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Reconstruction of the climate and environment during the past 150kyrs under the NEEM project

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To improve the projection of future Arctic climate and environment changes associated with global warming, including retreat of Greenland ice sheet, advancement in ice sheet and climate modeling is required. For this goal, long-term records of the past Arctic warmings and their impacts, and the understanding of the mechanisms are necessary. An international ice coring project NEEM (North Greenland Eemian Ice Drilling) was initiated to obtain the oldest ice core in the northern hemisphere, covering the last interglacial period (Eemian), which is thought to be 3-5^{o}C warmer than today. The drilling reached the bedrock in July 2010. Using the NEEM core, we aim at reconstructing the climatic and environmental changes during the Eemian, early Holocene, and the abrupt climate changes in the last glacial period (Dansgaard-Oeschger events). Based on an accurate chronology, relative timing of changes in Greenland air temperature, greenhouse gases, sea level, global ocean temperature, Antarctic temperature and orbital parameters will be investigated. Results of this project will shed light on the mechanisms of climate and ice sheet changes, and also provide important data for improving climate and ice sheet models. Part of the NEEM ice core and snow pit samples have been transported to Japan and analyzed. Results of the preliminary analyses will be presented.

Keywords: Greenland, ice core, NEEM, Eemian