

2012 WORK PLANS FOR DEVONIAN-CARBONIFEROUS BOUNDARY TASK GROUP

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The work plans for the D-C Boundary task group during the November 1st, 2011 - October 31st, 2012 fiscal year resemble those for the previous one and the primary task continues to be the location of a suitable event marker to define the boundary. A suitable section for the GSSP also needs to be chosen. A biostratigraphic analysis by Ji Qiang and his colleagues (Ji *et al.*, 1989) and further work (Kaiser, 2009) indicates that there are problems with the D-C Boundary GSSP (Paproth *et al.*, 1991) at La Serre, France.

At the onset of the reappraisal project in 2008, the SCCS executive hoped the current event marker, the FAD of the conodont *Siphonodella sulcata* (Huddle, 1934), could be used for boundary definition. Preliminary results from the re-evaluation of the lineage containing that index (Kaiser & Corradini, 2011) suggest it is not useable but additional work is required by other specialists to test their findings. Slightly later in the project, it was thought a protognathodid conodont lineage could be used for D-C boundary definition but the assessment of that group has not provided favorable results (Corradini *et al.*, 2011).

Considerable progress on re-evaluating the lineage containing the current D-C boundary marker, the FAD of the conodont *S. sulcata*, has been made. Additional study of the lineage is required, however, and the task group plans to complete that work shortly. In the La Serre section, Corradini & Kaiser (2009) identified seven morphotypes in the transition from *S. praesulcata* Sandberg, 1972 to *S. sulcata*. Unfortunately, the conodonts within the transition are reworked and no correlation exists between the stratigraphic level and individual morphotypes. The task group plans to determine if any correlation between the morphotypes and stratigraphic level exists in other D-C boundary sections, where reworking is not an issue.

Several task-group members have been studying the taxonomic and phylogenetic problems within the protognathodid conodont lineages (Corradini *et al.*, 2011). Four species of *Protognathodus* are known from the relevant time span: *Protognathodus meischeri*, *P. collinsoni*, *P. kockeli* and *P. kuehni*. Presently favoured for boundary definition are the first occurrences of *P. kockeli* from *P. collinsoni* and *P. kuehni* from *P. kockeli*. The SCCS executive has asked the conodont specialists to evaluate the utility of using the lineages for boundary definition by studying them in the best of their D-C boundary sections.

If the FAD of *S. sulcata* is retained for boundary definition, a suitable section for the GSSP is required because work at La Serre (Ji *et al.*, 1989; Kaiser, 2009; Corradini & Kaiser, 2009) indicates the lack of a phylogenetic transition from *S. praesulcata* to *S. sulcata* in that section. In addition, the section is not suitable because the first occurrence of *S. sulcata* occurs immediately above an abrupt facies change (ooid grainstone on sandy shale) that is probably erosional. Because of the potential break, some task-group members are completing independent sedimentologic assessments of that contact and the entire section.

At the July 2010 ICP3 workshop in London and at other recent meetings, it was proposed that we consider using some component of the multiphase Hangenberg Event Interval (Kaiser *et al.*, 2008) for boundary definition. At the end of the meeting, Markus Aretz asked participants to prepare for the D-C boundary workshop in Morocco from March 23rd to 30th, 2013 (see circular in v 29 of Newsletter on Carboniferous Stratigraphy) by developing precise correlation charts for their regions of study showing the biostratigraphic, geochemical and depositional events within the Hangenberg Event.

At the International Commission of Stratigraphy meeting held in Prague from May 31st to June 3rd, 2010, Vladimir Davydov (Boise State University, Idaho, USA) proposed that volcanic-ash layers be used to define boundaries such as the D-C boundary. They can also be used to date events within the Hangenberg Interval and assist with their global correlation. The study of the ash horizons is ongoing.

Four of the D-C boundary projects that are planned for next four to five years are outlined below. 1) Vladimir Pazukhin along with Yuriy Gatovsky and Lyudmila Kononova (Moscow State University) plan to complete a monograph on the conodont biostratigraphy of D-C boundary interval in the Ural Mountains of Russia. The study will consider the interval from the Famennian *marginifera* Zone into the Tournaisian *isosticha* Zone. 2) Chinese colleagues along with the SCCS executive and task-group leaders initiated a re-assessment of the best D-C boundary sections in China by visiting the Dapoushang section (Ji *et al.*, 1989) in southern Guizhou Province during the November 22nd - 29th 2010 SCCS workshop and field meeting. 3) Task-group member Jiri Kalvoda and colleagues from the Czech Republic are conducting a multidiscipline project to study the D-C Boundary interval in Western Europe including the La Serre section. The project's principal goal is the correlation of evolutionary changes in foraminifer and conodont faunas in the D-C Boundary interval with a high-resolution stratigraphic framework arising from multidiscipline stratigraphic-paleoenvironmental analysis. Anticipated benefits of the project for the ICS and SCCS are a better understanding of the *S. praesulcata* - *S. sulcata* lineage and whether or not it is suitable for definition of the D-C Boundary GSSP. Other conodont lineages relevant to the boundary (protognathodids lineages) will also be evaluated. The resulting high-resolution stratigraphy will be used to test the isochroneity of the events within the Hangenberg Event Interval and contribute to a better correlation between basinal and shallow-water successions. 4) In western Canada, Barry Richards intends to continue his ongoing studies of the latest Famennian to early Tournaisian Exshaw Formation (see Richards *et al.*, 2002) and its correlatives to see if the main events in the multi-phase Hangenberg Event Interval can be more precisely located in the formation by employing a multidisciplinary approach. The work is part of a broader investigation intended to access the hydrocarbon resources of the interval and will include examination of coeval correlatives (including Bakken Formation) in adjacent areas.

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