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

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Table I: Performance Chart
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
- V.V. Gopalakrishna
- R.J.K. Charyulu
- M.S.S. Sarma
- A.M. Almeida
- D. Sundar
- K. Santanam
- Algar Swamy
- K. Somasunder
- A. Menezes
- M. Satyakumar
- S.P. Saxena
- S.K. Dey
- S.S. Kataria
- D.R. Gota
- G.P. Iyer

- Chief Scientist
- Physical Oceanography Division, NIO, Goa
- Chemical Oceanography Division, NIO, Goa
- Instrumentation & Computer Division, NIO, Goa
- India Meteorological Department, New Delhi
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 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) 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 Kenya for their excellent cooperation during the cruise.
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* 35 is a stationary location for time-series observations