

R.V. FRANKLIN

NATIONAL FACILITY OCEANOGRAPHIC RESEARCH VESSEL

RESEARCH PLAN

Cruise FR 1/91

Sail Hobart 0900 Sunday 6 January 1991
Arrive Adelaide 1200 Monday 14 January 1991

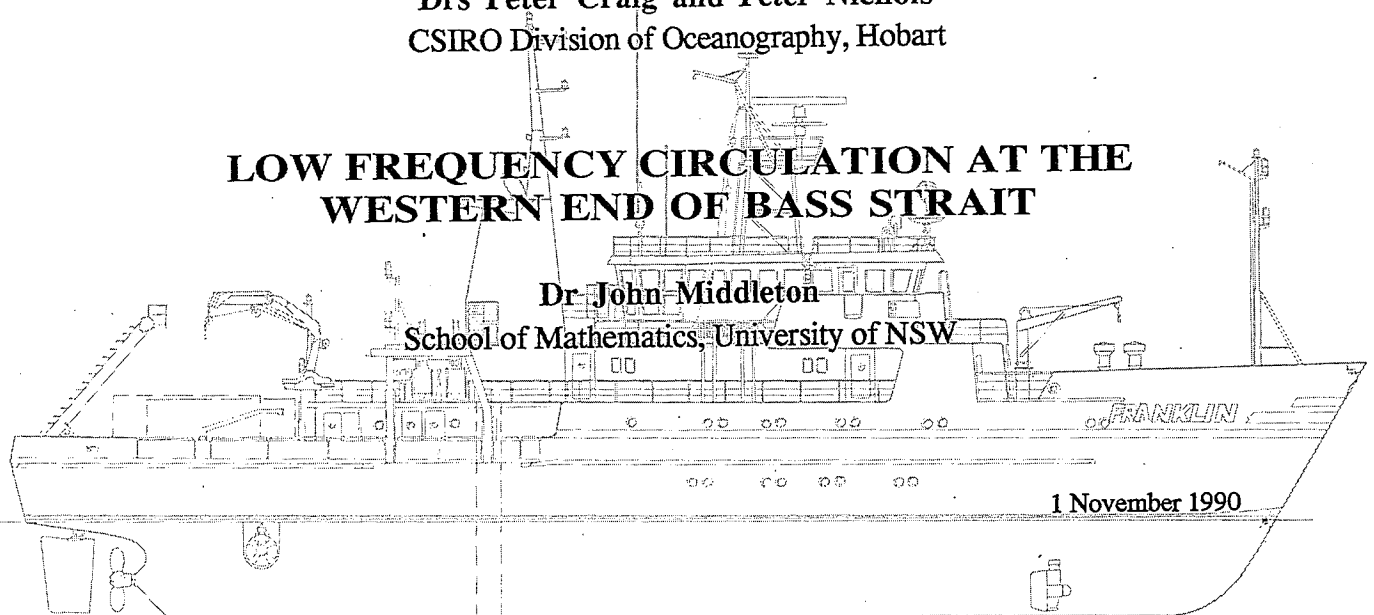
BASS STRAIT INTERDISCIPLINARY STUDIES

Principal Investigators

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CSIRO Division of Oceanography, Hobart

LOW FREQUENCY CIRCULATION AT THE WESTERN END OF BASS STRAIT

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R.V. FRANKLIN IS OWNED AND OPERATED BY CSIRO

Bass Strait Interdisciplinary Studies

Scientific Objectives

- To determine present chemical levels in Bass Strait water and sediments, with emphasis on the coastal margins and anthropogenic inputs.
- By deploying instruments arrays at the eastern and western ends of Bass Strait, estimate and explain mass and energy fluxes through the Strait under both summer and winter conditions.
- Relate chemical distributions to the physical dynamics of the Strait through the use of numerical circulation and dispersion models.

Cruise objectives

- Deploy five current meter moorings across each of the eastern and western entrances to the Strait.
- Conduct regular CTD stations and underway ADCP measurements along the cruise track.
- Collect and analyse underway surface water temperature, salinity and pH. The pH data will be used to estimate pCO₂ of surface waters.
- Collect water and sediment samples at selected stations.
- Collect sediment samples off East Gippsland as part of collaborative studies with the School of Chemistry, University of Melbourne.
- Collect water samples for ΣCO_2 and titration alkalinity, to investigate carbon cycling.
- Collect atmospheric gas samples for the CSIRO Division of Atmospheric Research for the analysis of CO₂ and other relatively important tracer gases.

Low Frequency Circulation at the Western End of Bass Strait

Scientific Objectives

- Determine the net flux of mass and energy scattered into the western mouth of Bass Strait as a fraction of that due to incident coastal-trapped waves from the Great Australian Bight.

- Determine the circulation on the shelf west of Bass Strait and in particular, the mechanism for upwelling of nutrients into the Strait itself.

Cruise Objectives

- Six current meter moorings will be deployed on the shelf west of Bass Strait (see table 1).
- CTD and ADCP measurements will be made at the mooring sites and across the shelf.

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Cruise Track

Moorings locations are shown in table 1 and the cruise track is shown on the attached figure. CTD profiles will be taken at each mooring location, with a further 10 between mooring 5 and 6, and another two between moorings 7 and M1

Time Estimate

Steaming -1200 nm @ 11 kts	121
16 moorings	32
28 CTD Stations	21
10 sediment samples	10
ADCP sections	<u>24</u>
	<u>208</u> (8.5 days)

ORV Equipment

CTD
 ADCP
 Rosette
 Hydrology
 Thermosalinograph
 Underway pH and Fluorometer

User Equipment

Sediment grab
 Gas sampler

Personnel

Peter Nichols	CSIRO-Oceanography	Chief Scientist
Rhys Leeming	"	
Mark Rayner	"	
Paul Boulton	"	
Peter Craig	"	
Fred Boland	"	
Kevin Miller	"	
Danny McLaughlin	"	
Graham Symonds	ADFA	
Erik Madsen	CSIRO-ORV	
Jeff Dunn	"	
Gary Critchley	"	

This research plan is in accordance with the directions of the National Facility Steering Committee for the oceanographic research vessel *Franklin*.



A.D. McEwan
CSIRO Division of Oceanography



D.H. Green
National Facility Steering Committee

Table 1

Mooring Locations

Bass Strait Interdisciplinary Studies

Mooring	Latitude	Longitude	Depth
1	40-38.8S	148-07.6E	37
2	39-30	148-00	41
3	39-00	148-00	62
4	38-30	148-00	64
5	38-00	148-00	41
6	40-09	144-14.8	48
7	40-19	144-28.7	55
8	39-23.7	143-49.7	95
9	39-04	143-38.6	91
10	38-54.4	143-33.2	50

Low Frequency Circulation at the Western End of Bass Strait

M1	41-06	144-12	100
M2	41-12	144-04	175
M3	40-47	143-47	175
M4	39-02	142-37	100
M5	39-06	142-34	175
M6	39-29	142-17	2000

CRUISE TRACK FR1/91

