

## Cyprus Basin: Evolution and Dispersion of Quaternary Sediments

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The Cyprus Basin is the eastern part of the Levantine Basin; in this area, sedimentation is mainly affected by the detrital supply from the Nile river and by the seasonal supply from minor rivers flowing in nearby regions. This transport and depositional pattern has prevailed since the early Pliocene (ROSS and UCHUPI, 1977; COLEMAN *et al.*, 1981). The submarine cone of the Nile, closing the Cyprus Basin southwards, is supplied mainly with terrigenous sediments coming from the Damietta branch, the eastern tributary of the Nile. These sediments are distributed on a large area, due to strong surface currents moving counterclockwise.

A study has been carried out on late Quaternary sediments found in cores drilled in the Cyprus Basin (oceanographic cruise NOE-1984 and two oceanographic cruises organized by the Institute of Geology and Paleontology of Trieste in 1986 and 1987; fig. 1). The predominance of pelagic muds with sporadic layers with a higher sand content, probably deriving from a distal turbidite, and the foraminifers and ostracods association show that sedimentation occurs in a pelagic environment.

The sequences observed clearly reflect physical-oceanographic conditions which led to repeated anoxic phases in the Levantine Basin during the Plio-Quaternary. Evidence of this is the cyclic repetition of the facies studied, with colours gradually fading from beige to light gray and dark gray (sapropel/sapropelitic level), then returning to beige in connection with improved oxygenation of the environment.

A number of sapropel levels were dated in the Beta Analytic Laboratory in Washington, while one layer of volcanic glass was assessed to be a Y-2 layer (18,000 years of age) (VINCI, unpublished data). These findings revealed greater sedimentation rate in the stages of Pleistocene regression (between 13.3 and 17.2 cm/1000) than during the stage of Holocene transgression (between 1.3 and 3.9 cm/1000), as reported also by MALDONADO and STANLEY (1978 and 1979). A study of the mineralogic and geochemical features was carried out on sample layers of the cores. The geochemical analyses was based on those elements (Al, Cd, Cr, Fe, Hg, Mn, Ni, Pb, Ti and Zn) corresponding to the main mineralogic components of sediments transported by the Nile (EMELYANOV and SHIMKUS, 1986). These elements, in a solution by means of two different types of extraction (total extraction with an acid mix and partial extraction with  $\text{HNO}_3$  8 N) were analyzed by atomic absorption spectrophotometry; furthermore, to characterize the sediment, its structural features and its content in organic and inorganic C were studied.

Trace elements distribution in the levels under study led to determine that the geochemical basis consists in Al, Cr, Fe and Ti, which are all elements showing the prevailing supply of terrigenous material. Other elements, such as Hg, Mn and Zn, have a behaviour which is difficult to define with the variables adopted. All elements bind with preference with the clay fraction of the sediment (< 2  $\mu\text{m}$ ), with the exception of Cd and Pb, which are mainly present in the sandy fraction.

Fine sedimentation in the Cyprus Basin is marked by the presence of clay minerals, whose bounds with smectite and kaolinite prove that the terrigenous material comes from the northeastern African continent. With their distribution throughout the Basin, they determine diffusion of some trace elements (Al, Fe and Ti), while other elements depend more on the non lithogenic fraction of the sediment and therefore on the conditions of the environment where they deposit, as reported also by MURAT and GOT (1987).

In conclusion, therefore, in an environment where recent sedimentation is determined periodically by particular situations with prolonged anoxic phases, the terrigenous sediments coming from the Nile mouth is the determining supply for the Cyprus Basin; these features lasted during the whole late Quaternary.

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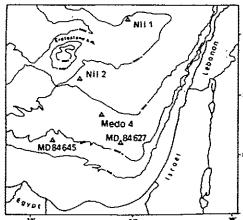


Fig. 1 - cores location in the  
Cyprus Basin.

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## Rôle du Bloc Corso-Sarde dans la formation de la Méditerranée Occidentale

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La séparation du Bloc Corso-Sarde de la marge européenne pyrénéo-provençale est bien connue et de nombreux travaux ont commenté sa migration et l'apparition simultanée de croûte océanique dans le bassin algéro-provencal.

Les travaux récents de la Géotraverse européenne EGT ont apporté des éléments qui permettent d'apprécier le rôle du bloc après sa rotation.

En effet, celle-ci s'est arrêtée à cause du blocage du Sud du bloc contre la marge septentrionale de la Tunisie. On passe de la Tunisie à la Sardaigne par une zone de croûte continentale, amincie certes, mais continue. A mi-chemin entre l'île de La Galite et la Sardaigne, le socle rapide s'approche du fond de la mer, au détriment des terrains plus lents connus le long de la partie tunisienne du profil. On peut interpréter ces terrains rapides comme un lambeau dérivant hercynien ressemblant à d'autres éléments exogènes connus dans la région comme les Massifs Kabyles, le N.E. de la Sicile ou le Massif Calabrais. Ce lambeau aurait été écrasé contre la marge tunisienne par le bloc corso-sarde entré en collision.

Le blocage a empêché la Sardaigne et la Corse de poursuivre leur rotation à la suite de celle de l'Italie péninsulaire; comme celle-ci a continué son déplacement anti-horaire l'espace tyrrhénien s'est agrandi au-delà des possibilités d'étiement de ses marges, d'où l'apparition récente de taches océaniques.

A partir du Miocène supérieur et jusqu'à maintenant le bloc corso-sarde est devenu un poinçon actif dans la compression que l'Afrique fait subir à l'Europe : au Sud les diverses unités ont été écrasées et repliées avec une concentration plus forte des zones tectoniques en Tunisie qu'en Algérie ou en Sicile. En Tunisie, la suture majeure de l'Axe Nord-Sud est actuellement le site de petits séismes, la Tunisie orientale ayant plus de facilité à se déplacer vers le Nord, que la Tunisie occidentale ainsi bloquée vers le Nord.

Au Nord, le poinçon Corso-Sarde a tamponné l'Arc ligure et entraîné un transfert des forces dans ce secteur avec vergence vers l'Ouest et même le Sud-Ouest à l'Arc de Nice. Par ailleurs, dans la zone ligure et au Sud de la Plaine du Po, on a identifié la superposition de plusieurs unités crustales, Moho compris, se surmontant successivement : unité européenne s'enfonçant sous les Alpes, unité apulienne formant la voûte du Milanais, unité des Apennins ligure et unité Corso-Sarde.

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