

Eastern Mediterranean Tectonics

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Most rocks exposed in the Eastern Mediterranean show evidence for a long-standing and complex tectonic history. Besides the active Hellenic subduction system, this history includes at least four major orogenic episodes, namely the Cadomian, the Variscan, the Cimmerian, and the Alpine Orogeny, accompanied by the destruction and/or formation of large oceans such as the Paleotethys and the Neotethys. Therefore, with the term “Eastern Mediterranean Tectonics” we refer to all tectonic processes that occurred from the Neoproterozoic to present and contributed to the formation of the present geological edifice of the Eastern Mediterranean.

This topical issue of the *International Journal of Earth Science* sheds some more light on the tectonic history of the Eastern Mediterranean presenting a collection of fifteen papers, which cover processes that took place in Aegean and Anatolian domains from the Neoproterozoic to the present (Fig. 1). The idea for this issue was born during the *GeoFrankfurt2014 conference*, where we convened a session entitled “The Evolution of the Alpine Orogenic System in the Eastern Mediterranean.” Apart from the participants of this session, the invitation to submit papers was

extended to many other colleagues working in the Eastern Mediterranean.

The papers of the present issue were written by structural geologists, sedimentologists, petrologists, geochemists, geophysics and seismologists, thus covering a wide range of disciplines. All these contributions are aiming to reveal the tectonic evolution and paleogeography of the Eastern Mediterranean. A first collection sequence of papers is dealing with the pre-Alpine tectonic evolution and paleogeography. A second collection is addressing problems related to the Eo- and the Meso-Alpine orogenic phases occurring from Late Jurassic to Oligocene. Finally, there are papers dealing with the Late Miocene to Holocene evolution of the south Aegean and west Anatolian domains.

Specifically, the issue starts with two papers (Chatzaras et al., and Zulauf et al.), which are mainly based on detrital zircon U–Pb ages to track the margin of northern Gondwana and the Paleotethys suture in the southern and southwestern part of the External Hellenides. Detrital zircon U–Pb ages are also used by Hinskens et al. to constrain Late Cretaceous maximum sedimentation ages and a Triassic to Neoproterozoic provenance for the metasedimentary rocks of the Cycladic blueschists of Tinos. The following two papers by Ferriere et al. and Michail et al. describe the evolution of the Vardar Ocean and suggest west-directed obduction of the ophiolitic complex to the Pelagonian zone during the Eo-Hellenic orogenic phase. Based on structural and geochronological data, Georgiev et al. suggest Jurassic to Paleogene nappe stacking in the Rhodope metamorphic complex and Middle Eocene extensional overprinting. Okay and Altiner present new constraints on the Cretaceous development of the southern part of the Pontides close to the Izmir–Ankara suture (Haymana and Ankara regions) using mainly biostratigraphical data. The Late Cretaceous to Eocene evolution of the Asterousia

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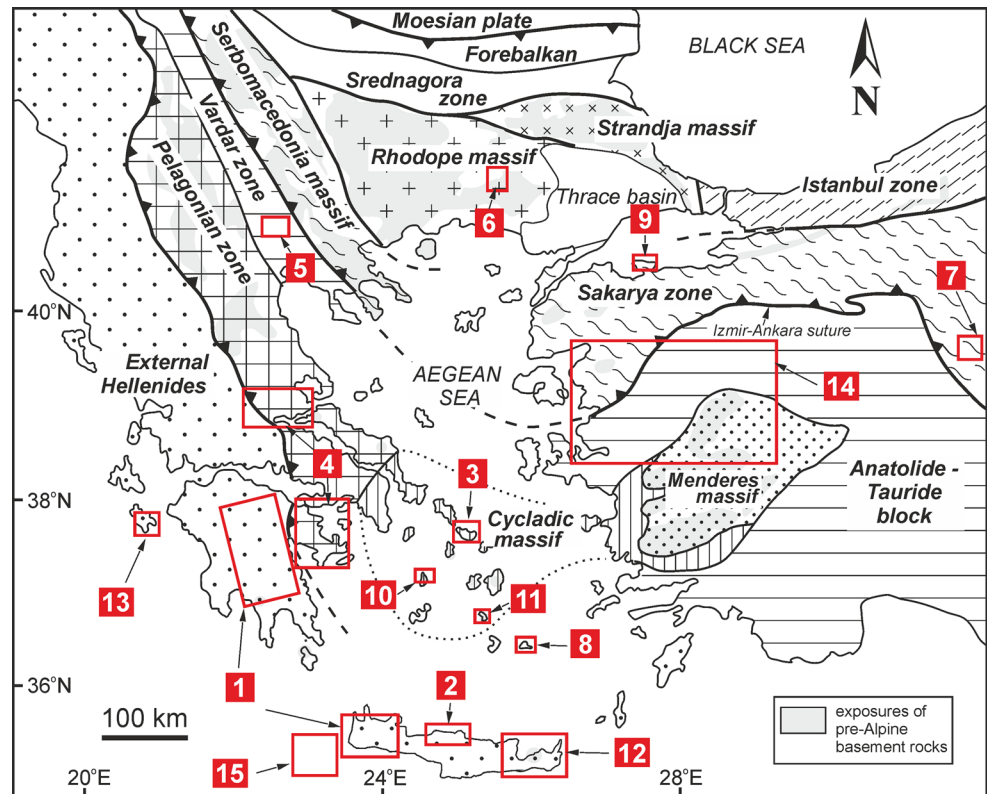
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Fig. 1 Simplified tectonic map of Greece and western Turkey showing the locations of the study areas in this issue: 1 Chatzaras et al., 2 Zulauf et al., 3 Hinskens et al., 4 Ferriere et al., 5 Michail et al., 6 Georgiev et al., 7 Okay and Altiner, 8 Martha et al., 9 Türkoğlu et al., 10 Aravadinou et al., 11 Mizera and Behrmann, 12 Zelilidis et al. (a) [published Vol 105/6: 1859–1878], 13 Zelilidis et al. (b), 14 Gessner et al., 15 Papadimitiou et al.



crystalline complex exposed on Anafi Island is discussed by Martha et al. on the basis of new structural and U–Pb zircon data. Türkoğlu et al. present structural data from the Kapıdağ shear zone and suggest that the dextral strike-slip in NW Anatolia commenced probably during the Middle Eocene. The following two papers by Aravadinou et al. and Mizera and Behrmann describe the ductile deformation and the Eocene–early Miocene structural evolution of the Cycladic Massif in Sifnos and Ios islands, respectively. The paper by Zelilidis et al. (a) is dealing with the upper Miocene to lower Pliocene successions of eastern Crete and discusses the hydrocarbon prospectivity in the Hellenic trench system, while Zelilidis et al. (b) presents sedimentological and structural data to describe the Pliocene–Pleistocene tectonic evolution of Zakynthos Island.

Cross-gradient joint inversion of gravity and aeromagnetic data are used by Gessner et al. to explore the structure of the upper crust in the northern Menderes Massif. The issue is closing with the seismological work of Papadimitiou et al., which describes the slab geometry and the mode of deformation along the southwestern part of the Hellenic arc based on the October 12, 2013 Mw 6.7 earthquake offshore Crete Island.

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