Tectono-sedimentary breccias in the Upper Cretaceous–Lower Paleogene formations from the eastern part of the Pieniny Klippen Belt (Western Carpathians)

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The studied section of the Pieniny Klippen Belt is, apart from tectonic klippens, characterized by the presence of sedimentary-type klippens – olistoliths situated in the Upper Cretaceous and Paleogene flysch sediments (Jarmuta and Proč fms.) of the Oravic Subpieniny and Šariš units, respectively. These tectono-sedimentary breccias are known as the Gregorianka and Milpoš breccias (Nemčok et al., 1989; Plašienka and Mikuš, 2010) and represent synorogenic deposits formed in response to superficial thrusting processes. The Gregorianka breccias form tabular to lenticular bodies in the upper parts of the Maastrichtian Jarmuta Fm. of the Subpieniny unit. They contain mostly monomictic material derived from the structurally highest Pieniny unit of the Pieniny Klippen Belt. In contrast, the Paleocene – Lower Eocene Milpoš Breccia from the structurally lowermost Šariš Unit contains variegated material derived mainly from the overlying Subpieniny unit and probably also from the Pieniny unit, including some recycled "exotic" material. They also carry blocks – olistoliths derived from these units which range up to the size of megaolistolites. These can be considered as already partly disintegrated fronts of the overriding Subpieniny nappe that were transformed to bodies of tectono-sedimentary breccias and transported gravitationally as mass-flows into the frontal Proč flysch basin. Consequently, the Gregorianka and Milpoš breccias represent important sedimentary records of the tectonic thrust processes in the Oravic Superunit of the Pieniny Klippen Belt. The main aim of this contribution is sedimentological, biostratigraphical and lithologic-petrographic analysis of the breccia material and interpretation of their origin and significance for dating of the thrusting events within the Pieniny Klippen Belt.

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