

# R.V. FRANKLIN

## NATIONAL FACILITY OCEANOGRAPHIC RESEARCH VESSEL

*RV FRANKLIN*

RESEARCH PLAN

CRUISE FR 10/89

Sails Hobart 0800 hrs Tuesday 15 August 1989  
Arrives Brisbane 1100 hrs Wednesday 6 September 1989

### Principal Investigators

Dr John Church  
&  
Dr Gary Meyers  
CSIRO Division of Oceanography

together with

Associate Professor Matt Tomczak  
Ocean Sciences Institute  
The University of Sydney

OCEAN TRANSPORT IN THE TASMAN SEA

April 1989

For further information contact

ORV Operations Manager  
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R.V. FRANKLIN IS OWNED AND OPERATED BY CSIRO

**Cruise Plan  
R.V. Franklin  
FR10/89**

**Itinerary**

Depart Hobart:	0800Hrs	15 August 1989
Arrive Brisbane:	1100Hrs	6 September 1989

**Scientific Program**

Although the East Australian Current (EAC) has been studied close to the western boundary, the transport of the EAC is not well determined and there is virtually no information on the seasonal and interannual variations in this transport. This investigation is designed to determine the transport of the EAC (and estimate the temporal variations in this transport) using a combination of in-situ observations (CTD, ADCP, moored instruments) and GEOSAT altimeter data. Knowledge of the EAC is the key to determining the role of the South Pacific in the poleward transport of heat.

This study is also designed to determine the large-scale general circulation of the Tasman Sea using patterns of tracers (temperature, salinity, oxygen and nutrients) and of density to estimate geostrophic circulation at all depths.

A New Zealand scientist has expressed interest in this project and details of his participation are currently under discussion.

**Principal Investigators**

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Ocean Sciences Institute  
The University of Sydney  
Sydney, NSW 2006

## Cruise Objectives

1. To estimate the volume transport (and its time variability) of the EAC along the east Australian coast and in the Tasman Front using CTD, ADCP and current meter moorings.
2. To determine the large-scale general circulation of the Tasman Sea using patterns of tracers (temperature, salinity, oxygen and nutrients) and of density to estimate geostrophic circulation.
3. To determine temporal changes in surface pressure gradient between two points on the Lord Howe Rise, one at 28°S and the other at 38°S using two independent methods (steric height estimate and GEOSAT altimetry).
4. To estimate the meridional heat and freshwater fluxes at 28° and 43°S where there are previous trans-Pacific hydrographic sections (the "Scorpio" sections).

## Cruise Track

A proposed cruise track is shown in Figure 1. The cruise will be followed immediately by FR 11/89, Brisbane to Hobart. The stop in Brisbane will be to refuel and re-provision the ship, and to change some of the scientific personnel.

## ORV Equipment Required

All standard instrumentation plus 24 bottle rosette, ACR deck unit, Aanderaa tape reader. We will require a large storage space and clear deck area for mooring work (no container labs).

## Time Estimates

Steaming	12.7 days
CTD stations	8.5* days
Mooring ops.	0.8 days
Total	22.0 days
Time available	23.0 days

\*If 24 bottle rosette is not available, an additional 2.5 days will be required

## Personnel

A. Forbes (Chief Scientist)  
N. White  
F. Boland  
K. Miller

D. McLaughlan  
P. Adams  
K. Suber  
G. Critchley  
M. Rayner  
R. Morrow (OSI, University of Sydney)

This Cruise Plan is in accordance with the directions of the National Facility Steering Committee for the oceanographic research vessel RV Franklin.



A.D. McEwan  
CSIRO Division of Oceanography



D.H. Green  
National Facility Steering  
Committee

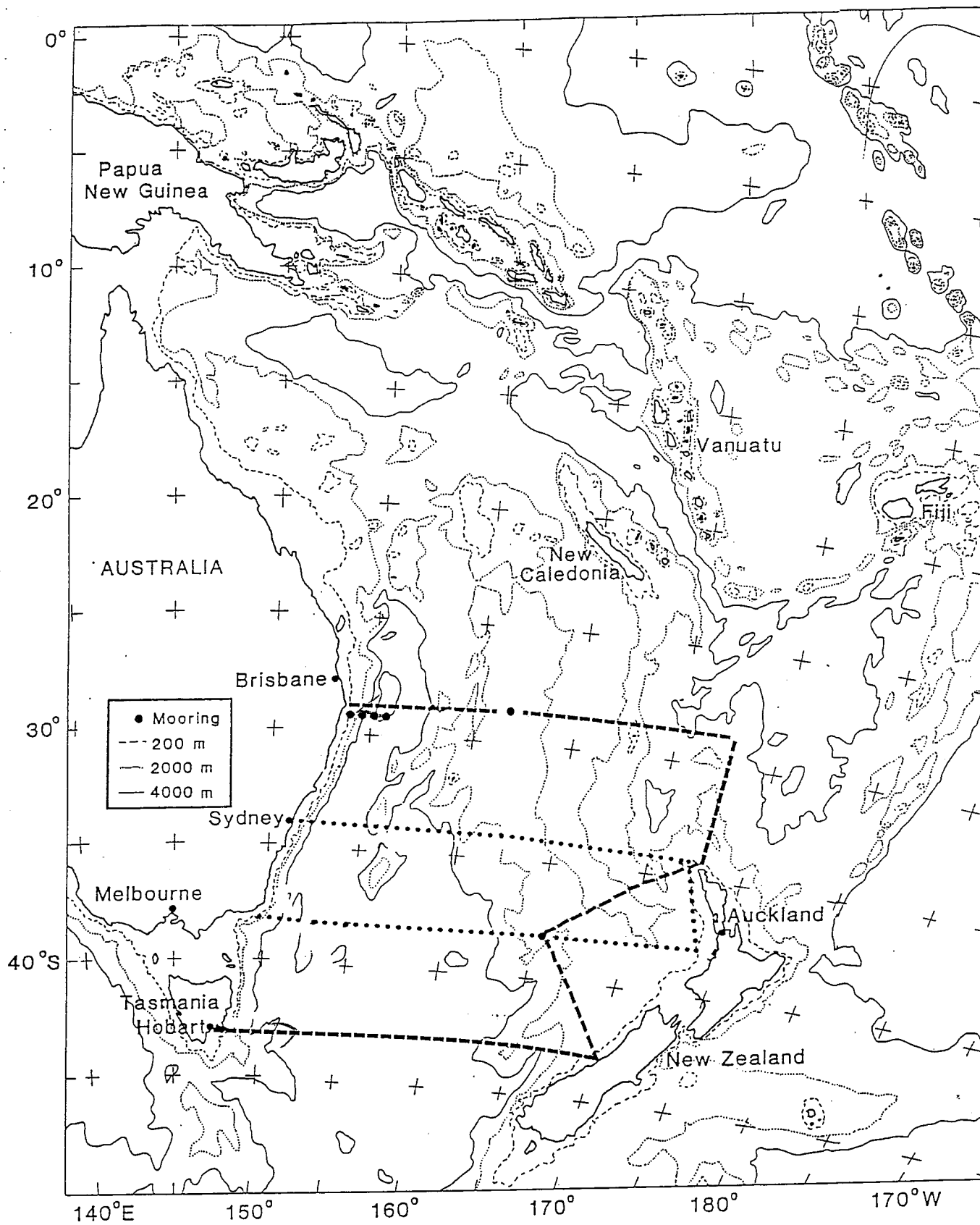


Figure 1

Cruise tracks for FR10/89 (-----) and for FR11/89 (.....).