FRANKLIN

National Facility
Oceanographic Research Vessel

The paleoclimatic history of the New Caledonia region - closing the gap between the deep-sea and the coral records

CRUISE SUMMARY

RV FRANKLIN

FR 07/01

Depart Brisbane	Wednesday 29 August 2001
Arrive Noumea	Tuesday 4 September 2001

Principal Investigator

Dr Patrick De Deckker
Department of Geology, Australian National University

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FR07/2001

Title

The palaeoclimatic history of the New Caledonia region - closing the gap between the deep-sea and the coral records

Itinerary

Departed Brisbane 1900hrs, Wednesday 29 August 2001
Arrived Noumea, 1000hrs Tuesday 4 September 2001

Principal Investigator(s)

Dr Patrick De Deckker (Chief Scientist)
The Australian National University
Dept. of Geology, Australian National University, Canberra ACT 0200
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Dr Thierry Correge, Institut de Recherche pour le Development (IRD), Noumea, New Caledonia
Dr Guy Cabioch, IRD

Scientific Objectives

The objectives of the cruise were to:

- obtain a number of sediment cores from offshore Amedee Island and adjacent sites to document records of oceanic changes, both at the surface and on the sea floor at different water dephs. The aim was to obtain a continuous record of environmental change spanning at least 150,000 years and covering two periods of sea-level high and two glacials.

- carry out intensive analyses on horizons in the cores that correspond to the periods of sea-level highs wen the corals recovered from Amedee Island would have been growing. Chemical analyses on open-ocean organisms organisms such

as foraminifers would provide an ideal comparison against the chemical signals obtained from Amedee corals. Such calibration has rarely been achieved anywhere in the world!

- carry out a great variety of analyses on the oceanic cores to determine environmental conditions through time. The aim was to analyse pollen from the cores to determine vegetational changes on New Caledonia. In addition, the supply of terrigenous material such as clays from New Caledonia to determine periods of erosion and land stabilisation in New Caledonia was also investigated to link these to climatic change. This was to be paralleled with the vegetation record. Finally, those data are to be compared with conditions at sea through the study of marine microfossils such as foraminifers, nanoplankton an benthic ostracods. The chemical signals in some those microfossils are to be used to further determine conditions of the oceans such as temperature and salinity.

Cruise Objectives

The cruise objectives were to:

- collect water and plankton and water samples every 100km while in transit between Brisbane and Noumea.
- take 10 gravity cores, 9 of which were located along a transect adjacent to the 23 degree latitude southwest of New Caledonia. The last core, which was to be taken inside 'The Lagon' near Noumea, could not be collected. The 9 other cores were taken between 3,500 m and 500m.
- obtain water samples near the coring sites for stable isotope, trace metals, dissolved oxygen and nutrients analyses, and for comparison wit the chemical record of the microfossils to be obtained from the cores.

Cruise Track

See attached figures.

Results

The attached table gives details of cores taken during the cruise.

Personnel

Scientific Crew

Dr Patrik De Deckker	Geology Department, ANU	Cruise Leader
Dr Franz Gingele,	Baltic Sea Research Institute, Warnemunde, Germany,	ARC Post-doc
Ms Elsie Gretton	Geology Department, ANU	Honours student
Mr Martin Young	Archaeology and Natural History, ANU	PhD student
Mr Vincent Dijkmans,	Free University, Amsterdam,	Visitor, ANU
Dr Thierry Correge	Institut de Recherche pour le Development (IRD) Noumea, New Caledonia,	Cruise Co-leader
Dr Guy Cabioch	IRD	Cruise Co-leader
Dr Anne-Marie Semah,	IRD, Bondy, France	
Dr Denis Wirrmann,	IRD, Bondy, France	

Crew Members

Neil Cheshire	Master
Arthur Staron	1st Mate
John Boyes	2nd Mate
Malcolm McDougall	Bosun
Anthony Hearne	Assistant Bosun
Jason Walker	Integrated Rating
Gareth Pratley	Integrated Rating
Gordon Gore	Chief Engineer
David Jonker	1st Engineer
Wayne Hanson	Electrical Engineer
Howard Davies	Greaser
Shaun McQuaid	Chief Stewart
Marc Sweeney	Chief Cook
Bernard Sorensen	Second Cook

Acknowledgments

We wish to thank the following people and institutions for their help and support for the cruise:

- Dr Jean_Marie Auzende, Directeur pour la Recherce en Nouvelle Caledonie, who made it possible to have relevant bathymetric maps produced by the governmental S.M.A.I.

- The ANU Faculties Research Fund which awarded a grant to P. De Deckker to help defray many of the costs for the cruise.
- The Australian Geological Survey Organisation [and in particular Mr John Stratton, Dr N. Exon, and Mr S. Duton] who made it possible to borrow the AGSO gravity corer. John Stratton also came to Brisbane prior to our departure to explain all the features involved to deploy the gravity corer and he associated rail attached to the rear deck of the ship.
- The German DAAD, under the German-Australian exchange scheme that provided funds to F. Gingele to join the cruise.

Patrick De Deckker
Chief Scientist

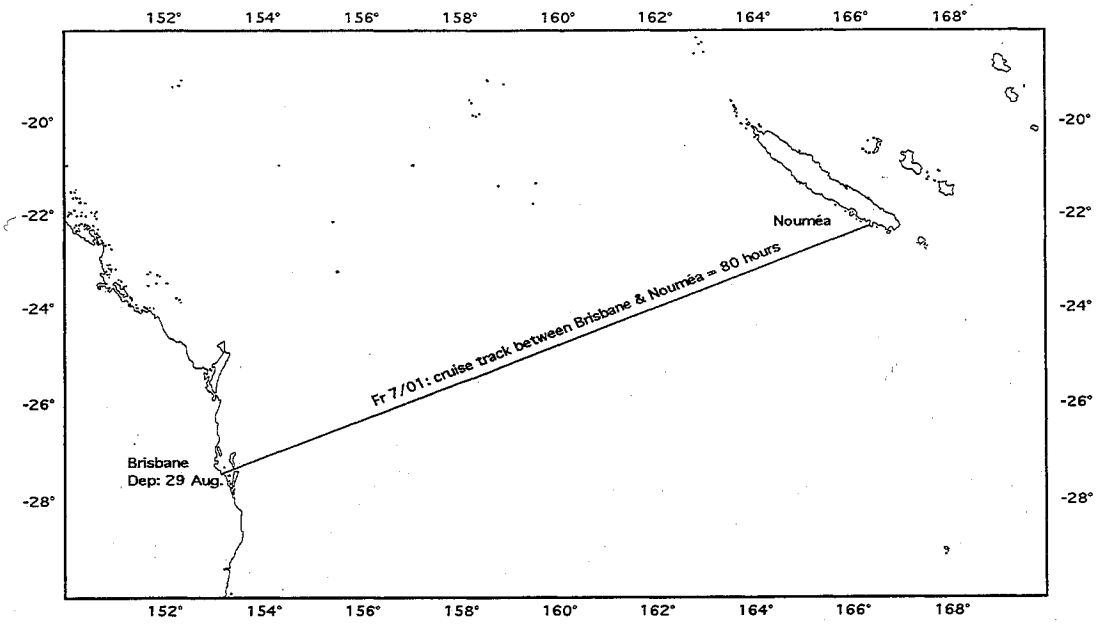
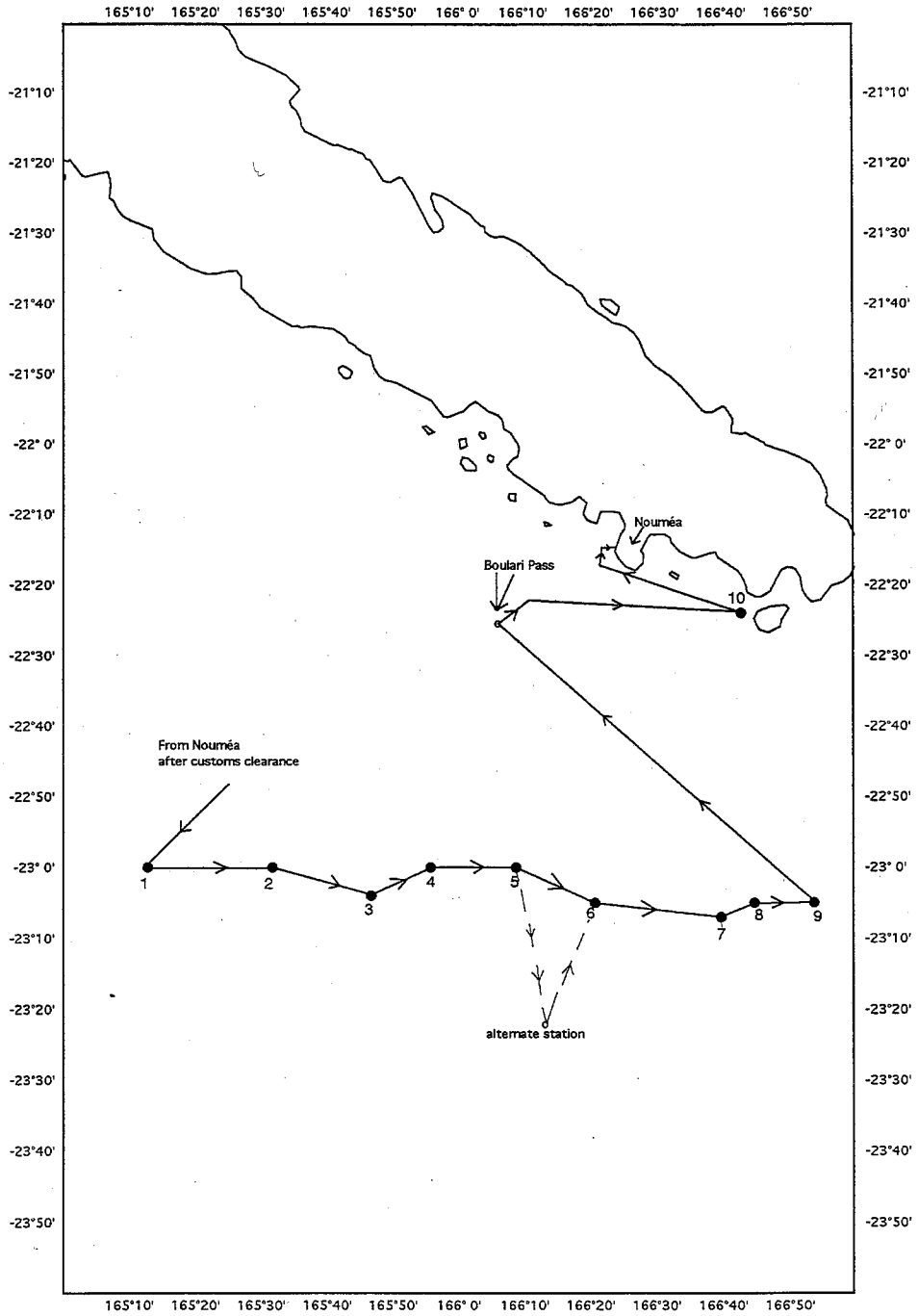


Figure 1. Transit, Brisbane-Noumea

Franklin 7/01 proposed track



RV Franklin FR07/01, Brisbane to Noumea August 28, 2001 - September 04, 2001

Station List

Station no.	Date local	Time local	Time UTC	Latitude °S	Longitude °E	Water depth m. sound	Water depth m. cable	SSS ppt.	SST °C	Outside T °C	Corer UTC	Recovery cm.	CTD UTC	Plankton / water sample	Remarks
1	2-Sep	4:11	17:11	22°59.987"	165°13.020"	3619.0	3595	35.25	22.39	20.2	18:05	nil	19:35	yes	24-bottle CTD
2	2-Sep	11:26	0:26	23°00.019"	165°31.892"	3530(*)	3529	35.42	21.81	21.2	1:11	373	none	yes	Core-GC1. (*) Ships echo sounder
3	2-Sep	15:08	4:08	23°04.096"	165°47.047"	3149.0	3152	35.34	22.26	21.4	15:40	73	none	yes	Core-GC2
4	2-Sep	17:58	6:59	22°59.991"	165°56.705"	2588.5	2551	35.36	22.10	21.2	?	383	(*)	yes	Core-GC3. (*) CTD failure
5	2-Sep	20:15	9:15	22°59.975"	166°09.066"	2476.0	2477	35.35	21.92	21.3	21:30	410	(*)	yes	Core-GC4. (*) CTD not available
6	3-Sep	0:45	13:45	23°22.036"	166°12.022"	2813.0	2790	35.37	22.21	21.1	15:28	261	(*)	yes	Core-GC5. (*) CTD not available
7	3-Sep	5:28	18:28	23°04.098"	166°21.501"	2093.5	2083	35.35	21.90	21.5	19:07	415	(*)	yes	Core-GC6. (*) CTD not available
8	3-Sep	8:39	21:39	23°06.629"	166°37.939"	1268.0	1265	35.33	21.96	22.1	22:05	18	(*)	yes	Core-GC7. (*) CTD not available
9	3-Sep	9:55	22:55	23°07.011"	166°40.049"	1133.5	1129	35.34	21.98	22.4	23:15	nil.	(*)	none	(*) CTD not available
10	3-Sep	11:19	0:19	23°04.997"	166°45.222"	880.0	885	35.38	22.04	22.3	0:37	nil.	1:23	none	12-bottle CTD
11	3-Sep	13:20	2:21	23°04.880"	166°48.211"	821.0	823	35.36	22.04	22.4	?	nil.	none	none	none
12	3-Sep	16:35	5:35	22°50.916"	166°36.185"	1060.5	?	35.21	22.61	22.6	?	nil.	5:36	yes	12-bottle CTD
13	3-Sep	19:35	8:35	23°40.004"	166°21.568"	2093.0	n/a	35.35	22.09	23.40	none	n/a	08:40	yes	12-bottle CTD
14	4-Sep	0:17	13:17	22°42.513"	165°58.649"	2915.0	2883	35.32	22.41	21.90	14:02	nil.	none	yes	none

Table 1. Details of cores taken.