Vol. 87 Supp.

Samuel BOWRING, 2013. Geochronology of the End-Permian Extinction: What More Can We Learn?. *Acta Geologica Sinica* (English Edition), 87(supp.): 911.

Geochronology of the End-Permian Extinction: What More Can We Learn?

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The past decade has seen a considerable amount of geochronological research focused on the end-Permian extinction, including U-Pb, Ar-Ar, and Astronomical Time Scale (ATS) studies. Published ages for the Permian-Triassic boundary as defined by the first appearance of Hindeodus parvus at the GSSP in Meishan are variable but cluster around ca. 252 Ma. Most studies agree that there was a single, short-lived extinction. While many are satisfied with the precision and accuracy to which these dates and durations are currently constrained, there is much more that needs and can be done to understand the details of one of the most severe biotic crises in at least the last 542 million years.

The EARTHTIME initiative has been crucial in the identify and eliminate/minimize effort to interchronometer and inter-laboratory biases and highlights the importance of identifying, minimizing and propagating all sources of uncertainty. The range of published IDTIMS U-Pb dates for the extinction are all within \pm 0.3 % of one another and the dispersion is likely the result of differences in tracer calibration, data acquisition and reduction protocols, and sample pretreatment. In the past three years a number of new developments that are a direct outgrowth of the EARTHTIME initiative have made it possible to achieve uncertainties of

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