New high precision CA-ID-TIMS U-Pb zircon ages from the Thuringian Forest Rotliegend section

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During the last phase of the Variscan orogeny, the deposition of molasses started in a variety of separate basins in Central Europe. Together with the debris of the eroding orogen, widespread volcanic activity led to the interlayering of molasses with lava flows and tuffs in many of these basins. Sedimentation in the basins was manifold and possibly diachronous, so that different formations had to be defined for each single basin up to the present. Absolute timing and intercorrelation of these formations is still under discussion.

For the age-determination of these molasses, the Thuringian Forest Basin is of exceptional value, because it is biostratigraphically very well investigated and it shows recurrent strong intrabasinal volcanism that produced hundreds of meter thick piles of lava flows and tuffs. A precise and accurate age dating of the Thuringian Forest formations is therefore critical for the correct correlation and stratigraphic categorisation of a variety of other European Rotliegend Basins.

We dated a total of 7 volcanic rock samples from 4 different formations (Möhrenbach-, Ilmenau-, Oberhof-, and Rotterode formations) of the Thuringian Forest with the zircon U-Pb CA-ID-TIMS method and yielded highly precise (+- 0.1 %) and accurate ages through the use of chemical abrasion in combination with the well-calibrated EarthTime (ET535) Tracer.

Our ages are within the ∼15 Ma time span of previously published age data and fit with the biostratigraphically defined Carboniferous/Permian boundary in the Thuringian Forest strata, but reduce this time interval to not more than 6 Ma.