

EP3-93-DI
NOAA Ship Discoverer
San Diego - San Diego
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ACQUISITION:

A total of 41 CTD casts were taken along 95W and 110W during leg 1 of the fall EPOCS cruise using PMEL Neil Brown CTD s/n 1114 and 12-bottle rosette sampling package. The majority of the casts were taken to a depth of 1000 meters. Two were to only 500 m and one was a deep cast.

Typically 12 bottles were fired on each cast and salinity samples were taken for calibration checks of the NBIS CTD. Survey department personnel under the supervision of L. Mangum were responsible for preparing the CTD, all data acquisition, collection of water samples, and analyzing the samples for salinity using the ship's Autosol. The CTD data were collected on PMEL's shipboard acquisition system, consisting of a Zenith PC with EG&G acquisition software.

CONDUCTIVITY CALIBRATIONS:

A .CAL file was created at sea from CTD cast logs using program CALDSKW. Where CTD and bottle salinities differed greatly, a 60 scan average salinity value from EG&G .BTL file replaced the cast log value if it made an improvement. Pre-cruise calibrations (NRCC August, 1993) were used in CALIB.DAT for temperature and pressure coefficients. Conductivity coefficients came from LINCALW applying a linear fit over all bottles from both EP393 and EP493 cruises, excluding cast 32 bottles greater than 1000 db. Note no samples were taken during cast 38 owing to a deck unit malfunction.

CALIB.DAT precruise calibrations for CTD used:

1114	6	380							
-31.33027	.9964779	0.740232E-6	-0.420914E-10	P	DN	S/N 1114	AUG 93		
-33.06427	.9928080	0.227357E-5	-0.187309E-09	P	UP	S/N 1114	AUG 93		
-0.00211	.9997917	0.000000E-6	0.000000E-10	T	68	S/N 1114	AUG 93		
-0.03060	.9983487	0.000000E-6	0.000000E-10	C		S/N 1114	AUG 93		

Results of LINCALW:

A0 = 0.2380314E-02
A1 = 0.9993364E+00
max residual = -0.0127
std error = 0.0046 (64/510 discarded in 15 reps)

CONDUCTIVITY CALIBRATION PROGRAMS & PPLUS COMMAND FILES:

CALDSKW - creates .CAL uncalibrated data file on SCS system
CALMSTRW - inputs .CAL uncalibrated data file
- outputs .CLB calibrated data file (from .COM), and

.SEA calibrated WOCE data file (edit quality bytes)
 LINCALW - inputs .CAL uncalibrated data file (may be broken into groups), applies a linear fit to the data and throws out any points greater than 2.8 times the standard deviation, iterates through the program until no points are thrown out
 outputs .COEF file containing linear fit coefficients and .LOG file of fit iterations
 CALMCONW.PPC - reads .CLB calibrated bottle data file and makes five separate scatter plots: P, T, C, S, and cast number vs. delta-C (CTD-bottle). These are examined for cast breaks and drifts in the CTD.
 CALMDEEPW.PPC - reads .CLB calibrated bottle data file and makes two separate scatter plots: CTD salinity and bottle salinity vs. potential temperature from theta=0.6 to 2.2 C.
 DEEPCTD.PPC - reads .CTD EPIC pointer file and .BOT EPIC pointer file of deep casts only and overplots the bottle salinity data and CTD salinity trace from theta=.8 to 2.4 C for each deep cast.

PROCESSING:

Raw data files were restored from Mountain tapes and/or TK50 tapes to the VAX at PMEL. Standard processing programs with default parameters were used to reduce these data. Single point spikes were removed from casts 1, 20, and 39 using NOMIT subroutine in EPCTDW. Cast 32 was truncated at 1000 db.

Final CTD and bottle files were moved to DISK\$HAYES and included in the RIM data management tables on December 18, 1995.

DPDNZ - inputs EG&G .EDT raw data file
 - outputs .DPZ binary file including computed fall rates and .RECZ ASCII file to choose downcast record range from
 DLAGZ - inputs .DPZ binary file, applies precruise calibrations from CALIB.DAT, edits data for window outliers (according to WINDOW.DAT) and first differencing outliers, fills gaps by linear interpolation, lags conductivity, edits data exceeding fall rate criteria (according to .INP created by DLAGAVZ.COM; default minimum fall rate acceptable is .8 db/60 scans (25 meters per minute) and pressure interval of 1.5 db; doesn't fill these gaps), computes 1-meter averages, and applies cell dependence to final conductivity values
 - outputs CTDERR.DAT file of outlier flags, interpolated values, and fall rate criteria failures, and an ASCII .CTD data file including computed salinity
 EPCTDW - inputs .CTD calibrated P, T, OXC, OXT, and raw conductivity; applies any additional P and T calcs (in EPCTDW_SHIP.COM), corrects raw C for cell factor, and applies C calcs from EPCTDW_SHIP.COM; computes salinity; deals with oxygen if there was a sensor; eliminates 1-point spikes according to the gradients hardwired into the source code; omits any values for manual despiking; fills by linear interpolation for a value to exist every whole meter; recomputes C from S; and calculates ITS-90 temperature and other EPIC variables.
 - outputs final .CTD data file in EPIC format, and a .LOG file listing edited and filled data points
 EPICBOMSTRW - inputs .CLB calibrated bottle data file and .CTD EPIC data files (for header information)
 - outputs .BOT bottle data files in EPIC format
 TSPLTEP.PPC - reads .CTD EPIC pointer file and .BOT EPIC pointer file and overplots full water column bottle salinity and CTD trace as well as sigma-t lines (from SIGMAT.DAT). Use

