



Lithospheric structure of the Spitsbergen area from receiver function analysis

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Receiver function analysis has been used to investigate the lithospheric structure beneath the broad-band seismic stations: HSPB (Hornsund), KBS (Ny-Alesund) and SPITS array (Adventdalen) in the Spitsbergen area. Spitsbergen is the island located in Arctica, at the north-western part of the Barents Sea continental platform which is bordered to the west and to the north by passive continental margins with transition to oceanic crust. This is an area of transition from 30-35 km thick continental crust in the east, to oceanic crust with Moho at 10-15 km depth in the west. The spreading axis in the Greenland Sea is today represented by the Knipovich Ridge. Well seen P-to-S converted phases and multiple from the Moho discontinuity can allow to estimate the Moho depth. The Moho depth determined using RF is about 32 km beneath the HSPB (Poisson's ratio is 0.26), about 24 km beneath the KBS (Poisson's ratio is 0.29) and about 31 km beneath the SPITS array (Poisson's ratio is 0.27). The backazimuthal sections of receiver function show a strong variation for HSPB and KBS stations. Significant amplitudes of transversal component of RF for the HSPB indicate a shallow dipping discontinuity (sedimentary-basement) towards the south-west. The structure of the lithosphere beneath the SPITS array seems to be more complicated but less heterogeneous. The S-to-P converted phases from the lithosphere-asthenosphere for KBS and SPITS array can be seen at about 7 seconds, what gives the depth of discontinuity at about 70-80 km.