

## **The Pelagonian terrane in Greece: a piece of peri-Gondwanan mosaic of the Eastern Mediterranean and a new piece of information about the geological evolution of Avalonia**

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The North-East Mediterranean region is a crustal mosaic comprised of proximal (Cadomian) and exotic (Avalonian) peri-Gondwanan terranes that were accreted to the European margin and repeatedly reshaped during several orogenic events, including Caledonian, Variscan and Alpine. The Pelagonian terrane in Greece is a peri-Gondwanan terrane of the Avalonian affinity: the properties of its >700 Ma-aged “Proto-Pelagonian” basement are attesting its peri-Amazonian origin. Our new survey reveals the Proto-Pelagonian rocks in most of the basement outcrops. Additionally, 600 Ma-aged orthogneisses were discovered, which is typical for the Avalonian magmatic arc. Here we also report the data obtained on the overstep Late Ediacaran to Early Mesozoic Pelagonian rock section, using U-Pb-Hf isotope geochemistry, and supported by structural and lithological observations. The Late Ediacaran Pelagonian metasedimentary sequence yields mainly magmatic ages between 750-560 Ma with Hf-TDM ages of 1.0-1.4 Ga, indicating the detrital transport exclusively from the Avalonian microcontinent that was insular at that time. These data are well correlated with the correspondent Avalonian sequences from Atlantic Canada and the British Midlands.

It is generally suggested that Avalonian terranes were detached from Gondwana by the Rheic Ocean opening in the Early Ordovician and accreted to the European margin in the course of the Caledonian orogeny, while the Cadomian terranes have detached and accreted later, during the Variscan convergence. Despite this, no Caledonian magmatism is manifested within Pelagonian basement. Moreover, the post-Caledonian zircon data displays no Caledonian zircon ages, with a gap between 520 and 350 Ma. Voluminous intrusion of late-Variscan (ca. 300 Ma) Pelagonian granites indicates the upper-plate position for the Pelagonian terrane at that time. It suggests that the Pelagonian terrane wasn't involved in the Caledonian orogeny, but had remained adjacent to Gondwana or insular until the Variscan convergence. In contrast, Caledonian ages were reported from several Cadomian-type terranes in the Eastern Mediterranean. These data call for a reassessment of the Paleozoic drifting-and-accretion processes of peri-Gondwanan terranes in the NE Mediterranean.