Are you looking for shipboard ADCP?

Moored ADCP on CD-ROM Introduction

This database contains Acoustic Doppler Current Profiler (ADCP) data collected during 1994-1995 on the eastern shelf of Florida. The data were collected at ten-minute intervals by a bottom mounted 300-KHz ADCP unit (from RD Instruments, San Diego, CA), and is offshore Ft. Lauderdale, Florida at a depth of 140 meters. This instrument is positioned at approximately 26 04.0 N by 80 03.5 W. The unit is supported by the United States Naval Surface Warfare Center (NSWC), which receives binary data directly from the ADCP by way of a submerged cable. Following negotiations in 1993, a cooperative effort was established between the National Oceanic and Atmospheric Administration (NOAA) and the Naval Surface Warfare Center (NSWC) to forward the binary ADCP data collected by NSWC to the NOAA Atlantic Oceanographic and Meteorological Laboratory (AOML) in Miami, Florida. Since April 1994, AOML has been receiving the binary data from NSWC.

CD-ROM Contents

This CD-ROM contains six subdirectories: **BINARY, ASC, ASCDAILY, FLT, FLTDAILY,** and **PLOTS**.

The **BINARY** subdirectory contains the original ADCP data files as received from NSWC. The file 94INDEX.TXT (located in the main directory) lists the corresponding data coverage date and time for each file.

The **ASC** and **ASCDAILY** subdirectories contain processed ADCP data files in an ASCII format. These data were converted into an ASCII format using a processing program called LogDas v1.03 that was developed by RD Instruments. Each file located in the ASC subdirectory directly corresponds with a particular binary file in the BINARY subdirectory. The file 94INDEX.TXT (located in the main directory) may be used to determine the corresponding data coverage date and time for each file found in the ASC subdirectory. The ASCDAILY subdirectory contains the same ASCII ADCP data. In this subdirectory however, the data set has been broken down into daily files (denoted by the Julian date in the file name). ASCII files found in either the ASC or ASCDAILY subdirectories are organized in the fashion listed below.

Each ASCII file begins with a DEPLOYMENT SETTINGS header, containing the following information:

- 1 Header number
- 2 Beam orientation (-1=not valid, 0=up, 1=down)
- 3 Beam pattern (-1=not valid, 0=convex, 1=concave)
- 4 Beam mounting angle (degrees)

- 5 Sampling interval (seconds)
- 6 Number of depth cells (bins)
- 7 Depth cell length (meters)
- 8 Pings per ensemble
- 9 Transmit pulse length (meters)
- 10 Blank after transmit (meters)
- 11 Percent-good threshold (percentage)
- 12 First bin of reference layer
- 13 Last bin of reference layer
- 14 ADCP temperature scale (degrees C)
- 15 ADCP temperature offset (degrees C)
- 16 Salinity (parts per thousand)
- 17 Depth offset (meters)
- 18 Heading bias (degrees)
- 19 Roll offset (degrees)
- 20 Pitch offset (degrees)
- 21 Heading offset (degrees)
- 22 Bottom-tracking (0=off, 1=on)
- 23 Roll compensation (0=off, 1=on)
- 24 Pitch compensation (0=off, 1=on)
- 25 Heading compensation (0=off, 1=on)
- 26 Communication interface type (0=serial, 1=GPIB)

Each record contains two header lines followed by the averaged profile data regarding the first 36 bins.

The first header line, ENSEMBLE TIME, contains the following information:

- 1 Header number
- 2 Ensemble number
- 3-8 Ensemble time (month, day, year, hour, minute, second)
- 9 Number of pings in ensemble
- 10 Percentage of profiling range that is valid for Beam #1
- 11 Percentage of profiling range that is valid for Beam #2
- 12 Percentage of profiling range that is valid for Beam #3
- 13 Percentage of profiling range that is valid for Beam #4

The second header line, PITCH/ROLL/HEADING/TEMPERATURE, contains the following information:

- 1 Header number
- 2 Ensemble number
- 3 Last roll angle (degrees)
- 4 Last pitch angle (degrees)
- 5 Last heading angle (degrees)
- 6 Last ADCP temperature reading (degrees C)
- 7 Average roll angle (degrees)
- 8 Average pitch angle (degrees)
- 9 Average heading angle (degrees)

- 10 Average ADCP temperature reading (degrees C)
- 11 Sum of square roll (counts squared)
- 12 Sum of square pitch (counts squared)
- 13 Sum of square heading (counts squared)
- 14 Sum of square ADCP temperature (counts squared)
- 15 Number of samples used for RPHT averages and sums of squares

Following the header lines, the AVERAGED PROFILE DATA is displayed, line by line, containing the following information:

- 1 Header number
- 2 Beam orientation (-1=not valid, 0=up, 1=down)
- 3 Beam pattern (-1=not valid, 0=convex, 1=concave)
- 4 Beam mounting angle (degrees)
- 5 Sampling interval (seconds)
- 6 Number of depth cells (bins)
- 7 Depth cell length (meters)
- 8 Pings per ensemble
- 9 Transmit pulse length (meters)
- 10 Blank after transmit (meters)
- 11 Percent-good threshold (percentage)
- 12 First bin of reference layer
- 13 Last bin of reference layer
- 14 ADCP temperature scale (degrees C)
- 15 ADCP temperature offset (degrees C)
- 16 Salinity (parts per thousand)
- 17 Depth offset (meters)
- 18 Heading bias (degrees)
- 19 Roll offset (degrees)
- 20 Pitch offset (degrees)
- 21 Heading offset (degrees)
- 22 Bottom-tracking (0=off, 1=on)
- 23 Roll compensation (0=off, 1=on)
- 24 Pitch compensation (0=off, 1=on)
- 25 Heading compensation (0=off, 1=on)
- 26 Communication interface type (0=serial, 1=GPIB)

Each record contains two header lines followed by the averaged profile data regarding the first 36 bins.

The first header line, ENSEMBLE TIME, contains the following information:

- 1 Header number

- 2 Ensemble number
- 3-8 Ensemble time (month, day, year, hour, minute, second)
- 9 Number of pings in ensemble
- 10 Percentage of profiling range that is valid for Beam #1
- 11 Percentage of profiling range that is valid for Beam #2
- 12 Percentage of profiling range that is valid for Beam #3
- 13 Percentage of profiling range that is valid for Beam #4

The second header line, PITCH/ROLL/HEADING/TEMPERATURE, contains the following information:

- 1 Header number
- 2 Ensemble number
- 3 Last roll angle (degrees)
- 4 Last pitch angle (degrees)
- 5 Last heading angle (degrees)
- 6 Last ADCP temperature reading (degrees C)
- 7 Average roll angle (degrees)
- 8 Average pitch angle (degrees)
- 9 Average heading angle (degrees)
- 10 Average ADCP temperature reading (degrees C)
- 11 Sum of square roll (counts squared)
- 12 Sum of square pitch (counts squared)
- 13 Sum of square heading (counts squared)
- 14 Sum of square ADCP temperature (counts squared)
- 15 Number of samples used for RPHT averages and sums of squares

Following the header lines, the AVERAGED PROFILE DATA is displayed, line by line, containing the following information:

- 1 Header number
- 2 Ensemble number
- 3 Bin number
- 4 Depth of bin (meters)
- 5 E/W velocity (mm/s; +=E, 19999=bad)
- 6 N/S velocity (mm/s; +=N, 19999=bad)
- 7 Vertical vel (mm/s; +=up, 19999=bad)
- 8 Error velocity (mm/s; 19999=bad)
- 9 Amplitude (counts)
- 10 Percent-good (percentage)

The **FLT** and **FLTDAILY** subdirectories contain the 1994 ADCP data in a format processed to give north/south and east/west velocities at each bin depth. The files, written in ASCII, are said to be `flat' because each line contains an entire profile. Like data in the subdirectories ASC and ASCDAILY, data in FLT and FLTDAILY parallel one another. The files found in the FLT subdirectory follow the same convention used by the binary data files (in the BINARY subdirectory) and the ASCII data files (in the ASC subdirectory). The flat files contained within the FLTDAILY subdirectory are orgainzed by Julian date, and each file only contains data pertaining to the Julian date listed in the file name. The flat files in both the FLT and FLTDAILY subdirectories are organized in the fashion listed below.

Every line in a flat file is organized in the same manner.

The line begins with the following header information:

- 1 Year
- 2 Month
- 3 Day
- 4 Hour
- 5 Minute
- 6 Second
- 7 Exact Julian date (including time as a fraction)
- 8 Temperature (degrees C)

Following the header information, velocity data are given:

- 1 Bin Depth (starting at the surface)
- 2 East/West Velocity
- 3 North/South Velocity

The **PLOTS** subdirectory contains the velocities found in the flat files (described above) projected as Hovmueller plots. The Hovmueller plots are in color PostScript format and are named as follows:**fla(MM)94(u,v).ps where:**

- MM is the month
- u,v is easterly or northerly current.

So "fla0794v.ps" is the July 1994 northward component Hovmueller plot. **Also, there are ASCII files of the same data:**

- u_adcp94.day - U-component (mm/s)
- v_adcp94.day - V-component (mm/s)

- n_adcp94.day - Number of observations (NOBS) for each day/depth cell.

These datasets are organized into 365 rows by 36 columns with each row being a Julian day from 1-365 and each column a 4 m depth cell from zero to 140 m.

Missing values are those with a NOBS value of zero.

Special thanks to Bill Venezia, Jesse Aycock, Steve Thorstead and others at the NSWC for their efforts in providing this data set, and to Mike Crane of NODC for initiating this cooperative effort.