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Mid-Late Pleistocene variability in deepwater δ^{13}C, New Caledonia Basin, Subtropical Western Pacific

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The glacial-interglacial timescale variability of $\delta^{13}C_{DIC}$ in the deep-water masses of the Pacific Ocean is related to regional and global changes in both ocean chemistry and deepwater circulation. Recent deep-water in the New Caledonia Basin is southward-flowing Circumpolar Deepwater that has passed through the Tasman Sea, as opposed to the main Pacific deep western boundary current, east of New Zealand.

We present stable carbon and oxygen isotope measurements in the benthic foraminifera *C. wuellerstorfi* from piston core MD06-3018 (R.V. Marion Dufresne, 23ºS, 166ºE, 2470m water depth) in the New Caledonia Basin. An age model for the core, derived using magnetic stratigraphy and orbital tuning of the $\delta^{18}O_{benthic}$ record, shows that the core spans the past 1.5Ma. The $\delta^{13}C_{benthic}$ record over this period shows clear glacial-interglacial variability with glacial values between 0.5 and 1.0 permil more negative than interglacial ones. The Mid-Pleistocene Transition is detectable in the $\delta^{13}C_{benthic}$ record through the emergence of significant spectral power near to the 100ka band and a long-term perturbation in the mean $\delta^{13}C_{benthic}$value.

The $\delta^{13}C_{benthic}$ record shows similar glacial-interglacial and longer term variability to that seen in cores from the deep Eastern Tropical Pacific over the Mid-Late Pleistocene. However, across the entire record, $\delta^{13}C_{benthic}$ values in core MD06-3018 are consistently more positive than those from deep Eastern Tropical Pacific cores, an offset consistent with the modern $\delta^{13}C_{DIC}$distribution in the Pacific.

Core MD06-3018 demonstrates that across the past 1.5Ma the pathways for deepwater input to the New Caledonia Basin and the open Pacific remained distinct. The similarity of the glacial-interglacial variability seen between the two locations, in spite of these differing deepwater pathways, suggests that this variability is representative of global ocean chemistry changes and that any accompanying changes in ventilation rate are Pacific wide.