

## 2012 WORK PLANS FOR BASHKIRIAN-MOSCOVIAN BOUNDARY TASK GROUP

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The Bashkirian-Moscovian boundary task group is conducting research in Eurasia to continue its evaluation of lineages suitable for boundary definition. Investigations focus on evolutionary transitions in conodont and fusulinid lineages and it is anticipated that during the November 1<sup>st</sup>, 2011 - October 31<sup>st</sup>, 2012 fiscal year a lineage and taxon suitable for boundary definition will be selected.

During the fiscal year most work will be directed on localities in Guizhou Province, South China. The well-known Naqing (= Nashui) section contains exceptionally abundant and diverse conodonts in a relatively deep-water, slope setting (Qi *et al.*, 2007; 2010). Fusulinids are present at Naqing, but they are less abundant and not as well preserved the conodonts. Qi Yuping is leading a group of conodont specialists who have identified three levels at which a lower Moscovian boundary might be placed. The lowest potential marker is the appearance of *Streptognathodus expansus* Igo & Koike, 1964 at 169.05 m above the base of the section. This species appears in evolutionary continuity with a yet-to-be-named ancestor. The next higher potential marker is the appearance of *Diplognathodus ellesmerensis* Bender, 1980 at 174.3 m. Whereas the evolutionary origin of *D. ellesmerensis* was once unclear, Qi and his colleagues now report the discovery of a transitional form linking *D. orphanus* with *D. ellesmerensis*. The highest potential boundary level is the appearance of *Mesogondolella* spp. (e.g., *M. donbassica*) at 179.9 m. *Mesogondolella* is an attractive marker because it is easily identified and widespread geographically, but its appearance is consistently above those of *Declinognathodus donetzianus*, *Neognathodus kanumai* and *N. atokaensis*, which are conventionally regarded as Moscovian indices. Work for the coming year will involve formally describing the ancestor to *S. expansus*, fleshing out evolutionary relationships between *D. orphanus* and *D. ellesmerensis* and testing the intercontinental biostratigraphic fidelity of the potential marker events.

Work on the sedimentology, stable-isotope geochemistry, and geophysical characteristics of the boundary interval in the Nashui section are not as advanced as the paleontological investigations and need to be a focus of the team's work in 2012. During 2012, the task group plans to complete measuring the Moscovian component of the section into the lower Kasimovian and finish a bed-by-bed analysis of the strata over a 10 to 20 metre-thick interval on either side of the probable boundary level.

Fusulinid specialists in the task group recently proposed the FAD of *Eofusulina* as a potential marker for the base of the Moscovian Stage. This prompted Katsumi Ueno along with Japanese and Chinese colleagues to re-sample platform carbonates at the Zongdi section (Ueno *et al.*, 2007) in an attempt to demonstrate a continuous *Verella*–*Eofusulina* lineage. At Zongdi the lowest *Verella* was found at 56 m and specimens continue up to 76 m. The lowest *Eofusulina* occurs at 80.5 m and others are commonly found up to 95 m. Ueno *et al.* noted that the FAD of *Eofusulina* is just below a subaerial exposure surface at 83.0 m, suggesting that at this locality the derivation of *Eofusulina* from *Verella* might be a true evolutionary first appearance event. Ueno and colleagues will continue their investigation of the *Verella*–*Eofusulina* lineage at Zongdi and also at the recently discovered Luokun and Dianzishang sections, which are known to contain good conodont and fusulinid faunas.

Demir Altiner and colleagues conducted an analysis of the sequence stratigraphy and fusulinid biostratigraphy of Bashkirian-Moscovian boundary beds in the Tauride Belt, southern

Turkey. Three overlapping sections spanning the Lower Bashkirian (Askynbashky) to Lower Moscovian (Solontsovsky) beds were measured and sampled on a bed-by-bed basis. The Bashkirian-Moscovian boundary is recognized locally by the first occurrence of *Profusulinella prisca* within the *P. staffellaeformis*-*P. paratimanica* lineage. This level also coincides with the first occurrence of *Aljutovella aljutovica*. The lowest occurrence of the genus *Eofusulina* is slightly higher than that of *P. prisca* and *A. aljutovica*. This homotaxial sequence has been observed elsewhere and is attributed to the low abundance of *Eofusulina* relative to *Profusulinella* and *Aljutovella*. Stacking patterns of upward-shoaling meter-scale cycles indicate the presence of two third-order sequences dated as Askynbashky to lowermost Asatausky and Asatausky to Solontsovsky. A quartz arenitic sandstone intercalated within the Upper Bashkirian carbonate succession has been interpreted as a falling stage systems tract corresponding to stratal offlap during the culmination phase of the second glacial interval in the Carboniferous. Following the sea-level fall in the earliest Asatausky, a new carbonate regime was installed in the Asatausky-Solontsovsky interval by a glacio-eustatic sea-level rise. The Bashkirian-Moscovian boundary seems to be located within the transgressive systems tract of this new carbonate regime. Turkish sections might rival those in South China as candidates for the basal Moscovian GSSPs but it is necessary to undertake detailed analyses of the conodonts in order to integrate sequence stratigraphy with a combined conodont-fusulinid biostratigraphy.

### References

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