

Paleoceanographic role of the Tsushima Warm Current in the Hupo Basin of the southwestern East Sea (Sea of Japan)

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The Hupo Basin, located in the western margin of the East Sea (Sea of Japan), is sensitive to global/regional climate change. To reconstruct paleoenvironmental change in the Hupo Basin and reveal its controlling mechanism, we conducted various geochemical (TOC, TC, TN, CaCO₃, biogenic opal and C/N ratio) and biomarker (GDGT, TEX₈₆ and U^{K'}₃₇) analyses using a sediment core (ES14-GC02; 6.28 m long) with high resolution (*ca.* 240 yr interval).

Core ES14-GC02 is divided into two parts: 1) upper part (the uppermost to 5.2 m; present to ~7,000 ¹⁴C yr BP) characterized by high sedimentation rate, constant high values of TOC, TC, TN, GDGT and TEX₈₆ and low values of CaCO₃ and C/N ratio, and 2) lower part (5.2 m to the core bottom; ~7,000 to ~30,500 ¹⁴C yr BP) characterized by low sedimentation rate, low values of TOC, TC, TN, GDGT and TEX₈₆, and high values of CaCO₃ and C/N ratio. Meanwhile, values of biogenic opal, U^{K'}₃₇ and TEX₈₆ are fluctuated since ~7000 ¹⁴C yr BP.

Our results indicate that the Hupo Basin has well recorded the history of environmental changes during Holocene/glacial periods, interpreted as a fact that, after flowing into the East Sea (Sea of Japan), the Tsushima Warm Current began to affect the Hupo Basin since ~7,000 ¹⁴C yr BP, leading to the increase of marine productivity and seawater temperature.