RCVD: 4 AUG 76 | (ACKN) | ACCESSION NUMBER 7601900

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DATA DOCUMENTATION FORM

BL2549 F022
BL2550 C100

NOAA FORM 24-13 (2)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEANOGRAPHIC DATA CENTER
RECORDS SECTION
ROCKVILLE, MARYLAND 20852
ATTN: FRANCIS MITCHELL

FORM APPROVED
O.M.B. No. 41-R2651

This form should accompany all data submissions to NODC. Section A, Originator Identification, must be completed when the data are submitted. It is highly desirable for NODC to also receive the remaining pertinent information at that time. This may be most easily accomplished by attaching reports, publications, or manuscripts which are readily available describing data collection, analysis, and format specifics. Readable, handwritten submissions are acceptable in all cases. All data shipments should be sent to the above address.

48 HYDRO CASTS PLUS

IDOE / CUEA

193 CASTS

A. ORIGINATOR IDENTIFICATION

HIGH RESOLUTION CTD'S

THIS SECTION MUST BE COMPLETED BY DONOR FOR ALL DATA TRANSMITTALS

1. NAME AND ADDRESS OF INSTITUTION, LABORATORY, OR ACTIVITY WITH WHICH SUBMITTED DATA ARE ASSOCIATED

SCHOOL OF OCEANOGRAPHY
OREGON STATE UNIVERSITY
CORVALLIS, OR 97331

NODC TAPE 2567
RECFM=FB LRECL=80
BLKSIZE=800 LABEL=(,NL)
1600 b.p.i. 9TRK

2. EXPEDITION, PROJECT, OR PROGRAM DURING WHICH DATA WERE COLLECTED

JOINT I (1974)

3. CRUISE NUMBER(S) USED BY ORIGINATOR TO IDENTIFY DATA IN THIS SHIPMENT

JOINT I
[GS7401]

4. PLATFORM NAME(S)

R/V GILLISS

5. PLATFORM TYPE(S) *(E.G., SHIP, BUOY, ETC.)*

SHIP

6. PLATFORM AND OPERATOR NATIONALITY(IES)

PLATFORM	OPERATOR
R/V GILLISS	UNIV. OF WASHINGTON

7. DATES

FROM: MO/DAY/YR	TO: MO/DAY/YR
FEB 9, 74	APR 23/74

8. ARE DATA PROPRIETARY?

[X] NO [ ] YES

IF YES, WHEN CAN THEY BE RELEASED FOR GENERAL USE? YEAR ____ MONTH ____

9. ARE DATA DECLARED NATIONAL PROGRAM (DNP)?

(I.E., SHOULD THEY BE INCLUDED IN WORLD DATA CENTERS HOLDINGS FOR INTERNATIONAL EXCHANGE?)

[ ] NO [X] YES [ ] PART *(SPECIFY BELOW)*

10. PERSON TO WHOM INQUIRIES CONCERNING DATA SHOULD BE ADDRESSED WITH TELEPHONE NUMBER *(AND ADDRESS IF OTHER THAN IN ITEM-1)*

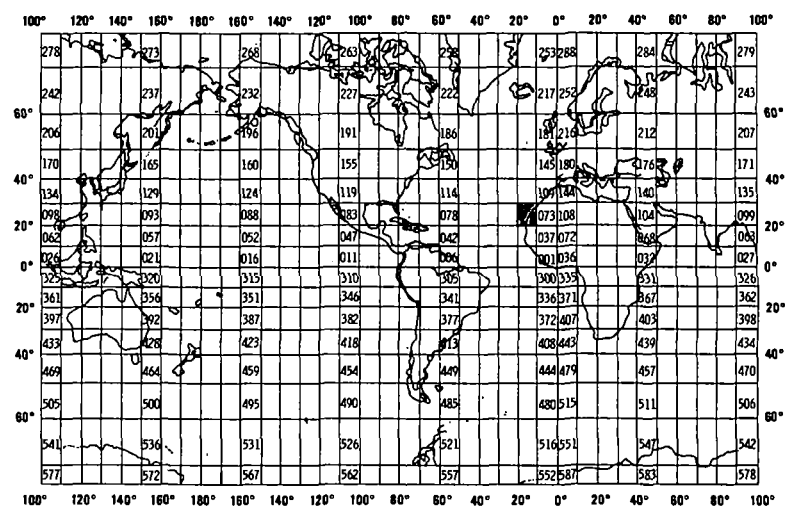
DR. JANE HUYER

(503) 754-2206

11. PLEASE DARKEN ALL MARSDEN SQUARES IN WHICH ANY DATA CONTAINED IN YOUR SUBMISSION WERE COLLECTED.

GRANT : GX-33502
NSF/IDOE

GENERAL AREA



USCOMM-DC 44289-P72

B. SCIENTIFIC CONTENT

Include enough information concerning manner of observation, instrumentation, analysis, and data reduction routines to make them understandable to future users. Furnish the minimum documentation considered relevant to each data type. Documentation will be retained as a permanent part of the data and will be available to future users. Equivalent information already available may be substituted for this section of the form (i.e., publications, reports, and manuscripts describing observational and analytical methods). If you do not provide equivalent information by attachment, please complete the scientific content section in a manner similar to the one shown in the following example.

EXAMPLE (HYPOTHETICAL INFORMATION)

NAME OF DATA FIELD	REPORTING UNITS OR CODE	METHODS OF OBSERVATION AND INSTRUMENTS USED (SPECIFY TYPE AND MODEL)	ANALYTICAL METHODS (INCLUDING MODIFICATIONS) AND LABORATORY PROCEDURES	DATA PROCESSING TECHNIQUES WITH FILTERING AND AVERAGING
Salinity	‰	Nansen bottles	Inductive salinometer (Hytech model S 510)	N/A (Not applicable)
		STD Bissett-Berman Model 9006	N/A	Values averaged over 5-meter intervals
Water color	Forel scale	Visual comparison with Forel bottles	N/A	N/A
Sediment size	ϕ units and percent by weight	Ewing corer	Standard sieves. Carbonate fraction removed by acid treatment	Same as "Sedimentary Rock Manual," Folk '65

(SPACE IS PROVIDED ON THE FOLLOWING TWO PAGES FOR THIS INFORMATION)

B. SCIENTIFIC CONTENT

NAME OF DATA FIELD	REPORTING UNITS OR CODE	METHODS OF OBSERVATION AND INSTRUMENTS USED (SPECIFY TYPE AND MODEL)	ANALYTICAL METHODS (INCLUDING MODIFICATIONS) AND LABORATORY PROCEDURES	DATA PROCESSING TECHNIQUES WITH FILTERING AND AVERAGING
TEMPERATURE CONDUCTIVITY SALINITY	°C mhos/cm² ‰	GEODYNE CTD STD - BISSETT-BERMAN Model 9060	(see attached sheet)	values averaged over 1. meter intervals

HYDRO

(BEGINNING W/ RECORD # 1991 [COUNT]) ARE HYDRO CAST DATA, STATION #'S ARE 197, 198, 202-206, 217-223, 227-233 AND 235-261

TAPE CONTAINS FIVE (5) FILES W/ EOF AFTER EACH FILE. 1ST FOUR + PART OF FIFTH FILE ARE CTD CASTS. THE LAST 48 STATIONS (CASTS) IN FILE FIVE

B. SCIENTIFIC CONTENT

NAME OF DATA FIELD	REPORTING UNITS OR CODE	METHODS OF OBSERVATION AND INSTRUMENTS USED (SPECIFY TYPE AND MODEL)	ANALYTICAL METHODS (INCLUDING MODIFICATIONS) AND LABORATORY PROCEDURES	DATA PROCESSING TECHNIQUES WITH FILTERING AND AVERAGING

C. DATA FORMAT

This information is requested only for data transmitted on punched cards or magnetic tape. Have one of your data processing specialists furnish answers either on the form or by attaching equivalent readily available documentation. Identify the nature and meaning of all entries and explain any codes used.

1. List the record types contained in your file transmittal (e.g., tape label record, master, detail, standard depth, etc.).

2. Describe briefly how your file is organized.

3-13. Self-explanatory.

14. Enter the field name as appropriate (e.g., header information, temperature, depth, salinity.

15. Enter starting position of the field.

16. Enter field length in number columns and unit of measurement (e.g., bit, byte, character, word) in unit column.

17. Enter attributes as expressed in the programming language specified in item 3 (e.g., "F 4.1," "BINARY FIXED (5.1)").

18. Describe field. If sort field, enter "SORT 1" for first, "SORT 2" for second, etc. If field is repeated, state number of times it is repeated.

C. DATA FORMAT

COMPLETE THIS SECTION FOR PUNCHED CARDS OR TAPE, MAGNETIC TAPE, OR DISC SUBMISSIONS.

1. LIST RECORD TYPES CONTAINED IN THE TRANSMITTAL OF YOUR FILE
GIVE METHOD OF IDENTIFYING EACH RECORD TYPE

Header Block - list is enclosed with mag tape (there are 5 cruises)
Data Blocks - each cast is composed of 2 header cards and numberous lines of data. See p. 27-28 of enclosed data report for header card information. P. 28-29 gives data layout.

2. GIVE BRIEF DESCRIPTION OF FILE ORGANIZATION

Header block followed by as many data blocks as needed.

{

(5 cruises)

3. ATTRIBUTES AS EXPRESSED IN ☐ PL-1 ☐ ALGOL ☐ COBOL ☐ FORTRAN ☐ _____ LANGUAGE

4. RESPONSIBLE COMPUTER SPECIALIST:
NAME AND PHONE NUMBER WILLIAM GILBERT (503) 754-2206
ADDRESS SCHOOL OF OCEANOGRAPHY, OREGON STATE UNIV, Corvallis, OR 97331

COMPLETE THIS SECTION IF DATA ARE ON MAGNETIC TAPE

5. RECORDING MODE
☒ BCD ☐ BINARY ☐ ASCII ☐ EBCDIC ☐ _____

6. NUMBER OF TRACKS (CHANNELS)
☒ SEVEN ☐ NINE ☐ _____

7. PARITY
☐ ODD ☒ EVEN

8. DENSITY
☐ 200 BPI ☐ 1600 BPI ☐ 556 BPI ☒ 800 BPI ☐ _____

9. LENGTH OF INTER-RECORD GAP (IF KNOWN) ☒ 3/4 INCH ☐ _____

10. END OF FILE MARK
☒ OCTAL 17 ☐ _____

11. PASTE-ON-PAPER LABEL DESCRIPTION (*INCLUDE ORIGINATOR NAME AND SOME LAY SPECIFICATIONS OF DATA TYPE, VOLUME NUMBER*)
OREGON STATE UNIVERSITY
SCHOOL OF OCEANOGRAPHY
BCD EVEN PARITY JOINT-I
7 TRACK 800 BPI (OFF AFRICA)

12. PHYSICAL BLOCK LENGTH IN BYTES
4000

13. LENGTH OF BYTES IN BITS
6

RECORD FORMAT DESCRIPTION

RECORD NAME _____

14. FIELD NAME	15. POSITION FROM-1 MEASURED IN _____ (e.g., bits, bytes)	16. LENGTH NUMBER	16. LENGTH UNITS	17. ATTRIBUTES	18. USE AND MEANING
FIRST HEADER CARD					
STA. NO.	col 1-3				station number
	col 4				U => up cast; D = down
STA. DESIGNATOR (IF used)	col 5-8				
Month	9-10				
Day	11-12				
time (Z)	13-16				
LATITUDE (N)	18-23				
LONGITUDE (W)	24-30				
Swell direction	31-33				
swell height (ft)	34-35				
swell period (sec)	36-37				
wind direction	38-40				
wind speed (knots)	41-42				
barometric pressure (mb)	43-46				14.6 => 1014.6 mb
wet bulb temperature	47-50				°C
dry bulb temperature	51-54				°C
WMO weather code	55-56				
cloud type	58				
second cloud type	60				
cloud amount	61				
visibility code	62				

RECORD FORMAT DESCRIPTION

RECORD NAME _____

14. FIELD NAME	15. POSITION FROM-1 MEASURED IN _____ (e.g., bits, bytes)	16. LENGTH NUMBER	16. LENGTH UNITS	17. ATTRIBUTES	18. USE AND MEANING

Second Header Card

	columns
bottom depth (m)	1-4
surface temperature ~1m	5-8
surface salinity ~1m	9-14
depth of following salinity (m)	15-18
↳ salinity (‰)	19-24
CTD number	25-28
year (1974)	29-32

Data

depth (m)
temperature (°C)
conductivity (millimhos/cm²)
salinity (‰)
sigma-T
(repeats)

RECORD NAME #1 DETAIL CARD CTD'S

RECORD FORMAT DESCRIPTION

14. FIELD NAME	15. POSITION FROM-1 MEASURED IN _____ (e.g., bits, bytes)	16. LENGTH NUMBER	16. LENGTH UNITS	17. ATTRIBUTES	18. USE AND MEANING
DEPTH (m.)	1-4	4		XXXX	Whole meters
BLANK	5	1			BLANK
TEMPERATURE	6-9	4		XX.XX 1	°C, degrees to HUNDRETHS
BLANK	10	1			BLANK
CONDUCTIVITY	11-14	4		X.XXX 1	m MHO's to HUNDRETHS
BLANK	15	1			BLANK
SALINITY	16-19	4		XX.XX 1	°/oo to HUNDRETHS
BLANK	20	1			BLANK
σ_t	21-24	4		XX.XX 1	Density
BLANK	25-26	2			BLANK
DEPTH	27-30	4		XXXX	Whole meters
BLANK	31	1			BLANK
TEMPERATURE	32-35	4		XX.XX 1	°C, degrees, to HUNDRETHS
BLANK	36	1			BLANK
CONDUCTIVITY	37-40	4		XX.XX 1	m MHOS to HUNDRETHS
BLANK	41	1			BLANK
SALINITY	42-45	4		XX.XX 1	°/oo TO HUNDRETHS
BLANK	46	1			BLANK
σ_t	47-50	4		XX.XX 1	Density
BLANK	51-52	2			BLANK
DEPTH	53-56	4		XXXX	Whole meters
BLANK	57	1			BLANK
TEMPERATURE	58-61	4		XX.XX 1	°C, degrees to HUNDRETHS
BLANK	62	1			BLANK
CONDUCTIVITY	63-66	4		X.XXX 1	m MHO's to HUNDRETHS
BLANK	67	1			BLANK
SALINITY	68-71	4		XX.XX 1	°/oo to HUNDRETHS
BLANK	72	1			BLANK
σ_t	73-76	4		XX.XX 1	Density

1 = decimal implied

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RECORD FORMAT DESCRIPTION

RECORD NAME # 2 DETAIL CARD - HYDRO CASTS

14. FIELD NAME	15. POSITION FROM - 1 MEASURED IN _____ (e.g., bits, bytes)	16. LENGTH NUMBER	16. LENGTH UNITS	17. ATTRIBUTES	18. USE AND MEANING
DEPTH	1-4	4		XXXX	Whole METERS
BLANK	5	1			BLANK
TEMPERATURE	6-9	4		XX.XX[1]	°C to HUNDRETHS
BLANK	10-13	4			BLANK
DUMMY	14	1			ZERO ENTERED
BLANK	15	1			BLANK
SALINITY	16-19	4		XX.XX[1]	°/oo TO HUNDRETHS
BLANK	20	1			BLANK
σ_t	21-24	4		XX.XX[1]	Density
BLANK	25-26	2			BLANK
DEPTH	27-30	4		XX.XX[1]	whole Meters
BLANK	31	1			BLANK
TEMPERATURE	32-35	4		XX.XX[1]	°C to HUNDRETHS
BLANK	36-39	4			BLANK
DUMMY	40	1			ZERO ENTERED
BLANK	41	1			BLANK
SALINITY	42-45	4		XX.XX[1]	°/oo to HUNDRETHS
BLANK	46	1			BLANK
σ_t	47-50	4		XX.XX[1]	Density
BLANK	51-52	2			BLANK
DEPTH	53-56	4		XXXX	Whole METERS
BLANK	57	1			BLANK
TEMPERATURE	58-61	4		XX.XX[1]	°C to HUNDRETHS
BLANK	62-65	4			BLANK
DUMMY	66	1			ZERO ENTERED
BLANK	67	1			BLANK
SALINITY	68-71	4		XX.XX[1]	°/oo to HUNDRETHS
BLANK	72	1			BLANK
σ_t	73-76	4		XX.XX[1]	Density
	1 = IMPLIED DECIMAL				

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D. INSTRUMENT CALIBRATION

This calibration information will be utilized by NOAA's National Oceanographic Instrumentation Center in their efforts to develop calibration standards for voluntary acceptance by the oceanographic community. Identify the instruments used by your organization to obtain the scientific content of the DDF (i.e., STD, temperature and pressure sensors, salinometers, oxygen meters, velocimeters, etc.) and furnish the calibration data requested by completing and/or checking ("✓") the appropriate spaces. Add the interval time (i.e., 3 months, 6 months, 9 months, etc.) if the fixed interval calibration cycle is checked.

INSTRUMENT TYPE (MFR., MODEL NO.)	DATE OF LAST CALIBRATION	INSTRUMENT WAS CALIBRATED BY		CHECK ONE: INSTRUMENT IS CALIBRATED					INSTRUMENT IS NOT CALIBRATED
		YOUR ORGANIZATION (√)	OTHER ORGANIZATION (GIVE NAME)	AT FIXED INTERVALS (√)	BEFORE OR AFTER USE (√)	BEFORE AND AFTER USE (√)	ONLY AFTER REPAIR (√)	ONLY WHEN NEW (√)	(√)
GEODYNE CTD's		✓				✓			

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USCOMM-DC 44289-P72

RCVD: 4 AUG 76

JOINT-I, 1974
R/V GILLISS

Documentation of Processed STD Velocimeter Data

National Oceanographic Data Center

September 1971

Please use this form as a supplement to the NODC "Data Definition Form, General Information."

All items on this form are considered of importance to the archive processing and future use of STD-velocimeter data. In submitting computer processed data, it is especially important to complete the section titled "Reduction-Processing."

A. Instrument - Sensors

1. Instrument - Sensors

   a. Manufacturer GEODYNE CTD (#1, #2, #3) & BISSETT-BERMAN STD
   b. Model 9060
   c. Serial
   d. Sensors (The questions asked about each sensor listed may serve as a guide for information to be submitted about other sensors.)

2. Salinity (Compensated Conductivity)

   a. Model
   b. Serial
   c. Date of last calibration Data was calibrated using samples collected during casts.

3. Temperature

   a. Model
   b. Serial
   c. Date of last calibration Data was calibrated using samples collected during casts.

4. Pressure

   a. Model
   b. Serial
   c. Date of last calibration 1972 (we use manufacture's calibration)
   d. If pressure is recorded as depth, what relationship was used to arrive at depth?

5. Sound Velocity

   a. Model
   b. Serial number
   c. Date of last calibration
   d. Is raw calibration data available? Yes_____ No_____
   e. Person to be contacted for calibration information.
   f. Reference equation used for sound velocity (i.e., Wilson, Greenspan, etc., or variations theron).

6. Conductivity (if used)

   a. Model
   b. Serial
   c. Date of last calibration collected samples used to calibrate data during cruise.

7. Other (Attach a list for other parameters such as ambient light, transmissivity, etc.)

8. Is calibration data for the above sensors available? Yes X No___

9. Have you modified your instrument and/or sensors? yes

10. Which parameters are affected by the modifications? conductivity, T

11. What is the result of the modification with respect to the accuracy, resolution, and precision of the data? improved data quality

B. Operational Methods

1. Mode of use

   (a) Platform is affected by pitch and roll which is not decoupled from the package.
   b. Platform is stable or platform motion is decoupled from package.
   c. Unit is freefalling.
   d. Other (describe).

2. Lowering rate (meters/min)

   a. Enter lowering rate in regions of high parameter gradients
   b. Enter lowering rate in regions of low parameter gradients

   > 15 m/minute

3. Time Response

   a. Unit measures continuously STD

CTD 1 — 1 — 4
CTD 2 — 1 — 2
CTD 3 — 3 — 4

b. Unit measures 1 samples per 4
c. Samples are averages of measurements over _____ time or 1 m. depth.

4. Power Supply

a. Power supply is unstabilized _____ Maximum fluctuations ± _____ Volts about _____ volts nom
b. Power supply to the following portions of the system is stabilized. The instrument package which is lowered into the water use a self contained battery power supply.

5. Field Checks (Indicate any operational "Deck" tests routinely made on the system (e.g., ice point tests on temperature sensors, electrical tests, etc.). (Describe) Collected sample T + S were compared to profile listings.

6. Thermal Environment

a. Instrument stored in water bath at _____ °C to °C

C. Reduction-Processing

1. Primary Data Output

a. Strip chart (state scale setting (s))
b. Paper tape STD
(c.) Magnetic tape (CTD's)

(1) Digital (CTD's)
(2) Analog STD

2. Initial Reduction

(a.) Down trace only
b. Down trace and up trace processed

(1) Separate
(2) Averaged

c. Multiple lowerings _____ through depth interval _____
d. Values smoothed against depth. Describe (e.g., running average, etc.)
(e.) Special routines to compensate for "spiking" (describe)
f. Compression applied to final data record (i.e., vertical spacing, rounding of depth, temperature, salinity, etc.)

Spikes removed by removing those values that looked bad on T, S, σ_t plots.

3. Corrections

a. Were corrections applied to final data? yes

b. Corrections based on (by parameter)

(1) Surface sample
(2) On-line samplers (give depth relation to probe) T,C (2 m above probe)
(3) Separate lowerings (Nansen casts, other probes)
(4) Other _____

c. For corrected data, what is the estimated average accuracy of the final data? ~~For uncorrected data, what is the average bias (if known)?~~

		CTD 1	CTD 2	CTD 3	STD
(1)	Depth-pressure	± 0.2	± 0.2	± 0.2	± 0.2
(2)	Temperature	± 0.03	± 0.04	± 0.02	± 0.03
(3)	Salinity	± 0.03	± 0.04	± 0.02	± 0.03
(4)	Sound Velocity	± _____			

likely due to real changes in the hydrography than to instrumental behavior as they are not consistent in sign throughout the depth range observed. Also, in other profiles made near this location, differences similar in magnitude but opposite in sign were apparent between 'up' and 'down' traces.

Reasonable agreement is evident between CTD and STD data. However, the latter have been more heavily smoothed and consequently show less structure than the CTD profiles. Agreement in sigma-t is good for cast 198, less so for cast 197. Below 100 m, STD values are about 0.05 sigma-t units lower than CTD values. Because of the weak stratification, this could cause an uncertainty in isopycnal depth of up to 50 m.

Data presentation

Profiles of temperature, salinity and sigma-t are presented in groups corresponding to hydrographic lines, drogue stations, or anchor stations. Long series of profiles are broken into subsets. Temperature profiles are offset by 2°C, salinity profiles by 0.25 o/oo, and sigma-t profiles by 0.5 sigma-t units. Each profile is identified by station number shown to its right. The origin for the temperature, salinity, or sigma-t scale for each profile is denoted by a tick mark on the bottom of the diagram.

For each cast, observed and computed parameters are listed at a series of standard depths. The header data, which precedes each listing, giving location and weather information is coded as follows:

CAST NO	Consecutive cast number. For CTD casts, the number is followed by 'U' if the profile was obtained during ascent of the probe or 'D' if it was obtained during descent.
STATION	Station designator for positions along the L or H lines, or indicating parachute drogue stations (D).

LAT	Latitude in degrees and minutes north of the equator.
LONG	Longitude in degrees and minutes west of Greenwich.
DATE	Month/day/year
TIME	Hours and minutes, Universal time
DPTH	Bottom depth in meters
PROBE	OSU1, OSU2, OSU3 - CTD units 1, 2, 3. STD - Bissett Berman self-contained probe unit.
SWELL DIR	Direction in degrees True from which the swell propagates.
HT	Swell height in feet
PER	Swell period in seconds
BAR	Atmospheric pressure in excess of 1000 mb.
WEATHER	See WMO weather code.
WIND DIR	Direction in degrees True from which the wind blows.
SPD	Wind speed in knots.
CLOUD TYPE	The two predominant cloud types (see WMO Cloud Type code).
AMOUNT	Coded cloud amount (see WMO Cloud Amount code).
AIR TEMP	Air temperature in degrees Celsius.
WET BULB	Wet bulb temperature in degrees Celsius.

The data listing includes observed and calculated parameters at the shallowest and deepest observation levels. If there was no observation at 0 m, sea surface values are assumed to be the same as those of the shallowest observation. For each depth, the temperature (TEMP) and salinity (SAL) values are as observed or interpolated linearly from the nearest neighboring values. Sigma-t (SIGMA), specific volume anomaly x 10^5 (SVA), dynamic height (DELD) in dynamic meters, and potential energy in 10^8 ergs

cm^{-2} (POTE) are given for each depth. Computer parameters are calculated from the complete data array.

Acknowledgments

The cooperation and assistance of Captain Hagen, the officers, and crew of R/V GILLISS during JOINT-I is greatly appreciated. Special thanks are due to Ms. Karie Tamura for typing this report. The observational program was supported by National Science Foundation Grant GX-33502.

References

Brown, N. L. and B. V. Hamon (1961) An inductive salinometer. Deep-Sea Research, 8, 65-75.

Huyer, A. (1974) Coastal Upwelling Experiment data report, June-August 1973. School of Oceanography, Oregon State University, Corvallis, Oregon 97331. Data Report 59. Reference 74-8.

Jones, J. H. (1969) Processing of digital data logger STD tapes at the Scripps Institute of Oceanography and the Bureau of Commercial Fisheries. La Jolla, B. C. F. S. S. R. Fisher., No. 588, 25 pages.

Perkin, R. C. and E. R. Walker (1972) Salinity calculations from in situ measurements. Journal of Geophysical Research, 77(33), 6618-6621.

Pillsbury, R. D., J. S. Bottero, R. E. Still and E. Mittelstaedt (1975) A compilation of observations from moored current meters, Vol. VIII. Wind, currents and temperature off NW Africa along 21°40'N during JOINT-I. February-April 1974. School of Oceanography, Oregon State University, Corvallis, Oregon 97331. Data Report 62. Reference 74-20.

Sweers, H. E. (1971) A comparison of methods used to calculate sigma-t, specific volume anomaly, and dynamic height. MTS Journal, 5(3), 7-26.

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

Code figure ww

No meteors except photometeors

00	Cloud development not observed or not observable
01	Clouds generally dissolving or becoming less developed
02	State of sky on the whole unchanged
03	Clouds generally forming or developing

(characteristic change of the state of sky during the past hour)

Haze, dust, sand or smoke

04	Visibility reduced by smoke, e.g. veldt or forest fires, industrial smoke or volcanic ashes
05	*Haze*
06	Widespread dust in suspension in the air, not raised by wind at or near the station at the time of observation
07	Dust or sand raised by wind at or near the station at the time of observation, but no well developed dust whirl(s) or sand whirl(s), and no duststorm or sandstorm seen
08	Well developed dust whirl(s) or sand whirl(s) seen at or near the station during the preceding hour or at the time of observation, but no dustorm or sandstorm
09	Duststorm or sandstorm within sight at the time of observation, or at the station during the preceding hour
10	Mist
11	Patches of — shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
12	More of less continuous — shallow fog or ice fog at the station, whether on land or sea, not deeper than about 2 metres on land or 10 metres at sea
13	Lightning visible, no thunder heard
14	Precipitation within sight, not reaching the ground or the surface of the sea
15	Precipitation within sight, reaching the ground or the surface of the sea, but distant (i.e. estimated to be more than 5 km) from the station
16	Precipitation within sight, reaching the ground or the surface of the sea, near to, but not at the station
17	Thunderstorm, but no precepitation at the time of observation
18	Squalls
19	Funnel clouds

(18, 19: at or within sight of the station during the preceding hour or at the time of observation)

ww = 20 – 29 Precipitation, fog, ice fog or thunderstorm at the station during the preceding hour but not at the time of observation

20	Drizzle (not freezing) or snow grains
21	Rain (not freezing)
22	Snow
23	Rain and snow or ice pellets, type (a)
24	Freezing drizzle or freezing rain

(20–24: not falling as shower(s))

25	Shower(s) of rain
26	Shower(s) of snow, or of rain and snow
27	Shower(s) of hail, or of rain and hail
28	Fog or ice fog
29	Thunderstorm (with or without precipitation)

ww = 30 – 39 Duststorm, sandstorm, drifting or blowing snow

30	Slight or moderate duststorm or sandstorm	– has decreased during the preceding hour
31		– no appreciable change during the preceding hour
32		– has begun or has increased during the preceding hour
33	Severe duststorm or sandstorm	– has decreased during the preceding hour
34		– no appreciable change during the preceding hour
35		– has begun or has increased during the preceding hour
36	Slight or moderate blowing snow	generally low (below eye level)
37	Heavy drifting snow	
38	Slight or moderate blowing snow	generally high (above eye level)
39	Heavy blowing snow	

ww = 40 – 49 Fog or ice fog at the time of observation

40	Fog or ice fog at a distance at the time of observation, but not at the station during the preceding hour, the fog or ice fog extending to a level above that of the observer	
41	Fog or ice fog in patches	
42	Fog or ice fog, sky visible	has become thinner during the preceding hour
43	Fog or ice fog, sky invisible	
44	Fog or ice fog, sky visible	no appreciable change during the preceding hour
45	Fog or ice fog, sky invisible	
46	Fog or ice fog, sky visible	has begun or has become thicker during the preceding hour
47	Fog or ice fog, sky invisible	
48	Fog, depositing rime, sky visible	
49	Fog, depositing rime, sky invisible	

NO PRECIPITATION ON STATION AT TIME OF OBSERVATION

ww = 50 – 59	Drizzle	
50	Drizzle, not freezing, intermittent	slight at time of observation
51	Drizzle, not freezing, continuous	
52	Drizzle, not freezing, intermittent	moderate at time of observation
53	Drizzle, not freezing, continuous	
54	Drizzle, not freezing, intermittent	heavy (dense) at time of observation
55	Drizzle, not freezing, continuous	
56	Drizzle, freezing, slight	
57	Drizzle, freezing, moderate or heavy (dense)	
58	Drizzle and rain, slight	
59	Drizzle and rain, moderate or heavy	

ww = 60 – 69	Rain	
60	Rain, not freezing, intermittent	slight at time of observation
61	Rain, not freezing, continuous	
62	Rain, not freezing, intermittent	moderate at time of observation
63	Rain, not freezing, continuous	
64	Rain, not freezing, intermittent	heavy at time of observation
65	Rain, not freezing, continuous	
66	Rain, freezing, slight	
67	Rain, freezing, moderate or heavy	
68	Rain or drizzle and snow, slight	
69	Rain or drizzle and snow, moderate or heavy	

70 – 79	Solid precipitation not in showers	
ww		
70	Intermittent fall of snow flakes	slight at time of observation
71	Continuous fall of snow flakes	
72	Intermittent fall of snow flakes	moderate at time of observation
73	Continuous fall of snow flakes	
74	Intermittent fall of snow flakes	heavy at time of observation
75	Continuous fall of snow flakes	
76	Ice prisms (with or without fog)	
77	Snow grains (with or without fog)	
78	Isolated starlike snow crystals (with or without fog)	
79	Ice pellets, type (a)	

ww = 80 – 99	Showery precipitation, or precipitation with current or recent thunderstorm	
80	Rain shower(s), slight	
81	Rain shower(s), moderate or heavy	
82	Rain shower(s), violent	
83	Shower(s) of rain and snow mixed, slight	
84	Shower(s) of rain and snow mixed, moderate or heavy	
85	Snow shower(s), slight	
86	Snow shower(s), moderate or heavy	
87	Shower(s) of snow pellets or ice pellets, type (b), with or without rain or rain and snow mixed	– slight
88		– moderate or heavy
89	Shower(s) of hail, with or without rain or rain and snow mixed, not associated with thunder	– slight
90		– moderate or heavy
91	Slight rain at time of observation	thunderstorm during the preceding hour but not at time of observation
92	Moderate or heavy rain at time of observation	
93	Slight snow, or rain and snow mixed or hail at time of observation	
94	Moderate or heavy snow, or rain and snow mixed or hail at time of observation	
95	Thunderstorm, slight or moderate, without hail, but with rain and/or snow at time of observation	thunderstorm at time of observation
96	Thunderstorm, slight or moderate, with hail at time of observation	
97	Thunderstorm, heavy, without hail, but with rain and/or snow at time of observation	
98	Thunderstorm, combined with duststorm or sandstorm at time of observation	
99	Thunderstorm, heavy, with hail at time of observation	

CLOUD TYPE CODE

Code	Cloud Type	Code	Cloud Type
0	Cirrus Ci	5	Nimbostratus ..... Ns
1	Cirrocumulus Cc	6	Stratocumulus ..... Sc
2	Cirrostratus ..... Cs	7	Stratus ..... St
3	Altocumulus ..... Ac	8	Cumulus ..... Cu
4	Altostratus ..... As	9	Cumulonimbus ..... Cb
X	Cloud not visible owing to darkness, fog, duststorm, sandstorm, or other analogous phenomena		

CLOUD AMOUNT CODE

Code	Cloud Cover	Code	Cloud Cover
0	0	6	6 oktas
1	1 okta or less, but not zero	7	7 oktas or more, but not 8 oktas
2	2 oktas	8	8 oktas
3	3 oktas	9	Sky obscured, or cloud amount cannot be estimated
4	4 oktas		
5	5 oktas		

Note: 1 okta = 1/8 of the sky covered

```
Password:
 accNo   fleA refNo  proj inst ship    startDate  cruise   catId
 ------- ---- ------ ---- ---- ------- ---------- -------- ----------
 7601900 F022 BL2549 0071 3103 31GI    1974/02/09 GS7401       301463
 7601900 C100 BL2550 0071 3103 31GI    1974/02/09 GS7401       301464

(2 rows affected)
```

7601900

```
Password:
 accNo   fleA refNo  ship staCnt recCnt startDate  endDate
 ------- ---- ------ ---- ------ ------ ---------- ----------
 7601900 F022 BL2549 31GI 193    NULL   74/02/09   74/04/23
 7601900 C100 BL2550 31GI 48     NULL   74/02/09   74/04/23

(2 rows affected)
```

```
Password:
 accNo   fleA refNo  proj inst ship    startDate  cruise   catId
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 7601900 F022 BL2549 0071 3103 31GI    1974/02/09 GS7401       301463
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(2 rows affected)
```

```
Password:
 accNo   fleA refNo  ship staCnt recCnt startDate  endDate
 ------- ---- ------ ---- ------ ------ ---------- ----------
 7601900 F022 BL2549 31GI 193    0      74/02/09   74/04/23
 7601900 C100 BL2550 31GI 48     0      74/02/09   74/04/23

(2 rows affected)
```