

data summary

Southern Surveyor Voyage ss2012_v02



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ss2012_v02

Title

“The northern Lau Backarc Basin: magmatism, tectonics, and hydrothermal activity”

Principal Investigators

Professor Richard Arculus (Chief Scientist)
The Australian National University
Research School of Earth Sciences
Australian National University, Canberra, ACT 0200
Phone: +61 2 6125 3778 E-mail: Richard.Arculus@anu.edu.au

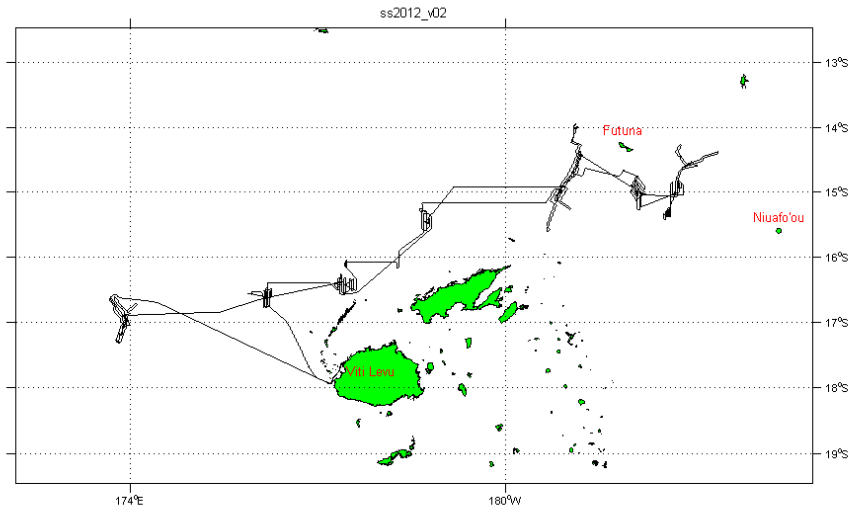
Ports

Original schedule (local time):
Depart: Lautoka (Fiji) 1000hrs, Saturday 12 May, 2012
Arrive: Lautoka (Fiji) 1000hrs, Tuesday 05 June, 2012

Date

11-May-2012 22:00:55 to 04-Jun-2012 21:31:25 (UTC)

Voyage Track



Underway Data

Navigation data is acquired using the Seapath 200 position and reference unit, which is also differentially corrected by data from the FUGRO DGPS receiver.

The Meteorological data consists of 2 relative humidity and temperature sensors; a barometer, wind sensor, and licor light sensor.

Thermosalinograph data is acquired with a Seabird TSG and remote temperature by SBE 3T. Data from a flow meter is also recorded.

Digital depth data is recorded from a Simrad EK60 sounder.

Data from “IMOS” (Integrated Marine Observing System) sensors are also included. The sensors are port and starboard radiometers and pyranometers, wind speed and direction; rain and rainrate.

See Electronics report for this voyage for instruments used and their serial numbers.

Navigation, meteorological, thermosalinograph, IMOS and depth data are preliminary quality controlled by combining all data from hourly recorded files to 5 second values in a netCDF formatted file. The combined data is referred to as “underway data”.

A combined file was made on 22-Jan-2013 by running a Java application, written by Lindsay Pender of CMAR, UwyMerger version 1.8.0 with data time range of 11-May-2012 22:00:55 to 04-Jun-2012 21:31:25 (UTC).

Completeness and Data Quality

Navigation data (latitude and longitude, speed over ground, ship heading and course over ground); meteorological data (port and starboard air temperature, port and starboard humidity, wind direction and speed, maximum wind gust, light, atmospheric pressure, uncorrected wind direction, rain and speed) and IMOS data (port and starboard radiometers, port and starboard pyranometers, derived wind direction and speed, uncorrected wind direction and speed, rain and rain rate), thermosalinograph (salinity and water temperature) data were evaluated and quality controlled.

Processing Comments

A number of minor discrepancies between the port and starboard air temperature sensors were noted (max differences of about 1.77 degrees, otherwise both sensors gave very close reading with the mean absolute difference of about 0.026 degrees). These occurred usually during periods of rapid temperature increase or decrease. Investigation of these indicated that they have usually occurred when the ship was stationary with little wind or during/following periods of rainfall. This phenomenon has probably come about due to the rapid warming of air due to the ship becoming stationary or cooling of the air temperature due to the evaporation of the rain water around the sensor housing. It is unclear as to why there should be a notable temperature differential between the port and starboard temperature sensors.

A similar discrepancy (max differences of about 8.14%) between the port and starboard humidity sensors was observed. It should also be noted that the starboard humidity sensor appears to consistently give a higher humidity reading with the mean absolute difference of about 0.37%. The recorded values are within instrument tolerance.

No port AirTemp & Humidity values were recorded between 14-May-2012 04:04:15 15-May-2012 08:09:40, the reason is most likely due to a Metstation software fault (see voyage computing report).

The courseOG values when the ship is stationary are not true values as the ship is not travelling a course however this is a feature of the current acquisition system. The QC flags have been set as good however this feature should be noted if the values during the stationary periods are to be used.

Due to a Metstation software fault some IMOS hourly rain data was incorrect. These were manually set to NaNs and their QC flag set to {'bad','none','operatorFlagged'}.

Due to a power outage (see voyage computing & electronics report for more details) on the IMOS Wind sensor and IMOS rain gauge between 31-May-2012 09:05:30 and 02-Jun-2012 23:20:30, no IMOSRain, IMOSRainRate, IMOSWindSpeed and IMOSWindDir are recorded during this period. The zeros recorded for the affected sensors have been set to NaNs and their QC flags set to {'bad','none','operatorFlagged'}.

It was noted that values recorded by the IMOS starboard Radiometer and Pyranometer were on average about 3.29 and 1.52 W/m² respectively greater than the port Radiometer and Pyranometer throughout the voyage.

IMOSPortPyranometer recorded small negative values at night time, however as the instrument closely matched the recordings from IMOSStbdPyranometer during the day time, it has been QCed as good.

No CTD water samples for salinity hydrochemistry were collected during this voyage. Therefore the TSG calibration factor of 1.000535213338116 from the previous voyage ss2012_v01 with a conductivity lag of 32 seconds were applied to the TSG salinity data and the thermosalinograph salinity QC was set to { 'good' , 'manually adjusted' , 'no error' }.

All erroneous salinity and seas surface waterTemp spikes (likely caused by air bubbles) were manually set to NaNs and their QC flag set to { 'bad', 'none', 'operatorFlagged' }.

Note: Depth data is no longer processed, however, non QCed data is still available in the underway data set. QCed depth data can be obtained from processed Swath dataset for this voyage.

Final Underway Data

The navigation, meteorological, thermosalinograph, IMOS and depth data will be entered into the CMAR divisional data warehouse. All data timestamps are in UTC.

Filename	Parameters	Resolution
ss2012_v02uwy10.csv	latitude, latitudeQC, longitude, longitudeQC, speedOG, speedOGQC, courseOG, courseOGQC, shipHeading, shipHeadingQC, uncorrWindDir, uncorrWindDirQC, uncorrWindSpeed, uncorrWindSpeedQC, waterDepth, waterDepthQC, portAirTemp, portAirTempQC, stbdAirTemp, stbdAirTempQC, portHumidity, portHumidityQC, stbdHumidity, stbdHumidityQC, windSpeed, windSpeedQC, maxWindGust, maxWindGustQC, windDir, windDirQC, PAR, PARQC, atmPressure, atmPressureQC, waterTemp, waterTempQC, salinity, salinityQC, IMOSStbdRadiometer, IMOSStbdRadiometerQC, IMOSStbdPyranometer, IMOSStbdPyranometerQC, IMOSRainRate, IMOSRainRateQC, IMOSRain, IMOSRainQC, IMOSWindSpeed, IMOSWindSpeedQC, IMOSWindDir, IMOSWindDirQC, IMOSPortRadiometer, IMOSPortRadiometerQC, IMOSPortPyranometer, IMOSPortPyranometerQC, IMOSUncorrWindSpeed, IMOSUncorrWindSpeedQC, IMOSUncorrWindDir, IMOSUncorrWindDirQC rain, rainQC	10 seconds
ss2012_v02uwy5min.csv	Ditto 10 second data	5 minutes

References

Subversion repository version of DPG Matlab generic tools 3427

Pender, L., 2000. Data Quality Control flags.

http://www.marine.csiro.au/datacentre/ext_docs/DataQualityControlFlags. Pdf

Processed by: A Sarraf , CSIRO Marine and Atmospheric Research, Hobart, Tasmania, Australia