NOAA’s Atmospheric Mercury Monitoring in the Gulf of Mexico Region

January 17, 2008
In September 2006, the National Oceanic and Atmospheric Administration (NOAA) Air Resources Laboratory (ARL) and the Grand Bay National Estuarine Research Reserve (NERR) established a long-term atmospheric monitoring station for the measurement of speciated mercury compounds and ancillary trace species. The measurements are designed to:

- Assemble a long-term, publicly available data record
- Discern trends in atmospheric mercury concentrations
- Derive dry deposition estimates
- Elucidate mercury source-receptor relationships
- Establish correlations with meteorology and ancillary trace species to better understand the emission, transport, transformations, and fate of mercury in the atmosphere
- Provide a data set for model evaluation
# Atmospheric Measurements at Grand Bay NERR

**Type of Measurement:**
- **A** = concentration in ambient air
- **B** = concentration in precipitation
- **C** = meteorological parameter

* to be established

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Type</th>
<th>Start Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elemental mercury</td>
<td>A</td>
<td>Sept 2006</td>
</tr>
<tr>
<td>Fine particulate mercury</td>
<td>A</td>
<td>Sept 2006</td>
</tr>
<tr>
<td>Reactive gaseous mercury</td>
<td>A</td>
<td>Sept 2006</td>
</tr>
<tr>
<td>Sulfur dioxide</td>
<td>A</td>
<td>Oct 2006</td>
</tr>
<tr>
<td>Ozone</td>
<td>A</td>
<td>Oct 2006</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>A</td>
<td>Oct 2006</td>
</tr>
<tr>
<td>Nitrogen Oxides (NO, NOy)</td>
<td>A</td>
<td>Jan 2008</td>
</tr>
<tr>
<td>Wind speed</td>
<td>C</td>
<td>Feb 2007</td>
</tr>
<tr>
<td>Wind Direction</td>
<td>C</td>
<td>Feb 2007</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>C</td>
<td>Feb 2007</td>
</tr>
<tr>
<td>Temperature</td>
<td>C</td>
<td>Feb 2007</td>
</tr>
<tr>
<td>Precipitation</td>
<td>C</td>
<td>Feb 2007</td>
</tr>
<tr>
<td>Total mercury in precipitation</td>
<td>B</td>
<td>*</td>
</tr>
<tr>
<td>Major ions in precipitation</td>
<td>B</td>
<td>*</td>
</tr>
</tbody>
</table>

*4 m sampling height*
Location of the NOAA/Grand Bay NERR Atmospheric Mercury monitoring site, other atmospheric Hg monitoring sites, and major Hg point sources in the region (EPA 1999 NEI emissions inventory)

- Type of mercury emissions source:
  - Red: coal-fired power plant
  - Blue: waste incinerator
  - Yellow: manufacturing
  - Gray: metallurgical
  - Green: other fuel combustion

- Total atmospheric mercury emissions (kg/yr, 1999 EPA NEI):
  - Circle: 1 – 50
  - Triangle: 50 - 100
  - Circle With Diagonal Line: 100 - 200
  - Square: 200 - 400

Monitor Sites:
- NOOA
- SEARCH
- USGS
- UWF/FSU
- MDN

- Location:
  - Pascagoula, MS
  - Mobile, AL
  - Mississippi
  - Alabama
  - Mobile Bay
  - NOAA Grand Bay NERR Hg site
  - Victor J. Daniel
  - Holcim Cement
  - Jack Watson
  - Barry
  - Paper manuf
  - Pascagoula MSW incin
  - Haz waste incin

- Emissions:
  - 50 - 100
  - 100 - 200
  - 200 - 400
  - 1 – 50
Oct 2006 Pictures of Initial Monitoring Site
Current Pictures of Permanent Monitoring Site

View from top of 10 m tower looking at the southerly (prevailing wind) sampling sector over the U.S. Fish and Wildlife Service Pavilion at Grand Bay NERR
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