# RV *Investigator*

# ADCP Processing Report

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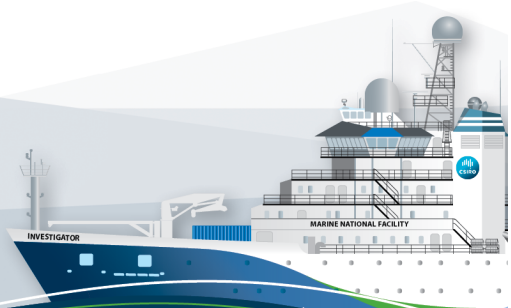
|---|---|
| **Voyage #:** | in2015_c01 |
| **Voyage title:** | GAB deep water geological and benthic ecology program |
| **Depart:** | Hobart, 0800 Thursday, 21 October 2015 |
| **Return:** | Port Lincoln, 0800 Saturday, 28th November 2015 |
| **Voyage Manager:** | Steve McCullum |
| **Chief Scientist:** | Andy Ross |
| **Affiliation:** | CSIRO Energy |
| **Report compiled by:** | Hugh Barker |



# Contents

# 1 Summary

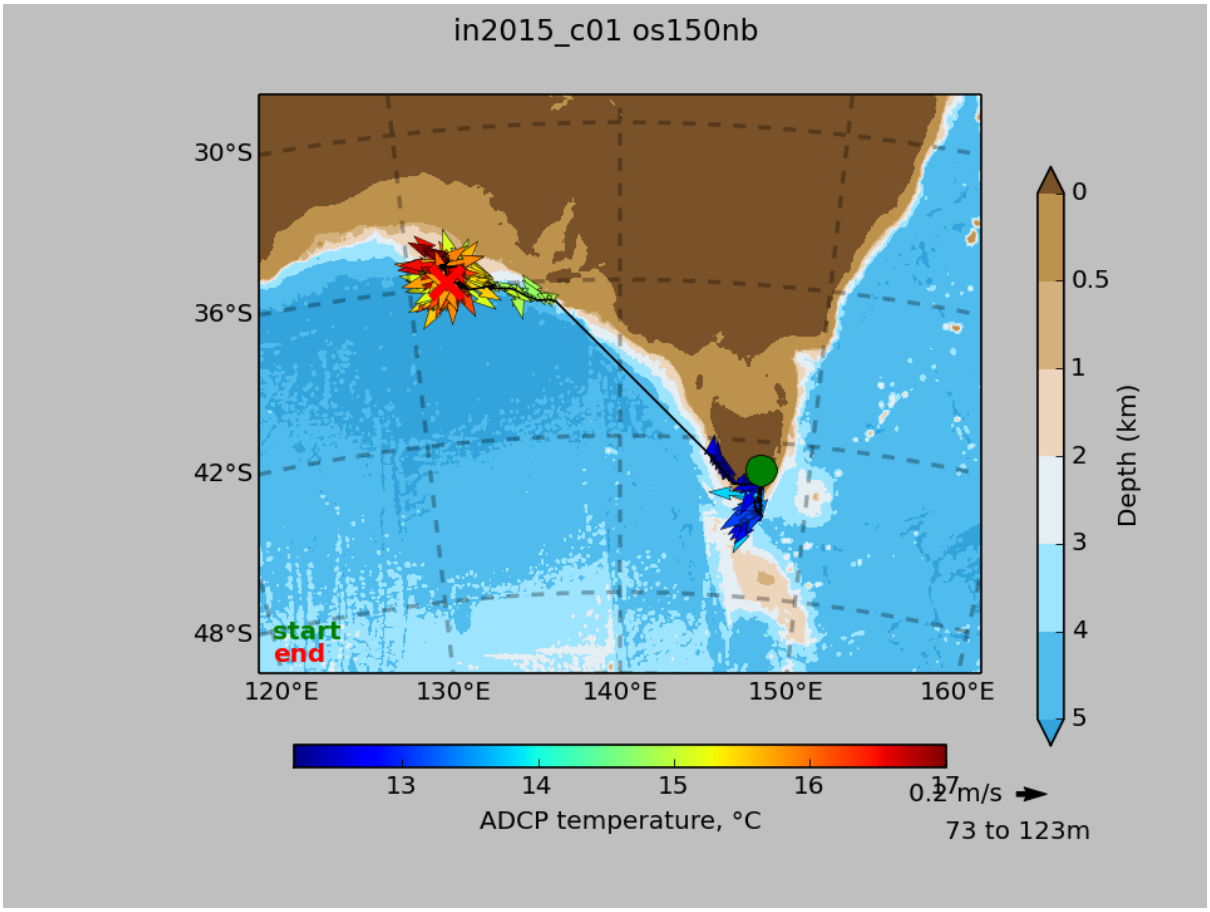
Both the os75 and os150 were operated for most of the voyage. On the 5-Nov-2015 the OS75 stopped working due to an electronics fault.

Both ADCPs were operated externally triggered for the duration of the voyage, which caused some gaps in data coverage due to issues with K-Sync.

The os75 was operated with 16m bins, which the os150 used 8m bins.

Apart from the above noted gaps in coverage, data quality was generally good, and required minimal editing. Better data quality is achievable by internally triggering the ADCPs.

For further details on data acquisition, see computing and instrumentation voyage reports.




# 2 Processing Background

The University of Hawaii's CODAS software system was used for data processing. Revision 262:6e156571631e, dated May 27 2015, was used.

See their website, http://currents.soest.hawaii.edu/docs/doc/codas_doc/index.html, for further details.

Data was processed using raw single ping (*.ENR files), along with Seapath (position, attitude) and

gyro devices for position information.

# 3 Data Header

## 3.1 os150

```
netcdf os150nb {
dimensions:
      time = 5635 ;
      depth_cell = 50 ;
variables:
      int trajectory ;
            trajectory:standard_name = "trajectory_id" ;
      float vship(time) ;
            vship:data_max = 5.87842f ;
            vship:long_name = "Ship meridional velocity component" ;
            vship:C_format = "%9.4f" ;
            vship:data_min = -6.093502f ;
            vship:units = "meter second-1" ;
            vship:missing_value = 1.e+38f ;
      float v(time, depth_cell) ;
            v:data_max = 0.9336023f ;
            v:long_name = "Meridional velocity component" ;
            v:C_format = "%7.2f" ;
            v:data_min = -1.471274f ;
            v:units = "meter second-1" ;
            v:missing_value = 1.e+38f ;
      float uship(time) ;
            uship:data_max = 5.780385f ;
            uship:long_name = "Ship zonal velocity component" ;
            uship:C_format = "%9.4f" ;
            uship:data_min = -6.237132f ;
            uship:units = "meter second-1" ;
            uship:missing_value = 1.e+38f ;
      float u(time, depth_cell) ;
            u:data_max = 1.495219f ;
            u:long_name = "Zonal velocity component" ;
            u:C_format = "%7.2f" ;
            u:data_min = -2.581668f ;
            u:units = "meter second-1" ;
            u:missing_value = 1.e+38f ;
      float tr_temp(time) ;
            tr_temp:data_max = 18.46567f ;
            tr_temp:long_name = "ADCP transducer temperature" ;
            tr_temp:C_format = "%4.1f" ;
            tr_temp:data_min = 12.14415f ;
            tr_temp:units = "Celsius" ;
```

```
      tr_temp:missing_value = 1.e+38f ;
double time(time) ;
      time:C_format = "%12.5f" ;
      time:long_name = "Decimal day" ;
      time:standard_name = "time" ;
      time:data_min = 294.452164351852 ;
      time:units = "days since 2015-01-01 00:00:00" ;
      time:data_max = 330.850706018519 ;
byte pg(time, depth_cell) ;
      pg:long_name = "Percent good pings" ;
      pg:missing_value = -1b ;
      pg:data_min = 0b ;
      pg:data_max = 100b ;
      pg:C_format = "%d" ;
byte pflag(time, depth_cell) ;
      pflag:long_name = "Editing flags" ;
      pflag:missing_value = -1b ;
      pflag:data_min = 0b ;
      pflag:data_max = 7b ;
      pflag:C_format = "%d" ;
double lon(time) ;
      lon:C_format = "%9.4f" ;
      lon:long_name = "Longitude" ;
      lon:standard_name = "longitude" ;
      lon:data_min = 131.534402777778 ;
      lon:units = "degrees_east" ;
      lon:missing_value = 1.e+38 ;
      lon:data_max = 147.666930555556 ;
double lat(time) ;
      lat:C_format = "%9.4f" ;
      lat:long_name = "Latitude" ;
      lat:standard_name = "latitude" ;
      lat:data_min = -44.8051472222222 ;
      lat:units = "degrees_north" ;
      lat:missing_value = 1.e+38 ;
      lat:data_max = -34.9829166666667 ;
float heading(time) ;
      heading:data_max = 179.9774f ;
      heading:long_name = "Ship heading" ;
      heading:C_format = "%6.1f" ;
      heading:data_min = -179.9986f ;
      heading:units = "degrees" ;
      heading:missing_value = 1.e+38f ;
float depth(time, depth_cell) ;
      depth:C_format = "%8.2f" ;
      depth:positive = "down" ;
      depth:long_name = "Depth" ;
      depth:data_min = 23.63f ;
      depth:units = "meter" ;
      depth:missing_value = 1.e+38f ;
```

```
            depth:data_max = 415.68f ;
      short amp(time, depth_cell) ;
            amp:long_name = "Received signal strength" ;
            amp:missing_value = 32767s ;
            amp:data_min = 19s ;
            amp:data_max = 230s ;
            amp:C_format = "%d" ;

// global attributes:
            :featureType = "trajectoryProfile" ;
            :description = "Shipboard ADCP velocity profiles from
in2015_c01 using instrument os150nb" ;
            :title = "Shipboard ADCP velocity profiles" ;
            :cruise_id = "in2015_c01" ;
            :Conventions = "COARDS" ;
            :sonar = "os150nb" ;
            :history = "Created: 2016-05-13 14:55:24" ;
            :software = "pycurrents" ;
}
```

## 3.2 os75

```
netcdf os75nb {
dimensions:
      time = 4218 ;
      depth_cell = 50 ;
variables:
      int trajectory ;
            trajectory:standard_name = "trajectory_id" ;
      float vship(time) ;
            vship:data_max = 5.891809f ;
            vship:long_name = "Ship meridional velocity component" ;
            vship:C_format = "%9.4f" ;
            vship:data_min = -6.058005f ;
            vship:units = "meter second-1" ;
            vship:missing_value = 1.e+38f ;
      float v(time, depth_cell) ;
            v:data_max = 1.375633f ;
            v:long_name = "Meridional velocity component" ;
            v:C_format = "%7.2f" ;
            v:data_min = -0.9424075f ;
            v:units = "meter second-1" ;
            v:missing_value = 1.e+38f ;
      float uship(time) ;
            uship:data_max = 5.770428f ;
            uship:long_name = "Ship zonal velocity component" ;
            uship:C_format = "%9.4f" ;
            uship:data_min = -6.020963f ;
            uship:units = "meter second-1" ;
            uship:missing_value = 1.e+38f ;
```

```
float u(time, depth_cell) ;
      u:data_max = 1.378259f ;
      u:long_name = "Zonal velocity component" ;
      u:C_format = "%7.2f" ;
      u:data_min = -2.171336f ;
      u:units = "meter second-1" ;
      u:missing_value = 1.e+38f ;
float tr_temp(time) ;
      tr_temp:data_max = 63.7591f ;
      tr_temp:long_name = "ADCP transducer temperature" ;
      tr_temp:C_format = "%4.1f" ;
      tr_temp:data_min = 13.35227f ;
      tr_temp:units = "Celsius" ;
      tr_temp:missing_value = 1.e+38f ;
double time(time) ;
      time:C_format = "%12.5f" ;
      time:long_name = "Decimal day" ;
      time:standard_name = "time" ;
      time:data_min = 294.450983796296 ;
      time:units = "days since 2015-01-01 00:00:00" ;
      time:data_max = 310.425231481481 ;
byte pg(time, depth_cell) ;
      pg:long_name = "Percent good pings" ;
      pg:missing_value = -1b ;
      pg:data_min = 0b ;
      pg:data_max = 100b ;
      pg:C_format = "%d" ;
byte pflag(time, depth_cell) ;
      pflag:long_name = "Editing flags" ;
      pflag:missing_value = -1b ;
      pflag:data_min = 0b ;
      pflag:data_max = 7b ;
      pflag:C_format = "%d" ;
double lon(time) ;
      lon:C_format = "%9.4f" ;
      lon:long_name = "Longitude" ;
      lon:standard_name = "longitude" ;
      lon:data_min = 131.553666666667 ;
      lon:units = "degrees_east" ;
      lon:missing_value = 1.e+38 ;
      lon:data_max = 147.668166666667 ;
double lat(time) ;
      lat:C_format = "%9.4f" ;
      lat:long_name = "Latitude" ;
      lat:standard_name = "latitude" ;
      lat:data_min = -44.8054555555556 ;
      lat:units = "degrees_north" ;
      lat:missing_value = 1.e+38 ;
      lat:data_max = -35.3497916666667 ;
float heading(time) ;
```

```
            heading:data_max = 179.8649f ;
            heading:long_name = "Ship heading" ;
            heading:C_format = "%6.1f" ;
            heading:data_min = -179.9705f ;
            heading:units = "degrees" ;
            heading:missing_value = 1.e+38f ;
      float depth(time, depth_cell) ;
            depth:C_format = "%8.2f" ;
            depth:positive = "down" ;
            depth:long_name = "Depth" ;
            depth:data_min = 31.63f ;
            depth:units = "meter" ;
            depth:missing_value = 1.e+38f ;
            depth:data_max = 815.69f ;
      short amp(time, depth_cell) ;
            amp:long_name = "Received signal strength" ;
            amp:missing_value = 32767s ;
            amp:data_min = 6s ;
            amp:data_max = 219s ;
            amp:C_format = "%d" ;

// global attributes:
            :featureType = "trajectoryProfile" ;
            :description = "Shipboard ADCP velocity profiles from
in2015_c01 using instrument os75nb" ;
            :title = "Shipboard ADCP velocity profiles" ;
            :cruise_id = "in2015_c01" ;
            :Conventions = "COARDS" ;
            :sonar = "os75nb" ;
            :history = "Created: 2016-05-13 14:06:47" ;
            :software = "pycurrents" ;
}
```