EP4-94-MB
NOAA Ship Malcolm Baldrige
San Diego - Rodman, Panama
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CTD Personnel: Survey only
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ACQUISITION:

A total of 31 CTD casts were taken along 110W and 125W during leg 2 of the fall EPOCS cruise using PMEL Neil Brown CTD s/n 1111 and 12-bottle rosette sampling package. The majority of casts were to a depth of 1000 meters. Typically 12 bottles were fired on each cast and salinity samples were taken for calibration checks of the NBIS CTD. Survey department personnel were responsible for preparing the CTD, all data acquisition, collection of water samples, and analyzing the samples for salinity using the ship's Autosal.

The CTD data were acquired using the ship's LOGGER software. Audio backups were made on VCR tapes. Raw CTD data were transferred from the acquisition microVAX to the processing microVAX where PMEL programs reduced the data for analysis. Final calibrations were determined at PMEL after the cruise.

CONDUCTIVITY CALIBRATIONS:

CALIB.DAT precruise calibrations for PMEL CTD 1111:

```
1111    6  380
 0.0899   .9975877  0.126079E-5  -0.1409308E-09   P DN  S/N 1111  JUL 94
 0.0044   .9963378  0.167671E-5  -0.1790991E-09   P UP  S/N 1111  JUL 94
-0.0021  1.0000750  0.000000E-6   0.0000000E-10   T 68  S/N 1111  JUL 94
-0.0009  1.0000030  0.000000E-6   0.0000000E-10   C     S/N 1111  JUL 94
```

Post-cruise, files were restored to the VAX computer system at PMEL from Exabyte 8mm tapes. The .CAL file was created on the ship using CALDSK which takes the CTD values from those written on the cast logs during acquisition and not from the READER listings. The .CAL file was proofed, typos corrected, and put into the latest format compatible with WOCE modified programs at the lab. LINCALW.FOR, CALMSTRW.FOR, CALMCONW.PPC, and CALMDEEPW.PPC were used to find the best calibrations to apply to this data set.

Final calibrations applied were from an overall fit of all bottles:

```
A0 = -0.3424963E-02
A1 =  0.1000258E+01
max residual = 0.0094
std error = 0.0034 (26/217 discarded in 7 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 salintiy trace from theta=.8 to 2.4 C for each deep cast.

PROCESSING:

Raw data files were restored from Exabyte 8mm tapes to the VAX at PMEL. Standard processing programs for the Baldrige with default parameters were used to reduce these data. Single-point spikes were removed from casts 19, 27, and 30 using NOMIT in EPCTDW.

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

DPDNB - 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
DLAGB - 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 cals (in EPCTDW_SHIP.COM), corrects raw C for cell factor, and applies C cals from EPCTDW_SHIP.COM; computes salinity; deals with oxygen if there was a sensor; option to eliminate 1-point spikes according to the gradients hardwired into the source code NOT used by default; omits any values for manual despiking; fills by linear interpolation for a value to exist every whole meter; recomputes C from S; and calculates other EPIC variables.
- outputs final .CTD data file in EPIC format, and a .LOG file listing editted 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 TSPLTB.PPC to include oxygen data.

TEXTNOX - inputs .CTD EPIC pointer file and constructs PPLUS subcommand files
- outputs TXT*.PPC files containing %label commands for table listings for each cast

3PLTNOX.PPC - reads TXT*.PPC subcommand files and .CTD EPIC pointer file and overplots vertical profiles of temperature, salinity, and sigma-t vs. pressure to 1000 db on left-hand side of page; and lists data in table form on right-hand side of page. Use 4PLT1DB.PPC to include oxygen data.