

南極ドームふじ氷床コア中の宇宙線生成核種 ^{10}Be を用いた Blake エクスカーションの復元

Reconstruction of Blake excursion using the cosmogenic radio nuclide Beryllium-10 in Antarctic Dome Fuji ice core

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An important development in the field of geomagnetism is the recognition of excursions that serve as chronostratigraphic tools for the dating and correlation of marine and lacustrine sediment cores. Here, we reconstruct the Blake excursion from 127ka to 101ka by analyzing ^{10}Be in the second Dome Fuji deep ice core. We focus attention on the Blake excursion because it occurs during Marine Isotope Stage (MIS) 5, during the last interglaciation, beyond the range of radiocarbon dating. ^{10}Be and other cosmogenic radionuclides, such as ^{14}C , ^{26}Al , and ^{36}Cl are good proxies for geomagnetic field intensity because atmospheric production increases during periods of low intensity during excursions, and ^{10}Be is particularly well suited due to its long half life, high production rate, and well understood fallout process. While the accumulation of ^{10}Be in sediments is complicated due to enrichment from sources other than direct atmospheric fallout, polar ice cores are remarkable archives of ^{10}Be , especially those from Antarctica, which is isolated from other continents. Ice cores drilled at Dome Fuji also have the advantage of a well dated chronology using the O_2/N_2 ratios (Kawamura, et al., 2007). Results indicate there are five discrete peaks in ^{10}Be flux during the Blake excursion that will allow export of the Dome Fuji chronology to the MIS5 intervals of sediment cores.

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