# 学 术 报 告

## If it quacks like a duck: Deciphering the record of the Great Oxidation Event in Western Australia



报 告 人：**Heidi J. Allen，墨尔本大学**

报告时间：**2026 年 11 月 25 日 上午 10:00**

地　　点：**图书馆三楼报告厅**

主　　办：**全国重点实验室、早期生命与天体生物学中心**

**报告简介：**

The Paleoproterozoic Era was marked by profound environmental, tectonic, and biological change. Western Australia's northern Capricorn Orogen preserves a globally significant record of these events and a co-evolving biosphere. One specific locality has been the focus of extensive geobiological investigation and was previously assigned to the 2444–2208 Ma Turee Creek Group, considered coeval with the Great Oxidation Event. However, stratigraphic assignment of the locality has been contentious due to similarities with the younger 2008–793 Ma Duck Creek Dolomite.

This talk presents a reassessment of this locality identifying three depositional packages consistent with the Duck Creek Dolomite: a lower unit representing a shallow to emergent microbialite reef, a middle heterolithic unit recording a regionally recognised deepening event coeval with volcanism at c. 1880 Ma, and an upper bedded carbonate unit deposited in a carbonate slope environment at c. 1830 Ma. New SHRIMP U–Pb zircon geochronology constrains the middle and upper packages. The lower unit includes a diverse microbialite assemblage that is widespread and distinct from microbialites of the Turee Creek Group. We also report a newly identified microfossil locality from the middle heterolithic unit and make comparison with previously reported microfossils. This new lithostratigraphic and geochronologic data unequivocally demonstrate that the section previously interpreted as the Turee Creek Group is instead a faulted slice of the Duck Creek Dolomite which significantly post-dates the Great Oxidation Event. This study highlights the importance of robust geochronological constraints and a well-defined stratigraphic framework when investigating globally significant Precambrian events.