



## Timor Sea surface and subsurface temperature variability on centennial timescales during MIS 2-3

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We present Marine Isotope Stage (MIS) 2-3 (~20-60 kyr BP) seasurface and subsurface temperature records (60-120 yr temporal resolution) from IMAGES Core MD01-2378 (121°47.27'E and 13°04.95'S, 1783 m water depth) located in the outflow region of the Indonesian Throughflow (ITF) within Timor Sea. We measured Mg/Ca on the near surface dwelling planktonic foraminifer *Globigerinoides ruber* (white) and the upper thermocline dwelling *Pulleniatina obliquiloculata*. Our results show that changes in the thermal structure of the upper ocean are controlled by two main factors during MIS 3: (i) thermocline cooling (*P. obliquiloculata* record) reflects intensification of the relatively cool thermocline flow of the ITF modulated by sealevel and monsoonal winds; (ii) SST cooling (*Gs. ruber* record) indicates periodic northeastward migrations of the West Australian Current (WAC) related to Antarctic cooling episodes between widely recognized warming events (A1-A4). Four main cooling events centered at ~60 kyr, ~55 kyr, ~48 kyr, and ~42 kyr and related to WAC intensification are observed in our *Gs. ruber* SST record. The longest of these coolings (~5 kyrs), which occurred between A1 and A2, is also recognized within benthic foraminiferal census counts.