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Forum Comment

Did the great dying of life take 700 k.y.? Evidence from global astronomical correlation of the Permian-Triassic boundary interval

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Huang et al. (2011) have produced a valuable astro-chronological framework across the Permian-Triassic boundary in China and Austria. However, in doing so they define a mass extinction interval (MEI) and prolonged extinction lasting in all cases ~700 k.y. The MEI in their study ranges from the start of the *Neogondolella meishanensis* conodont zone to the base of the *Isarcicella isarcica* zone, spanning four conodont zones. This is much too long a time period to assign to the extinction event. For the Meishan, China, section, most workers put the abrupt mass extinction horizon at the base of Bed 25 (Jin et al., 2000). More recently, Kaiho et al. (2009) narrowed the Late Permian mass extinction horizon to within a 1.2-cm-thick interval near the top of Bed 24e-2 in the condensed section at Meishan. A possible second abrupt extinction event takes place at the base of Bed 28 (Song et al., 2009). By contrast, Huang et al. define a prolonged MEI stretching from the top of Bed 24e to the base of Bed 29.

For the expanded section in the Gartnerkofel core from the Carnic Alps in Austria, the abrupt last occurrence of Permian fauna is reported at 231 m in the core at the base of the Tesero Horizon (Rampino et al., 2002) close to an abrupt negative shift in $\delta^{13}C$. By contrast, Huang et al. define a long MEI stretching over 50 m, from ~230 m to 180 m in the core, from the Upper Permian well into the Lower Triassic.

Using cyclostratigraphy in the Gartnerkofel core, Rampino et al. (2000, 2002) were able to limit the last occurrence of Permian fauna to an interval less than 1 m or ~10 k.y. (half a precessional cycle) at rates of sedimentation calculated to be as high as 10 cm per k.y. In similar nearby sections in the Italian Alps, all Late Permian foraminifera disappear within a 30 cm to 1 m interval representing from ~3–10 k.y. (Gorjan et al., 2007; Rampino et al., 2002). Thus, we can limit the mass extinction event or events to very brief periods, perhaps less than 10 k.y., not a long interval of 700 k.y., suggesting some catastrophic cause or abrupt threshold events.

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