



Tectonic history of the Cycladic Blueschist Unit, from subduction to Aegean extension.

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The Cycladic Blueschist Unit is mainly outcropping in Aegean Sea. This unit is composed from top to bottom of three lithologies: (1) An oceanic crust unit composed of coarse-grained metagabbros, fine-grained metabasalts, metavolcanites and serpentinitic schists; (2) a margin sedimentary sequence composed of marbles and schists intercalations and (3) the underlying gneissic basement. The oceanic crust has Pindos Ocean affinities as it has been dated from 240 to 80 Ma (Bulle et al 2010) and the sedimentary sequence and basement correspond to the northern extremity of the Adria margin (Attic area display a continuous sedimentation from Permian to Eocene, lying on Adria basement). The oceanic units are over-thrust on top of the margin sequence and the whole pile underwent Eocene HP metamorphism and Oligocene greenschist overprint.

The present day morphology of the Cyclades archipelago allows few correlations between the constitutive islands. We present here a pre-Aquitania restoration of the Cycladic Blueschists domain including the late tertiary extension interpreted from available bathymetric and paleomagnetic data. Main results are as follows:

1/ Two opposite senses of shear are associated with the regional lineation: i) Top to NE in the north and ii) top to SW in the south. Top to SW sense of shear is prior to Lawsonite retrogression and then related to HP metamorphism showing that kinematics of subduction is conserved in the Cycladic Blueschists Unit. Evidences for this top to the SW event related to subduction are the thrust of the Pindos Ocean on top of the Adria margin, observed on the islands of Syros, Evvia and Attica. Top to NE sense of shear is associated with decompression from eclogite to greenschist facies and attributed to exhumation. The unit is exhumed along the reactivated Vardar Suture Zone, explaining the overprint gradient and the top to northeast shearing increasing toward north.

2/ Core complex extension occurred after a first stage of exhumation of the unit from mantle depths to crustal level as the North Cycladic detachment is cross cutting the whole pile of the Cycladic Blueschists Unit.

3/ Then, flat and ramp extensional systems develop inside the Blueschists unit, triggering the development of flat lying internal to the Cycladic Blueschists unit and leading to the present day geometry.

4/ Finally, late Miocene to present day faulting giving the major extensional basins of Evvia, Corinth and Cretan Sea dismembers the Cycladic Blueschists unit, this late extensional event is well illustrated by the numerous thermochronological data that are available in the area.