

Accepted Manuscript

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PII: S0012-8252(17)30386-0
DOI: [doi:10.1016/j.earscirev.2017.10.011](https://doi.org/10.1016/j.earscirev.2017.10.011)
Reference: EARTH 2511
To appear in: *Earth-Science Reviews*
Received date: 26 July 2017
Revised date: 22 October 2017
Accepted date: 23 October 2017



Please cite this article as: V.I. Davydov, A.V. Biakov, M.D. Schmitz, V.V. Silantiev , Radioisotopic calibration of the Guadalupian (middle Permian) series: Review and updates. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Earth(2017), doi:[10.1016/j.earscirev.2017.10.011](https://doi.org/10.1016/j.earscirev.2017.10.011)

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Radioisotopic calibration of the Guadalupian (Middle Permian) Series: review and updates

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Abstract.

Four high-precision U-Pb CA-IDTIMS dates for the Roadian (lower Guadalupian) of 274.0 ± 0.12 and 273.1 ± 0.1 Ma and for the Wuchiapingian (lower Lopingian) of 260.16 ± 0.39 and 258.14 ± 0.20 Ma were obtained from Permian tuff beds in the periphery of the Okhotsk Massif, N-E Russia. The beds are well constrained within the local lithostratigraphic and regional biostratigraphic framework. Besides regional bivalves and brachiopod faunas, the ammonoid *Sverdrupites harkeri* occurs close to the recovered Roadian tuffs. This ammonoid provides direct correlation of the tuffs with the Kazanian Stage on the Russian Platform and the Roadian Stage in the Canadian Arctic, where the conodont index species of the Roadian Stage *Jinogondolella nankingensis gracilis* and *Sverdrupites harkeri* and other Roadian ammonoids are documented from the Assistant Formation. Our review of the Kungurian-Roadian-Wordian successions in the main well-studied regions suggests that the base of the Roadian Stage should be extended down to approximately 277 Ma and the Roadian-Wordian boundary should be placed at approximately 271 Ma. The new calibration of the Roadian Stage reduces the duration of the enormously long Kungurian Stage from about 10 Myr approximately to 6.0–6.5 Myr. If the proposed calibration is correct, the

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