Thermocline temperature variability in the Timor Strait during the last glacial cycle

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Variations in thermocline temperature within the Timor Strait are related to changes in the intensity of the Indonesian Throughflow (ITF). Thus, reconstructing temperature variations within the thermocline, where the main transport takes place, helps to decipher the ITF role in the past and to better understand the modern current system. We present a study based on Core SO18471 (9°21.987' S, 129°58.983' E, 485 m water depth, 13.5 m length) retrieved in the Timor Sea during the R/V Sonne Cruise 185 "VITAL". The age model for this core is based on 5 AMS ^{14}C dates and correlation of benthic stable isotopes to the Antarctic EDML1 ice core. We measured Mg/Ca ratios in ~10 tests of the benthic foraminifera *Hoeglundina elegans, Cibicidoides wuellerstorfi* and *Hyalinea balthica* in 1-2 kyr time resolution to reconstruct thermocline temperature variability.

Preliminary results show that thermocline temperature varies between 4 and 10.5°C, in comparison to a modern temperature of 7.9°C. During periods of relatively high sea level, thermocline waters cooled and freshened, suggesting a gradual shift from surface to thermocline dominated flow. In contrast, during intervals of low sea level, thermocline temperatures increased, supporting the hypothesis of a reduced thermocline flow during glacials. Although sea level changes appear to be the main control on ITF variability, the Australian-Asian monsoon system also influences the ITF. Our data suggest that cooling events in the Northern Hemisphere during MIS 3, which promoted intensification of the monsoon, reduced the cool ITF thermocline flow, resulting in higher thermocline temperatures in the Timor Strait.