

Interactive comment on “Studying local earthquakes in the northern Fennoscandian Shield using the data of the POLENET/LAPNET temporary array” by O. A. Usoltseva and E. G. Kozlovskaya

Anonymous Referee #2

Received and published: 31 January 2016

The authors analyse local and regional seismic events in northern Finland and adjacent areas. Many parts of the manuscript are fine but I strongly recommend some additions and corrections:

- 1) Reading the manuscript clearly shows that many parts of northern Fennoscandia are not investigated in this study. The authors should change title and text accordingly.
- 2) Some relevant literature has not been cited (e.g., Bungum et al., J. Geol. Soc., 167, 373-384; Lindholm et al., Geol. Soc. London, Special Publication, 167, 429-439,

C1914

2000).

3) The usage of the words accurate and precise are mixed up. Please check this and change it according to e.g., Bormann et al., Glossary of interest to earthquake and engineering seismologists, DOI: 10.2312/GFZ.NMSOP-2_Glossary

4) To the discussion about the amplitude behavior of P onsets (page 5/6) one should mention that these amplitudes are influenced by the radiation pattern of the respective earthquakes.

5) Page 6: Why was the 6-layers model changed to constant velocities? This should be explained.

6) The first paragraph on page 9 has to be explained better. What data sets are giving more accurate solutions? How are you deciding what solution is more accurate? The RMS value has always to be seen in context to location uncertainty and the number of used data points. If a solution including S gives a similarly accurate location than with less data (P-only), the solution based on more observations is to be preferred.

7) Page 9, paragraph 2: I am not surprised that the acoustic amplitudes at different sites in different azimuth directions from the source are different: it is well documented that infrasound amplitudes are strongly depending on weather conditions (wind directions, temperature).

8) Page 10, last paragraph: determination of an event depth is in principle quite difficult, in particular if you have no very close by stations. I refer here to Havskov et al., Seismic Source Location, DOI: 10.2312/GFZ.NMSOP-2_IS_11.1.

9) Page 11 and Fig. 11: The data for the focal mechanisms are limited and the shown solutions are just one possibility. Please show in Fig. 11 the whole range of possible solutions (uncertainty range) and take them in account when discussing the results.

10) Page 13: I am surprised that the station corrections resulting from VELEST are correlating with station elevations. The standard procedure to locate seismic events is

C1915

to apply elevation corrections from the beginning (see Havskov et al., Seismic Source Location, DOI: 10.2312/GFZ.NMSOP-2_IS_11.1). Was this not done? Then the relocation results have to be regarded with care.

11) Please check (or have the manuscript checked) the English: I found e.g., Finnish-Swedish boundary (instead of border) or strike-sleep faulting (instead of strike-slip).

Interactive comment on Solid Earth Discuss., 7, 3689, 2015.