Geophysical Research Abstracts
Vol. 20, EGU2018-10393-1, 2018
EGU General Assembly 2018

Lateral heterogeneity of SKS anisotropy in the central part of the East-European craton.

Andrey Goev (1), Grigoriy Kosarev (2), Irina Sanina (1), and Oksana Riznichenko (1)

(1) Institute of Geospheres Dynamics Russian Academy of Sciences, Moscow, Russia (a.g.goev@gmail.com), (2) Schmidt Institute of Physics of the Earth Russian Academy of Sciences, Moscow, Russia

Central part of the East-European craton, so called the Russian platform, consist of three different segments – Fennoscandia, Sarmatia and Volgo-Uralia. For this research we use SKS/SKKS data acquired by OBN seismic station that is located right in between of these blocks. We analyze shear wave splitting parameters such as fast direction and lag time working in the assumption of a single layer of anisotropy material.
For the given research we obtained data since 2000 year and take 35 events form different azimuths and epicentral distances more than 80 degrees with isolated SKS/SKKS phases. Working with the dataset we selected 25 events with individual delay time less than 3 seconds that could be seen in tectonic stable regions. In the result of mutual inversion of 25 SKS waveforms recorded by OBN observatory we obtained average fast direction and delay time equal to 90 degrees and 0.5 sec. respectively.
It is important to mention that in contrast to previous determinations of delay time and fast direction in OBN we discover clear lateral heterogeneity of anisotropic parameters as a function of SKS/SKKS back azimuth. For fifteen events registered from the North-East-East (ray traces located basically in the Volgo-Uralian segment) we obtain the fast direction – 150 degrees and the delay time – 0.7 sec. On the contrary, ten events from the North-West-West (ray traces located in the Sarmatian segment) showed the fast direction – 100 degrees and delay time – 0.5 sec. We propose that the anisotropic parameters are related to the frozen orientation of olivine.
This publication is based on work supported by the Russian Foundation for Basic Research (RFBR), project № 17-05-01099 and by the leading scientific school, NS-3345.2014.5.