



## **Orbital-and millennial-scale variations in aeolian dust transport path to the Japan Sea**

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Orbital- and Millennial-scale variations in Asian summer monsoon and its probable association with Dansgaard-Oeschger (D-O) Cycles have been demonstrated by previous studies (e.g. Wang et al., 2001). However, the origin and nature of such variations are poorly understood. The Japan Sea is located at downwind of Asian winter monsoon and beneath the westerly jet that passes over dried areas in the Eurasian continent, and receives significant amount of aeolian dust derived from these arid areas. In that sense, the hemipelagic sediments of the Japan Sea are expected to record continuous aeolian dust accumulation, which may provide the information about the past variations in Asian winter monsoon and westerly jet.

Provenance of aeolian dust in the sediments were examined using a sediment core MD01-2407 obtained from southern parts of the Japan Sea. Since the silt fraction of the detrital materials in Japan Sea sediment is composed dominantly of aeolian dust, the grain size, provenance, and flux of the silt fraction were examined. The Taklimakan Desert – Loess Plateau and Siberia – Northeast China areas were identified as possible source areas of aeolian dust in the sediments of the Japan Sea based on the Electron Spin Resonance (ESR) signal intensity and crystallinity of quartz. Grain size and flux of aeolian dust from each source areas show orbital- and millennial- scale variations in harmony with the insolation change at 30° N in June and D-O Cycles. These results may suggest orbital- and millennial-scale changes in the frequency of dust storms in the Taklimakan Desert – Loess Plateau and Siberia – Northeast China areas possibly due to the southward (northward) shifts of the westerly jet axis together with intensified (weakened) winter monsoon during periods of smaller (larger) insolation in June and stadials (interstadials).