

## The latest Permian Red Ammonoid Limestone and the basal Triassic Sponge-Microbial buildups, Time Specific Facies on the Cimmerian margin of Central Iran and Armenia

Baud A.\*<sup>1</sup> & Richoz S.<sup>2</sup>

<sup>1</sup> Institute of Earth Sciences, Lausanne University, Switzerland. <sup>2</sup> Department of Geology, Lund University, Sweden.

Corresponding author email: [aymon.baud@unil.ch](mailto:aymon.baud@unil.ch)

*Keywords:* Changhsingian, Induan, bio-events, Neotethys.

Walliser (1984) introduced the term “Time-Specific Facies” (TSF) to refer to unique facies typical of particular narrow intervals, some of which are related to bio-events or to biological crisis. The latest Permian Red Ammonoid Limestone, 4-5 m thick (Leda et al., 2014) is one of these TSF. It was deposited just before the Permian great dying on the Cimmerian side of the Neotethys (Central Iran, NW Iran and Armenia) and records the most complete ammonoid and conodont succession of the late Changhsingian (8 ammonoid horizons and 6 conodont zones, Korn et al., 2015). Absent during Induan time, this TSF come out again during the lower Olenekian on the Gondwana side of the Neotethys, from Timor to Oman (Baud, 2013). This Facies is similar to the condensed younger Triassic cephalopod limestone known as red Hallstatt limestone. The next TSF consists of the Sponge-microbial buildups (SMB) deposited on the same Cimmerian margin just following the end-Permian great extinction up to the basal Dienerian (Early Induan). The main localities are Shahreza (Central Iran, Baud et al., 2018) and Chanakhchi (S Armenia, Sahakyan et al., 2017, Friesenbichler et al., 2018). It differs from the well-known South China Permian-Triassic boundary short-lasting microbialites (PTBms) by longer duration, deeper water deposition, and cohabitation of sponges with microbialites. The unique, oxygenated, deep ramp setting of the Cimmerian margin at the Permian-Triassic transition allowed the expansion of these two TSF.

- Baud A. (2013) - The Olenekian (Early Triassic) Red Ammonoid Limestone, a Time-Specific Facies on the Gondwana Margin: Timor - Roof of the World - Oman Connection. *Acta Geologica Sinica*, 87, 894-895.
- Baud A., Richoz S., Brandner R., Krystyn L., Heindel K., Mohtat T. & Mohtat-Aghai P. (2018) - Sponge Microbial Build-up: A New View on the Enigmatic Basal Triassic Crystal Layer Records from Central Iran. 20thISC, Quebec, Abstract 184-Qdty-163
- Friesenbichler E., Richoz S., Baud A., Krystyn L., Sahakyan L., Vardanyan S., Peckmann J., Reitner J. & Heindel K. (2018) - Sponge-microbial build-ups from the lowermost Triassic Chanakhchi section in southern Armenia: Microfacies and stable carbon isotopes. *Palaeogeogr., Palaeoclimatol., Palaeoecol.*, 490, 653-672.
- Korn D., Ghaderi A., Leda L., Schobben M. & Ashouri A.R. (2016) - The ammonoids from the Late Permian Paratirolites Limestone of Julfa (East Azerbaijan, Iran). *J. Sys. Pal.*, 14, 841-890.
- Leda L., Korn D., Ghaderi A., Hairapetian V., Struck U. & Reimold W.U. (2014) - Lithostratigraphy and carbonate microfacies across the Permian-Triassic boundary near Julfa (NW Iran) and in the Baghuk Mountains (Central Iran). *Facies*, 60, 295-325.
- Sahakyan L., Baud A., Grigoryan A., Friesenbichler E. & Richoz S. (Eds) (2017) - The Permian-Triassic transition in Southern Armenia. 5th IGCP 630 Conference, Yerevan, Field Guide Book, 1-53.
- Walliser, O.H., 1984. Geologic processes and global events. *Terra Cognita*, 4, 17-20.