

1602M1/UNIQUE/M00136/PROJECTS/TOGA-COARE/CTD/Franklin-CTD

9400109

#DOCUMENTATION FILE NAME: Franklin_CTD-ddf
#NODC ACCESSION NUMBER:
#NODC REFERENCE NUMBER:
#NODC DOCUMENTATION DATE: 19940712
#DOCUMENTOR: Jeff Butt
#NODC REVIEWER: Harry Iredale
#DISTRIBUTION RESTRICTION: none
#DATE RECEIVED: 19940624
#SUBMISSION MEDIUM: ftp
#SUBMITTER NAME: Jeff Butt
#SUBMITTER INSTITUTION: CSIRO
Division of Oceanography
#SUBMITTER STREET ADDRESS: Castray Esplanade
GPO Box 1538
#SUBMITTER CITY: Hobart
#SUBMITTER STATE: Tasmania
#SUBMITTER COUNTRY: Australia
#SUBMITTER ZIP CODE: 7001
#SUBMITTER TELEPHONE NO: 61-02-325302
#SUBMITTER INTERNET: butt@aqueous.ml.csiro.au
#SUBMITTER EMAIL (OTHER): n/a

#COLLECTION INFORMATION:

The Australian R/V Franklin participated in the TOGA COARE Intensive Observing period from 19 Nov to 19 Dec 1992 (Townsville - Townsville) and from 07 Jan to 07 Feb 1993 (Townsville - Townsville) conducting upper-ocean survey and turbulent flux measurements. A total of 89 CTD casts were made over the two cruises. The CTD unit was also operated in Seasoar mode during both cruises.

#PRINCIPAL INVESTIGATOR NAME: Stuart Godfrey
#PI INSTITUTION: CSIRO
Division of Oceanography
#PI STREET-ADDRESS: Castray Esplanade
GPO Box 1538
#PI CITY: Hobart
#PI STATE: Tasmania
#PI COUNTRY: Australia
#PI ZIP CODE: 7001
#PI TELEPHONE NO: 61-02-325210
#PI INTERNET: godfrey@aqueous.ml.csiro.au
#PI EMAIL: j.godfrey
#PROJECT: TOGA COARE
#FUNDING AGENCY: CSIRO
#GRANT/CONTRACT-NO:
#PLATFORM TYPE: research vessel
#PLATFORM NAME: R/V Franklin
#COLLECTION METHODS:

CALIBRATION PROCEDURE: The instrument in use was swapped regularly from the ship's hydrographic winch to the SEASOAR. While on the ship's winch, salinity bottles were obtained and used to provide T-S calibration points. During the first leg of the first cruise (CTD data between 21-28 November 1992) it was discovered that there was a serious drift in the CTD, of up to 0.1 psu. Since there was no hydrology technician aboard, this was discovered by sending salinity samples to R/V Wecoma for analysis. From then on for the first cruise, the second CTD unit was used. Calibration salinities were obtained on the CTD winch roughly once a day, and surface salinity samples were taken once an hour until we became confident of stability of the new sensor. The SEASOAR data and CTD stations 22-75,

collected on the second leg of the first cruise, i.e., between 1 December 1992, 2126 (GMT) to 12 December 1992, 1649 (GMT), are all considered accurate to 0.004 psu. All the data were recorded on magnetic tape, and transferred to Exabyte (8 mm) tapes before leaving the ship.

#ANALYSIS_METHODS:

Two units were used. On the first cruise, the CTD data before 1 December 1992 are suspect, due to a faulty conductivity cell. The problem was corrected after this date, and all CTD salinity data have been calibrated against salinity samples collected on CTD casts (roughly one a day). The data have been processed and (with the exception mentioned above) all salinities are accurate to better than 0.01 psu, most substantially better.

Data processed by the Data Product Group of the Division of Oceanography.

#INSTRUMENTS:

Mark Brown IIIB Ctd

#PUBLICATIONS:

#ASSOCIATED_DATASETS:

Sea-soar data (NOT YET READY FOR DISTRIBUTION)

#ASSOCIATED_VERSIONS:

*

#DATA_FILES:

1164451 Jul 12 11:36 fr9209.ctd, 70 stations

262183 Jul 12 11:36 fr9301.ctd, 26 stationsjimc0722.out

#DATA_SET_VOLUME:

1426634 bytes

#DOCUMENTATION_FILES:

ctd.format (included in this text)

#SOURCE_COMPUTER:

Silicon Graphics

#SOURCE_COMPUTER_OPERATING_SYSTEM:

UNIX

#SOURCE_LANGUAGE:

Fortran/C

#COMPUTER_CODE:

ASCII

#ORIGINATOR_DATASET_IDENTIFIER:

Fr09/92, Fr01/93

#DATA_DATES:

19921119-19930207

#LEFT_GEOGRAPHIC_UPPER_BOUND:

0 140E

#RIGHT_GEOGRAPHIC_LOWER_BOUND:

20S 160E

#GEOGRAPHIC_REGION:

Equatorial Pacific, north of Australia

COARE Large Scale Domain

Western Pacific warm pool

#DATA_TYPE:

CTD data

#SPHERE:

ocean

#PARAMETERS:

pressure, conductivity, temperature, salinity,

dissolved oxygen content (uncalibrated!).

#FORMAT_DESCRIPTION:

CSIRO Division of Oceanography/RV Franklin CTD format guide

=====

The output format for our CTD data has changed in some ways. The basic format of the data files has remained unchanged, but now many files are concatenated into one. Normally, all stations for one cruise will be in one file, but, if data has been extracted for a specified area and range of dates, regardless of specific cruises, stations from many cruises will be in the same file.

The format of each file is such that it is easy to unpack the data into separate files for each station at the destination site.

Overall file structure

=====

The data for each station is preceded by a record consisting of 80 x 'S', then a record with an 'S', one blank space, the 9 character name that we used for the file on our system, then the total number of header and data records for the station.

A typical sequence of FORTRAN statements to unpack a station would be:

```
      read(inunit,1000)file,nrecs
1000  format(/,2x,a9,i8)
      if(nrecs.eq.-1)goto (finished)

      open(outunit,name=file//'.ave',form='formatted',status='unknown')

      do i=1,nrecs
        read(inunit,'(a)')cbuf
        write(outunit,'(a)')cbuf
      end do

      close(outunit)

(finished) close(inunit)
```

The last station in a file is followed by a record of 'E's, then, in the next record, an 'E', a blank where the file name would have been, and -1 for the number of records.

Note that cbuf must be at least 79 characters long for cruises where the 16-channel digitiser was not in use, and at least (79 + ndig X 13) characters long for cruises where the 16-channel digitiser was in use. 'ndig' here is the number of digitiser channels in use. Any digitiser channels which were used can, of course, be ignored at this stage.

See example.

Station data format

=====

For each station there are a total of 15 header records. These are followed by as many data records as are needed. Some header fields may be blank. Positions are determined from (in order of preference) 1. Gps, 2. back-calculate SATNAV data, 3. any other source. Note also that the maximum cast pressure is in decibars, and that the bottom depth is in metres, so for some deep stations the maximum cast pressure may be numerically greater than the bottom depth.

The header records are always in the same order, and all headers are always present, even if the information for some of the header records is not available.

The temperature scale for the temperature data is recorded in the 15th header record. This is always t68 (IPITS-68) for data up to the end of 1989, and t90 (ITS-90) from 01-JAN-1990 onwards. The conversion between the two temperature scales in the 'Oceanographic' range is :

$$t_{90} = 0.99976 \times t_{68}$$

Care should be used when using temperature to calculate any derived quantities such as theta or sigma-theta, as most existing equation of state routines expect temperatures in t68!

Where the 16 channel digitiser was used, the digitiser channel labels are in columns 81-92, 94-105, etc of header record number 14.

Each data record consists of the averages for 2 decibar bins centred on even integers. Missing data is indicated by blanks. The data records contain the fields :

Cols	Quantity
====	=====
1- 6	Pressure (centre of interval) (decibars)
7-13	Temperature (t68 or t90 as above)
14-20	Salinity (psu)
21-27	Sigma-t
28-34	Anomaly of Specific Volume X 1.e+8
35-41	Geopotential anomaly (J/Kg)
44-49	Dissolved oxygen (micromoles/cubic decimetre)
62-67	Number of good samples in 2 decibar interval
68-73	Standard deviation of good temperature samples in the interval
74-79	Standard deviation of good conductivity samples in the interval

and, if the 16 channel digitiser was in use,

```
81-92      value for digitiser channel 1
94-105     value for digitiser channel 2
etc
```

A typical FORTRAN statement to read a data record is :

```

      read(inunit,1000)pres,temp,sal,sig,sva,geopan,dissox,nsam,tstd,cstd
1000  format(f6.1,3f7.3,f7.2,f7.32x,f6.1,12x,i6,2f6.3)

```

or, if there are digitiser channels present,

```

        read(inunit,1000)pres,temp,sal,sig,sva,geopan,dissox,nsam,tstd,cstd,
$          (rdig(ii),ii=1,ndig)
1000  format(f6.1,3f7.3,f7.2,f7.3,2x,f6.1,12x,i6,2f6.3,<ndig>(x,e12.5))

```

#SAMPLE DATA:

```

SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS
S f90021001      60
SHIP             : R.V. Franklin
STATION NUMBER   :    1
DATE             : 26-FEB-1990   (DAY NUMBER   57)
START TIME       : 0636 UTC = Z
BOTTOM TIME      : 0639 UTC = Z
FINISH TIME      : 0652 UTC = Z
CRUISE           : FR02/90
START POSITION     : 43:12.58S 148:03.86E

```

BOTTOM POSITION : 43:12.54S 148:03.87E
FINISH POSITION : 43:12.56S 148:03.90E
MAXIMUM PRESSURE : 90 DECIBARS
BOTTOM DEPTH : 95 METRES

PRESS	TEMP (T-90)	SAL	SIGMA-T	S.V.A.	G.A.	D.O.			
2.0	17.693	35.431	25.678	230.37	0.046	239.7	78	0.001	0.002
4.0	17.693	35.433	25.679	230.29	0.092	237.5	58	0.001	0.001
6.0	17.689	35.433	25.680	230.26	0.138	238.5	40	0.003	0.002
8.0	17.680	35.434	25.683	230.05	0.184	238.9	56	0.001	0.001
10.0	17.671	35.435	25.686	229.83	0.230	237.1	68	0.004	0.003
12.0	17.655	35.438	25.692	229.31	0.276	236.4	93	0.010	0.008
14.0	17.632	35.442	25.701	228.55	0.322	235.2	46	0.009	0.008

.									
.									
.									
78.0	15.804	35.279	26.007	201.38	1.724	213.4		26	0.049 0.051
80.0	15.416	35.247	26.070	195.42	1.764	218.7		35	0.164 0.166
82.0	15.150	35.249	26.131	189.67	1.803	217.1		39	0.045 0.046
84.0	14.979	35.234	26.157	187.22	1.840	212.5		28	0.077 0.081
86.0	14.787	35.215	26.184	184.65	1.877	209.4		27	0.062 0.068
88.0	14.516	35.189	26.223	181.00	1.914	209.4		27	0.117 0.119
90.0	14.334	35.200	26.271	176.52	1.950	211.0		14	0.003 0.004

[illegible]

```
SHIP : R.V. Franklin
STATION NUMBER : 2
DATE : 26-FEB-1990 (DAY NUMBER 57)
START TIME : 0730 UTC = Z
BOTTOM TIME : 0733 UTC = Z
FINISH TIME : 0745 UTC = Z
CRUISE : FR02/90
START POSITION : 43:12.87S 148:04.67E
BOTTOM POSITION : 43:12.87S 148:04.73E
FINISH POSITION : 43:12.95S 148:04.83E
MAXIMUM PRESSURE : 110 DECIBARS
BOTTOM DEPTH : 125 METRES
```

PRESS	TEMP (T-90)	SAL	SIGMA-T	S.V.A.	G.A.	D.O.			
2.0	17.816	35.476	25.682	229.96	0.046	246.9	75	0.008	0.009
4.0	17.807	35.475	25.684	229.89	0.092	245.5	67	0.005	0.005
6.0	17.797	35.476	25.687	229.65	0.138	251.6	41	0.001	0.001
8.0	17.794	35.475	25.687	229.72	0.184	256.5	29	0.001	0.002
10.0	17.794	35.475	25.687	229.78	0.230	258.4	29	0.001	0.002
12.0	17.788	35.474	25.687	229.78	0.276	260.9	39	0.006	0.007
14.0	17.764	35.469	25.689	229.65	0.322	261.1	46	0.015	0.020
16.0	17.689	35.461	25.702	228.55	0.368	262.6	26	0.009	0.010
18.0	17.669	35.456	25.703	228.52	0.413	263.2	27	0.012	0.015
20.0	17.637	35.452	25.708	228.13	0.459	261.9	32	0.008	0.008

```

.
.
.   (remainder of station 2)
.
.   (intermediate stations)
.
.   (start of station 142))

```

118.0	13.764	35.210	26.399	165.05	2.876	179.5	31	0.011	0.013
-------	--------	--------	--------	--------	-------	-------	----	-------	-------

120.0	13.721	35.206	26.405	164.54	2.908	181.7	32	0.009	0.010
122.0	13.699	35.205	26.409	164.23	2.941	179.0	25	0.003	0.002
124.0	13.693	35.205	26.410	164.16	2.974	177.9	29	0.002	0.002
126.0	13.692	35.206	26.411	164.13	3.007	180.3	39	0.001	0.001
128.0	13.691	35.205	26.410	164.23	3.040	177.6	28	0.001	0.000
130.0	13.690	35.205	26.411	164.27	3.073	175.6	30	0.001	0.002
132.0	13.695	35.205	26.409	164.42	3.106	175.5	10	0.000	0.000

S f90021143 70

PRESS	TEMP (T-90)	SAL	SIGMA-T	S.V.A.	G.A.	D.O.			
2.0	23.143	34.937	23.845	404.95	0.081	222.5	33	0.003	0.004
4.0	23.141	34.934	23.843	405.19	0.162	235.4	30	0.002	0.003
6.0	23.130	34.927	23.841	405.46	0.243	224.1	32	0.010	0.015
8.0	23.076	34.918	23.849	404.70	0.324	219.3	28	0.014	0.017
10.0	23.065	34.916	23.851	404.62	0.405	219.3	34	0.006	0.007
12.0	23.066	34.915	23.850	404.79	0.486	218.0	30	0.002	0.003

[illegible]

//