Geophysical Research Abstracts
Vol. 16, EGU2014-5597, 2014
EGU General Assembly 2014

SST and terrestrial n-alkanes records in sediment of the Korean Plateau, East Sea (Japan Sea) during the last 400 kyr: Paleoceanographic and paleoclimatic implications

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SST variation was reconstructed using alkenones and their variation was compared with terrestrial n-alkanes signature from the sediment of the Korean Plateau, East Sea (Japan Sea) during the last 400 ka. SST variation showed glacial-interglacial time scale variation with a maximum temperature of 26 oC in MIS 7, and a minimum of 12 oC at MIS 2 and 6. The distribution of terrestrial n-alkanes signatures is characterized by the occurrence of high odd number predominance in most samples, however minor dominance of a specific compound (nC27 only) was the additional characteristic.bAverage Chain Length (ACL) and Carbon Preferences Index (ICP), derived from n-alkane distributions, showed a similar shifting between glacial-interglacial time-scale. This suggests that paleovegetation communities changed in response to paleoclimatological variations, and the input of terrestrial compound is strongly linked with paleoclimatology. In the previous work, isotopic composition of δ13C and δ15N of organic matter showed extreme temporal variation since MIS 11 suggesting influx of a large amount of terrestrial organic matters from the neighboring continent during MIS 2, 8 and 10. In particular, depleted values of δ13C during MIS 2, 8 and 10 were coincident with lower nitrogen isotope values indicating local paleoceanographic effects such as paleoproductivity changes. Decoupling of δ13C and δ15N during MIS 1, 3, 5, and 7, and coupling of the two during MIS 8 and 11 is observed, which can be interpreted as local productivity changes. The alkenones SST and n-alkanes signature coincided with carbon and nitrogen isotope variation in terms of glacial-interglacial time scale suggesting that the paleoenvironments in the East Sea is sensitive to the global climate changes associated with not only orbital-scale glacial-interglacial variations but also local paleceanographic variations.