Доклади на Българската академия на науките
Comptes rendus de l'Académie bulgare des Sciences
Tome 50, N° 11 – 12, 1997

GEOLOGIE
Stratigraphie

AN AMMONITE FIND IN THE MAKRI UNIT (BERRIASIAN, SOUTHEAST RHODOPES, NORTHEAST GREECE)

E. Dimadis, T. Nikolov*

(Submitted on January 7, 1997)

One of the big lithostratigraphic and geotectonic units, building the Greek part of the Rhodope massif, is the Makri unit. The rocks of this unit (known also as the phyllite series) are developed in the Circum-Rhodope zone of the Thetys ocean [11]. Many good finds of the upper part of the Makri unit are observed to the northwest from Alexandroupolis in the region of Greek Thrace (Fig. 1).

According to data of P. Papadopoulos [11,12], the Makri unit is divided into two parts: lower, metasedimentary series and upper, meta-volcanosedimentary series. After Papadopoulos et al. [11] the underlying metasedimentary series comprising (*1*) a lower sequence dominated by coarse-grained clastic formations (meta-conglomerate, meta-greywacke, etc.) that represents the major unconformity event to the crystalline basement; (*2*) an upper carbonate sequence consisting of limestone, dolomitized limestone, dolomite, dolomitic marble, marble and calc-schists, showing shallow sea-water characteristics. The upper carbonate sequence shows too a transitional upward gradation to schistose rocks of the meta-volcanosedimentary series. The overlying meta-volcanosedimentary series consists predominantly of greenschists. Basic dyke intrusion (diabase, dolerites) of Early Cretaceous age intersects the greenschists [11].

There are a number of indirect (superposition) and direct (paleontologic) data about the Mesozoic age of the rocks of the Makri unit, but its more detailed dismemberment is hampered by the considerable tectonic deformation and metamorphization of the building rocks [4,5,7]. On this account, no clear remains of characteristic orthofossils have been found, with the exception of some rare finds of corals and other indeterminable macrofossils. The microfossil taxa established in the Makri unit rocks have a great range in most of the cases and cannot be used for exact dating. For this reason, the age of the Makri unit is generally defined as Triassic — Upper Jurassic [11,12].

In the course of the geological mapping of the Makri region, one of the authors (E. D.) has found an ammonite specimen which was determined (T. N.) as *Pseudosubplanites* (*Pseudosubplanites*) cf. *combesi* Le Hegarat (Fig. 3). A geological map of the region, a geological profile and a geological column with the lithological successions of the Makri unit in the investigated area are presented in order to show the exact locality of this important ammonite find (Figs 1, 2).

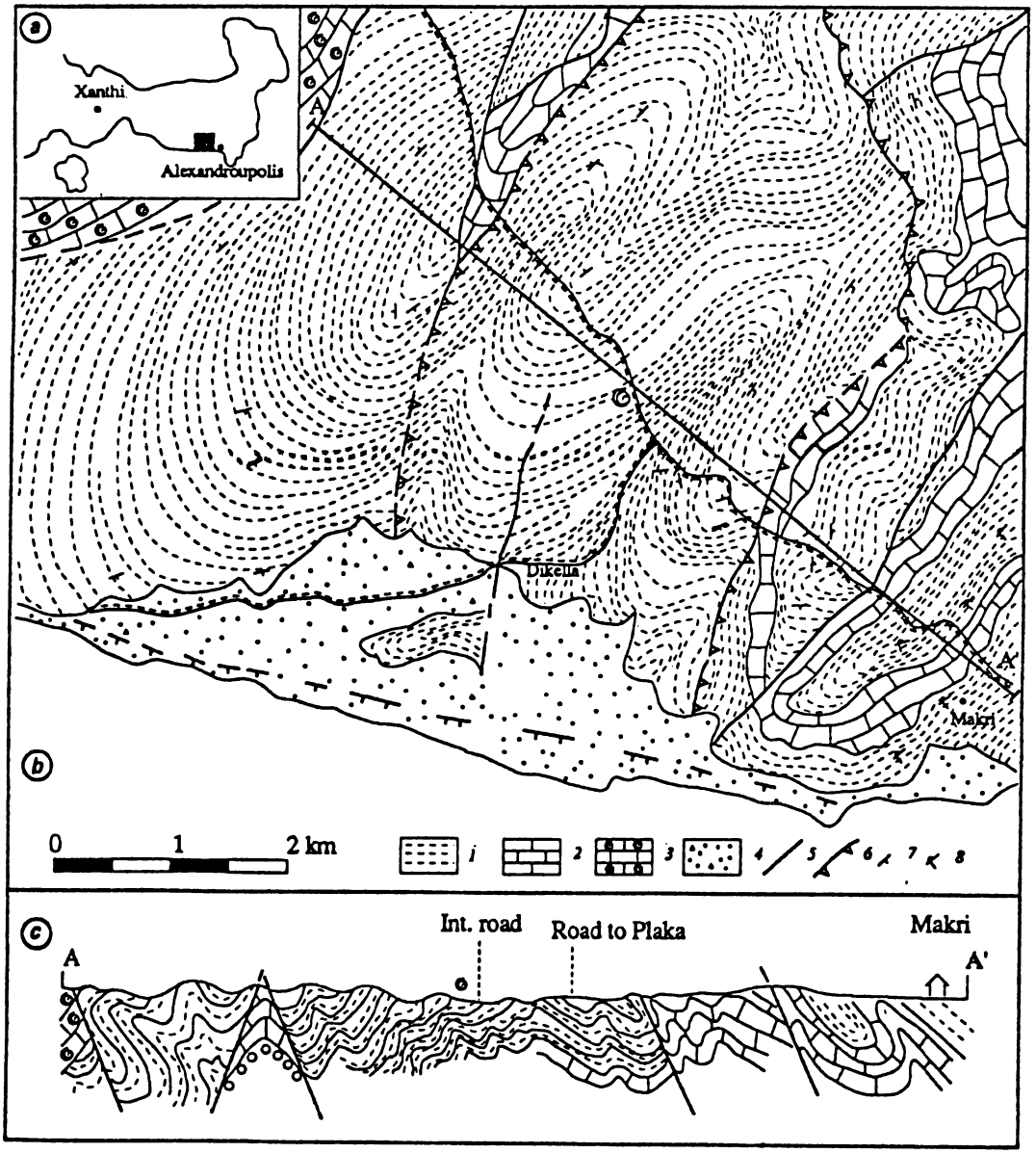

Fig. 1. Geological map of Makri village area (compiled by E. Dimadis)
a — geographical disposition of the research area; *b* — geological map; *c* — geological section
1 — sericite schists; *2* — dolomitic marble and marble; *3* — Tertiary limestones (Oligocene);
4 — Pliocene and Quaternary sediments; *5* — normal fault; *6* — overthrust; *7* — normal strata;
8 — overturned strata

No direct contact of the Makri unit with the older rocks has been observed in the region of the Makri village, but it has been established in a regional plan that it is transgressively and discordantly situated over a Precambrian base of highly metamorphic rocks [10,11]. The Makri unit is covered transgressively in normal successions by the Drimos Melia unit, which is provisionally related to the Upper Jurassic — Lower Cretaceous [11].

Regardless of the tectonic deformations, quite clear successions can be traced along the profile starting immediately from the Makri village and crossing the region in northwest direction (Figs 1, 2). A breccia-conglomerate packet with a thickness of about 10 m is encountered at the lowest part of the section. The pieces consist of gneisses, quartz, pigmatites, etc. The affiliation of this conglomerate is not quite clear. We assume that it is an analogue of the polygenic breccia-conglomerate from the lower part of the metasedimentary series of the Makri unit, mentioned by Papadopoulos et al. [11]. Massive light grey to white marbled dolomites or dolomitic marbles and fine crystalline marbled limestones are established in the upper direction, which are probably a part of the upper carbonate sequence of the metasedimentary series of the Makri unit, described by Papadopoulos et al. [11].

The NN *4*, *5* and *6* packets shown in Fig. 2 build the upper-metavolcanic series of the Makri unit. The ammonite was found in the middle part of this sequence among sericite schists. The determined species is found during the latest Tithonian, where it has been established by rare specimens. It was developed on a large scale during the Berriasian. For this reason we assume that it determines most probably Berriasian age of the phyllitoid packets. Even if it assumed that this species occurred here during the late Tithonian, in all cases this will be the uppermost part of the Upper Tithonian. Therefore, the overlaying beds certainly include the Berriasian stage too. This provides the basis to correct the Makri unit age during the interval Triassic-Lower Cretaceous (Berriasian). The transgressive position of the Drimos Melia unit over the Makri unit [11] is determined in our opinion by the late Cimmerian movements, which faded during the Berriasian. On this account, the Drimos Melia unit cannot include the Upper Jurassic (except as olistostrome rocks); it is superpositionally related only to the Lower Cretaceous. The upper boundary of the Drimos Melia unit is determined by the mid-Cretaceous Austrian transformations.

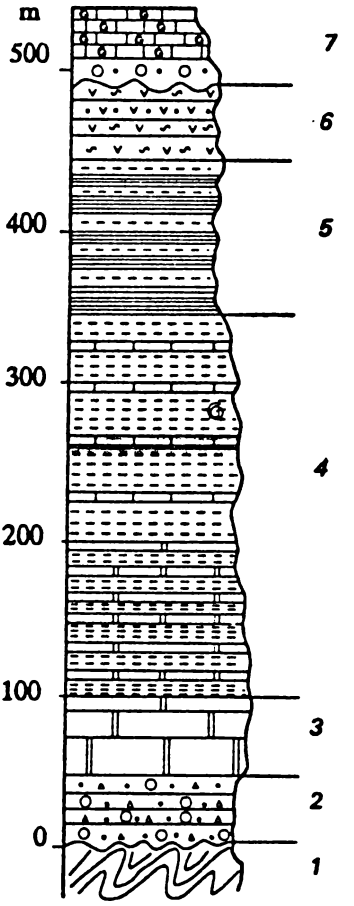

Fig. 2. General stratigraphic column of Makri unit in the Makri village area
1 — Precambrian crystalline basement; *2* — breccia-conglomerates; *3* — marbles; *4* — sericite schists with intercalations of crystalline limestones; *5* — dark phyllites and sericite schists; *6* — greenschists: metadiabases and their tufs; *7* — Oligocene limestones with basal conglomerate

The new data on our disposal confirm the correlation of Boyanov and Russeva, who consider the Makri unit and the Drimos Melia unit as analogues of the Mandrica Group and the Maglenik Group from the Bulgarian part of the East Rhodopes [1].

Description of the ammonite specimen.

1973. *Pseudosubplanites* (*Pseudosubplanites*) cf. *combesi* Le Hegarat, Fig. 3.
1973. *Pseudosubplanites combesi* n. sp. Le Hegarat, p. 36, pl. 1, Fig. 2; pl. 37, Fig. 1.
1982. *Pseudosubplanites* (*Pseudosubplanites*) *combesi* Le Hegarat sensu Nikolov, p. 38, pl. IV, Fig. 2; pl. V, Fig. 3, 4.
1987. *Psedosubplanites* sp. Nikolov, p. 137.

Medium, srtongly secondary compressed ammonite, with moderately evolute conch.

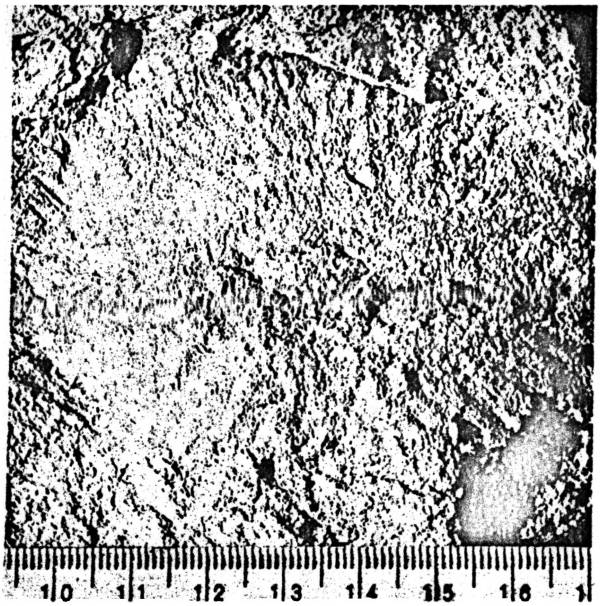

Fig. 3. *Pseudosubplanites* (*Ps.*) cf. *combesi* Le Hegarat, 1:1

he worls of the spire grow slowly in height.

The ribs are coarse, radial and a little sinusoidal, biplicate. There are also virga-tome (triplicate) ribs in the last worl as well as rare intermediate ribs.

This species is extensively developed in the Beriasian basal. The first representaves of the species have appeared in the latest Tithonian — in the upper part of the *araulacosphinctes transitorius* zone — the top of the *Malbosiceras chaperi* subzone; = *erriasella jacobi* zone). The acme-zone coincide with the lower part of the Berriasian *Pseudosuplanites grandis* zone).

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titute of Geology and Mineral Exploration
Xanthi, Greece

**Geological Institute*
Bulgarian Academy of Sciences
1113 Sofia, Bulgaria