

R.V. FRANKLIN

NATIONAL FACILITY OCEANOGRAPHIC RESEARCH VESSEL

RESEARCH CRUISE PLAN

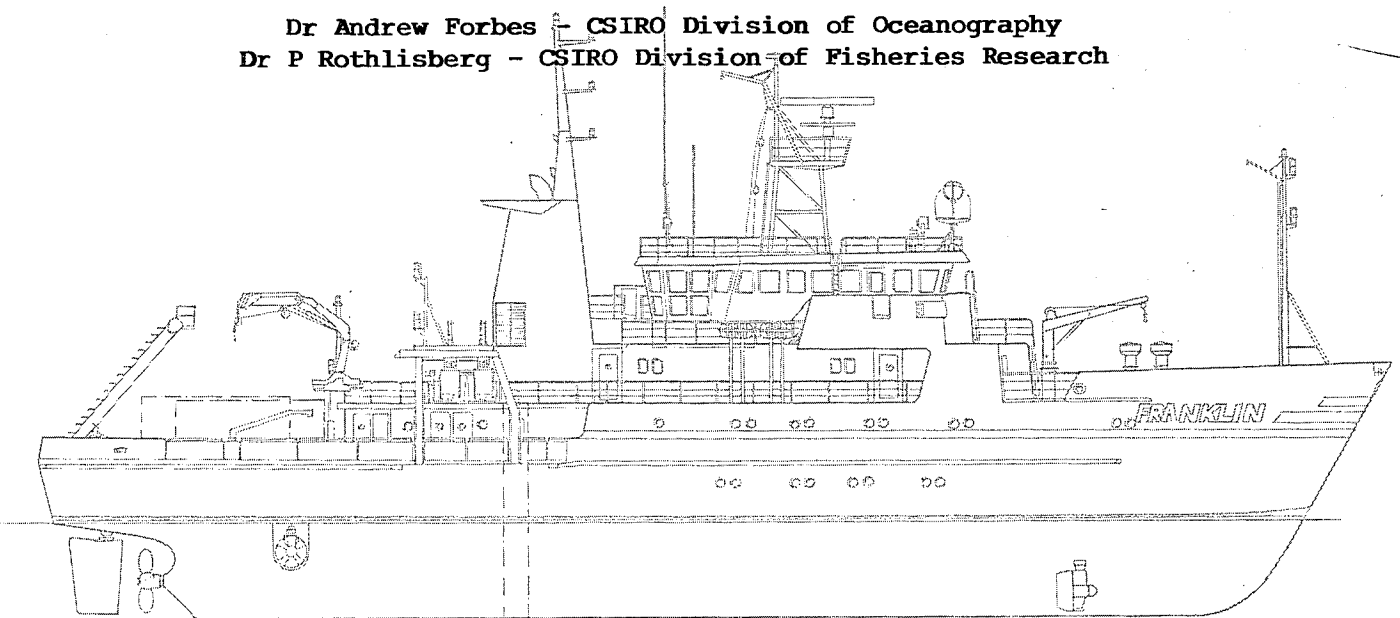
R.V. 'FRANKLIN'

CRUISE FR 2/88

19 February 1988 - 7 March 1988

Principal Investigators:

Dr Andrew Forbes - CSIRO Division of Oceanography
Dr P Rothlisberg - CSIRO Division of Fisheries Research



For further information contact

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R.V. FRANKLIN IS OWNED AND OPERATED BY CSIRO

Research Cruise Plan
R.V. Franklin
FR 2/88

Itinerary

Depart Cairns:	1000Hrs	19 February 1988
Arrive Darwin:	1400Hrs	7 March 1988

Scientific Program

This cruise will investigate the roles that tidal and wind mixing of water masses and the presence of extensive seagrass beds may play in determining nutrient distribution and cycling in the Gulf of Carpentaria. Mixing processes are intimately connected with primary and bacterial productivity, so it is also the purpose of this cruise to gather the maximum possible data on the stratification and distributions of nutrients and planktonic plant, animal and bacterial biomasses throughout the Gulf. The program calls for daily measurements of primary and bacterial productivity, fundamental properties of the Gulf about which little is known.

Principal Investigators

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Cruise Objectives

1. To map the extent of the tidally mixed bottom layer in the Gulf of Carpentaria.
2. To locate and characterise fronts separating vertically mixed regions from stratified regions.
3. To assess the contributions of wind and tidal current to vertical mixing in the Gulf.
4. To recover four month's of current, sea level and meteorological data at the Gulf's boundary with the Arafura sea and in the centre of the Gulf. Also, to obtain a series of vertical current profiles throughout the Gulf.
5. To collect sediments with a grab or corer for detailed lipid studies to estimate microbial biomass and microbial community composition along transects throughout the Gulf.
6. To determine the contribution of seagrass to Gulf sediments and suspended particulate material through the analysis of lipid biomarkers and measurement of stable carbon isotope ratios.
7. To characterise dissolved organic material in water samples collected from throughout the Gulf, utilising methods currently being developed within the Division of

Oceanography.

8. To measure particulate fluxes in the region using sediment traps. These samples will be analysed for lipids, elemental and other organic constituents.

9. To obtain an integrated sample of water column particulate and dissolved organic material using an in-situ water sampler.

10. To determine the vertical and horizontal distribution of nutrients (N,Si,P) in the Gulf.

11. To determine the phytoplankton and zooplankton standing stocks and species composition in the Gulf of Carpentaria and the Arafura Sea.

12. To measure the primary productivity at selected sites.

13. To measure bacterial production and biomass in the water column and surface sediments on Gulf-wide transects.

Cruise Track

A proposed cruise track is shown in Figure 1. Two days will be spent steaming to the Gulf, then 14 days will be spent working along east-west transects across the Gulf, followed by two days of mooring recovery and steaming to Darwin.

ORV Equipment Required

All standard instrumentation, especially:

Biological container deck laboratory
Variosens attached to the CTD
Liquid scintillation counter
Refrigerator and freezer space - generous
Ice maker

Time Estimates

Steaming @ 11kt	11.9 days
CTD stations (26)	1.1 days
CTD/Bio/Chem stations (31)	1.3 days
Mooring operations	1.5 days
Weather allowance	1.3 days

Total 17.1 days

Time available 17.1 days

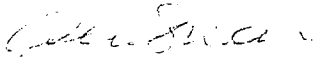
Personnel

A. Forbes (Chief Scientist)	CSIRO Div. of Oceanography
P. Nichols	"
P. Deprez	"
D. Vaudrey	"
F. Boland	"
P. Rothlisberg	CSIRO Div. of Fisheries Research
D. Moriarty	"
P. Pollard	"
C. Jackson	"

B. Barker
E. Madsen
K. Suber

ORV staff
"
"

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

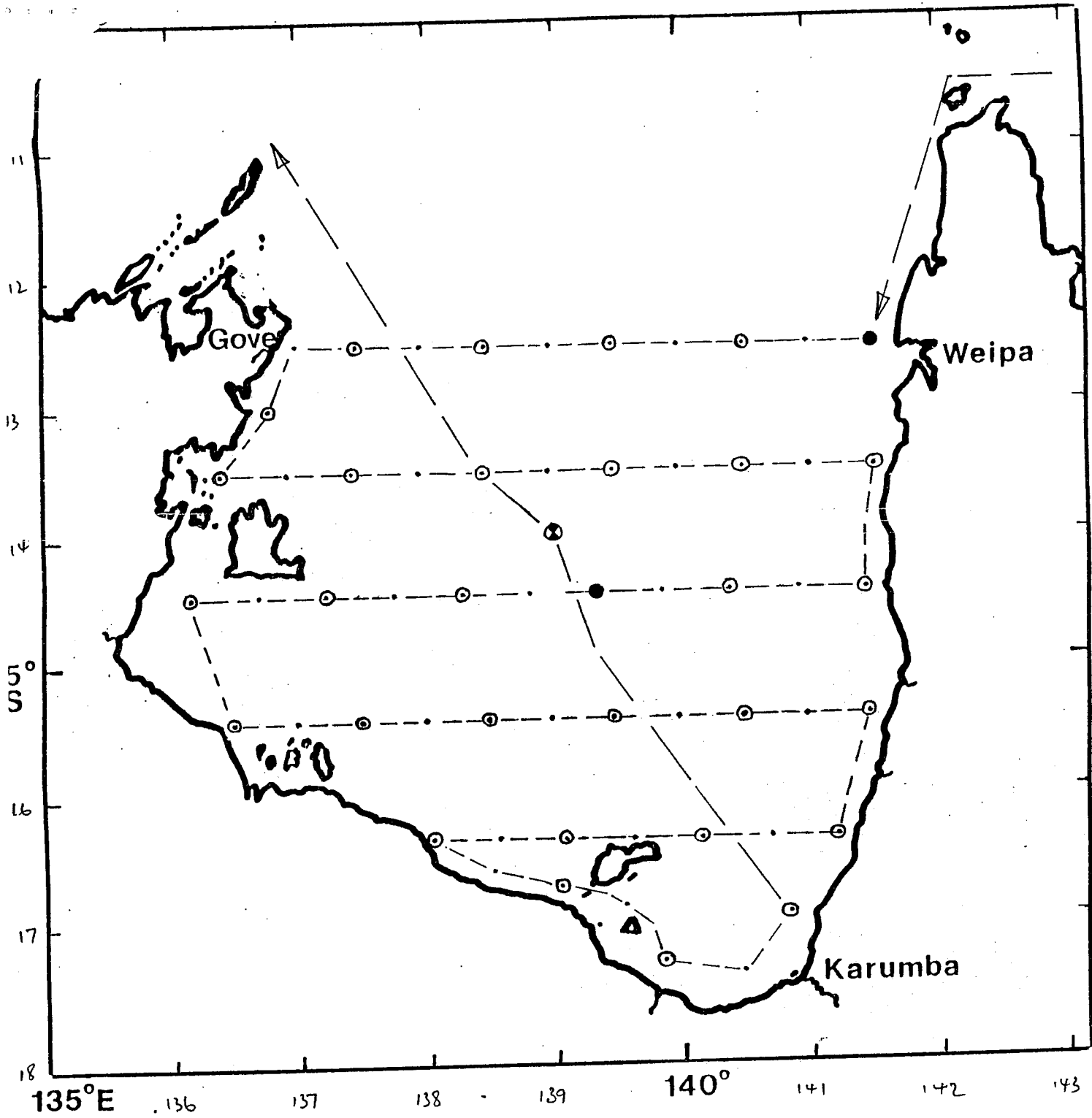


Figure 1. Proposed cruise track — — — — —
 CTD station •
 Chem/Bio station ⊙
 24 hr. station ●
 Mooring ⊗