

3D SEISMIC TOMOGRAPHIC MODELLING OF THE NORTH-WESTERN SVALBARD AREA

Wojciech Czuba, Institute of Geophysics, Polish Academy of Sciences,
Warsaw, Poland

Deep seismic sounding measurements were performed in the continent-ocean transition zone of the north-western Svalbard continental margin in 1976 - 1999 in an international co-operation. Seismic energy (airgun and TNT shots) was recorded by land (onshore) seismic stations, ocean bottom seismometers (OBS), and hydrophone systems (OBH). Data from archival and modern seismic profiles were altogether used for 3D tomographic inversion using JIVE3D software. The results are similar to the earlier 2-D modelling, supplemented by new off-line information giving a 3D image of the crustal structure. The continental crust thins to the west and north. A minimum depth of about 6 km to the Moho discontinuity was found east of the Molloy Deep. The Moho interface deepens to about 30 km beneath the continental crust of Spitsbergen.