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Potential controls on trends in background concentrations of Hg⁰ in the Northeastern

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An analysis of multi-year data sets suggested a decreasing trend of 3.8 ± 0.9 ppqv yr⁻¹ in background levels of gaseous elemental mercury (Hg⁰) at an elevated, rural site in New Hampshire, US. It is in close agreement with the declining trends reported from Mace Head (3.1 ± 1.1 ppqv yr⁻¹), Cape Point South Africa (3.8 ± 0.6 ppqv yr⁻¹), and mid-latitude Canadian sites (~ 2.6 - 3.9 ppqv yr⁻¹). In comparison, an abrupt increase in the fall of 2006 at a coastal, rural site resulted in no trends there. Further examination showed a decreasing trend in the anthropogenic component at both sites, which probably is the mechanism that drove the decline in the background concentrations observed at various locations. However, near the surface, abundant precipitation in senescence months followed by a lack of snow in the following winter may cause increased mercury evasion from the surface, which may ultimately increase the atmospheric concentration of Hg⁰. This is a working hypothesis for the abrupt increase in the background concentrations of Hg⁰ at the coastal site.

Biography

Huiting Mao completed her PhD in 1999 from the State University of New York at Albany. She is currently Associate Professor at the Department of Chemistry, State University of New York College of Environmental Science and Forestry. Her research spans a wide range of topics in air quality and climate, including regional to global mercury budgets. She has published over 60 papers in high impact journals.

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