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Mercury distribution and reactivity in the Siberian Shelf: preliminary data from the Arctic Expedition ISSS-2020

Alyssa Azaroff[1], Örjan Gustafsson[1], Igor Semiletov[2], and Sofi Jonsson[1]
[1]Stockholm University, Department of Environmental Science, Stolckholm, Sweden
[2]The Pacific Oceanological Institute, Far Eastern Branch of Russian Academy of Sciences (POI FEB RAS), Vladivostok, Russia

Despite the remote location of the Arctic Ocean (AO), mercury (Hg) level in some Arctic species has increased due to the global anthropogenic Hg emissions. Methylmercury (MeHg), the form of Hg known to bioaccumulate in biota to levels of concern, is a neurotoxin that is mainly produced by microbial methylation of inorganic mercury (iHg) in sediments and natural waters. While huge efforts are made to better understand the Hg cycling of the AO, observational data is still missing for many areas. This is especially true for the largest continental shelf on earth, the Siberian continental shelf.

Here we present the first data on mercury speciation from the international Russian-Swedish Arctic expedition “International Siberian Shelf Study 2020” (ISSS-2020). During the expedition, onboard the research vessel Akademik Mstislav Keldysh, water and sediment were collected from the Barents Sea, Kara Sea, Laptev Sea, and the East Siberian Sea. In addition to samples collected for Hg speciation analysis, experimental incubations of water and sediment using isotopically enriched stable mercury were performed to estimate potential mercury transformations rates. Microbial samples were also collected to determine the microbial diversity associated with mercury transformation.