



2004 Meeting Report Form Re: UNESCO-IUGS Contract and IUGS Supplementary Contribution

Project Number and Title: **467: Triassic time and correlations**

MEETING: International Geological Congress.

Date: August 20-28, 2004

Place: Florence, Italy

Itinerary: Workshop DWO-09: Definition, subdivision, and correlation of the Upper Triassic.

SCOPE AND RESULTS OF MEETING:

Scope of Meeting (program or outline of geological study)

The main feature of the meeting was *Workshop DWO-09: Definition, subdivision, and correlation of the Upper Triassic*, which was co-sponsored by STS and IGCP 467. The Workshop attracted up to about 50 participants who enjoyed lively presentations and discussions on topics relating to correlation and definition of the base Carnian, Norian, and Rhaetian stages of the Upper Triassic. The abstracts from the fourteen talks/ posters are reproduced on the IGCP web-site.

<http://paleo.cortland.edu/IGCP467/>

Achievements of Meeting

The Upper Triassic represents the larger part of the Triassic Period, perhaps 35 of the total ~50 million years. At present there is no formally defined stage boundary within the interval. We heard about work on the Ladinian-Carnian boundary sections in Spiti, India, where there is a rare opportunity to compare the evolution of the ammonoids, conodonts and bivalves and to calibrate an integrated bio-chronostratigraphic scale. The choice of a GSSP datum awaits comparison with the successions in New Pass, Nevada as well as further consideration of the sections in the Dolomites, northern Italy.

A new conodont zonation for the Carnian-Norian boundary at Black Bear Ridge in western Canada was presented and new conodont lineages defined. Choice of cosmopolitan guide conodont for the C-N boundary should be possible soon, which is furthermore well integrated with bivalve *Halobia* species.

New data on the Norian-Rhaetian boundary from a 50 m thick boundary interval in the Zlambach Formation in Austria were presented. This included ammonoids, pelagic bivalves, conodonts, radiolarians, palynomorphs and magnetostratigraphy. Unexpected ranges of the some ammonoids and conodonts were noted; a distinct dinoflagellate change occurs midway through the section. This event is widely recognized and could prove invaluable in distinguishing the Norian and Rhaetian in shallow marine and/or high latitude basins. Radiolarians appearing at the base of the *Proparvicingula moniliformis* Zone provide the most distinctive faunal change for characterizing the base Rhaetian in the oceanic realm. This level corresponds also to the FAD of the conodont *Epigondolella mosheri* in North America, which is associated with *Cochloceras amoenum* bearing strata at Tyaughton Creek, B.C. and in New York Canyon, Nevada.

Outcome of Meeting

There remains substantial disagreement about the relative lengths of each of the constituent stages - Carnian, Norian, and Rhaetian - and this was unlikely to be fully resolved until we can get

an accurate isotopic age from a marine sequence. Present durations are based on astrological calibration of the Newark cycles and divergent views on their magnetostratigraphic correlation with Tethyan marine successions. This now being attempted in successions in western North America. Whichever correlations prove the more accurate, the Norian or Carnian appear to be the longest Stage in the Phanerozoic so the eventual need for substage definition is evident.

Each of the three constituent stages of the Upper Triassic are being actively investigated by international research teams and the search for a definitive GSSP datums is well advanced. This meeting brought together many of the interested parties, informed them of current problems and issues to be addresses, and promoted further collaborative research. Specific collaborative field expeditions are now planned for at least two of the three stage boundaries. The momentum generated by the workshop will hopefully sustain progress in Upper Triassic boundary studies.

Signature of Project Leader and Date

M.J Orchard
25 November 2004