Tropical Atmosphere Ocean (TOGA/TAO) mooring cruises

CRUISE_NAME: ship_tag=ep692 woce_tag=PR16 EXPOCODE=31DSEP692_2
PORTS: Manzanillo, Mexico to San Diego California to Guayaquil, Ecuador
GEOGRAPHIC_REGION: tropical eastern Pacific

CRUISE NOTES
CHIEF SCIENTIST ON SHIP : unconfirmed
INSTITUTE : NOAA/PMEL
COUNTRY : USA
SIGNIFICANT DATA GAPS : ADCP gap on days 291-300
SPECIAL SHIP TRACK PATTERNS :
COMMENTS :

ADCP INSTRUMENTATION
MANUFACTURER : RDI
HARDWARE MODEL : VM-150
SERIAL NUMBERS :
FIRMWARE VERSION :
TRANSMIT FREQUENCY : 153 KHz
TRANSUDER CONFIGURATION : JANUS CONCAVE
ACOUSTIC BEAM WIDTH :
TRANSUDER BEAM ANGLE : 30 deg
COMMENTS :

ADCP INSTALLATION
METHOD/DESCRIPTION OF THE ATTACHMENT TO THE HULL : The ADCP transducer is in a steel housing that is welded to the hull. The transducer itself fits in the housing with the transducer array parallel to bottom of the steel housing. We can remove the transducer by bolting a steel plate on the bottom of the housing (to keep water out of the ship when the transducer is removed) and then from the inside of the ship, unbol the upper plate and pull the transducer up inside the ship.
LOCATION/DEPTH ON HULL : The ADCP transducer is located at approx. Frame 50. The depth below the water line is approx. 18 to 19' depending on ship load.
REPEATABLE ATTACHMENT : YES
DATE OF MOST RECENT ATTACH. :
ACOUSTIC WINDOW : There is no acoustic window over the face to the transducer array. It is free flooding.
COMMENTS :

ADCP INSTRUMENT CONFIGURATION
DEPTH RANGE : 18 to 522 m
BIN LENGTH : 8 m
NUMBER OF BINS : 64
TRANSMIT PULSE LENGTH : 8 m
BLANKING INTERVAL : 4 m
ENSEMBLE AVERAGING INTERVAL : 60 s
SOUND SPEED CALCULATION : FUNCTION OF TEMP AT TRANSDUCER
BOTTOM TRACKING : at times
DIRECT COMMANDS :
COMMENTS :

ADCP DATA ACQUISITION SYSTEM
SOFTWARE DEVELOPERS :
SOFTWARE VERSIONS : RDI DAS 2.48
DATA LOGGER, MAKE/MODEL :
ADCPLOGGER COMMUNICATION : GPIB
USER BUFFER VERSION : unconfirmed
CLOCK :
COMMENTS :

SHIP HEADING
INSTRUMENT MAKE/MODEL : gyro-compass
SYNCHRO OR STEPPER : synchro
SYNCHRO RATIO : 1:1
COMPENSATION APPLIED :
GPS ATTITUDE SYSTEM : no
LOCATION OF ANTENNAS :
RIGID ATTACHMENT :
LOGGING RATE :

ANCILLARY MEASUREMENTS
SURFACE TEMP AND SALINITY : yes
PITCH/ROLL MEASUREMENTS :
HYDRO CAST MEASUREMENTS :
BIOMASS DETERMINATION :
DATE OF LAST CALIBRATION :
CALIBRATION COEFFICIENTS :
BEAM-AVERAGED AGC AVAILABLE?: YES
CALIBRATION NET TOWS? : < NO > < YES >
COMMENTS :

ADCP DATA PROCESSING/EDITING
PERSONNEL IN CHARGE : T.Plimpton and Eric Johnson
DATE OF PROCESSING : unconfirmed
ADDED TO NODC DB : May 1999
NOTABLE SCATTERING LAYERS :
SOUND SPEED CORRECTIONS : YES
COMMENTS :

Preparation of the PMEL data consists of three stages: the timing adjustment,
the navigation of the data, and the calibration of the ADCP. Time
corrected with time marks from GPS system. The measured relative
velocities are corrected for the true speed of sound at the transducer using
thermistor
data and assuming salinity of 35 psu. In situations where the thermistor
was not working the speed of sound correction can not be carried out, but
its cruise-averaged value and the broadest scales of its spatial
variability are necessarily incorporated in the time-dependent instrument calibrations.
Navigation data were edited to remove bad fixes.

The ADCP data has not been edited for noise caused by turbulence in the
upper layers or interference from the CTD. USERS MUST BE AWARE OF SUCH
POTENTIAL LIMITATIONS AND TEST FOR THOSE THAT MIGHT AFFECT THEIR PARTICULAR
APPLICATION.

The data are archived in original depth bins rather than re-gridded, so
depths are not corrected for the small (~2%) difference between nominal
and local speed of sound.
NAVIGATION
GPS : YES
MAKE/MODEL : Magnavox MX4200
SELECTIVE AVAILABILITY : YES
P-CODE : NO
DIFFERENTIAL : NO
SAMPLE INTERVAL : 1 sec
LOCATION OF ANTENNA RELATIVE TO TRANSDUCER :
TIME OBTAINED RELATIVE TO START/END OF ENSEMBLE : start and end
AVERAGING/EDITING APPLIED : none
LOGGED WITH ADCP DATA : YES via UE3 user exit program
LOGGED INDEPENDENTLY : undoubtedly by shipboard computer
COMMENTS :
OTHER :

CALIBRATION
GYROCOMPASS CORRECTION : Yes
BOTTOM TRACK METHOD : Yes
WATER TRACK METHOD : YES
FINAL SELECTION : AMPLITUDE=1.0045 PHASE= 2.039 deg
AGREEMENT WITH PREVIOUS CRUISES :
COMMENTS :
The data are searched by computer for hour-long intervals containing large variations in ship's velocity. These intervals are used to estimate the heading bias and gain error of the instrument as in Joyce, 1989. The calibrations are edited for obvious outliers, filtered heavily in time to remove time scales shorter than 1.6 days, and fed back into a final, clean navigation of the data.

NAVIGATION CALCULATION
NAVIGATION USED : gps
REFERENCE LAYER DEPTH RANGE : 139 - 195 m
FILTERING METHOD FOR SMOOTHING REFERENCE LAYER VELOCITY (FORM/WIDTH) : Time filtered long enough to eliminate periods shorter than 2 hours (time scales shorter than 20 minutes).
FINALIZED SHIP VEL/POSITIONS STORED IN DATABASE : YES
COMMENTS :
GENERAL ASSESSMENT :
VECTOR PLOTS : ok
COMMENTS : ok

REFERENCES (DATA REPORTS, ETC.) :

Eric Johnson Patricia E. Plimpton
Earth and Space Research NOAA/PMEL
1910 Fairview Ave. E. 7600 Sand Point Way NE, Bldg. 3
Seattle, WA 98102 Seattle, WA 98115