

## **LA-ICP-MS U-Pb detrital zircon study and structural observations of the Cycladic Blueschist Unit on Heraklia Island (Cyclades, Greece)**

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At the central and southern part of the Attic-Cycladic complex (Aegean Sea, Greece) significant exposures of the Cycladic Basement Unit orthogneisses and meta-sediments are observed. These are mainly cropping out in Paros, Naxos and Ios islands and to a much lesser extend in Sikinos Island and they comprise Variscan (granitic) orthogneisses and late Paleozoic metasediments. In this paper we present evidence of a hitherto not identified possible outcrop of the Cycladic Basement in Heraklia Island (central Cyclades).

The small Heraklia Island, situated at the center of the Attic-Cycladic core complex in the Aegean, between the islands of Naxos and Ios, consists of rocks that are attributed to the Cycladic Blueschist Unit. The tectonostratigraphy of Heraklia Island includes: a) a lowermost schist sequence with interbedded lenses of felsic orthogneisses whose primary relationship is obliterated by later subduction and exhumation related shearing b) A ~200m thick variegated marble sequence with sparse calc-schist intercalations, which is isoclinally folded together with ~100m thick overlying quartz-mica and calc-schists schists.

All rocks comprise a penetrative foliation formed by greenschist facies mineral assemblages but in the uppermost schists relics of the Eocene HP event are found in the form of glaucophane inclusions within albite porphyroblasts. A mylonitic planar fabric with a cataclastic overprint is observed at the base of the marble sequence and the roof of the underlying schists and orthogneisses. It is accompanied by a ~N-S stretching lineation, subparallel to isoclinal folding in all scales. Numerous kinematic indicators reveal a top-to-N sense of shear thus linking the Heraklia rocks kinematically with the crustal extensional detachment systems of both Naxos and Ios islands.

LA-ICP-MS U-Pb detrital zircon study of schists and gneisses is used in order to identify provenance and to elucidate the tectonostratigraphic relationship between the lower and upper schists of the island. The lowermost schists are characterized by a Panafrican provenance and maximum deposition ages (MDA) that span from late Proterozoic in the schists to Triassic in the orthogneisses, whereas the upper quartz-mica schist sequence shows Variscan provenance and yielded a late Cretaceous maximum deposition age.

Based on the above the lowermost sequence of Heraklia Island may represent a portion of the Cycladic Basement metasediments that's been intruded by felsic magmas in the Triassic. These rocks could be correlated with the carapace of the basement rocks in Ios Island.