[EJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-CG Complex & General

[A-CG38]Science in the Arctic Region

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The Arctic and circumpolar region is the key area for the study of global change because the anthropogenic impact is projected to be the largest in this area due to the complicated feedback processes of the nature. A number of international and interdisciplinary research projects have been conducted for the studies on the land-atmosphere-ocean system. In order to understand the feedback processes occurring in the Arctic and to project the global warming in the future, we need to establish the intense observational network and to exchange the knowledge and information by combining the different scientific communities under the common interest of the Arctic. The objectives of this session are 1) to exchange our knowledge on the observational facts and integrated modelling and 2) to deepen our understanding on wide range of natural sciences related to the Arctic and the circumpolar region. Studies on humanities, social sciences, and interdisciplinary fields are also welcomed.

[ACG38-P24]Recent annual snow depositions and seasonal variations of major ion and dust concentrations clarified by pit observations at the EGRIP, Greenland

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East Greenland Ice Core Project (EGRIP), which is an international ice coring project led by University of Copenhagen in Denmark, commenced in 2015 to clarify the variations of climate and ice sheet in Greenland. We are participating in the project under the Arctic Challenge for Sustainability project (ArCS), and cooperative research is underway with various countries. In 2016, we dug two pits with depths of 4.02 and 3.18 m at the EGRIP camp (75°37′N, 35°59′W) to estimate recent annual snow depositions and examine seasonal variations of major ion species and dust particles in the snow samples. Snow sampling and snow density measurement were carried out at 0.03 m interval in those pits. We analyzed those snow samples for Na^+, K^+, NH_4^+, Mg^{2+}, Ca^{2+}, Cl^-, NO_3^-, SO_4^{2-}, $CH_3SO_3^-$, dust (particle size of 0.52–12 μm) and stable isotopes of water (δ^{18}O and δD). Clear seasonal variations in the δ^{18}O and δD values were observed in the depth profiles, which indicated that the 4.02 and 3.18 m deep pits included snow depositions corresponding to ten years from 2006 to 2016 and seven years covering 2009–2016, respectively. The annual snow depositions ranged from 58 to 202 mm water equivalent (w.e.)/yr, showing the mean value of 138 mm w.e./yr for the 4.02 m deep pit. The mean value in 2009–2016 was 146 mm w.e./yr. On the other hand, the deposition for the 3.18 m deep pit varied from 126 to 188 mm w.e./yr, averaging 147mm w.e./yr. The mean values of the depositions examined in this study were higher than the average value of 0.10 m w.e./yr for the period 1607–2011 previously estimated by a 67 m firn core study in the same region. Seasonal variations of concentrations in the major ion species and dust were observed, which were similar to those previously reported for Greenland. The concentrations of Na^+, K^+, Mg_2^+, Ca_2^+, Cl^-, SO_4^{2-} and dust recorded an annual peak in the layers between winter and the next summer. Concentrations of NH_4^+ and NO_3^- showed one peak in summer, while occasionally appearing another peak

in winter to spring layers. In addition, concentrations of $CH_3SO_3^-$ appeared one peak in late summer to autumn.