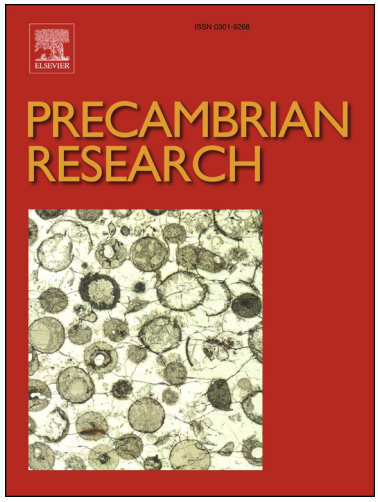

Delayed euxinia in Paleoproterozoic intracontinental seas: Vital havens for the evolution of eukaryotes?

Samuel C. Spinks, Susanne Schmid, Anais Pagès

PII: S0301-9268(16)30180-2
DOI: http://dx.doi.org/10.1016/j.precamres.2016.11.002
Reference: PRECAM 4609

To appear in: *Precambrian Research*

Received Date: 31 May 2016
Revised Date: 21 October 2016
Accepted Date: 1 November 2016

Please cite this article as: S.C. Spinks, S. Schmid, A. Pagès, Delayed euxinia in Paleoproterozoic intracontinental seas: Vital havens for the evolution of eukaryotes?, *Precambrian Research* (2016), doi: http://dx.doi.org/10.1016/j.precamres.2016.11.002

Delayed euxinia in Paleoproterozoic intracontinental seas: Vital havens for the evolution of eukaryotes?

Samuel C. Spinks[1*], Susanne Schmid[1], Anais Pagès[1]

[1]CSIRO Mineral Resources, Australian Resources Research Centre, 26 Dick Perry Avenue, Kensington, WA 6151, Australia

e: sam.spinks@csiro.au

Abstract

Increased flux of sulfate to the oceans in the aftermath of the Great Oxidation Event (GOE) ~2.4 billion years ago (Ga) caused major changes in seawater chemistry, which eventually contributed to the cessation of iron formation deposition ~1.8 Ga. It is generally accepted that this engendered heterogeneous stratified redox conditions, with anoxic and sulfidic (euxinic) conditions in shallow open-marine environments and anoxic ferruginous conditions in deeper environments. However, the redox evolution of intracontinental marine basins following the cessation of iron formation deposition remains poorly understood.

Here, we report contrasting paleoredox conditions in two shale units of the lower McArthur Basin, northern Australia, soon after the cessation of iron formation deposition ~1.84 Ga. Our data shows that the ~1.78 Ga McDermott Formation was deposited in a sulfur-limited, anoxic shallow-marine environment, whereas the younger ~1.73 Ga Wollogorang Formation was deposited in a euxinic shallow-marine environment. This implies a delay in the development of euxinia in a shallow intracontinental basin following