

Biogeochemical study in the sea ice area of the Southern Ocean

NOMURA, Daiki^{1*} ; HASHIDA, Gen² ; TAMURA, Takeshi² ; OHSHIMA, Kay. I.¹

¹Institute of Low Temperature Science, Hokkaido University, ²National Institute of Polar Research

Sea ice has rarely been considered in estimates of global biogeochemical cycles, especially gas exchanges, because of the assumption that, in ice-covered seas, sea-ice acts as a barrier for atmosphere-ocean exchange. However, recent work has shown that sea ice and its snow cover play an active role in the exchange of gases between the ocean and atmosphere. Our results provide a useful reference for future studies as the ongoing drastic changes in polar climate and sea ice extent are likely to alter the biogeochemical cycles in polar ocean-sea ice-atmosphere system. In this presentation, we will show the preliminary results obtained at the international sea ice research by Aurora Australis off East Antarctica (SIPEX-II) in 2012 and a mid-winter sea ice cruise by Polarstern in the Weddell Sea, Antarctica (AWECS) in 2013. In addition, we will also show the ongoing research for the effect of Antarctic bottom water formation on the biogeochemical cycles in the Southern Ocean.

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