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# Tracing variations in the Flux of Extraterrestrial Material through time

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The flux of extraterrestrial (ET) material to the Earth does not appear to have been constant over time, but so far no consistent reconstructions of the ET flux to Earth's surface through time have been compiled. This lack of data results from biases inherent in the conventional proxies used to assess variations in ET input (iridium concentrations, osmium isotope ratios, $^{3}$He content and/or ET spinel chromites minerals), which are based on stochastic large-scale events documented from the sedimentary record. Global ET flux estimates vary widely, over 3 orders of magnitude from hundreds to thousands of tons per year [1-3], but the cause of this variation is likely linked to neither short time scale cosmic events, nor to terrestrial biases [4]. As such, accurately constraining the nature and magnitude of changes in the intensity and composition of this ET flux continues to present considerable scientific challenges.

To address these challenges, we have collected carbonates and shales from stratigraphically below the Devonian–Carboniferous boundary in Chanxhe (Belgium) that record the Hangenberg extinction event, and extracted the fossil micrometeorites (MMs) using a light acid dissolution (HCl). While most of the arriving ET material weathers away quickly under the oxidizing conditions at the Earth surface, MMs and other specific refractory minerals may resist alteration and diagenesis [5,6]. We aim to reconstruct a first ET flux at high resolution and identify all potential variations in the ET material across the selected stratigraphic interval. By analysing conventional proxies, we also plan to identify differences between these various applied techniques and define optimal strategies to trace noticeable variations of the ET flux with time, proposing an effective multiparameter method for future reconstructions.

**References:**

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