of structural analysis and P-T data allows the reference of the observed structural differentiation of the studied areas to the obtained metamorphic histories.

The most widely observed structural feature within rocks of the Stronie Formation is a gently dipping metamorphic foliation S2 connected with the development of tight to isoclinal folds F2 plunging at low angles to the NE and SW. Earlier foliation S1 was developed parallel to the axial planes of folds F1, intrafolial relicts of which can be observed only locally. The original orientation of the S1 foliation and F1 folds is unclear. Evidence concerning this matter varies in the area of the LSMU: at some places, data support the hypothesis about its steep orientation while in other parts of the region the observed features indicate that the orientation of the S1 foliation was close to the orientation of the S2 planes into which it was later transposed. Folding connected with the D2 stage was accompanied with shearing generally along the E–W direction, leading to development of a weak stretching lineation interpreted as the effect of a flexural slip along folded layers. Much stronger shearing episode (D3) took place in the later stage and is particularly well recorded in the rocks of the ZSTSZ where the S2 foliation was reactivated and transposed into steep (locally almost vertical) shear planes.

Thermobarometric calculations, with special regard to the information from the PT pseudosections, were carried out for the mineral assemblages assigned to each deformation stage. Shapes of the obtained P-T paths are very similar in both cases. This suggests that structurally different parts of the volcano-sedimentary sequence of the Stronie Formation were metamorphosed in the same geotectonic regime. The conditions of metamorphism, obtained by standard thermobarometry calculations and by modelling of changes in the composition and modal proportion of garnets during growth reveal that the samples from the ZSTSZ and the Krowiarki Mts. underwent metamorphism under similar temperature conditions, but at slightly different depths. Maximal burial of those rocks corresponds to a pressure of ~8.5 kbar, whereas the sample from the Krowiarki Mts. reveals the peak pressure of about 7 kbar. The peak pressure for the sample from the ZSTSZ, characterized by the trivariant equilibrium grt+chl+st, is recorded in the intertectonic garnet cores, which show straight inclusion patterns defining the earliest identifiable foliation S1. In the ZSTSZ mica schists, subsequent increase in temperature accompanied with a decrease in pressure led to syntectonic development of garnet rims with curved inclusion patterns. This stage was contemporary with D2 folding and shearing observed throughout the Orlica-Śnieżnik Dome. Garnets from the sample coming from the Krowiarki Mts. contain curved inclusion trails (mainly of qtz, ru, ilm and bt) across the entire grain which implies their one-staged, syntectonic growth contemporary with the formation of garnet rims in the ZSTSZ rocks during the D2 stage. Later beginning of garnet formation in the studied rocks from the Krowiarki Mts. can be explained by the differences in the bulk composition and by shallower depth of burial prior to the D2 stage of deformation. Late stage of deformation and metamorphism in the ZSTSZ was connected with strong isobaric heating – up to about 600 ºC – under low-P conditions, connected with late Variscan granitic plutonism. This episode led to the late- to post-kinematic development of andalusite blasts, which are a prominent feature of rocks from the ZSTSZ as the unit developed under a sinistral transpression regime. Deformation connected with this stage can also be observed in the Krowiarki Mts. area, however, in this region it proceeded under lower temperature, leading to the development of stretching lineation trending NNE–SSW or NNW–SSE.

The structural and phase-equilibria lines of evidence show that the tectono-metamorphic evolution of the Stronie Formation in the area of the LSMU was that of early burial to a depth not exceeding the upper amphibolite-facies conditions and subsequent uplift connected with subvertical shortening and flattening strain (orientation and geometry of the F2 folds), during which the peak of regional metamorphism took place. This stage of deformation led to the reorientation of the S1 foliation, which originally was probably steep. Only minor differences observed in the P-T trajectories obtained for rocks from the two compared areas indicate similar tectonometamorphic conditions for the Stronie Formation of the LSMU. Contrasting structural and kinematic characteristics of the ZSTSZ are an effect of localized shearing.

Structure and Episodic Tectonic Evolution of the Lower Crustal Accretionary Wedge: in Moldanubian Zone, Austria

Radmila NAHODILOVÁ, Pavla ŠTÍPSKÁ, Karel SCHULMANN, Jakub HALODA and Ondrej LEXA
Institute of Petrology and Structural Geology, Charles University, Albertov 6, 14200 Prague, Czech Republic

Structural succession observed in the Moldanubian Zone in the northern Waldviertel in Austria is interpreted as an episodic evolution of deep crustal wedge.

The E-W oriented profile in the area of Karlstein and Raabs is traced from the Monotonous unit to the west, across the Gföhl unit in the centre to the Raabs unit to the east. N-S elongate body of the Gfohl orthogneiss is rimmed in the west by serpentinites and amphibolites and in the east by a belt of felsic and mafic granulites. The Raabs unit contains anatectic paragneisses, amphibolites and a large body of Kolmitz gneiss consisting of highly anatectic para- and ortho- gneisses.

The first recognized structure is moderately to steeply eastward dipping gneissosisty, which is well-preserved along at the western and eastern border of the Gfohl orthogneiss and in the Kolmitz gneiss. It is folded by open to isoclinal F2 folds with westerly dipping axial planes and subhorizontal hinges. This folding leads to almost complete transposition producing moderately westerly dipping anatectic foliation, which is a dominant structure in all units. Metre-scale late post-metamorphic folds with subvertical NE-SW trending axial planes locally modify the generally westerly dipping fabric pattern.

In order to estimate the PT evolution in individual lithologies, the metamorphic assemblages and chemistry of the minerals from selected samples were compared with pseudosections constructed in the NCKFMASH system. The Gfohl gneiss contains relics of Ky enveloped by feldspars indicating the earlier HP metamorphic stage. The dominant assemblage within the S2 foliation is Sill-Grt-Plg-Kfs-Bt determining conditions of the metamorphic overprint at 8-10 kbar and 850 °C. Similar evolution is documented in the Kolmitz gneiss where abundant relics of Ky within feldspars were found in both the gneiss and in the coarse-grained melts. The dominant assemblage is identical to that of the Gfohl gneiss thus indicating the same conditions of D2 reworking at 8-10 kbar and 850 °C. The serpentinites at the western border of the Gfohl gneiss mark the first west-vergent thrust of the Gfohl unit over the Monotonous unit, while the Ky-Kfs felsic granulites and Cpx-Grt mafic granulites along the eastern border of the Gfohl gneiss mark the second east-vergent HP thrust of the Gfohl orthogneiss over the Raabs unit. The development of spinel in the Ky-Kfs granulites and Opx-Plg in mafic granulites along the eastern border of the Gfohl gneiss indicate, that thrusting continued to shallow depths at still high temperature.

The observed structural pattern is interpreted in terms of episodic evolution of lower crustal accretionary wedge. The Monotonous series is seen as more rigid indenting continental crust causing the west-vergent thrusting and exhumation of the deepest part of the lower crust and upper mantle represented by the western margin of the Gfohl unit. Almost complete reworking of earlier east-vergent fabric by moderately westerly dipping foliations and initiation of east-vergent HP thrust located at the eastern border of the Gfohl orthogneiss is interpreted to have been caused by underthrusting of the Brunovistulian foreland further to the east. The exhumation of the rocks along east-vergent fabric continues from ca10kbars to ca 6kbars at still high temperature. Local reworking of both fabrics by steep NE-SW trending folds indicate continuous compression at shallow crustal levels, while the extruding steep or intermediate dipping fabrics are locally affected by flat shear zones accommodating the gravitational collapse of the whole wedge structure.

Structural Configuration and Lithofacies of the Southeastern Part of the Carpathian Foredeep Basin as Defined by Subsurface Data

Slavomír NEHYBA[1], František HUBATKA[2] and Jan ŠIKULA[3]

[1] Department of Geology and Paleontology, Masaryk University, Kotlářská 2, 611 37 Brno, Czech Republic.
[2] KOLEJCONSULT & servis, středisko geofyziky 2000, Křenová 35, 602 00 Brno, Czech Republic
[3] Czech Geological Survey, Leitnerova 22, 658 69 Brno, Czech Republic

The Carpathian Foredeep represents a peripheral foreland basin formed as the result of peripheral down-buckling of the passive North European Plate margin (represented by the Bohemian Massif in the area of study) in the foreland of the Alpine–Carpathian orogenic belt. The basin fill in the study area is formed by Neogene sediments (Egerian to Lower Badenian, i.e. 22.5 Ma to 15.5 Ma). Their maximum thickness exceeds 1500 m.

The study area is located in the proximal (i.e., adjacent to the active thrust front) part of the basin with strong dominance of basinal deposit. These deposits are exposed to only a very limited degree. Subsurface data (seismic reflection profiles, wireline logs and drill cores) represent the main tool for the recognition of the basin evolution and depositional architecture. Further aim of the present study of the subsurface data was also to collect data for the lithostratigraphy of the basin and to apply “alternative” stratigraphic techniques.

Several macro-elements can be followed within the studied part of the basin in seismic reflection profiles calibrated by wells. The recognized elements represent “superior” evolutionary stages in the basin development. Basin configuration in these stages differed considerably. Tectonic setting (both extensional and compressional) within the accretionary wedge was the dominant ruling factor of these processes. Significant differences in lithology and petrography of the sedimentary fill of the basin reflect the existence of depositional cycles of several orders. These can be followed mainly in well logs.

Erosion and tectonic deformation contributed to the relatively narrow shape of the basin. Large volumes of deposits (especially of Karpatian and Lower Badenian age) were eroded. Strong dominance of basinal lithofacies (Karpatian *schlier* and Lower Badenian *tegel*) and the almost complete absence or their marginal/distal equivalents supported the role of these processes.

Basement of the basin, formed by crystalline rocks of the Bohemian Massif and its Mesozoic and Paleogene sedimentary cover, was also significantly affected by the tectonics of the active thrust front.

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