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Reconstruction of the Tectonic Evolution of the Helvetic Zone between Lake Chiemsee and Saalach River, East Upper Bavaria, Germany

U. Blaha (1), H. v. Rochow (2), M. Freimoser (3), and U. Teipel (4)

(1) Bavarian Environment Agency (LfU), Geological Survey, Hans-Högn-Str. 12, 95030 Hof/Saale, Germany (ulrich.blaha@lfu.bayern.de), (2) Ludwig-Maximilians-Universität, Department für Geo- und Umweltwissenschaften, Richard-Wagner-Str. 10, 80333 Munich, Germany (henning.v.rochow@gmail.com), (3) Dr. von Moos AG, Geological Engineering Office, Bachofnerstr. 5, 8037 Zurich, Switzerland (freimoser@geovm.ch), (4) Bavarian Environment Agency (LfU), Geological Survey, Lazarettstraße 67, 80636 Munich, Germany (ulrich.teipel@lfu.bayern.de)

Detailed geological mapping of the Helvetic zone between Lake Chiemsee and Saalach river, near the village of Teisendorf, provides data to unravel the tectonic history of the Meso-European continental margin from Lower Cretaceous until Oligocene time. Focus on tectonic structures, combined with age dating of marlstones using foraminifera, is the basis for reconstruction of overthrusting of both Ultrahelvetic and Rhenodanubian Flysch sediments onto the Helvetic shelf during Alpine orogenesis. Sedimentation history of Helvetic, Ultrahelvetic and Rhenodanubian Flysch zones is interpreted in combination with tectonic activity embedded into the plate tectonic model. Overthrusting of Ultrahelvetic and Rhenodanubian Flysch nappes onto subsiding Helvetic sediments, already overlain by the Molasse sediments of the Schöneck Formation (Schönecker Fischschiefer), during Oligocene and internal folding of the Helvetic sediments is shown in detail. New insight into the evolution history of the northern Alpine margin east of Lake Chiemsee is obtained by systematic analysis of a limited number of remnants of tectonic structures, sediment outcrops and drillings. The widely covered Cretaceous and Tertiary sediments, in an area strongly affected by Pleistocene glacial activity and Holocene erosion processes, still reveal a sufficient number of characteristic structures for detailed reconstruction of the tectonically less investigated, but structurally important Helvetic zone.