



2011

RV Southern Surveyor

program

voyageplan

ss2011_v07

**Integrated Marine Observing System (IMOS)
observations for climate and carbon cycle studies
southwest of Tasmania (47°S, 140°E).**

Itinerary

Begin loading equipment Hobart 0800hrs, Monday 21 November 2011.

Depart Hobart as soon as possible following loading (expecting 1600hr on the 21st, or 1200 on the 22nd) and within constraints of crew and weather.

Arrive Hobart 1300hrs, Sunday 27 November 2011 and demobilise

Principal Investigators

Dr. Eric Schulz (Chief Scientist)

Bureau of Meteorology Phone: +61 3 9669 4618, Fax: 61 3 9669 4660

CAWCR, GPO Box 1289, Melbourne, Vic 3001 AUSTRALIA

Phone: 03 9669 4618 **Mobile:** 0425853615 **Email:** e.schulz@bom.gov.au

Associate Professor Tom Trull (not participating on voyage)

CMAR-UTAS-ACECRC PB 80, Hobart, 7001

Phone: +61 3 6226 2988, or +61 3 6232 5069 **Mobile:** 0447 795 735

Emails: Tom.Trull@csiro.au, or Tom.Trull@acecrc.org.au



Scientific Objectives

The overall scientific objective is to obtain frequent measurements of surface and deep ocean properties that control the transfer of heat, mass and CO₂ from the atmosphere to the upper ocean. The flux of heat and mass is a measure of the ocean-atmosphere interaction that controls climate variability and water mass formation on a range of scales. CO₂ is transported from the surface waters down to the ocean interior in the form of sinking particles. This “biological pump” drives carbon sequestration from the atmosphere, and writes the sedimentary record. The controls on its intensity are complex and involve processes that vary on daily, weekly, seasonal, and interannual timescales. Obtaining observations with the necessary frequency is not possible from ships. For this reason the NCRIS IMOS Southern Ocean Time Series Facility seeks to obtain this information using automated sensor measurements and sample collections.

This voyage will deploy the Southern Ocean Flux Station (SOFS-2) mooring to obtain in-air and in-sea measurements to better understand the exchange of heat, moisture, and gases between the ocean and atmosphere.

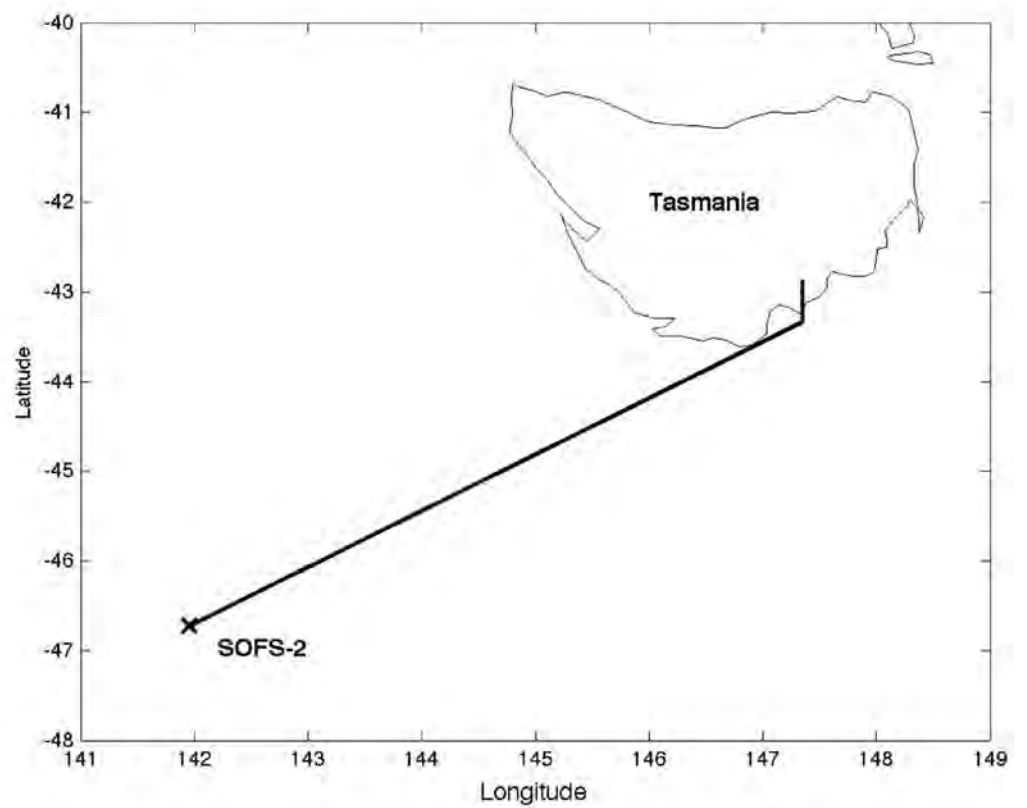
Voyage Objectives

Sequential list of tasks to achieve the overall objectives:

1. Perform test CTD cast in Storm Bay
2. Transit to SOFS-2 mooring site
3. Deploy SOFS-2
4. Perform CTD cast to 1000m at Pulse-2 site (with O₂, PAR, transmissometer sensors) and sample for salinity, nutrients, alkalinity, DIC.
5. Obtain ship-based meteorological measurements near SOFS-2 mooring, by holding ship head-to-weather near mooring for up to 24 hours
6. Near SOFS-2 site, deploy two autonomous profilers
7. Near SOFS-2, attempt recovery of ANFOG ocean glider

Priority Ranking:

1. Deploy SOFS-2 mooring
2. Deploy floats
3. CTD casts
4. Meteorological measurements
5. Recover glider



SOFS-2 location

Location

Deploy SOFS-2

46° 43.384' S

141° 57.231' E

4624m water depth

Time Estimates

Calculated with ship speed of 8 knots.

	Decimal Latitude	Decimal Longitude	Distance (km)	Distance (nm)	Total Distance	Steaming time	Total Steam
Hobart	42.87	147.35					
Storm Bay	43.33	147.35	51	28	28	4	4
SOFS-2	46.72	141.95	567	306	334	38	42
Storm Bay	43.33	141.95	567	306	640	38	80
Hobart	42.87	147.35	51	28	668	4	84

Work time estimates (total 2 days)

1. Deploy SOFS-2: 12 hours of daylight
2. Triangulate SOFS-2 4 hours
3. Meteorological measurements near SOFS-1 24 hours
4. Deploy floats and glider 6 hours
5. CTD cast to 1000m + 1 test cast. 4+2 hours

Tentative Calendar (highly weather dependent, includes early start)

Day 1: Leave Hobart at 16:00, test CTD in Storm Bay. Transit overnight and through next day to SOFS-2 Site

Day 2: Transit to SOFS-2 site

Day 3: Arrive at SOFS-2 site at 12:00 @ 8 knots. Deploy SOFS-2

Day 4: Triangulate SOFS-2 anchor location. Perform CTD to 1000m. Meteorological measurements near buoy

Day 5: Continue meteorological measurements near buoy. Deploy glider and 2 floats. Depart for Hobart evening.

Day 6: Transit to Hobart

Day 7: Arrive Hobart

Southern Surveyor Equipment

1. Stern-ramp cover fitted.
2. Rosette with 12 Niskin bottles and CTD with O₂, PAR, and fitted with MNF or user- supplied transmissometer.
4. Echosounder and recorder
5. Connections for hull-mounted hydrophone too acoustic release deck unit

User Equipment

1. ~10 cage pallets and anchor on trawl deck for storage of mooring components for SOFS-2.
2. Two acoustic deck units and 2x hand-held hydrophones
3. Grappling cannon and other mooring recovery equipment

Special Requests

1. Meteorological observations to be collected for a 24-hour period (not necessarily contiguous), buy holding the ship head to wind, with least amount of way on as possible, positioned ¼ nm downwind of SOFS-2 surface float.
2. Closely coordinate the CTD casts with ship operations – specifically to avoid releasing grey water or other wastes at this time.
3. Toxic chemicals: MSDS will be onboard for preserving water samples from CTD or underway clean seawater water collection.

Personnel List

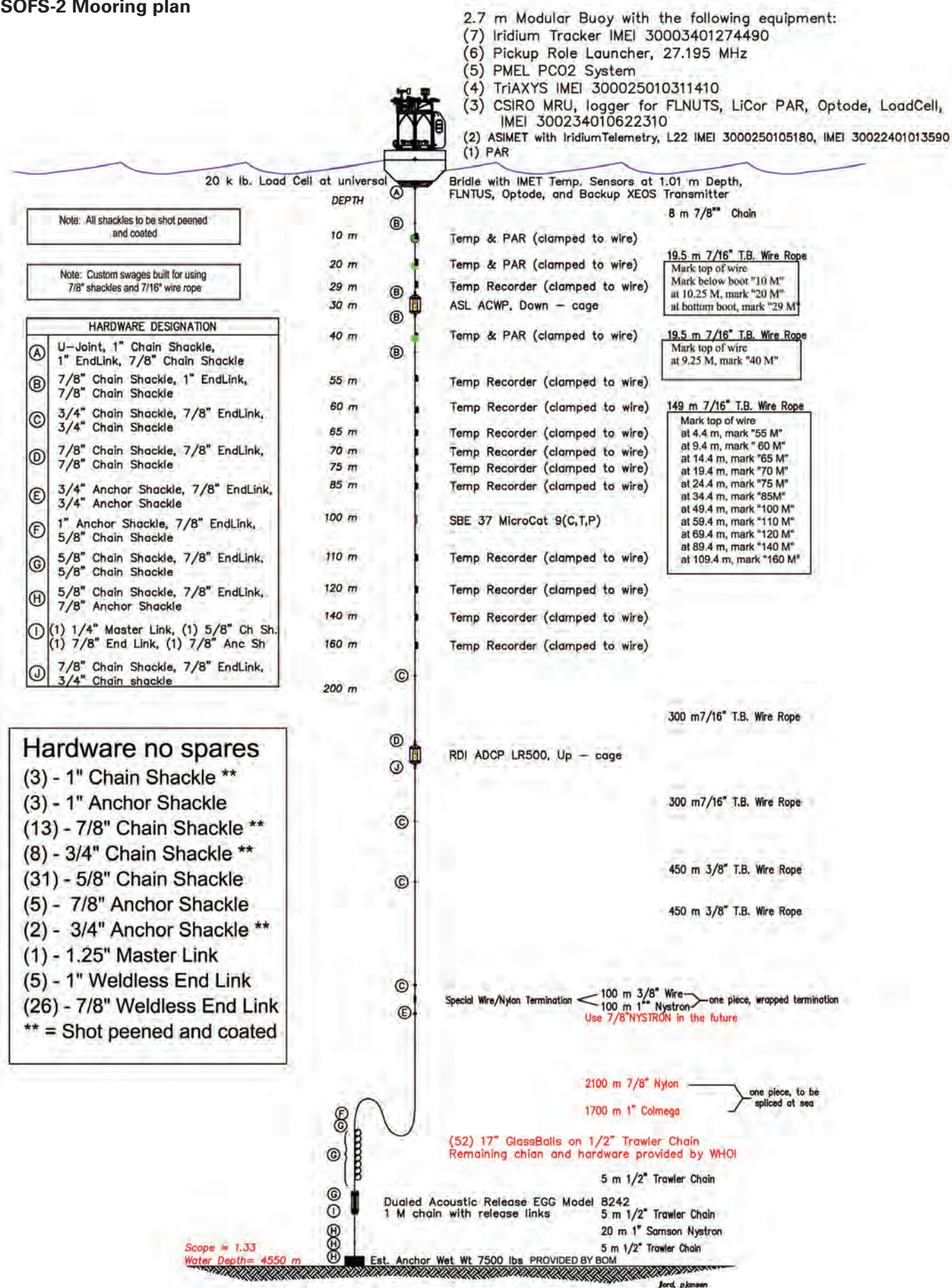
Person	Employer	Role	Cabin
1. Eric Schulz	BOM	Chief Scientist	Chief Scientist
2. Mark Rosenberg	UTAS	Moorings, CTD, Floats	Sci 6/7
3. Dave Cherry	CMAR	Moorings	Sci 8/9
4. Peter Jansen	CMAR	Moorings, gliders, electronics	Sci 10/11
5. Drew Mills	CMAR	MNF Voyage Manager	Crew/Sci 2
6. Brett Muir	CMAR	MNF Electronics Support	Sci 4/5
7. Hiski Kippo	CMAR	MNF Computing	Crew/Sci 3
8. Tara Martin	CMAR	MNF Swath Mapping	Sci 1
9. Rick Smith	CMAR	MNF Swath Mapping	Sci 2/3
10. Peter Hughes	CMAR	MNF Hydrochemistry	Crew/Sci 4

Note: all participants will be on watch on an as-needed basis

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

Eric Schulz
Chief Scientist
12 October 2011

SOFS-2 Mooring plan



Southern Ocean Flux Station #2

V3 2011-10-26

Trawl 1 deck equipment load

