

## **THE GHOMARIDES PALEOZOIC TERRANE, RIFT – COAST RANGE, MOROCCO, AND ITS BEARING ON WESTERN MEDITERRANEAN TECTONICS**

**A. Michard\*, A. Chalouan\*\***

\*ENS, Dépt de Géologie, 24 rue Lhomond, 75005 Paris, France

\*\*Dépt de Géologie, Faculté des Sciences, BP 1014, RABAT, Maroc

In the Gibraltar arc, the Ghomarides (Rif) – Malaguides (Betics) nappes are the uppermost basement-bearing units of the Alpine inner zones. Paleozoic rocks constitute the prominent part of these upper nappes that virtually escaped Alpine metamorphism.

A study of the Ghomaride Paleozoic rocks allowed to reconstruct a chip of the former Variscan belt. Ordovician to Famennian sediments accumulated on a north-deepening margin and were folded (N-verging folds) and slightly metamorphosed prior to the deposition of a Culm sequence. The segment correlates well with the Eastern Morocco Variscan belt (Alpine foreland) and the Kabylia-Calabria-Upper Austro-Alpine Paleozoic sequences.

The Mesozoic-Cenozoic cover sequences of the Ghomarides nappes and associated Dorsale units indicate an extensional (transtensional?) setting from Triassic to Early Cretaceous time. Stratigraphic gaps characterize the Late Cretaceous-Eocene period. The nappes piling-up occurred prior to Upper Oligocene-Miocene coarse sedimentation. A moderate metamorphic event affected the very base of the Ghomaride pile at about 25 Ma, at the same time that the underlying Sebides units. Correlations with the Upper Austro-Alpine-Tuscany area support the concept of an African homeland for the Ghomarides, a «terrane» that originated more than 500 Km east of its present position.

## **CORRELATION OF THE GEOTECTONIC POSITION OF KYTHIRA AND CYCLADES WITHIN THE GEODYNAMIC EVOLUTION OF THE HELLENIC ARC**

**D. Papanikolaou, G. Danamos**

University of Athens, Department of Geology, Panepistimioupoli,  
Zografou, 15784, Athens, Greece

The tectonic structure and evolution of Kythira is in general similar to that of the Cyclades with a difference in the chronologic succession of the alpine and post alpine geodynamic processes which have ended in the Cyclades in contrast to Kythira where they are still in evolution. A basic distinction has to be made between the early phase of compressional tectonism which built up the alpine nappe pile and the late phase of extensional character which denudates the non metamorphic units from the crests of the anticlinal domes of the underlying metamorphic units. During this late phase the decollement and sliding of the non metamorphic units along their contact with the underlying metamorphic units is dominant under the important effect of gravity.

## **GEOLOGICAL STRUCTURE AND EVOLUTION OF THE NISYROS VOLCANO**

**D. Papanikolaou, E. Lekkas, D. Sakelariou**

University of Athens, Department of Geology, Panepistimioupoli Zografou,  
15784, Athens, Greece

Detailed mapping at scale 1/10.000 permitted us the establishment of the stratigraphic and tectonic structure of the Nisyros volcano. The stratigraphy comprises four lava formations A, B, C, D each followed by pyroclastics and pumise which form a volcanic cone. This stratovolcanic succession is followed by massive rhyolite extrusions in the SW of the cone (Nikia) followed by an important pumise formation contemporaneous and slightly post-dating the caldera formation in the centre of the former cone. Post-caldera massive extrusions of rhyolitic-dacitic lavas cut through the former volcanic cone and caldera building up high mountains in the central and western part of Nisyros.

The tectonic structure is dominated by the activation of four major fault zones dissecting the volcano in triangular segments. The throw of the major faults ranges from 70-100 m and it is the result of both pre-caldera and post-caldera tectonic activity. The faults have influenced the local stratigraphy of the volcano because they have limited as natural barriers the lava flows and consequent volcanic materials only in some segments of Nisyros. Intense geothermal alteration is observed along the major fault zones of Nisyros.

## **OBSERVATIONS ON THE KINEMATIC AND DYNAMIC EVOLUTION OF NEOTECTONIC BASINS IN EASTERN KORINTHOS**

**D. Papanikolaou, E. Logos, S. Lozios, Ch. Sideris**

University of Athens, Department of Geology,  
Panepistimioupolis Zografou, 15784, Athens, Greece

Structural analysis of some small neotectonic grabens in the area of eastern Korinthos, showed that during the first stages of their formation in Late Miocene – Early Pliocene they could be regarded as «pull apart basins», created within the shear zone of an echelon vertical and/or inclined strike-slip faults.

Younger slip motions indicate a gradual change towards oblique-slip faults, whereas finally most recent slip motions indicate dip-slip normal faults.

The overall stress-field seems to be constant throughout the neotectonic evolution (Late Miocene – Present) with a mutual change of the position between  $\sigma_1$  and  $\sigma_2$  principal stress axes.

Thus, (i) in the early stages  $\sigma_1$  was sub-horizontal in the E-W direction whereas in the late stages it became sub-vertical, (ii)  $\sigma_2$  was sub-vertical and became sub-horizontal in the