

Climate change during the geomagnetic polarity reversals: paleoecological evidence

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Observed correlation between galactic cosmic ray (CR) flux and cloud cover suggests that variations in geomagnetic field intensity could change climate through modulation of CR flux. This hypothesis has never been tested using robust geological evidence. Here we present a new record of climate cooling that coincided with a large decrease in field intensity during the Matuyama-Brunhes and Lower Jaramillo geomagnetic polarity reversals. The cooling event cannot be attributed to orbital forcing because it occurred across an interglacial sea-level highstand. The geomagnetic field intensity seems to influence global climate through the modulation of CR flux at variable timescales. The effect can be observed in multiple climatic parameters.

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