

New Re-Os organic-rich shale geochronology and U-Pb zircon data from Cryogenian and Ediacaran strata of South China

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Neoproterozoic successions in South China preserve a rich paleontological record, large carbon isotope excursions interpreted to reflect perturbations to the global carbon cycle, shifts in redox proxies that have been associated with a possible rise in atmospheric oxygen, and at least two Cryogenian glacial deposits. New high precision CA-ID-TIMS U-Pb zircon data and Re-Os organic-rich shale geochronology data from multiple stratigraphic sections provide new constraints for the termination of the Sturtian-age glaciation on South China. Ages from these two systems agree and aid in our efforts to more fully understand the timing of and nature of glacial and deglacial sedimentation. Additionally, new Re-Os dates yield age constraints for the onset of the Ediacaran-age Shuram carbon isotope excursion, the largest known carbon isotope excursion in Earth history. Together, these data help calibrate these iconic records of seawater chemistry, climate, and evolutionary innovations during this crucial interval in Earth history.