Original orientation of neptunian dykes in the Pieniny Klippen Belt (Western Carpathians): the first results

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A b s t r a c t : Measurements of neptunian dykes and their evaluation with utilizing of paleomagnetic correction for the first time provided data that enable to estimate orientation of the hypothetic Czorsztyn Swell. This ridge was individualized during Jurassic rifting and formed an axis of the so called Pienidic Domain. This domain was destroyed in the Alpine orogenic cycle. The basement of this zone was consumed, but the overlying sediments were preserved and now form the majority of the so called klippen in the Pieniny Klippen Belt which is now the most complex zone of the Western Carpathians. The klippen are tectonic blocks and lenses of mostly Jurassic limestones in softer, mostly Cretaceous envelope. As these remnants of Jurassic limestones are of different orientation, paleomagnetic corrections are necessary to complement any structural measurements in this zone. Callovian to Oxfordian neptunian dykes occurring in the Czorsztyn Unit, the sediments of which deposited in the shallowest parts of the Czorsztyn Swell, were taken as a direct indicator of the Jurassic extension. Four sites in western Slovakia were examined, possessing larger networks of neptunian dykes: Babiná, Mestečská skala, Vršatec and Bolešovská dolina. The mean orientation of the neptunian dykes was NE–SW (with N–S to ENE–WSW variations), which indicates also the most probable orientation of the Czorsztyn Swell. This direction points to NW–SE oriented Jurassic extension in that area. The paleomagnetic inclination ranging between 21° and 46°, with mean point of about 33° indicates approximately 10–30°paleolatitudes, where the Czorsztyn sedimentary area might had been located at that time.

Key words: paleomagnetic direction, neptunian dykes, Jurassic, Klippen Belt

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