geodynamic evolution of the area. A new and detailed regional coalification pattern (i.e. thermal maturity) was established based on the microscopical analyses of about 80 samples, including the measurements of the reflectance of vitrinite. Rock-Eval pyrolysis was used for characterising the organic material. The results presented here are based on outcrop samples taken from areas along the TRANSALP Traverse. These include sedimentary rocks from the middle Permian *Gardena-Formation* up to the Cretaceous *Antruilles-Formation.*

The regional vitrinite reflectance pattern indicates an obvious increase of thermal maturity with stratigraphic age. For example a maturity of about 0.5 % VR_r was found for the late Triassic *Heiligkreuz/Raibl* Formation, whereas values of around 0.9 % VR_r measured for the middle Permian *Gardena* formation. This indicates a pre-orogenic coalification pattern as well as an overall low level of thermal maturity of the Permo-Mesozoic sedimentary successions. The measured maturities for the *Heiligkreuz/Raibl Formation* indicate a maximum burial depth of 1850 meters, based on the method described by YAMAJI (1986). Furthermore, the vitrinite reflectance values are very well in accordance with the maturity data derived from Rock-Eval pyrolysis.

Basin modelling for the "Alta badia" valley indicates that the present-day surface of the *Heiligkreuz/Raibl Formation* was overlain by an approximately 1750 meter thick sedimentary sequence during maximum burial with a concurrent basal heat flow of 62 $mW \cdot m^{-2}$. In the study area, however, only 1000 meters of the reconstructed overburden are preserved today. These modelling results imply that Mesozoic and Cenozoic sedimentation lasted longer and was more widespread than documented by the preserved present-day sedimentary sequence. Assumptions about the exact timing of maximum burial, which was probably reached during Upper Cretaceous times are so far not fully clarified. The question whether the eroded sequence consisted of autochthonous sedimentary rocks or of allochthonous thrust sheets is not cleared either. Fission track data and cross section balancing are currently performed and will help elucidate the problem.

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Eoalpine versus Tertiary deformation: Dating of heterogeneously partitioned strain (Tauern Window, Austria)

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The Salzachtal-Ennstal fault zone (SEMP) is a major crustal-scale transpressional shear zone, which developed at the northern border of the Tauern Window during Tertiary lateral extrusion and unroofing (Linzer et al. 1997; Neubauer et al., 1999). Between Zell am See and the Rauriser Ache the Salzachtal-Fault juxtaposes rocks of the Paleozoic Upper Austroalpine Greywacke Unit and the Penninic Units of the Tauern Window. Both units show distinct deformational and cooling histories, which are constrained by new kinematic data and geochronological $^{40}Ar/^{39}Ar$ age datings.

The Penninic Units of the northernmost Tauern Window are part of a transpressional shear zone accomodating sinistral ductile shear and c. NNE/SSW compression along the E-W-striking shear zone. Kinematic data are mainly obtained from mylonitic marbles. Formation ages of synkinematic minerals from 28 Ma to 35 Ma constrain the age of sinistral transpression at the northern border of the Tauern window. These ages are well defined by 9 $^{40}Ar/^{39}Ar$ data from mica of different grain size fractions (< 2 μ, 6-11 μ and 11-20 μ; Fig. 1). High temperature steps indicate Cretaceous ages of the core of micas. The rocks of the Greywacke Unit are devoid of comparable transpressional structures. The unit comprises three main Cretaceous (Eoalpine) deformation events in its current position: D_n ductile shear related to the formation of c. E-W striking, subhorizontal stretching lineations, D_{n+1} south-vergent folding and D_{n+2} normal faulting towards N indicated by SC-fabrics. 6 Createous $^{40}Ar/^{39}Ar$ -cooling ages ranging from 90 to 115 Ma from white mica (< 2 μ, 6-11 μ and 11-20 μ) indicate that the deformations D_n to D_{n+2} occurred during the Cretaceous.

Structures related to sinistral transpression provide further evidence for the kinematics of the sinistral SEMP-wrench fault, which is kinematically related to the exhumation of the Penninic Units south of the fault (Linzer et al. 1997; Neubauer et al., 1999). This wrench zone previously was interpreted as a Late Oligocene/ Early Miocene structure. However, $^{40}Ar/^{39}Ar$ data record Late Eocene/Early Oligocene (28 Ma–35 Ma) ages for the beginning of transpressional deformation at the northern border of the Tauern window. The data presented in this study are in line with previously published age data constraining the onset of decompression of the Penninic Units of the Tauern Window with 35 Ma (Selverstone 1993).

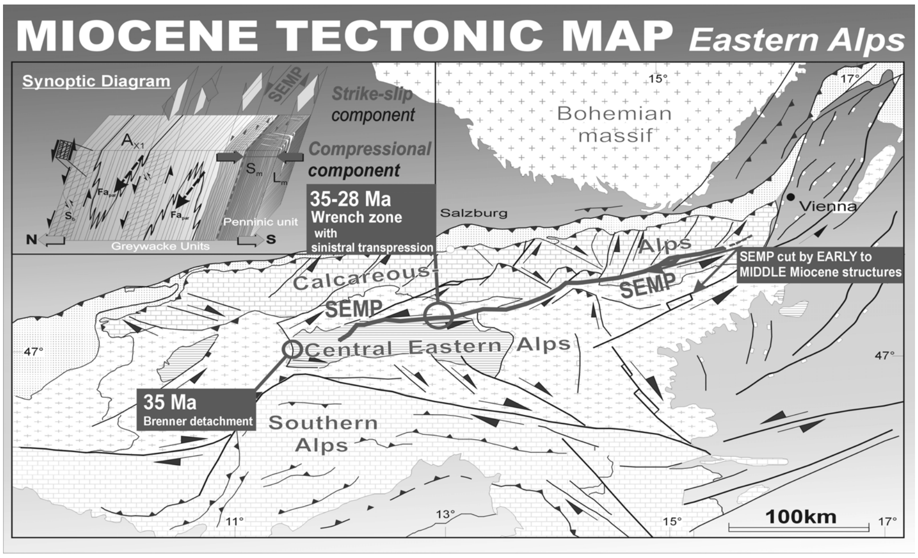

Figure 1. *Miocene Tectonic map of the Eastern Alps. $^{40}Ar/^{39}Ar$ data record (28–35 Ma) Late Eocene/Early Oligocene for the beginning of transpressional deformation at the northern border of the Tauern Window.*

The Bohemian Massif – from Gondwana to Pangea

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In Kossmat's (1927) reconstruction of the European Variscan belt, the Bohemian Massif appears as one of the dominant structures. Among the many results of geological research since that time, we only mention the pioneering work on the southern parts of the Bohemian Massif (Fuchs and Matura 1976), as their geological map is still a valid base for present-day research. Evidently, with growing knowledge, interpretations of structures have changed and it may be interesting to follow the evolution of distinct Variscan massifs in palaeotectonic reconstructions from the Cambrian to the Late Carboniferous, presented recently by Stampfli and Borel (2002). Different stages may be differentiated, the Early Palaeozoic peri-Gondwana evolution, the drift history, and the period of Variscan collision.

During the Cambrian, most parts of the Bohemian massif, like other European basement areas, were located at the Gondwana margin, in the former eastern prolongation of Avalonia and Cadomia, thus having in common relicts of Gondwana-derived Cadomian basement, a Late-Proterozoic active margin setting, the formation of Vendian-Early Palaeozoic detrital sediments on the Gondwana shelf, the sedimentary infill of Cambrian rift systems, and the initial stages of Rheic ocean opening (von Raumer et al. 2002, and references therein).

After separation of Avalonia, around 480 Ma, the plate tectonic evolution of the remaining, more eastern located continental blocks, the Bohemian Massif included, followed a different path. After a short Ordovician orogenic event at the Gondwana border, their evolution was guided, since the Silurian, by the continuing diachronous oblique subduction of Prototethys oceanic ridge under the different remaining segments (Armorica, Alpine domain) accompanied by the opening of the Palaeotethys and the stepwise separation of continental blocks from Gondwana. The Bohemian Massif, consequently, was part of an archipelago-like continental ribbon, which drifted from Gondwana in direction of Laurussia, leaving behind the large space of Palaeotethys.

Since the earliest Devonian, around 380 Ma, parts of this continental ribbon began to collide either with Laurussia-Avalonia-derived continental blocks or with island-arc-structures, accompanied by the high-grade metamorphic transformations as consequence of this first Variscan orogenic event (Stampfli et al. 2003). Subsequently, the amalgamated terranes collided with Eurasia in a second Variscan orogenic event during the Visean, accompanied by large scale lateral escape of major parts of the accreted margin. Final collision between Gondwana and Laurussia took place from the Late Carboniferous onwards, and since the Early Permian, large areas of the resulting Variscan basement underwent postorogenic collapse, accompanied by formation of new rift basins.

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