

Dust influx reconstruction during the last 26,000 years inferred from a sedimentary leaf wax record from the Japan Sea

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We obtained the high-resolution record of terrestrial biomarkers (C29 and C31 n-alkanes) for the last 26,000 years from Oki Ridge in the south Japan Sea that enabled us to discuss millennial scale climate changes. Our sampling resolution for the biomarker during the major deglaciation period (10-19.5 cal ka BP) is 300 years and for the elemental analyses (total organic carbon and total nitrogen) is as good as ca. 200 years. The estimated mass accumulation rate of these molecules during the last glacial period is substantially higher than during the Holocene. They also exhibited two distinct peaks at 17.6 cal ka BP and 11.4 cal ka BP, which are coincident with Heinrich Event 1 and the latest stage of the Younger Dryas, respectively. The unique oceanographic setting of the Japan Sea tends to preferentially preserve organic material of aeolian origin. The nature of our biomarker record in fact suggests a strong aeolian signal, and hence their influx to the Japan Sea potentially reflects the climate conditions of the dust source regions and transport intensity. Our results are consistent with previously reported monsoon variations based on other proxies that is indicative of a strong linkage between North Atlantic climate and Asian monsoon intensity.