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Paleosecular variations indicate the specific mode of geodynamo operation during the Cretaceous Normal Polarity Superchron

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The volcanic rocks of the Okhotsk-Chukotka volcanic belt represent a promising object for studying the characteristics of the ancient geomagnetic field, in particular for estimating the amplitude of the paleosecular geomagnetic variations during the Cretaceous Normal Polarity Superchron. Obtaining such estimates is critically important for testing hypotheses on the origin of geomagnetic superchrons and for assessing their relationship to mantle dynamics. The performed work shows that the amplitude of the PSV at high latitudes during the Cretaceous Superchron was ~15% less than during the periods, when the geomagnetic reversal frequency was relatively high. This result confirms a possible connection between secular variations and the frequency of geomagnetic inversions and supports the hypothesis that the superchron is a special state of geodynamo, probably caused by an external forcing by mantle geodynamic processes. The work was supported by the Russian Science Foundation grant N◦23-17-00112.