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The new late Jurassic - Cretaceous APW for Adria as a tectonic framework for the interpretation of paleomagnetic results from the Northern Adriatic Basin

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As a result of systematic paleomagnetic studies in stable Istria and in the foreland of the Southern Alps, the Late Jurassic-Cretaceous segment of the APW for stable Adria became well-constrained by direct measurements on biostratigraphically dated carbonates deposited simultaneously on a platform and in a basin (MARTON et al. 2008, 2010). This APW characterizes the movements of Adria during the named time interval and also serves as a reference framework for describing the displacements in the deformed margin of stable Adria relative to the „hard core". When Late Cretaceous paleomagnetic results are referred to this framework from the islands of the Northern Adriatic basin, no relative movements are revealed between the stable core and the deformed margin of Adria. On the contrary, Jurassic paleomagnetic directions from the mainland (Dinaricum or Dinaridic domain) exhibit an about 30° CW rotation with respect to Adria, since the CCW rotation observed for the Dinaricum for coeval rocks is less than for those for stable Adria or for its imbricated margin.

The timing of the above described relative rotation is not yet solved. It can be „inherited", i.e due to the existence of two independent platforms (Adriatic and Dinaric), could be connected to thrusting of the Dinaricum over Adriaticum or we can assume that the former did not participated in the post-Eocene CCW rotation of the former.

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The „tectonic trend" of the Pieniny Klippen Belt (PKB) in the light of new palaeomagnetic results from the late Cretaceous red marls

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The PKB is a long, narrow shear zone of arcuated shape which separates the Central and Outer Western Carpathians. Oroclinal bending of the originally linear belt is the most popular concept for explanaining the present shape. The PKB is made up of Jurassic-Paleocene sediments which suffered nappe transport during Late Cretaceous. According to BIRKENMAJER (1983) the mega-shear zone was formed by clockwise rotation of the Central Carpathians respective to the Outer Carpathians during Miocene and the strike-slip movements caused the mega-brecciation that is the most characteristic feature of the PKB.

Modern paleomagnetic studies documented that both the Central Carpathians and the Outer Western Carpathians rotated CCW, with the same angle, after the Oligocene (MARTON et al. 1999, 2009) and the model of bending during the Miocene was not supported. Nevertheless, oroclinal bending before the Eocene was not excluded. In order to test this option, we studied with paleomagnetic method Albian-Senonian pelagic red marls from 13 localities distributed along the Slovak and Polish segments between Bratislava and Kosice.

The oriented samples were subjected to magnetic mineralogy, paleomagnetic and magnetic susceptibility anisotropy (AMS) measurements and the stable

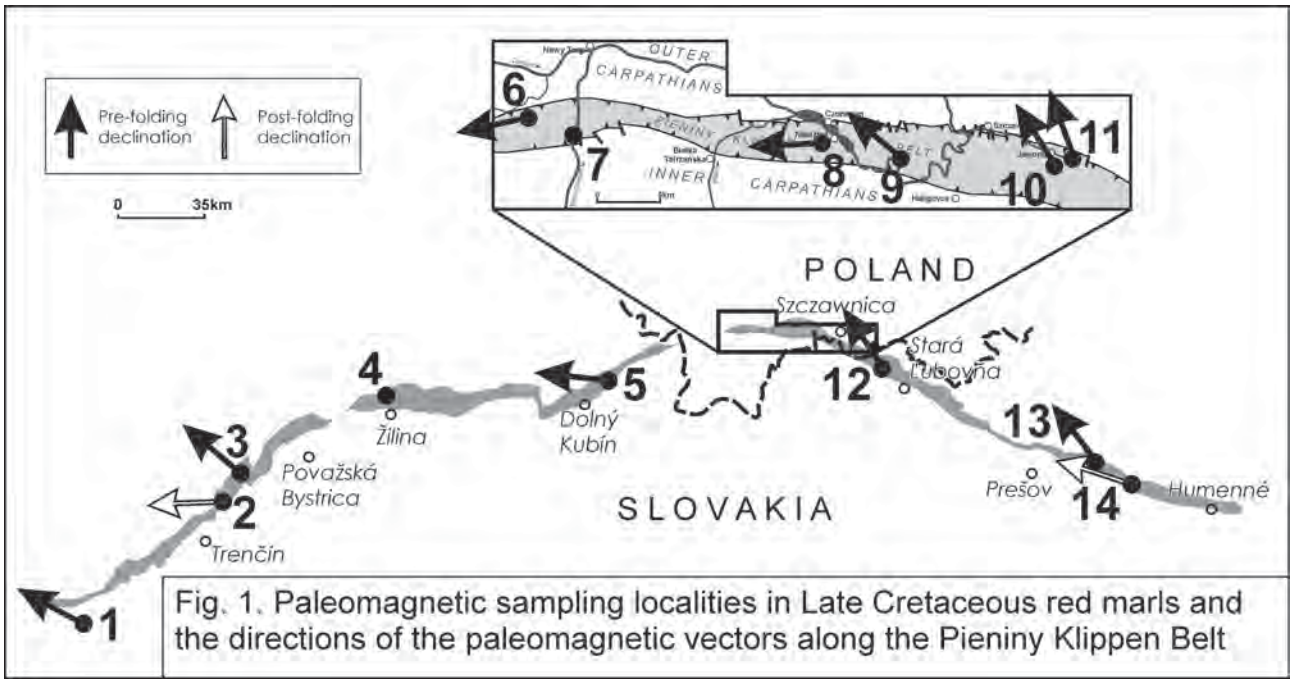

Fig. 1. Paleomagnetic sampling localities in Late Cretaceous red marls and the directions of the paleomagnetic vectors along the Pieniny Klippen Belt

components of the NRM and the magnetic lineations were interpreted in terms of tectonics. Within locality fold/tilt test proved that localities 2 and 14 possess post-folding, while 5, 9-13 pre-folding remanences (Fig. 1). The cases of uniform within-locality tilts fit the general paleomagnetic trend outlined by the best six localities. The rotations indicated are CCW from about 90° to moderate angles (Fig. 1). Concerning the magnetic fabric, well-defined lineations are observed in most cases due to compressional tectonics.

The lineations, similarly to the paleomagnetic directions do not follow the shape of the arc (Fig. 1), i.e. the popular model of oroclinal bending of the PKB is not supported by paleomagnetic nor by AMS data.

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3D modelling of an ammonite mass-occurrence within the Carnian Crisis (Taurus, Turkey)

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The Upper Triassic in general, and the Carnian stage in detail was devastated by one of the most severe ecological crisis of the Mesozoic Era, the Carnian Crisis (=Carnian Pluvial Event), when the carbonate platforms demised and with them most of the reef-builders disappeared. The *Orthoceltites* assemblage (ammonoids, cephalopods) was formed in the Carnian Crisis, now located at the boundary from Kartoz and Kasimlar Formation (Anatolia, Turkey), can act as proxy for the environmental activities and biotic crisis in the Carnian time. It has to be noted that the ultimate cause of this drastic Mesozoic crisis is still under comprehensive discussion. The main investigation topics of the project are the palaeoecologic, palaeobiogeographic, litho-, cyclo- and magnetostratigraphic development of the Upper Triassic (Carnian) ammonoid mass-occurrence at the Asagiyaylabel section in Anatolia (Turkey), formed during the Carnian Crisis. This area is a key section within the Taurids and has a connecting and intermediate position. Situated on the western end of the Cimmerian System at that time it shows connection to both, the Neo-Tethys and the Palaeo-Tethys Oceans. New insights into the taxonomy and the palaeoecology of the investigated ammonoids and associated macro- and microfossils are expected. The abundant ammonoid *Orthoceltites*, at least 200 000 000 !!! specimens, is assumed to be a new species. Further topics of investigation are the original position and environmental conditions of the sedimentation area at the Asagiyaylabel section, located in the Taurids. The formation of the