



## **Late Quaternary radiolarian assemblages as indicators for paleoceanographic changes offshore eastern New Zealand, southwest Pacific**

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Pleistocene-Holocene investigations of radiolarian assemblages at ODP Sites 1123, 1124, and preliminary studies at Site Y8, offshore eastern New Zealand, southwest Pacific, have been used to determine how past climatic changes have affected oceanographic conditions in the vicinity of the Subtropical Front (STF).

North of the STF, a ~21 kyr resolution study at Site 1123 (42°S, 3300 m water depth) during marine isotope stages (MIS)15-1 and a high resolution study (~5 kyr) at Site 1124 (39°S, 3980 m water depth) through MIS15-12 and 7-1 reveal abundant and diverse faunas consisting of mainly transitional, subtropical and subantarctic species, typical of temperate waters. At Site 1123, radiolarian abundance and diversity peak in Interglacials (especially MIS9, 7, 1) reaching ~10,000 radiolarians/gram of sediment and 103 taxa, with shallow-dwelling and warm-water species also peaking in abundance (reaching 7.6% of the total fauna). In Glacials, abundance and diversity decrease (especially MIS12, 10, 2) and cool-water species increase to 15% of the fauna. At Site 1124, radiolarian abundance and diversity are high throughout the studied interval, peaking in MIS5 (~70,000 rads/gram; 122 taxa). Pronounced increases in shallow-dwelling, warm-water taxa occur at the onset of Interglacials of MIS13 and 5 (reaching 15% of the total fauna), whereas abundance of cool-water species increases during Glacials but does not exceed 15% of the total fauna. Preliminary studies at Site Y8 (~2 kyr resolution study during MIS8-1, 46°S, 1335 m water depth), south of the STF, indicate that radiolarian faunas are very abundant and diverse throughout MIS8-1 (reaching ~200,000 rads/gram; 120 taxa), with diversity peaking in early MIS5. Fau-

nas are dominated by cool-water species that reach up to 36.7% during coolest climate conditions (MIS6, 2). Warm-water taxa increase to 15% of the fauna in MIS5e and the uppermost Holocene.

Overall, north of the STF our results suggest warmer conditions at Site 1124 during the last 600 kyrs, reflecting sustained influence of subtropical, warm, nutrient-rich East Cape Current (ECC) flow. During Interglacials, warmest conditions at both sites are associated with significant strengthening of the ECC and associated eddies. At Site 1123 abundance of deep-dwelling taxa in MIS13 and 9 might indicate upwelling conditions within Interglacials. During Glacials, northward expansion of cool, nutrient-poor subantarctic waters (SAW) occurs at both sites. At Site 1123, northward oscillation of the STF and expansion of SAW over the studied location is suggested. At Site Y8 and south of the STF, the results suggest prevailing, cool climate conditions during MIS8-1 under the influence of southern-sourced waters. Strong deep current flow is indicated during coolest Glacials in MIS6 and 2.