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Rapid variability during MIS3 and Termination I from the Western Pacific Warm Pool: new geochemical and sedimentological data

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Giant piston core MD10-3339 (39m) was retrieved in the Halmahera basin at $\sim$ 1920m of water depth. It provides a $\sim$50 kyr-long, high-resolution record that makes it possible to decipher the imprint of sea level, deep currents and monsoon/ENSO variability on sedimentation at the south-easternmost entrance of the Indonesian Archipelago, at the heart of the Western Pacific Warm Pool. Our multiproxy study combines (i) stable O and C isotopic analyses and Mg/Ca analyses on planktonic foraminifers, (ii) high-resolution XRF-derived elemental composition, (iii) laser-granulometry and (iv) magnetic anisotropy. The age model is based on mono-foraminifer 14C dates and extrapolated (constant sedimentation rate) before $\sim$ 42 ka.
The XRF profiles are dominated by millennial-scale variability, with no evidence of glacial/interglacial changes, suggesting the lack of long-term climate impact or sea-level control on sedimentation at site MD10-3339. A clear G/IG imprint is readily seen, however, on the decarbonated silt record, suggesting a reduction of bottom current activity during the Holocene (finer material) relative to the last glacial (coarser material). This change in current activity is not reflected in the magnetic anisotropy (no change in direction).
Elemental profiles associated to terrigeneous inputs (eg. Fe, Ti,..) show a strong co-variance with planktonic δ18O over the 35-45 ka interval and across the last deglaciation. This strong in-phase relationship degrades, however, at the end of MIS3 and during MIS2. We used paired δ18O-Mg/Ca data to infer past changes in local δ18Osw (i.e. advection, local evaporati n/precipitation) and explore the hypothesis that could explain the evolution of δ18O -XRF data relationship through time.