Japan Geoscience Union Meeting 2012
(May 20-25 2012 at Makuhari, Chiba, Japan)

ACG37-P08 Room:Convention Hall Time:May 22 17:15-18:30

The GreenLand Ice Sheet monitoring Network (GLISN)

KANAO, Masaki[1*], TSUBOI, Seiji[2], TONO, Yoko[2], TOYOKUNI, Genti[3], HIMENO, Tetsuto[1]

[1]National Institute of Polar Research, [2]JAMSTEC, [3]Graduate School of Science, Tohoku University

The Greenland Ice Sheet and its response to climate change have potentially a great impact upon mankind, both through long-term sea level rise and through modulation of fresh water input to the oceans. Internationally monitoring the dynamic response of the Greenland Ice Sheet to climate change is a fundamental component of long-term observational efforts for monitoring climate change. Glacial earthquakes have been observed along the edges of Greenland with strong seasonality and increasing frequency since 2002 (Ekstrom et al, 2003, 2006) by continuously monitoring data from the Global Seismographic Network (GSN). These glacial earthquakes in the magnitude range 4.6-5.1 may be modeled as a large glacial ice mass sliding downhill several meters on its basal surface over duration of 30 to 60 seconds. The detection, enumeration, and characterization of smaller glacial earthquakes are limited by the propagation distance to globally distributed seismic stations, i.e., the Global Seismographic Network (GSN) with the International Federation of Digital Seismograph Networks (FDSN). Glacial earthquakes have been observed at seismic stations within Greenland (Larsen et al, 2006), but the current coverage is very sparse. In order to define the fine structure and detailed mechanisms of glacial earthquakes within the Greenland Ice Sheet, a broadband, real-time seismic network needs to be installed throughout Greenland's Ice Sheet and perimeter. The International Polar Year 2007-2008 was a good chance to initiate this program with international collaboration. All of the partners are committed to free, unrestricted, open access to all data from The GreenLand Ice Sheet monitoring Network (GLISN) in real-time. In this presentation, seismicity around the Greenland region, including glacial related signals are presented with discussion associated with recent global warming.

Keywords: Greenland, global warming, glacial earthquakes, broadband seismometer, monitoring, global network