

Cruise Plan

R.V. Franklin

FR 03/99

Itinerary

Depart Noumea 1000 hrs, 10 April, 1999.

Arrive Cairns 1000 hrs, 5 May, 1999.

Title

Sea-level magnitudes and variations recorded by continental margin sequences on the Marion Plateau, northeast Australia: Surveys for future ocean drilling.

Principal Investigators

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Scientific Program

The primary objective of FR 03/99 is to investigate the facies architecture and depositional history of the sediments and carbonate platforms of the Marion Plateau, northeast Australia (Fig. 1) using a detailed grid of multi-channel seismic data collected over the plateau. Specifically, these data will be used to:

investigate the long-term evolution of carbonate/siliciclastic depositional environments on the Marion Plateau and how they are influenced by external forces such as climatic variation and sea level change, particular attention will be paid to the development and demise of the formerly extensive carbonate platforms on the plateau;

- determine the amplitude of global sea-level fluctuations using the unique depositional geometry of the carbonate platforms on the Marion Plateau;**
- investigate variations in sequence architecture resulting from sea level change occurring at different frequencies in time.**

In addition, seismic data and sediments collected during FR 03/99 will serve as site surveys for a highly-ranked Ocean Drilling Program (ODP) proposal which, if successful, would likely be drilled in early 2001.

Cruise Objectives

Both regional and high resolution seismic surveys will be collected during FR03/99. All seismic data will be collected at 5 knots using two 40/150 cu. In. GI guns and a 24 channel streamer. After transit from Noumea to the Marion Plateau we will first collect a regional grid of seismic over the study area with an average grid spacing of 10 nmi. (Fig. 1). During collection of the regional seismic grid we will complete a preliminary interpretation of the sedimentary architecture of the Marion Plateau platform growth phases. This interpretation will enable us to locate potential drillsites for future ODP drilling. After collection of the regional grid, we will collect more detailed (0.5 nmi. spacing) seismic grids over identified drillsites. Once collection of all seismic data is completed, we will retrieve the seismic equipment and proceed to each proposed site for collection of sediment samples and seafloor photographs.

ORV Equipment needed

Moorings winch

Weak links for dredges

AGSO Equipment Provided

Note: AGSO Equipment will be loaded aboard R.V. Franklin on the 25th of March during port call to Brisbane which is scheduled for FR02/99.

Container housing seismic source compressors and workshop

Two GI-gun seismic sources

24-channel seismic streamer (600m active length plus 200m leader)

Seismic acquisition system including plotting facilities

Gravity coring system

Dredges

Weak links for dredges

All consumables related to coring (sampling buckets, core liner, core cutters, etc.)

Time estimates

Activity	Time (hrs)	Time (days)

Transit from Noumea to the Marion Plateau	75.7	3.2
Deployment of seismic streamer and source	12.0	0.5
Regional seismic survey (@ 5 knts)	325.0	13.5
Detailed survey of Site CS-01	12.0	0.5
Detailed survey of Site CS-02	12.0	0.5
Detailed survey of Site CS-03	12.0	0.5
Detailed survey of Site CS-04	12.0	0.5
Detailed survey of Sites CS-05 and CS-06	18.0	0.8
Detailed survey of Sites CS-07 and CS-08	18.0	0.8
Recovery of seismic streamer and source	5.0	0.2
Sediment sampling and bottom photography at eight sites	80.0	3.3
Transit from the Marion Plateau to Cairns	38.7	1.6

Total survey time	620.4	25.8
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Personnel

Alexandra Isern (Chief Scientist)

Flavio Anselmetti(ETH)

David Feary (AGSO)

Student TBA(ETH)

Electronics TBA(AGSO)

Gun Tech TBA(AGSO)

Gun Tech TBA(AGSO)

Seismic Acq. Tech TBA(AGSO)

Ron Plaschke (CMR Cruise Manager)

Bernadette Heaney(CMR Computing)

Mark Underwood(CMR Electronics)

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

Dr. Nan Bray

Chief, CSIRO Marine Research