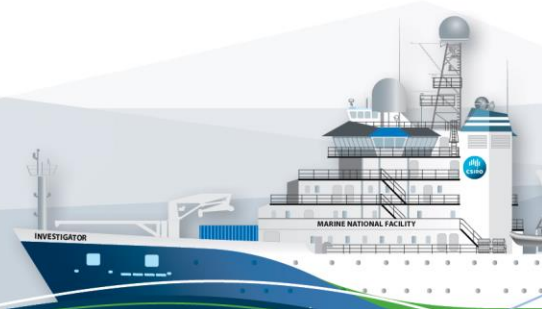# RV *Investigator*

ADCP Processing Report

Voyage #:	in2108_v02
Voyage title:	SOTS: Southern Ocean Time Series automated moorings for climate and carbon cycle studies south west Tasmania; Subantarctic Biogeochemistry of Carbon and Iron.
Depart:	Hobart, 0800 Saturday 3 March 2018
Return:	Hobart, 0920 Wednesday, 21 March 2018
Chief Scientist:	Tom Trull
Affiliation:	CSIRO
Report compiled by:	Karl Malakoff

Contents

1   Summary

Data was collected during in2018_v02 for the entire duration of the voyage. Data was collected using UHDAS and post-processed using CODAS.

The os150(150kHz) ADCP was not operational during this voyage. The os75(75kHz) was run for the entire cruise.

The ADCP was operated in narrowband mode with 8m bins for the duration of the voyage.

Internal triggering was used as external triggering was found to be unstable on previous voyages.

The drop keel was at 2m for most of the voyage. It was raised to flush with hull on the 13th of March at 0118. UHDAS logging was not restarted till 0422 resulting in several hours of bad data.

See the voyage computing and electronics report for more details regarding data acquisition.

2   Processing Background

The University of Hawaii's CODAS software was used for data post-processing. Revision 2417:49ecfa0cc6c5 dated Sep 13 2017 was used.

3   Processing Notes

Overall data quality and coverage was good. There is a large gap in data caused by bad weather upon the return trip to Hobart. The ADCP as not logging while triangulating moorings or alongside in Hobart.

There are other small gaps in data cause by a low percent good on ping returns.

Some profiles were edited out, both manually and using CODAS's automatic processing. The dataset was rotated by 0.17 degrees with an amplitude correction of 1.0030.

Some ringing was found. The top 1 – 2 bins, or about 35 meters, were edited out when needed. This effect of this was minimal while on station and did not always occur while underway.

CTD wire interference can be seen in some bins while on station. This has been edited out.

4 netCDF Data Headers

```
netcdf in2018_v02_os75nb {
dimensions:
        time = 4581 ;
        depth_cell = 60 ;
variables:
        int trajectory ;
                trajectory:standard_name = "trajectory_id" ;
        double time(time) ;
                time:long_name = "Decimal day" ;
                time:units = "days since 2018-01-01 00:00:00" ;
                time:C_format = "%12.5f" ;
                time:standard_name = "time" ;
                time:data_min = 61.4943055555556 ;
                time:data_max = 78.8410763888889 ;
        double lon(time) ;
                lon:missing_value = 1.e+38 ;
                lon:long_name = "Longitude" ;
                lon:units = "degrees_east" ;
                lon:C_format = "%9.4f" ;
                lon:standard_name = "longitude" ;
                lon:data_min = 141.510961111111 ;
                lon:data_max = 147.548613888889 ;
        double lat(time) ;
                lat:missing_value = 1.e+38 ;
                lat:long_name = "Latitude" ;
                lat:units = "degrees_north" ;
                lat:C_format = "%9.4f" ;
                lat:standard_name = "latitude" ;
                lat:data_min = -47.1580972222222 ;
                lat:data_max = -42.8849361111111 ;
        float depth(time, depth_cell) ;
                depth:missing_value = 1.e+38f ;
                depth:long_name = "Depth" ;
                depth:units = "meter" ;
                depth:C_format = "%8.2f" ;
                depth:positive = "down" ;
                depth:data_min = 29.93f ;
                depth:data_max = 974.f ;
        float u(time, depth_cell) ;
                u:missing_value = 1.e+38f ;
                u:long_name = "Zonal velocity component" ;
                u:units = "meter second-1" ;
                u:C_format = "%7.2f" ;
                u:data_min = -0.5526624f ;
                u:data_max = 0.5899339f ;
        float v(time, depth_cell) ;
                v:missing_value = 1.e+38f ;
                v:long_name = "Meridional velocity component" ;
                v:units = "meter second-1" ;
                v:C_format = "%7.2f" ;
                v:data_min = -0.5440247f ;
                v:data_max = 0.5531327f ;
        short amp(time, depth_cell) ;
                amp:missing_value = 32767s ;
                amp:long_name = "Received signal strength" ;
                amp:C_format = "%d" ;
                amp:data_min = 7s ;
                amp:data_max = 218s ;
        byte pg(time, depth_cell) ;
                pg:missing_value = -1b ;
                pg:long_name = "Percent good pings" ;
                pg:C_format = "%d" ;
                pg:data_min = 0b ;
                pg:data_max = 100b ;
```

```
        byte pflag(time, depth_cell) ;
                pflag:long_name = "Editing flags" ;
                pflag:C_format = "%d" ;
                pflag:data_min = 0b ;
                pflag:data_max = 7b ;
        float heading(time) ;
                heading:missing_value = 1.e+38f ;
                heading:long_name = "Ship heading" ;
                heading:units = "degrees" ;
                heading:C_format = "%6.1f" ;
                heading:data_min = -179.9881f ;
                heading:data_max = 179.8437f ;
        float tr_temp(time) ;
                tr_temp:missing_value = 1.e+38f ;
                tr_temp:long_name = "ADCP transducer temperature" ;
                tr_temp:units = "Celsius" ;
                tr_temp:C_format = "%4.1f" ;
                tr_temp:data_min = 10.4153f ;
                tr_temp:data_max = 19.08398f ;
        byte num_pings(time) ;
                num_pings:long_name = "Number of pings averaged per ensemble" ;
                num_pings:units = "None" ;
                num_pings:C_format = "%d" ;
                num_pings:data_min = -124b ;
                num_pings:data_max = 126b ;
        float uship(time) ;
                uship:missing_value = 1.e+38f ;
                uship:long_name = "Ship zonal velocity component" ;
                uship:units = "meter second-1" ;
                uship:C_format = "%9.4f" ;
                uship:data_min = -5.727823f ;
                uship:data_max = 6.236604f ;
        float vship(time) ;
                vship:missing_value = 1.e+38f ;
                vship:long_name = "Ship meridional velocity component" ;
                vship:units = "meter second-1" ;
                vship:C_format = "%9.4f" ;
                vship:data_min = -6.00237f ;
                vship:data_max = 6.356496f ;

// global attributes:
                :featureType = "trajectoryProfile" ;
                :history = "Created: 2018-05-18 01:49:35 UTC" ;
                :Conventions = "COARDS" ;
                :software = "pycurrents" ;
                :hg_changeset = "2417:49ecfa0cc6c5" ;
                :title = "Shipboard ADCP velocity profiles" ;
                :description = "Shipboard ADCP velocity profiles from in2018_v02 using instrument
os5nb" ;
                :cruise_id = "in2018_v02" ;
                :sonar = "os5nb" ;
                :yearbase = 2018 ;
}
```