Géologie et évolution paléogéographique de la zone pélagique du nord de l'île d'Evia (Grèce): contraintes et implications géodynamiques pour les Hellénides

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In the northern Evia island (Greece), Paleozoic and Mesozoic sequences were folded together or imbricated as the result of two main tectonic events (Alpine and eo-Alpine). These sequences belong to the Pelagonia Terrane. The latter is represented by napes which overthrusted the units of the External Hellenides domain during Late Eocene-Oligocene times. The Pelagonian sequence is made of continental crust elements (basement), syn-rift deposits, carbonate platform sediments as well as volcano-sedimentary sequences. The syn-rift deposits comprise continental detrital sediments as well as Late Permian shallow water carbonate incursions. The detrital formation is followed by dolomites of Middle Triassic age. This sequence is compared with the southern Alps sequence-Verrucano Lombardo followed by the Late Permian Bellerophon limestone, overlain by a new siliclastic episode grading into a Mid Triassic carbonate platform. This Permo-Triassic detrital sequence is interpreted as a syn-rift transitional sequence that we ascribe to the initiation of the Maliac back-arc rift during the Permian.

New geochronological data indicate a prolonged Late Carboniferous magmatic activity and cooling of the magmatic bodies and metamorphic host rocks in upper greenschist to epidote-amphibolite metamorphic conditions during the Permian rift phase. The multistage magmatism had a duration of at least 20 Ma centred between 308 and 325 Ma. Geochemical analyses indicate calc-alkaline to alkaline affinities for the granodiorites. A volcanic arc setting for the origin of the intrusive rocks is proposed.

The new data point towards the SE continuation, in Evia and the Cyclades, of a Variscan continental crust already recognised in central and northern Greece (Pelagonian basement). The Late Carboniferous magmatism is viewed as a result of northward subduction of the Paleotethys under the Eurasian margin generating transtentional regime and aborted or successful back-arc rifts along this margin. In conclusion, we interpret Pelagonia as an Eurasian Variscan drifted fragment representing a southward migrating magmatic arc as a result of northward Paleotethys subduction under Eurasia in Carboniferous times, followed by the collapse of the Variscan cordillera. The collapsing event led to the Triassic opening of the Meliata-Maliac back-arc oceans due to increased Paleotethys slab roll-back and to the eo-Cimmerian collision of Pelagonia with Cimmerian terranes drifting away from Gondwana during the Early Triassic. The NE oriented Triassic southern passive margin of the Maliac ocean is represented in Evia and Hydra by series belonging to its proximal part whereas the Argolis and Othrys series represent its distal part.