

Estimation of sulfur source contribution to sulfate aerosol in surface snow in East Antarctica using sulfur isotope analysis

*Ryu Uemura¹, Kosuke Masaka¹, Kotaro FUKUI², Yoshinori Iizuka³, Motohiro Hirabayashi⁴, Hideaki Motoyama⁴

1.University of the Ryukyus, 2.Tateyama Caldera Sabo Museum, 3.Institute of Low Temperature Science, Hokkaido University, 4.National Institute of Polar Research

Sulfur stable isotope ratio ($\delta^{34}\text{S}$) of sulfate aerosol provides important information to assess contributions from various sources. Despite several observations in Antarctica, spatial distribution of sulfur isotopes in Antarctica, however, still remain unclear. Here, we present the first sulfur isotope data of surface snow along latitudinal transect in east Dronning Maud land, East Antarctica. The $\delta^{34}\text{S}$ values showed homogeneous values without significant relationship between $\delta^{34}\text{S}$ and latitudes, suggesting that isotopic fractionation during transportation is insignificant. Based on the $\delta^{34}\text{S}$ value and ion concentrations, the contribution of marine biogenic sulfur to sulfate aerosol is dominant.

Keywords: sulfate aerosol, Antarctica, sulfur isotope