

An Elevation Correlated Map of the Neogene in the Styrian Basin

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This article contributes to a progress report on a digital map of the Styrian Basin (as part of the Alpine Orogen–Pannonian Basin transition zone), in which we correlate marker horizons across the transition zone in elevation and time. The Styrian Basin was inverted about 7–10 Ma ago and is currently characterized by a hilly landscape between 200 and 600 m in elevation. In the bounding orogen, mountains rapidly rise to 2200 m asl. A series of conspicuous features in the basin indicate that the region experienced a complicated uplift history during the inversion of the basin margin. These include asymmetric valley profiles, parallel orientation of drainages in discretely defined zones of the basin and others.

The aim of the map is to understand the relative importance of erosion driven incision and tectonic uplift in the shaping of the surface morphology in the transition zone. For this we extract the tectonic component by mapping the elevation of marker horizons of constant age and equivalent deposition environment across the basin. As marker horizons we use various Neogene sediments like coeval fluvial terraces and shallow marine deposits in the basin. Currently we use existing maps, and preliminary dating of cosmogenic nuclei from cave deposits as well as unpublished information. Further work will use low temperature geochronology, morphological mapping and numerical landform modelling to constrain the uplift history in space and absolute time.

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