data summary

Southern Surveyor Voyage ss2013_v02

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ss2013_v02

Title

"Carbonate sedimentation at the southern margin of reef growth in the Tasman Sea"

Principal Investigators

Professor Colin D. Woodroffe
School of Earth and Environmental Sciences, University of Wollongong
email colin@uow.edu.au
phone 02 4221 3359

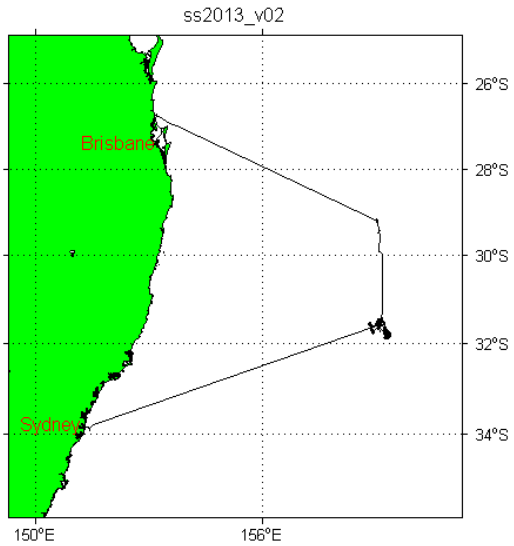
Ports

Depart*:* Brisbane 1000hrs, Friday 8 February 2013
Arrive*:* Sydney 0800hrs, Monday 25 February 2013

Date

08-Feb-2013 00:09:50 to 24-Feb-2013 22:55:50 (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 5 June 2013 and final by running a Java application, written by Lindsay Pender of CMAR, UwyMerger version 1.8.0 with data time range of 08-Feb-2013 00:09:50 to 24-Feb-2013 22:55:50 (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 1.3 degrees, otherwise both sensors gave very close reading with the mean absolute difference of about 0.04 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 the ships metal structure and air due to the ship becoming stationary or cooling of the air temperature due to the ship speeding off from stationary or due to the evaporation of 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.

Major discrepancies (max differences of about 16.2%) between the port and starboard humidity sensors were observed. It should also be noted that the port humidity sensor appears to consistently give a higher reading with the mean absolute difference of about 5.98%.
As the port humidity sensor values were unusually larger than the starboard side most of port humidity values have been flagged as suspect with the QC flag set to {'suspect','none','operatorFlagged'}. Moreover, the port humidity sensor values exceeding 100% have been adjusted to 100% with its QC flag set to {'suspect','adjusted','range'} (the non QCed values can be found in the UWY netCDF file as rawPortHumidity).
After adjusting the port humidity values the discrepancy between the port and starboard humidity sensor improved with the max difference reduced to 13.2% and mean absolute difference reduced to 5.90%.

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'}.

It was noted that values recorded by the IMOS port and starboard Radiometer and Pyranometer had a mean absolute difference of 2.54 and 10.2 W/m^2 respectively and in particular the port Radiometer values were mostly smaller than the starboard sensor.

Due to the TSG failure there are a number of periods without salinity or waterTemp data, the most notable of which is between 23-Feb-2013 15:00:30 to 24-Feb-2013 07:07:20 and 22-Feb-2013 04:23:40 to 11:32:10. The salinity and waterTemp for these periods have been NaNed and their QC flags set to {'bad','none','operatorFlagged'}. See voyage computing/electronics report for details about the TSG failure.

No CTDs were performed during this voyage. Therefore the TSG salinity scaling factor of 1.000363935002681 from the previous voyage (ss2013_v01) along with the TSG lag of 32

seconds was applied to the TSG salinity data and the thermosalingraph salinity QC was set to {‘good’ ,‘manually adjusted’,‘no error’}.

Note: Depth data is no longer processed. The non QCed data is available in the underway netCDF file. The QCed depth data could be obtained from the 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
ss2013_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, IMOStbdPyranometer, IMOSStbdPyranometerQC, IMOSRainRate, IMOSRainRateQC, IMOSRain, IMOSRainQC, IMOSWindSpeed, IMOSWindSpeedQC, IMOSWindDir,IMOSWindDirQC, IMOSPortRadiometer, MOSPortRadiometerQC, IMOSPortPyranometer, IMOSPortPyranometerQC, IMOSUncorrWindSpeed,MOSUncorrWindSpeedQC, IMOSUncorrWindDir,IMOSUncorrWindDirQC rain, rainQC	10 seconds
ss2013_v02uwy5min.csv	Ditto 10 second data	5 minutes

References

Subversion repository version of DPG Matlab generic tools 3974
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