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Paleomagnetic and geochronologic constraints on the geodynamic evolution of the Central Dinarides

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The geodynamic evolution of the Dinaride Mountains of southeastern Europe is relatively poorly understood, especially in comparison with the neighbouring Alps and Carpathians. We have constructed a new chronostratigraphy for the post-orogenic intra-montane basins of the Central Dinarides based on paleomagnetic and 40Ar/39Ar age data. Our results provide time constraints on the formation of these basins and elucidate their subsequent evolution. This is a fundamental step towards a better understanding of the late stage geodynamic evolution of the Central Dinarides. Our paleomagnetic results moreover indicate that the Dinarides have not experienced significant tectonic rotation since the late Oligocene. This implies that the Dinarides were decoupled from the adjacent Adria and the Tisza-Dacia Mega-Units that both underwent major rotation. We provide a reference frame for our rotation results through a review of Late Jurassic to Miocene paleomagnetic data, which elucidates spatial and tectonic rotation patterns in the Adria-Dinarides collision zone. The obtained results significantly improve our insight in the evolution of the Central Dinarides and help reconcile structural geological and paleomagnetic rotation estimates.