

Contribution to the study of coastal geology
of Rhodes island (Greece)

by

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Rhodes island in the Aegean Sea belongs to the island arc of Peloponnesus - Kythira - Crete - Carpathos - Rhodes - Asia Minor. This island arc lies between the Hellenic trench and the volcanic arc of Aegean Sea, where many interesting neotectonic events have been observed.

In Rhodes an island of natural beauties, we can observe a succession of terraces along the eastern coast-lines, while, along the northern coast only the higher ones can be distinguished. The terraces and the (old) strandlines or the eastern part of the island are quite obvious and located in different heights (see table)

T a b l e

Locations of elevated SE coasts of Rhodos Island with the altitude a.s.l. of the Holocene old-strandlines and Plio-Quaternary terraces.

VODI	0,80	1,20	1,60	2-2,20	15-20	-	40m.	50-70	
KALLITHEA			1,50	2	12-15	25-30	40-50	-	
NOURA-LADIKON	0,60	1,00	1,70	2,20	12-15	25-30	-	50-70	
VAGIA-KOLIMBIA	0,60	1,10	1,50	1,80	10-15	20-25	-	-	
TSAMBIKA	-	1,00	1,50	-	8-12	20	40	60-70	130
ARCHANGELOS	-	1,00	-	2,50	8-12	20-30	-	60-70	
MALONA	0,80	1,00	-	-	6-12	20-30	40-50	70	
GADOURAS		1,00	1,70	2,20	6-8	15-20	40	-	
LINDOS			1,50	2,80	12-15	20-30	40-50	-	
PEFKA	0,80			1,80	8-15	20-30	40-50	-	
LARDOS		1,10	1,20	-	10-15	-	-	-	
GENNADION	0,50	1,20		-	12-15	-	-	-	
LACHANIAS		1,20							
PLIMMIRI	0,50				15-20				
ALYKAE-MAVRO VOUNO	0,30-0,40								

Many caves were observed below or above the terrace - levels, e.g. in Ladiko and Erimokastron (East Rhodes) at a height of 50-70 m. which are the

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result of carstification and sea-erosion. The surfaces of the limestones inside and outside the caves are perforated by the *Litnodomus*. Inside one of the caves which is located at Erimokastron and within its deposits fossilified bones of *Palaeoloxodon antiquus mnaidriensis* were found (Marinos and Symeonides, 1973). At the same heights there are terraces enclosing marine molluscs, characterizing the Pliocene.

In some other terraces at heights 20-30 m. and 12-15 m. micro - and macrofauna characterizing the Pleistocene stages were determined (Calabrian, M. Zaccaria (1968) - B. Kerandren (1968-69), Pleistocene, J. Broekman, 1974).

Additionally the Tyrrhenian transgression can be identified by the presence of large *Spondylus gaederopus* and *Polinices (Polinices) lacteus* found in sandstone-conglomerates of the 12-15 m. terraces near Ladiko (East coast of Rhodes).

The different number of terraces from one locality to the other proves that besides the eustatic sea movements some tilt tectonic movements in several blocks along the coastlines of Rhodes took also place.

The small number of terraces is combined with large width. This may be caused by the longer influence of the eustatic movements or because the lesser inclined higher terraces were assimilated by the more inclined lower ones. These broad terraces are composed of two surfaces with small difference in inclination.

In many regions tectonic movements during historic times took place although eustatic movements are also responsible for the risen beach-rocks of Ladikon and Gennadion (eastern coasts) or for the submerged coasts of Skala Kamirou (western coasts).

At the small harbour of Skala Kamirou at the western coast some ruins of Palaeochristian church of 6th century A.D. were observed at a depth of 1,50 m. On the coast at height 0,80 m. a.s.l. the old floor of the church was found as well as some remains of the walls. Thus the amount of displacement is about 2,30 - 2,50 m.

Although the coast movement at Skala kamirou (western coast) is positive, at the eastern coast of the island is negative with movements of about 0,40-2,80 m.

The different number of furrow like old strandlines from one location to the other is also due to the enstatic movements and to the tilt - tectonic elevation.

The age of negative displacement of the coasts can be determined by the pieces of pottery, younger than the Byzantine period, as those found at the risen beach-rocks (height 1,10 m.) at Ladikon.

The same was found at Gennadion coast in risen beach rocks at heights 0,50-1,20 m.

Finally we would like to emphasize that the above terraces and the recent old strandlines are the result of tilting, combined with enstatic movements at individual blocks with a different rate of movement.

Analogous observations and results are reported from Crete (Dermitzakis, 1973, 1974) and from Peloponnesus (SCHRODER-KELLETAI, 1976).

