

Thermocline temperature variability in the Timor Strait over the last two glacial cycles.

**\*Lo Giudice Cappelli, E**

*elgc@gpi.uni-kiel.de*

*Institute of Geosciences, Christian-Albrechts-University, Kiel, Germany*

**Holbourn, A**

*ah@gpi.uni-kiel.de*

*Institute of Geosciences, Christian-Albrechts-University, Kiel, Germany*

**Kuhnt, W**

*wk@gpi.uni-kiel.de*

*Institute of Geosciences, Christian-Albrechts-University, Kiel, Germany*

**Regenberg, M**

*regenberg@gpi.uni-kiel.de*

*Institute of Geosciences, Christian-Albrechts-University, Kiel, Germany*

**Garbe- Schönberg, D**

*dgs@gpi.uni-kiel.de*

*Institute of Geosciences, Christian-Albrechts-University, Kiel, Germany*

Seafloor temperature variations within the path of the Indonesian Throughflow are mainly influenced by the intensity of the cool throughflow and by glacial-interglacial sea-level changes. We present a study based on core 18471 (9°21.987' S, 129°58.983' E, 485m water depth, 13.5m long) and 30 core tops retrieved in the Timor Sea during the R/V Sonne Cruise 185 ("VITAL"). Multicorer core tops were retrieved along two transects between 130 and 2400m water depths, representing a range of present day bottom water temperatures between 2 and 21°C.

For the downcore study, we measured Mg/Ca-ratios in ~10 tests of the benthic foraminifera *Hoeglundina elegans*, *Cibicidoides wuellerstorfi* and *Hyalinea balthica* in 10 cm intervals (1-2 kyr time resolution). The preservation of tests was checked with a scanning electron microscope. *Cibicidoides wuellerstorfi* and *H. balthica* were used in one interval, where *H. elegans* was rare. Duplicate samples were analyzed to inter-calibrate the three species. Mg/Ca ratios were converted into temperature using published calibrations and our regional calibration based on Timor Sea core tops.

Preliminary results show that Mg/Ca ratios in *H. elegans* vary between 0.8 and 2.2 mmol mol<sup>-1</sup> corresponding to a temperature range between 4 and 10.5°C, in contrast to a modern annual average temperature of 7.9°C at 400 m. 22-paired analyses in *H. elegans* give a reproducibility of 0.16 mmol mol<sup>-1</sup> (standard deviation), corresponding to a temperature difference of ±0.9°C. The amplitude of the temperature change during deglaciation is ~2°C between MIS2 and the Holocene and ~3°C between MIS6 and MIS5e. In contrast, the highest amplitude variability (~6.5°C) is detected during MIS3, suggesting transient shutdown of the Indonesian Throughflow leading to thermocline warming.