

Fluctuations of stable carbon isotope ratio in organic matter - example from the IODP Site U1352 offshore Canterbury -

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IODP Expedition 317 drilled three sites on the continental shelf and one site on the slope of the offshore Canterbury, on the eastern margin of the South Island of New Zealand, for understanding the relative importance of global sea level versus local tectonic and sedimentary processes in controlling continental margin sedimentary cycles. Samples using this study are collected from Site U1352 located on the upper continental slope and this site was suitable for providing age control for the studies. Its water depths is 344m, and core recovery was nearly 100% above 550m depth from the sea floor.

Global climate changes have been studied on the basis of the oxygen isotope and stable carbon isotope records derived from marine foraminifers. However, in the southern hemisphere ocean, stable carbon isotope ratios of marine organic matters are considered to depend on latitude change, and temperature of surface seawater (Rau et al . ,1982).

This study aims to examine whether stable carbon isotope ratios derived from marine organic matter can correspond to Marine Isotope Stage (MIS), namely compare stable carbon isotope fluctuations derived from marine organic matters with oxygen isotope curve derived from marine foraminifers.

The measurement intervals are ~10,000 years durations based on the rates of deposition.

Spikes of stable carbon isotope ratios coincide with these of oxygen isotope and stable carbon isotope of foraminifers. Based on our isotope data together with nannofossil datums, we identify most of the marine isotope stages since MIS 63 (1.76 Ma).

Keywords: stable carbon isotope ratio, marine organic matter, Marine Isotope Stage