F119-019 **Room: 101** **Time: May 20 15:30-15:45**

The sources and reactions of aerosols inferred from the chemical composition of snow

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In mountainous regions along the Sea of Japan, heavy snowfalls occur during winter. Chemical compositions of wet deposition or dry deposition are preserved in snow in the regions, because snow in high mountains hardly melts during winter. Many observations of atmospheric chemistry were performed in Tateyama located along the main mountain range of the north half of Honshu island, because sea salts and air pollution are transported to the Sea of Japan side in Japan by the strong winter monsoon. In this study, we collected snow section samples at Murododaira (2450m a.s.l.), near the summit of Mt. Tateyama(3016m a.s.l.).

Sampling was performed on April, 2007. The depth of the snow layer was 5m70cm in this year. Snow samples collected along the vertical profile at every 10cm using a stainless-steel shovel from the section of a snow pit. Snow samples were kept in zippered plastic bags and were brought back to the laboratory being frozen in cooled containers. At the laboratory samples were thawed at room temperature, followed by measurement of pH and filtration through a membrane filter. The concentrations of the major water-soluble ionic species were determined with ion chromatography.

Several peaks of Na+ and Cl- originated from sea salt were observed in the vertical profile of the snow layer. The profiles SO42- and NO3- are similar to that of NH4+, indicating that parts of SO42- and NO3- had been transported as ammonium salts. The profiles are not similar to those of Na+ and Cl-. Several peaks of Ca2+ were also observed at the depth shallower than above 100cm. The peaks corresponded to brown dirt inserts in the snow profiles. Kosa particles contain calcium carbonate particles and the brown inserts, Ca2+ peaks were to be due to Kosa in early spring.

The molar concentration of Na+ exceeds that of Cl- for the three biggest peaks, indicating Chlorine loss. The concentrations of SO42- and NO3- were too low to explain the chlorine loss of the three biggest peaks. It is suggested that Cl produced by photochemical reactions had been removed from the aerosols into the atmosphere.

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