RV *Investigator*

ADCP Processing Report

Voyage #:	In2016_v06
Voyage title:	Sustained monitoring of the East Australian Current
Depart:	Brisbane, 0900 Saturday, 29 October 2016
Return:	Brisbane, 0900 Sunday, 13 November 2016
Voyage Manager:	Tegan Sime
Chief Scientist:	Bernadette Sloyan
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Contents

1 Summary

Data was collected during in2016_v06, a moorings retrieval and deployment voyage across the EAC outside of Brisbane.

Both os75 and os150 units were operated in narrowband mode.

Units were operated internally triggered, with bottom track enabled during the outbound and inbound transits.

The os150 was operated with 4m bins, while the os75 was operated with 16m bins.

See computing and instrumentation voyage reports for more details about data acquisition.

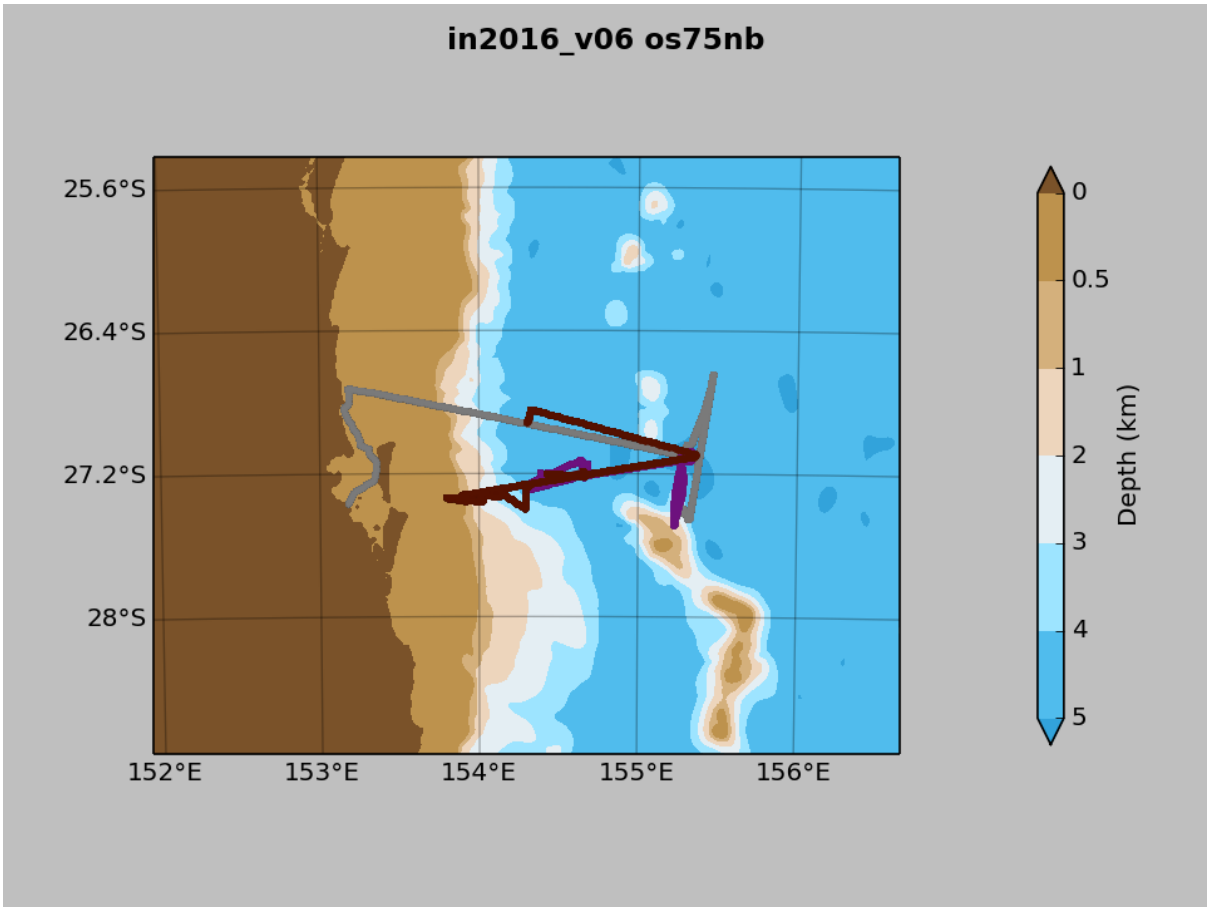

Figure 1: Voyage Track

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 Processing Notes

The raw data for both the OS150 and the OS75 ADCP units were acquired with the VMDAS acquisition software. This was the last voyage for which VMDAS was used for ADCP data acquisition. Due to an identified issue with VMDAS, navigational data needed to be rebuilt in the acquired dataset for both the OS75 and OS150.

4 Data Header

4.1 os75

```
netcdf os75nb {
dimensions:
        time = 3868 ;
        depth_cell = 50 ;
variables:
        int trajectory ;
                trajectory:standard_name = "trajectory_id" ;
        double time(time) ;
                time:long_name = "Decimal day" ;
                time:units = "days since 2016-01-01 00:00:00" ;
                time:C_format = "%12.5f" ;
                time:standard_name = "time" ;
                time:data_min = 301.932152777778 ;
                time:data_max = 316.511134259259 ;
        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 = 153.149388888889 ;
                lon:data_max = 155.465408333333 ;
        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 = -27.5402833333333 ;
                lat:data_max = -26.377975 ;
        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 = 25.93f ;
                depth:data_max = 809.97f ;
        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 = -1.89627f ;
        u:data_max = 1.978089f ;
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 = -3.127207f ;
        v:data_max = 1.483168f ;
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 = -179.9508f ;
        heading:data_max = 179.9474f ;
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 = 22.54893f ;
        tr_temp:data_max = 25.91153f ;
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 = -5.989243f ;
        uship:data_max = 6.139987f ;
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 = -6.739233f ;
                vship:data_max = 6.413903f ;

// global attributes:
                :featureType = "trajectoryProfile" ;
                :history = "Created: 2017-04-12 01:00:10 UTC" ;
                :Conventions = "COARDS" ;
                :software = "pycurrents" ;
                :hg_changeset = "2320:184969c40ec8" ;
                :title = "Shipboard ADCP velocity profiles" ;
                :description = "Shipboard ADCP velocity profiles from in2016_v06
using instrument os75nb" ;
                :cruise_id = "in2016_v06" ;
                :sonar = "os75nb" ;
}
```

4.2 os150

```
netcdf os150nb {
dimensions:
        time = 3847 ;
        depth_cell = 50 ;
variables:
        int trajectory ;
                trajectory:standard_name = "trajectory_id" ;
        double time(time) ;
                time:long_name = "Decimal day" ;
                time:units = "days since 2016-01-01 00:00:00" ;
                time:C_format = "%12.5f" ;
                time:standard_name = "time" ;
                time:data_min = 301.931828703704 ;
                time:data_max = 316.441655092593 ;
        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 = 153.14975 ;
                lon:data_max = 155.465413888889 ;
        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 = -27.5402916666667 ;
                lat:data_max = -26.3781888888889 ;
        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 = 17.96f ;
        depth:data_max = 409.99f ;
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 = -2.664527f ;
        u:data_max = 1.896026f ;
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 = -3.200217f ;
        v:data_max = 1.531934f ;
short amp(time, depth_cell) ;
        amp:missing_value = 32767s ;
        amp:long_name = "Received signal strength" ;
        amp:C_format = "%d" ;
        amp:data_min = 27s ;
        amp:data_max = 225s ;
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 = -179.962f ;
        heading:data_max = 179.8305f ;
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 = 22.16258f ;
        tr_temp:data_max = 36.07692f ;
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 = -5.982723f ;
        uship:data_max = 6.15534f ;
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 = -6.733206f ;
                vship:data_max = 6.486225f ;

// global attributes:
                :featureType = "trajectoryProfile" ;
                :history = "Created: 2017-04-12 01:01:44 UTC" ;
                :Conventions = "COARDS" ;
                :software = "pycurrents" ;
                :hg_changeset = "2320:184969c40ec8" ;
                :title = "Shipboard ADCP velocity profiles" ;
                :description = "Shipboard ADCP velocity profiles from in2016_v06
using instrument os150nb" ;
                :cruise_id = "in2016_v06" ;
                :sonar = "os150nb" ;
}
```