

## Quantifying the Environmental Exposure Pathway for Methylmercury

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The effectiveness of recent regulatory actions controlling anthropogenic mercury releases is still largely unknown. This presentation will provide an overview of recent progress in quantifying the environmental exposure pathway for mercury and anticipated responses to global change. We have developed a fully coupled biogeochemical modeling framework for atmospheric, terrestrial and oceanic mercury dynamics. The impacts of all-time historical anthropogenic emissions on concentration trajectories in different ocean basins will be discussed, including releases from intentional uses. Using recent data from CLIVAR cruises in the North Pacific, Indian and Southern Oceans, we have developed a model relating inorganic mercury concentrations to methylmercury levels in seawater, as well as variability due to ocean biogeochemistry. We have also developed a bioaccumulation model for methylmercury that is driven by both environmental properties and seawater methylmercury concentrations. Implications of past and future trends in fisheries harvests for human consumption on methylmercury exposures will be discussed. This analysis will provide a case-study example of how changes in global anthropogenic Hg emissions can be linked quantitatively to changes in fish concentrations and human exposure to evaluate the effectiveness of various regulatory control options.