



Kinematics of syn- and post-orogenic exhumations on Ios (southern Cyclades, Aegean Sea, Greece): local and regional constraints from an extensive field study

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Ios island (South Aegean Sea, Greece) is located in the southern part of the Attic Cycladic Blueschist Massif (ACBM). There, South verging shear have already been described whereas North verging normal shear have been described in the northern part of the ACBM. Observations on Ios are crucial to understand whether back-arc extension in the Aegean is symmetric or asymmetric. We present new structural data from an extensive field study carried out on Ios with an attempt to characterize the ductile deformation and its relationships with metamorphism.

Two successive tectono-metamorphic events have been recognized in the upper Series unit (Cycladic Blueschist Unit) and the pre-alpine Basement (Cycladic Continental Basement). First, top to South shearing is localized closed to the Series/Basement contact. Penetrative strain in the Series is dominated by south-verging shear-bands associated to blueschist and greenschist facies minerals. However, in the basement, mylonites and anastomosed shear-bands affect the upper levels of the unit. Large top to North shear-zones lately crosscut the whole pile. These structures show clear evidence of activation through the ductile-brittle transition.

Therefore, two episodes of exhumation can be pointed out. The first episode consists in the top to South thrust of the Series (a metamorphic unit of oceanic affinity) on the Basement (a less metamorphic unit of continental affinity) in the subduction wedge. It can be considered as syn-orogenic. The second post-orogenic episode consists in top to North asymmetric extension in the back-arc context. It leads both units to pass through the brittle-ductile transition. These constrains allow us to reinterpret the kinematics of

the South Aegean domain during syn- and post-orogenic periods.