

First SHRIMP U-Pb geochronology on detrital zircons from Triassic and Cretaceous strata from the foreland of the Bohemian Massif (S Poland)

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We performed U-Pb geochronology on six samples of detrital zircons separated from Triassic (Induan, Olenekian, Anisian, and Norian) and Cretaceous (Cenomanian and Coniacian) siliciclastics and carbonates cropping out in the foreland of the Bohemian Massif, Opolian Silesia (S Poland), to identify their provenance, changes in erosional levels of the nearby orogeny, and presumed recycling of older sediments. Analysis yielded a zircon age spectrum spanning concordant ages between 282 ± 8 Ma and 2779 ± 9 Ma. All samples except the Norian are dominated by zircons with Viséan ages (~40% of examined grains). The Induan and Coniacian samples, and the Olenekian sample reveal distinct maxima at 340 and 339 Ma, respectively. The Anisian and Cenomanian samples show a greater proportion of slightly younger grains (maxima at 333 and 330 Ma, respectively). The zircons with Carboniferous ages do not form a consistent group with regard to grain features: they show various degrees of abrasion, internal textures, etc., which suggest different histories of deposition and source rocks. Two subordinate populations show ages in the ranges 450–490 Ma and 530–630 Ma (each constituting ~15% of the grains in each of the samples, except the Norian); however, distinct subpopulations can be seen in the individual samples. The Norian sample is dominated by 530–600-Ma-old zircons (~40% of grains). The diversity of specific ages and the features of the grains in the samples suggest that the detritus was delivered to Triassic and Cretaceous sedimentary basins from different host rocks and areas. Detailed comparative analysis will be performed to determine the provenance of the grains; preliminary interpretation suggests the Lugian, Moravo-Silesian and Moldanubian domains as the most probable source areas. The research was financed from NCN grant 2014/13/B/ST10/02102. The analysis was performed in the SHRIMP IIe/MC laboratory of PGI-NRI, Warsaw.