

# R.V. FRANKLIN

## NATIONAL FACILITY OCEANOGRAPHIC RESEARCH VESSEL

### RESEARCH PLAN

#### CRUISE FR 6/90

|        |            |      |                        |
|--------|------------|------|------------------------|
| Sail   | Townsville | 0700 | Friday 6 July 1990     |
| Call   | Cairns     |      | Wednesday 18 July 1990 |
| Arrive | Cairns     | 1600 | Thursday 2 August 1990 |

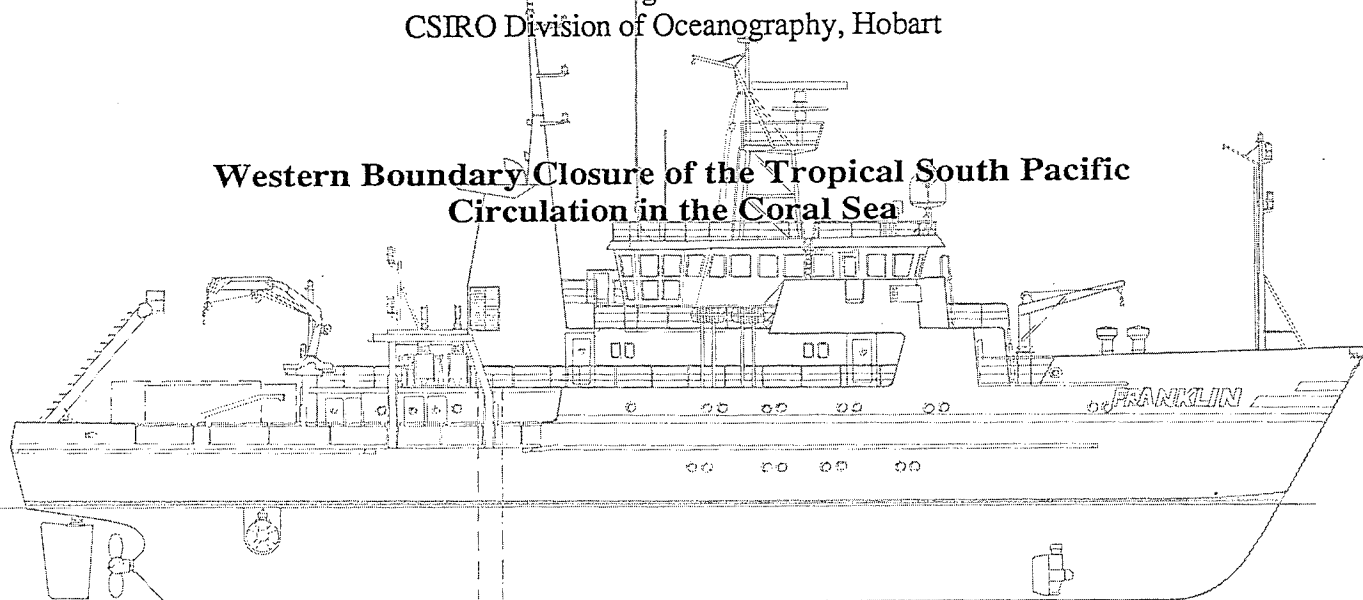
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#### Principal Investigators

**Dr Derek Burrage**  
Australian Institute of Marine Science, Townsville

**Dr George Cresswell**  
CSIRO Division of Oceanography, Hobart

**Western Boundary Closure of the Tropical South Pacific  
Circulation in the Coral Sea**



6 March 1990

For further information contact

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R.V. FRANKLIN IS OWNED AND OPERATED BY CSIRO

Research Plan  
R.V. Franklin  
FR06/90

**Itinerary:**

|                   |          |              |
|-------------------|----------|--------------|
| Depart Townsville | 0700 Hrs | 6 July, 1990 |
| Arrive Cairns     | 1600 Hrs | 2 Aug., 1990 |

**Project Title:** Western Boundary Closure of the Tropical South Pacific Circulation in the Coral Sea.

**Scientific Program:**

This cruise continues the work of FR05/85 and FR05/88 in investigating the circulation of the Coral Sea including volume transports of the South Equatorial Current (SEC), East Australian Current (EAC) and the associated Australian and PNG boundary currents. This cruise will focus on the bifurcation of the SEC and the closure of the Tropical Pacific Circulation in the western Coral Sea under winter-time conditions. It will also provide boundary data for use in numerical modelling studies of the Coral Sea circulation the results of which will be combined with radar altimetry data in the future.

**Principal Investigators:**

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**Co-investigators (non-participating)**

Dr. Lance Bode,  
Dept. of Civil and Systems Engineering,  
James Cook University of North Queensland.

Dr. Mike Bonell,  
Dept. of Geography,  
James Cook University of North Queensland.

Dr. Masamichi Inoue,  
Coastal Studies Institute,  
Louisiana State University, USA

### Cruise Objectives:

1. To observe connections and estimate volume budgets for the Coral Sea current system comprising the SEC, the Great Barrier Reef Undercurrent, the clockwise circulation around the Gulf of Papua and the outflows to the Tasman and Solomon Seas.
2. To investigate the continuity of water types and water masses in the Coral Sea current system by measuring temperature, salinity oxygen and nutrient properties.
3. To measure the surface currents associated with the Coral Sea current system using hydrographic and Acoustic Doppler current data.
4. To deploy Lagrangian satellite-tracked buoys in the four major current features.

### Cruise Track:

The proposed cruise track is shown plotted in Figure 1. Estimated time includes accumulated transit time 16.6 days and science time 10.6 days including contingencies for a total of 27.2 days.

### ORV Equipment Required:

GPS/SATNAV navigation computers  
CTD Profiling System including 12 bottle rosette  
12 (plus spares) Niskin bottles  
Starboard A-frame and oceanographic winch  
Reversing thermometers (deep sea) and Niskin bottles mounts  
Acoustic Doppler Profiler System  
XBT System including launcher and probes to 750 m. (type T7).  
Underway Thermosalinograph  
Precision Depth Recorder  
VAX 11/750 Mainframe computer and data logging minicomputers  
Meteorological station and logger  
Reference Irradiance sensor (as part of met station)  
Oxygen Analysis  
Auto-analyzer (NO<sub>3</sub>, NO<sub>2</sub>, Si(OH)<sub>4</sub>, PO<sub>4</sub>)  
Inductive Salinometer  
INMARSAT Data Link  
Clean Freezer for Nutrient samples

### User Supplied Equipment:

Receiver for radio-tracked drifters  
Antenna for radio-direction finder  
(to be fitted as for FR05/88)

### AIMS:

HP7475A plotter  
AT4 EPSON AX2 Graphics Computer  
LT7 TOSHIBA Lap Top Computer with hard disk  
AD3 XT transportable  
AD7 XT transportable  
Everest Radiometer System comprising  
Radiometer heads (to be fitted above bridge as for Ian Barton's  
radiometer during FR05/88, Field and Lab Datataker.  
DEC Compatible Terminals (2).  
ARGOS Drifters and drogues (Type MR-109)  
Additional XBT's

### CSIRO Div. of Oceanography:

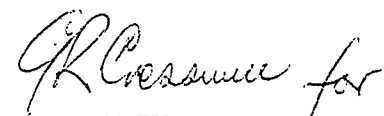
ARGOS Drifters and drogues (CSIRO type)

### Personnel:

Derek Burrage (Chief Scientist, Co-PI, AIMS)  
Craig Steinberg (AIMS)  
William Skirving (JCUNQ)  
Rowen Hughes (JCUNQ)  
Possibly one other, to be decided.

George Cresswell (Cruise Manager, Co-PI, CSIRO)  
Jan Peterson (CSIRO)  
Phil Adams (CSIRO)  
Bob Griffiths (CSIRO)  
Mark Rayner (CSIRO)

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

FR06/90 Coral Sea Circulation Closure (AIMS/CSIRO)

Commencing at Townsville 6 July, 1990

Completing at Cairns 2 August, 1990

\*\*\* Heavy line indicates Shelfbreak

---\*--- Indicates CTD stations and \* Selected Reefs

---\*--- Indicates CTD Transects

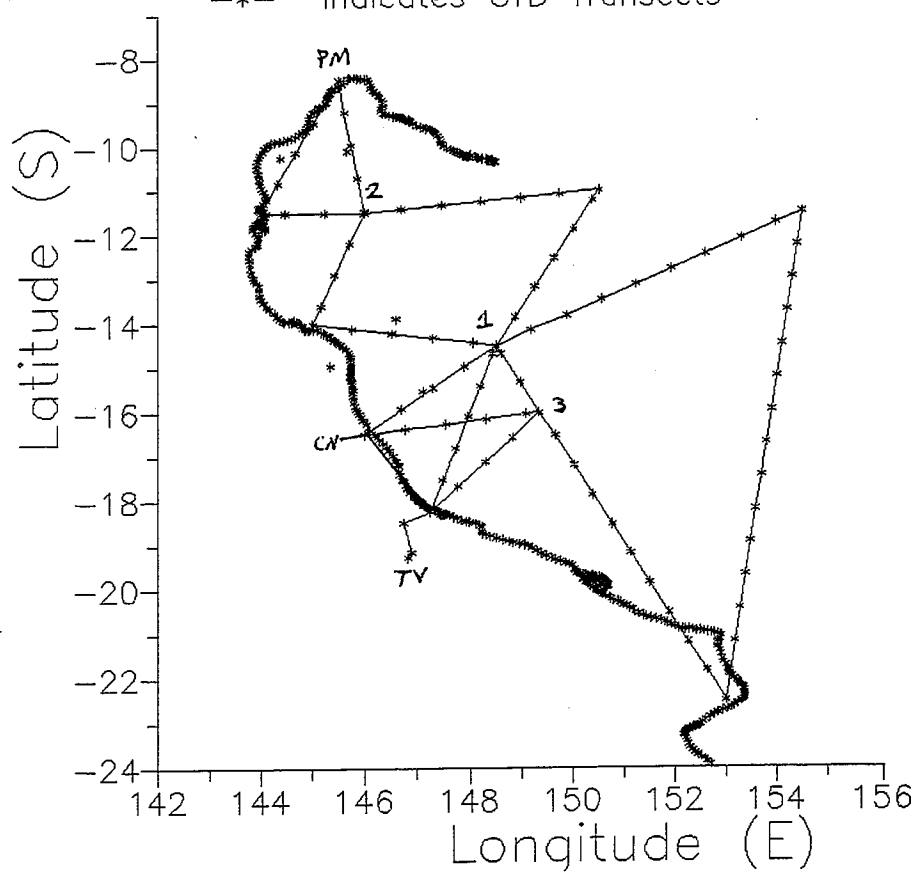


FIG 1.