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Did anoxia terminate Ediacaran benthic communities? Evidence from early diagenesis

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ABSTRACT

The Ediacaran oceanic redox landscape was heterogeneous, where many basins had a shallow and highly dynamic chemocline above anoxic (ferruginous or euxinic) or low oxygen (manganous) waters. Seawater mMg/Ca ratio was also high, promoting early diagenetic dolomitisation. How the benthos responded to these conditions is fundamental to understanding their ecological dynamics. Here we utilise redox sensitive elements in early marine carbonate cements to investigate possible water column redox controls on the distribution and growth of the oldest metazoan communities.

Skeletal communities in the Zaris Sub-Basin of the Nama Group, Namibia (~550-547 Ma), grew in shallow waters where fine-grained carbonate sediment often shows evidence of early dolomitisation. Mid-ramp *Cloudina* reefs are composed of open, highly porous structures that formed multiple, successive assemblages. Each assemblage is terminated by thin (< 1 mm), layers of dolomicrite sediment and

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