

Mélange deposits in the Skrzydlna and Wiśniowa tectonic windows (Outer Carpathians) – preliminary results

KRZYSZTOF STARZEC^{1,2}, WOJCIECH SCHNABEL², ANNA WAŚKOWSKA¹,
JAN GOLONKA¹, GRZEGORZ MACHOWSKI¹ and MICHAŁ STEFANIUK¹

1 – AGH University of Science and Technology, Faculty of Geology, Geophysics and Environmental Protection, Al. Mickiewicza 30, 30-059 Kraków, Poland

2 – Geokrak Ltd. ul. Mazowiecka 21, 30-019 Kraków, Poland

The deposits traditionally linked to the Subsilesian Unit occur in the Lipnik, Wiśniowa and Skrzydlna area, Polish Outer Carpathians. This region belongs to the larger Lanckorona–Żegocina tectonic zone. This zone was interpreted as a series of tectonic windows, where the Subsilesian Unit rocks crop out from the overlying Silesian Nappe (Książkiewicz, 1953, 1972; Skoczylas-Ciszewska, 1960; Burtan, 1978). Burtan (1978) distinguished Wiśniowa and Skrzydlna windows.

Burtan (1978) as well as Skoczylas-Ciszewska (1960) indicate difficulties in unravelling the geological structure of this zone, caused by strong tectonic deformations. Książkiewicz (1972) regarded Lanckorona–Żegocina tectonic zone as anticlinal structure originated by folding of both Subsilesian and Silesian nappes. According to Golonka et al. (2011) the diapiric-type migration of the less competent formations of Subsilesian nappe along the strike-slip fault forms these so-called tectonic windows.

The field observations indicate that the Subsilesian Unit is built of strongly deformed mélanges that is soft plastic claystones containing fragments of harder rocks. The Lower Cretaceous Grodziszczce, Verovice, Lgota formations are main components of this blocks. Węglówka and Frydek marls of Subsilesian Unit are also present in these blocks (Książkiewicz et al., 1962; Burtan, 1978; Waśkowska-Oliwa, 2005). The Czerwin sandstones (Burtan, 1978; Leśniak et al., 2005) are also characteristic for this zone. These sandstones are absent in the other Subsilesian Unit areas.

Two types of mélanges were distinguished: The deposits „blocks in matrix type” that is *de facto* breccias with mixture of clayey-sandy matrix and coarse material, which includes clasts differentiated by size and lithology and strongly deformed shales with layers of sandstones displaying budinage. The blocks in matrix type mélanges represent olistostromes according to Cieszkowski et al. (2011)

The mélange deposits age was established using micropaleontological investigations. The content of micropaleontological assemblages and samples biostratigraphy is linked to the type of sediments. The dark non-calcareous claystones contain Early Cretaceous microfauna, while gray marls and mudstones, contain microfauna’s characteristic for Paleocene and Eocene.

The Early Cretaceous assemblages are dominated by agglutinated forms containing typical Early Cretaceous species *Glomospirella gaultina* Berthelin, *H. nonioninoides* (Reuss), *H. depressa* Vasicek, *P. variabilis* (Vasicek), *T. neocomiensis* Geroch, *A. carpathicus* Geroch, *A. infimus* Bornemann, *P. troyeri* (Tappan), *C. crassa* (Geroch), *G. oblonga* Zaspelova, *T. vocontiana* Moullade, and *V. subfiliformis* Bartenstein. The Albian was estimated, however quite often the forams assemblages do not allowed the precise estimation and the longer Hauterivian-Albian interval was assumed.

The Paleocene samples contain extraordinary rich forams' assemblages (70 recognized species). The typical Paleocene *Rz. fissistomata* (Grzybowski) is present. The more precise age estimations were established by analysis of plankton containing acarinas (*A. nitida* Martin, *A. soldadoensis* (Brönnimann)), globigerins (*G. cf. primitiva* (Finlay), morozovellas (*M. subbotinae* Renz et Morozova, *M. cf. aequa* Cushman et Renz), subbotinas (*S. triangularis* White, *S. triloculinoides* Plummer, *S. velascoensis* Cushman, *S. triloculinoides* Plummer), and parasubbotinas (*P. cf. variospira* Belford, *P. varianta* Subbotina) suggesting middle Thanetian age.

The Eocene assemblages are dominated by planktonic forams. The subbotinas are most frequent. *S. corpulenta* (Subbotina), *S. cf. criociapertura* Blow, *S. eoacaena* (Guembel), *S. linaperta* (Finlay), *S. yeguaensis* (Weinzierl & Applin), as well as acarinas (*A. bullbrooki* Bolli, *A. cf. collactea* (Finlay), *A. cf. praetopilensis* (Blow)) suggest Lutetian age of the analyzed deposits. *R. amplectens* (Grzybowski), *E. propinquus* (Brady) and *C. cf. praelopjanicus* Mjatluk represent early Lutetian benthic forms.

Acknowledgement: This research has been financially supported by AGH grant no. AGH 11.11.140.173 and National Centre for Research and Development grant no. BG2/ShaleCarp/14.

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