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Estimation of glacier motions at Svalbard, NovayaZemlya with ALOS/PALSAR

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While the Greenland Ice Sheet's mass loss is equivalent to 0.6mm/yr sea level rise, a half of them is attributed to the changes in glacier dynamics (Broeke et al., 2009). Namely, surface velocities of many glaciers in Greenland have increased in the recent decade (Moon et al., 2012). We thus wonder if glacier velocities outside Greenland have also increased or not.

Svalbard and NovayaZemlya are arctic islands located at 78 degrees north and 74 degrees north, respectively, and have many glaciers. Stozzi et al. (2008) estimated glacier motions in these islands with SAR in 1990s. However, there are not any studies with SAR in recent decade.

We examined Duvebreen glacier in Svalbard and Vize Glacier in NovayaZemlya. In this study, we used PALSAR derived by the ALOS satellite launched from Japan. The PALSAR data were acquired 10 times at Duvebreen glacier from July 2007 to October 2010, 13 times at Vize Glacier from February 2007 to December 2010. We compared the result with 1990s velocity in previous study.

Accordingly, two glaciers in Svalbard and NovayaZemlya speeded up from 1990s. This result suggests that velocity of other arctic glaciers increase as Greenland's glaciers.

Keywords: svalbard, novaya zemlya, glacier, alos, duvebreen, vize glacier