

Japanese field activities and ice-core analyses during EGRIP 2016-2018

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The Greenland Ice Sheet has recently been experiencing drastic changes, such as extended summer melting and increasing mass losses. There is an urgent need to understand the mechanisms of such changes because they are directly linked to global sea level rise as well as changes in ocean circulation and climate. To understand the Greenland Ice Sheet dynamics, the East Greenland Ice Core Project (EGRIP) was launched. Under EGRIP, a deep ice core to the bed will be drilled at the onset of the North-East Greenland Ice Stream (NEGIS), where horizontal flow velocity is expected to be several tens of meters per year. As NEGIS is the largest ice stream in Greenland, the EGRIP ice core will certainly advance our knowledge on the dynamics and past changes of the Greenland Ice Sheet. The EGRIP core will also give us an ideal opportunity to reconstruct the climate and environment changes during the early Holocene, which was known to be warmer than today and should be an excellent analogue to the future Greenland affected by global warming. As much of the early Holocene ice in Greenland is in the brittle zone, poor quality of the early Holocene ice drilled under the previous ice coring projects have prevented high-resolution analyses of chemistry and gases. The results from the EGRIP core will fill the gap of our knowledge on the climate and environment in early Holocene. At EGRIP, special care has been taken during drilling and ice core processing to obtain high quality ice samples even from the brittle zone. Japan participates in the EGRIP under the ArCS (Arctic Challenge for Sustainability) project, a recently funded national project. In 2016, two scientists participated in the fieldwork at EGRIP. In 2017, five scientists, a student, a drill engineer and a journalist participated in the EGRIP field activities. In February –March 2018, part of the EGRIP deep core will be analyzed with Continuous Flow Analyses (CFA) method at University of Bern by an international team. Japan will be responsible for the black carbon analysis of the EGRIP core. At the JpGU meeting, we will report the Japanese field activities at EGRIP and CFA at University of Bern during 2016-2018. We will also present plans for the Japanese field activities and ice core analyses.

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