CRUISE NOTES

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COUNTRY: Germany

SIGNIFICANT DATA GAPS: A few short gaps less than 1.5 hours due to PC problems. GPS was unavailable for 5 hours starting 4/24 at 14:54 hours

SPECIAL SHIP TRACK PATTERNS: The scientific objective of the cruise was to study the development of the northern Somali current prior to the onset of the summer monsoon which had never been investigated using direct current observations. Furthermore, the outflow of the Red Sea was investigated along a section in the region of the Bab-el-Mandeb-sill between the Red Sea and the Gulf of Aden. The deployment of 12 moorings and three pressure gauges in the western part of the Arabian Sea were a major component of the work carried out.

The overall data quality was very good, predominately because of low surface waves and good satellite coverage. During the first day of acquisition, bottom track and ensemble time intervals of 60 sec were used to get a detailed measurement of the Red Sea outflow. Deep water configuration was run after passing the 44E meridian at 1300 hr UTC on 3/26. The vertical range of the data was more than 400m throughout most of the cruise. Only in the northern Arabian Sea, especially at 16N, the range decreased to about 250m owing to small backscatter strength.

ADCP INSTRUMENTATION

MANUFACTURER: RDI
HARDWARE MODEL: 150
SERIAL NUMBERS:
FIRMWARE VERSION:
TRANSMIT FREQUENCY: 153.6 kHz
TRANSUDER CONFIGURATION: JANUS CONCAVE

ADCP INSTALLATION

METHOD/DESCRIPTION OF THE ATTACHMENT TO THE HULL: The transducers were installed in the front hull

...
to reduce noise by propeller cavitation.

LOCATION/DEPTH ON HULL : Transducer depth at nominally 5 m
REPEATABLE ATTACHMENT :
DATE OF MOST RECENT ATTACH. :
ACOUSTIC WINDOW :
COMMENTS :

ADCP INSTRUMENT CONFIGURATION
DEPTH RANGE : 13 to 523
BIN LENGTH : varies (note below)
NUMBER OF BINS : varies (note below)
TRANSMIT PULSE LENGTH : varies (note below)
BLANKING INTERVAL : 4 m
ENSEMBLE AVERAGING INTERVAL : varies (note below)
SOUND SPEED CALCULATION : FUNCTION OF TEMP AT TRANSDUCER
BOTTOM TRACKING : varies (note below)
DIRECT COMMANDS :
COMMENTS : Configuration varied for shallow (<500m) versus deep waters. During data acquisition, the speed of sound was calculated using the water temperature measured by the thermistor at the transducer and a constant salinity value of 35 psu.

Configuration History File
Columns are as follows:
- B : CODAS logical block number
- BT : bottom track mode (on or off)
- SI : sampling interval or averaging period for ensemble (sec)
- NB : number of bins
- BL : bin length (m)
- PL : pulse length (m)
- TD : transducer depth (m)
- BK : blanking length (m)
- TR : top reference bin (m)
- BR : bottom reference bin (m)

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ADCP DATA ACQUISITION SYSTEM
SOFTWARE DEVELOPERS : RDI
SOFTWARE VERSIONS : DAS 2.48
DATA LOGGER, MAKE/MODEL : PC
ADCP/LOGGER COMMUNICATION :
USER BUFFER VERSION : User Exit 1920_buffer
CLOCK : Ashtech GPS synchronizes the PC clock via the User Exit (ue3.exe) program
COMMENTS :

SHIP HEADING
INSTRUMENT MAKE/MODEL : gyro
SYNCHRO OR STEPPER :
SYNCHRO RATIO :
COMPENSATION APPLIED : no
GPS ATTITUDE SYSTEM : YES, Ashtech
LOCATION OF ANTENNAS :
RIGID ATTACHMENT :
LOGGING RATE :

ANCILLARY MEASUREMENTS
SURFACE TEMP AND SALINITY : thermistor and CTD
PITCH/ROLL MEASUREMENTS :
HYDRO CAST MEASUREMENTS : yes
BIOMASS DETERMINATION : no
DATE OF LAST CALIBRATION :
CALIBRATION COEFFICIENTS :
BEAM-AVERAGED AGC AVAILABLE?:
CALIBRATION NET TOWS? :
COMMENTS :

ADCP DATA PROCESSING/EDITING
PERSONNEL IN CHARGE : M.Dengler
DATE OF PROCESSING : 1997
ADDED TO NODC DB : July 1998
NOTABLE SCATTERING LAYERS :
COMMENTS :

Speed of Sound: the transducer temperature was compared to CTD data which revealed an offset of -0.084°C. Also CTD salinity values of 6m depth were interpolated to calculate corrected sound speed for every ensemble. The temperature and salinity corrections were applied to the database, which automatically alters velocity magnitudes.

Profile editing performed for bottom reflection, wire interference, and spectral width broadening while underway.

NAVIGATION
GPS : YES
MAKE/MODEL : Magnavox
SELECTIVE AVAILABILITY :
P-CODE :
DIFFERENTIAL : no
SAMPLE INTERVAL :
LOCATION OF ANTENNA
RELATIVE TO TRANSDUCER :
TIME OBTAINED RELATIVE TO
START/END OF ENSEMBLE : end (UE3.exe program)
AVERAGING/EDITING APPLIED : yes, bad fixes edited out
LOGGED WITH ADCP DATA : yes
LOGGED INDEPENDENTLY : yes
COMMENTS :
OTHER :

CALIBRATION
GYROCOMPASS CORRECTION : YES, Ashtech
The gyrocompass was corrected for each ensemble with Ashtech information. Discontinuities in the Ashtech data resulted in corrections to the gyro based on least square fit dependencies.

BOTTOM TRACK METHOD : NO
WATER TRACK METHOD : YES
CALIBRATION POINTS : 237
AFTER EDITING :
MISALIGNMENT ANGLE : mean 1.09, rms 0.7098, drift +0.0133 deg/d
CURRENT AMPLITUDE : mean 1.0002, rms 0.0109, drif +0.0001
FINAL SELECTION :
AGREEMENT WITH PREVIOUS CRUISES :
good
SOUND SPEED CORRECTIONS : YES, using CTD data

NAVIGATION CALCULATION
NAVIGATION USED : GPS
REFERENCE LAYER DEPTH RANGE : bins 5 to 20
FILTERING METHOD FOR SMOOTHING REFERENCE LAYER VELOCITY (FORM/WIDTH) : Blackman window function of width T (0.5 hr):
\[ w(t) = 0.42 - 0.5 \cos(2 \pi t / T) + 0.08 \cos(4 \pi t / T) \]
FINALIZED SHIP VEL/POSITIONS
STORED IN DATABASE : YES
COMMENTS :

GENERAL ASSESSMENT : OK
ON-STATION VS. UNDERWAY : OK
VECTOR, CONTOUR, STICK PLOTS : OK
COMMENTS : OK

REFERENCES (DATA REPORTS, ETC.) : Data report as follows: