



Glacial earthquakes in Greenland

T.B. Larsen (1), M.L. Andersen(1), M. Nettles(2), P. Elósegui(3), A.P. Ahlstrøm(1), J.L. Davis(4), J. de Juan(3), G. Ekström(2), R. Forsberg(5), G.S. Hamilton(6), S.A. Khan(5), L.A. Stearns(6), L. Stenseng(5)

(1) Geological Survey of Denmark and Greenland, Copenhagen (GEUS), Denmark (tbl@geus.dk), (2)Lamont-Doherty Earth Observatory of Columbia University, USA, (3) Institute for Space Science, CSIC/IEEC, Spain, (4) Harvard-Smithsonian Center for Astrophysics, USA, (5) Danish National Space Center, Denmark, (6) Climate Change Institute, University of Maine, USA

Large glacial earthquakes occur primarily in Greenland in connection with major outlet glaciers. The events can be detected teleseismically in the surface wave band. However, seismograms recorded in Greenland reveal a much more complicated signal from the glacial earthquakes than observed in the teleseismic data. Thus the regional data have the potential to provide a better understanding of this peculiar phenomenon.

Since 2000 a total of 30 broadband (BB) seismographs have been deployed in Greenland for shorter or longer periods of time. While the majority of the seismographs were installed for structural studies, the data are equally useful for analyzing glacial earthquakes. One of the most productive glaciers in Greenland with respect to glacial earthquakes is Helheim glacier in East Greenland. A BB seismograph has operated continuously in the nearby town of Tasiilaq since January 2000 and another BB seismograph was installed in the nearby settlement of Isortoq in July 2007. The first data have been retrieved and will be presented.

This study of glacial earthquakes is part of a large multidisciplinary effort involving seismology, geodesy, glaciology and climatology. Major field work has been carried out on Helheim glacier during the summers of 2006 and 2007. In this presentation we will give an overview of the project and present seismological results based on recordings from Greenland.