

IAS Postgraduate Grant Scheme

Introduction

PhD Thesis title is “Ionian basin analysis and its evolution, during the Triassic – Paleogene time interval and the relation with hydrocarbon plays”. The main target of the study is to reveal, in every detail, the sedimentation pattern during the above mentioned time interval. The study area is located in western Greece (Fig. 1).

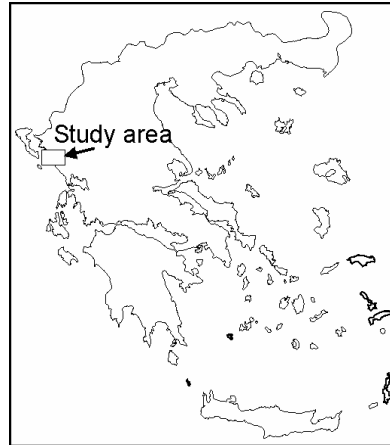


Figure 1: Location of the study area

The sediments of the Ionian basin were studied in fifty outcrops and a number of 300 samples were collected (Fig 2). Thin sections were prepared for all the samples and they were studied under polar microscopy. The samples were classified using Dunham’s (1965) classification chart. Afterwards, SMF and FZ, after Flugel (1972) and Wilson (1975), were determined. In addition, stable isotope analysis; clay mineral analysis, organic carbon analysis and micropaleontological study were conducted.

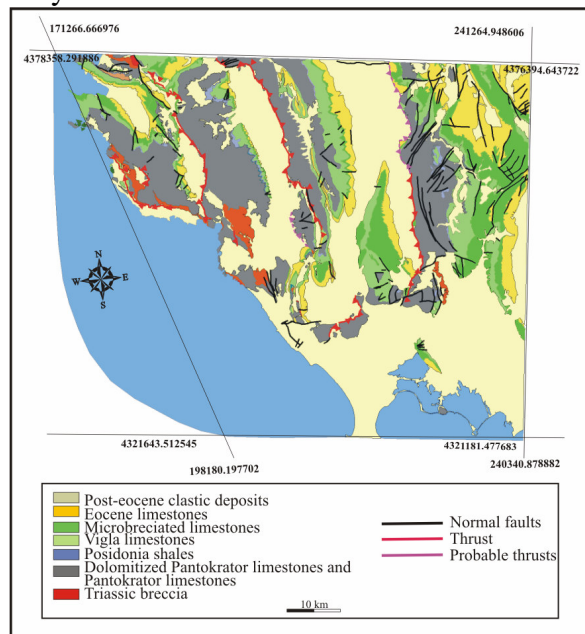


Figure 2: Stratigraphy of the study area

Unfortunately in many thin sections of pelagic limestones only radiolarians were present. As a consequence the age determination using microfossils was highly problematic. In order to overcome this problem eighty samples of radiolarian lime-mudstones were picked

out and sent to Bulgaria, A.Prof. Dr.K.Stoykova, Academy G.Bouncev, Sofia, for calcareous nannofossil study.

Nannofossil analysis

During nannofossil analysis the following species were studied:

1. *Discoaster diastypus* Bramlette & Sullivan, 1961. Sample T28-10, Lower Eocene, NP11-12 Zone.
2. *Chiasmolithus* spp. Sample T28-7, Lower Eocene, NP12 Zone.
3. *Ericsonia formosa* (Kamptner, 1963) Haq, 1971. Sample T28-7, Lower Eocene, NP12 Zone.
4. *Sphenolithus editus* Perch-Nielsen, 1978. Sample T28-7, Lower Eocene, NP12 Zone.
5. *Discoaster robustus* Haq, 1969. Sample T28-7, Lower Eocene, NP12 Zone.
6. *Discoaster lodoensis* Bramlette & Riedel, 1954. Sample T28-4, Middle Eocene, NP15-16 Zone.
7. *Discoaster barbadiensis* Tan, 1927. Sample T28-4, Middle Eocene, NP15-16 Zone.
8. *Nannoconus globulus globulus* Bronnimann, 1955. Sample T43-3, Lower Cretaceous, Upper Hauterivian to Lower Barremian.
9. *Rucinolithus terebrodentarius* Applegate et al., 1987. Sample T43-3, Lower Cretaceous, Upper Hauterivian to Lower Barremian.
10. *Zeugrhabdotus embergeri* (Noel, 1959) Pech-Nielsen, 1984. Sample T43-1, Lower Cretaceous, Upper Hauterivian to Lower Barremian.
11. *Cruciellipsis cuvillieri* (Manivit, 1966) Thierstein, 1971. Sample T41-1, Lower Cretaceous, Valanginian to Lower Hauterivian.
12. *Watznaueria barnesiae* (Black, 1959) Perch-Nielsen 1968. Sample T43-3, Lower Cretaceous, Upper Hauterivian to Lower Barremian.
13. *Watznaueria barnesiae* (Black, 1959) Perch-Nielsen 1968. Sample T41-1, Lower Cretaceous, Valanginian to Lower Hauterivian
14. *Coccolithus eopelagicus* (Bramlette & Riedel, 1954) Bramlette & Sullivan, 1961. Sample T25-12, Upper Eocene, NP19-21 Zone.
15. *Cruciellipsis cuvillieri* (Manivit, 1966) Thierstein, 1971. Sample T20-3, Lower Cretaceous, middle part of Lower Berriasian.
16. *Watznaueria britannica* (Stradner, 1963) Reinhardt, 1964. Sample T20-3, Lower Cretaceous, middle part of Lower Berriasian.
17. *Cyclagelosphaera margerelii* Noel, 1965. Sample T27-14, Lower Cretaceous, Berriasian.
18. *Zeugrhabdotus embergeri* (Noel, 1958) Perch-Nielsen, 1984. Sample T27-14, Lower Cretaceous, Berriasian.
19. *Nannoconus* spp. top view. Sample T27-14, Lower Cretaceous, Berriasian.
20. *Cyclagelosphaera deflandrei* (Manivit, 1966) Roth, 1973. Sample T27-14, Lower Cretaceous, Berriasian.
21. *Watznaueria barnesiae* (Black, 1959) Perch-Nielsen, 1968. Sample T27-14, Lower Cretaceous, Berriasian.
22. *Nannoconis steinmanni minor occurrence*
23. *Prinsius bisulcus* (Stredner, 1963) Hay & Mohler, 1967. Sample T35-1, Paleocene, NP 5-NP9 Zone.
24. *Fasciculithus* spp. Sample T35-1, Paleocene, NP 5-NP9 Zone.
25. *Chiasmolithus bidens* (Bramlette & Sullivan, 1961) Hay & Mohler, 1967. Sample T35-1, Paleocene, NP 5-NP9 Zone.
26. *Fasciculithus jani* Perch-Nielsen, 1971. Sample T35-1, Paleocene, NP 5 Zone.

27. *Sphenolithus primus* Perch-Nielsen, 1971. Sample T35-1, Paleocene, NP 5 - NP 9 Zone.
28. *Chiasmolithus consuetus* (Bramlette & Sullivan, 1961) Hay & Mohler, 1967. Sample T35-1, Paleocene, NP 5-NP9 Zone.
29. *Cretarhabdus crenulatus* Bramlette & Martini, 1964. Sample T35-6, Upper Cretaceous, Maastrichtian.
30. *Watznaueria barnesiae* (Black, 1959) Perch-Nielsen, 1968. Sample T35-3, Upper Cretaceous, Maastrichtian.
31. *Reticulofenestra dictyoda* (Deflandre, 1954) Stradner, 1968. Sample T31-1, Lower Eocene - Ypresian, NP13-NP14 Zone.
32. *Biantholithus* sp. Sample T31-1, Lower Eocene - Ypresian, NP13-NP14 Zone.
33. *Ericsonia formosa* (Kamptner, 1963) Haq, 1971. Sample T31-3, Lower Eocene - Ypresian, NP13-NP14 Zone.
34. *Discoster barbadiensis* Tan, 1927. Sample T31-3, Lower Eocene - Ypresian, NP13-NP14 Zone.

The numbers next to the references, for example T35-3, are the codes of the studied samples.

Results

Finally samples from every epoch within the Triassic to Cretaceous time interval were studied and the depositional age was determined in every detail. Afterwards and according to their age, the results from clay mineral analysis, ¹³C and ¹⁸O stable isotope analysis, SEM study and of course study of thin sections under polar microscopy were correlated and the Ionian basin evolution was determined. The results will be published in a number of international conferences and magazines.

I would like to thank the IAS Bureau for their financial support of this study.

Sincerely yours,

Getsos Kosmas.