Tuesday, October 9
Poster Session 2
10:30–12:30

Poster 138

OPTICAL ASSESSMENT OF RIVERINE INPUTS INTO ARCTIC COASTAL MARGINS

Arctic coastal margins receive large inputs of dissolved and particulate matter from the river systems that drain adjacent continental landmasses. These inputs are expected to increase dramatically over the coming decades due to climate-driven melting of Arctic continental permafrost. To better understand the sources and fates of riverine carbon in Arctic coastal margins, a three-year study is underway near Prudhoe Bay, Alaska that uses optical approaches to investigate seasonality and variability in Arctic riverine inputs by comparing two nearby river systems: the Kuparuk and the Sagavanirktok. These two rivers drain different types of terrestrial biomes and their optical signatures are expected to provide insight into possible source-river differences in organic and inorganic matter transport into these coastal, seasonally ice-covered waters. Optical sensor suites have been deployed on in situ landers for annual-scale assessments, along with autonomous packages embedded in the sea ice for shorter-term measurements of the spring freshet as it travels into the coastal ocean under landfast sea ice. Direct sampling of the rivers during the freshet event itself, and during open water seasons when possible, provides critical data regarding the optical and chemical composition of incoming and resident dissolved and particulate matter. Such a multifaceted approach, combining autonomous optical measurements with periodic direct sampling, is essential for reducing uncertainties about key aspects of the organic carbon cycle in these logistically challenging to sample Arctic coastal waters.

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