MIOCENE AND PLIOCENE SEDIMENTS FROM CORE 22M37 (MEDITERRANEAN RIDGE, IONIAN SEA)

by
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Core 22M37 position: 36° 10.9' N
20° 48.5' E
water depth: about 3,200 m
length: 106 cm

Description:

0 - 5 cm	brownish colors, "slumping" structures (coring effect or slumping?), 55 % carbonate Nanno: NN 20 (Quaternary)
5 - 10.5 cm	olive, "slumping" structures like 0-5 cm, 2 - 8 % carbonate Forams: Upper Pliocene - Quaternary Nanno: NN 20 (Quaternary)
10.5-12.5 cm	dark greenish gray, 9 % carbonate Nanno: upper part of NN 9 - NN 10 (Tortonian)
12.5 - 15 cm	light gray, 56 % carbonate Forams: Upper Miocene, perhaps N 17 Nanno: NN 11 (Messinian)
15 - 16 cm	dark greenish gray, 3 % carbonate Nanno: upper part of NN 9 - NN 10 (Tortonian)
16 - 19 cm	light gray, 53 % carbonate Forams: MPl 4 or base of MPl 5 (Upper Zanclean or Lower Piacenzian) Nanno: NN 14 or NN 15 (Upper Zanclean)
19 - 106 cm	Breccia with different components: 90 % of the number of the clasts are greenish gray claystones (max. diameter 15 mm). Some of the claystones contain very thin silt layers. Carbonate content: up to 5.5 % organic carbon: 0.6 % Quartz, feldspars, kaolinite, chlorite, smectite, mixed layers, pyrite. Very rare is hornblende. Forams are very rare. Many of the claystones

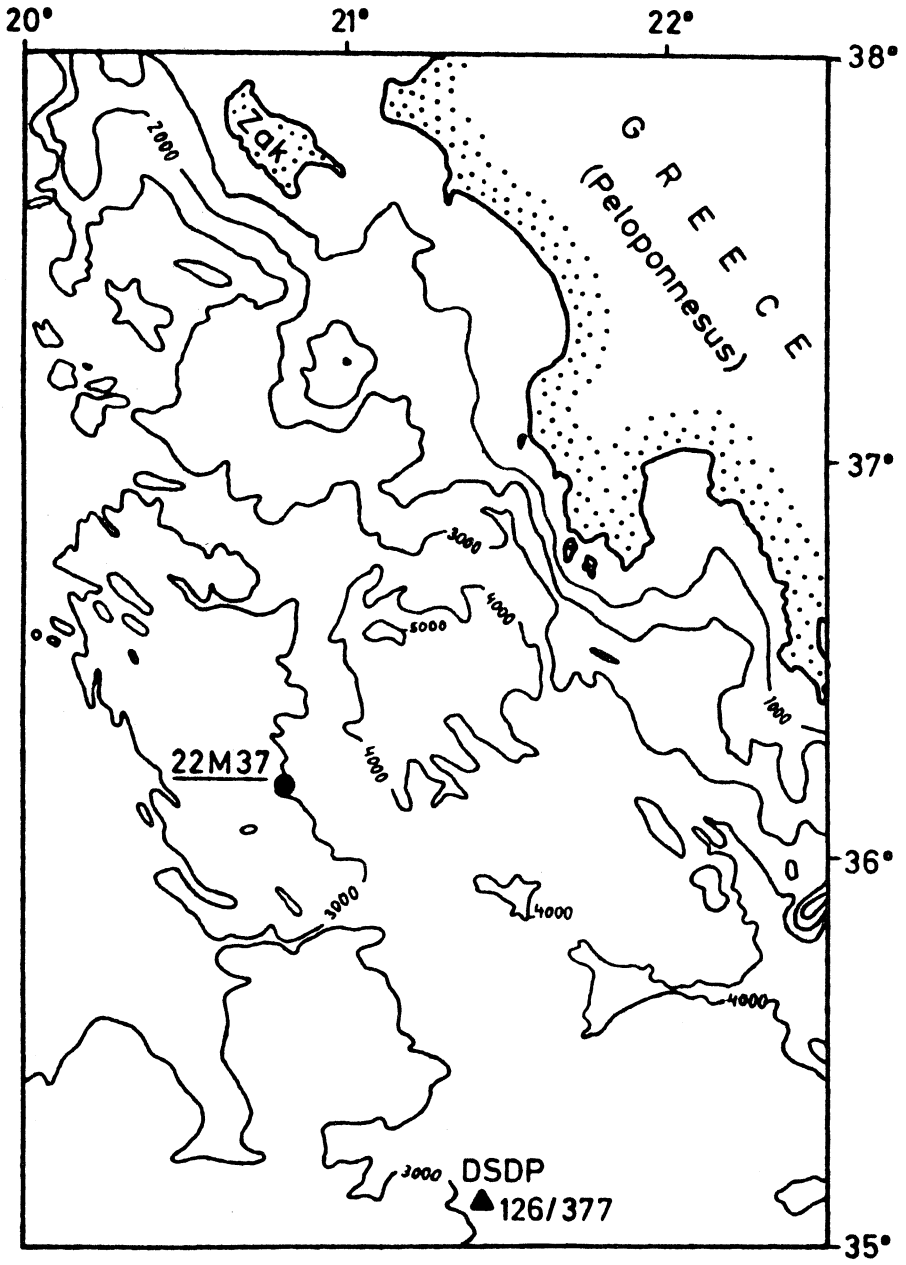
20°
21°
22°
38°
37°
36°
35°
Zak
GREECE
(Peloponnesus)
2000
3000
4000
5000
4000
1000
22M37
3000
4000
4000
3000
DSDP
126/377

Fig. 1

but not all of them contain nannoplankton. Remarkable amounts of plant debris.

The remaining 10 % of the clasts are siltstones, finesandstones and foraminifera sandstones (all with max. diameter 3 mm). The finesandstones and foram sandstones are rich in carbonate.

At about 84 cm core depth there is a thin irregular lense of finesand consisting mainly of quartz and feldspars.

In the upper part of the breccia occur light gray clasts of a smaller degree of lithification than the claystones have: 35 % carbonate, smaller content of chlorite and smectite than in the claystones.

Age determinations:
claystones: Nanno: NN 9 (Upper Serravallian - Lower Tortonian)
whole section of the breccia without discrimination of components and matrix:
Forams: N 14 (Upper Serravallian)
light gray clasts:
Forams: MPl 4 (Upper Zanclean) - Quaternary
Nanno: NN 11 ? (not younger than Miocene)

In the sample of the whole section of the breccia a benthic foraminifera fauna has been found too. It indicates neritic conditions with the exception of Osangularia culter the upper limit of which is about 500-700 m. To the neritic zone belong as well bryozoans.

Interpretation:

We interpret the observations from core 22M37 as follows:

The Serravallian sedimentary sequence from which the breccia originated may have consist of mud and intercalated silt, finesand and foraminifera layers. This is in good agreement with the lithology of the Early to Middle Miocene sediments of DSDP Sites 126 and 377. The terrigeneous material as well as the neritic fauna must have been transported by turbidites.

In the present morphology (Fig. 1) no turbidites of normal dimensions coming from the neritic zone could reach the core position. Therefore, we have to conclude that during Middle Miocene time the morphology was much more uncomplicated than today, i.e. a direct slope from the coast to the present core position must have existed.

The breccia may have originated during Quaternary time. At that time, sediments of Serravallian, Tortonian, Messinian,

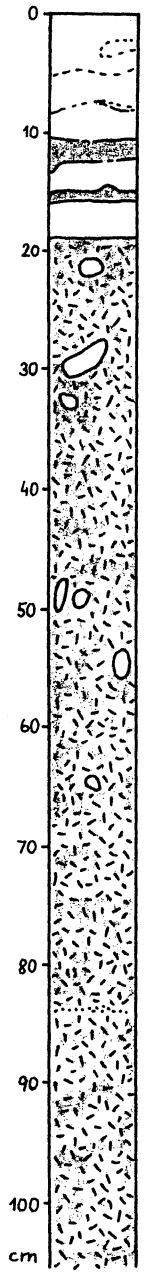

Fig. 2

Pliocene and Lower Quaternary age must have been exposed at the sea floor to have been able to slide one upon the other.

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