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Report on Oceanographic Cruise of O. R. V. Sagar Kanya

CRUISE No. 25

15th August to 7th September, 1986

National Institute of Oceanography
Dona Paula–403 004, Goa
INDIA

NATIONAL INSTITUTE OF OCEANOGRAPHY
(Council of Scientific & Industrial Research)
Dona Paula - 403 004, Goa

REPORT ON

25TH OCEANOGRAPHIC CRUISE OF

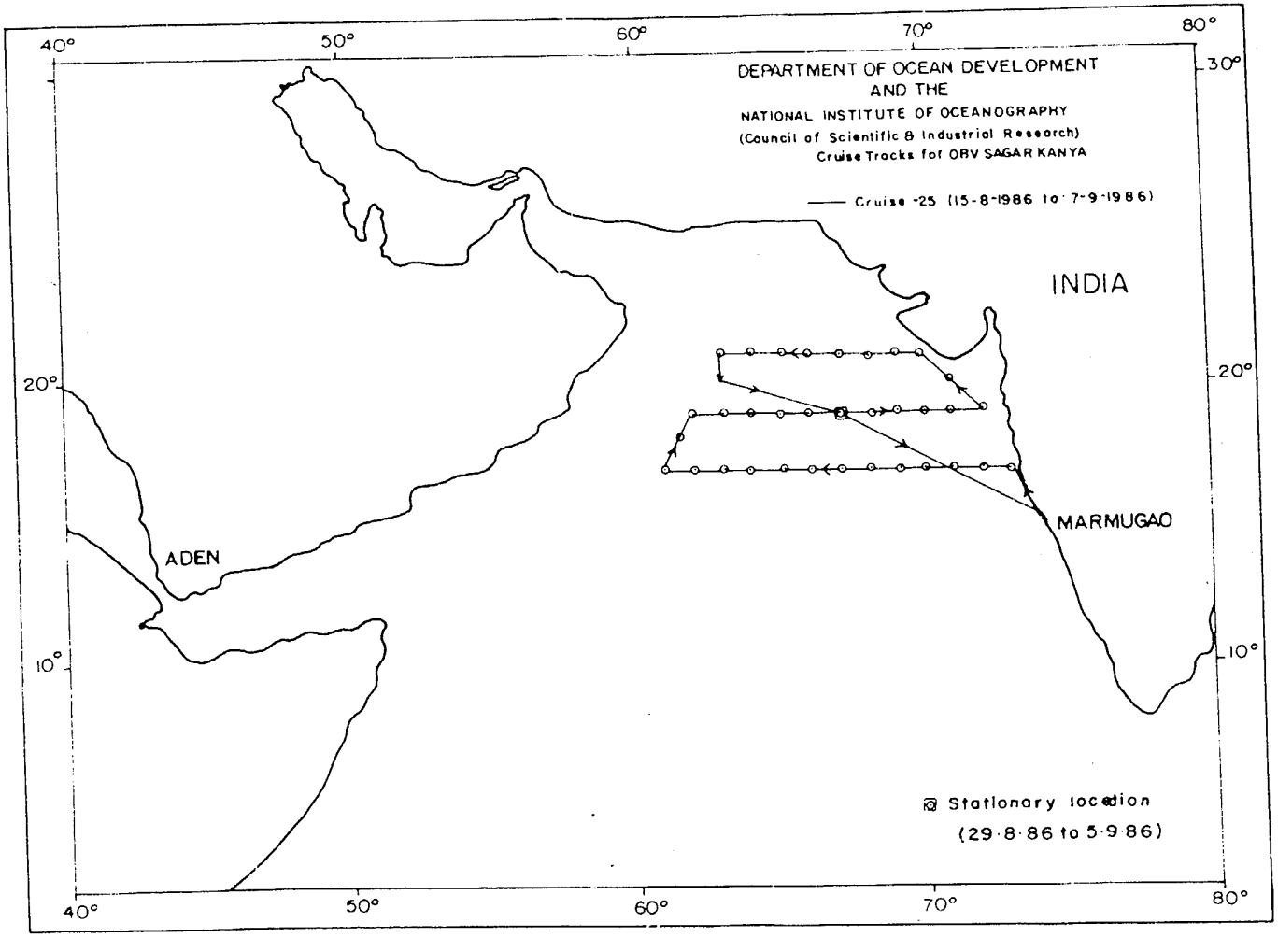
O.R.V. SAGAR KANYA

(15th August to 7th September, 1986)

REPORT ON THE 25TH OCEANOGRAPHIC CRUISE OF

C.R.V. SAGAR KANYA

C O N T E N T S


DEPARTMENT OF OCEAN DEVELOPMENT
AND THE
NATIONAL INSTITUTE OF OCEANOGRAPHY
(Council of Scientific & Industrial Research)
Cruise Tracks for ORV SAGAR KANYA
Cruise -25 (15-8-1986 to 7-9-1986)
INDIA
ADEN
MARMUGAO
Stationary location
(29·8·86 to 5·9·86)
40°
50°
60°
70°
80°
30°
20°
10°

2. CRUISE SUMMARY

The duration of the cruise was from 15 August to 7 September, 1986. It was commenced from Mormugao Port and ended at the same port. During this cruise, stations were occupied along three zonal sections - 17°, 19°, and 21°N - in central and northern parts of the Arabian Sea with a view to understand the response of the ocean to the summer monsoon and the feed-back effect of the anomalous Arabian Sea summer cooling on the energetics of the monsoon. The stations were spaced at one degree interval. There were 13, 11, and 8 stations occupied along 17°, 19° and 21°N latitudes respectively. In addition to these stations, time-series observations were taken at a stationary location 19°N and 67°E from 29 August to 5 September 1986 to probe the variations in the heat content of the upper oceanic layer (0-500 m).

3. PARTICIPANTS

a) Scientific component

V. Ramesh Babu	-	Chief Scientist
V.V. Gopalakrishna	X	Physical Oceanography Division, NIO, Goa
R.J.K. Charyulu	X	
M.S.S. Sarma	X	
A.M. Almeida	X	
D. Sundar	X	
K. Santanam	X	
Algar Swamy	X	Chemical Oceanography Division, NIO, Goa
K. Somasunder	X	
A. Menezes	X	Instrumentation & Computer Division, NIO, Goa
M. Satyakumar	X	India Meteorological Department, New Delhi
S.P. Saxena	X	
S.K. Dey	X	
S.S. Kataria	X	
D.R. Gota	X	
G.P. Iyer	X	

b) Ship's complement

J.S. Bawa	-	Master
S.K. Mahapatra	-	Chief Officer
J.S. Rathaur	-	Second Officer
V.M. Thomray	-	Third Officer
J.L.M. Nazareth	-	Chief Radio Officer
Gautam Mandal	-	Radio Officer
H.K. Jumani	-	Medical Officer
V.N. Kaodoskar	-	Purser
L.J. Fernandes	-	Chief Engineer
Arun Sharma	-	Second Engineer
R.K. Diwakar	-	Third Engineer
Anupam Kumar	-	Fourth Engineer
H.A. Dhmankar	-	Fifth Engineer
P.S. Dhillon	-	Electrical Officer
K.N. Samant	-	Electrical Officer
A.D. Carneiro	-	Chief Catering Officer

4. OBJECTIVES AND ORIGINAL CRUISE PLAN

The original plan was to conduct this cruise during July - August 1986 from Mogadishu (Somalia port) to Mormugao port after covering five sections along 13°, 15°, 17°, 19° and 21°N to understand mainly the response of the ocean (hydrography, circulation) in relation to the onset of strong summer monsoon winds over the area. Since stations were already covered along 13° and 15°N latitudes during Sagar Kanya twenty-fourth cruise, the present cruise was intended to cover the remaining three sections in central and northern parts of the Arabian Sea only. The work was essentially the continuation of the earlier cruise.

5. CRUISE DETAILS

Departure from Mormugao port - 15 August 1986 at 1735 IST

Arrival at Mormugao port - 7 September 1986 at 0845 IST

During this cruise, hydrographic data (temperature and salinity) at different depths were collected at 35 stations including the stationary location (19°N and 67°E). The hydrocast was operated at the stationary location at every twelve hours. Nansen bottles and reversing thermometers were used to collect the hydrographic data. Only Expendable

(XBT) Bathythermograph was operated at 26 hydrographic stations. Also at a stationary location, XBT was operated at every three hourly interval to obtain temperature profiles in upper layers of the water column.

Making use of shipborne wave recorder, data on waves were collected at all stations. Surface meteorological observations (air temperature, atmospheric pressure, wind speed and direction) were taken at hydrographic stations. Scientists from India Meteorological Department normally operated radiosonde twice daily at 0530 and 1730 IST to record upper air temperature and humidity fields and also attempted to operate omegasonde equipment once daily at 1130 IST to record profiles of winds in addition to air temperature and humidity.

6. SYNOPSIS OF OBSERVATIONS AND DATA COLLECTED

The positions of all stations covered during the cruise alongwith synopsis of observational schedule followed at each station are shown in Table 1.

It is to be pointed out here that necessary corrections are to be applied to the temperature data obtained through hydrocast. Depth and temperature corrections are also to be applied to the original temperature digitised from XBT

records. The water samples collected thrcugh hydrocast were analysed on board the ship using a salinometer (Autosal) for estimation of salinity. The shipborne wave recorder data provide information on wave height and period.

7. SPECIAL REPORTS/SIGNIFICANT FINDINGS

(i) The heat content variations in the upper 100 m water column at a stationary location (19°N and 67°E) are one order higher than those found in the mixed layer (0-50 m). The net heat exchange is mainly controlled by evaporation rates which are further related to fluctuations in wind field.

(ii) The nitrite concentration decreases away from the Indian coast as seen in all three sections.

(iii) Petroleum hydrocarbon concentration is found less in the open sea than in the coastal sea.

8. PERFORMANCE ANALYSIS

The performance of CTD system was not good as sudden jumps in depth (pressure) values were continued to encounter in spite of our best efforts to rectify the fault.

9. LOSSES/DAMAGES

During this cruise, the following three reversing protective thermometers were found broken on account of rough sea conditions.

Nos. : 7991, 7995 and 9379

10. SPECIFIC COMMENTS/SUGGESTIONS

It is highly desirable to see that the research ship is made available in time so that we can adhere to the original planned cruise dates for conducting a successful time variable ocean parameters study.

11. ACKNOWLEDGEMENTS

The Chief Scientist and other participants of the cruise wish to express sincere thanks to the master, officers and crew of ORV Sagar Kanya for their excellent cooperation during the cruise.

ORV Sagar Kanya
Cruise 25

Table - 1

P E R F O R M A N C E C H A R T

STN. NO.	LATITUDE	LONGITUDE	DATE	DURATION From	DURATION TO	SONIC DEPTH	PHYSICAL PARAMETERS XBT	HYDRO -CAST	WAVES	CHEMICAL PARAMETERS OXYGEN	PHOS- PHATE	NITRATE	NITRITE	SILI- CATE	OTHER MEASURES	MET. OBSERVATIONS SURFACE	CHEMICAL	R.E.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	17°00	73°00	16.8.86	0600	0630	0045		X	X	X		X	X			X		
2	17°00	72°00	16.8.86	1330	1445	0174		X	X	X		X	X			X		
3	17°00	71°00.50	16.8.86	2100	2340	2364	X	X	X	X		X	X			X		
4	17°00	70°00	17.8.86	0445	0530	3464	X	X	X					X		X		X
5	17°00	69°00	17.8.86	1300	1700	3000	X	X	X	X		X	X			X		
6	17°00	68°00	18.8.86	0015	0230	3530	X	X	X							X		
7	17°00	67°00	18.8.86	1020	1310	3566	X	X	X	X		X	X	X		X	X	
8	17°00	66°00.20	18.8.86	2100	2320	3750	X	X	X							X		
9	17°00	65°00	19.8.86	0755	1220	3479	X	X	X	X	X	X	X	X		X	X	
10	17°00	64°00	19.8.86	1940	2140	3660	X	X	X							X		
11	17°00	63°00	20.8.86	0800	1115	3732	X	X	X	X	X	X	X	X		X		
12	17°00	62°01	20.8.86	1900	2100	3822	X	X	X							X		
13	17°00	61°00	21.8.86	0430	0745	3930	X	X	X	X	X	X	X	X		X		X
14	18°00	61°30	21.8.86	1400	1600	3766	X	X	X	X	X	X	X	X		X		
15	19°00.10	62°00	21/22.8.86	2305	0115	3605	X	X	X	X	X	X	X	X		X		
16	19°00	63°00	22.8.86	0720	1030	3265	X	X	X							X		
17	19°00	64°00	22.8.86	1600	1850	3260	X	X	X	X	X	X	X	X		X		X
18	19°00	65°00	23.8.86	0000	0245	3256	X	X	X	X	X	X	X	X		X		
19	19°00.40	66°00	23.8.86	0845	1245	3200	X	X	X	X	X	X	X	X		X	X	
20	19°00	67°00	23.8.86	1830	2200	3246	X	X	X	X	X	X	X	X		X		
21	19°00	68°00	24.8.86	0245	0457	3284	X	X	X	X	X	X	X	X		X		

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
22	19°00	69°00.04	24.8.86	1040	1210	2806		x	x	x	x	x	x	x		x	x	
23	19°00	70°00	24.8.86	1730	1800	0216		x	x							x		x
24	18°58.80	71°00	24.8.86	2300	2315	0081		x	x							x		
25	18°58	72°00	25.8.86	0435	0440	0064		x	x							x		
26	20°00	71°00.02	25.8.86	1330	1345	0065		x	x							x		
27	21°00	70°00	25.8.86	2225	2348	0050		x	x							x		
28	21°00.03	69°00	26.8.86	0445	0540	0927	x	x	x	x	x	x	x	x		x		
29	21°00	68°00	26.8.86	1135	1310	2500	x	x	x	x	x	x	x	x		x		
30	21°00	67°00	26.8.86	2010	2145	2580	x	x	x	x	x	x	x	x	x	x		
31	21°00	66°00	27.8.86	0400	0604	2500	x	x	x	x	x	x	x	x		x		x
32	21°00	65°00	27.8.86	1250	1532	2770	x	x	x	x	x	x	x	x	x	x		
33	21°00	64°00	28.8.86	2315	0110	2990	x	x	x	x	x	x	x	x	x	x		
34	21°01	63°30.05	28.8.86	1000	1250	3416	x	x	x	x	x	x	x	x	x	x	x	
*35	19°00	67°00	29.8.86 / 5.9.86	1650	0820	3246	x	x	x	x	x	x	x	x	x	x	x	x

* 35 is a stationary location for time-series observations