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Environmental context of the earliest tetrapod trackways: clues from MS and petrological studies (Eifelian, Holy Cross Mts., Poland)

GRABOWSKI, J.¹, NARKIEWICZ, M.¹ & DE VLEESCHOUWER, D.²

(1) Polish Geological Institute – National Research Institute, Rakowiecka 4, 00-975 Warszawa, Poland;
jacek.grabowski@pgi.gov.pl, marek.narkiewicz@pgi.gov.pl

(2) Earth System Sciences and Department of Geology, Vrije Universiteit Brussel, Pleinlaan 2, B-1050 Brussels, Belgium; *dadevlee@vub.ac.be*

The lower, track-bearing part of the investigated Zachełmie section (NARKIEWICZ & NARKIEWICZ, 2010; NIEDŹWIEDZKI et al., 2010) is composed of marly dolomitic mudstones and dolomitic shales with a common microbial lamination, dessication cracks, incipient palaeosol levels and evidence of (mostly vanished) evaporites. It grades upwards into bioturbated dolomite mudstones to wackestones, and, occasionally even grainstones with marine fossils, including crinoids and conodonts. MS in the lower part is carried mostly by hematite, whereas the grained dolomite varieties contain fine-grained magnetite. Moreover, MS signal appears to be controlled mainly by depositional pattern, with a few exceptional levels where it seems to be related to a secondary hematite mineralization. Time-series analysis of the MS data revealed a clear cyclicity that can be interpreted in terms of orbital/climatic cycles. The MS cycles are here compared to geochemical data, including elemental and stable isotopes (C, O, Sr) composition. Moreover, a comparison between MS data and bulk chemistry is intended to substantiate depositional controls on MS distribution. The environmental parameters, including redox conditions and palaeosalinity will be discussed.

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