

## Geophysical Studies and Crustal Structure of the European Geotraverse - Southern Segment

F. EGLOFF\*, J. MAKRIS\* and R. NICOLICH\*\*

\*Institut für Geophysik, Universität Hamburg (F.R.G.)

\*\*Istituto di Miniere e Geofisica Applicata, Università Trieste (Italia)

The structure of the crust in the Ligurian Sea and the Sardinia Channel was investigated by the EGT-S (European Geotraverse-South) seismic experiments in 1985 and 1987. The resulting refraction and wide-angle reflection seismic data indicate a stretched continental crust in the eastern part of the Ligurian Sea. The ocean-continent boundary can be seen at water depths of nearly 2,000 m. The Pg and PmP arrivals can be clearly identified. The P-wave velocity of the sedimentary layers is about 2.5 km/s and 4.1 to 4.5 km/s. The continental-oceanic crust boundary is characterized by a marked change in the amplitude and velocity behaviour in the seismic sections. The most heavily stretched segment of the continental crust is 17 km thick, and the crust thickens towards the Italian coast to about 30 km. The oceanic crust is approximately 10 km thick. The upper mantle velocity under the continental crust is 7.5 km/s, as established by previous investigations. The oceanic crust has an upper mantle velocity of 8.0 km/s (Fig. 1).

The profile shot in the Sardinia Channel shows an 18 km thick stretched continental crust in the central part. The sedimentary cover reaches a depth of 6 km below sea-level and is 4 to 5 km thick. It consists of two main layers, one of recent sediments with 2.2 km/s, while the lower sediment velocity varies between 3.8 and 4.2 km/s. Strike-slip movements and shearing along the southward dipping faults are responsible for the present day geometry of the crust in this area. Our results show that the shear zone previously identified across the Kabylia structure and the Sardinia Channel is located south of an observed crystalline high in the central part of the profile. This shear zone divides the profile into two parts, the southern one being the most heavily stretched. These two profile segments are presented and the geological evidence discussed.

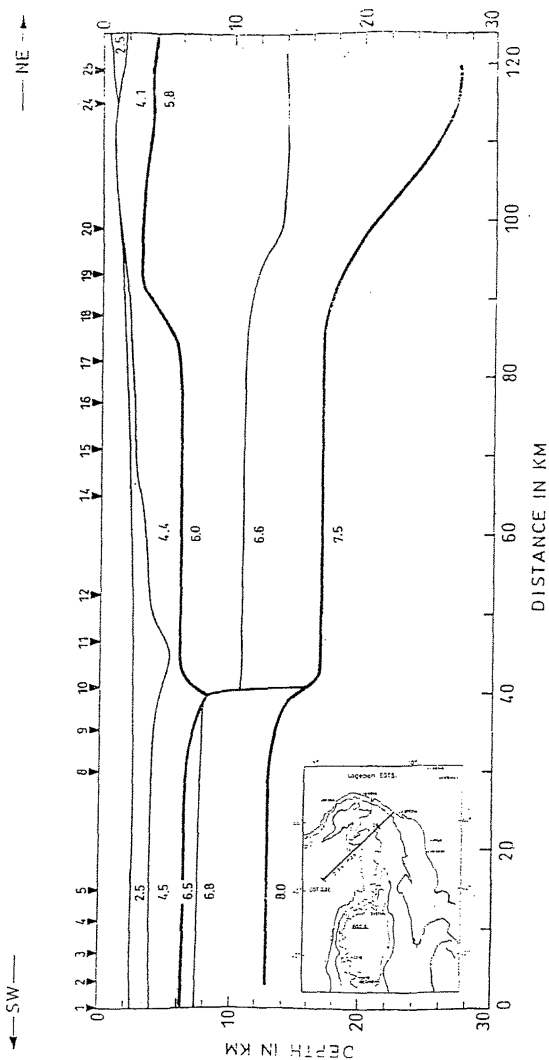


FIG. 1 CRUSTAL STRUCTURE IN THE LIGURIAN SEA