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Department of Marine Sciences
Presents a Seminar by

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Deposition and accumulation of mercury in terrestrial ecosystems – and why it matters

Atmospheric mercury (Hg), emitted from anthropogenic sources as well as natural sources, deposits via various wet and dry deposition processes to terrestrial ecosystems. From upland ecosystems, soil runoff is an important source of Hg to coastal ecosystems, even dominating as a source to entire ocean basins such as the Arctic Ocean. We now understand that atmospheric deposition of elemental Hg(0) dominates as a source in many terrestrial ecosystems, largely taken up by vegetation and transferred to soils when plants die off or shed leaves (also termed “litterfall”). Recent technical advancement of stable Hg isotope that allow to track sources in the environment now support that Hg(0) accounts for 57-94% of Hg residing in ecosystems and soils. While litterfall deposition studies have been extensively used to characterize this dry Hg deposition, there are substantial limitations of using litterfall as a proxy. We provide results from soil investigation and direct Hg(0) deposition measurements using micrometeorological methods to constrain patterns and dynamics of dry deposition of Hg(0) across terrestrial ecosystems, including the arctic tundra. We further show insights into preliminary studies from a New England forest and salt marsh to constrain dry deposition of Hg(0) and contributions of plants to deposition. Finally, mass balance considerations indicate that substantial amounts of Hg are residing in soils of a salt marsh ecosystem, which could serve as an important source of Hg to tidal waters.

Host: Robert Mason

Time & Date: 11:00 am, Friday, February 15, 2019

Place: Marine Sciences Building, Seminar Room 103

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