



U/Pb dating and geochemical characterization of the Brocken and the Ramberg Plutons, Harz Mountain, Germany

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The Harz Mountains (Germany) form a part of the Variscan basement in the southern part of the Rheno-Hercynian Zone of the Central European Variscides. The area is situated close to the suture between Laurussia and Gondwana represented by the Mid-German Crystalline Zone. The Harz Mountains became intruded by a number of granitoids that are believed to be related to the Variscan orogeny culminating in Devonian-Carboniferous time. The two major granitoids in the Harz Mountains are represented by the Brocken and the Ramberg plutons.

We dated zircons of two samples from the marginal facies of the Brocken and the Ramberg granites in the Harz Mountains using U/Pb single zircon dating by a Laser-ICP-MS. The measurements of the youngest population of needle-shaped magmatic zircons show a concordia age of 283 ± 2.1 Ma for the Brocken granite and a concordia age of 283 ± 2.8 Ma for the Ramberg granite. Both overlapping results are interpreted to reflect the age of intrusion of these two granitoids. The ages relate the magmatic event documented by the intrusion of the Brocken and the Ramberg granites to the opening of the large molasse basins during the Rotliegend (Lower Permian) and not, as believed for a long time, to the Variscan orogeny. Therefore the geotectonic setting of the two large granitoid intrusions in the Harz Mountains must be re-interpreted. It is characterized by extension and thinning of the crust during the formation of molasse basins in the central part of Pangea. Geochemical signatures and thin section microscopy of our samples support the assumption of a doming in the asthenosphere and a resulting heat flow responsible to the formation of magmas in the Harz Moun-

tains during the Lower Permian.