

## Late Quaternary climates of East Asia elucidated from the total organic carbon contents of cored sediments, Japan Sea

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Total organic carbon (TOC) and total nitrogen (TN) contents are analyzed with high temporal resolution (ca. 100 ka) for MD179-3304 and MD179-3312 cores taken from the Japan Sea off Joetsu City. The temporal changes in TOC and TN contents vary quasi-regularly in a similar pattern. The age models are formed on the basis of the relationship of the dates of <sup>14</sup>C dating, marker tephra beds, TL layers, and marine isotope events with depth. TOC content is high in MIS 1 and 5, and is low in MIS 2 and 4. That in MIS 3 is a slightly elevated, with frequent fluctuations of short periodicity. This general trend is very similar to LR04 curve, except for the reduced dominance of TOC around the MIS 5.5 substage. As shown typically in MIS 3, there are many peaks of TOC in a short interval. The details of these TOC peaks can be correlated with the warm interstadials of the Greenland ice core. We can identify a sawtooth-like decreasing trend of TOC in MIS 3. In contrast, the decreasing trend of oxygen isotope ratios in the ice core corresponds to an increasing trend of TOC in MIS 5.

The synchronicity of temperature changes between East Asia and the North Atlantic is easily explained by oscillation of the Arctic polar front through time. The detailed correspondence of TOC contents of the Japan Sea sediments to other common paleoclimate proxies means that the TOC contents of these sediments is an excellent paleoclimate record in Far East Asia, although the genetic relationship between air temperature and biological productivity in the Japan Sea is as yet unknown.

Keywords: total organic carbon, climate change, Japan Sea sediment, high resolution, D-O cycle, Late Quaternary