# Synchronous initiation of the 2nd episode of worldwide Sturtian glaciation: SIMS zircon U-Pb and O isotope evidence from the Jiangkou Group in South China

ZHONG-WU LAN, XIAN-HUA LI, QIU-LI LI AND QI-RUI ZHANG

State Key Laboratory of Lithospheric Evolution, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China

A new SIMS zircon U-Pb age of 691.9 ± 8.0 (MSWD=1.3) was obtained from a tuffaceous siltstone bed within the upper part of Xieshuihe Formation, Jiangkou Group, in the Nanhua Basin of South China, which is within errors consistent with the ID-TIMS U-Pb zircon age of 688.6+9.5/-6.2 Ma from Yukon, Canada, the SHRIMP U-Pb zircon ages of 685 ± 7 Ma and 684 ± 4 Ma from central Idaho, and the SHRIMP U-Pb zircon age of 686 ± 4 Ma from southeastern Idaho. All these dated formations conformably underlie the upper Sturtian glaciogenic diamictite. As such, new ages suggest a maximum initiation age of ca. 690 Ma for the 2nd episode of Sturtian glaciation, which is synchronous in at least two geographically separated paleocontinents. The commonly low $\delta^{18}O$ values (3-5‰) from the zircon grains of Xieshuihe Formation suggest the influence of glaciation during their formation, probably by means of an ice-fire interaction process as previously assumed, although an alteration process can not be totally discounted. Additionally, new age data suggest the Xieshuihe Formation is not correlative with the Banxi Group or Liantuo Formation as previously assumed. Rather, it should be correlated with the Liangjiahe Member, Fulu Formation in South China.