

OS3.1 Deoxygenation in the marine environment: drivers, trends and challenges

Changes in oxygen concentrations of intermediate water in the eastern tropical north Pacific over the last 140,000 years.

*Babette Hoogakker^{*a}, Christopher Day^{*b} & Melanie Leng^{*c}*

Contact: b.hoogakker@hw.ac.uk

*a



the
Lyell
centre

*b



*c

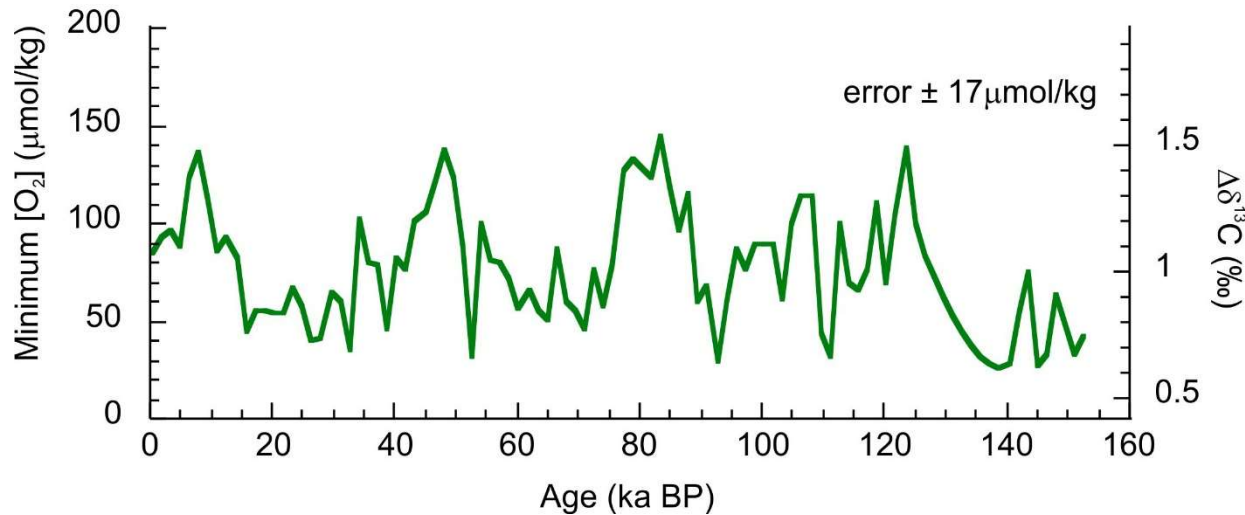
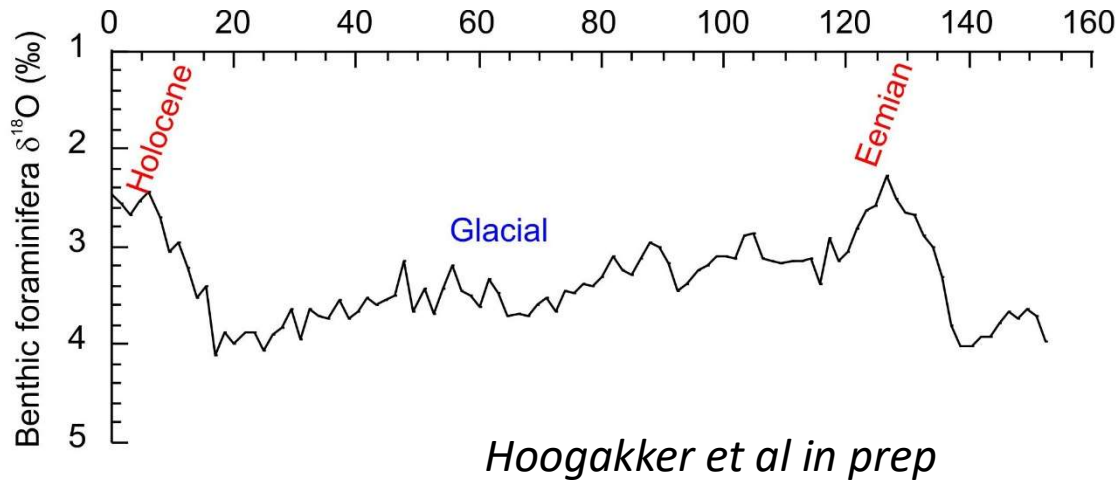


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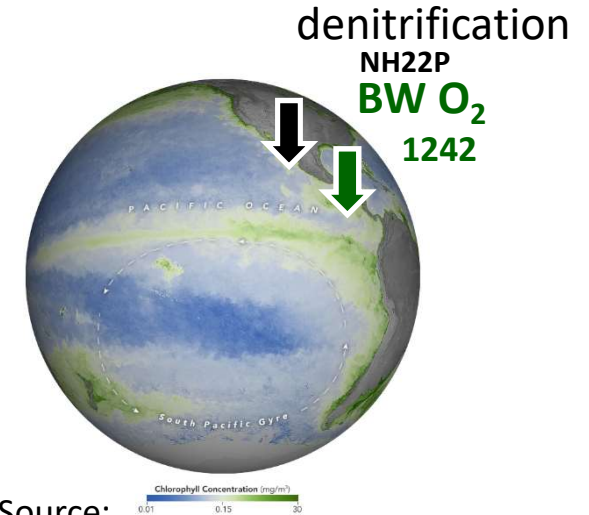
Abstract:

Intermediate waters (500 - 2000 m) from the equatorial- to North Pacific are currently hypoxic (oxygen concentrations below 120 $\mu\text{mol/kg}$), while deeper waters are well oxygenated. For the last ice-age, some proxy records suggested that this trend was reversed, with well-oxygenated Pacific intermediate waters, and lower oxygenated deeper waters associated with an increased deep carbon reservoir. Recent work however suggests that there was an overall expansion of oxygen depleted water in the eastern tropical North Pacific during the last glacial period (Hoogakker et al., 2018). To further assess the natural variability in intermediate water dissolved oxygen concentrations over longer time-scales we extend the bottom water oxygen record of ODP Site 1242 (1360 m depth located in the eastern tropical north Pacific), to 140,000 years, using the benthic foraminifera carbon isotope gradient approach of Hoogakker et al. (2015). Our reconstructions suggest that oxygen concentrations varied with an approximate 40 kyr period; with lowest concentration during cool periods of the penultimate glacial, MIS 5b, 4 and 2.

Glacial-interglacial variations



- Higher-frequency intermediate water O_2 variations in the eastern tropical Pacific.
- Higher-frequency variations of OMZ (bulk $\delta^{15}\text{N}$, Ganeshram et al., 1995).



Source: <https://earthobservatory.nasa.gov/images/91107/searching-for-the-bluest>



References & Acknowledgements

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