

Simultaneous Multi-elemental Analysis by Continuous Flow Analysis System Equipped with ICP-MS

Motohiro Hirabayashi¹, Jun Ogata¹ and Kumiko Goto-Azuma^{1,2}

¹*National Institute of Polar Research*

²*SOKENDAI (The Graduate University for Advanced Studies)*

Snow and ice 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 concentration of inorganic species reflects the origin and the chemical cycle of those species. In this research, concentrations of dissolved and insoluble inorganic species in an Antarctic ice core were analyzed.

The continuous flow analysis system consists of melting part and analysis part. Ice core samples were melted with a melter and decontamination were carried out simultaneously. Decontaminated sample flows to debubbler. Gas fraction and liquid fraction are separated in a debubbler and it flows to each analyser. The analyzer configuration changes with ice core sample. In normal cases, it consists of water isotope analyzer, inductively-coupled-plasma mass spectrometer, particle analyser, methane concentration analyser and fraction collectors. The quantitative analyses of inorganic species were measured using ICP quadrupole type mass spectrometer (ICP-MS). About inorganic species, sodium (Na), magnesium (Mg), silicon (Si), potassium (K), calcium (Ca), aluminium (Al), and iron (Fe) concentration were measured by ICP-MS. Further results and discussion about dissolved and insoluble inorganic species in ice core will be presented.