Japan Geoscience Union Meeting 2014
(28 April - 02 May 2014 at Pacifico YOKOHAMA, Kanagawa, Japan)

ACG36-P08 Room:Poster Time:April 30 18:15-19:30

Accurate snowfall measurement at Yakutsk, Russia

HIRASAWA, Naohiko[1*] ; SUGIURA, Konosuke[2] ; HOSAKA, Masahiro[3] ; MAXIMOV, Trofim[4]

[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

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 provideing 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.

Keywords: Yakutsk, Snowfall, Disdrometer