

CRUISE REPORT

ORV SAGAR KANYA

Cruise No. 130

(30 Dec. 1997 to 11 Jan., 1998)



राष्ट्रीय समुद्र विज्ञान
संस्थान

**NATIONAL INSTITUTE
OF
OCEANOGRAPHY**

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NATIONAL INSTITUTE OF OCEANOGRAPHY

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REPORT ON THE 130TH OCEANOGRAPHIC CRUISE OF O.R.V. SAGAR KANYA

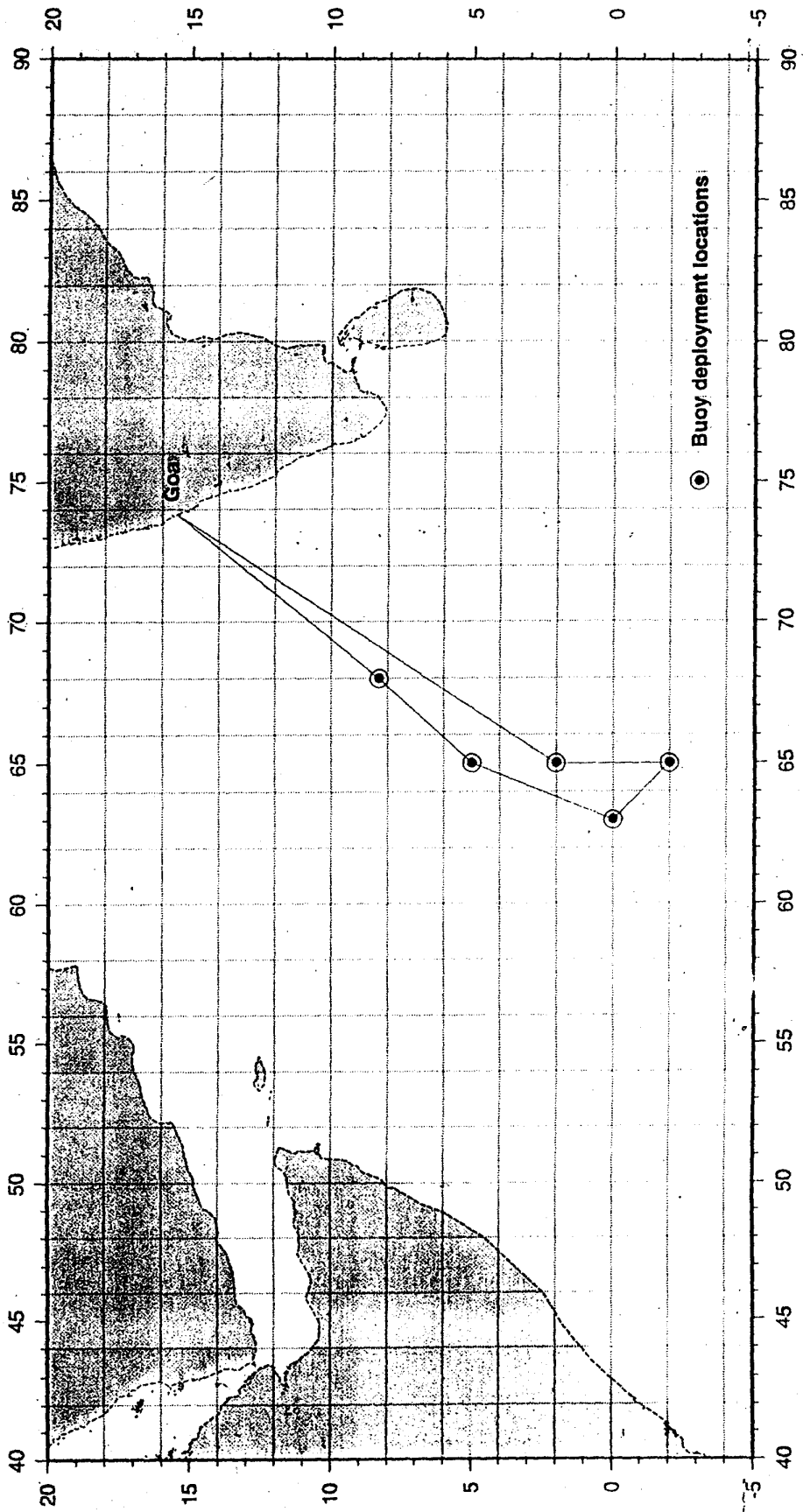
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Cruise Track SK-130



2. CRUISE SUMMARY

The cruise was organized as a part of drifting buoy programme initiated in 1991 under the sea-truth data collection project of MARSIS (Marine Satellite Information System). The main objective of the cruise was deployment of drifting buoys at pre-determined locations. The area of deployment was equatorial Indian Ocean and southern Arabian Sea. During the voyage towards the deployment locations and back to Mormugao, several transects of ADCP (Acoustic Doppler Current Profiler) were also made. The ship sailed from Mormugao on 30 December 1997 with 6 scientists onboard. Except for the intermittent rains on the immediate north of the equator, the weather was excellent for the buoy deployment operations. Altogether, 3 TOGA type multi-parameter buoys and 2 WOCE type buoys were deployed. The cruise ended on 11 January 1998 at Mormugao.

3. PARTICIPANTS

3.1 Scientific component

Satheesh C. Shenoi, <i>Chief Scientist</i>)	
R.J.K. Charyulu)	
G. Nampoothiri)	
P.K. Saji)	NIO, Goa
A.M. Almeida)	
M. Subramaniam)	
Biju V. Nair)	M/s NORINCO, Goa
Rajeev K.C.)	

3.2 Ship's complement

Capt. N. Sreekumar	—	Master
S. P. Sahu	—	Chief Officer
Tarsem Singh	—	NWKO
V. Kanakaraj	—	AWKO
Ashwani Kumar	—	NWKO
Aniruddha Home	—	C/E/O
G. Ganguli	—	2/E/O
H.K. Jain	—	3/E/O
P.K. Mitra	—	3/E/O
P. Sreedharan	—	Electrical Officer
M.S. Chahal	—	Electrical Officer
G. S. Nagarcenkar	—	Radio Officer
James Jose	—	Medical Officer
I. R. Vaz	—	Catering Officer
G. C. Jacques	—	Purser

4. INTRODUCTION

The cruise was a part of drifting buoy programme of sea-truth data collection project, that deployed and managed several drifters in the equatorial and north Indian Ocean since 1991. The objective of the cruise was to deploy multi-parameter buoys in the equatorial Indian Ocean and southern Arabian Sea at suitable locations. The deployment of drifters were made to collect data on some meteorological and oceanographic information required as the sea-truth for the calibration and validation of algorithms for remotely sensed data in the north Indian Ocean and to study the surface current characteristics in the Indian Ocean. Further, the data will be used by weather prediction centers when the data is disseminated over the Global Telecommunication System (GTS) on near real time.

The ARGOS Data Collection and Location System (DCLS) installed onboard NOAA (National Oceanographic and Atmospheric Administration) satellites are used for data transmission and position location. On an average, 7 to 8 observations are being obtained from each buoy every day. The data gets down loaded at ARGOS ground stations in USA and France and later gets transported to NIO.

Earlier, most of the deployments were made during the voyages meant for other scientific studies in the Indian Ocean. This time a special cruise was essential due to the factors listed under section on cruise details.

5. CRUISE DETAILS

The cruise was planned to deploy TOGA type multi-parameter and WOCE type SVP buoys in the equatorial and southern Arabian Sea sector of the north Indian Ocean. The selection of locations to deploy the buoys were made based on (i) the regions where the buoy data density is low or non-existent and (ii) the regions that can provide longer survival times for the expensive TOGA type buoys. Combining with other cruises, planned for the year, would have called for considerable compromise on these issues. Also, unlike the WOCE type buoys, the TOGA type buoys required special care while deployment to avoid the damage of wind mast assembly.

The ship sailed from Mormugao on 30 December 1997 at 1700 hrs. with six scientists from NIO and two technicians from M/s NORINCO onboard. The first deployment was made at 080 18.16' N and 670 59.82' E on 2 January 1998 at 0345 hrs. IST. Later, four more deployments were made during this cruise. The cruise track shows the locations where the buoys were deployed. Table 1 lists the locations of deployments, time of deployment, sensors attached to the buoys and meteorological parameters prevailed at the deployment locations. All the buoys were switched ON for transmission before the commencement of the cruise and were monitored for transmission quality through on-line consultation of ARGOS computers situated in France. Consultations were made using the Internet facility in NIO and communicated to ship.

Two WOCE type buoys were deployed in their deployment cartons itself. The adhesive tape sealed cartons gets dissolved in water releasing the drifter ready for drift and transmission. Just a reduction in the ship speed (4 to 5 knots) was enough for these deployments. One of them (ID 15704) carried sensors for SST and barometric pressure and indicators for the presence of drogue attachment and battery level. The second buoy (ID 26413) carried a sensor for SST and indicators for drogue attachment and battery level. Both the buoys were attached with holey sock drogues as sea anchor.

The deployments of TOGA type multi-parameter buoys were made using a crane situated on the star-board side of the ship. Compared to WOCE buoys, the TOGA buoys were heavier and longer. The mast assembly was fragile and great care was required to

avoid the damage of mast. These buoys carried sensors for SST, air temperature, atmospheric pressure, wind speed and wind direction. The wind speed and directions were measured using sonic anemometers.

Fifteen transects of vertical profiles of horizontal velocities were made during the cruise using the broad band ADCP mounted on the hull of the ship. Table 2 lists the summary of transects. Navigational data was obtained through the GPS navigator installed onboard. During most of the transects, profiles could be obtained over a water column extending from about 27 to 200 m. Due to logistics, only the processed data were archived. While processing, 10 ping ensembles over 5 minutes were averaged. The archived data consist of components of horizontal velocities, percent good data, correlation and echo intensity. The later three parameters were archived for the post-processing of horizontal velocities. Vertically, 4 m bins were selected.

6. PERFORMANCE OF ONBOARD EQUIPMENTS

Performance of Wave Recorder and Thermosalinograph was tested during the cruise. Wave Recorder was switched ON for 15 minutes for testing at 3 locations where the ship stopped for TOGA type buoy deployments. The performance of Wave Recorder was satisfactory.

Thermosalinograph was switched ON for testing for about 4 hours on 8 January. The performance was satisfactory, except for the leakage in one of the pure sea-water pipe passing through the incinerator room. Captain was informed about this problem.

There was no loss of equipment during the cruise.

7. ACKNOWLEDGEMENTS

The cruise participants are thankful to Department of Ocean Development for making *SAGAR KANYA* available for the deployment of drifting buoys. Thanks are also due to Master of the vessel and his crew for making this cruise a big success.

Table 1: Buoy deployment locations and surface meteorological observations

Buoy ID	Latitude	Longitude	Date	Time hrs (IST)	Sensors attached	SST °C	Air Temperature °C		Sea level pressure mb	wind direction °TN
							DB	WB		
26413	08° 18.16' N	67° 59.82' E	2-1-98	0345	SST	28.0	26.0	24.5	1010.2	0
11354	04° 59.90' N	65° 00.00' E	3-1-98	0930	SST, AT, BP, WS, WD	29.5	29.5	25.7	1003.9	60
11352	00° 00.20' N	62° 59.80' E	4-1-98	1845	SST, AT, BP, WS, WD	29.6	29.5	26.3	1010.9	130
11353	01° 59.95' S	64° 59.70' E	5-1-98	1455	SST, AT, BP, WS, WD	29.5	30.8	27.0	1009.0	122
15704	02° 00.50' N	64° 59.90' E	6-1-98	1630	SST, BP	30.4	30.2	26.0	1008.4	100

Table 2: Details of ADCP transects made during the voyage.

Transect No.	Start				End			
	Latitude	Longitude	Date	Time (hrs) IST	Latitude	Longitude	Date	Time (hrs) IST
Buoy046	11° 52' N	70° 32' E	31-12-97	22:53	11° 48' N	70° 30' E	31-12-97	23:30
Buoy049	11° 42' N	70° 26' E	1-1-98	00:10	09° 10' N	68° 35' E	1-1-98	20:29
Buoy050	09° 09' N	68° 35' E	1-1-98	20:35	09° 00' N	68° 29' E	1-1-98	21:48
Buoy052	08° 58' N	68° 28' E	1-1-98	19:56	08° 48' N	68° 22' E	1-1-98	23:26
Buoy055	08° 42' N	68° 17' E	2-1-98	00:11	07° 23' N	67° 09' E	2-1-98	12:11
Buoy061	07° 17' N	67° 04' E	2-1-98	12:56	05° 01' N	65° 01' E	3-1-98	09:06
Buoy064	04° 35' N	64° 50' E	3-1-98	12:38	03° 44' N	64° 30' E	3-1-98	18:03
Buoy065	03° 42' N	64° 50' E	3-1-98	18:11	00° 02' S	63° 01' E	4-1-98	18:32
Buoy066	00° 05' S	63° 05' E	4-1-98	19:55	02° 00' S	65° 00' E	5-1-98	15:05
Buoy067	01° 58' S	65° 00' E	5-1-98	15:31	02° 00' N	65° 00' E	6-1-98	16:26
Buoy068	02° 06' N	65° 03' E	6-1-98	17:19	10° 45' N	70° 06' E	9-1-98	10:59
Buoy069	10° 58' N	70° 13' E	9-1-98	12:34	12° 14' N	70° 58' E	9-1-98	21:29
Buoy070	12° 39' N	71° 13' E	10-1-98	00:21	13° 57' N	71° 57' E	10-1-98	09:56
Buoy071	14° 02' N	72° 02' E	10-1-98	10:49	14° 31' N	72° 36' E	10-1-98	16:21
Buoy072	14° 33' N	72° 39' E	10-1-98	16:50	14° 36' N	72° 44' E	10-1-98	18:08
Buoy075	14° 40' N	72° 50' E	10-1-98	18:20				