

VM-ADCP DATA SET – VOCALS Peru Cruise Documentation file

TITLE:

Vessel Mounted ADCP (VM-ADCP) data recorded during the “VOCALS-REx-Perú”, Cruise 2008-10 of R/V José Olaya Balandra

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1.0 DATA SET OVERVIEW:

Introduction or abstract:

This data sets consist of continuous records of VM-ADCP data obtained during the VOCALS-REx-Per  cruise carried out in October 2008 in Southern Peru.

Time period covered by the data:

START: 20081003030300; STOP: 20081017190400

Physical location (including lat/lon/elev) of the measurement or platform:

RV Jose Olaya, mobile, inside an area limited by longitudes 80W-75W, latitudes 17.5S-12S

Data source if applicable (e.g., for operational data include agency):

N/C

Any World Wide Web address references:

http://www.met.igp.gob.pe/proyectos/vocals_rex

2.0 INSTRUMENT DESCRIPTION:

Brief text (i.e., 1-2 paragraphs) describing the instrument with references:

The instrument is an RD Instruments OS-75 ADCP (mounted inside an acoustic well under the hull, filled with fresh water and isolated from sea by an acoustic window.

Figures (or links), if applicable:

<http://www.rdinstruments.com/surveyor.html>

Table of specifications (i.e., accuracy, precision, frequency, resolution, etc.):

Specifications are given there: http://www.rdinstruments.com/datasheets/ocean_surveyor_ds_lr.pdf

3.0 DATA COLLECTION AND PROCESSING:

Description of data collection:

The ADCP was interfaced to the ship's gyroscope (Sperry MK10) and a dedicated GPS receiver (Garmin 178C). An external synchronizing device (IFREMER OSEA) was used to reduce interference with other acoustic devices (sounders), at the cost of a lower ping rate.

Bin size was 8m, the ADCP depth was 4m under the surface, and a blanking interval of 8m was used. Ping rate was 0.3 s^{-1} and data was averaged in 600 s ensembles.

Description of derived parameters and processing techniques used:

Raw data was processed using the CODAS v3 processing software and database suite [Bahr et al., 1990]. Processing involved: i) statistical detection of outliers in terms of noise, vertical velocity, and hand editing if necessary; ii) integration of GPS navigation; iii) self-calibration using the Pollard and Read [1989] method.

More details on data processing can be found in the cruise report [Grados et al., 2008].

Data intercomparisons, if applicable:

N/C

4.0 DATA FORMAT:

Data file structure and file naming conventions:

The unique data file provided here for the cruise is in ASCII format (*.txt) with space delimited columns, with a UTC date/time stamp at the beginning of each data record.

Data format and layout specifications:

1. First data record consists of parameters identifying each column.
2. Second data record consists of respective parameter units.
3. Third data record begins actual data and consists of a date/time column followed by decimal day, position coordinates, depth and horizontal components of water velocity in geographical coordinates, averaged on the 10mn time span preceding the time stamp.

Date/time is in UTC. The format is: YYYYMMDDHHmmss where:

YYYY = Year

MM = Month (00-12)

DD = Day (01-31)

HH = Hour (00-23)

mm = Minute (00-59)

ss = Second (00-59)

Decimal days is in days, with day 0.00 = 01/01/2008 00:00 UTC.

Position coordinates are expressed in decimal degrees for each data point, with negative South latitudes and West longitudes.

Time and positions are given for the end of each ADCP averaging interval.

List of parameters with units, sampling intervals, frequency, range:

There is no fixed frequency of sampling either in space or time; missing or bad data are not included in the file.

Column 5: Depth, in meters, always negative.

Column 6: Zonal component of water velocity, in cm/s, positive eastward.

Column 7: Meridional component of water velocity, in cm/s, positive northward.

Data version number and date:

Final, 30 April 2009.

5.0 DATA REMARKS:

PI's assessment of the data:

After processing, the estimated accuracy of data is about 3 cm/s.

Missing data periods:

N/C

Software compatibility (i.e., list of existing software to view/manipulate the data):

Original CODAS v3 files (proprietary binary format) can be obtained from the PIs on request.

6.0 REFERENCES:

Bahr, F., E. Firing and S. Jiang, Acoustic Doppler current profiling in the western Pacific during the US-PRC TOGA Cruises 5 and 6, *JIMAR Contr. 90-0228, U. of Hawaii*, 162 pp., 1990.

Grados, C., et al., VOCALS Peru / VOCALS Regional Experiment Executive Report, R/V Jose Olaya Cruise 2008-10, IMARPE, 2008.

Pollard, R. and J. Read, A method for calibrating shipmounted acoustic Doppler profilers, and the limitations of gyro compasses, *J. Atmos. Oceanic Technol.*, 6, 859-865, 1989.

EXAMPLE:

Beginning of data file:

YYYYMMDDHHMMSS	Dec.day days	Long. dec.deg	Lat. dec.deg	Depth m	U cm/s	V cm/s
20081003032311	276.1411	-77.156	-12.407	-16.00	1.80	-6.90
20081003032311	276.1411	-77.156	-12.407	-24.00	11.10	-4.60
20081003032311	276.1411	-77.156	-12.407	-32.00	22.10	-2.90
20081003032311	276.1411	-77.156	-12.407	-40.00	16.30	-7.30
20081003032311	276.1411	-77.156	-12.407	-48.00	15.30	-3.90