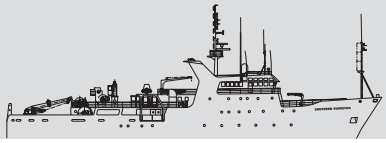

MARINE
NATIONAL FACILITY

2006 program

RV *Southern Surveyor*

voyageplan

SS04/2006

Continental shelf processes between Cape Leeuwin and the Great Australian Bight during the summer.

Itinerary

Depart Esperance 1600 hrs, Wednesday 12 April 2006
Arrive Fremantle 0800 hrs, Monday 1 May 2006

Principal Investigators

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CSIRO

Scientific Objectives

- To determine the summer circulation pattern along the continental shelf between Cape Leeuwin and the Great Australian Bight, in particular, definition of the Leeuwin Current in the region and the interaction between the eastward flowing Leeuwin Current and a colder westward flowing current inshore of the Leeuwin Current, similar to the Capes and Ningaloo Currents along the west coast.
- To determine the connectivity between the Flinders Current (FC) and the Leeuwin Under Current (LUC).
- To determine the interaction of coastal currents, phytoplankton dynamics and trophic transfer in the coastal waters of southern Australia.

Voyage Objectives

From Esperance, *Southern Surveyor* will conduct 17 cross-shelf transects (Figure 1). For each transect, 10-15 CTD stations will be occupied depending on the shelf width. The transects will extend from the coast (~30m isobath) to the 2000m contour. As in previous voyages, stations will be located at 50m depth intervals, especially along the continental slope. In addition to the standard CTD and fluorescence, nutrient data will also be collected. At selected stations Bongo nets will be deployed to obtain zooplankton samples.

Process studies (using ADCP measurements and high resolution CTD stations) will be undertaken at a submarine canyon (located between transects K, J and I, Figure 1) to examine the fine-scale features of the effect of topography on the currents.

Voyage Track

After departing Esperance, *Southern Surveyor*, will transit to the offshore end of Transect A (off Twilight Cove, Figure 1) and conduct a cross-shelf transect. This will be followed by transects B to J. Based on the data collected from transects I and J and satellite imagery, we have allowed for 22 hours to undertake additional stations and ADCP transects at high resolution to capture the circulation and distribution of properties within the submarine canyon. At the conclusion, we shall complete transects K to S and return to Fremantle. The voyage track is given on Figure 1.

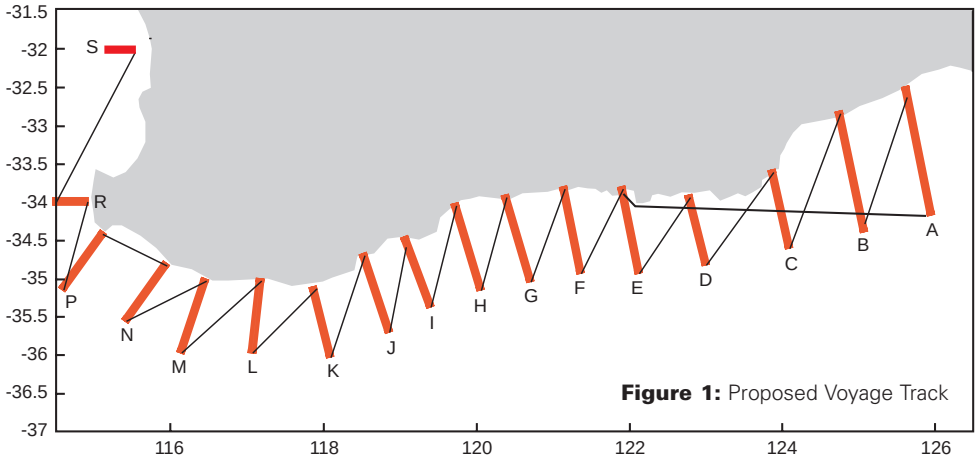

Figure 1: Proposed Voyage Track

Time Estimates

Esperance to start of transect A	(24 hrs @ 11 knots)
transect A	(5 h rs @ 11 knots + 11 hours on station)
transect A to start of transect B	(6 hrs @ 11 knots)
transect B	(5 hrs @ 11 knots + 11 hours on station)
transect B to start of transect C	(6 hrs @ 11 knots)
transect C	(6 hrs @ 11 knots + 11 hours on station)
transect C to start of transect D	(6 hrs @ 11 knots)
transect D	(6 hrs @ 11 knots + 11 hours on station)
transect D to start of transect E	(6 hrs @ 11 knots)
transect E	(5 hrs @ 11 knots + 11 hours on station)
transect E to start of transect F	(6 hrs @ 11 knots)
transect F	(5 hrs @ 11 knots + 11 hours on station)
transect F to start of transect G	(6 hrs @ 11 knots)
transect G	(5 hrs @ 11 knots + 11 hours on station)
transect G to start of transect H	(6 hrs @ 11 knots)
transect H	(5 hrs @ 11 knots + 11 hours on station)
transect H to start of transect J	(6 hrs @ 11 knots)
transect J	(6 hrs @ 11 knots + 11 hours on station)
transect J to start of transect K	(6 hrs @ 11 knots)
Process studies	(22 hours)
transect K	(6 hrs @ 11 knots + 11 hours on station)
transect K to start of transect L	(7 hrs @ 11 knots)
transect L	(6 hrs @ 11 knots + 11 hours on station)
transect L to start of transect M	(6 hrs @ 11 knots)
transect M	(7 hrs @ 11 knots + 11 hours on station)
transect M to start of transect N	(7 hrs @ 11 knots)
transect N	(6 hrs @ 11 knots + 11 hours on station)
transect N to start of transect P	(7 hrs @ 11 knots)
transect P	(7 hrs @ 11 knots + 11 hours on station)
transect P to start of transect Q	(8 hrs @ 11 knots)
transect Q	(8 hrs @ 11 knots + 11 hours on station)
transect Q to start of transect R	(8 hrs @ 11 knots)
transect R	(8 hrs @ 11 knots + 11 hours on station)
transect R to start of transect S	(12 hrs @ 11 knots)
transect S	(8 hrs @ 11 knots + 11 hours on station)
transect S to Fremantle	(2 hrs @ 11 knots)

Transit time:	239.0 hours
On station:	187.0 hours
Process studies:	22 hours
TOTAL	**448 hours**

Piggy-back Projects (if any)

None

Southern Surveyor Equipment

- Navigational: GPS, DGPS (where possible),
- Sounder
- Meteorological sensors
- Thermosalinograph with underway fluorometer
- ADCP – LADCP
- CTD with Oxygen, Transmissometer, Fluorescence, Light sensors
- Altimeter for monitoring CTD package altitude
- Rosette: 24 x 5L Niskins (with spares)
- Hydrographic sample analyses: salinity, oxygen, nitrate, silicate and phosphate
- Milli-Q water supply
- Colour printer, laser printer, unix computers
- Scintillation Counter
- Running seawater on the back deck (deck hoses fine)

User Equipment

• Turner Designs Fluorometer • Incubation racks

Personnel List

Charitha Pattiaratchi	SESE/UWA	Chief Scientist, Physical Oceanography
Will Schroeder	UA	Physical Oceanography
Florence Verspecht	SESE/UWA	Phytoplankton, nutrients
Mun Woo	SESE/UWA	Physical Oceanography
Mohd Fazil	SESE/UWA	Physical Oceanography
Peter Thompson	CMAR	Phytoplankton, nutrients
Luke Twomey	SESE/UWA	Phytoplankton, nutrients
Pru Bonham	CMAR	Phytoplankton, nutrients
Kim Brooks	SESE/UWA	Phytoplankton, nutrients
Cameron Buchanan	GA	Swath Support
Pamela Brodie	CMAR	MNF Computing/Voyage Manager
Stephen Thomas	CMAR	MNF Electronics Support (SST)
David Terhell	CMAR	MNF Hydrochemistry Support (SST)
Mark Rayner	CMAR	MNF Hydrochemistry Support (SST)

SESE – School of Environmental Systems Engineering; UWA – University of Western Australia; UA – University of Alabama; CMAR – CSIRO Marine and Atmospheric Research; GA – Geoscience Australia; MNF – Marine National Facility; SST – Systems Support Technician

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

C Pattiaratchi
Chief Scientist