RV *Investigator* Voyage Scientific Highlights and Summary

Voyage #:	IN2018_V07		
Voyage title:	SOTS: Southern Ocean Time Series automated moorings for climate and carbon cycle studies southwest of Tasmania		
Mobilisation:	Hobart, Monday, 6 August 2018 0800		
Depart:	Hobart, Monday, 20 August 2018, 1200		
Return:	Hobart, Friday, 24 August 2018, 0800		
Demobilisation:	Hobart, Friday, 24 August 2018, 0800		
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Principal Investigators:			
Project name:			
Affiliation:		Contact details:	

Scientific Highlights

The Chief Scientist

Dr Eric Schulz is a research scientist and leads a team of ocean modellers at the Australian Bureau of Meteorology. His research area is to understand and quantify air-sea fluxes with a primary application of the improvement of models, satellite based products and operational ocean forecasting.

He obtained his PhD from the University of New South Wales on 2002, undertook a Postdoctoral fellowship at CNRS and joined the Bureau in 2004.

His key achievements include:

- Quantifying the biases in air-sea fluxes used to drive ocean model forecasts
- Achieving the first year-long high latitude flux reference station mooring in the Southern Ocean

Title

SOTS: Southern Ocean Time Series automated moorings for climate and carbon cycle studies southwest of Tasmania

Purpose

The Southern Ocean is an important part of the global climate system, soaking up carbon dioxide and heat to moderate the earth's atmosphere. The Southern Ocean Time Series observatory uses a set of automated moorings to measure these processes under extreme conditions, where they are most intense and least studied. The processes occur on many timescales, from the day-night cycle up to ocean basin decadal oscillations and thus high frequency observations sustained over many years are required.

Contribution to the nation

The SOTS research improves understanding of the global climate system by focussing on a key region –the Southern Ocean. Careful sustained observations over the last decade and into the next increases our knowledge of how the ocean interacts with the atmosphere. Improved understanding is essential to enhance advice to the nation on climate variability affecting us now, develop future scenarios and impact assessments, and to make optimal decisions that will affect the nation's future. The work also directly addresses the issue of how ocean biogeochemistry and productivity respond to ocean dynamics, which is an important input to projecting future biogeochemical and ecosystem states. In addition, enhanced understanding of process occurring in the region related to clouds, ocean mixing, waves and rain will also lead to improved forecasts and warnings issued to the public.

As a result of this voyage

As a result of this voyage, we have deployed moored platforms that assemble an integrated view of the seasonality of the processes that control the productivity of the Subantarctic microbial foodweb. This analysis extends from the physics of ocean mixing and insolation, to the chemistry of ocean nutrients and the biological responses of phytoplankton, zooplankton and fish.