margins. The magmatic fabric is partly overprinted by late extensional shear zones indicating mostly top to the SW oriented movements under subsolidus conditions.

The part of the durbachite body north from the Trebic fault exhibit mostly vertical fabrics indicating subvertical magma movements near the feeding chimney of the intrusion. Going to the margins of the apparatus the foliation changes its trend being subparallel to the margins of the pluton. Flow direction is almost subhorizontal and associated with sinistral movements. The early magmatic fabric is here overprinted by subhorizontal flat postsolidus shear zones indicating outward magma upwelling during late stages.

The structural and petrofabric study of the Trebic durbachite massif reveals complicated interplay between regional tectonic evolution of intra-Moldanubian nappes and dynamics of magma flow. The body is emplaced along major intra-Moldanubian thrust boundary and probably reflects the change of direction of nappe movement at the northern termination of the Moldanubian zone. Here, to a NE oriented transpressional tectonics typical for eastern margin of the Bohemian Massif is gradually converted into a NW oriented transtensional one. This process led to the opening of elongated space in considerable depth of the crust which was filled by deep-seated durbachitic intrusion.

THE PRE-ALPINE METAMORPHIC AND PALAEOGEOGRAPHIC PATTERN OF THE AUSTROALPINE UNITS EAST OF THE TAUERN WINDOW

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Based on metamorphic petrology and geochronological investigations an important new Alpine thrust at the base of the Bundschuh Crystalline below the Gurktal Nappe was discovered. This new observation leads to an palaeogeographic evolution model which is much more simple than previous ones in respect of the relationship of the Austroalpine tectonic elements before the Early Alpine orogenic events and the pre-Alpine reconstruction of the crystalline basement units.

Today the tectonically lowest units of the Austroalpine crystalline E of the Tauern Window are the polymetamorphic Schladming- and Seckau Crystalline in the north and the lithologically different polymetamorphic Millstatt Serie in the south. Based on the lithology and the types of Variscan garnet zoning pattern, the Millstatt Serie represents an equivalent of the Saualm- and Koralm Crystalline E of the Gurktal Nappe.

The Wölz Crystalline, comprising the Radenthein serie, Wölz micaschists and the Klieningand Wolfsberg window, is overlying these units W and N of the Gurktal

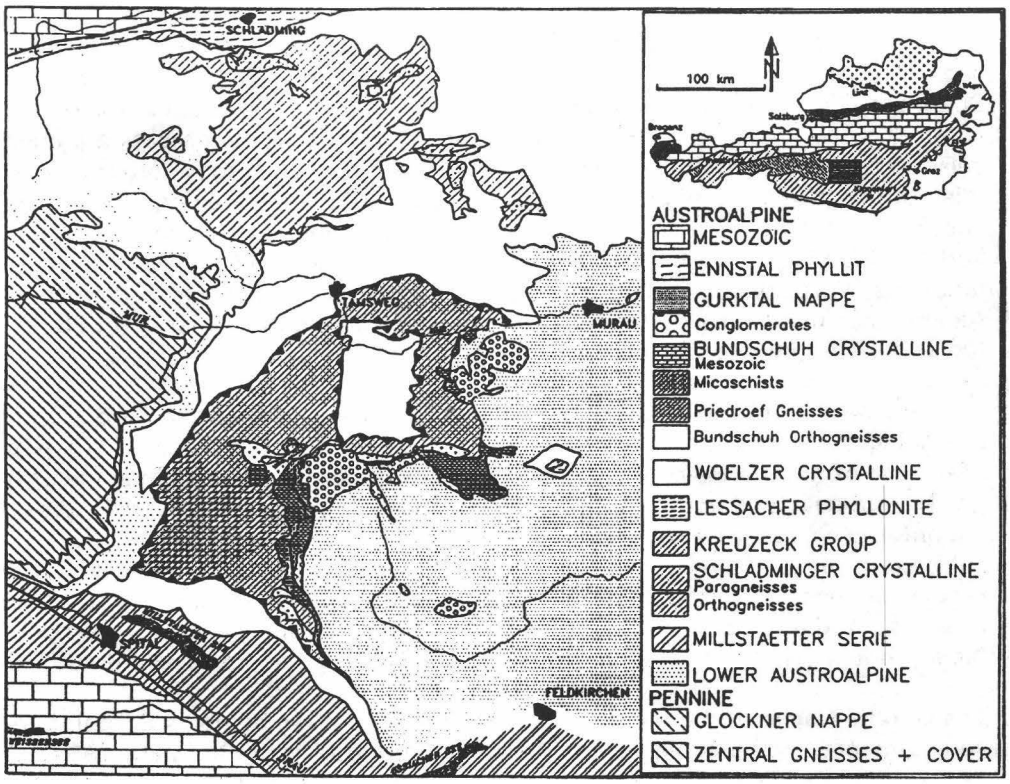
Nappe. The Wölz Crystalline consists mainly of micaschists, with intercalations of graphitic micaschists, amphibolites and marbles. No autochthonous Mesozoic sediments are known here. Variscan garnet only can be found in the area around Schönberg. The main structural and metamorphic imprint happened in Alpine time, as Sm-Nd data on garnets (83 ± 6.5 Ma) confirm. The Alpine garnets are chemically zoned, the core containing 6 - 8 % Ca. All elements show growth curves (distribution profiles) that argue for a single stage prograde metamorphism. In most cases it can be demontrated that staurolite and kyanite also belongs to the same Early Alpine metamorphic event. As a consequence, we conclude that in Variscan times the Wölz Crystalline was characterized by lower greenschist facies, while in Alpine times conditions of the amphibolite facies with about 7 kbar and 580 °C in the south and greenschist facies in the north were reached.

The polymetamorphic Bundschuh Crystalline rests tectonically on the Wölz Cystalline along the western border of the Gurktal Nappe. This cystalline wedge is the basement of the Stangalm Mesozoic. It consists of paragneisses with some orthogneiss intercalations and also micaschists. The Stangalm Mesozoic transgresses unconformably on a large scale gentle the synclinal structure. The basement suffered a Variscan amphibolite facies metamorphism with more than 600 °C and 5 kbar, deduced from the chemical homogenization within the garnets, while the Alpine overprint happened in most areas under medium to high grade greenschist facies conditions. The Alpine garnet rims around older grains have also 6 - 8 % Ca.

The Gurktal Nappe at the top of the Bundschuh Crystalline contains Carboniferous conglomerates with pebbles of the Bundschuh orthogneiss (FRIMMEL, 1987). For that reason the Gurktal Nappe and the Bundschuh Crystalline must have been neighboured units already during the Carboniferous. E of the Gurktal Nappe the polymetamorphic Saualm- and Koralm Crystalline overrides the Wölz Crystalline, visible in the Kliening- and Wolfsberg windows.

The lithology and the metamorphic history of the Bundschuh Crystalline has much more in common with parts of the Ötztal Crystalline than to any other rock series E of the Tauern window. The same is true for the parautochthonous Mesozoic sediments with their clastic intercalations in the Anisian, a serious argument for a connection to the west of the Austroalpine cover unit: Therefore we postulate that the Bundschuh Crystalline and its Mesozoic cover together with other units were transferred from a western position to the E along important strike slip faults prior to the onset of the Early Alpine thinskinned tectonics.

The transport history of the present tectonically stacked units is well in line with other findings in the last years (NEUBAUER, 1987). The compressive deformation starts with a direction to the NW and turned to N and NNE. This process can also be seen in the way how the units took place on the Wölz crystalline. At first the Bundschuh Crystalline-nappe came from the SE. The same is true for the Murau Nappe, the lower part of the Gurktal Nappe, while the upper Stolzalpe Nappe had a direction to the NNW.



This model has another important consequence: The vast area (especially when the considerable crustal shortening in the Saualm-Koralm area is considered) of the Wölz-Saualm Crystalline has lost its primary Permomesozoic cover tectonically during the very early stages of the Early Alpine event. So a reasonable reconstruction of the Prealpine crust E of the present Tauern window reveals a vast area without any authochtonous mesozoic cover. It obviously represents the depositional area of the Northern Calcareous Alps in the eastern half of the Eastern Alps.

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