

# 南極定着氷表面から大気への硫化ジメチルの放出について

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## DMS emission from Antarctic fast ice surface to the atmosphere

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In general, dimethylsulfide (DMS) emissions from sea ice to the atmosphere are disregarded when estimating the global sulfur budget because sea ice is assumed to suppress gas exchange through the air–water interface. Recently, however, gas exchange of CO<sub>2</sub> through sea ice has been demonstrated. Thus, it is important to consider its contributions to chemical component budgets in the polar oceans. Here, we present the first direct measurements obtained using a chamber technique of DMS emissions from the surface of sea ice to the atmosphere during seasonal warming conditions over Antarctic sea ice. DMS fluxes were estimated to be from 0.1 to 5.3  $\mu\text{mol m}^{-2} \text{day}^{-1}$ . DMS concentrations in slush water ranged from 1.2 to 121.8 nM. DMS fluxes increased with increasing DMS concentrations in slush water. Our results indicate that the sea-ice slush layer is both a DMS source and storage region for the atmosphere, although snow accumulation and the formation of superimposed ice (ice formed by the freezing of snow meltwater) over the sea ice partially blocks the diffusion of DMS. DMS emitted from the sea-ice surface may account for an important fraction of the global sulfur budget.