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MATÍAS REOLID, Coordinator of the Organizing Committee of the International Workshop on the Toarcian Oceanic Anoxic Event (IW-TOAE), certifies:

ASAD ABDI

has participated in the meeting held in Jaén from the October 4th to 7th 2017 and presented the contributions:

Radiolarian content, trace fossil and REE reveal general bottom anoxia in the Kermanshah Radiolarite basin (West Iran) during the Pliensbachian-Early Toarcian

First record of volcanism in western border of Neo-tethys, Kermanshah Radiolarite Basin (Iran), during the Pliensbachian-Early Toarcian.

Jaén, October 7th, 2017

Matías Reolid

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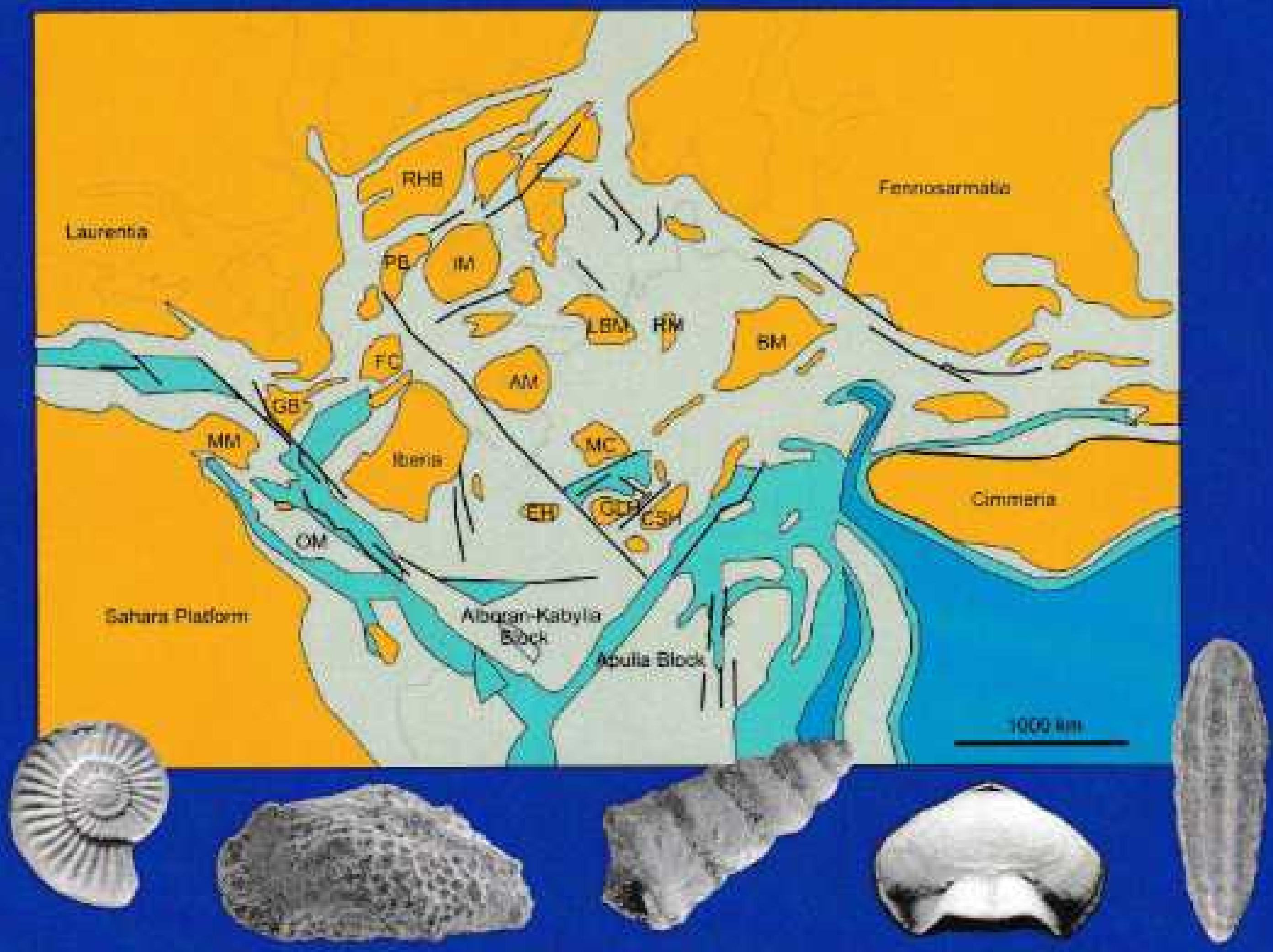
Abstract Book



Matías Reolid (ed.)

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Radiolarian content, trace fossil and REE reveal general bottom anoxia in the Kermanshah Radiolarite basin (West Iran) during the Pliensbachian-early Toarcian

Abdi, Asad[a]; Bádenas, Beatriz[b]; Gharaie, Mohamad H.M.[c]
[a] *Department of Geology, Ferdowsi University of Mashhad & Zaminrizkavan Co. Ltd., Iran;* asadabdi656@gmail.com
[b] *Department of Earth Sciences, Faculty of Sciences, University of Zaragoza, Spain*
[c] *Department of Geology, Ferdowsi University of Mashhad, Iran*

The Pliensbachian–Aalenian succession in Kermanshah Radiolarite Basin (Kermanshah, Zagros orogenic system, West Iran) allows recognizing the imprint of the Pliensbachian–early Toarcian long-term warming and long-term middle Toarcian–Aalenian cooling trends on the circulation pattern controlling nutrient supply and radiolarian productivity. Low radiolarian productivity within Pliensbachian *p.p.*–lower Toarcian sponge spicule-radiolarian limestones (J.2 member) was related to weak thermohaline circulation and weak upwelling currents. In contrast, middle Toarcian–Aalenian ribbon cherts (J.3 member) reflect high radiolarian productivity due to strong upwelling currents (Abdi et al., 2016). Microfacies and trace fossil analyses of the Pliensbachian p.p.–lower Toarcian pelagic limestones of J.2 indicate the general conditions of weak thermohaline circulation, stratified waters and bottom dysoxia/anoxia were interrupted by short pulses of high radiolarian productivity and bottom oxygenation, probably linked to volcanic eruptions and turbulence events generated by internalwaves (Abdi et al., 2016). Preliminary geochemical trace element and REE analyses have been performed here to potentially confirm the return to anoxic conditions after these short pulses of bottom oxygenation.

The J.2 member encompasses an 18 m-thick limestone succession including discrete intercalations of pyroclastic beds (vitric tuffs) and internal wave deposits (Abdi et al., 2014). The dominant facies indicating general dysoxic/anoxic bottom waters are grey sponge-spicule mudstones to wackestones with <2 % radiolarian fossils and absent or very scarce bioturbation (mainly *Chondrites* filled by fine-grained framboidal pyrites). Discrete beds of radiolarian-rich pyroclastic deposits and bioturbated limestones located on top of interval wave deposits recorded short pulses of high radiolarian productivity and bottom oxygenation. These limestone have *Thalassinoides* traces filled with fine-grained dark green, gray and dark radiolarian muddy internal sediment that are cross-cut by *Chondrites* with dark radiolarian filling sediment and framboidal pyrites within the radiolarian skeletons (Fig. 1). Therefore, the cross-cutting relationship and nature of internal filling sediment of traces reflect the change from the short pulses of bottom oxygenation to general dysoxic/anoxic conditions. Trace element and REE analyses of 3 samples (siliceous-radiolarian filling sediment and pyroclastic deposits) indicate Ce negative values and low Th/U ratio (Fig. 2), which confirm anoxic conditions (e.g. Kakuwa and Matsumoto, 2006).

Therefore, the proposed scenario for these short-term changing conditions on the sea floor are: 1) Warm conditions controlled water stratification and bottom dysoxia/anoxia (i.e. pelagic limestone with scarce *Chondrites* with framboidal pyrite); 2) Volcanic and/or tectonic pulses generate internal waves in the pycnocline (i.e. deposition of internal wave deposits: Abdi et al., 2014); 3) Backwash currents transferred oxygen and food from shallow marine environments favouring colonization by deposit feeders (i.e. *Thalassinoides*) or transported arthropods to produce burrows under anoxic conditions for a limited number of days (e.g. Föllmi and Grimm,1990); and finally 4) Rapid return to bottom dysoxia/anoxia (bioturbation by *Chondrites*, formation of framboidal pyrite, Ce negative anomaly and depletion of the Th/U ratio).

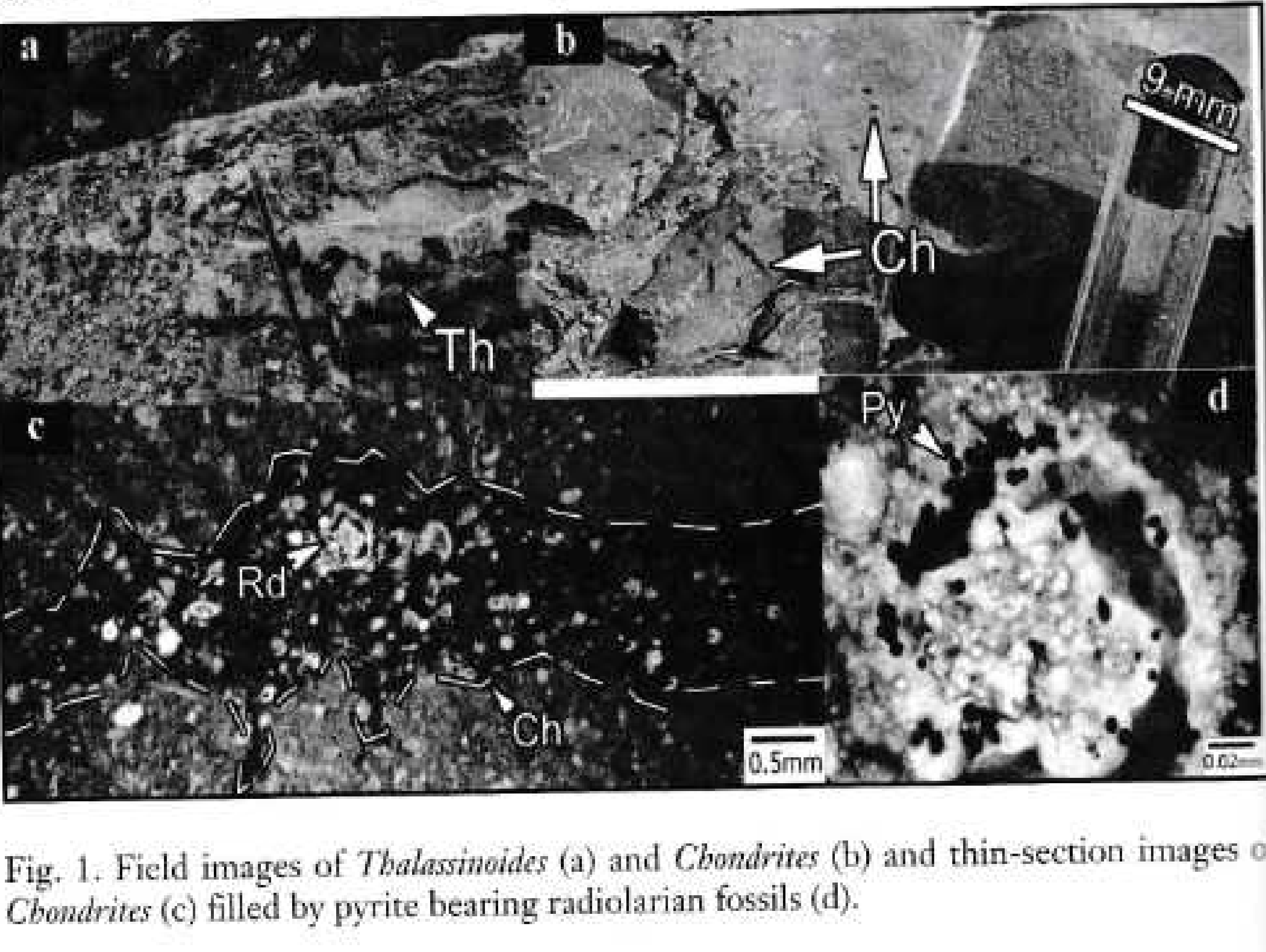

Fig. 1. Field images of *Thalassinoides* (a) and *Chondrites* (b) and thin-section images of *Chondrites* (c) filled by pyrite bearing radiolarian fossils (d).

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