

Pelagonian affinity of the Intermediate Blueschist Nappe in the Olympus-Ossa-Pelion area (Northern Greece)

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The diversity in provenance specifications of the Pelagonian and Cycladic massifs, comprising the central Hellenides in Greece, was applied in order to investigate the Intermediate Blueschist Nappe, which is thought to represent the Cycladic Blueschist Unit in the Olympus-Ossa tectonic window and the Pelion peninsula.

Pre-Variscan (>310 Ma) rock samples from the Cycladic basement of the islands of Ios and Naxos, analyzed in this study, yield a U-Pb zircon signal compatible with a North African provenance and the Cadomian affinity, while the Pelagonian Massif yields a peri-Amazonian/Avalonian provenance. In addition, Cycladic rock samples contain significant Ordovician-Devonian (450-400 Ma) detrital zircon population, which is virtually absent from the Pelagonian terrain and from the External Hellenides. It implies that the protolith of the Cycladic Blueschist Unit was deposited in an oceanic basin that was located in a more internal position relative to the Pelagonian, i.e. in the Vardar Ocean (not in the Pindos).

We surveyed the U-Pb detrital zircon of the blueschist lithologies in the Olympos-Ossa area and in the Pelion peninsula in order to define their provenance and origin. The oldest analyzed rock units in this area are Variscan-aged and Triassic orthogneisses and meta-igneous blueschists (including Ambelakia Unit in Mt. Ossa: 246±3 Ma). The youngest detrital zircons of the metasedimentary Makrinitza Unit (Pelion peninsula) are ca. 250 Ma; its detrital age spectrum portrays a major peak at 320 Ma and minor peaks at 550-1000 Ma and at 1500 Ma; older ages are absent, and Ordovician-Devonian (450-400 Ma) zircons are rare. Therefore, rather than resembling the Cycladic Blueschist, the Intermediate Blueschist Nappe in northern Greece reveals a Pelagonian provenance and likely represents the thinned continental margin of Pelagonia facing the Vardar Ocean.