

Seismic stratigraphy, microfossil dating and the environments of Akburun-Alaçatı epiheritic succession (Cesme, Turkey)

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On the southern shelf area of the Çeşme Peninsula, a shallow seismic study was carried out and 12 gravity cores (0.30 - 1.15 m.) collected. These marine surveys were conducted by R/V K. Piri Reis along the Akburun - Alaçatı regions (Fig. 1). The stratigraphic succession of the Çeşme Peninsula, which has a Mesozoic limestone basement, is mainly composed of Late Tertiary intermediate-acid volcanics and alternating limestone-marl and sandstone. The uppermost rock unit is represented mainly by tuffaceous sediment, and this is covered by sandy-muddy clastics. Twenty km of seismic reflection profiles and refraction surveys were carried out using 40 in airgun with a single channel hydrophone-array and a sonobuoy system respectively. From these studies, the seismic velocities, thicknesses and dips of layers were determined. The geological cross-section of the area was also constructed from these results (Fig. 1). The observed stratigraphic sequence includes four lithological units (excluding the Mesozoic basement): (1) Volcanics; (2) Neogene limestone-marls; (3) Tuffaceous sediments and (4) Recent sandy-muddy clastics.

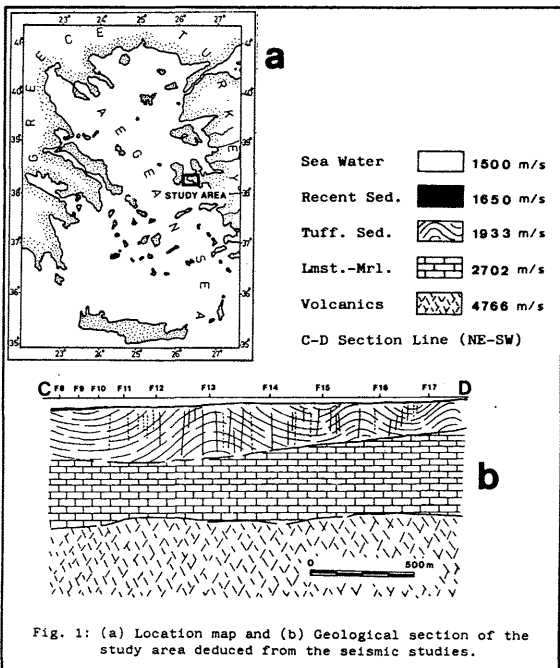


Fig. 1: (a) Location map and (b) Geological section of the study area deduced from the seismic studies.

Microplaeontological study was mainly applied to the core samples from the Recent sediments and tuffaceous horizon as well as to the land outcrops of the limestone-marl-sandstone unit. The geological age of the tuffaceous horizon is Sarmatian from the association of *Elphidium antonium* (d'ORBIGNY), *E. hauerium* (d'ORBIGNY), *E. reginum* (d'ORBIGNY) and *Ammonia beccarii* (LINNE). The tuffaceous sediments are lagoonal products. The deposition of the uppermost clastics occurred during the post-glacial period (Holocene) in a shallow marine environment with variation in sea-level given by the following assemblage: *Carinocythereis antiquata* (BAIRD), *Trachyleberis hystrix* (REUSS), *Xestoleberis communis* (MULLER), *Ammonia beccarii* (LINNE), *Cytheropteron alatum* (SARS), *Elphidium crispum* (LINNE), *Discorbis globularis* d'ORBIGNY, *Callistocythere elegans* (MULLER). Moreover, this unit contains only benthic foraminifers and ostracodes as microfossil association. Absence of planktonic foraminifers in this horizon might be explained by enhanced regional supply of fresh water during pluvial episodes of the Late Quaternary. In addition to this, diversity of the benthic foraminifers and ostracodes is probably linked to a tranquil sea-bottom, with high oxygen availability and abundant nutrients. The micropaleontological studies on the land samples of the limestone-marl unit, showed these also to be Sarmatian in age and deposited in lacustrine conditions, according to the following ostracodes: *Candona (Typholocypris) illustris* (SNEJDER), *Candona nobilis* (SNEJDER), *Linnocythere* sp.

The results obtained in the present study demonstrate the effects of two phases of shoreline oscillation: (i) A late Miocene episode probably related to the beginning of Aegean tectonic extension; (ii) A late Quaternary cycle linked to late and post-glacial climatic changes.

La macrofaune marine des sédiments pliocènes et pléistocènes en Messénie Occidentale (Péloponnèse, Grèce)

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INTRODUCTION

La région étudiée se situe au SW du Péloponnèse (fig.1) où les formations pliocènes et pléistocènes se sont dispersées dans 4 petits bassins tectoniques (fig. 2 a,b,c,d).



Fig. 1

Ces formations qui reposent en discordance sur le substratum sont d'origine marine, lacustre et fluviolacustre; elles se constituent en général de marnes sableuses ou argileuses à intercalations gréseuses et de conglomérats.

Les plus anciens dépôts datent du Pliocène inf. (biozone à *Globobulimina margaritae*), (Koutsouveli et al. 1985, Koutsouveli 1987), affleurent dans le bassin "d" (région de Falanthis), et leur étendue est très limitée, tandis que les sédiments du Pliocène supérieur (biozones à *Gl. crassaformis* et *Gl. inflata*) sont assez répandus (bassins a,b,c,d.). Le Pléistocène affleure dans les bassins "a" (région de Stenossia) à *Hyalinina balthica* (Koutsouveli et al. 1985, Koutsouveli 1987) et "b" à *Chlamys septemradiata* (Koutsouveli, 1987).

BIO-CHRONOSTRATIGRAPHIE ET INTERPRETATIONS PALEOECOLOGIQUES

D'après l'étude détaillée de la macrofaune constituée par 90 espèces de différents groupes (tabl. 1) nous avons constaté que durant le Pliocène inf.

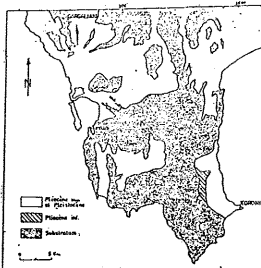


Fig. 2

(z. à *Gl. margaritae*) la mer était assez profonde, tandis qu'au cours du Pliocène sup. il y avait une diminution de la mer, événement qui se confirme par la présence des Bivalves (*Ostrea*, *Spondylus*, *Pectinidae* e.t.c.), des Gastéropodes (*Murex*, *Strobus*, etc.) et d'autres groupes de fossiles. L'espèce *Chlamys septemradiata* caractéristique des sédiments du Pléistocène affleure dans le bassin "b".

On peut signaler que l'association des fossiles recueillis dans tous les bassins sus-

mentionnés, a les caractères suivants :

1. Les Bivalves, en général, conservent les deux valves.
2. On observe des traces d'activité des Sponges et des Verses sur des tests des fossiles.
3. On n'a pas observé des transports des fossiles.

Ces observations nous ont permis de considérer que les fossiles sont "in situ" et il s'agit d'une thanatocoenose.

FOSSILES	DISTRIBUTION			
	a	b	c	d
1. <i>Ammonia</i> sp.				
2. <i>Ammonia beccarii</i> (LINNE)				
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Tableau I

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