

EUROPROBE -Multidisciplinary Studies of the Lithosphere across a United Europe

David G. Gee and Irina M. Artemieva Dept. Earth Sciences, Uppsala University, S-75236 Sweden, E-mail: eprobe@geofys.uu.se

During the 1990's, major interdisciplinary, multinational, ILP projects have been carried out by EUROPROBE partners, targeting key structures of the European lithosphere. The work has involved a wide range of geological studies in combination with deep geophysical investigations and isotope geochemistry. Targets have ranged from the young orogens to the Archean cratons, in an effort to better understand mantle processes through time.

Two major transects across the Uralides Orogen have been completed. Russian Ministry of Natural Resources and western university seismic teams have acquired comprehensive near-vertical and wide-angle seismic data from deep in the crust and mantle. This Paleozoic orogen is remarkable for its preservation of subduction-related metamorphic complexes (partly UHP), oceanic crust, major magmatic arcs and deep orogenic roots. Teleseismic tomography experiments in the Trans-European Suture Zone project TOR and in Svekalapko have focused on the deep crust and upper mantle to understand, in the case of the former, the transition zone from the Early-Mid Proterozoic craton to the Paleozoic orogen (across Denmark from Sweden to Germany) and, in the latter, the exceptionally thick (c. 55-60 km) craton crust of the Early Proterozoic suture zone along the southern margin of the Archean craton (in Finland and northwestern Russia). Major collaborative ventures (POLONAISE) with USA and Canadian geophysicists have investigated the deep lithosphere of Central Europe; a new seismic project CELEBRATION-2000, planned for June 2000, will provide the most comprehensive investigations ever of the full lithosphere in Central Europe. Further south, in the southeastern Carpathians, studies focus on the Vrancea seismic zone and an inferred detached lithospheric slab, sinking into the asthenosphere. Within the East European Craton, in Ukraine, comprehensive seismic investigations (DOBRE) target the Donets inverted rift. In SW Iberia plans are going ahead for a transect (including deep CDP) across a major transpression zone. And in the high Eurasian Arctic, international geological expeditions prepare the way for new seismic investigations of the Barents and Kara seas.