



Geochemical study of metagranitoid rocks of Serifos Island (Cyclades, Greece): implications for the late Paleozoic early Mesozoic geodynamic setting of the Cycladic domain

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The Cycladic Blueschist Unit (CBU) is the main unit of the Attic-Cycladic crystalline complex (Greece), generally exposed in the footwalls of lithospheric scale detachments. Serifos Island represents a metamorphic core complex in which the footwall CBU occupies most of the island and it is intruded by a Miocene granodiorite. This study investigates the geochemical, petrographical and microstructural characteristics of metagranitoids and acid metavolcanics as layers and lenses exposed in the structurally lower parts of the CBU, on Serifos Island. In the southern and southwestern Serifos Island, this lithological sequence has been previously described as a “gneiss unit” or a “basement unit”. Field observations and detailed petrography reveal that this unit is composed by alternating layers of mica-schists, metagranitoids, metatuffs and intensely mylonitised quartzites and marbles, close to the contact with the main granitic intrusion.

Previously published age data from the Serifos othogneiss (metagranitoids) yielded Carboniferous to Triassic ages, which indicate the diverse origin of the protoliths. Early–Middle Triassic protolith ages of meta-igneous rocks have been recorded in other Cycladic islands, Attica and Evvia Island and mostly support magmatic activity with alkaline and anorogenic affinities throughout the Triassic. The major and trace element whole rock analyses, Rare Earth Element (REE) patterns and Sr-Nd isotopic data of the Serifos metagranitoids suggest involvement of an arc-type magmatic sequence with andesite/granodiorite and fractionated volcanic rocks. The results point to a subduction zone environment that occupied some part of the Cycladic Blueschist Unit domain in the late Paleozoic - early Mesozoic.