



Accretion of continental extensional zone and development of Rehamna metamorphic dome (Morocco)

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The Rehamna massif is a part of the Morocco Variscan belt where the metamorphic infrastructure has been exhumed in a continental accretionary wedge. The relationships between infra- and supra-structure tectonics originate by thickening of intra-continental Devonian and Carboniferous (Mississippian) basin. Two superposed deformations probably related to plate configuration changes have been identified. The first one corresponds to the development of the Barrovian metamorphism with a climax estimated at 0.5-0.7 Gpa, 500-550°C (litt.). The thickening of thermally preheated crust is related to a SW vergent nappe stacking in the orogenic infrastructure. This event terminates with large scale folding and extrusion of high grade rocks forming a large scale E-W trending metamorphic dome surrounded by un-metamorphosed Lower Palaeozoic rocks of orogenic suprastructure indicating complete decoupling between the two crustal layers. The second E-W shortening along Western Meseta Shear Zone event is responsible for the development of important deformation gradient orthogonal to the metamorphic dome axis. It is marked by an increase of the strain intensity towards the Cambrian rigid buttress located further west. This deformation gradient is marked by mechanical coupling and gentle folding of infra- and supra-structure in the east, development of slaty cleavage in the central part of the dome and intense deformation front close to the western buttress. Here the superposed fold pattern results in accentuation of asymmetrical NE-SW trending metamorphic dome close to the buttress and to further exhumation of deepest rocks associated with subsequent elevation and folding of metamorphic isograds. $^{40}\text{Ar}/^{39}\text{Ar}$ dating reveals that the cooling associated with the first thermal event occurred at around 310 Ma (biotite) while the second thermal event yields typical Alleghanian age around 280 Ma (muscovite). This last thermal event is contemporaneous with magmatic intrusions and continental basins opening in a context of Permo-Carboniferous dextral shearing.