

## Ice thickness change of Bowdoin Gletscher, northwestern Greenland

TSUTAKI, Shun<sup>1\*</sup> ; SUGIYAMA, Shin<sup>2</sup> ; SAKAKIBARA, Daiki<sup>2</sup> ; SAWAGAKI, Takanobu<sup>3</sup> ; MARUYAMA, Mihiro<sup>2</sup>

<sup>1</sup>Arctic Environmental Research Center, National Institute of Polar Research, <sup>2</sup>Institute of Low Temperature Science, Hokkaido University, <sup>3</sup>Faculty of Environmental Earth Science, Hokkaido University

Ice discharge from calving glaciers in the Greenland ice sheet (GrIS) has recently increased through the acceleration of glaciers, and this increase plays an important role in the ice volume change of GrIS and sea level rise. Previous studies have used remote-sensing (RS) data to assess surface lowering of calving glaciers in GrIS. However, because of the remoteness of these glaciers, relatively few field data are available on the surface elevation change. Consequently, RS data have been used without calibration with field data. The accuracy of such studies relies on digital elevation models (DEMs) derived from satellite data.

In this study, surface elevation was measured along longitudinal and three transverse profiles in Bowdoin Gletscher (77°41'18"N, 68°29'47"W) in July 2013. DEMs of Bowdoin Gletscher in August 20, 2007 and September 4, 2010 were generated by Advanced Land Observing Satellite (ALOS) Panchromatic remote-sensing Instrument for Stereo Mapping (PRISM) images with a 50 m grid mesh, and calibrated using field data. Mean surface elevation change along the field survey profiles were  $-16.3 \pm 4.0$  m ( $5.3 \text{ m yr}^{-1}$ ) in 2007-2010 and  $-10.8 \pm 4.0$  m ( $-3.8 \text{ m yr}^{-1}$ ) in 2007-2013. Surface elevation change along the lower most transverse profile (800 m from the calving front) was more negative than those along the other profiles in the upper reaches. Surface lowering rate at all profiles has decreased from 2007-2010 to 2010-2013.

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