

**JS5 Glacier, Ice Sheet and Snow Seismology (IASPEI, IACS)**Joint Inter-Association  
Symposium

28-Jun-2015, 10:30 - 12:00

**Abstract content:****"Local glacial seismicity study using automatic processing of single three component station data"**

Seismic events generated by glaciers (icequakes) often are very weak and generally are recorded by a small number of stations or even by only one station. Therefore it is important to have an opportunity to detect and locate icequakes by single station data for automatic monitoring of glaciers.

We propose automatic detector and locator of seismic events by a single three component station. In this routine we have implemented automatic procedures of accurate phase arrival time picking based on statistical determination of ambient noise level and autoregressive technique. Phase type determination (P or S) and back azimuth calculation are based on polarization and correlation analyses. Some properties of signal envelopes are used to screen out false alarms of the detector.

We use average frequency criterion to select glacier related events from all detected events. It was shown that such events have low frequency content with spectral maximum in the range 2 – 5 Hz.

We have processed data sets of seismic stations placed in Spitsbergen and Franz Josef Land archipelagos. The results show that single-station detector allows getting bulletins of glacier-related events with a small number of false alarms. And automatic location is good enough for most part of events but artifacts can occur sometimes because of complexity of wave forms.

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**Keywords:**

icequake detection location seismic monitoring

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