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# Temporal and spatial distribution of glacial earthquakes in Greenland during the IPY 2007-2009

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Glacial earthquakes are seismic events associated with rapid changes in the dynamics of ice sheets and glaciers. Monitoring of such events from Greenland at gerional distances was one of the major targets of the POLENET/LAPNET passive seismic experiment in northern Fennoscandia (northern parts of Finland, Sweden, Norway and Russian Karelia) during the IPY 2007-2009. The POLENET/LAPNET array, with the average spacing between stations of 70 km, recorded high-frequency continuous data of 37 temporary stations, which were in operation during the time frame from 01.05.2008 to 31.09.2009, and of 21 stations of selected permanent networks in the Fennoscandia. Glacial events from Greenland were identified using manual analysis of the continuous POLENET/LAPNET data. Recordings of glacial earthquakes by the array contain the long-period energy only. In many cases the events were recorded in groups within the time interval of up to 1 hour. For some of the events it was possible to recognize not only the long-period surface wave, but also the first arrival of a long-period P-wave. The events were located using standard array techniques. Our study proves that glacial earthquakes show a strong seasonality, with most of events occurring during summer months. We found out that during Summer, 2008, significant number of events originated from the northern part of Greenland, where recent investigation using GRACE data (Chen et al., 2011) showed rapid increase of ice loss rate. This