The sediments of the Gulf of Antalya (Southern Turkey)

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This paper reports the results of a study carried out on 4 cores collected in the northern part of the Antalya Basin, on the slope-margin of the basin, during the MAC-GAN cruise (Groupe MAC GAN, 1986; ROSSI *et al.*, 1988) and on 7 beach samples gathered near to the main rivers of the Turkish coasts from Kemer to Anamur (Fig. 1). In order to characterize these sediments and to point out their source area and depositional mechanism, grain size and mineralogy analyses of the sediments were performed on all the cores; heavy mineral identification was carried out both on the beach samples and sandy levels within the cores. In the Antalya Gulf a narrow platform develops with a steep continental slope. Many submarine canyons, acting as pathways of turbiditic flows, cut the slope; the main one is going away in front of Antalya Harbour, in a North-South direction. The Antalya basin reaches a maximum depth of 2600 m and is limited in the southern part by seamounts of the Cyprus Arc.

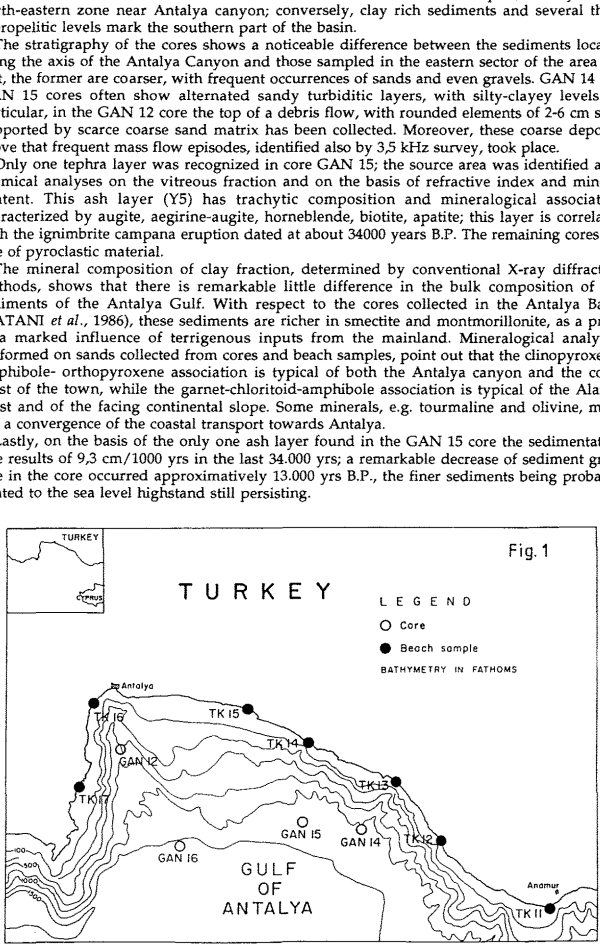
A previous study by CATANI *et al.* (1986) of the central part of the basin showed that it is characterized by two zones with different morphological and sedimentological features: coarser sediments and several turbiditic flows occur in the northern part, mainly in the north-eastern zone near Antalya canyon; conversely, clay rich sediments and several thick sapropelitic levels mark the southern part of the basin.

The stratigraphy of the cores shows a noticeable difference between the sediments located along the axis of the Antalya Canyon and those sampled in the eastern sector of the area : in fact, the former are coarser, with frequent occurrences of sands and even gravels. GAN 14 and GAN 15 cores often show alternated sandy turbiditic layers, with silty-clayey levels. In particular, in the GAN 12 core the top of a debris flow, with rounded elements of 2-6 cm size, supported by scarce coarse sand matrix has been collected. Moreover, these coarse deposits prove that frequent mass flow episodes, identified also by 3,5 kHz survey, took place.

Only one tephra layer was recognized in core GAN 15; the source area was identified after chemical analyses on the vitreous fraction and on the basis of refractive index and mineral content. This ash layer (Y5) has trachytic composition and mineralogical association characterized by augite, aegirine-augite, horneblende, biotite, apatite; this layer is correlated with the ignimbrite campana eruption dated at about 34000 years B.P. The remaining cores are free of pyroclastic material.

The mineral composition of clay fraction, determined by conventional X-ray diffraction methods, shows that there is remarkable little difference in the bulk composition of the sediments of the Antalya Gulf. With respect to the cores collected in the Antalya Basin (CATANI *et al.*, 1986), these sediments are richer in smectite and montmorillonite, as a proof of a marked influence of terrigenous inputs from the mainland. Mineralogical analyses, performed on sands collected from cores and beach samples, point out that the clinopyroxene-amphibole- orthopyroxene association is typical of both the Antalya canyon and the coast West of the town, while the garnet-chloritoid-amphibole association is typical of the Alanya coast and of the facing continental slope. Some minerals, e.g. tourmaline and olivine, mark out a convergence of the coastal transport towards Antalya.

Lastly, on the basis of the only one ash layer found in the GAN 15 core the sedimentation rate results of 9,3 cm/1000 yrs in the last 34.000 yrs; a remarkable decrease of sediment grain size in the core occurred approximatively 13.000 yrs B.P., the finer sediments being probably related to the sea level highstand still persisting.



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