

Neogene circulation patterns and biogeography of foraminifera in the Indonesian Throughflow

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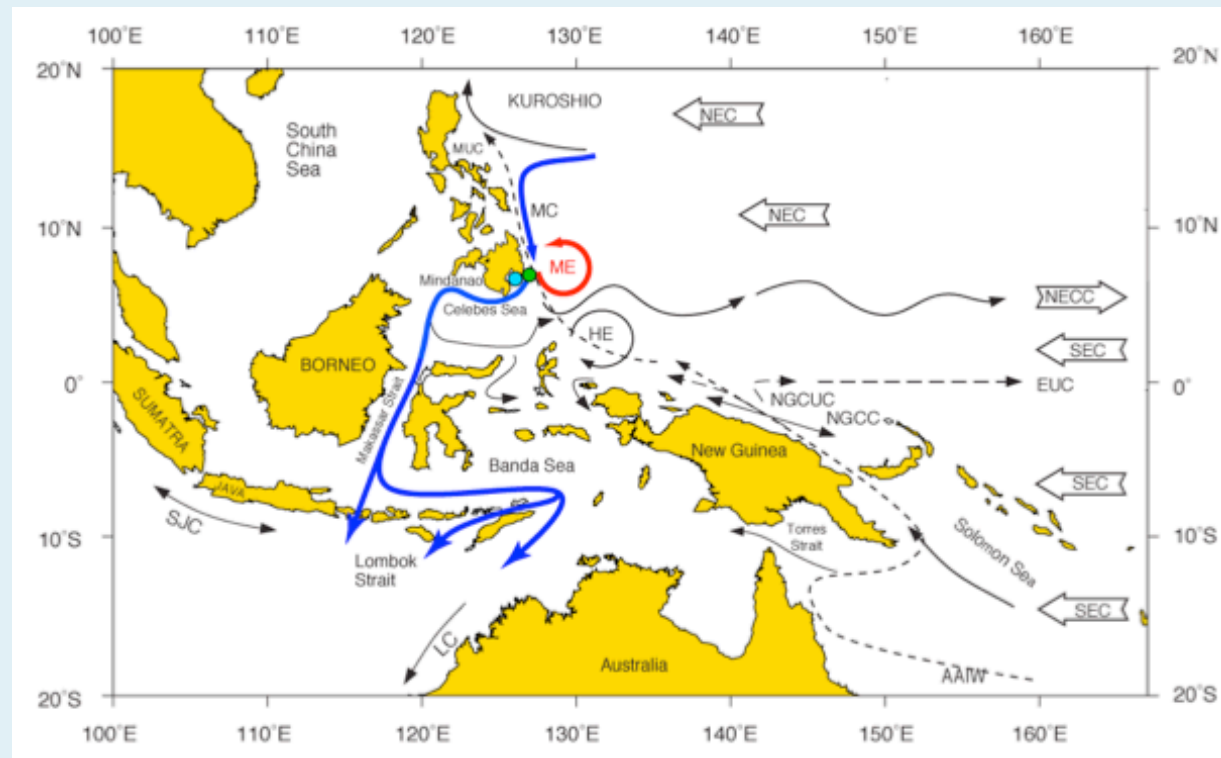
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Project Objectives

- Reconstruct Indonesian Throughflow (ITF) variability on orbital time scales.
- Apply a range of foraminiferal geochemical proxies to glacial-interglacial and longterm changes in ITF hydrology. E.g. Mg/Ca, $\delta^{18}\text{O}$, $\delta^{13}\text{C}$, XRF core-scanning.
- Correlation of biostratigraphic and geochemical records.

Current Work

- Core MD06-3075, in the ITF inflow path.



(Bolliet et al.)

Current Work

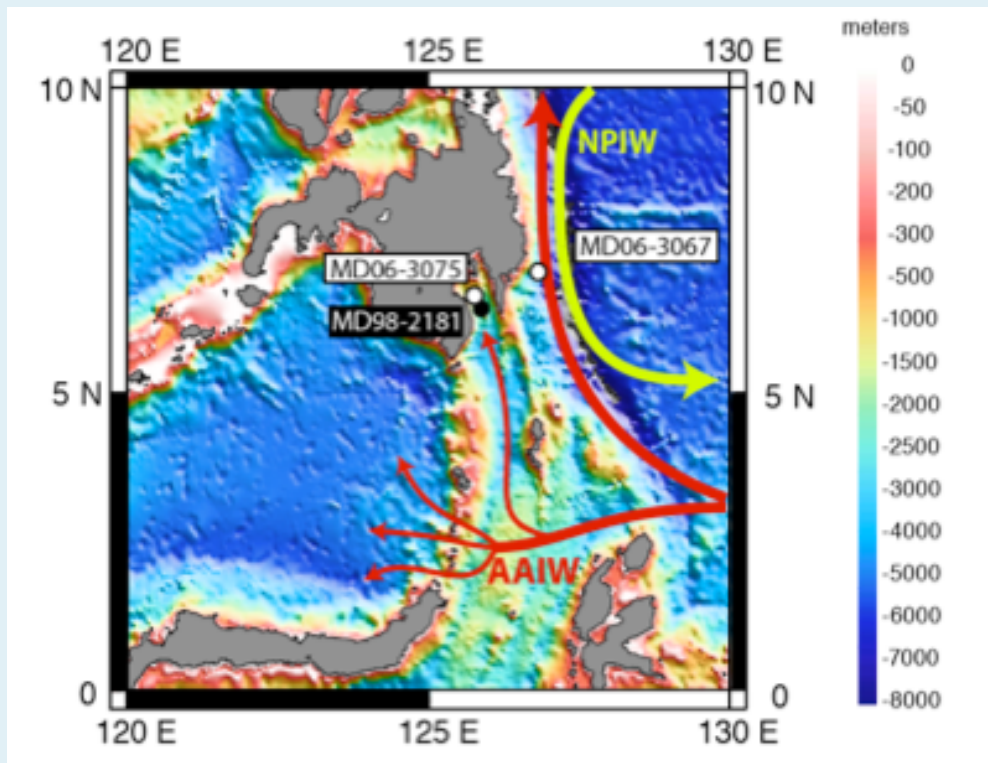
- Core MD06-3075, in the ITF inflow path.

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(Bolliet et al.)

Current Work

- Core MD06-3075, in the ITF inflow path.



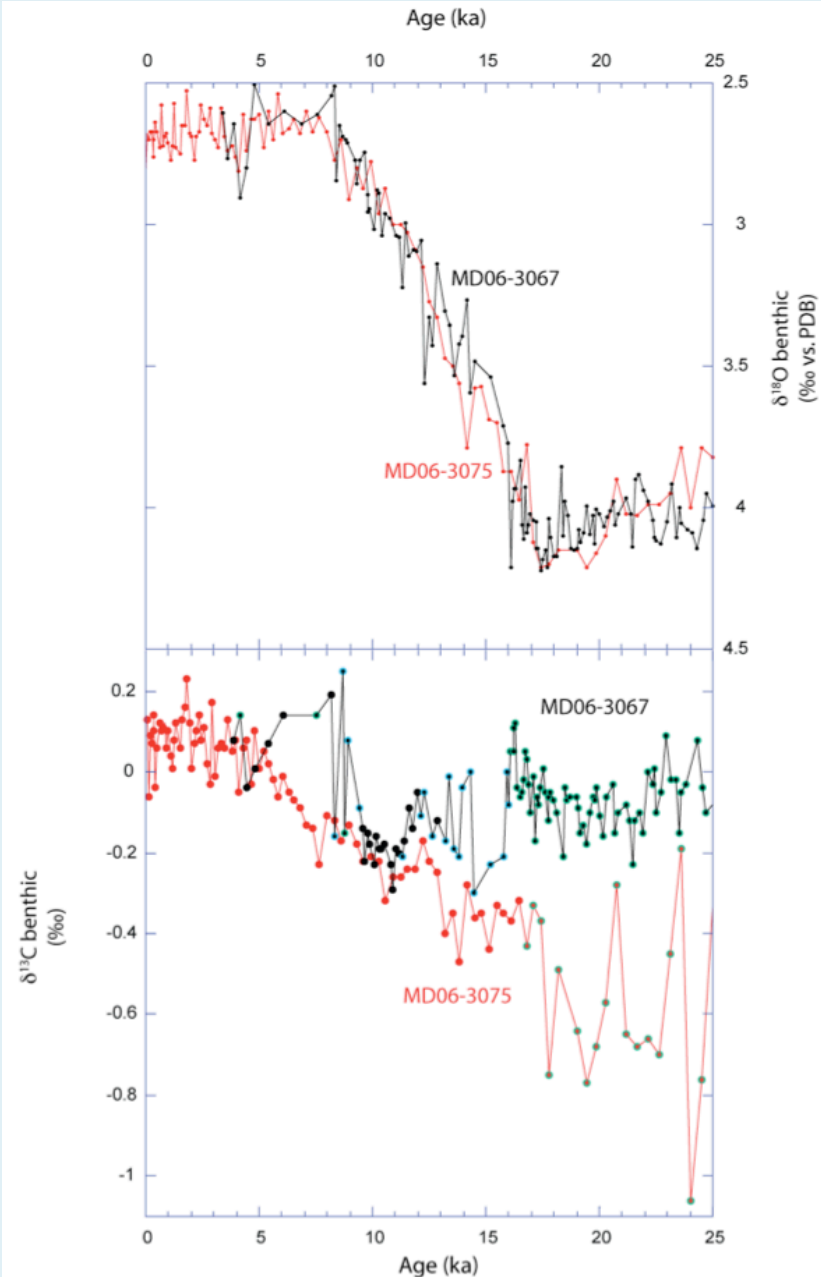
(Bolliet et al.)

- Depth of core: 1878m
- Separated from West Pacific by a narrow sill, ~800m high
- High sedimentation rates (max. 78cm/kyr)

Current Work

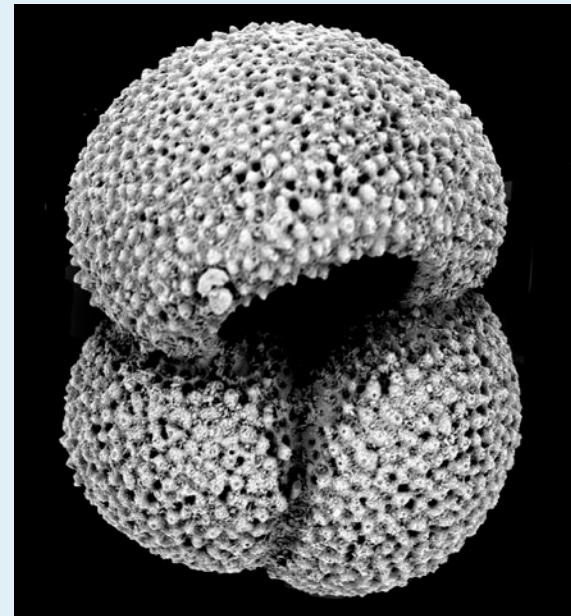
- Creation of a high-resolution Mg/Ca record at the ITF inflow during the holocene and LGM.
- Comparison with modelling and recent publication values.

(Bolliet et al.)



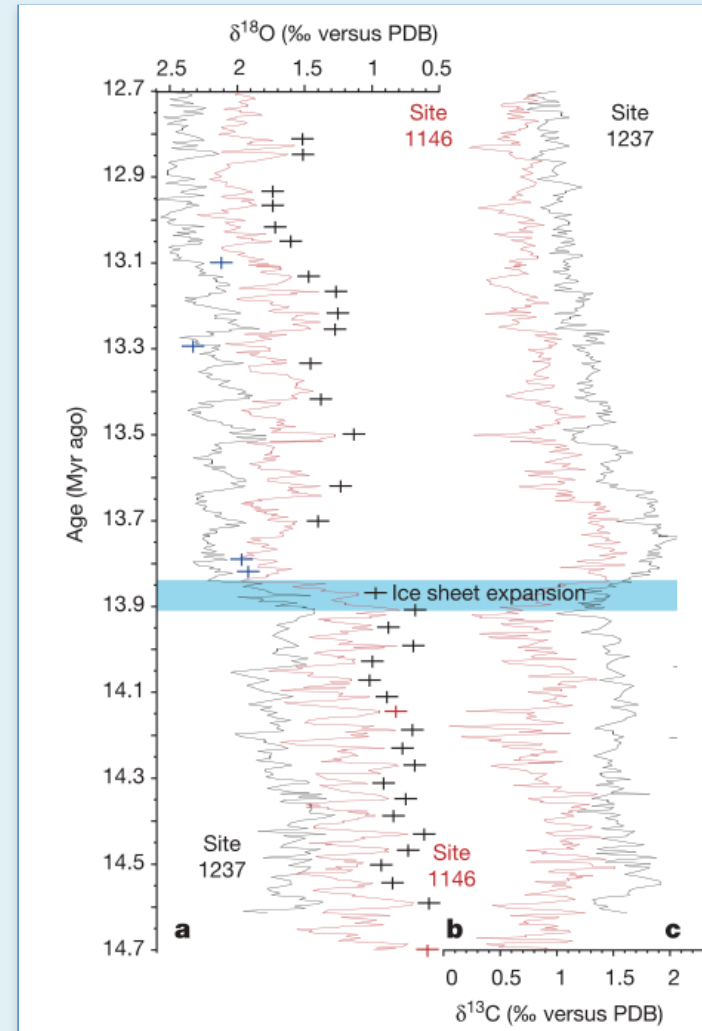
Current Work - Methodology

- Sampled upper 9m of core
- Washed and sieved into different size fractions
- Picked for *Globigerinoides ruber*
- Samples crushed and cleaned
- Analysed for Mg/Ca ratios



Aims of Current Fieldwork

- Sampling of clay-rich sediments
- Perform stable isotope analysis to enable reconstruction of mid-Miocene climate
- Obtain information on planktonic and benthic foraminifera biostratigraphy



(Holbourn et al., 2005)

Aims of Current Fieldwork

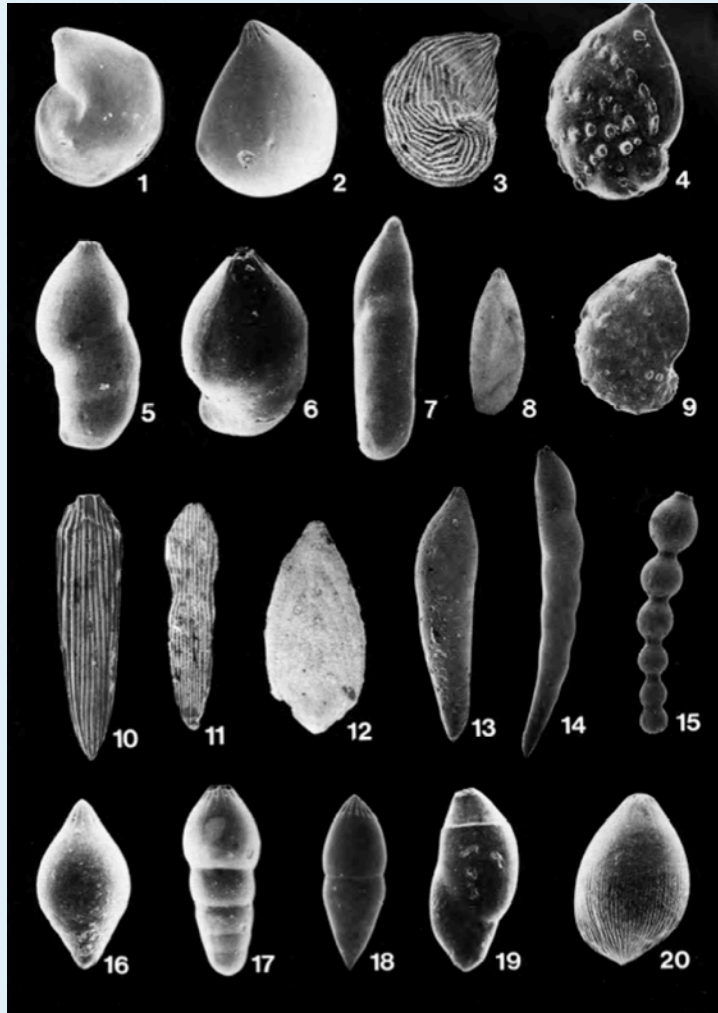


PLATE 1		MIOCENE												PLIOCENE		QUATERNARY		REMARKS																	
FIGURES	TAXA	ISLANDS													BASE	COLUMN	SUBSOL																		
			EARLY				MIDDLE				LATE									EARLY				MIDDLE				LATE							
			8	7	6	5	4	3	2	1	0	1	2	3						4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	<i>Lenticulina gibba</i> (d'Orbigny)	BUVU KAI SEKAM TAMU																																	1. Sample GS-6-155B (Recent); 50x Note distinct apertures of outer chambers
2	<i>Lenticulina peregrina</i> (Schwager)	BUVU KAI SEKAM TAMU																																	2. Sample GS-4-82B (Recent); 100x
3	<i>Lenticulina costata</i> (Fichtel and Moll)	BUVU KAI SEKAM TAMU																																	3. Sample GF1A-T192; 35x
4+9	<i>Planulina gemmata</i> (Brady)	BUVU KAI SEKAM TAMU																																	4. Sample GF1A-B293; 65x 9. Sample GF1A-B293; 65x Note characteristic ornament of exogenous beads upon or parallel to the sutures
5-6	<i>Marginulina glabra</i> d'Orbigny	BUVU KAI SEKAM TAMU																																	5. Sample GF1A-B293; 50x 6. Sample GF1A-B293; 80x
7	<i>Vaginulopsis sublegumen</i> Parr	BUVU KAI SEKAM TAMU																																	7. Sample GF1A-B293; 50x Note flush sutures
8	<i>Astacolus crepidulus</i> (Fichtel and Moll)	BUVU KAI SEKAM TAMU																																	8. Sample GF1A-T192; 50x
10-12	<i>Plectofrondicularia</i> spp.	BUVU KAI SEKAM TAMU																																	10. <i>Plectofrondicularia heleneae</i> (Chapman) Sample GF1A-B293; 50x 11. Idem. Sample GF1A-T63; 40x 12. <i>Plectofrondicularia advena</i> (Cushman) Sample GF2A-K201; 40x
13-15	<i>Dentalina</i> spp.	BUVU KAI SEKAM TAMU																																	13. <i>Dentalina advena</i> (Cushman); Sample GF1A-T192; 85x 14. <i>Dentalina kilburni</i> (d'Orbigny) Sample GS-6-155B (Recent); 40x 15. <i>Dentalina subulata</i> (Cushman) Sample GS-6-155B (Recent); 40x
16-18	<i>Pseudonodosaria</i> spp.	BUVU KAI SEKAM TAMU																																	16. <i>Glandulina levigata</i> d'Orbigny; Sample GF1A 17. <i>Pseudonodosaria radicata</i> (Linnaeus) J293; 55x Sample GF1A-T192; 40x 18. <i>Pseudonodosaria aequalis</i> Sample GS-6-155B (Recent); 80x
19	<i>Pyralina fusiformis</i> (Roemer)	BUVU KAI SEKAM TAMU																																	19. Sample GF2A-S116; 75x
20	<i>Glubulina australis</i> d'Orbigny	BUVU KAI SEKAM TAMU																																	20. Sample GF1A-B293; 55x Note striate basal part.

(Van Marle, 1991)

Future Work

- RV Sonne Cruise 2011 (SO-217)
- Coring in the Makassar Strait



Thanks for listening

Questions/Suggestions?