[A-CG36_30PM1] Science in the Arctic Region

Convener: *Sei-Ichi Saitoh (Faculty of Fisheries Sciences, Hokkaido University), Jun Inoue (National Institute of Polar Resarch), Naomi Harada (Japan Agency for Marine-Earth Science and Technology), Rikie Suzuki (Research Institute for Global Change, Japan Agency for Marine-Earth Science and Technology), Chair: Sei-Ichi Saitoh (Faculty of Fisheries Sciences, Hokkaido University)

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The Arctic region and surrounding 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 are in progress for the studies on the atmosphere-ocean-land system under the extension program of the International Polar Year (IPY) during 2007 to 2008. 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. Contributions from Green Network of Excellence (GRENE) Arctic Climate Change Research Project are also welcome.

2:15 PM - 2:30 PM

[ACG36-P08_PG] Accurate snowfall measurement at Yakutsk, Russia

3-min talk in an oral session

*Naohiko HIRASAWA, Konosuke SUGIURA, Masahiro HOSAKA, Trofim MAXIMOV (1.National Institute of Polar Research, 2.Center for Far Eastern Studies, University of Toyama, 3.Meteorological Research Institute, 4.Institute for Biological Problems of Chryolithozone)

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In association with global warming, the water cycle in the atmosphere also changes for every climatic region on the globe. In polar regions, change in snowfall turns in change in distribution of snow surface and snow cover period, which will drive the ice-albedo feedback process. In order to know the present condition of the water cycle of polar regions and to study the trajectory of the polar climate systems in future, we have to observe not only air property such as temperature but also hydrological property such as snowfall amount, snow depth and so. In spite of the development in accurate measurements for air temperature, pressure, wind speed and direction, the accuracy of snowfall measurement is not sufficiently high. While heated raingauge is currently generally deployed all over the world, the capture rate of snow particles falls together with wind speed, e.g., around 0.5 of the rate at 5 m/s. It means we measure only a half of the true value of snowfall amount at 5 m/s. This effect has been known for long time as wind loss. Evaporation loss also is more important in the polar regions than the other regions because many snowfall events have the smaller amounts in the total and lower snowfall rates according to the lower-temperature condition in the polar regions. Now, the accurate measurement of snowfall amount is one of the top issues in polar climate science. The purpose of this study is to measure the accurate snowfall amount in the Arctic region. Moreover, based upon the results, we intend to correct other data which are measured in other region and in past years and also contribute to improve climate model by providing accurate snowfall data. This study deploys a disdrometer, which measures diameter and fall velocity for each particle and out put the statistics minutely. It is not affected by wind loss and evaporation loss. This presentation shows a snowfall event observed at Yakutsk in early winter of 2013/14.