

Source identification of mineral dust in surface snow near Dome Fuji, Antarctica

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Snow ice sample in Antarctica contains particulate matter. Particulates originate from continent, volcano, sea, space, and organism. The particulate matter of continental origin contains many elements from minerals and rocks. The isotopic ratio of an element reflects the origin and the history of the particle. Since the isotopic composition of Strontium (Sr) or Neodymium (Nd) depends on the formation ages of the earth crust, the information about the source of the particulate matter of continental origin can be estimated by analyzing the isotopic ratio of Sr or Nd. In this research, isotopic ratio of Sr and Nd in surface snow collected at the sampling site DF80 near Dome Fuji in Antarctica were analyzed. The surface snow sample was condensed by heat, then microwave decomposition was carried out with the mixture of nitric acid and hydrofluoric acid. The quantitative analyses of Sr and Nd were performed using the quadrupole type inductively-coupled plasma mass spectrometer (ICP-MS). The concentrations of Sr and Nd contained in surface snow were ca. 40 ppt and ca. 1 ppt, respectively. In order to avoid the interference by isobars, Sr and Rb were isolated by solid-phase extraction. Sr and Nd isotopic ratio were measured using the multi-collector type ICP-MS. For this sample, the preliminary values of $^{87}\text{Sr}/^{86}\text{Sr} = 0.7096$ and epsilon Nd = -10 were acquired. Further results and discussion about the origin of particulate matter will be presented.