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The deep structure component of TopoScandia

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The Scandinavian mountains form the second major element of the European topography, just after the active Mediterranean orogenic area. Its origin, away from any presently active plate margin, is however not understod. In particualr, it is not clear if the mountains are sustained isostatically either by crustal thickening or by light upper mantle material because no precise model of the crust and mantle structure is available for the area. I will present two related projects which result from the cooperation of nine European institutions and which aim at filling this gap. The MAGNUS on-going project is the collection of a set of different seismological data in Southern Norway and the TopoScandiaDeep planned project is mostly the exploitation of the MAGNUS data both from a seismological and a geodynamical point of view.

The MAGNUS project consists of almost two years of deployement in Southern Norway of 40 three-component broadband seismological stations and three active long-range profiles over the same area (the MAGNUS-REX lines). The data will be complemented by existing CENMOVE, existing and planned SCANLIPS lines in Northern Norway and data from the permanent Swedish Seismological Network to build a comprehensive model of the elastic properties of the lithosphere below Scandinavia. This dataset will be analysed using in particular teleseismic and local tomographic methods, receiver function and surface wave analysis. The seismic model will be combined with geoid heights, gravimetric, magnetic and heat-flow data to build a complete geophysical and rheological model for the region which will be used to conduct numerical and analogue geodynamic modelling to study the causes and consequences of the Cenozoic uplift of the Scandinavian mountains and test different uplift scenarios: e.g. to distinguish tectonic uplift of the Scandes from uplift induced by the post-glacial rebound of Fennoscandia and dynamic topography related to processes connected to

the opening of the North Atlantic.