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**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)**

**OCEAN TRANSPORT IN THE TASMAN/CORAL SEAS
CRUISE FR 7/92**

DIMETHYL SULPHIDE IN SURFACE AND SUB-SURFACE WATERS

**AUSTRALIA
September-October 1992**

Submitted by:

**FRANKLIN (C S I R O)
National Facility Oceanographic Research Vessel**

**Research Plan
Franklin
FR 7/92**

Itinerary

Sail	Townsville	0800	Saturday 19 September 1992
Arrive	Brisbane	1200	Tuesday 6 October 1992

Scientific Program

OCEAN TRANSPORT IN THE TASMAN/CORAL SEAS

The objectives of this study are to analyse in detail the ocean dynamics in the Tasman/Coral Sea. Specifically, we want

1) To estimate the volume transport of the East Australian Current (EAC) at 23°S and 30°S and to estimate the time variability of this transport at 30°S. The EAC differs from the surface western boundary currents in other oceans in that the eddies are of the same magnitude as the mean current so that it appears that the current is discontinuous in time and along the coast. Thus part of the problem is to acquire sufficient data to properly define the EAC. As part of this objective, we hope to determine the large-scale general circulation of the Tasman/Coral Sea using patterns of tracers (temperature, salinity, oxygen and nutrients) and of density to estimate geostrophic circulation (baroclinic plus barotropic) at all depths.

2) In collaboration with US scientists completing a section between South America and New Zealand at about 32°S, to estimate the meridional heat and freshwater fluxes. One of the keys to accurately estimating these fluxes is to have good estimates of the transport in the western boundary current (Hall and Bryden 1982).

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3) To estimate the natural distribution of DMS/DMSP in surface and subsurface waters, the dominant phytoplankton responsible, and to assess the flux between the ocean and the atmosphere.

Principal Investigators

Objectives 1 and 2:

Dr J.A. Church
Dr G. Meyers
Mr Fred Boland
all of:
CSIRO Division of Oceanography
GPO Box 1538
Hobart, Tas 7001

Professor M. Tomczak
The Flinders University of SA
Adelaide SA

Objectives 3:

Dr Graham Jones
James Cook University of North Queensland

Cruise Objectives

- * To recover, service and re-deploy the current meter array which was deployed on FR 10/91 at 30°S
- * To complete 2 CTD/ADCP/nutrient sections as indicated on the figure.
- * To sample for, and analyse on board, DMS/DMSP

Cruise Track

A proposed cruise track is shown on the attached figure. CTD stations are shown as crosses.

ORV Equipment Required

All standard instrumentation including 24 bottle rosette, ACR deck unit, Aanderaa tape reader. Underway pH and fluorescence, profiling pH on the CTD. Deck lab for DMS work.

Equipment to be provided by users

Mooring equipment, back up ACR units.

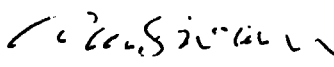
Time Estimates

Steaming	8.0 days	
CTD stations	4.5 days	
Moorings	4.0 days	
Allowance for bad weather	0.5 days	(If the weather is good then this time will be used to complete a repeat section (CTD/ADCP) across the current meter moorings.)
Total	17 days	
Time available	17 days	

Personnel

John Church	CSIRO DO	Chief Scientist
Fred Boland	CSIRO DO	
Kevin Miller	CSIRO DO	
Danny McLaughlin	CSIRO DO	
Tony Woods	CSIRO DO	
Neil White	CSIRO ORV	
Phil Adams	CSIRO ORV	
Gary Critchley	CSIRO ORV	
Mark Rayner	CSIRO ORV	
Graham Jones	James Cook University	Principal Investigator
Marc Curran	James Cook University	

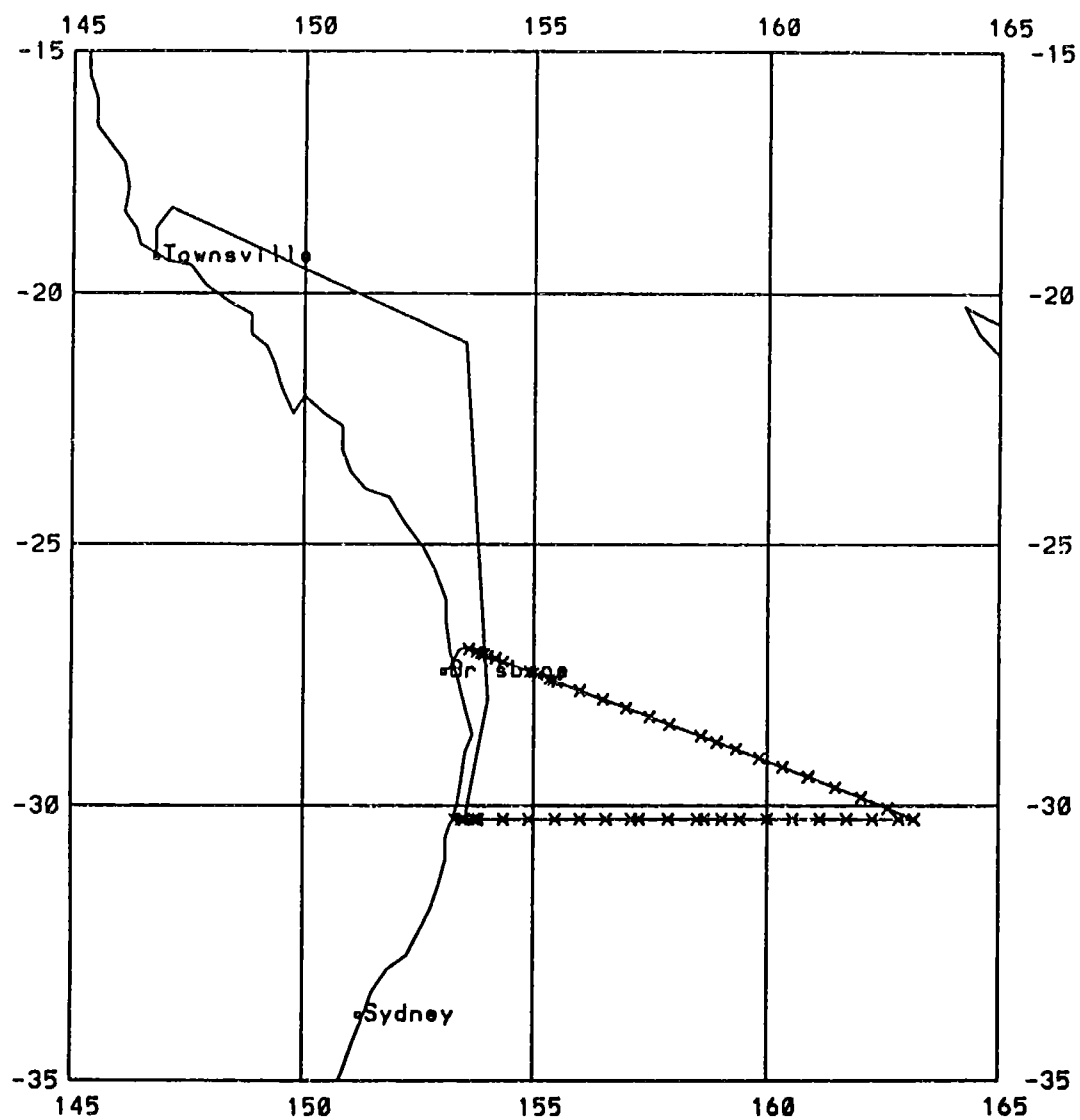
This Cruise Plan is in accordance with the directions of the National Facility Steering Committee for the oceanographic research vessel *Franklin*.


A.D. McEwan
CSIRO Division of Oceanography


G.W. Paltridge
National Facility Steering Committee

March 1992

Fr 7/92



Station number -----	Position -----	Cast depth -----	Event type -----	Station time -----	Distance (delta) -----	
	19:15.00S 146:45.00E		way			Townsville
	18:40.00S 146:45.00E		way		34.9	
	18:15.00S 147:05.00E		way		31.3	
	21:00.00S 153:30.00E		way		398.8	
	28:00.00S 154:00.00E		way		419.6	
	30:15.00S 153:30.00E		way		137.2	
1	30:15.00S 153:17.00E	50	ctd	0:15	11.3	
2	30:15.00S 153:25.00E	100	ctd	0:15	6.9	
3	30:15.00S 153:28.00E	200	ctd	0:35	2.6	
4	30:15.00S 153:30.00E	500	ctd	0:50	1.7	
5	30:15.00S 153:31.00E	1000	ctd	1:10	0.9	
6	30:15.00S 153:42.00E	2000	ctd	1:45	9.5	
7	30:15.00S 153:44.00E	3000	ctd	2:20	1.7	
8	30:15.00S 153:48.00E	4000	ctd	2:55	3.5	
9	30:15.00S 154:21.00E	4100	ctd	2:58	28.6	
10	30:15.00S 154:54.00E	4100	ctd	2:58	28.6	
11	30:15.00S 155:28.00E	4200	ctd	3:02	29.4	
12	30:15.00S 156:01.00E	4100	ctd	2:58	28.6	
13	30:15.00S 156:34.00E	4100	ctd	2:58	28.6	
14	30:15.00S 157:07.00E	4000	ctd	2:55	28.6	
15	30:15.00S 157:17.00E	3000	ctd	2:20	8.7	
16	30:15.00S 157:54.00E	2200	ctd	1:52	32.0	
17	30:15.00S 158:31.00E	3000	ctd	2:20	32.0	
18	30:15.00S 158:39.00E	3000	ctd	2:20	6.9	
19	30:15.00S 159:02.00E	2500	ctd	2:02	19.9	
20	30:15.00S 159:25.00E	2000	ctd	1:45	19.9	
21	30:15.00S 160:00.00E	1700	ctd	1:34	30.3	
22	30:15.00S 160:34.00E	1400	ctd	1:24	29.4	
23	30:15.00S 161:09.00E	1200	ctd	1:17	30.3	
24	30:15.00S 161:44.00E	1100	ctd	1:13	30.3	
25	30:15.00S 162:18.00E	1200	ctd	1:17	29.4	
26	30:15.00S 162:53.00E	1400	ctd	1:24	30.3	
27	30:15.00S 163:12.00E	1100	ctd	1:13	16.5	
28	30:03.00S 162:38.00E	1300	ctd	1:20	31.8	
29	29:51.00S 162:03.00E	1300	ctd	1:20	32.7	
30	29:40.00S 161:29.00E	1500	ctd	1:27	31.6	
31	29:28.00S 160:54.00E	1500	ctd	1:27	32.8	
32	29:17.00S 160:20.00E	2000	ctd	1:45	31.7	
33	29:07.00S 159:50.00E	3000	ctd	2:20	28.1	
34	28:57.00S 159:20.00E	3000	ctd	2:20	28.1	
35	28:49.00S 158:55.00E	3000	ctd	2:20	23.4	
36	28:42.00S 158:35.00E	3000	ctd	2:20	18.9	
37	28:29.00S 157:55.00E	3000	ctd	2:20	37.5	
38	28:20.00S 157:30.00E	4000	ctd	2:55	23.8	
39	28:10.00S 157:00.00E	4100	ctd	2:58	28.3	
40	28:00.00S 156:30.00E	4600	ctd	3:16	28.3	
41	27:50.00S 156:00.00E	4500	ctd	3:12	28.4	
42	27:40.00S 155:30.00E	4000	ctd	2:55	28.4	
43	27:38.00S 155:25.00E	3000	ctd	2:20	4.9	
44	27:37.00S 155:20.00E	2000	ctd	1:45	4.6	
45	27:32.00S 155:05.00E	2000	ctd	1:45	14.2	
46	27:30.00S 154:60.00E	3000	ctd	2:20	4.9	
47	27:28.00S 154:55.00E	4000	ctd	2:55	4.9	
48	27:17.00S 154:20.00E	4000	ctd	2:55	33.0	
49	27:13.00S 154:10.00E	2000	ctd	2:20	9.8	
50	27:10.00S 153:60.00E	3000	ctd	1:45	9.4	
51	27:08.00S 153:55.00E	1000	ctd	1:10	4.9	
52	27:07.00S 153:50.00E	500	ctd	0:50	4.6	
53	27:05.00S 153:45.00E	100	ctd	0:15	4.9	
54	27:02.00S 153:35.00E	50	ctd	0:15	9.4	
	27:00.00S 153:30.00E		way		4.9	Cape moreton
	27:03.00S 153:22.00E		way		7.7	
	27:23.00S 153:11.00E		way		22.2	
	27:26.00S 153:03.00E		way		7.7	Brisbane