

# Fluctuation of alkenone temperature in the southwestern Okhotsk Sea during the past 10 kyr.

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The Okhotsk Sea, its sea ice expansion in winter season is sensitively affected by global warming and cooling. Regionally, the southwestern Okhotsk Sea closely connects to the climate change in the East Asia including Japan, because it is considered that cold sea surface temperature (SST) in the southwestern Okhotsk Sea remotes directly appearance and development of the Okhotsk High, and the activated Okhotsk High brings cold climate in the northern area in Japan. Therefore, the environmental change in the Okhotsk Sea would be a good sensitive mirror to reflect the global and the regional climate changes. In order to better understand how the surface environmental change in the Okhotsk Sea had potential influencing the climate change in the East Asia, SSTs were estimated in the southwestern Okhotsk Sea during the past 10 kyr with millennial-centennial time resolution using the long-chain unsaturated alkyl ketones (alkenones) thermometer. A sediment core was collected at Off Shari in the southwestern Okhotsk Sea (MD01-2412, 44.31N, 145E, WD1,225m) during an investigation of IMAGES. The alkenone temperature, corresponding to the SST upper 20m depth and in autumn, repeated abrupt change with a predominant cycle of 1.22 kyr-cycle, whereas its amplify was smaller than that in the glacial period. Such 1 kyr scale cycle would be originated from two possibilities of oscillation inside the oceanic system and solar activity perturbation. However, we could not identify a robust evidence to explain a reliable relationship between the SST in the Okhotsk Sea and solar activity. Further investigations of alkenone temperature reconstruction in fine time resolution with an accurate age model are necessary to evaluate the impact of solar activity.