

RESEARCH PLAN

Cruise FR 4/91

Sail Hobart 0900 Thursday 2 May 1991
Call Queenscliff Sunday 12 May 1991
Call Bell Bay Monday 20 May 1991
Arrive Sydney 1000 Thursday 23 May 1991

BASS STRAIT INTERDISCIPLINARY STUDIES

Drs Peter Craig and Peter Nichols
CSIRO Division of Oceanography, Hobart

LOW FREQUENCY CIRCULATION AT THE WESTERN END OF BASS STRAIT

Dr John Middleton
School of Mathematics, University of NSW

PHARMACOLOGY OF BASS STRAIT INVERTEBRATES

Dr Robert Capon
The University of Melbourne

22 March 1991

Research Plan
RV FRANKLIN FR 4/91

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 instrument 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

- Retrieve five current meter moorings across each of the eastern and western entrances to the Strait (Table 1).
- 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 stations throughout Bass Strait with particular reference to coastal margins. This sampling will include collection of sediment samples for the Division of Oceanography Tasmania/Bass Strait oil-seep survey program.
- Deploy and recover two chemistry moorings; one at Geelong sewage outfall near Black Rock, and the other near Burnie off the north-west coast of Tasmania.
- 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 important tracer gases.
- Time permitting, collect sediment and water samples adjacent to Sydney's sewage

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

- Five current meter moorings will be retrieved 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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Pharmacology of Bass Strait Invertebrates

Scientific Objectives

- To collect marine invertebrates to detect sources of chemical, biochemical and pharmacological useful substances.

Cruise Objectives

- Collection of sponges (by dredging) at selected locations in Bass Strait

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User Equipment

Sediment grab
Gas sampler
Filtration equipment
HPLC
Dredges (University of Melbourne)

Personnel

Peter Nichols	CSIRO-Oceanography	Chief Scientist
Rhys Leeming	"	
Mark Rayner	"	
Danny Holdsworth	"	
Teresa O'Leary	"	
John Volkman	"	
Peter Craig	"	
Fred Boland	"	
Danny McLaughlin	"	
Mark Butler	Uni. of Melbourne	
Bruce Brady	"	
Erik Madsen	CSIRO-ORV	
Bob Beattie	"	
Val Latham	"	
Dave Terhell	"	

Boland, McLaughlin and Craig will be picked up in Port Phillip Bay on 12 May, when Volkman, O'Leary and Brady will disembark. Boland, McLaughlin, Craig and Butler and will disembark at Bell Bay on 20 May.

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



G.W. Paltridge
National Facility Steering Committee

Table 1

Mooring Locations

Bass Strait Interdisciplinary Studies

Mooring	Station	Latitude	Longitude	Depth	Instrumentation
1	2	40-39.45	148-08.2E	40	3cm
2	3	39-30	148-00.4	47	3cm 1tg
3	4	38.59.15	148-00.52	67	3cm
4	6	38-29.83	147.59.98	70	3cm
5	5	38-00.00	147-59.82	47	3cm 1tg
6	15	40-08.63	144-15.02	53	3cm 1 tg
7	16	40-18.35	144-28.89	71	3cm
8	21	39-23.64	143-49.74	102	ADCP
9	22	39-04.13	143-38.51	93	ADCP
9A		39-04.98	143-38.04	95	ts
10	23	38-54.73	143-32.55	64	3cm 1 tg

Low Frequency Circulation at the Western End of Bass Strait

M1	17	40-50.23	144-08.50	95	1cm 1tg
M2	18	41-10.94	144-13.74	115	1cm 1tg
M3	19	41-13.35	144-05.87	496	1cm
M4	24	38-38.90	142-56.76	53	1cm 1tg
M5	25	38-54.11	142-43.89	79	1cm

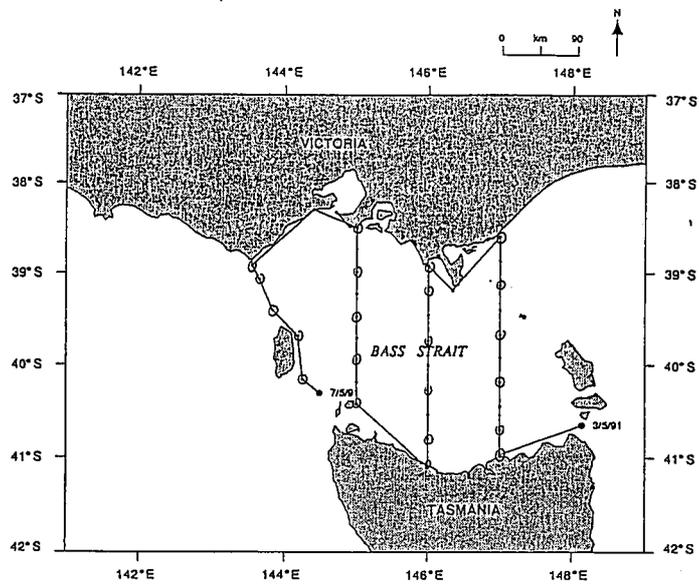
cm - current meter

tg - tide gauge

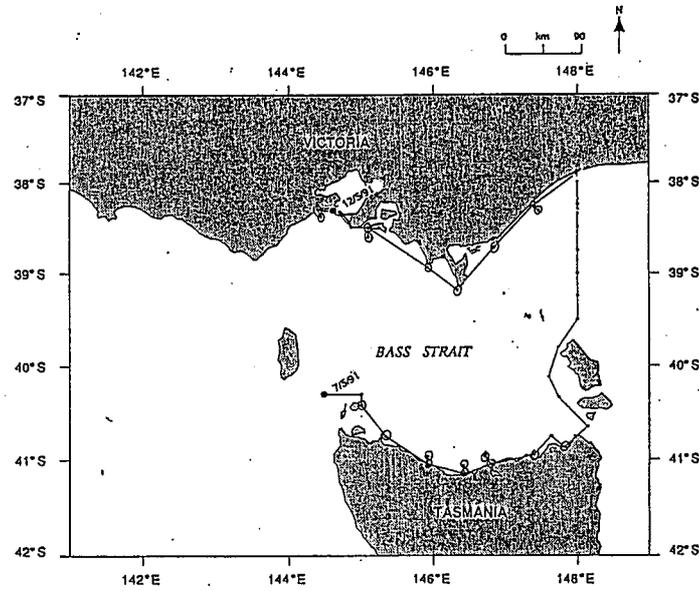
ADCP - acoustic doppler current profiler

ts - thermistor string

FR4/91 CRUISE PLAN LEG 1



FR4/91 CRUISE PLAN LEG 2



FR4/91 CRUISE PLAN LEG 3

