

Large scale structure and tectonic relevance of the Plattengneiss shear zone

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The Plattengneiss is a flat lying shear zone that crops out over 600 square kilometres in the Koralpe Complex of the Eastern Alps. The region is well known for its high metamorphic grade and also hosts the eclogite type locality. The Plattengneiss shear zone dips in and out of the topography and it appears to be warped into large open folds on a kilometre length scale. However, because of the lack of outcrop and the large size of the region where it may be found its large scale geometry remains badly understood. In particular the late stage deformation history is of interest because it occurred in an important part of the evolution of the region: It occurred during the subsidence of the near by Gosau basin and simultaneous exhumation of the Gleinalm dome. In order to constrain the spatial geometry of the shear zone, we have modelled the shear zone in 3 dimensions. For the modelling, we used 800 field data points from where the position relative to the Plattengneiss is known (above, within or below) and the interpretative software 3D weg as a modelling tool to constrain the geometry of the shear zone contacts. It is shown that the shear zone is made up of a single, 500m thick mylonitic layer that is folded into 4 open synforms and 5 antiforms with a mean distance of about 5 km. In the south, these folds strike WNW-ESE and turn towards an N-S direction in the north. This geometry indicates that the folding event was highly non-coaxial. We suggest that this geometry may be interpreted in terms of a southward propagation of folding and exhumation of the region during the late Cretaceous.