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PRELIMINARY RESULTS OF AN ICE CORE OBTAINED FROM NORTHWESTERN GREENLAND ICE SHEET (SIGMA-D)

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We conducted ice core drilling and glaciological observations in the northwestern Greenland Ice Sheet (GrIS) in 2014 to reconstruct temporal variations of snow impurities and climate changes in GrIS.

We conducted 222m ice coring with an electro-mechanical drill developed by Geotech Co. Ltd. We also carried out the temperature measurement of borehole, snow pit observations for snow collection and near infrared photometric observation, surface flow velocity and surface topography measurements around the drilling site by GPS system. We established an automatic weather station near drilling site. The measurement parameters were air temperature, relative humidity, air pressure, wind speed and direction, snow height change, down and upward solar radiation, down and upward longwave radiation, snow temperature. The ten-minute interval data are stored on a data logger, and are transported to us via Argos satellite. These data are prepared to open on the Arctic Data archive System (ADS) in National Institute of Polar Research.

Liquid samples were transported to Institute of Low Temperature Science, Hokkaido University after research expedition, and were kept frozen until chemical analyses were done. Chemical species were determined with an ion chromatography (Thermoscientific, ICS-2100), and stable isotope ratios of water were measured with a cavity ring-down spectroscopy (Picarro, L-2130i). We will show preliminary results of an ice core obtained from Northwestern Greenland Ice Sheet.