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APPROACHES FOR UNDERSTANDING ARCTIC CHANGE BY CRYOSPHERIC STUDY IN THE GRENE-ARCTIC PROJECT

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GRENE-Arctic project has implementing groups of “The role of Arctic cryosphere in the global change” This research group has been trying to contribute to the strategic targets of 1) understanding the mechanism of warming amplification in the Arctic, 2) understanding the Arctic system for global climate and future change. The cryospheric research group has three working area of snow cover, glacier and ice sheet.

Winter snow cover acts as heat insulation which suppresses heat loss of the ground, while high albedo suppresses temperature increases due to the spring-time insolation. To reduce uncertainties in predicting the snow melting and disappearing in the spring, field and satellite research and snow modelling were carried out. Another major concern is the effect on snow and ice albedo change due to microscopic carbon particles and other impurities on the snow. JAXA’s satellite data are utilized with the support of Arctic data archiving System (ADS).

Glaciers and ice sheets are experiencing rapid depletion. At the Greenland ice sheet, melting water seeps underneath the ice sheet. This seepage increases glacier flow and the collapse of glacier tips is estimated to explain 50% of the ice-sheet reduction in Greenland. Research has been conducted to investigate the effects of melted ice from the glacier flow

Arctic glaciers are shrinking throughout the Arctic; the activities underway are local on-field measurements, database construction, and future climate forecasts.