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Towards a definition of the Induan-Olenekian Boundary: The potential of Eurygnathodus costatus and Eurygnathodus hamadai as index fossils

Micha Horacek (1,2) and Leopold Krystyn (3)

(1) BLT Wieselburg, Francisco-Josephinum, Austria (micha.horacek@josephinum.at), (2) Vienna University, Department of Lithospheric Research, (3) Vienna University, Department of Paleontology

Extended research in Spiti, Himalaya and published data from sections in other Tethys regions demonstrate a convincing timely correspondence between the FO of Nv.w. waageni and that of Eurygnathodus costatus and E. hamadai.
Presence of the latter two species appearing successively has been documented in detail in several Tethyan sections, e.g. China (Chaohu), India (Mud) and Slovenia (Ciri).
Occurrences of E. costatus and/or E. hamadei additionally are known from various other sections in Fareast Russia (South Primoye), Japan, China (e.g. Daxiakou, Guandao), Malaysia, Vietnam, Oman, Croatia and Italy (Southern Alps).
They have been reported as occurring over only a short period around the Induan-Olenekian Boundary (IOB) and are present even in very shallow marine sections that are generally poor in time diagnostic offshore conodonts. E. costatus usually occurs at the onset of the steep increase in carbon isotopes in the shallow water sections and E. hamadai follows immediately after the maximum of the IOB positive carbon isotope peak.
The common occurrence of the two Eurygnathodus species around the IOB – and their restriction to the boundary interval – makes them potential candidates as index fossils or at least as primary proxies for the IOB, yet in need to be internationally defined. Furthermore, and adverse to the Nv. waageni group, both species are very easily recognizable. Disadvantageous are the absence of the Eurygnathodus species in the Boreal region and it thus cannot be used there. A still open question is the presence of Eurygnathodus in the Panthalassa realm: despite both its species have been reported from sections in Japan they still have to be detected in North America.