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The redefinition of the Devonian-Carboniferous Boundary: recent developments

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Since in the GSSP section at La Serre, southern France, the marker fossil for the base of the Carboniferous, the conodont *Siphonodella sulcata*, was found below the boundary just above a facies change, the definition of the base of the Carboniferous has been back on the agendas of the Devonian and Carboniferous subcommissions. A joint SDS/ISCS Task group was established in 2009 to redefine the base of the Carboniferous and thus to regain stratigraphical stability in this critical interval of Earth history. Task group members have been active in various aspects related to the boundary definition and a wealth of new data has become available. Characteristic for many studies are multi-disciplinary approaches, which combine palaeontological, sedimentological, geochemical and petrophysical methods and data.

Our aim is not to report all task group activities of the last years herein, but to summarize some, and especially to present a brief summary on the discussions and results. Special sessions on the DCB, or formal discussions were held at the 2nd International Congress on Stratigraphy (Strati 2015) in July 2015 in Graz, at the Congress on Carboniferous and Permian (Kazan, August 2015) and at the IGCP 596 final meeting in Brussels (September 2015). A dedicated workshop with two days of discussions and a field trip to the classical sections in Montagne Noire was organized in Montpellier in September 2016.

The task group is still gathering data and no decision has so far been made on a suitable level, an index taxon or a section. There are still many options to check. The task group is committed to stratigraphical stability, but also to a user-friendly definition of the base of the Carboniferous. In this respect the extinction events in the global Hangenberg Crises, which in the current definition predates the boundary, have been among many others one focus of our work.

It should be noted that a few papers (Becker et al., 2016; Corradini et al., 2016) discussed possible levels where to place the boundary, highlighting pros and cons for each, and several others discussed various aspects of the boundary interval (i.e.: Kaiser et al., 2015; Bábek et al., 2016).

In any case, the recent works demonstrated that the GSSP section and the auxiliary stratotype sections in China and Germany are not suitable for the definition of a new boundary. Hence the discussions are open in all directions and they require the input from all interested researchers.

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Original Project title

The redefinition of the Devonian-Carboniferous Boundary.

Project leaders, funding agency, duration

Aretz, M. (chair), Corradini, C. (vice-chair), Devonian-Carboniferous Boundary task group, International Commission on Stratigraphy (ICS), contribution by ICS and ISCS for organizing the Montpellier workshop in 2016.

Scientific background

Because the first appearance datum (FAD) of the index conodont which indicated the base of the Carboniferous at GSSP was found below that level in connection with a facies break, beside taxonomic problems, the definition of the base of the Carboniferous system has to be re-evaluated, wherefore a special task group with members of both stratigraphic commissions (Devonian and Carboniferous) was established.

References

BÁBEK, O., KUMPAN, T., KALVODA, J. & GRYGAR, T.M. (2016): Devonian/Carboniferous boundary glacioeustatic fluctuations in a platform-to-basin direction: A geochemical approach of sequence stratigraphy in pelagic settings. - *Sedimentary geology*, 337: 81-99.

BECKER, R.T., KAISER, S.I. & ARETZ, M. (2016): Review of chrono-, litho- and biostratigraphy across the global Hangenberg Crisis and Devonian-Carboniferous Boundary. - In: BECKER, R.T., KÖNIGSHOF, P. & BRETT, C.E. (eds): *Devonian Climate, Sea Level and Evolutionary Events*, Geological Society, London, Special Publications, 423.

CORRADINI, C., SPALLETTA, C., MOSSONI, A., MATYJA, H. & OVER, D.J. (2016): Conodont across the Devonian/Carboniferous boundary: a review and implication for the redefinition of the boundary and a proposal for an updated conodont zonation. - *Geological Magazine*: 15 pp.

KAISER, S.I., ARETZ, M. & BECKER, R.T. (2015): The global Hangenberg Crisis (Devonian-Carboniferous transition): review of a first-order mass extinction. - In: BECKER, R.T., KÖNIGSHOF, P. & BRETT, C.E. (eds): *Devonian Climate, Sea Level and Evolutionary Events*, Geological Society, London, Special Publications, 423.