

Oligocene emplacement of the Eclogite Zone of the central Tauern Window, Eastern Alps, Austria *Poster*

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The EZ is an approximately 20 km long and 2–3 km wide coherent unit of the Tauern Window in the Eastern Alps. It is sandwiched between the Venediger- and the Glockner Nappe. While rocks in the EZ experienced HP metamorphic conditions (24 kbar/650°C), rocks from the underlying Venediger Nappe and the overlying Glockner Nappe only record lower alpine metamorphic conditions with peak pressures not exceeding 10 and 8 kbar, respectively. While metamorphism in the EZ is well dated with an average age of 31.5 ± 0.7 Ma (Glodny et al. 2005) the final emplacement of these different nappes is still under debate.

Thrusting of the EZ on top of the underlying Venediger Nappe is documented by top-N shear-sense indicators in carbonaceous mica schists and mylonites from the Dorfertal. The internal structure of the EZ is characterized by N-vergent folds at the 100 m to km scale. Fold axial planes are moderately to steeply dipping. The upper boundary of the EZ at its contact with the Glockner Nappe is characterized by blueschist to greenschist facies carbonate bearing mylonites. Stretching lineations in the ENE-striking mylonites dip on average 20° to the ENE indicating sinistral shear

with a slight extensional component.

Two carbonate mylonites from the Dorfertal, (samples EIS 14a and 14b; calcite, dolomite, muscovite, paragonite, tourmaline and rare garnet) yielded Rb/Sr mineral isochron ages between 30.5 ± 0.8 Ma and 29.1 ± 0.5 Ma, interpreted to date the final thrust emplacement of the EZ above the Venediger Nappe. The youngest ages are obtained from the most fine-grained muscovites in these mylonites, which are further characterised by particularly high Sr concentrations. This may be due to a change of the Sr partition coefficient between carbonate and muscovite during progressive deformation and coeval decompression, related to the aragonite to calcite phase transition. A Rb/Sr mineral isochron age of 31.4 ± 0.4 Ma from a mafic schist from the base of the Glockner Nappe (Seekopfscharte, sample EIS11) directly above the EZ dates blueschist facies metamorphism and sinistral shearing within the Glockner Nappe. Rb/Sr data from carbonate-dominated mylonites (sample EIS 6; calcite, dolomite, muscovite, rare amphibole and epidote), marking the upper boundary of the EZ in the Timmeltal provide a deformation age of 31.2 ± 0.7 Ma.

Our data indicate that top-N thrusting at the base and large-scale folding of the EZ was coeval with sinistral strike-slip faulting at its upper boundary and eclogite-facies metamorphism in the EZ. The data also indicate that today's nappe architecture must have been established in less than 2 Ma after the eclogite facies metamorphism in the EZ. Very fast exhumation of the EZ was accomplished in a transpressional setting, which might explain why the exposed EZ is such a small unit.

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References

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