

Rifting of the Sub-Pelagonian carbonate platform: A case study from the *Aggelokastro* section, Argolida, Greece

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Abstract

This study presents the preliminary results of selected samples from *Aggelokastro* section, Argolida, Greece. The section is comprised of a ~200m thick carbonate sedimentary succession, capped by ~50m of clastic sediments of the “schist-sandstone-chert” formation. The entire sedimentary sequence belongs to the Sub-Pelagonian type B Unit, member of the tectonostratigraphic terrain H3, equivalent to the non-metamorphic Pelagonian platform (Papanikolaou, 1990; Papanikolaou, 2021). In total 12 thin sections were produced from selected samples and studied under the microscope. Each sample was characterized according to the Standard Microfacies (SMF) scheme of Flugel (2010). The results show significant diversion between paleoenvironmental conditions and are divided into three main parts (see Fig. 1):

- Lower formation: shallow water carbonate succession with densely packed peloidal packstones-grainstones with coated benthic foraminifera (*Orbitopsella* and others), gastropods and echinoids (SMF 11, platform margin shoals or platform margin reef) and wackestones with gastropods, benthic foraminifera and algae (SMF 8, open marine-interior platform)
- Middle formation: transitional (slope) environment carbonates, represented by a polymictic breccia grading to wackestone with subangular-subrounded lithoclasts and bioclasts (shell debris, radiolaria, benthic foraminifera and large bivalve shells) (SMF 4, slope or toe-of-slope) and
- Upper formation: deep marine environment carbonates, including Ammonitico Rosso facies, represented by wackestones-packstones with spicules, thin shelled bivalves, radiolaria and planktonic foraminifera (SMF 1 and 3, deep shelf or deep sea).

Additionally, smear slides from the “flysch-like” succession point to a deep marine clastic environment with rare or absent carbonate material. The defined Standard Microfacies show a clear deepening upward trend, marking the rifting of the carbonate platform. Regarding geological age considerations, the lower formation should be considered as Early Jurassic (late Sinemurian – middle/late Plienbachian) due to the presence of *Orbitopsella* sp. (Ogg et al., 2016). The Ammonitico Rosso facies of the upper formation is tentatively attributed to Middle Jurassic, similarly to the dating of radiolarites above the carbonate platform (Danelian and Robertson, 1995) in Beotia area. Lastly, the “flysch-like” clastic succession is generally considered of Late Jurassic-Early Cretaceous age, according to Papanikolaou (1990).

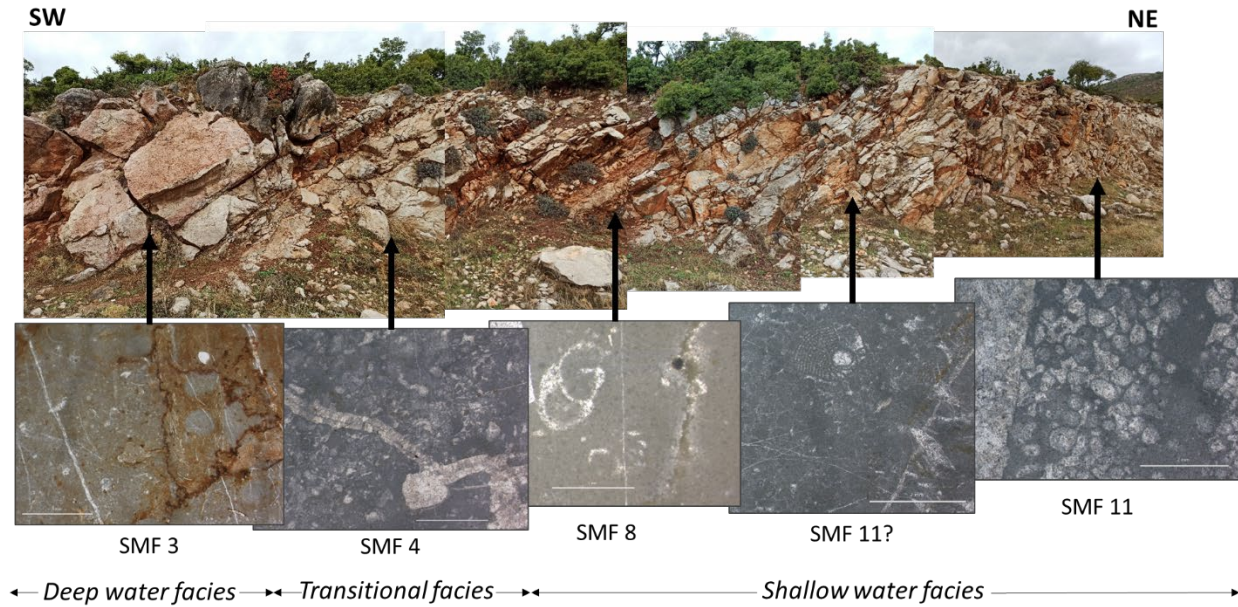


Figure 1. Aggelokastro section, carbonate part (point of view ~50m) and microfacies images from 5 sampling positions (indicated by the black arrows). The defined Standard Microfacies show a clear deepening upward trend related to the rifting of the Sub-Pelagonian carbonate platform.

References

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