



Earthquake swarms in Greenland

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Earthquake swarms occur primarily near active volcanoes and in areas with frequent tectonic activity. However, intraplate earthquake swarms are not an unknown phenomenon. They are located near zones of weakness, e.g. in regions with geological contrasts, where dynamic processes are active. An earthquake swarm is defined as a period of increased seismicity, in the form of a cluster of earthquakes of similar magnitude, occurring in the same general area, during a limited time period. There is no obvious main shock among the earthquakes in a swarm. Earthquake swarms occur in Greenland, which is a tectonically stable, intraplate environment. The first earthquake swarms in Greenland were detected more than 30 years ago in Northern and North-Eastern Greenland. However, detection of these low-magnitude events is challenging due to the enormous distances and the relatively sparse network of seismographs. The seismograph coverage of Greenland has vastly improved since the international GLISN-project was initiated in 2008. Greenland is currently covered by an open network of 19 BB seismographs, most of them transmitting data in real-time. Additionally, earthquake activity in Greenland is monitored by seismographs in Canada, Iceland, on Jan Mayen, and on Svalbard. The time-series of data from the GLISN network is still short, with the latest station been added in NW Greenland in 2013. However, the network has already proven useful in detecting several earthquake swarms. In this study we will focus on two swarms: one occurring near/on the East Greenland coast in 2008, and another swarm occurring in the Disko-area near the west coast of Greenland in 2010. Both swarms consist of earthquakes with local magnitudes between 1.9 and 3.2. The areas, where the swarms are located, are regularly active with small earthquakes. The earthquake swarms are analyzed in the context of the general seismicity and the possible relationship to the local geological conditions.