

**MARINE  
NATIONAL FACILITY**

**voyageplan**  
**transit SS1-2009**

# 2009 *RV Southern Surveyor* program

*Next Wave* Transit voyage Sydney to Wellington

Supported by MNF, CMAR, ARCNESS and NSW DPI

**Itinerary**

Mobilise Sydney 1200hrs, Sunday 25 January, 2009

Depart Sydney 1600hrs, Sunday 25 January, 2009

Arrive Wellington (local time) 1000hrs, Sunday 1 February, 2009 and demobilise

**Principal Investigators**

Professor Iain Suthers (Chief Scientist)

Sydney Institute of Marine Science and UNSW

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## Scientific Objectives

“Next Wave” is a new programme of the Marine National Facility Research Vessel Southern Surveyor to encourage young scientists to try research at sea, inspired by the success of the 2006 voyage led by Dr Moninya Roughan and supported by ARCNESS. Next Wave provides the additional crew as well as a full scientific staff (electronics, hydrochemistry, computing etc) on their transit voyages between ports. The students and leaders work 12 hr shifts between 0700-2300 to operate the CTD rosette, neuston, N70 and RMT nets, XBT casts, deploy 2 ARGO floats, as well as underway TSG, fluorometer etc, bird/whale counts, etc.

Our scientific aims on the voyage are :

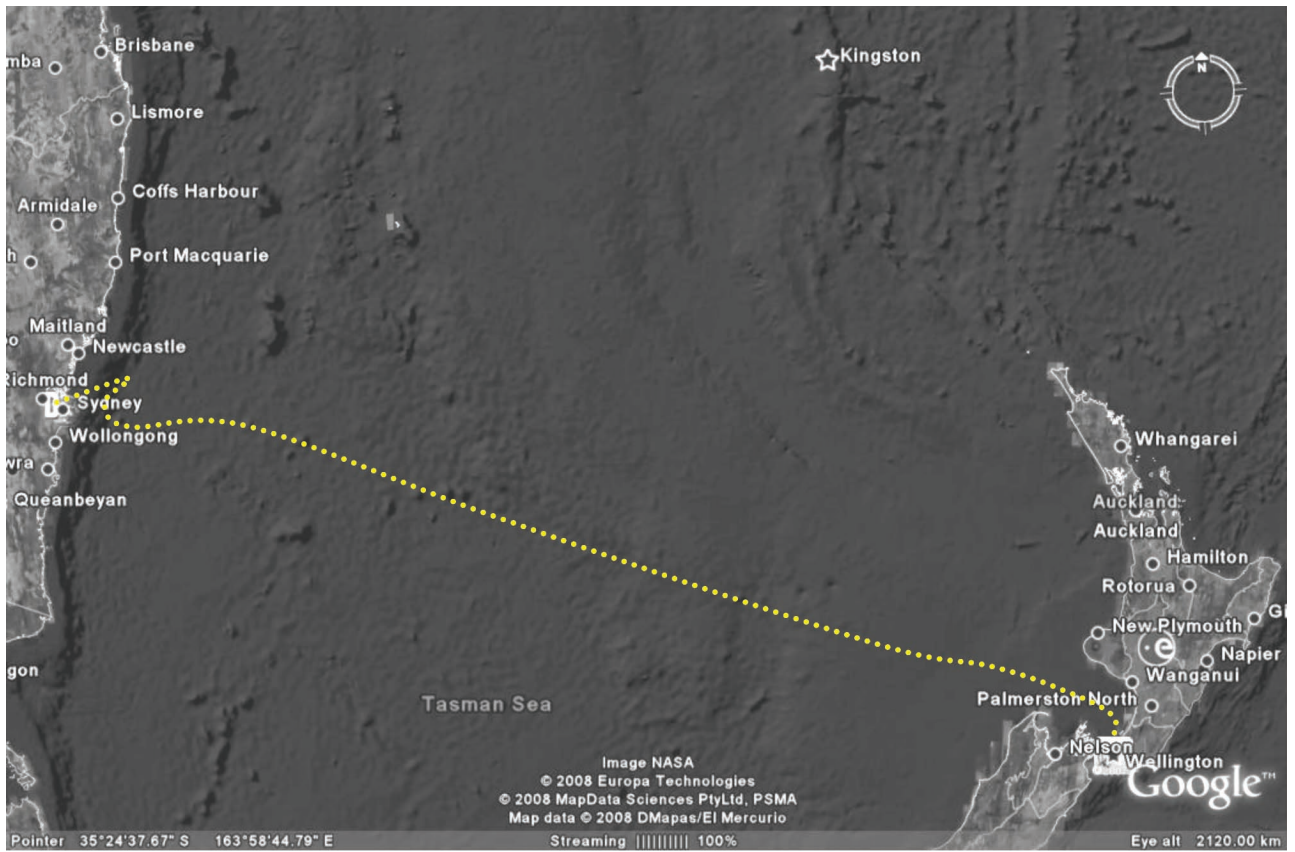
- a) To expose students to the challenges of research voyages, by using the basic equipment of the vessel and occasional lectures or tutorials by the scientific crew and the officers; to appreciate the importance of communication, mutual respect, lines of authority and safety “toolboxes” for each operation;
- b) To operate and interpret the CTD rosette, plankton nets (RMT, surface neuston, and N70 vertical haul), the ADCP and underway data; to take nutrient samples and chlorophyll calibration samples;
- c) To opportunistically investigate oceanographic features of the East Australian Current such as fronts and eddies identified from MODIS images and BlueLink;
- d) To determine spatial (negative) correlation between salps and crustacean zooplankton (copepods and krill) across the Tasman Sea.

## Voyage Objectives

Our voyage objectives are :

- i) Conduct daytime tool boxes of all gear, and occasional lectures;
- ii) To determine the trans-Tasman gradient in nutrients, phytoplankton and zooplankton (particularly salps and krill) - except within 200 nm of NZ - as well as counting seabirds and whales. CTD casts and plankton tows will occur during each evening, and will be aligned with any oceanographic features;
- iii) To compare an Eco-triplet sensor (UTS supplied) with bottle samples
- iv) If possible, to compare the nutrients and plankton net hauls inside and outside eddies that are encountered on the voyage (to be guided by MODIS images and BlueLink forecasts during the week before departure);
- v) To monitor the ADCP and underway data (T, S and fluorescence at 4 m intake) as the vessel crosses eddies and other oceanographic features;
- vi) To deploy XBTs and 2 ARGO floats.

## Voyage track



NB – no sampling will be conducted within 200 nm (24 hours) of NZ

## Time Estimates

1600hrs 25 January 2009 to 1000hrs 1 February 2009 = 162 hours total voyage.

Steaming (including underway, ADCP and swath mapping) from Sydney Wellington (1236 nmiles @ 10 knots = 124 hours, plus 4 hours in port traffic and muster drills etc., leaving approximately 34 hours for science and diversions:

Date	Activity	Duration [cumulative]
Sun 25 Jan afternoon	RMT tool box	2 h
	Neuston net tool box	1 h
	CTD + N70 tool box (1000 m pressure test?)	2 h [5]
Sun 25 Jan evening	Steaming NE	3 h
	2 stations * replicated RMT + Neuston nets	2 h
	2 * CTD to 500 m	2 h [12]
	(Despite being early in the voyage, it is essential to sample near the NSW coast, and over the shelf for subsequent comparisons)	
Mon 26 Jan evening	Afternoon lecture: The East Australian Current vs. Leeuwin	
	2 * RMT + Neuston nets	2 h
	2 * CTD to 500 m	2 h [16]
Tues 27 Jan evening	Afternoon lecture: the Integrated Marine Observing System	
	2 * RMT + Neuston nets	2 h
	2 * CTD to 500 m	2 h [20]
Wed 28 Jan evening	Afternoon lecture: Recent Slocum glider adventures	
	2 * RMT + Neuston nets	2 h
	2 * CTD to 500 m	2 h [24]
Thurs 29 Jan evening	Afternoon lecture: Careers night	
	2 * RMT + Neuston nets	2 h
	2 * CTD to 500 m	2 h [28]
Fri 30 Jan evening	Afternoon lecture: TBA	
	2 * RMT + Neuston nets	2 h
	2 * CTD to 500 m	2 h [32]
	Any remaining time could be used for a daytime net tow for comparison	
Sat 31 Jan evening	Afternoon lecture: TBA No sampling activity	
Sun 1 Feb	Arrive Wellington	

12 \* Scientific stations (2 per evening, 8 pm and 11 pm separated by a 1 or 2 hour steam);

- 3 replicate RMT trawls @ 2-3 knots, stepped oblique tow to 60 m depth, 10 min each (first sample is for general exhibition fresh in a bucket and then discarded; the next two are to be preserved immediately in formalin for scientific purposes).
- The RMT net will have a GO flow meter and a small 20 cm diameter, 100 um mesh net mounted inside it.

- 2 replicate neuston tows of 4 min each from the hydro-winch during each RMT tows
- While RMT samples being stowed, bring vessel to halt and make a CTD cast to 500 m depth (or near bottom), and swapping drums for a vertical haul from 50 m depth of the N70 net, totalling 90 min station time);
- XBTs deployed in consultation with the Voyage manager
- Deploy 2 ARGO floats, possibly during one of the evening stations.

#### **CTD set-up:**

16 bottles

PAR and the wet labs fluorometer, plus a possible, stand alone (self logging) Eco-puck triplet sensor (identical to that deployed on the IMOS gliders);

Most casts to 500 m (bathymetry permitting), with a pair of bottles popped at 500, 250, 150, 100, 75, 50, 25, 0 (the second bottle at each depth will be filtered onto a sieve for tiny salps).

#### **Piggy-back Projects**

XBTs and ARGO deployments

XBT vs CTD calibration

#### **Southern Surveyor Equipment**

ADCP,

Underway sensors;

CTD and rosette, with 16 bottles, fluorometer, PAR sensor;

If the RMT uses the conducting cable, we'd appreciate the Marine National Facilities' depth sensor.

#### **User Equipment**

- 1.8 m wide, 0.75 cm deep, Rectangular Midwater Trawl Net to be supplied by Iain Suthers, as per SS10/08, using towed body winch; RMT has a GO flow meter and 20 cm diameter 100 um mesh net
- 75 cm<sup>2</sup> Neuston net from forward boom; own block and tackle from hydro frame;
- Nally bins, and black drums with O-rings for sample storage Vacuum pump, filters for chlorophyll, isotopes. Stereo microscope
- Formalin, alcohol, jars, consumables  
A Wet labs Eco puck is on order for the voyage

## Personnel List

Name	Tentative cabin	Organisation	Position
Iain Suthers	CS	SIMS-UNSW	Chief Scientist
Malcolm Lindsay	2/3	Uni of Melb	Alternate watch leader
Jessica Essex	1	UTAS	Student
Nicholas Summons	4/5	Uni of Melb	Student
Damon Bolton	4/5	UNSW	Student
Matt O'Sullivan	6/7	Southern Cross Uni.	Student
Matthew Edgar	6/7	UOW	Student
Melanie Sun	8/9	UNSW	Student
Natalie Miller	8/9	UWA	Student
Jo Randall	10/11	UTAS	Student
Sylvia Buchanan	10/11	La Trobe Uni	Student
Stephen Thomas	Crew/sci	CMAR	MNF Electronics support, Voyage Manager
Bob Beattie	Crew/sci	CMAR	MNF Computing support
Alicia Navidad	Crew/sci	CMAR	MNF Hydrochemistry support
Peter Hughes	2/3	CMAR	MNF Hydrochemistry support

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.
Steve Thomas (ACM40504)	AS02584
Bob Beattie (ACM40511)	AS02396
Alicia Navidad (ACM40612)	AS04836

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

**Iain Suthers**  
*Chief Scientist*