yielded temperatures ranging from 537 °C to 711 °C at pressures of 5-7 kbar for the pre-Variscan contact metamorphism. Calcite-dolomite thermometer yielded slightly lower temperatures between 448-599 °C.
Carbonate samples containing metabasic boudins are characterised by an eclogitic mineral assemblage described by omphacite (Jd_{30-50}) and complex zoned garnets with several growth stages in the rims. Within these boudins chemically two generations of garnets showing different contents of almandine and grossular in the core can be distinguished. Type 1 consists of a core enriched in Fe (Alm_{49-51}) while Ca increases from the core (Gro_{30}) to the rim and reaches the highest values in the outermost zone (Gro_{66-67}). Type 2 shows the highest amount of Fe (Alm_{42-50}) and the lowest Ca (Gro_{33-42}) in the rim next to the core. The Jd-content of omphacite inclusions reveals that the cores of type 1 and the innermost rims of type 2 reflect the maximum of pressure. After reaching the *P* peak *T* increased and caused a rise in Mg as explained by the reaction grossular + 6rutile + 3diopside <--> 6titanite + pyrope. This also agrees with the absence of rutile in garnet-rims containing the highest pyrope component. Garnets also show as a consequence of subsequent decompression either a symplectitic intergrowth of diopside (Jd_{7-20}) and plagioclase (An_{13-23}), or pargasitic amphiboles replacing garnet, which represents the late-stage transition from eclogite- to amphibolite-facies.

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Monometamorphic Austroalpine basement units and their significance for Eo-Alpine tectonics: A comparative study from Schneeberg and Radenthein Complexes

KRENN, K., FRITZ, H., KURZ, W. & HOINKES, G.

Institute of Earth Sciences, Karl-Franzens University, Universitätsplatz 2, 8010 Graz, Austria

The Schneeberg and Radenthein Complexes comprise metasedimentary units that experienced solely Cretaceous metamorphism. These units are sandwiched between polymetamorphosed basement units. The Schneeberg Complex is overlain by the Alpine weakly metamorphosed Ötztal Nappe and underlain by the Alpine high-grade metamorphosed Texel Complex. The Radenthein Complex is overlain by the Alpine weakly metamorphosed Bundschuh Nappe and underlain by the Alpine high-grade metamorphosed Millstatt Complex. Both, the Schneeberg-Radenthein Complexes together with the Texel-Millstatt Complexes, are part of the Koralpe-Wölz high pressure nappe system (SCHMID et al. 2004) and hence define a probable intracontinental suture zone within the Austroalpine nappe stack. Before Miocene unroofing of the Tauern Window the Schneeberg and Radenthein Complexes were attached and hence should record a comparable tectonic history. Problems, however, arise from different overall orientations of these units now located west and east of the Tauern Window, with a general North-dip in the West and a South-dip in the East. This situation was attributed to retro-wedge and pro-wedge tectonics, respectively. In addition, the existence of Alpine unmetamorphosed (or weakly metamorphosed) sediments within the Alpine nappe pile raises questions upon reliability of the traditional basement-cover systematics within the Eastern Alps that provide the basis for definition of major tectonic units.
We consider that Miocene tectonics, i.e. different amount of shortening released by the Adriatic indenter, accounts for different orientation of units to the west and east of the Tauern window. Thus before indentation both, the Schneeberg and Radenthein Complexes, were south dipping units with a comparable tectonic history between ca. 90 and 60 Ma. Deformation stage D1 is characterized by WNW directed shearing at high temperature conditions (550-600 °C) and related with initial exhumation of the high pressure wedge. Deformation stage D2 is largely coaxial and evolved during high- to medium temperature conditions (ca. 450 to >550 °C) with local annealing textures. This stage is related to advanced exhumation of the previous wedge and associated with large scale folding, especially known from the Schneeberg Complex but also proposed for the Radenthein Complex. Deformation stage D3 evolved at lower temperatures (ca. 400-500 °C), is related to east - southeast extension and considered responsible for the main exhumation of metamorphosed basement units, including Ötztal and Bundschuh nappes. Deformation stage D4 is of Oligocene to Miocene age and responsible for tilting of individual blocks. North-South shortening caused the well known fold interference patterns occurring in both complexes. Concerning Alpine geodynamics we suggest that (1) existence of an Eo-Alpine retro-wedge is not mandatory if Miocene tilting along the northern Apulian plate is considered effective. (2) We consider the Schneeberg and Radenthein Complexes as metamorphosed equivalents of Paleozoic sediments deposited on the Texel and Millstatt Complexes that define central portions of the later intracontinental subduction zone. The Ötztal and Bundschuh Complexes are considered as external units in the foreland of the later subduction zone.

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