

VOLCANIC STRATIGRAPHY AND EVOLUTION OF NISYROS ISLAND

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The chemical composition, mineralogical paragenesis, stratigraphic position, areal extension, age and depositional mechanisms of the formations of Nisyros volcano are presented.

In the light of all these data a new model on the evolution of the volcanic activity has been proposed: It consists of two eruptive cycles. The first cycle includes the cone-building eruptive activity and consists of three different phases. Each phase commenced with effusive and explosive (magmatic and hydromagmatic) activity fed by basic andesitic and andesitic magmas and terminated with the extrusion of dacitic - rhyodacitic lava domes and flows. The second eruptive cycle includes the caldera forming explosive activity and consists of two different phases. Each phase commenced with a low intensity - low magnitude phreatomagmatic explosion fed by rhyolitic magmas. This triggered a central calderic collapse which was followed by extrusion of rhyolitic - dacitic domes and lava flows.

The most reasonable cause that provoked the change in the eruptive behaviour from cycle one to cycle two was a change in the magma storage system: Cycle one eruptive activity was fed by deep magma chambers stored between 25 and 10 km depth while cycle two was fed by shallow magma chambers situated in less than 6 km depth.

PRELIMINARY RESULTS OF U-Pb AND Rb-Sr INVESTIGATIONS ON METAMORPHIC ROCKS OF THASSOS, PANGAEON COMPLEX, NORTHERN GREECE

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Pre-tectonically intruded granodiorites and their metasedimentary host rocks of the crystalline complex of Thassos Island, are examined by the U-Pb-zircons- and Rb-Sr-method on minerals and on whole rocks.

The metamorphic sequence is built up of gneisses, metapelites, amphibolites and marbles, which suffered low to medium grade prograde metamorphism.

The contact between ortho- and paragenic rocks is transposed by a shearing

deformation which developed a mylonite foliation in the metasediments and the inter-layering granodioritic gneisses in the same way. Diopside-bearing calc-silicate felses occur at the marble-orthogneiss lithologic boundaries.

U-Pb-investigations on zircons of a strongly foliated granodioritic orthogneiss reveal a late Variscan magmatic event. In the concordia diagram the U-Pb-data points of clear prismatic zircons form a regression line with an upper intercept age of 299 ± 1 Ma. The negative lower intercept probably due to a disturbance of the U-Pb-systems can't be explained until now.

Cathodoluminescence patterns of the zircon grains show zoned internal structures caused by incorporated trace elements and/or lattice defects during crystal growth. An analyzed fraction of turbid zircon grains contains a high abundance of recrystallized zones in the often cataclastic distressed crystals. If the observed lead-loss of this fraction is connected with an episodic -metamorphic- event has to be proved.

The magmatic event, accompanied by the emplacement of pegmatitic veins is also recorded by Rb-Sr-data of a metapegmatite. The two different white mica generations of the foliated granite-pegmatite could be distinguished into a pegmatitic postcrystalline deformed generation, and a syndeformatively crystallized generation. Separately analyzed, the pegmatitic generation yielded a Rb-Sr mineral age of 244 ± 9 Ma, the syntectonic generation, grown during the alpidic overprint, a mineral age of 26.0 ± 0.3 Ma.

Rb-Sr-data obtained on micas revealed Early Miocene (white micas) and Middle Miocene (biotites) mineral ages, which are interpreted as cooling ages. The influence of shearing processes on isotope homogenization during the alpidic overprint will be studied using the thin slab method on rocks consisting of lithological different layers produced by tectonic stacking.

THE RECENT DRAINAGE NETWORK OF THASOS AND ITS TECTONIC AND MORPHOLOGICAL BACKGROUND

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The hydrography of the island of Thasos at the southeastern edge of the Rila-Rhodope-Massif is marked by a distinct asymmetry of the drainage network. The main reason for that is an uplift-axes at the northeastern part of the island, that separates the contrasting drainage patterns.

Because of the fault-line-scarp, running parallel to the uplift axes and the vertical tectonic displacement (graben) of the northeastern areas, together with a high relief