

R/V ALIS - CTD DATA

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Background

The oceanographic cruise EQUALIS, a joint operation between the two international projects JGOFS (Joint Global Ocean Flux Study) and TOGA COARE was organized by the FLUPAC group of the Centre ORSTOM de Noumea, New Caledonia, with participation and collaboration of Japanese and Australian scientists.

The cruise was carried out from 3 November through 12 December 1992 (Noumea to Noumea) on board the ORSTOM research vessel ALIS and consisted of two fixed stations at 156 15E, 1 30S (for 10 days from 12 - 22 November 1992) and 156 10E, 1 45S (for 8 days from 27 November - 6 December 1992), interrupted for one day (27/28 November) for intercomparison of meteorological measurements with the Australian research vessel Franklin.

A total of 193 CTD casts were made with a SeaBird SBE 9-02 CTD. Each day 11 CTD casts were made, nine of these casts went down to 500 m and two casts down to 1000 m:

Time	# of casts	depth (m)
01h00	2	500
04h00	1	500
07h00	2	1000, 500
10h00	1	500
13h00	1	500
16h00	1	500
19h00	2	1000, 500
22h00	1	500

During each cast pressure (d-bar), temperature (deg C), and salinity (psu) were measured.

During CTD measurements, sea water samples were taken using a rosette system. Water samples were then analyzed for nutrients (nitrate, nitrite, phosphate and silicate) and chlorophyll on the 0 - 200 m layer, and for salinity when samples were taken at 1000 m (see Alis_nutrients).

Meteorological measurements were taken at the beginning of each CTD cast.

Data File Information

Directory name: Alis_CTD

Number of data files: (2 alispf1.ctd (leg 1), alispf2.ctd (leg 2))

Note: all casts taken during a leg were saved into one file and not into individual files.

Number of documentation files: 1 (alis_ctd.readme)

Dataset format: ASCII

Dataset volume: 1.4 MB

Headers

a) file header:

number of casts, vertical distance between two measurements, fixed station title

b) cast header:

station number, number of parameter measured, number of levels, day, month, year, hour, minute, latitude and longitude. Data and time are in UTC and latitude/longitude are in degrees and decimal degrees.

Parameters

- * pressure (d-bar)
- * temperature (deg C)
- * salinity (psu)

9999 indicate missing data

Data Example

```

104    2.00  Equalis 11 novembre-5 decembre 1992
1  3  255  11  11  92  22  32  -1.50000  156.250
    0.0    28.820    34.144
    4.0    28.820    34.144
    6.0    28.819    34.144
    8.0    28.818    34.144
   10.0    28.819    34.144

```

Data Acquisition, Processing and Calibration

Full resolution raw data of pressure, temperature and salinity were collected at a frequency of 24 scans/sec on the harddisk of a 486 PC Datamini using SeaBird 3.5A (SeaBird 1991) software. Raw data were averaged to 2db profiles after values with a descent rate of less than 0.25 m/s were discarded (EQUAxxx.AVG files where xxx = station number).

Pre- and post-cruise calibrations of temperature and salinity sensors were performed by SeaBird on 31 July 1992 and 14 January 1993, respectively.

A difference of 1 - 1.5 dbar between the pressure measured at sea level with the CTD sensor and with met instruments was observed. The pressure sensor was sent back to SeaBird and it was determined that the following correction had to be applied to all pressure data:

$P_{corr} = 1.00037 * P_{CTD} - 1.644$

The EQUAxxx.AVG files were corrected accordingly.

Twice per day, salinity measurements at 1000 m with the CTD were compared with salinity measurements measured from the bottle samples using a Portosal Guildline salinometer Model 8410. (Estimated precision: $2-3 * 10^{-3}$ salinity). Analyses were made 2 to 4 weeks after the samples were taken on board the R/V Le Noroit. Mean and standard deviation of the difference in salinity measurements with the CTD and with the Salinometer were calculated using pre and postcruise calibration coefficients :

	S(bottle) - S(CTD)	
	mean	std dev.
pre	0.0102	0.0064
post	0.0058	0.0058

Despite the use of the post calibration coefficient there is still a bias in the difference between salinity measured with the salinometer and the CTD. The data therefore have not been corrected.

The average difference between the CTD temperature using pre and post calibration coefficients was 0.03 deg C for temperatures above 25 deg C and 0.0006 deg C for temperatures below 5 deg C. Since this was in accordance with the calibration curve provide by SeaBird the data were corrected using the

postcalibration coefficient.

CTD specifications: TCduct; sensors: temperature - SBE 3 ($4 \cdot 10^{-3}$ deg C);
conductivity - SBE 4 ($3 \cdot 10^{-4}$ S/m per year); pressure - Parascientific
digiquartz 410K.105 (1000 psia, 0.02% full scale).

For more information, please contact:

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Reference:

Rapport de la campagne EQUALIS a bord du NO ALIS pendant la periode
d'observations intensives de l'operation COARE du 3 novembre au 12 decembre
1992. Rapports de Missions, Sciences de la Mer, Oceanographie, No 4, 1993,
ORSTOM, Centre de Noumea, New Caledonia, Decembre 1993, pp. 491.