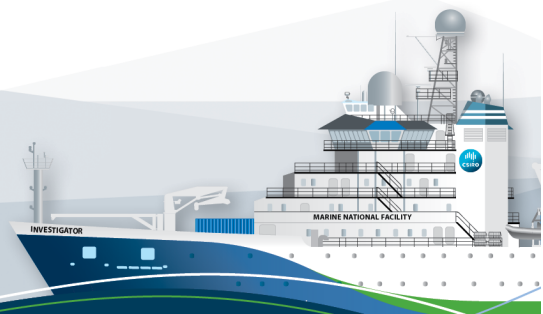
RV *Investigator*

ADCP Processing Report

Voyage #:	in2017_v05
Voyage title:	Long-term recovery of trawled marine communities
Depart:	0800, Wednesday 11 October 2017, Broome, WA
Return:	0800, Friday November 10, 2017, Henderson (Fremantle), WA
Chief Scientist:	John Keesing
Affiliation:	CSIRO O&A
Report compiled by:	Hugh Barker



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1 Summary

Data was collected during in2017_v05 for the duration of the voyage. Data was collected using UHDAS and post-processed using CODAS.

The RDI Ocean Surveyor 150kHz ADCP was not operated due to a hardware fault, so all data was collected with the RDI Ocean Surveyor 75kHz ADCP.

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

The drop keel was at 6m below the waterline for the duration of the voyage.

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 269:5bd8c22f6560 dated Oct 19 2016 was used.

3 Processing Notes

The majority of the voyage was in very shallow water (~50m) – the OS75 is primarily a deep water instrument, so there are some gaps in the data where quality was not acceptable. The operating mode of the ADCPs was modified by on board support staff to best suit water depth and operational requirements. Expert advice from Jules Hummon at the University of Hawaii was sought due to the challenges of operating an OS75 in shallow water.

A mix of broadband and narrowband data collection was used – these datasets were processed separately, and the final netCDF output files concatenated into a single file covering the entire voyage.

The ADCP was run in broadband mode for the following periods:

14-Oct-2017 20:16:50 to 04-Nov-2017 18:34:58

07-Nov-2017 05:31:52 to 07-Nov-2017 13:41:53

The ADCP was run in narrowband mode for the following periods:

11-Oct-2017 01:16:11 to 14-Oct-2017 20:06:11

04-Nov-2017 19:16:12 to 05-Nov-2017 19:11:11

06-Nov-2017 20:27:23 to 07-Nov-2017 05:12:23

Please see the webpy_bb and webpy_nb folders for overview plots of collected data.

4 netCDF Data Header (Combined File)

```
netcdf in2017_v05_os75 {
dimensions:
        time = UNLIMITED ; // (7614 currently)
        depth_cell = 60 ;
```

```
variables:
        short amp(time, depth_cell) ;
                amp:missing_value = 32767s ;
                amp:long_name = "Received signal strength" ;
                amp:C_format = "%d" ;
                amp:data_min = 20s ;
                amp:data_max = 218s ;
        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 = 21.93f ;
                depth:data_max = 493.99f ;
        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 = -179.6018f ;
                heading:data_max = 178.1604f ;
        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 = -19.9661083333333 ;
                lat:data_max = -17.9626722222222 ;
        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 = 117.597913888889 ;
                lon:data_max = 122.120955555556 ;
        byte pflag(time, depth_cell) ;
                pflag:long_name = "Editing flags" ;
                pflag:C_format = "%d" ;
                pflag:data_min = 0b ;
                pflag:data_max = 7b ;
        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 ;
        double time(time) ;
                time:long_name = "Decimal day" ;
                time:units = "days since 2017-01-01 00:00:00" ;
                time:C_format = "%12.5f" ;
                time:standard_name = "time" ;
                time:data_min = 283.052905092593 ;
                time:data_max = 286.837627314815 ;
        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 = 25.14275f ;
                tr_temp:data_max = 27.61337f ;
        int trajectory ;
                trajectory:standard_name = "trajectory_id" ;
        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 = -1.106773f ;
                u:data_max = 0.4721083f ;
        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 = -6.327276f ;
                uship:data_max = 6.385153f ;
        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 = -0.776444f ;
                v:data_max = 0.5294397f ;
        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 = -6.354496f ;
                vship:data_max = 6.36059f ;

// global attributes:
                :featureType = "trajectoryProfile" ;
                :history = "Thu Apr 19 15:32:33 2018: ncrcat ../os75nb/in2017_v05_282_286_time.nc
in2017_v05_286bb_time.nc ../os75nb/in2017_v05_307_time.nc ../os75nb/in2017_v05_309_time.nc
in2017_v05_310bb_time.nc in2017_v05_os75.nc\n",
                        "Thu Apr 19 15:30:24 2018: ncks --mk_rec_dmn time in2017_v05_282_286.nc
in2017_v05_282_286_time.nc\n",
                        "Created: 2018-04-19 04:40:19 UTC" ;
                :Conventions = "COARDS" ;
                :software = "pycurrents" ;
                :hg_changeset = "2320:184969c40ec8" ;
                :title = "Shipboard ADCP velocity profiles" ;
                :description = "Shipboard ADCP velocity profiles from in2017_v05 using instrument
os75" ;
                :cruise_id = "in2017_v05" ;
                :sonar = "os75" ;
                :NCO = "\"4.5.4\"" ;
                :nco_openmp_thread_number = 1 ;
}
```