

Geodynamic evolution of the Mid-German Crystalline Zone, and other key areas in the European Variscides

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Summary

The primary motivation of this project is to delineate the geodynamic history and significance of the Mid-German Crystalline Zone during the Variscan Orogeny. To achieve this aim a combination of petrological, structural, geochemical and geochronological investigations were undertaken during the last years.

the Mid-German Crystalline Zone (MGCZ) consists of various basement complexes that are exposed, from SW to NE, in the Rhineland-Palatinate and the Odenwald, Spessart, Ruhlra and Kyffhäuser crystalline basement areas. The basement of the MGCZ can be characterized by (i) Variscan magmatic arc rocks and associated sediments as old as Cambrian/Ordovician that are typically metamorphosed at granulite-facies conditions and (ii) Silurian to Early Devonian orthogneisses with mainly calc-alkaline compositions that occur together with medium-pressure metasedimentary rocks that were deposited during the Ordovician and Silurian. Eclogite-facies high-pressure metabasic rocks, which were discovered by Will and Schmädicke (2001), are locally exposed in the orthogneisses. In addition, pre-Variscan granulites occur in the western Odenwald crystalline basement (Will et al. 2010). The MGCZ is part of a much larger suture zone that extends from Mexico to Turkey and formed during the late Variscan closure of the Rheic Ocean that had previously separated Gondwana from Laurussia (i.e. Baltica, Laurentia and Avalonia). The MGCZ is a composite terrane with Palaeozoic sediments of distinct Gondwana/peri-Gondwana and Baltica affinities.

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