

CRUISE REPORT

SHIP UTILIZATION DATA

UNOLS

Rev. 4/83

SHIP NAME ROBERT D. CONRAD		OPERATING INST. L-DGO		PARTICIPATING PERSONNEL			
CRUISE (LEG) NO. RC2801		DATES		CODE	NAME	TITLE	AFFILIATION
AREA OF OPERATIONS: Equatorial Atlantic		PORT CALLS:		1.	Dr. Eli Katz	Scientist	L-DGO
		PLACE	DATES	2.	Dr. Frank Aikman	Scientist	L-DGO
		Rio de Janeiro	2-6 Jan 87	3.	Miguel Maccio	Engineer	L-DGO
		Recife	29 Jan 87	4.	Phil Mele	Computer Programmer	L-DGO
DAYS AT SEA 23	DAYS IN PORT 4	(Over)					
Use Reverse If Additional Space Required.							

WAS RESEARCH CONDUCTED IN FOREIGN WATERS? YES COUNTRY: BRAZIL
 PRIMARY PROJECTS (those which govern the principal operations, area and movements of the ship)

PROJECT TITLE AND PRINCIPAL INVESTIGATOR	SPONSORING ACTIVITY	GRANT OR CONTRACT NUMBER	PARTICIPATING PERSONNEL (AS CODED ABOVE)
"Waves, Annual Cycle and Interannual Variability of the Thermocline in the Equatorial Atlantic" P.I.'s: E.Katz/S.Garzoli	NSF	OCE 84-14319	1, 2, 3, 4, 7, 8
DISCIPLINE Pysical Oceanography			

ANCILLARY PROJECTS (which are accomplished on a not-to-interfere basis and contribute to the overall effectiveness of the cruise)

PROJECT TITLE AND PRINCIPAL INVESTIGATOR	SPONSORING ACTIVITY	GRANT OR CONTRACT NUMBER	PARTICIPATING PERSONNEL (AS CODED ABOVE)
Rain gage installation on equatorial island	O.R.S.T.O.M. (FRANCE)	-----	9

SIGNATURE E. Katz DATE 2/2/87
 CHIEF SCIENTIST

TOTAL SCIENTISTS 3 TOTAL TECHNICIANS 8
 TOTAL GRAD STUDENTS 2 TOTAL STUDENTS/OBSERVERS 2

ATTACH 1 SIZE CRUISE TRACK

COST ALLOCATION DATA

DAYS CHARGED	AGENCY OR ACTIVITY CHARGED	GRANT OR CONTRACT NO.
27	NSF	NOT AVAILABLE YET

SIGNATURE John R. Kelley
 Institution Official

DATE 1 Feb 87

<u>CODE</u>	<u>NAME</u>	<u>TITLE</u>	<u>AFFILIATION</u>
5.	Capt. E. Neiva	Observer	Brazilian Navy
6.	Nuno Perriera	Observer	Univ. of San Paulo
7.	Jose Cassio	Grad. Student	Univ. of San Paulo
8.	Carlos Franca	Grad. Student	Univ. of San Paulo
9.	Jacque Caliede	Scientist	O.R.S.T.O.M. (France)
10.	Joe Stennett	Shipboard Staff	L-DGO
11.	Frank Robinson	Shipboard Staff	L-DGO
12.	Steve LaBreque	Shipboard Staff	L-DGO
13.	Robert Blaes	Shipboard Staff	L-DGO
14.	David Caplan	Shipboard Staff	L-DGO
15.	Martin Iltzche	Shipboard Staff	L-DGO

Feb. 19, 1986

TO:

Barbee, W.D. - UNOLS
Dudley, J. - LDGO
Gerard, S. - LDGO
Hayes, D. - LDGO
Cox, L. - LDGO
Lotti, R. - LDGO
Raleigh, B. - LDGO
Ruddiman, W. - LDGO
Ryan, W.F.B. - LDGO
Sykes, L.R. - LDGO
Takahashi, T. - LDGO
Science Officer - CONRAD
Captain - CONRAD

RESEARCH CRUISE REPORT

R/V ROBERT D. CONRAD 28-01

Attached is a copy of a cruise report for the above CONRAD cruise.



Ann Burns
Marine Office

Enc.

Lamont-Doherty Geological Observatory
of Columbia University

Palisades, N.Y. 10964

Cable: LAMONTGEO

Palisades New York State

TWX-710-576-2653

Telephone: Code 914, 359-2900

February 10, 1987

Mr. Tom Cocke
OES/OMS, Room 5801
U.S. State Department
Washington, D.C. 20520

Dear Tom:

Enclosed please find three copies of our cruise report for CONRAD 28-01, conducted partially in Brazilian waters, in January 1987. Clearances were given as Presidential Decree 93066, appearing in the 8 December 1986 issue of the official gazette. Please forward copies to the Brazilian government as is necessary.

Yours sincerely,


Eli Joel Katz

encl: Cruise Report (3 Copies)

cc: Marine Office (Attention Mike Rawson)

LAMONT-DOHERTY GEOLOGICAL OBSERVATORY
COLUMBIA UNIVERSITY
PALISADES, NY 10964

CRUISE REPORT
R/V CONRAD, CRUISE 28-01

Project: Studies of the Interannual Variability of the Upper Ocean
Response to the Annual Wind Forcing in the Equatorial Atlantic.

Schedule: Departed Rio de Janeiro, Brazil, January 6, 1987
Arrived Recife, Brazil, January 29, 1987

Funding/Principal Investigator:

NSF OCE 84 15319/Eli Katz and Silvia Garzoli

Scientific Party:

Eli Katz	LDGO	Chief Scientist
Frank Aikman	LDGO	Scientist
Miguel Maccio	LDGO	Electronic Engineer
Phillip Mele	LDGO	Computer Programmer/Diver
Jacques Callede	ORSTOM	Hydrologist
Carlos Franca	IOUSP	Student
Jose Cassio, Jr.	IOUSP	Student
Nuno Pereira, Filho	IOUSP	Observer
Capt. Eugenio Neiva	BRAZ. NAVY	Observer
Joe Stennet	LDGO	Marine Technician
Steve La Breque	LDGO	Marine Technician
David Caplan	LDGO	Marine Technician
Martain Iltzsche	LDGO	Marine Technician
Frank Robinson	LDGO	Marine Technician
Robert Blaes, Jr.	LDGO	Marine Technician

Purpose:

To recover four inverted echo sounders and deploy seven. To replace existing meteorological station on St. Peter and St. Paul rocks. To establish rain gauge at latter site. To replace existing tide gauges at the latter site and at Fernando de Noronha. To obtain hydrographic data along the track.

Results:

All the above was accomplished with the following exceptions: The tide gauges were not replaced due to the death in a plane crash of the principal diver en route to the ship. The inverted echo sounder at the equator and 28 W was not recovered. Locations, times and ancillary information are provided in Tables 1-5 accompanying this report. A cruise track is also included with approximate times on station.

Respectfully submitted,

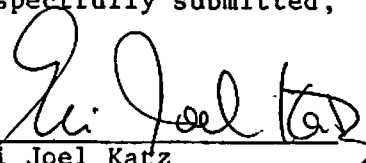

Eli Joel Katz
Chief Scientist

Table 1: Deployment of IES

SITE	S/N	YR.DAY	TIME(GMT)	WATER	LAT.(°N)	LONG.(°W)
				DEPTH(m)		
QUIZA	44	013	22:09	4100	0 00.2	28 10.7
SUE	43	018	23:30	4352	0 00.4	38 34.8
SOL	50	019	23:10	4530	3 16.1	38 36.8
SID	10	021	04:53	4640	6 01.0	38 29.6
SAL	45	022	03:18	4100	9 05.1	38 11.2
TED	14	024	03:12	4625	6 57.4	43 59.4
TOM	40	025	07:47	4195	2 59.3	44 01.0

Table 2: Recovery of IES

SITE	S/N	RELEASE				DAYS IN WATER	LAT.(°N)	LONG.(°W)
		YR.DAY	TIME(GMT)					
QUIZA	38	L O S T				0 00.2	28 10.5	
SUE	39	027	02:35		455	0 00.1	38 33.9	
SOL	40	020	10:07		448	3 15.9	38 35.5	
SAL	41	022	13:15		448	9 04.6	38 11.4	

Table 3: Initialization of Data Acquisition
on St. Peter & St. Paul Rocks

A. Wind Recorder (LDGO)

Yr.Day 014 12:17 GMT Shut Down Recorder (After 447 days of operation)
 014 19:18 Restart Recorder - Subsequently Fails
 016 17:05 Restart Recorder

B. Rain Gauge (ORSTOM)

Yr.Day 014 14:00 GMT Initialized Data Acquisition

Table 4: CTD Casts

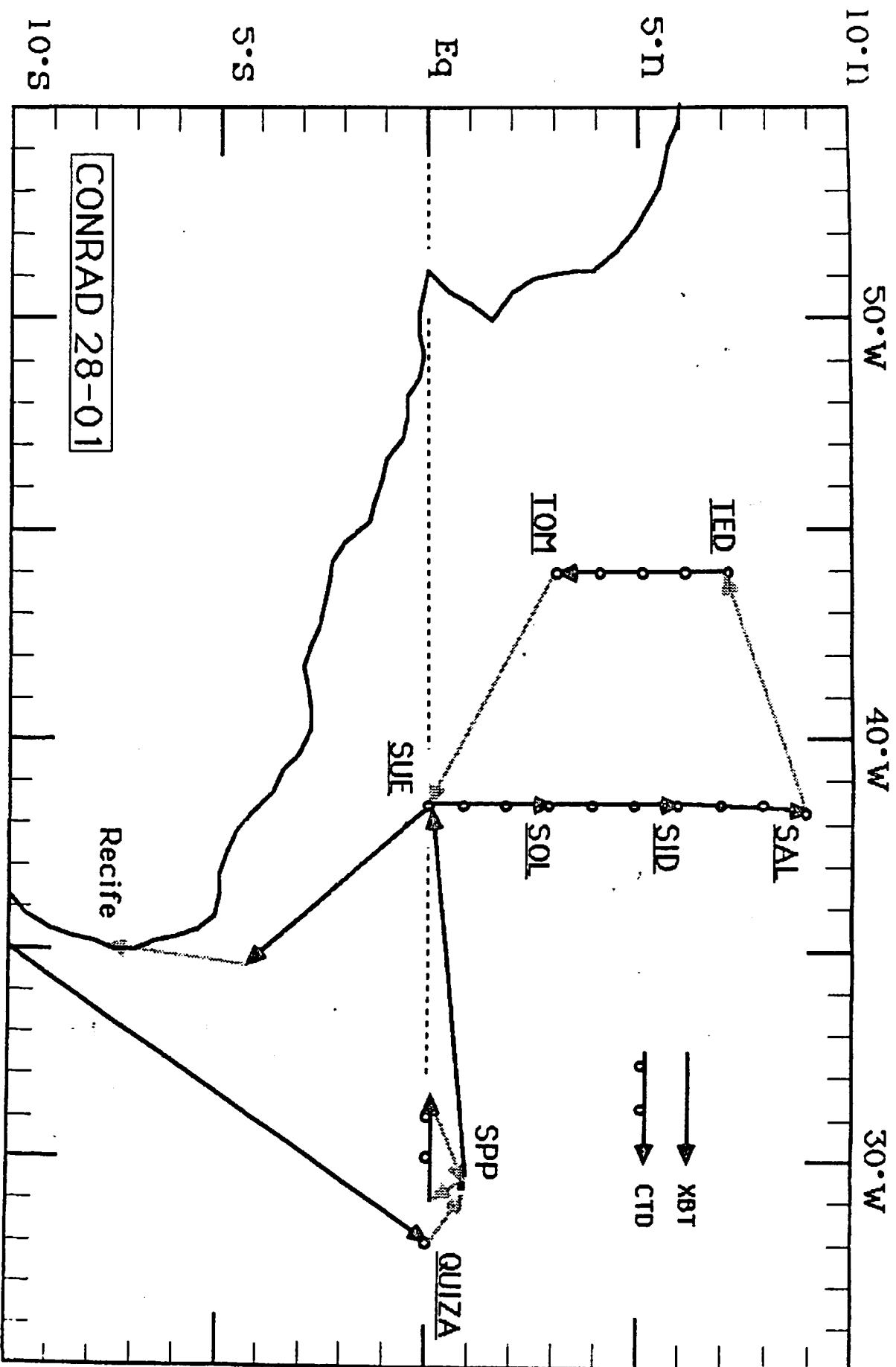
CAST NO.	YR.DAY	TIME(GMT)	LAT.	LONG.(°W)	WIRE OUT(m)
33	009	16:26	14 38.3'S	35 45.6'	500
34	011	11:32	7 55.4'S	32 18.1'	1000
35	013	23:33	0 00.9'N	28 11.6'	600
36	015	12:28	0 00.4'N	29 58.1'	500
37	015	19:21	0 00.1'S	30 59.4'	545
38	019	00:53	0 00.7'N	38 35.8'	1500
39	020	00:58	3 16.7'N	38 39.7'	1500
40	020	08:12	3 17.6'N	38 24.4'	1500
41	021	06:00	6 00.5'N	38 28.9'	1500
42	022	04:19	9 04.4'N	38 11.6'	1500
43	022	10:38	9 04.1'N	38 14.0'	1500
44	024	01:25	6 57.9'N	44 01.3'	1500
45	024	11:15	6 00.5'N	43 59.4'	600
46	024	17:41	5 00.1'N	44 17.4'	600
47	025	00:42	3 59.9'N	44 00.6'	600
48	025	10:17	2 58.0'N	44 02.0'	1500
49	027	05:01	0 00.6'N	38 35.3'	1500

Table 5: List of Successful XBTs

XBT NO.	1987		TIME (GMT)	LAT.	LONG(W)	BUCKET	
	YR.DAY					SAL(ppt)	T(°C)
30	007		18:06	21 35.6'S	40 03.8'	36.927	26.7
32	008		16:14	18 27.1'S	37 41.7'	37.156	27.3
34	008		21:37	17 43.2'S	37 04.5'	37.199	27.4
35	009		02:41	17 00.6'S	36 31.0'	36.966	27.5
37	009		08:05	16 03.1'S	36 15.0'	36.962	27.3
38	009		11:16	15 29.6'S	36 04.7'	37.162	27.2
40	009		15:36	14 43.6'S	35 48.0'	36.941	27.6
41	009		21:26	13 59.9'S	35 29.6'	36.828	27.4
42	010		02:10	13 14.9'S	35 06.9'	36.840	27.1
43	010		07:19	12 29.4'S	34 40.8'	36.656	27.2
46	010		11:48	11 42.1'S	34 17.2'	36.681	27.4
48	010		16:21	10 58.2'S	33 53.2'	36.424	27.9
49	010		20:52	10 14.7'S	33 30.8'	36.431	27.5
50	011		01:24	9 30.4'S	33 09.0'	36.506	27.3
51	011		05:58	8 44.6'S	32 46.8'	36.633	27.2
52	011		10:31	7 59.9'S	32 21.7'	36.468	27.3
53	011		20:50	7 15.0'S	31 59.1'	36.552	27.5
55	012		01:51	6 28.6'S	31 35.1'	36.563	27.4
56	012		06:42	5 44.8'S	31 11.6'	36.531	26.9
57	012		11:20	5 00.2'S	30 49.1'	36.447	27.1
58	012		16:15	4 15.0'S	30 25.0'	36.406	27.3
59	012		21:05	3 30.0'S	30 01.6'	36.480	27.2
60	013		02:09	2 45.0'S	29 36.5'	36.392	27.5
61	013		07:04	1 59.5'S	29 13.2'	36.466	27.4
63	013		12:14	1 12.9'S	28 48.6'	36.471	27.0
64	013		16:57	0 29.9'S	28 26.1'	36.376	27.5
66	013		18:43	0 13.5'S	28 17.8'	36.333	26.8
67	013		20:06	0 00.7'N	28 11.3'	36.267	26.8
68	014		22:22	0 53.9'N	29 25.8'	36.288	26.8
69	015		05:28	0 00.3'S	29 10.2'	36.294	26.8
70	016		21:33	0 51.7'N	29 59.9'	36.209	27.0
71	017		02:49	0 42.7'N	31 00.1'	36.201	26.8
72	017		07:44	0 38.7'N	32 00.1'	36.075	26.8
73	017		12:33	0 33.0'N	33 00.5'	36.309	27.0
74	017		19:50	0 27.2'N	34 00.5'	36.336	27.3
75	018		00:44	0 20.7'N	35 00.1'	36.321	27.1
76	018		06:03	0 13.2'N	35 59.7'	36.350	27.0
77	018		11:33	0 09.4'N	36 59.7'	36.459	27.2
78	018		19:20	0 03.7'N	38 00.4'	36.403	27.4
79	018		20:39	0 01.7'N	38 14.9'	36.338	27.4
80	018		22:01	0 00.4'N	38 31.2'	36.280	27.5
81	019		04:01	0 14.9'N	38 35.8'	36.333	27.1
82	019		11:41	1 30.4'N	38 35.5'	36.293	27.1
83	019		16:19	2 17.3'N	38 36.2'	36.180	27.2
84	019		20:42	2 59.8'N	38 35.6'	36.130	27.1
85	019		22:21	3 15.8'N	38 35.5'	36.012	27.1
86	020		14:00	3 30.4'N	38 36.1'	36.189	27.1
87	020		16:47	3 59.3'N	38 36.2'	36.213	27.1
89	020		22:56	5 01.8'N	38 32.2'	35.934	26.9
93	021		03:36	5 51.7'N	38 29.9'	36.267	26.6

Table 5 cont.

XBT NO.	1987		TIME (GMT)	LAT.	LONG(W)	BUCKET	
	YR.DAY					SAL(ppt)	T(°C)
94	021	04:28	6 00.0'N	38 30.0'		36.294	26.5
97	021	09:49	6 20.7'N	38 25.1'		36.323	26.4
98	021	13:45	6 59.6'N	38 23.0'		36.316	25.4
99	021	19:46	8 00.4'N	38 19.3'		36.347	25.0
100	022	00:07	8 45.4'N	38 13.8'		36.398	24.6
101	022	02:18	9 05.0'N	38 11.5'		36.275	24.6
102	022	16:48	8 56.4'N	38 27.8'		36.360	25.1
103	023	23:40	7 05.8'N	43 45.9'		36.504	26.2
104	024	03:35	6 57.3'N	43 58.5'		36.115	26.0
107	024	07:38	6 38.5'N	43 59.8'		36.007	25.8
108	025	05:38	3 14.4'N	44 00.3'		35.958	27.0
109	025	06:49	3 01.3'N	44 00.0'		35.982	27.0
111	025	13:07	2 52.5'N	43 48.8'		35.959	26.8
112	027	00:42	0 07.2'N	38 47.0'		36.557	27.5
113	027	02:21	0 00.1'N	38 34.4'		36.382	27.5
115	027	11:07	0 30.9'S	38 06.1'		36.429	27.5
117	027	15:04	1 00.7'S	37 39.4'		36.390	27.4
118	027	19:02	1 30.0'S	37 12.6'		36.459	27.7
119	027	23:05	2 00.1'S	36 42.9'		36.435	27.5
120	028	03:11	2 30.0'S	36 14.6'		36.487	27.4
121	028	07:07	3 00.0'S	35 47.9'		36.499	27.4
122	028	11:26	3 30.0'S	35 18.7'		36.466	27.8
123	028	15:19	4 04.0'S	35 05.6'		36.464	27.7
124	028	17:51	4 30.1'S	35 01.1'		36.621	27.9
125	028	19:54	4 49.7'S	34 57.1'		36.553	27.7



Depart Rio	St Peter & St Paul	SID	TOM
1700 Jan 06	1000-1630/16	0230-0730/21	0500-0930/25
QUIZA	SUE	SAL	SUE
1800-2300/13	2030/18-0300/19	0000-1330/22	0230-0500/27
St Peter & St Paul	SOL	TED	Arrive Recife
0700-1900/14	2030/19- /20	2300/23-0400/24	0 Jan 29