



TopoScandiaDeep: Results from an OBS survey off Møre, mid Norway

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As a part of the Eurocore, TopoScandiaDeep project, in which the deeper lithospheric structures of the southern Norway were studied, three ocean bottom seismometers profiles with deep seismic reflection and refraction data were conducted in the Møre Basin in 2009. In addition two of the profiles were extended by landstations (Profile 1 and 2). The total length of the OBS-profiles and of the landstation profiles were 783 km and 240 km, respectively. The modelling of the wide-angle seismic was performed using Rayinvr, a combined inversion and forward modelling software from Zelt and Smith, 1992. The onshore Møre region represents, together with the Lofoten region, the area in Norway with the highest topography. Many of the crustal structures offshore are linked to the onshore structure, and will thereby represent a crucial factor in understanding the onshore dynamics. The early Eocene flood basalts, representing the continent-ocean-transition (COT) and the sedimentary succession in the Møre Basin, landward the COT, have been well studied over the last 30-40 years: Geophysical studies with expanded spread profiling, ocean bottom seismometers, potential field data and sedimentary/tectonic studies correlated with bore-hole data, have all contributed to reveal the basin some of its secrets. However, both the deeper part of the basin representing the pre-Cenomanian sedimentary succession and the basement crustal structure, including the crustal structure and the Moho depth around the coastline, is less well documented. Another unresolved issue is whether the +8 km/s boundary actually is representing the top of the mantle or top lower crustal eclogites. Knowledge about this is important for the stretching history, subsidence and thermal history. In this study we document the crustal structure of the Møre Basin in the NW-SE direction (Profile 1 and 2) and in the NE-SW direction (Profile 3). Our results from the coast parallel Slørebøn sub-basin, showed the maximum thickness of the sediments to be ca 11 km and the minimum crustal thickness to be ca 13 km. The top of the mantle is found at 20-23 km depth. The lower crustal velocities are found to be ca 6.6-6.8 km/s.