Geophysical Research Abstracts
Vol. 13, EGU2011-4566, 2011
EGU General Assembly 2011

Environmental control on earliest Triassic pelagic faunal recovery: geochemical and sedimentary evidence from the southeastern Tethys margin.

Sylvain Richoz (1), Leopold Krystyn (2), Thomas J. Algeo (3), Om N. Bagharva (4), Micha Horacek (5), and Christoph Spötl (6)

(1) Commission for the Paleontological and Stratigraphical Research of Austria, Austrian Academy of Sciences, Graz, Austria (sylvain.richoz@uni-graz.at), (2) Institute of Paleontology, University of Vienna, Vienna, Austria (leopold.krystyn@univie.ac.at), (3) Deptartement of Geology, University of Cincinnati, Cincinnati, Ohio, U.S.A (Thomas.Algeo@uc.edu), (4) Panchkula 134109, Haryana, India (onbhargava@yahoo.co.in), (5) Business Unit Health and Environmental Technologies, AIT Austrian Institute of Technology GmbH, Seiberdorf, Austria (Micha.Horacek@arcs.ac.at), (6) Department of Geology and Palaeontology, University of Innsbruck, 6020 Innsbruck, Austria (christoph.spoetl@uibk.ac.at)

The Mud section in Spiti valley, Western Himalaya, India is a candidate section for the GSSP of the Induan-Olenekian Boundary (IOB). The section contains abundant fossils allowing a very precise biostratigraphy and displays no signs of sedimentary breaks. Analysis of pelagic faunas proves a significant, two-step radiation phase in ammonoids and conodonts close to the Induan-Olenekian boundary. These diversifications are coupled with short-termed, prominent, positive δ13Ccarb , δ13Corg and δ15Norg excursions and a shift from an-/dysoxic to fully oxic sea-floor conditions as shown by geochemical (major, minor and trace elements, δ15Norg) and sedimentological evidence. Below the first step, a strong discrepancy between imported δ13Ccarb values from shallow tempestite and values from authigenic carbonate is interpreted as a sign of a well-stratified water column. This effect disappears with the more oxic conditions prevailing at time of radiation. The second step further coincides with the change from terrigenous to almost pure carbonate sedimentation and is causally linked to the start of the Smithian carbonate factory leading to the widespread onset and progradation of carbonate ramps along the tropical shelves of the Tethys and Panthalassa oceans. This new set of data demonstrates the rapidity of radiation of the pelagic fauna in the aftermath of the Permian-Triassic extinction as soon as environmental conditions are again favourable.