

THE GEOLOGICAL FEATURES OF LIGURIAN SEA - NORTHERN APENNINES - ADRIATIC FORELAND FROM CROP SEISMIC DATA

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ABSTRACT

The structure and the geodynamics of the Northern Apennines, and of the Tyrrhenian and Balearic basins is reconstructed and discussed using deep seismic reflection data from the Italian CROP project. Three profiles cross the Northern Tyrrhenian Sea (CROP M12A), the Northern Apennines (CROP03) and the Adriatic Sea (CROP M16). Lines CROP M10 and M11 cross the northern Balearic Basin, the Ligurian Sea and the Corsica-Sardinia block while line CROP M12B crosses longitudinally the Corsica Basin. Profile interpretation allows imaging E-verging lithospheric-scale contractional structures superposing the Corsica-Sardinia block onto the western margin of Adria Plate (lines CROP M10, M11, M12B) and the Corsica Basin characteristically located above this collision zone. Interpretation of seismic profiles (CROP M10, M11, M12A) has also allowed identifying a culmination of the asthenosphere top in the northern Tyrrhenian Basin. This culmination strikes in a roughly NNW direction and above it nucleate most of the Tyrrhenian extensional structures. The oceanic crust, the architecture of the sedimentary fill and the geome-

try of the margins of the northern Balearic Basin are imaged in the western part of profiles CROP M10 and M11. Profiles interpretation supports that the Northern Apennines are characterised by a dominant compressional style expressed by a well developed thrust system and shear planes. Crustal extension generally assumed to affect the whole Tuscan Apennines area is instead mainly restricted to the Tyrrhenian Basin where major extensional features mostly reactivate early compressive lithospheric structures. Such a tectonic picture derived from deep seismic profile interpretation is in good agreement with the surface geological-structural data carried out in the hinterland basins and the axial thrust belt along line CROP03. Migration toward the east of compression resulted in major thrusts displacing the Moho beneath the Northern Apennines watershed. The deformation of this lithospheric-scale thrust system propagated far in the foreland and controlled the deposition and sedimentation in the easternmost Pliocene-Quaternary foredeep basin (line CROP M16). During this stage, the Tyrrhenian Basin has been developing in the innermost sectors of the chain.

