

## The Tournaisian-Visean boundary interval in the Velbert anticline (Rhenish Slate Mountains, Germany)

L. Dvořák<sup>1</sup>, M. Aretz<sup>2</sup>, O. Bábek<sup>1</sup>, H-G. Herbig<sup>3</sup>, J. Kalvoda<sup>1</sup>

<sup>1</sup>Department of Geological Sciences, Faculty of Science, Kotlarska 2, 61137 Brno, Czech Republic, lada.dvorak@centrum.cz

<sup>2</sup>Université Paul Sabatier, Observatoire Midi-Pyrénées, LMTG, 14 avenue Edouard Belin, 31400 Toulouse, France

<sup>3</sup>Universität zu Köln, Institut für Geologie und Mineralogie, AG Paläontologie und Historische Geologie, Zülpicher Strasse 49a, 50674 Köln, Germany

The Tournaisian-Visean boundary was in the focus of attention during last 2 decades. Recently new stratotype in Pengchong in SE China was unanimously approved by ICS Voting in March 2008. The new definition of the boundary is based on foraminiferal lineage from “*Eoparastaffella ovalis* group” to *Eoparastaffella simplex*. The lowest occurrence of the conodont *Pseudognathodus homopunctatus*, at less than 5 m above, and the highest occurrence of the conodont *Scaliognathus anchoralis europensis*, at about 30 m below the boundary in the GSSP at Pengchong were chosen as secondary markers. These criteria can be well applied in Eurasia, but both *E. ovalis* and *E. simplex* and *Psg. homopunctatus* are absent in North America (Devuyst 2006) and the occurrence of the evolutionary youngest subspecies *Scaliognathus anchoralis anchoralis* has been reported here to cross the Tn-V boundary (Lane and Ziegler 1983).

The occurrences of conodonts in the GSSP at Pengchong are quite rare (Devuyst et al. 2003, Devuyst 2006). The Zippenhaus Sedimentation Area (ZSA) representing the transition from the shallow marine Carboniferous Limestone facies to the Kulm facies (Aretz et al. 2006) is a classical area of the widely accepted Mississippian post-*Siphonodella* conodont zonation of Lane et al. (1980). Conodonts occur together with foraminifers (Paproth et al. 1973, Park 1983) and some important groups of macrofauna as rugose corals, brachiopods and ammonoids here. Consequently, the sections in the Velbert area reveal high potential for detailed biostratigraphical studies and correlations around the T/V boundary interval.

The revision of conodont fauna demonstrated that there is no overlap between the ranges of *Sc. anchoralis* and *Psg. homopunctatus* as reported earlier by Paproth et al (1973) and a *Gnathodus* interzone spans the interval between the last occurrence of *Sc. anchoralis* including also the nominal subspecies and the first occurrence of *Psg. homopunctatus* (Kalvoda 2003, Devuyst 2006, Devuyst and Kalvoda 2007) which has important consequences for the detection of the T/V boundary in North America. The sequence of events the extinction of *Sc. anchoralis*, the first occurrence of *Mestognathus beckmanni*, the last occurrence of *Mestognathus praebeckmanni*, the entry of *Psg. homopunctatus* and *Gnathodus praebilineatus* represent important tool for high resolution biostratigraphy of the studied interval.

Contrary to previous studies of Paproth et al. (1968, 1973) the sections in Velbert area furnished good record of the foraminiferal fauna with well-established foraminiferal guides as *Darjella monilis*, *Elevenella parvula*, *Lysella gadukensis*, *Eoendothyranopsis donica*, *Eoparastaffella ovalis*, *Eoparastaffella florigena*, *Eoparastaffella asymmetrica* and *Eoparastaffella simplex*.

Beside these important taxons the potential of *Omphalotis* ex gr. *chariessa*, *Globoendothyra orelica*, *Globoendothyra ishimica*, *Globoendothyra compressa*, *Forschia mikhailovi*, *Forschiella prisca*, *Florenella amplissima*, *Eoparastaffella subglobosa* and *Eoparastaffella pseudochomata* seems to be worth to test for detailed biostratigraphical studies and correlations in the T/V boundary interval. In summary, the excellent record of both fora-

miniferal and conodont fauna makes the Velbert Anticline a key region for correlation of the T/V boundary interval both in Europe and North America where the important foraminiferal guides are missing.

The new high resolution biostratigraphy enabled the distinction of the boundary between third order sequences 4 and 5 defined by Hance et al. (2001) just below the T/V boundary. The widespread dolomitization recognized both in Belgium and

British Isles that followed a major regression after the sequence 4 can be distinguished also in German sections and the correlation of the gamma-ray logging with the Salet and Sovet sections in Dinant basin support this interpretations.

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