

## **The Trans Cycladic Thrust: a new major tectonic structure in the Eocene syn-orogenic Hellenic subduction channel (Cyclades, Greece)**

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New structural, petrological and geochronological data from the basement rocks on Milos (Kiriaki Complex), together with published data from other Cycladic islands, suggest that the Cycladic Blueschist Unit can be subdivided in two different nappes that are separated by the newly defined Trans Cycladic Thrust (TCT). Both nappes consists of greenschists, marbles, metapelites and metabasic rocks that experienced Eocene peak metamorphic conditions during subduction in the Hellenic subduction channel. (i) The Lower Cycladic Blueschist Nappe, which comprises the islands between Makronisos and Serifos and Milos, Folegandros and Ghiaros, as well as Lavrion and Evia, reached temperatures of c. 400°C and 10 kbar. Decompression related shear deformation reflects top-to-the-W to -S thrusting. (ii) The Upper Cycladic Blueschist Nappe reached temperatures of c. 550°C and 20 kbar. Exhumation-related deformation indicates top-to-the-W to -S kinematics only at lower structural levels; most rocks preserve a top-to-the E to NE shear-sense, indicating apparent normal faulting. Andros, Tinos, Syros, Sifnos, Sikinos and Ios, which all preserve remnants of eclogites, lie within the Upper Cycladic Blueschist Nappe.

Because the exhumed Eocene syn-orogenic Hellenic subduction channel has been strongly overprinted by the Miocene post-orogenic extension, including differential rotation between the Western- and Central Cyclades, the TCT is bent by almost 90° and offset by major low-angle normal faults like the West Cycladic Detachment System. This observation suggests that the Miocene extensional low angle faults did not or only partly reactivated the Eocene crustal-scale faults associated with the extrusion of the Cycladic Blueschist Unit. The lateral continuation of the TCT is still under discussion but of crucial interest for linking the Hellenides with the Taurides.