

## Uranium Isotope Variation Across the Ediacaran Shuram Excursion

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The Ediacaran Shuram Excursion (SE) represents the largest negative carbon isotope excursion in Earth history. Its genesis, global extent, and biogeochemical implications are actively debated [1]. To explore the environmental drivers and consequences for this event, we measured U isotopes ( $\delta^{238}\text{U}$ ) in two widely separated carbonate sections that captured the SE – the Jiulongwan section in S. China and the Bol'shoy Patom section in Siberia. The Jiulongwan section records low  $\delta^{238}\text{U}$  values ( $-0.75 \pm 0.17\%$ ,  $n=16$ ) prior to the SE, whereas both sections record higher  $\delta^{238}\text{U}$  values ( $-0.26 \pm 0.29\%$ ,  $n=72$ ) during the SE. Identical  $\delta^{238}\text{U}$  from both sections support the primary authenticity of these records and provide direct evidence for a global episode of increased ocean oxygenation during the SE. We are currently testing this interpretation by analysing additional samples from the lower Bol'shoy Patom section to capture U isotope variations before and during the transition into the SE. This study may deepen our understanding of the biological innovations shortly after the SE.

[1] Grotzinger, et al. (2011), *Nature Geoscience* 4, 285–292 (2011).