

Cryosphere-atmosphere biogeochemical cycles: Insights from Arctic Ocean drifting campaign

*Daiki Nomura¹

1. Field Science Center for Northern Biosphere, Hokkaido University

Sea ice has until now rarely been considered in estimates of global biogeochemical cycles, especially gas exchanges, because of the assumption that, in ice-covered oceans, sea-ice acts as a barrier for atmosphere-ocean exchange. In order to understand the effects of sea-ice growth and decay processes on the biogeochemical cycles in the polar oceans, field observations in the Arctic, Antarctic, and Sea of Okhotsk as well as laboratory experiments were carried out. Observations over recent decades suggest that sea ice plays a significant role in global biogeochemical cycles, providing an active biogeochemical interface at the cryosphere-atmosphere boundary. In this presentation, I will show preliminary results obtained during the international drift campaign MOSAiC in the central Arctic for the gas dynamics and exchange process between sea ice/water surface and atmosphere.

Keywords: biogeochemical cycles, gas exchange process, sea ice