

# Paleomagnetism of the Late Cretaceous red marls from the Pieniny Klippen Belt: Tectonic implications

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We present paleomagnetic results from 14 geographically distributed localities in Late Cretaceous red marls along the Pieniny Klippen Belt (PKB), from Košariská, in the West and Skrabské, in the East. The localities were sampled either by the Polish–Hungarian or Slovak–Hungarian team. Most of the laboratory measurements and evaluations of samples from 12 localities were made in Budapest, but several samples/specimens were also processed in Warsaw, as a kind of inter-laboratory control. It proved the remarkable consistency of results obtained in different laboratories. One of the remaining two groups was entirely analysed in Warsaw, the other in Bratislava. As the main carrier of the remanent magnetization was hematite, the samples were thermally demagnetized stepwise up to 680 °C or sometimes even to 720 °C. Analysis of the demagnetization curves usually revealed an overprint component which had to be removed in order to obtain tectonically useful paleomagnetic signal (characteristic magnetization). This removal took place at minimum 350 °C, but more often at 450 °C or higher temperatures.

Fold/tilt test carried out on locality level, wherever it was applicable, proved that the characteristic magnetization was of post-folding age for two and of pre-folding age for five localities. Including the localities with monoclinical bedding dips (total of 11 localities) an overall-mean paleomagnetic direction was calculated before and after restoring the position of the strata to horizontal level. This test proved the pre-folding age of the magnetization and suggested an about 50° CCW rotation of the PKB, as a whole relative to the present North. This is in harmony

with earlier measured tectonic rotations on the Central and Outer Western Carpathian flysch of Oligocene age (Márton et al., 1999, 2009).

As the 11 locality mean paleomagnetic directions exhibit somewhat smeared distribution in declinations, a paleomagnetic oroclinal test was also carried out which proved to be negative. However, moderate correlation is observed between the general trend of the PKB and the paleomagnetic declinations when four localities with monoclinical steep dip or overturned strata are omitted. Thus, we can not exclude the possibility that the present shape of the PKB is partly due to oroclinal bending. In the context of the above cited Oligocene paleomagnetic results from the Central and Outer Western Carpathians, the age of the possible bending is constrained as of pre-Oligocene.

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## References

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