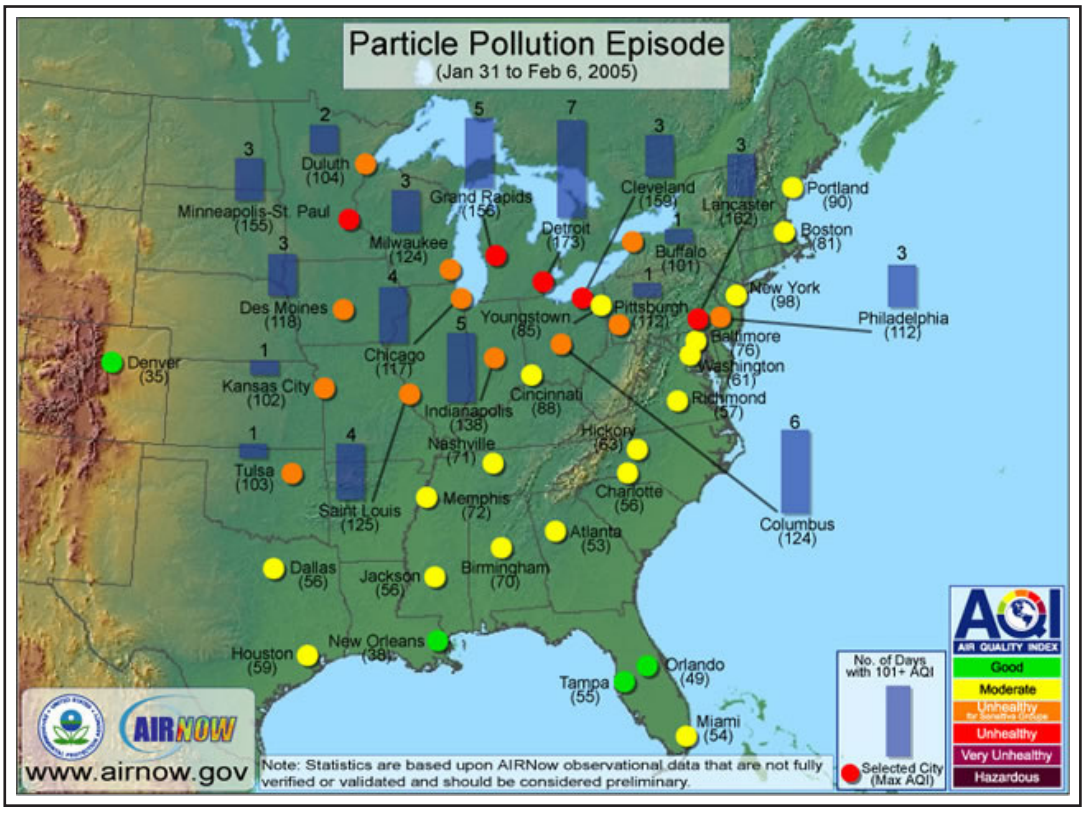
Particle Episode
January 31 - February 6, 2005

During the seven-day period from January 31 to February 6, 2005, many regions in the eastern half of the United States and southeastern Canada experienced a particle pollution episode, affecting millions of people. While it was not a rare event (based on the particle pollution levels recorded), it was still a major episode because of the duration and number of cities affected. Some preliminary AQI levels (based on 24-hour averages for particle pollution) include 155 AQI (Unhealthy) in Minneapolis-St. Paul on January 31, 117 AQI (Unhealthy for Sensitive Groups) in Chicago on February 2, and 173 AQI (Unhealthy) in Detroit on February 5. The figure below shows the maximum observed AQIs and number of days with AQIs of 101 and above for select cities during the episode, based on preliminary data from continuous $PM_{2.5}$ monitors reporting to AIRNow.

Weather played a significant part in the development of this episode. Particle levels were already in the high-moderate range in the Midwest a couple of days prior to the episode. During the seven-day period, the weather pattern was set up such that disturbances were moving across the southern United States and central Canada. Subsequently, there were minimal dynamics to promote vertical mixing and dispersion of particles in the atmosphere over the Midwest, southern Great Lakes region, Ohio River Valley, and parts of the Mid-Atlantic. At the surface, high pressure over much of the eastern United States resulted in light winds, stagnant conditions, and the build-up of pollutants. In addition, plenty of low-level moisture due to snow cover led to fog formation and increased particle formation. The snow cover also limited daytime heating, further reducing the mixing of the air. These conditions, combined with high particle carryover from day-to-day and local emissions (for example, automobiles and residential wood burning), contributed to this episode.



Source: U.S. Environmental Protection Agency. *AIRNow*. Retrieved February 16, 2005, from http://www.airnow.gov.