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Beryllium-10 enhancement over the Laschamp excursion recorded in a deep-sea sediment core from the Indian sector of the Southern Ocean

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The Laschamp geomagnetic dipole low, associated with a pronounced geomagnetic excursion that occurred at about 41.5 ka, has been studied in several authigenic beryllium isotope records from deep-sea sediments. However, such records from the Southern Hemisphere were scarce. In this study, we analyzed the authigenic beryllium isotope (the 10Be/9Be ratio) from 48 to 29 ka in a sediment core (the DCR-1PC core) from the Del Can˜o Rise (46°01'S, 44°15'E), the Indian sector of the Southern Ocean. The 10Be/9Be ratio showed a sharp increase to a maximum at 40.3 ka, followed by a gradual decrease. Given the behavior of the 10Be/9Be ratio and the uncertainty in the age model of the core, we conclude that this increase faithfully reflects the 10Be enhancement caused by the Laschamp geomagnetic dipole low. However, comparisons with authigenic beryllium isotope records from northeastern Atlantic and equatorial Pacific sediments showed a lower rate of the Laschamp peak enhancement in the Southern Hemisphere record. This suggests either the existence of a hemispheric difference in 10Be production /fallout or the influence of pre-/post- depositional smoothing, or both.

Student Submission

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