



Crustal structure maps of Europe

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From the early 1970s and even earlier, many good crustal models have been produced for different regions in Europe, by different institutes, or different consortia. Most crustal structure models describe the variation of seismic parameters, since seismic techniques provide the best resolution of discontinuities. From the point of view of the quantity of high resolution data and models now available, particularly seismic models, it is an appropriate time to bring them together and produce new integrated crustal structure maps of Europe, understand as an area from Ural Mountains in the east to mid-Atlantic ridge in the west, and Mediterranean Sea in the south to Spitsbergen in Arctic in the north.

Why improve crustal structure maps? To improve the maps, we need to improve the structural models from which they are drawn, by integrating the best local models available. An optimum crustal structure model is required for at least these four reasons: (1) as a pointer to the tectonic processes shaping surface geology; (2) to improve accuracy of location of earthquakes and explosions; (3) to understand and predict regional anomalies in seismic wave propagation, and (4) to allow removal of crustal effects in tomographic modelling of the mantle.

European institutions have organized or participated in several significant collaborative or individual experiments in recent years, including POLONAISE'97, TOR, SVEKALAPKO, CELEBRATION 2000, ALP 2002, SUDETES 2003 and PASSEQ, as examples. The models derived from them are of particular interest.

The ESC Subcommittee on Crust and Upper Mantle structure has proposed a project aimed at producing updated maps of European crustal structure, particularly in terms of seismic parameters, such as Moho depth and average crustal P- and S-wave velocities, anisotropy and upper mantle velocity acquired through deep seismic sounding, receiver function and tomographic analysis. We will present preliminary maps for several parts of Europe, as well as for the whole Europe.