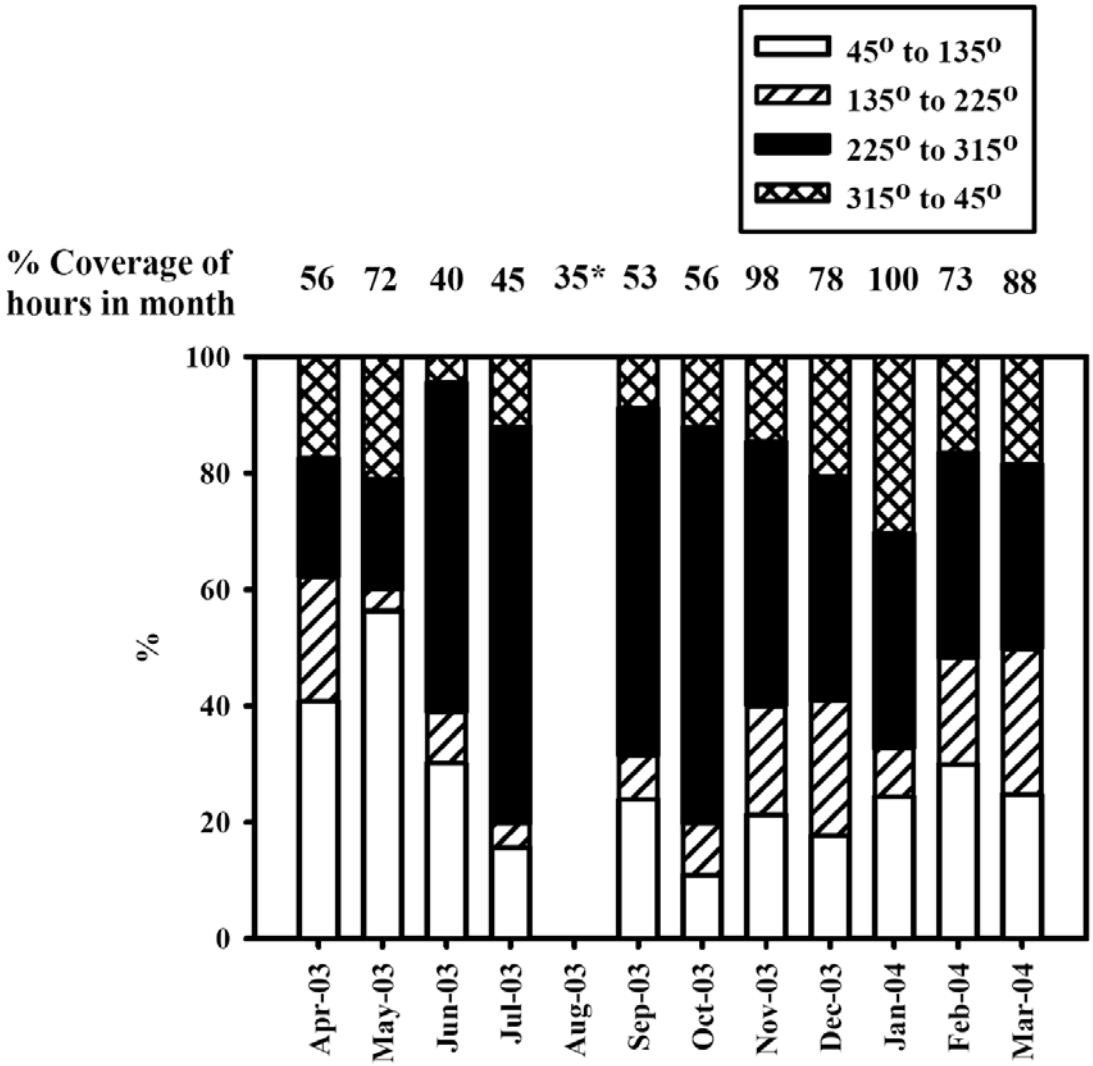
Supplementary Information

Figure S1. Hourly wind direction measurements made at Devil's Lake State Park (DLSP) between April, 2003 and March, 2004. The measurements were divided into 4 direction classes: East (45^o to 135^o); South (135^o to 225^o); West (225^o to 315^o); and, North (315^o to 45^o).



*Data discarded as less than 40% of month was available.

Figure S2a-h. Time series of atmospheric mercury concentration data for the entire measurement campaign. Figures S2a-d show GEM, PHg, RGM, and RM concentration data measured at Devil's Lake State Park, WI between April 2003 and March 2004. The bold solid lines depict the sections of the data sets during which no point source impacts were observed, and were therefore chosen to calculate reference means and point source thresholds (3 x standard deviation) for the impact estimate calculations. Figures S2e-h show GEM, PHg, RGM, and RM concentration data measured at Milwaukee, WI between July 2004 and May 2005. The reference means and point source thresholds calculated in Figures S2a-d are included in Figures S2e-h.

Supplementary Material (ESI) for Journal of Environmental Monitoring

Figure S2a-d

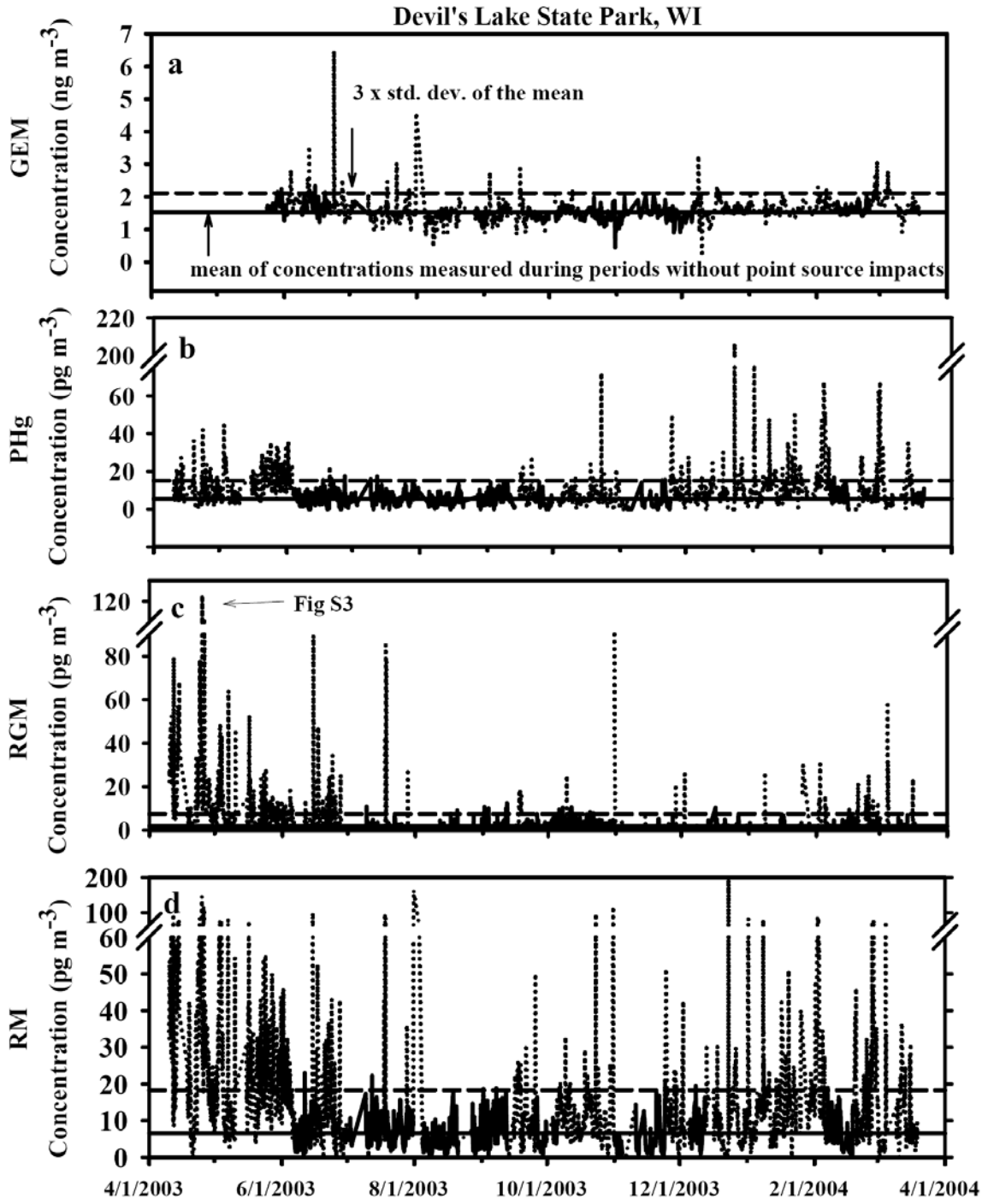


Figure S2e-h

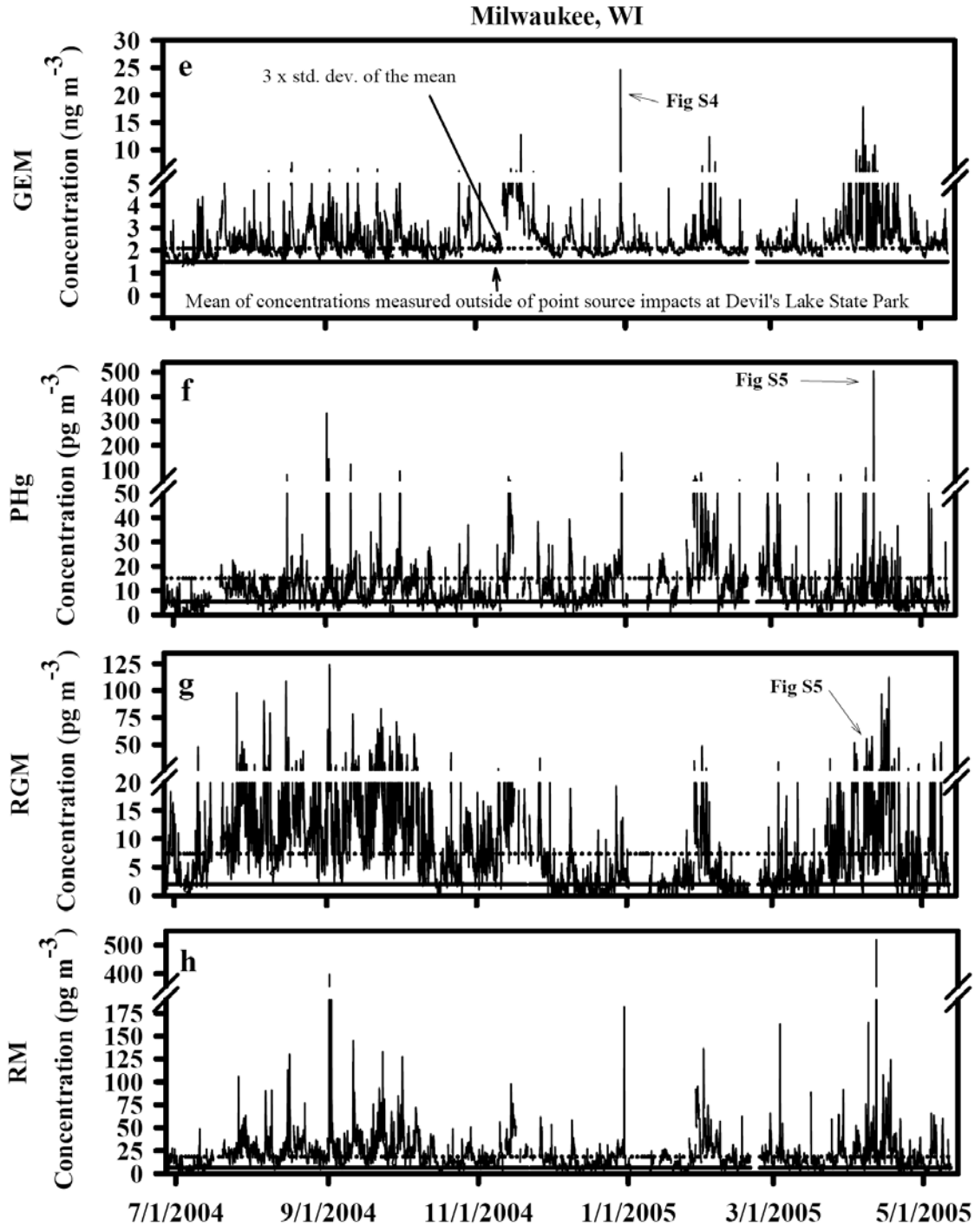


Figure S3. HYSPLIT back trajectory of the air mass that arrived at the Devil's Lake State Park sampling site at 12:00 UTC on May 7th, 2003. A short-lived RM concentration increase was seen at the same time (inset; dates labeled at 0:00 hrs UTC of each day). The Electricity Generation Station (EGS) at Pardeeville, WI is listed in the US EPA National Emissions Inventory as a large point source of mercury compounds. This figure demonstrates the likelihood that mercury emissions from the Pardeeville EGS impacted the RM concentrations measured at Devil's Lake State Park.

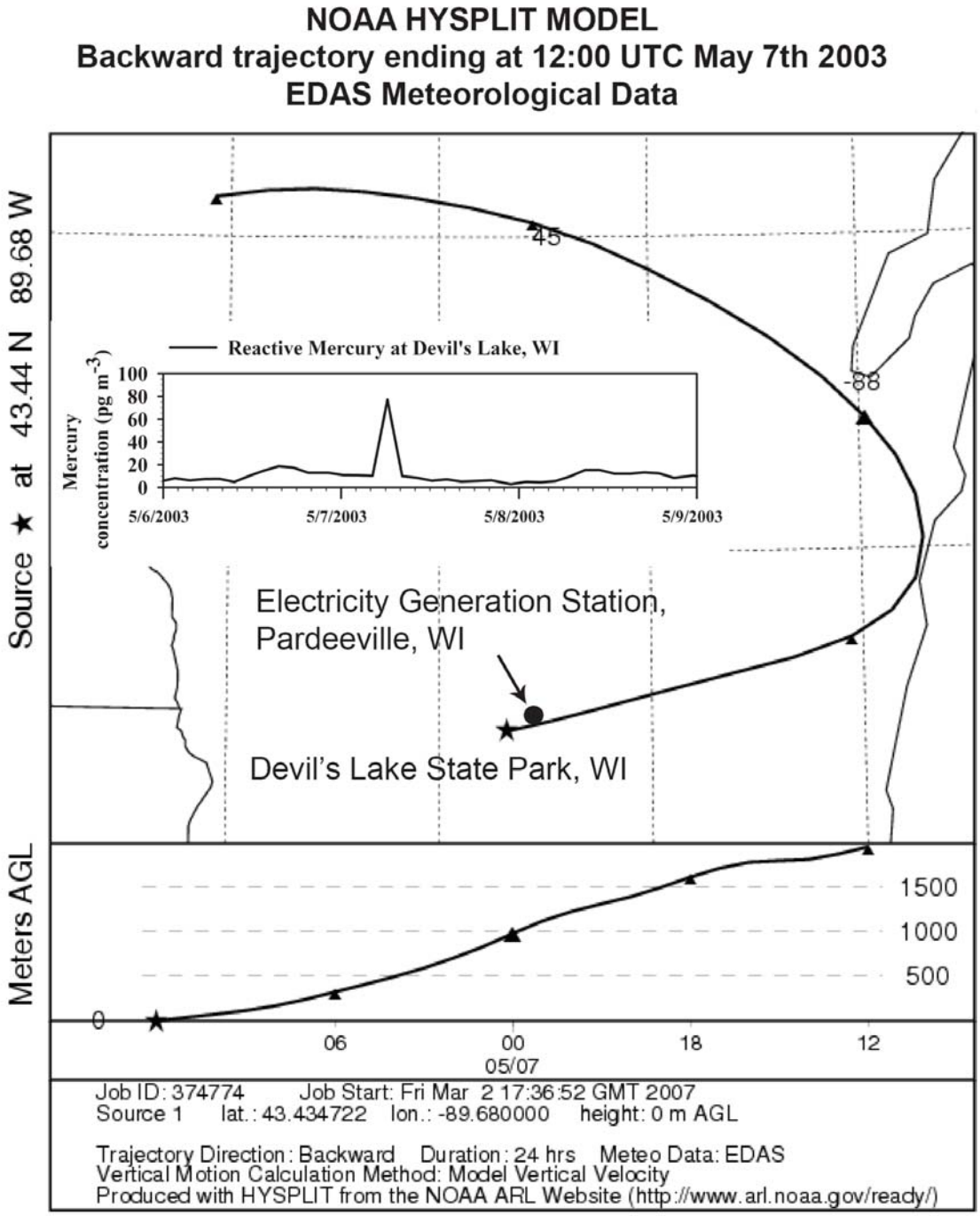


Figure S4. HYSPLIT back trajectory of the air mass that arrived at the Milwaukee sampling site at 06:00 UTC on December 30th, 2004. A short-lived GEM concentration increase was seen at the same time (inset; dates labeled at 0:00 hrs UTC of each day). The Electricity Generation Station (EGS), Sheboygan, WI is fueled with coal and therefore, is listed in the US EPA National Emissions Inventory as a large point source of mercury compounds. This figure demonstrates the likelihood that mercury emissions from the Sheboygan EGS impacted the GEM concentrations measured at the sampling location at Milwaukee.

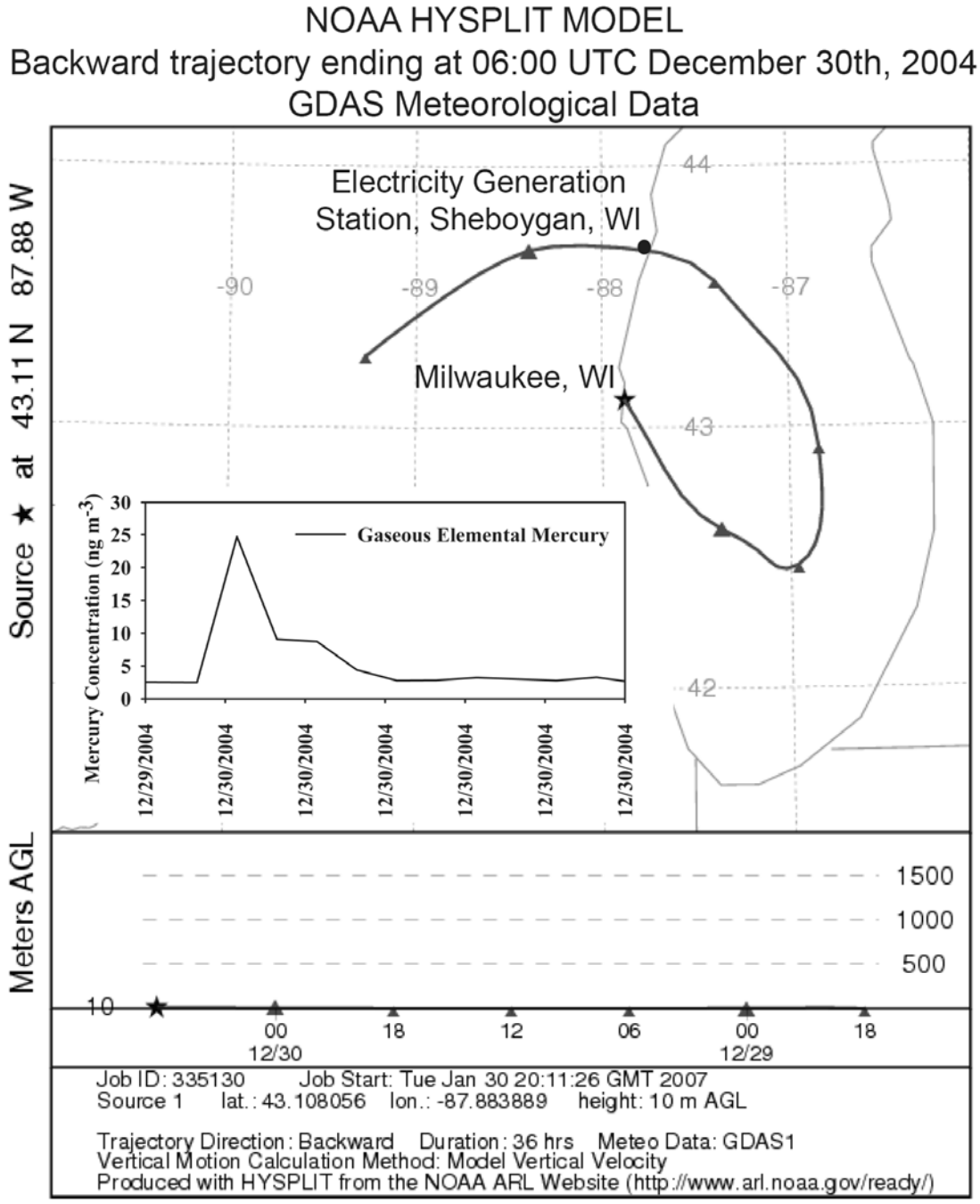


Figure S5. HYSPLIT back trajectory of the air mass that arrived at the Milwaukee sampling site at 20:00 UTC on April 8th, 2005. A short-lived increase in reactive mercury concentrations was seen at the same time (inset; dates labeled at 0:00 hrs UTC of each day). The Electricity Generation Station (EGS) at Filer City, MI, is listed in the US EPA National Emissions Inventory as a large point source of mercury compounds. This figure demonstrates the likelihood that the Filer City EGS impacted the reactive mercury concentrations measured at the sampling location at Milwaukee.