
Abstract. — In the Terracina and Gaeta basins Quaternary sediments are displaced by normal faults, which affect also the Meso-Cenozoic tectonic units of the acoustic basement. The extensional tectonics is characterized by normal faults systems trending NE-SW and E-W. In the Terracina basin, roughly N-S oriented, half-graben structures are downthrown seaward through normal faults; the Gaeta extensional basin, E-W oriented, has two main depocenters and is bounded to the north and to the south by E-W trending normal faults and to the east by a NW-SE trending normal fault.

Key words: Extensional tectonics; Seismic stratigraphy; Terracina and Gaeta basins; Eastern Tyrrhenian margin.


Introduction

The Tyrrenian sea, a young extensional domain with restricted areas of oceanic-type crust, encloses in its margins a number of basins («peri-tyrrhenian»; Fabbri et al., 1981; Malinverno and Ryan, 1986; Trincardi and Zitellini, 1987; Oldow et al., 1993) that show marked differences in size, thickness and internal architecture of the filling sequence.

The Terracina and Gaeta basins (fig. 1), located within the Eastern Tyrrenian offshore of Latium offer good opportunities to investigate the relationships between tectonics and sedimentation in a marine area strongly deformed during Neogene times. The present study is mostly based on the interpretation of about 1000 km of multi-channel seismic profiles (fig. 1) provided by the Italian Ministry of Industry («Zone E»), recorded by the Western Geophysical for the AGIP Oil Company, tied to the lithostratigraphic data of deep offshore wells (Michela 1 and Mara 1, Agip; fig. 1) and onshore boreholes (Ippolito et al., 1973; Agip, 1977; Ortolani and Torre, 1981; fig. 1).

The Terracina and the Gaeta basins, covering an offshore area of about 750 km², extend in the continental shelf of the southern Latium region, since they are located in

Fig. 1. – Sketch map showing the study area and the location of seismic profiles and exploratory wells analyzed in this paper. Offshore wells 1: Michela 1 well; 2: Mara 1 well. Onshore wells 3: Cellole Aurunci 1 well; Mondragone 1 well; 5: Castelvolturno 3 well; 6: Castelvolturno 1 well; 7: Castelvolturno 2 well; 8: Grazzanise 1 well; 9: Villa Literno 1 well.

waters down to the - 150 m isobath. The shelf break is at a water depth of about -200 m and the continental slope is characterized by the occurrence of two important slope basins in the Pontine Archipelago (Palmarola and the Ventotene basins; Zitellini et al., 1984).

Off the Latium and Campania coasts the peri-tyrrhenian basins often form the seaward prolongation of the coastal plains produced by Plio-Quaternary extensional tectonics (Mariani and Prato, 1988; Brancaccio et al., 1991). The tectono-sedimentary evolution of Terracina and Gaeta basins is connected with the Neogene evolution of the Apenninic chain (Royden et al., 1987; Patacca and Scandone, 1989). As suggested also by previous studies (Bartole, 1984; Argnani and Trincardi, 1990; Agate et al., 1993; Sacchi et al., 1994), the deformational history of the peri-tyrrhenian basins is characterized by alternating compressional and extensional tectonic phases during Plio-Quaternary times. In order to clarify the role of the different tectonic regimes in the Terracina and Gaeta basin evolution, it is necessary to discriminate between the eustatic and tectonic controls in the stratigraphic architecture of these basins.

According to the literature, the Tyrrhenian sea may be considered as an extensional back-arc basin associated with subduction of lithosphere of the African plate beneath the European plate during the Neogene and Quaternary (Boccaletti and Guazzone, 1974; Maliverno and Ryan, 1986; Royden et al., 1987; Kastens et al., 1986, 1988; Doglioni,