

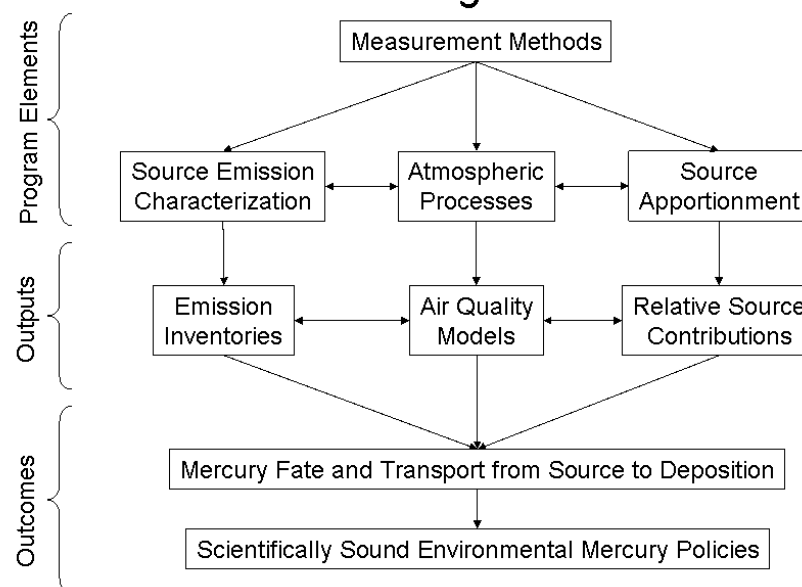
UNDERSTANDING MERCURY FATE AND TRANSPORT FROM SOURCES TO DEPOSITION

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APPROACH

- Develop/Evaluate Measurement Methods
 - Ambient Speciation Methods
 - Dry Deposition (Gas and Particle)
- Investigate
 - Source Characterization
 - Atmospheric Processes
 - Source Apportionment
- Deliver Research Results to Improve
 - Emission Inventories
 - Air Quality Models
 - Understanding of Source Contributions

NERL's Atmospheric Mercury Research Program



Research Locations



RECENT RESULTS THROUGH COLLABORATION

- **Florida TMDL Study**
 - Conducted measurements and analyses that documented the impact of local sources (medical and municipal waste incinerators) on Hg deposition to the Florida Everglades (Collaborators: State of Florida, University of Michigan, and NOAA)
- **Atmospheric Chemistry for Air Quality Models**
 - Building upon results from collaborative field studies, conducted laboratory chamber studies to develop atmospheric reaction rates that can be incorporated into future versions of Hg air quality models such as CMAQ. (Collaborators: State of Florida, University of Michigan, and NOAA)
- **Global Fate and Transport**
 - Revealed high altitude reactions that rapidly convert elemental mercury (Hg⁰) to reactive gaseous mercury (RGM) and RGM to Hg⁰ raising questions about the atmospheric half life of Hg⁰ (8 months to 1 year) and the resulting implications for global cycling of mercury. (Collaborators: State of Florida, University of Michigan, and NOAA)
 - Verification of polar mercury depletion events (Collaborator: Italian CNR)
- **Emission Inventories**
 - Provided speciated emissions measurements of Chlor-Alkali facilities which have been used to update and significantly improve mercury emission source inventories used to run air quality models. (Collaborator: EPA Region IV, Oak Ridge National Laboratory)
 - Provided empirical evidence (through tunnel study) that mobile sources emit mercury. (Collaborator: University of Michigan and University of Maryland)

FUTURE COLLABORATIVE PRODUCTS

- Relative contributions of local and regional coal combustion sources to mercury deposition. (Collaborator: University of Michigan)
- Methodology for measuring mercury dry deposition. (Collaborator: EPA Region IV)



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