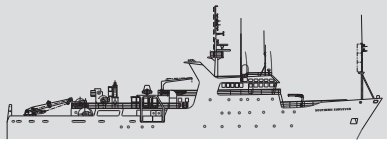

MARINE
NATIONAL FACILITY

2012 program

RV *Southern Surveyor*

voyageplan
ss2012_v01

Sustained Monitoring of the East Australian Current: Mass, Heat and Freshwater Transports.

Itinerary

Mobilise Hobart
0800hrs Wednesday 11 April 2012

Depart Brisbane
1600hrs Friday 20 April 2012

Arrive Brisbane
0800hrs Monday 30 April 2012 and demobilise

Principal Investigators

Mr. Ken Ridgway – CSIRO Marine and Atmospheric Research
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CSIRO

Scientific Objectives

The East Australian Current (EAC) is a complex and highly energetic western boundary system in the south-western Pacific off eastern Australia. It provides both the western boundary of the South Pacific gyre and the linking element between the Pacific and Indian Ocean gyres. This voyage will deploy an array of full-depth current meter and property (CTD) moorings from the continental slope to the abyssal waters off Brisbane (26oS). At this location the EAC, north of the high eddy variability, the approaching its maximum strength and its flow is relatively uniform and coherent. The aim of this observing system is to capture the mean and time-varying flow of the EAC.

This a component of IMOS, and will provide an intensive reference set of measurements of the EAC flow over sustained period for monitoring EAC transport, improved understanding of relationship of EAC and the South Pacific gyre and impact of the coastal marine ecosystem, and validation and interpretation of the current system in numerous climate and ocean models. The mooring array is located on the existing long-term XBT transects, satellite altimetry and glider tracks. The EAC deep mooring array will be complemented by a Queensland-IMOS operated inshore mooring array on the continental shelf region.

Voyage Objectives

The main aim of the voyage will be to deploy an array of (5) full-depth current meter/CTD moorings extending from the continental slope to the abyssal waters off Brisbane. The following specific objectives will be performed:

List of tasks

1. Carry out swath mapping from shelf to the end of the section and return
2. Detailed swath mapping at each mooring location
3. Deploy each of the moorings at appropriate locations including position triangulation of each mooring'
4. Complete CTD/rosette station at each location with LADCP.
5. Complete a LADCP section along the mooring line

All elements of the mooring deployments are required and hence have equal priority. The final LADCP section would have a lower ranking.

Voyage track

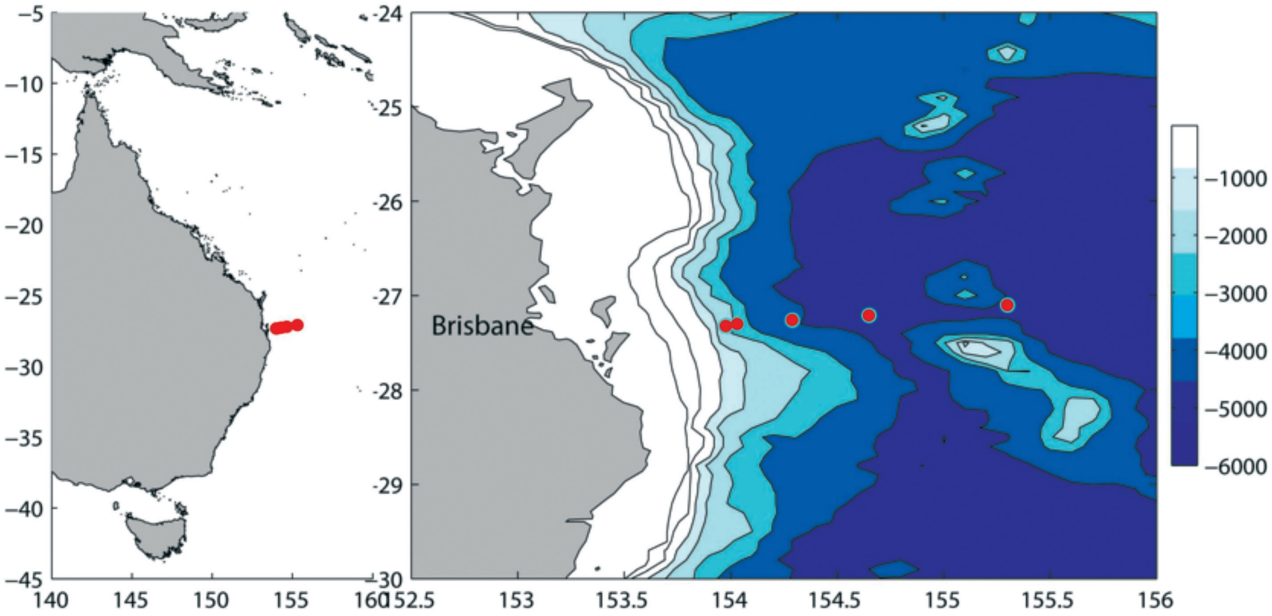

Figure 1: mooring locations are shown in red

Mooring Positions are

mooring	EAC 1	EAC 2	EAC 3	EAC 4	EAC 5
longitude	153.98	154.03	154.29	154.65	155.3
latitude	-27.31	-27.3	-27.26	-27.21	-27.1
Depth	1650	2257	4393	4814	4707

Time Estimates

1. Steaming estimates

Transit legs calculated with ship speed of 10 knots
^Swath mapping legs at 5 knots

Location	Latitude*	Longitude	Distance (km)	Distance (nm)	Total Distance	Steaming Time	Total Time
Brisbane							
Start section	-27.34	153.56	25	15	15	8	8
EAC1	-27.31	153.98	40	24	39	3	11
EAC2	-27.3	154.03	5.	3.	42	1	12
EAC3	-27.26	154.29	23	14	56	2	14
EAC1	-27.31	153.98	28	17	73	2	16
EAC2	-27.3	154.03	5.	3.	76	1	17
EAC3	-27.26	154.29	23	14	90	2	19
EAC4	-27.21	154.65	33	20	110	2	21
EAC5	-27.1	155.3	58	35.	145	4	25
^End section	-27.34	153.56	120	72	217	14	39
Brisbane			25	15	232	8	47

* Latitude and longitude are in decimal degrees

2. Work time estimates

From Brisbane we will proceed to EAC1. Intensive swath mapping surveys will be conducted at EAC1, 2 and 3 to determine the final locations of the 3 slope moorings. These moorings will then be deployed. We will then proceed to EAC 4 and complete swath survey and deployment and finally to EAC5. On the run back to Brisbane we will do a swath map of the complete mooring line, and a LADCP section.

Gridded swath mapping	12 hours
Deploy EAC1	12 hours
Triangulate EAC1	4 hours
CTD cast to 1650-m	3 hours
Gridded swath mapping	12 hours
Deploy EAC2	12 hours
Triangulate EAC2	4 hours
CTD cast to 2300-m	3 hours
Gridded swath mapping	12 hours
Deploy EAC3	12 hours
Triangulate EAC3	4 hours
CTD cast to 4400-m	3-4 hours
Gridded swath mapping	12 hours
Deploy EAC4	12 hours
Triangulate EAC4	4 hours
CTD cast to 4800-m	3-4 hours
Gridded swath mapping	12 hours
Deploy EAC5	12 hours
Triangulate EAC5	4 hours
CTD cast to 4700-m	3-4 hours
Total Work time	158 hours
Transit time	47 hours
Total	**205 hours**

Southern Surveyor Equipment

1. Standard CTD profiles are required with 24 bottle rosettes. We require ORV staff to measure oxygen, salinity, NO3+NO2, SiO2 and PO4.

2. Echosounder and recorder

3. Wide swath bathymetry

4. LADCP attached to CTD

5. trawl deck winches and other on ship equipment for mooring operations
- Net drum winch – preferably empty
- Gilson winch
- Mooring winch
- A-Frame, 2 lift points

6. XBTs for sound velocity calibration

User Equipment

Container for glass floats – 8000-kg
Anchor Pallets – 18000-kg total weight
Mooring cable and spools
Mooring instruments
Other mooring equipment
Total weight of 40000-kg
See attached sheet for complete details and proposed loading plan

Special Requests

Coordinate the CTD casts with sip operations, to avoid releasing grey water or other wastes during cast.

Personnel List

Ken Ridgway	CMAR	Chief Scientist
Bernadette Sloyan	CMAR	Co-investigator
Phil Adams	CMAR	Moorings
Dan McLaughlan	CMAR	Moorings
Jamie Derrick	CMAR	Moorings
Tara Martin	CMAR	MNF Voyage Manager
Lindsay Macdonald	CMAR	MNF Electronics Support
Hugh Barker	CMAR	MNF Computing Support
Sascha Frydman	CMAR	MNF Swath Mapping Support
Dave Terhell	CMAR	MNF Hydrochemistry Support
Craig Macaulay	CMAR	Communications
To be determined	UTAS-QMS	Moorings support, CTD
To be determined	UTAS-QMS	Moorings support, CTD
Andreas Marouchos	CMAR	Moorings engineeering

As per AMSA requirements for additional berths on Southern Surveyor, the following personnel are designated as System Support Technicians and are required to carry their original AMSA medical and AMSA Certificate of Safety Training on the voyage:

Name	**AMSA Certificate of Safety Training No.**
Tara Martin	BB05761
Hugh Barker	BB05460
Lindsay MacDonald	AS04157

This voyage plan is in accordance with the directions of the Marine National Facility Steering Committee for the Research Vessel Southern Surveyor.

Ken Ridgway

Chief Scientist
19 January 2012