



Comparing the geochemistry of Laacher See ash fall deposits to Greenland ice core geochemistry

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The source of a platinum peak identified in the Greenland Ice Sheet Project 2 (GISP2) ice core that occurs almost synchronously with the onset of the Younger Dryas (YD) is poorly understood. The Pt spike is associated with a high Pt/Ir and Pt/Al ratio that is difficult to link to the geochemistry of common meteorites or magmas, and previous research attributed the anomaly to the impact of an unusual iron-rich iridium-poor meteorite. The timing of the geochemical anomaly in the Greenland ice core also broadly coincides with the eruption of the Laacher See volcano, Germany, but this link is extremely understudied due to perceived chronological mismatches and the lack of platinum and iridium data from the Laacher See tephra. To explore this link further, we sampled proximal tephra deposits from the Laacher See eruption (LSE) at localities within a few kilometers of the volcano and analysed the relevant geochemistry. If the GISP2 Pt spike was linked to the LSE, this would support the hypothesis that the YD climate shifts were catalysed by the LSE. Conversely, if the Laacher See tephra is found to be geochemically dissimilar to the GISP2 anomaly, this would support the Younger Dryas Impact Hypothesis.