

Provenance of Eastern Carpathian mid-Cretaceous clastic sediments: Implications for the evolution of Moldavides

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The Moldavides represent the sedimentary remnants of the Ceahlau-Severin basin, an Alpine Tethys rift opened since the Early Jurassic, which are preserved today in a Cretaceous-Miocene thrust belt along much of the East Carpathians. It is unclear how large the basin was and if it contained any oceanic crust as a result of rifting. The basin is located between the Dacia Block in the West and an assembly encompassing the Moesian, Scythian and East European platforms, as well as the North Dobrogea Orogen. Following the mid Cretaceous collision with the Dacia Block, the Moldavides acted as a foredeep. Mid-Cretaceous Moldavide sediments are thick in the west up to 1000 m and much thinner, around 200 m, in central and eastern parts. The western Moldavides are made of turbidite channels and levees, i.e. conglomerates and lithic sandstones showing to the North to East flow directions. The central part contains turbiditic lobes having sublithic sandstones and greywackes while the flow directions are both to the West and the East. The eastern Moldavides are made of carbonate and siliciclastic sandstones with low grade metamorphic green clasts, incorporated by channels, levees and lobes, showing to West and North flow directions. The green clasts are known to be sourced in the Proterozoic of the Eastern Moesian Platform, while the sandstone source of central and western Moldavides is controversial, i.e. western orogenic one, eastern or intra-basinal. We carried out a detrital zircon U-Pb chronology on 9 samples, ~900 ages. Our results show that western Moldavides show 2 peaks, at ~450 and 590 Ma, similar to those found in the Dacia Block basement. The eastern Moldavide sediments are similar to those of the Eastern Moesian Platform and North Dobrogea Orogen, with 2 peaks at ~330 and 600 Ma, but also older ages, peaking at 2,000 and 2,700 Ma, typical for the East European Platform. The zircon from central Moldavides, sandstones and granodiorite clasts show values similar to the Danubian basement or Western Moesian Platform, with peaks at ~320 and 600 Ma. The uplifted blocks supplying granodiorites located in central Moldavides belong to the Western Moesian Platform.

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