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An overview on the use of trajectory models to investigate potential sources of atmospheric mercury

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Up to 99% of atmospheric mercury is elemental mercury whose atmospheric residence times are approximately 0.5-2 years. The global distribution by large-scale atmospheric circulations and re-remission of historical depositions resulted in elevated mercury levels in places far away from local sources. Over the past two decades, monitoring campaigns of atmospheric mercury have been conducted worldwide at different locations. Interpretation of mercury measurements relies on various tools. Among them, air mass trajectory technique has become a useful and widely used approach in investigating source-receptor relationships of atmospheric mercury. This review will focus on the application of trajectory models, such as HYbrid Single-Particle Lagrangian Integrated Trajectory (HYSPLIT) model by NOAA, USA. Selection of simulation parameters, including start height, start time, and length of simulation will be discussed in light of the mercury species under investigation, i.e., elemental, reactive, or particulate-bound mercury. The review will also include post simulation analysis, such as cluster, Potential Source Contribution Function (PSCF), emission inventory, and forward dispersion, as well as how those analyses aid the interpretation of ambient mercury measurements.

Biography

Iris Xiaohong Xu, PEng. is a Professor at the Department of Department of Civil and Environmental Engineering, University of Windsor, Ontario, Canada. She received her MASc and PhD degrees in Environmental Engineering at the University of Connecticut, USA. She then worked for two years as a Research Fellow at the University of Michigan. She joined the University of Windsor in 2002. Her areas of research include: air quality monitoring, air quality modeling, emission control, and environmental exposure assessment.

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