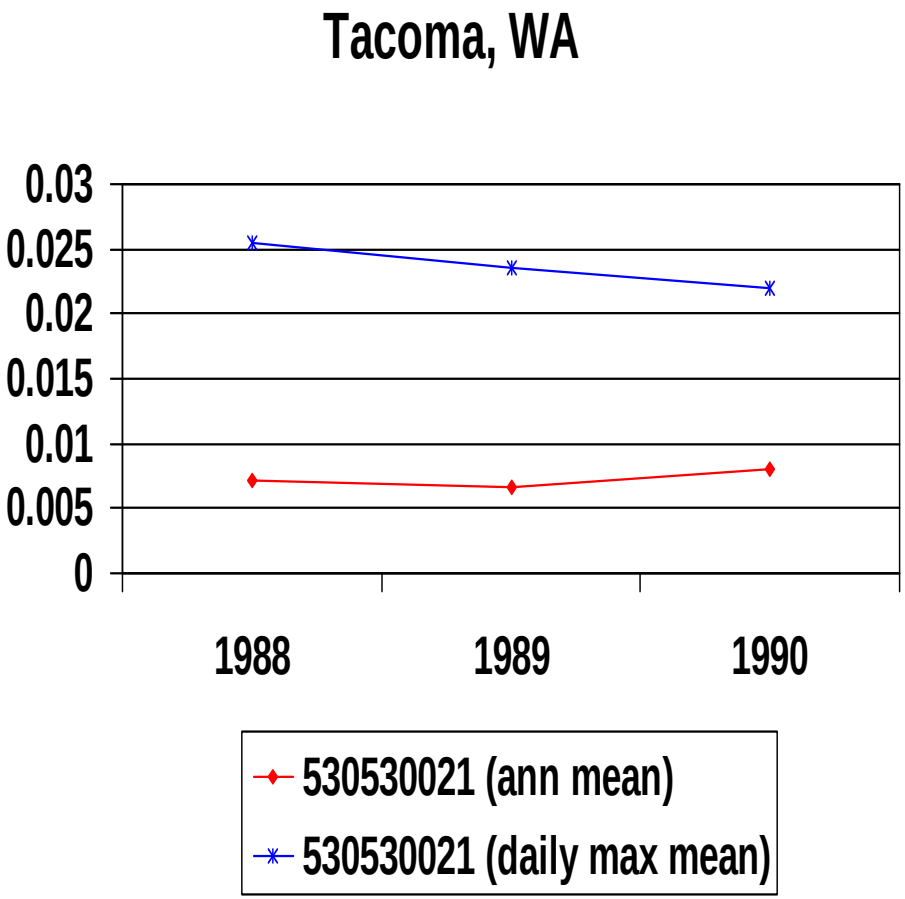
41 of the 66 hourly periods (62% of the time) with any 5-minute Value >= 0.5 ppm had more than 1 of these in the same hour.

SO2 Epidemiology Paper Studies

Short term fluctuations in air pollution and hospital admissions of the elderly for respiratory disease- Schwartz

From AQS sites in New Haven CT (09-009-New Haven Co) and Tacoma WA (53-053-Pierce Co) for 1/1/88 to 12/31/90



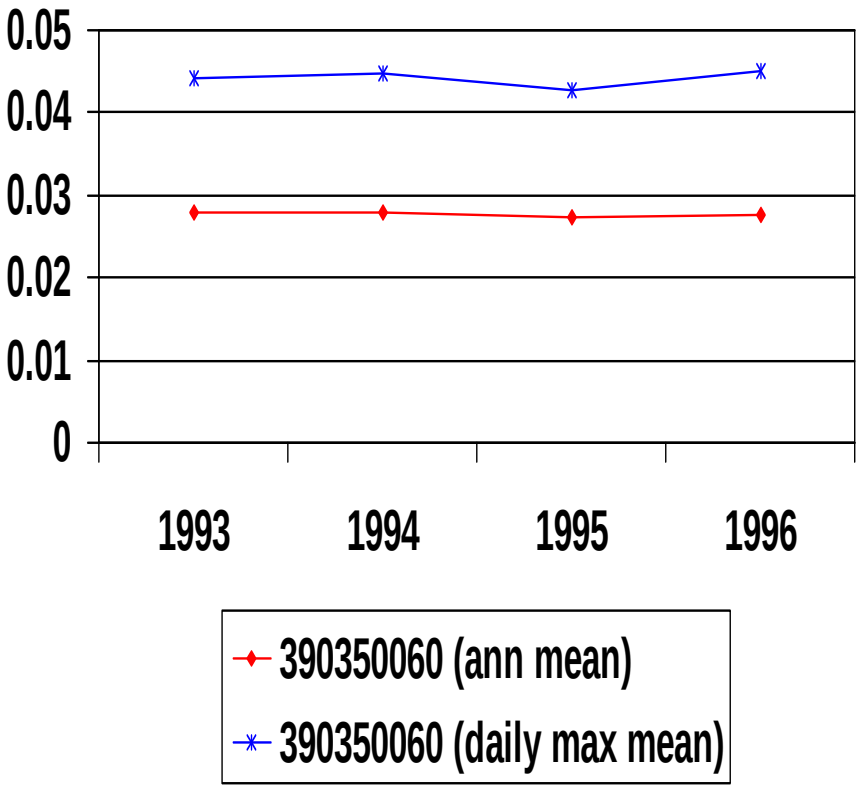


NO2 Epidemiology Paper Studies

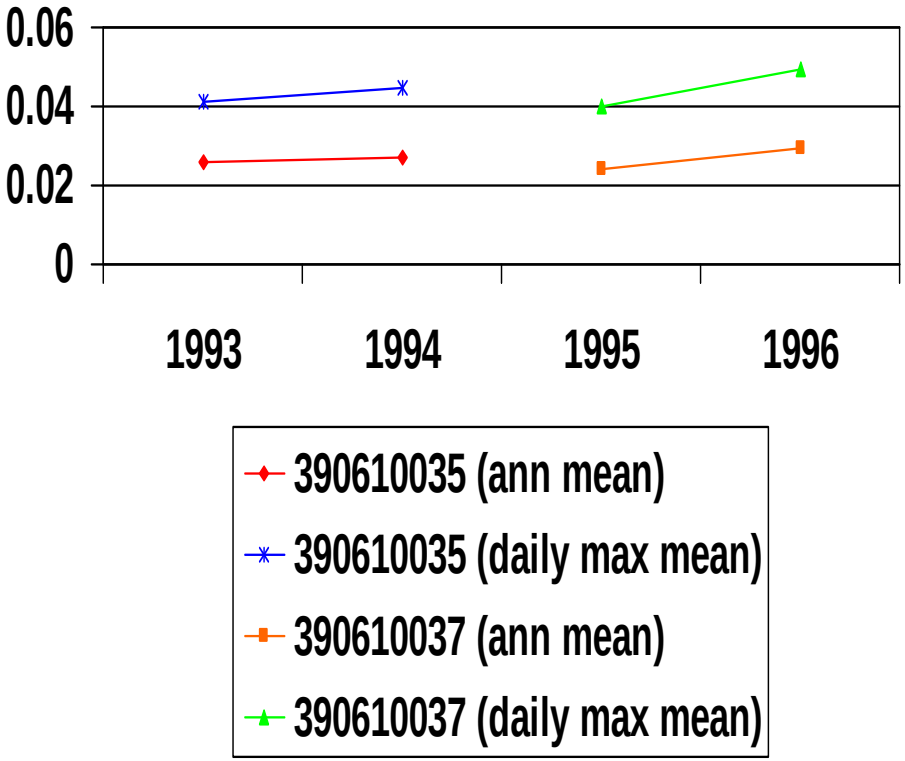
Air pollution and emergency department visits for asthma among Ohio Medicaid recipients, 1991-1996 - Jaffee

Authors said they pulled AQS sites in Cleveland and Cincinnati for June to August from 1991-1996 within a 10 mi radius of city. So I pulled all sites in either Cuyahoga(035) or Hamilton(061)

Cleveland, OH



Cincinnati, OH



From AQS all sites in Atlanta CMSA from 1/1/2005 -12/31/2007

No Flags were in this data

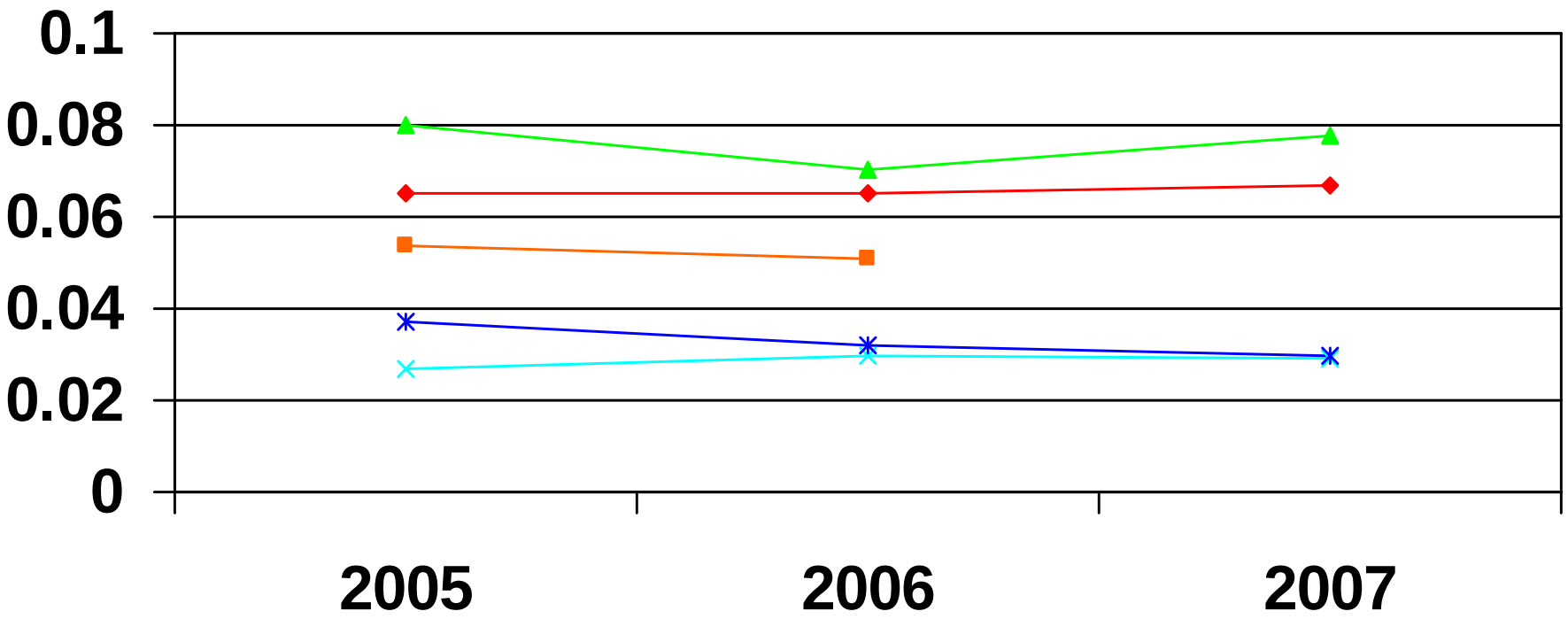
site 130890002 had 3 years of data but 1 qtr in 2007 was not complete; For PM we require all 4 qtrs to be complete

site 130893001 had no data at all for 2007

monitor id	year	99th %ile	98th%ile
130890002	2005	0.065	0.058
	2006	0.065	0.06
	2007	0.067	0.065
130893001	2005	0.054	0.053
	2006	0.051	0.048
131210048	2005	0.08	0.077
	2006	0.07	0.067
	2007	0.078	0.075
132230003	2005	0.027	0.026
	2006	0.03	0.024
	2007	0.029	0.025
132470001	2005	0.037	0.031
	2006	0.032	0.031
	2007	0.03	0.027

monitor id	year	number of complete days	number of incomplete days
131210048	2005	348	17
	2006	345	20
	2007	340	25

99th Percentile Daily Maximum 1-Hour SO2 for the 5 Atlanta CMSA Sites



After risk assessors returned a data set with missing days substituted.

monitor id	year	annual average	**2006-2007 design value highest ann ave latest 2 years**	**Standard 0.053 factor 3.011**
131210048	2005	0.0171		
	2006	0.0176		
	2007	0.0166	**0.0176**	

monitor id	year	99th %ile	**99th %ile 2005-2007 design value ave 3 yr %ile**	**99th %ile Standard 0.05 factor**	**99th %ile Standard 0.1 factor**	**99th %ile Standard 0.15 factor**	**99th %ile Standard 0.2 factor**
131210048	2005	0.08					
	2006	0.07					
	2007	0.078	**0.076**	**0.658**	**1.316**	**1.974**	**2.632**

monitor id	year	98th%ile	**98th%ile 2005-2007 design value ave 3 yr %ile**	**98th%ile Standard 0.05 factor**	**98th%ile Standard 0.1 factor**	**98th%ile Standard 0.15 factor**	**98th%ile Standard 0.2 factor**
131210048	2005	0.077					
	2006	0.066					
	2007	0.069	**0.071**	**0.708**	**1.415**	**2.123**	**2.830**

Factor Adjusted Annual Means