Thursday, October 11
Poster Session 4
10:30–12:00

Poster 168

TRACING TREND IN FLUX OF DISSOLVED ORGANIC CARBON OBSERVED IN MOUTHS OF MAJOR ARCTIC RIVERS: A SATELLITE VIEW

Global warming is affecting a broad spectrum of terrestrial and marine environments in high northern latitudes. River discharge has increased in both North American and Siberian sides of the Arctic region particularly since late 20th century. Significant amount of organic carbon originating from permafrost thaw is anticipated to be delivered by river discharge into the Arctic Ocean. We estimated, for the first time, the flux of dissolved organic carbon (DOC) in the Mackenzie River mouth from 2003 to 2013 using satellite ocean color data with known uncertainty. Our results show that there was no trend in DOC flux for the period considered. This is mainly attributed to no trend in river discharge. However, the depth of active layer of soil that annually thaws and freezes increased significantly. Doxaran et al. (2015) showed that the flux of particulate organic carbon (POC) has a positive trend in the same period. Given the age of POC observed in our study areas is old (thousands of years from the present; Guo et al., 2007), these findings suggest that organic carbon originating from permafrost thaw is already being observed in the Mackenzie River mouth. Possibilities regarding the difference of trends in DOC and POC fluxes will be further discussed.

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