

A 720 kyr record of dust flux variability from the Dome Fuji ice core

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Microparticles (dust) in deep ice cores in polar areas are well-known as a good indicator of terrestrial materials. Dust fluxes in deep ice cores vary with climate and environmental changes such as variations and surface states of dust origin areas, atmospheric transport intensity and atmospheric water cycle. Here we present a dust record from deep ice cores reached 3035.22 m depth at Dome Fuji, Antarctica. The age of ice core in 3028-m depth was 720 kyrs ago, which corresponded to Marine Isotope Stage (MIS) 17. Both of dust fluxes and ratios of dust size larger than 1×10^{-6} m in diameter (Large particle ratio: LPR) in the Dome Fuji ice core periodically varied high during glacial periods, especially glacial maximum including last glacial maximum (LGM) in the last glacial period, and low during interglacial periods with glacial-interglacial cycles from MIS 17 to Holocene. The dust fluxes remarkably differed from a factor of 100 to 200 between glacial maximum and interglacial periods. The amplitudes of dust flux variation in the ice core on the glacial-interglacial cycle were smaller than after 430 kyrs ago (MIS 12), so-called the Mid-Brunhes Event (MBE) as well as $\delta^{18}\text{O}$. On the other hands, this tendency was not remarkable for the LPR. The dust flux profile and flux level of the Dome Fuji ice core were similar to those of EPICA Dome C and Vostok, suggesting that dust relatively homogeneously deposited over East Antarctic inland plateau during the past 720 kyrs.