#DOCUMENTATION_FILE_NAME: Wecoma_leg2_CTD_ddf
#NODC_ACCESSION_NUMBER: *
#NODC_REFERENCE_NUMBER: *

9400077

#NODC_DOCUMENTATION_DATE: June 1, 1994 \
#DOCUMENTOR: Roger Lukas \
#NODC_REVIEWER: Harry Iredale \
#DISTRIBUTION_RESTRICTION: none \
#DATE_RECEIVED: May 12, 1994 \
#SUBMISSION_MEDIUM: FTP, tar and compressed \
#SUBMITTOR_NAME: Roger Lukas \
#SUBMITTOR_INSTITUTION: University of Hawaii/JIMAR
                               Department of Oceanography \
#SUBMITTER_STREET_ADDRESS: 1000 Pope Road MSB 309 \
#SUBMITTER_CITY: Honolulu \
#SUBMITTER_STATE: Hawaii \
#SUBMITTER_COUNTRY: USA \
#SUBMITTER_ZIP_CODE: 96822 \
#SUMITTER_TELEPHONE_NO: 808 956-7896 \
#SUBMITTER_INTERNET: rlukas@iniki.soest.hawaii.edu \
#SUBMITTER_EMAIL: R.LUKAS(Omnet) \
#COLLECTION_INFORMATION:

  The R/V Wecoma participated in the TOGA COARE Intensive Observing
  Period from 6 Nov 1993 through 23 Feb 1994.

  LEG 1: 06 Nov 1993 - 07 Dec 1993 (Guam - Guam)
  LEG 2: 14 Dec 1993 - 16 Jan 1994 (Guam - Guam)
  LEG 3: 22 Jan 1994 - 23 Feb 1994 (Guam - Guam)

  This documentation covers the 2nd leg CTD operations carried out
  by Dr. Roger Lukas' group from the University of Hawaii/JIMAR.
  Leg 1 and 3 are treated seperately by Dr. Adriana Huyer from
  Oregon State University.

  For detailed information on station (e.g. time, position, depth etc)
  see file iop2.sum
  Wecoma navigation data - interpolated to hourly values from 2 min GPS data
  are listed in file Wecoma_Leg2_nav \

#PRINCIPAL_INVESTIGATOR_NAME: Roger Lukas \
#PI_INSTITUTION: University of Hawaii/JIMAR
                                    Department of Oceanography \
#PI_STREET-ADDRESS: 1000 Pope Road MSB 309 \
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#PI_STATE: Hawaii \
#PI_COUNTRY: USA \
#PI_ZIP_CODE: 96822 \
#PI_TELEPHONE_NO: 808 956-7896 \
#PI_INTERNET: rlukas@iniki.soest.hawaii.edu \
#PI_EMAIL: R.LUKAS(Omnet) \
#PROJECT: TOGA COARE \
#FUNDING AGENCY: National Science Foundation \
#GRANT/CONTRACT-NO: OCE 9113948 \
#PLATFORM_TYPE: research vessel \
#PLATFORM_NAME: R/V Wecoma \

#COLLECTION_METHODS:
  CTD on rosette. Data acquired real time on IBM PCs.
  For information on water sampling done for comparison with CTD data

```
        consult files readme.water.woce.Wecoma_leg2 and iop2.sea. \

#ANALYSIS_METHODS:
 1) Up and down casts merged.
 2) 24hz data screened for errors. Temperature and Conductivity aligned.
 3) Averaged to 2hz. Lueck filter applied.
 4) Bin averaged to 2dbar. \

#INSTRUMENTS:                           SeaBird 9-11plus CTD \
#PUBLICATIONS:
#ASSOCIATED_DATASETS:                   CTD data Wecoma leg1 (Huyer) \
                                        CTD data Wecoma leg3 (Huyer) \

#ASSOCIATED_VERSIONS: \
##DATA_SET_INFORMATION: \
#DATA_SET_NAME:
#NUMBER_OF_DATA_FILES:   96
        50094 May 31 15:4       i02a0101.ctd
        50094 May 31 15:4       i02a0102.ctd
        49962 May 31 15:4       i02a0103.ctd
        49962 May 31 15:4       i02a0104.ctd
        50028 May 31 15:4       i02a0105.ctd
        49962 May 31 15:4       i02a0106.ctd
        50028 May 31 15:4       i02a0107.ctd
         7062 May 31 15:4       i02a0108.ctd
        49962 May 31 15:4       i02a0109.ctd
        49962 May 31 15:4       i02a0110.ctd
        50028 May 31 15:4       i02a0111.ctd
        50028 May 31 15:4       i02a0112.ctd
        50028 May 31 15:4       i02a0113.ctd
        50028 May 31 15:4       i02a0114.ctd
        49962 May 31 15:4       i02a0115.ctd
        50028 May 31 15:4       i02a0116.ctd
         7128 May 31 15:4       i02a0117.ctd
        17160 May 31 15:4       i02a0118.ctd
        17226 May 31 15:4       i02a0119.ctd
        27060 May 31 15:4       i02a0120.ctd
        26928 May 31 15:4       i02a0121.ctd
        26862 May 31 15:4       i02a0122.ctd
        26928 May 31 15:4       i02a0123.ctd
        17028 May 31 15:4       i02a0124.ctd
        16962 May 31 15:4       i02a0125.ctd
         8778 May 31 15:4       i02a0126.ctd
         8712 May 31 15:4       i02a0127.ctd
         8712 May 31 15:4       i02a0128.ctd
        26928 May 31 15:4       i02a0129.ctd
        26862 May 31 15:4       i02a0130.ctd
        17028 May 31 15:4       i02a0131.ctd
        16962 May 31 15:4       i02a0132.ctd
         8712 May 31 15:4       i02a0133.ctd
        50028 May 31 15:4       i02a0134.ctd
        26862 May 31 15:4       i02a0135.ctd
        26994 May 31 15:4       i02a0136.ctd
        17160 May 31 15:4       i02a0137.ctd
        17028 May 31 15:4       i02a0138.ctd
         8778 May 31 15:4       i02a0139.ctd
        16962 May 31 15:4       i02a0140.ctd
        26928 May 31 15:4       i02a0141.ctd
        26994 May 31 15:4       i02a0142.ctd
        49962 May 31 15:4       i02a0143.ctd
        50094 May 31 15:4       i02a0144.ctd
```

```
   11880 May 31 15:4      i02a0145.ctd
   10362 May 31 15:4      i02a0146.ctd
   17094 May 31 15:4      i02a0147.ctd
   26928 May 31 15:4      i02a0148.ctd
   50094 May 31 15:4      i02a0201.ctd
   50094 May 31 15:4      i02a0202.ctd
   49962 May 31 15:4      i02a0203.ctd
   49962 May 31 15:4      i02a0204.ctd
   50028 May 31 15:4      i02a0205.ctd
   49962 May 31 15:4      i02a0206.ctd
   50028 May 31 15:4      i02a0207.ctd
    7062 May 31 15:4      i02a0208.ctd
   49962 May 31 15:4      i02a0209.ctd
   49962 May 31 15:4      i02a0210.ctd
   50028 May 31 15:4      i02a0211.ctd
   50028 May 31 15:4      i02a0212.ctd
   50028 May 31 15:4      i02a0213.ctd
   50028 May 31 15:4      i02a0214.ctd
   49962 May 31 15:4      i02a0215.ctd
   50028 May 31 15:4      i02a0216.ctd
    7128 May 31 15:4      i02a0217.ctd
   17160 May 31 15:4      i02a0218.ctd
   17226 May 31 15:4      i02a0219.ctd
   27060 May 31 15:4      i02a0220.ctd
   26928 May 31 15:4      i02a0221.ctd
   26862 May 31 15:4      i02a0222.ctd
   26928 May 31 15:4      i02a0223.ctd
   17028 May 31 15:4      i02a0224.ctd
   16962 May 31 15:4      i02a0225.ctd
    8778 May 31 15:4      i02a0226.ctd
    8712 May 31 15:4      i02a0227.ctd
    8712 May 31 15:4      i02a0228.ctd
   26928 May 31 15:4      i02a0229.ctd
   26862 May 31 15:4      i02a0230.ctd
   17028 May 31 15:4      i02a0231.ctd
   16962 May 31 15:4      i02a0232.ctd
    8712 May 31 15:4      i02a0233.ctd
   50028 May 31 15:4      i02a0234.ctd
   26862 May 31 15:4      i02a0235.ctd
   26994 May 31 15:4      i02a0236.ctd
   17160 May 31 15:4      i02a0237.ctd
   17028 May 31 15:4      i02a0238.ctd
    8778 May 31 15:4      i02a0239.ctd
   16962 May 31 15:4      i02a0240.ctd
   26928 May 31 15:4      i02a0241.ctd
   26994 May 31 15:4      i02a0242.ctd
   49962 May 31 15:4      i02a0243.ctd
   50094 May 31 15:4      i02a0244.ctd
   11880 May 31 15:4      i02a0245.ctd
   10362 May 31 15:4      i02a0246.ctd
   17094 May 31 15:4      i02a0247.ctd
   26928 May 31 15:4      i02a0248.ctd
```

bottle data - iop2.sea

station header information - iop2.sum

#NUMBER_OFDOCUEMNTATION_FILES: 4

navigation information - Wecoma_Leg2_nav

```
bottle data - iop2.sea
station header information - iop2.sum

The following  files have been incorporated in this document

readme.water.woce.Wecoma_leg2
readme_Wecoma_leg2.ctd
readme_Wecoma_leg2.format \

#DATA_SET_VOLUME: 3082136 bytes w/documentation \
#SOURCE_COMPUTER:                       SUN Microsystem SUN \
#SOURCE_COMPUTER_OPERATING_SYSTEM:      SUN OS 4.1.X \
#SOURCE_LANGUAGE:                       C \
#COMPUTER_CODE:                         \
#ORIGINATOR_DATASET_IDENTIFIER:         IOP-2 \
#DATA_DATES:                            16 Dec 93 - 12 Jan 94 \
#LEFT_GEOGRAPHIC_UPPER_BOUND:           155.5E   5N \
#RIGHT_GEOGRAPHIC_LOWER_BOUND:          156.7    2.27S \
#GEOGRAPHIC_REGION:

                                        Equatorial Pacific, north of Australia
                                        TOGA COARE Large Scale Domain
                                        Western Pacific warm pool \
#DATA_TYPE:                             CTD data \
#SPHERE:                                ocean \
#PARAMETERS: pressure, temperature, salinity, depth, latitude, longitude \

#FORMAT_DESCRIPTION:
```

CTD Data Format Document

CTD data are distributed in a format specified by the international
WOCE Hydrographic Programme Office (WHPO). This document describes
that format.

Each station/cast is stored in a separate file. A file's name can be
determined by the concatenation of 'i', 2 digit cruise number, 'a', a 2 digit
station number, a 2 digit cast number and a file extension of ctd. For ex-
ample, IOP-2, station 2, cast 3, would be found in i02a0203.ctd.

NOTE: IOP-2 data were collected with two sets of temperature and
conductivity sensors. The data files corresponding to station one contain
the observations from the primary sensor, and in station two are the
data from the secondary sensors.

The cruise and position information for each cast is in the cruise
summary file (*.sum). The EXPOCODE, station number and cast number
can be used to cross-reference the CTD data files with the cruise
summary file. This code allows for the identification of the cruise.
It consists of a 4 character NODC country-ship code, a maximum of 8
character cruise number followed by a "/" and leg number. For example,
the EXPOCODE for HOT-13 on the R/V Moana Wave would be 31MW013/1.

The CTD data file has a fixed record length of 65 characters / record.
THE FIRST SIX RECORDS OF A CTD FILE CONTAIN HEADER INFORMATION:

```
     RECORD 1:
        Column   Format   Item
          9-22     a14     EXPOCODE (KA=Kaimalino,WE=Wecoma,MW=Moana Wave)
```

```
        31-34      a4     WHP station identification
        41-42      i2     Month
        43-44      i2     Day
        45-46      i2     Year
        FORTRAN FORMAT    (8x,a14,8x,a4,6x,3i2)
        C                 "%*s %s %*s %s %*s %2d%2d%2d"


RECORD 2:
         7-12      a6     Station number
        20-22      i3     Cast number
        36-40      i5     Number of data records in the file
        FORTRAN FORMAT    (6x,a6,7x,i3,13x,i5)
        C                 "%*s %d %*s %d %*s %d"


RECORD 3:
        16-21      i6     Instrument number
        37-41      f5.2   Sampling rate (hz)
        FORTRAN FORMAT    (15x,i6,15x,f5.2)
        C                 "%*s %d %*s %f"


RECORD 4:
        Headers for data columns (variable labels).

RECORD 5:
        Unit header for data columns.

RECORD 6:
        Quality byte designators.  All columns requiring a quality
        byte are underscored by seven asterisks.
```

The remaining records contain CTD data. The order of variables in a RECORD ARE AS FOLLOWS: pressure, temperature, salinity, oxygen, transmission, fluorescence and quality. Missing values are flagged with -99.0.

DATA RECORD FORMAT:

```
        Column    Format   Item
         1-8      f8.1     Pressure (Decibars)
         9-16     f8.4     Temperature (Degrees Celsius,
                                International Temperature Scale of 1990)
        17-25     f9.4     Salinity (1978 International Practical Salinity Scale)
        34-41     f8.3     Transmission (% transmission)
        42-49     f8.3     Fluorescense (wt/(cm**2))
        50-57     i8       Number of observations averaged at this pressure level
        FORTRAN FORMAT    (f8.1, f8.4, f9.4, f8.1, 2f8.3, i8, i8)
        C                 "%f %f %f %f %f %f %d %d"
```


** The quality word is the left-to-right concatenation of required quality byte FOR THE VARIABLES MEASURED.   THEY ARE DEFINED AS FOLLOWS:

```
byte value   Definition
     1       Not calibrated with water samples.
     2       Acceptable measurement.
     3       Questionable measurement.
     4       Bad measurement.
     5       Not reported.
     6       Interpolated value.
     7       Not assigned for CTD data
```

```
     8          Not assigned for CTD data
     9          Not sampled


#FORMAT_PUBLICATION:              HOT Data Report #1 (processing method)
#FORMAT_COMMENTS:
#MISC_DOCUMENTATION:              *
#SUBMITTOR_DOCUMENTATION:
                         1        Not calibrated with water samples.

                              iop2.sum
                              iop2.sea
                    readme.water.woce.Wecoma_leg2
                    readme_Wecoma_leg2.ctd
                    readme_Wecoma_leg2.format
                    readme_Wecoma_leg2.nav
```

COARE-IOP-2 CTD data

COARE-IOP-2 CTD data were collected using a SeaBird SBE 9/11 plus CTD
at the maximum sampling rate of 24 samples per second (24 Hz).
They were screened for errors and processed to 2-dbar averages.
Details of the CTD processing can be found in HOT Data Report #1
(for information on how to obtain a copy of the Data Report, please
contact Roger Lukas at the University of Hawaii (address below)).

CTD data are written to files using formats specified by the
WOCE Hydrographic Programme Office. These formats are based on
NODC formats, and are detailed in the WHP Office Report WHPO
90-1, available from Dr. Terrence Joyce, Director, WHP Office,
Dept. of Physical Oceanography, WHOI, Woods Hole, MA 02543.

Data consist of pressure, temperature and salinity for all
casts. Details of this format are given in the file Readme.format.
Briefly, the format consists of a self-documenting header followed
by the data. The data records are written so that they can be read
with a simple FORTRAN read statement.

Temperatures are reported in ITS-90 units. Since temperature
sensor calibrations were done in IPTS-68 units, and the UNESCO
routines require IPTS-68 temperature, all intermediate
processing was done in IPTS-68. As a final step, temperature and
potential temperature were converted to ITS-90 using
$t_{90} = 0.99976\ t_{68}$.

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              COARE-IOP-2 Water Sample Data

Water sample data from COARE-IOP-2 are written according to the *.sea
files specified by the WOCE Hydrographic Programme Office, for
submission of these data to the WHP.

Formats for these files are detailed in the WHP Office Report
WHPO 90-1, available from Dr. Terrence Joyce, Director, WHP Office,
Dept. of Physical Oceanography, WHOI, Woods Hole, MA 02543.

The files are self-explanatory, one column is written for each
measured parameter. Missing data are filled with -9. A 5-line
heading labels each column.

NOTE: IOP-2 data were collected with two sets of temperature and
conductivity sensors. The data files corresponding to station one contain
the observations from the primary sensor, and in station two are the
data from the secondary sensors.

Temperatures are reported in ITS-90 units. Since temperature
sensor calibrations were done in IPTS-68 units, and the UNESCO
routines require IPTS-68 temperature, all intermediate
processing was done in IPTS-68. As a final step, temperature and
potential temperature were converted to ITS-90 using
$t\_90 = 0.99976\ t\_68$.

Variables having 7 asterisks on the 4th heading line have a quality
flag associated with them. These 1-digit quality flags are concate-
nated to form quality word which is listed as the last variable in
each row. The values each digit can assume and their meanings are
LISTED BELOW:

BOTTLE QUALITY FLAG DEFINITIONS:

Byte Value	Definition
1	Not assigned.
2	No problems noted.
3	Leaking.
4	Did not trip correctly.
5-8	Not assigned.
9	Samples not drawn from this bottle.

WATER SAMPLE QUALITY FLAG DEFINITIONS:

Byte Value	Definition
1	Sample for this measurement was drawn from water bottle but analysis not received.
2	Acceptable measurement.
3	Questionable measurement.
4	Bad measurement.
5	Not reported.
6	Mean of replicate measurements.
7	Manual chromatographic peak integration.
8	Irregular digital chromatographic peak integration.
9	Sample not drawn for this measurement from this bottle.

\
#SAMPLE_DATA:

```
EXPOCODE       31WE002/0 WHP-ID PRS2 DATE 122992                    1
STNNBR      2 CASTNO 39 NO. RECORDS=   127                          2
INSTRUMENT NO.      0 SAMPLING RATE 24.00 HZ                        3
  CTDPRS   CTDTMP   CTDSAL   CTDOXY    XMISS    FLUOR  NUMBER QUALT1
    DBAR    DEG C   PSS-78  UMOL/KG   %TRANS   mVOLTS    OBS.      *
```

```
******* *******   ******* ******* ******* *******              *
    0.0 28.9071   34.0770   -99.0 -99.000 -99.000      36 222999
    2.0 28.9091   34.0782   -99.0 -99.000 -99.000      72 222999
    4.0 28.9163   34.0816   -99.0 -99.000 -99.000      96 222999
    6.0 28.9195   34.0830   -99.0 -99.000 -99.000      60 222999
    8.0 28.9210   34.0838   -99.0 -99.000 -99.000     168 222999
   10.0 28.9286   34.0890   -99.0 -99.000 -99.000      84 222999
   12.0 28.9332   34.0937   -99.0 -99.000 -99.000      84 222999
   14.0 28.9349   34.0952   -99.0 -99.000 -99.000      72 222999
   16.0 28.9373   34.1014   -99.0 -99.000 -99.000     144 222999
   18.0 28.9391   34.1109   -99.0 -99.000 -99.000      72 222999
   20.0 28.9384   34.1269   -99.0 -99.000 -99.000      96 222999
   22.0 28.9361   34.1571   -99.0 -99.000 -99.000      84 222999
   24.0 28.9134   34.2177   -99.0 -99.000 -99.000      72 222999
   26.0 28.8976   34.2285   -99.0 -99.000 -99.000     156 222999
   28.0 28.8858   34.2299   -99.0 -99.000 -99.000      72 222999
   30.0 28.8761   34.2324   -99.0 -99.000 -99.000     132 222999
\\
```