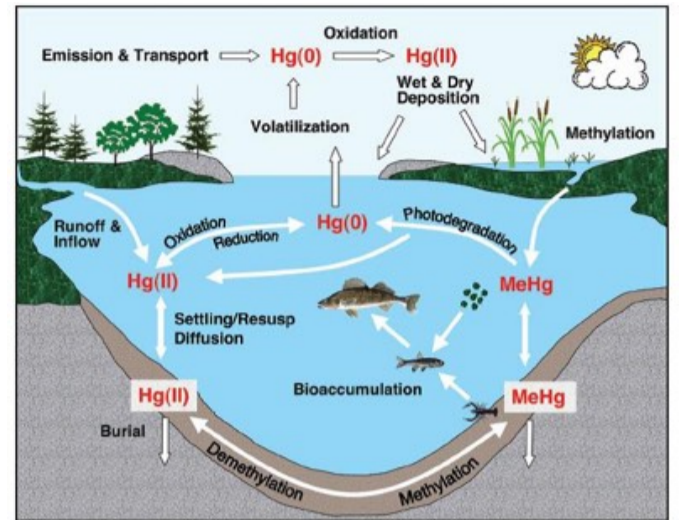


# How water physical-chemistry influences the bioavailability and biomagnification of mercury in estuarine systems, Melimoyu Nature Reserve, Northern Chilean Patagonia

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Physical-chemical features (temperature, salinity, organic matter) of water and sediment are capable of affecting the biogeochemical cycle of mercury, mainly because they influence the bacterial activity that methylates the inorganic mercury into its organic form, methylmercury, making it bioavailable for bioaccumulation in the aquatic food web. Also, these features can not be seen independently since they interact with each other resulting in a complex system of antagonistic and synergistic effects.



Biogeochemical cycle of mercury. Engstrom, 2007



This study focuses on an estuarine system in the Nature Reserve Melimoyu, located in northern Chilean Patagonia. This estuary is influenced by the Pacific Ocean and the mixture with freshwater from two rivers, the Colonos river of pluvial origin and the Marchant river fed by the glaciers of the Melimoyu Volcano.

In situ measurements (temperature, pH, conductivity) and water samples were taken for water physical-chemical characterization. To study biomagnification of mercury we took sediment, algae, aquatic invertebrates, and fish samples. For which different sampling methods were used.



Sampling methods include fishing with nets and electrical fishing, scuba diving, and searching for macroinvertebrates with a surber sampler.

Soft tissue was taken from all aquatic organisms. The samples are dried, ground, and weighed for later preparation for total mercury and methylmercury analysis in Nelson O’Driscoll’s mercury lab in the K.C. Irving Centre at Acadia University.



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