

## Sediment Dispersal in the Moravian–Silesian Culm Based on Garnet Geochemistry and Mica Dating

Jiří OTAVA

Czech Geological Survey, Leitnerova 22, 658 69 Brno, Czech Republic

There were many attempts to reconstruct the ways of infilling and redistribution of sedimentary load within the Lower Carboniferous Culm Basin of the Moravian–Silesian Variscan orogen. The most usual methods used in the past were the analysis of pebble composition of conglomerates and the petrology of greywackes. Probably the most complete evaluation of conglomerates was presented by Kumpera and Martinec (1995). Nevertheless, their diagrams showing conglomerate composition in different parts and levels of the Culmian sequence are somewhat confusing. The first reason of such a confusing pattern should result from compilation of data produced by 12 authors often using very different methods of sampling, sorting and analysing of the rock types in pebbles. Other unfavourable circumstances are often relative exclusivity of psephitic sediments in the basin, their generally small area and volume and their irregular distribution. All the mentioned disadvantages are eliminated in the study of thin sections of greywackes, but the results are even less plausible and satisfactory. Some authors (e.g., Štelcl, 1995) even conclude their microscopic study supported by X-ray and chemical analyses by the idea of a single source area, which remained unchanged during the whole time of deposition of the Drahaný Culm. This is, of course, an unacceptable conclusion.

Progress in the knowledge of provenance and distribution of sedimentary load in the basin has been made using the study of translucent heavy-mineral assemblages. The principal results should be expressed very shortly in two conclusions:

- 1) The basin fill consists of two entities of the first order, i.e., the western subbasin and the eastern subbasin. These entities differ both in composition and provenance.
- 2) The Drahaný (southern) and the Nížký Jeseník (northern) parts of the Culm were both dominantly fed from the same point source in the south. This opinion is very well supported by older works of Kumpera expressed in the paper of Kumpera and Martinec (1995). This means that originally there was one unique western subbasin between southern Moravia and southern Poland. The younger, eastern subbasin of Upper Viséan age reflects the change of source when an influx of high-grade metamorphic material blanketed the basin from the territory of S Moravia to S Poland in the north.

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The recent detailed comparative study of geochemistry of detrital garnet has brought more accuracy and precision into the estimation and/or determination of provenance and allowed to parallelize assemblages over large areas and long distances (Drahaný Upland, Nížký Jeseník Mts., southern Poland, boreholes under the Western Carpathians).

The recent study of Schneider et al. (1999) focused on  $^{40}\text{Ar}/^{39}\text{Ar}$  multi- and single-grain dating of detrital white mica from various Culm formations and revealed interesting parallelism with the results of the study of detrital garnet assemblages. The similarity is expressed by wider range of garnet types and of detrital mica ages (mostly ranging between 370 and 590 Ma) in the older, western subbasin. On the other hand, the younger, Upper Viséan eastern subbasin contains an oligomict mixture of detrital garnets and shows a narrower range of detrital mica ages (332–341 Ma for the Myslejovice Fm).

The results of the study of detrital white mica ages support very well the general pattern of sedimentary material distribution within the Moravian–Silesian Culm basin. Together with the study of detrital garnet assemblages it is another promising method of basin analysis and is definitely worth continuation.

### References

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## Gneisses of Polish Part of the Červenohorské sedlo Belt

Jacek PUZIEWICZ

Institute of Geological Sciences, University of Wrocław, Cybulskiego 30, 50-205 Wrocław, Poland

The Fore-Sudetic part of the Jeseník Mts. is situated almost entirely in the Czech Republic. However, the northernmost parts of the Žulová granitic massif and its cover stretch out into the area of Poland (in the vicinities of villages Sławniowice, Burgrabice and Gieralcic, SE of Nysa). The metamorphic rocks belong to the Červenohorské sedlo Belt (cf. tectonic sketch of

Cháb et al. 1994). The rocks of the northernmost parts of Vysoká hole nappe form the Góra Parkowa between Glucholazy and Polish/Czech border.

Gneisses and quartzites dominate in the Polish part of the Žulová pluton cover; subordinate are marble lenses close to Sławniowice and very small amphibolite occurrences in Apla