

Direct Re-Os ages of the Sinemurian-Pliensbachian time-scale boundary

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The Global Boundary Stratotype Sections and Points (GSSP) for the Early Jurassic Pliensbachian stage are defined by the first appearance of ammonite taxa *Bifericeras donovani* of ammonite zone *jamesoni* in the Pyritous Shale Member of the Redcar Mudstone Formation located in Wine Haven of Robin Hood's Bay, Yorkshire, UK. The most recent age projected for the base Pliensbachian stage is 191.4 ± 1.0 Ma. The numerical age assigned to the Sinemurian-Pliensbachian stage boundary (S-P), however, is extrapolated from linear $^{87}\text{Sr}/^{86}\text{Sr}$ ratio trends of contemporaneous seawater calibrated to radiometric tie points, and is thus lacking of a direct radiometric date. Here we provide the first direct radiometric dates, using Re-Os organic-rich sedimentary rock (ORS) geochronometry, for the S-P boundary by dating the Lower Gordondale Member of the Lower Jurassic Fernie Formation located in Western Canadian Sedimentary Basin (WCSB) of Alberta, Canada. The results of this study not only agree within uncertainty of the previously assigned numerical age of the S-P boundary at Robin Hood's Bay, but also with the $^{187}\text{Os}/^{188}\text{Os}$ ratio of contemporaneous seawater.

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