

Subproject: Project 2: Mercury transport and transformation: What is the role of sea ice, especially the CO₂ controlled pH environment, in the occurrence of mercury depletion events (MDEs)? What are the main processes controlling mercury transport across sea ice?

Actual field dates: January 1-31, 2013

Field site: Sea-ice Environmental Research Facility (SERF), University of Manitoba, Winnipeg, Canada

Number of man-days in the field: 150

Summary:

We discovered evidence for highly dynamic ikaite precipitation and We discovered that mercury in sea ice was associated primarily with particulate matter. We also observed correlation in temporal trends of mercury concentrations in sea ice and in seawater, suggesting that “seeding” of Hg from sea ice into underlying surface waters is possible. Attempts of recreating atmospheric mercury depletion events were not conclusive: we did observe small scales of boundary layer ozone depletion, but we could not explicitly attribute it to the sea ice environment. Experimental set-up needs to be refined in future studies.

Photos:

Fig. 1: Instrumental set-up at SERF during Experiment 2.2

Credit: Feiyue Wang

Fig. 2: Sampling of thin ice for mercury at SERF

Credit: Feiyue Wang

Participants:

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Acknowledgements:

NSERC, ArcticNet and the Canada Excellence Research Chair.

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Figure 1



Figure 2