

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

**CRUISE No. 24**

**4th July to 11th August, 1986**



**National Institute of Oceanography  
Dona Paula-403 004, Goa  
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NATIONAL INSTITUTE OF OCEANOGRAPHY  
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REPORT ON  
24TH OCEANOGRAPHIC CRUISE OF  
O.R.V. SAGAR KANYA

(4th July to 11th August, 1986)

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O.R.V. SAGAR KANYA

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Table - I : Performance Chart



## 2. CRUISE SUMMARY

The duration of the cruise was from 4 July to 11 August, 1986. The cruise commenced from Mormugao Port and ended at the same port. During this cruise, 22, 19, 16 and 14 stations were occupied along four zonal sections - 8°, 10°, 13° and 15°N respectively - in southern and central 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 Arabian Sea cooling on the lower atmospheric layer. The stations were spaced at one degree interval.

3. PARTICIPANTS

(a) Scientific component

V. Ramesh Babu	-	Chief Scientist
V.V. Gopalakrishna	X	
Y. Sadhuram	X	
M.S.S. Sarma	X	Physical Oceanography
A.M. Almeida	X	Division, N.I.O.
D. Sundar	X	
A.M. Michael	X	
M. Dilip Kumar	X	Chemical Oceanography
Amal Jayakumar	X	Division, N.I.O.
M. Satyakumar	X	
S.P. Saxena	X	India Meteorological
S.K. Dey	X	Department, New Delhi
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
V.J. Makuden	- Second Officer
V.K. Gupta	- Third Officer
V.M. Thomray	- Third Officer
J.L.M. Nazareth	- Chief Radio Officer
Gautam Mandal	- Radio Officer
H.K. Jumani	- Medical Officer
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
V.N. Kapdoskar	- Purser
A.D. Carneiro	- Chief Catering Officer

#### 4. OBJECTIVES AND ORIGINAL CRUISE PLAN

This cruise was originally planned for June-July 1986 in Somali Basin. Due to changes in the actual schedules of the cruises conducted prior to this cruise, the ship was made available only in July 1986. Also due to some operational problems, we had to finally revise the cruise tracks concentrating in the Arabian Basin area only instead of Somali Basin.

#### 5. CRUISE DETAILS

Departure from Mormugao port - 4 July 1986 at 1755 IST

Arrival at Mormugao port - 11 August 1986 at 1105 IST

During this cruise, hydrographic data (temperature and salinity) at different depths were collected at 73 stations. Nansen bottles and reversing thermometers were used to collect the hydrographic data. Mechanical (MBT) and Expendable (XBT) Bathythermographs were also operated at 60 and 14 stations respectively to obtain temperature profiles in upper layers of the water column.



Making use of shipborne wave recorder, data on waves were collected at 70 stations. Surface meteorological observations (air temperature, atmospheric pressure, wind speed and direction) were obtained at all hydrographic stations. Scientists from India Meteorological Department normally operated radiosonde twice at 0530 and 1730 IST to record upper air temperature and humidity fields and omegasonde equipment once at 1130 IST to record profiles of winds in addition to temperature and humidity. They also made special observations at a stationary position ( $12^{\circ}30'N$  and  $60^{\circ}E$ ) for about one day to study the diurnal behaviour of low level jet.

#### 6. SYNOPSIS OF OBSERVATIONS AND DATA COLLECTED

The positions of all stations covered during the cruise along with 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 made to the temperature data obtained through hydrocast. The depth and temperature corrections are also to be applied to the original temperature recorded by MBT and XBT. The water samples collected through 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) A strong zonal SST gradient is present around 58°E and 8°N whereas it is seen around 61°E and 10°N latitude indicating the spread of cold upwelled waters from Somalia coast into the western Arabian Sea.

(ii) In the western Arabian Sea, nitrate concentrations are found to be high (5  $\mu$ mol/litre) in the surface layers. In off-shore regions, nutrient levels show seasonal low as compared to those found in other seasons.

## 8. PERFORMANCE ANALYSIS

The performance of CTD system was not good as sudden jumps in depth (pressure) values were encountered. We could not eliminate them in spite of our best efforts to rectify the fault.

## 9. LOSSES/DAMAGES

During this cruise, one unprotected thermometer was lost as the thermometer frame was found broken and five unprotected thermometers along with two water samplers were also damaged on account of rough sea conditions.

Following are the numbers of the reversing thermometers that are either damaged or lost :

Nos. 9339 (lost at Stn. No.1), 9333, 9341, 20673, 21519, 9340.

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 Sagarkanya for their excellent cooperation during the cruise.





	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
61	14°00	59°59.80	3.8.86	0800	1800	4106	X	X	X	X	X	X	X	X	X	X	X	X	X	X
62	14°57.00	60°01	4/5.8.86	1145	1256	4082	X	X	X	X	X	X	X	X	X	X	X	X	X	X
60	15°00.50	61°03.70	5.8.86	1840	2139	4010	X	X	X	X	X	X	X	X	X	X	X	X	X	X
64	14°59.40	62°00	6.8.86	0750	0930	3944	X	X	X	X	X	X	X	X	X	X	X	X	X	X
65	15°00.50	62°58	6.8.86	1830	2120	3906	X	X	X	X	X	X	X	X	X	X	X	X	X	X
66	15°00	64°00	6.8.86	0530	0900	3856	X	X	X	X	X	X	X	X	X	X	X	X	X	X
67	14°58	65°01.40	6.8.86	1630	2050	3756	X	X	X	X	X	X	X	X	X	X	X	X	X	X
68	15°00	66°00	8.8.86	0245	0420	3853	X	X	X	X	X	X	X	X	X	X	X	X	X	X
69	15°00.40	67°00.80	8.8.86	1115	1304	3928	X	X	X	X	X	X	X	X	X	X	X	X	X	X
70	15°00.10	68°00.20	8.8.86	2130	2354	3998	X	X	X	X	X	X	X	X	X	X	X	X	X	X
71	15°00.10	68°59.90	9.8.86	0810	1010	3856	X	X	X	X	X	X	X	X	X	X	X	X	X	X
72	15°00.20	70°00	9.8.86	1915	2126	3500	X	X	X	X	X	X	X	X	X	X	X	X	X	X
73	14°59.90	71°00.10	10.8.86	0600	0808	2606	X	X	X	X	X	X	X	X	X	X	X	X	X	X
74	15°00	72°00.20	10.8.86	1710	1845	2050	X	X	X	X	X	X	X	X	X	X	X	X	X	X
75	15°00	73°00	11.8.86	0105	0124	200+	X	X	X	X	X	X	X	X	X	X	X	X	X	X

+ Chart Depth

\* 59 is a special station for upper air observations

@ 62 - stationary position for one day time-series XBT observations