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

CRUISE No. 77

21st September to 7th October, 1992

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

NATIONAL INSTITUTE OF OCEANOGRAPHY
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Dona Paula, Goa - 403 004

REPORT ON

77TH OCEANOGRAPHIC CRUISE OF

O.R.V. SAGAR KANYA

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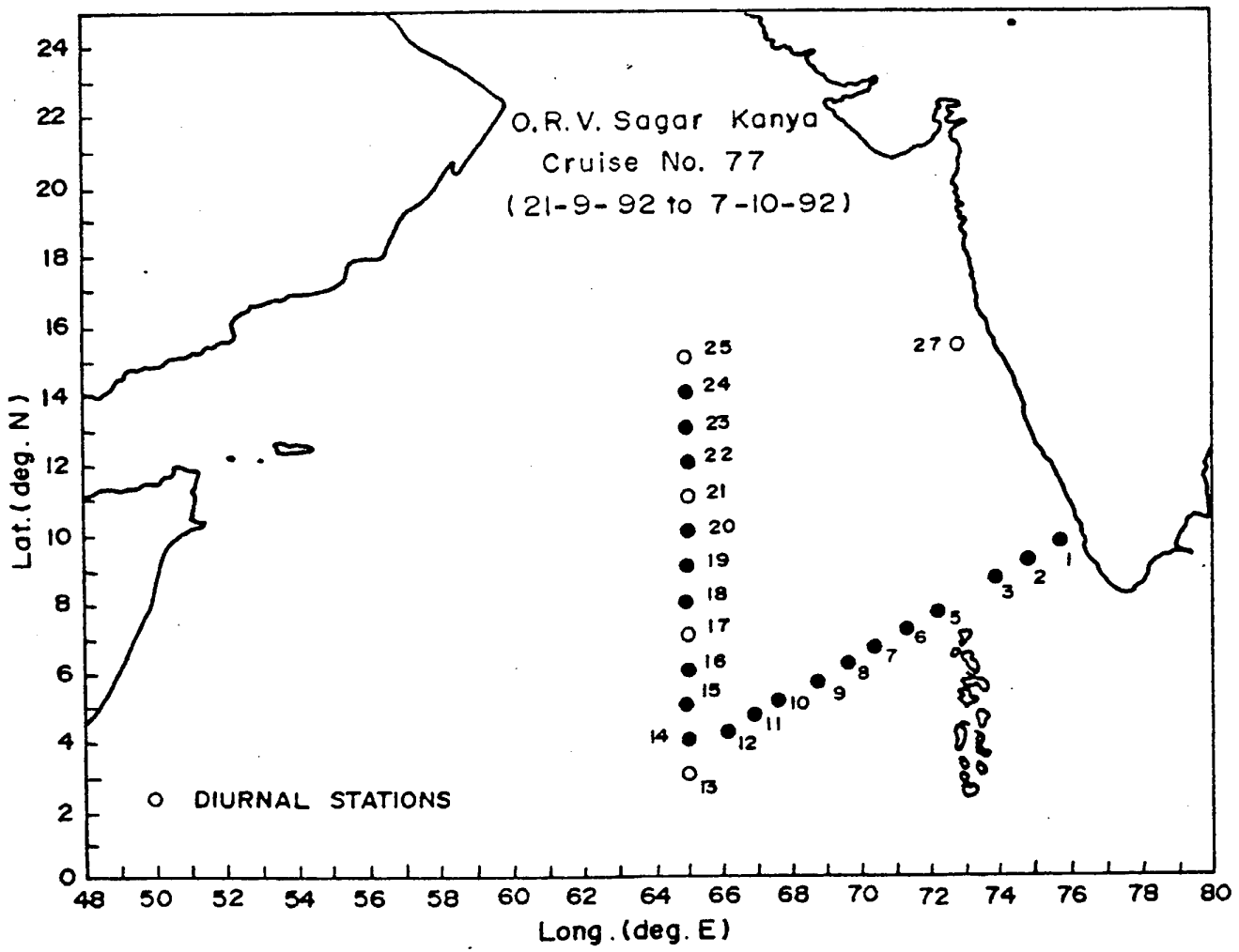
C O N T E N T S

JGOFS - INDIA 92 STATION LOCATIONS



2. CRUISE SUMMARY

Cruise 77 of ORV Sagar Kanya was multidisciplinary in nature. The cruise was undertaken to initiate the JGOFS-INDIA programme. The ship sailed from Mormugao on 21-9-92 and touched Cochin Port briefly to collect Multiple Plankton Net and the participants from Cochin Centre. The ship left the Cochin Port on 25.9.92 and commenced the observational programme along the south-north axis of the Arabian Sea.

Altogether 27 stations were worked out. Out of these, at 5 JGOFS stations diurnal observations were made. Observations were made on CTD, primary production, zooplankton, bacteria and foraminifera also. The cruise ended at Mormugao harbour on 7.10.92.

3. PARTICIPANTS

a) Scientific component

M. Madhupratap	.. Chief Scientist	National Institute of Oceanography, Goa.
P.M.A. Bhattathiri		
C.T. Achuthankutty		
N. Ramaiah		
P. Matondkar		
V. Subramanian		
M.K. Antony		
S. Prasanna Kumar		
V. Kesava Das		
A.S. Muralinath		
Rahul Mohan		
K.K.C. Nair		R.C. of NIO, Cochin.
T. Balachandran		
T.C. Gopalkrishnan		
P.N. Aravindakshan		

b) Ship's complement

R.S. Soni	-	Captain
S. Bage	-	Chief Officer
N.S. Nafrey	-	3rd Officer
P.K. Ghosh	-	Chief Engineer
U. Chakraborty	-	Addl. Chief Engineer
P.L. Chauhan	-	Electrical Officer

4. OBJECTIVES AND WORK PLAN

The cruise was undertaken under the JGOFS-INDIA programme. The objective was to determine and understand processes controlling time varying fluxes of carbon and associated biogenic elements in the Arabian Sea.

It is well known that there is an increasing gradient in productivity along the south-north axis of the Arabian Sea. Accordingly, 4 diurnal stations along 65°E from 3°N to 15°N was worked out, along with a coastal station. Additionally, 22 CTD stations were taken along two transects.

5. SYNOPSIS OF OBSERVATIONS AND DATA COLLECTED

The ship sailed from Mormugao harbour on 21 September, 1992 and arrived at Cochin on 23rd morning. Equipments were loaded and scientists from Cochin joined the cruise and the ship left Cochin on 25th morning. After completing the observations along the south-north axis of the Arabian Sea, the ship arrived at Mormugao harbour on 7 October, 1992.

CTD observations :

27 CTD stations were occupied. The thermohaline structure indicated signatures of the Arabian Sea high saline water, Red Sea water and to some extent Persian

Gulf water. Detailed analysis for circulation patterns are under way.

Biology :

a. Primary Productivity

Water samples were collected from various depths for determining PP and chlorophyll. At a few stations size fractionation of phytoplankton was done. Close sampling showed subsurface chl maximum at about 75 m. In most cases phytoplankton above 1 µm contributed to maximum chl. Dark uptake and C/N ratio of POC were carried out. A correlation between subsurface maximum and thermocline was recorded.

b. Microbiological studies

Water samples from different depths (upto 2000 m) at 13 stations showed very high abundance of bacteria in the upper 150 - 200 m depth ranging from 10^7 to 10^9 cells/l. Abundances fell sharply to 10^4 to 10^6 cells/l at 400 to 1000 m depth. Incorporation of H-thymidine by microbial assemblages was studied at 2 stations.

c. Mesozooplankton

Zooplankton were collected using a Multiple Plankton Net at the 5 diurnal stations. Depth intervals were

500-400, 400-300, 300-200, 200 - thermocline and UML. Accumulation of mesozooplankton was observed in the thermocline layer. Increase of zooplankton in the UML was observed during night.

d. Microplankton

Microplankton were collected by screening water samples through a 20 µm mesh. They were also collected for settlement analysis. All samples were preserved in Lugol and buffered Formalin.

e. Studies on Nannoplankton

Water samples were collected from surface to a depth of 200 m with the help of Niskin bottles (5 lit.) at eight different depths (0, 20, 40, 60, 80, 100, 150, 200 metres) for nannoplankton study. The water samples were filtered with the help of vacuum pump on a 45 µm preweighed nucleopore filters. These filters were later dried in a hot air oven.

Zooplankton net was operated for vertical hauls (0 - 200 m) to study the foraminiferal distribution and ecology. These samples were preserved in Buffer solution of Formalin and Rose Bengal. Subsequently, hydrogen peroxide and sodium hydroxide were added to eliminate the organic

matter. The samples were finally filtered through 63 µm mesh and dried in hot air oven. Dried filters were scanned under microscope for foraminiferal studies.

6. LOSS/DAMAGE

The 800 m CTD cable was cut off after station 8, since the cable developed kinks.

7. ACKNOWLEDGEMENT

The Chief Scientist and other participants of this cruise are grateful to the Captain and other crew of the vessel for their excellent cooperation during the cruise.