



Enhanced Earthquake Monitoring of the European Arctic

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We present preliminary results from a cooperative initiative between NORSAR and seismological institutions in NW Russia (Arkhangelsk and Apatity), which each operate seismic networks. To indicate the potential of combining resources to improve the seismic coverage of the European Arctic, we have carried out a comparison based on the first six months of 2013 between the Reviewed Event Bulletin of the CTBT International Data Centre, the NORSAR reviewed regional seismic bulletin (using data from Fennoscandia, Spitsbergen and the Kola Peninsula) and the bulletin produced by the Arkhangelsk seismological center (using data from their own network in combination with the data used to produce the NORSAR bulletin).

We show that the addition of the Arkhangelsk network leads to a considerable increase in the number of located seismic events, both at local distances from the individual stations and in the High Arctic. The latter increase is particularly pronounced along the Gakkel Ridge to the north of the Svalbard and Franz-Josef Land archipelagos. A closer investigation shows that the additional events in the High Arctic are included due to the contribution from the station ZFI on Franz-Josef Land in combination with the Spitsbergen stations SPITS and KBS. We also note that the vast majority of the events along the Gakkel Ridge have been located slightly to the south of the ridge. We interpret this as an effect of the lack of recording stations closer to and north of the Gakkel Ridge, and the use of a one-dimensional velocity model which is not fully representative for travel-times along observed propagation paths. We conclude that while the characteristics of earthquake activity in the European Arctic is currently poorly known, the knowledge can be expected to be significantly improved by establishing the appropriate cooperative seismic recording infrastructures.