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

CRUISE No. 26

14th September to 17th October, 1986

National Institute of Oceanography
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NATIONAL INSTITUTE OF OCEANOGRAPHY
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REPORT ON

26TH OCEANOGRAPHIC CRUISE OF

O.R.V. SAGAR KANYA

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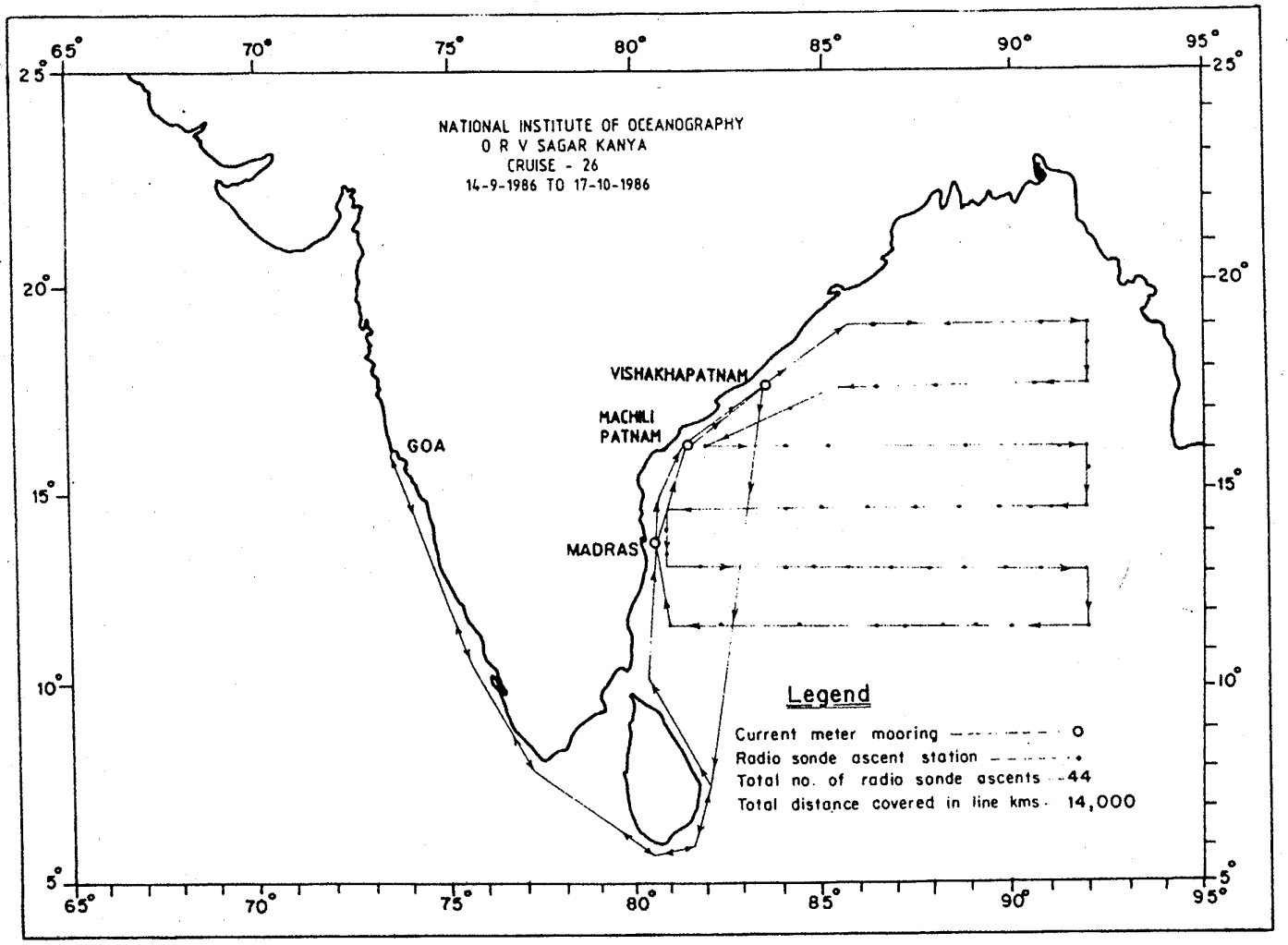

Fig. 1. MAP SHOWING THE ORV SAGARKANYA CRUISE-26-TRACK & STATION DETAILS

2. SUMMARY

This multidisciplinary cruise was primarily devoted to studies related to cyclogensis and withdrawal phase of south west monsoon in central and adjoining Bay of Bengal and collection of data on currents and tides by deploying current meter moorings at three locations viz. off Madras, off Machilipatnam and off Visakhapatnam. The cruise started from Mormugao on 14th September, 1986 and ended on 17th October, 1986 at Mormugao. During the cruise a total number of 44 radio sonde ascents were taken along with three hourly surface meteorological observations. Depth wise distribution of currents for a period of about 19 days at three earlier mentioned locations were collected. This is the first time reliable data on currents and tides have been collected using recording type of current meters moored over a period of 19 days. This type of data is highly useful in identifying the existing tidal components and their influence on the current pattern which are of great importance in the design of offshore structures.

3. PARTICIPANTS

(a) Scientific component

N.M. Anand	-	Chief Scientist
N. Bahulayan S. Mandal K. Ashok Kumar S. Prasanna Kumar H.C. Mandal P. Pednekar	)	National Institute of Oceanography, Goa
N.Y. Apte S.K. Dey B.N. Joshi N. Lal	)	India Meteorological Department
A. Majumdar	-	Jadavpur University
V. Ranga Rao	-	Andhra University
J. Joseph	-	Cochin University

(b) Ship's complement

Capt. J.S. Bawa	-	Master
S.K. Mahapatra	-	Chief Officer
J.A. Rathour	-	Second Officer
V.M. Thomray	-	Third Officer
J.A. Coutinho	-	Fourth Officer
K.G. Krishnan	-	Chief Engineer
Arun Sharma	-	Second Engineer
R.K. Diwakar	-	Third Engineer
Anupam Kumar	-	Fourth Engineer
H.A. Dhamankar	-	Fifth Engineer
P.S. Dhillon	-	Electrical Officer
P.R. Nair	-	Electrical Officer
J.L.M. Nazareth	-	Chief Radio Officer
R.S. Patil	-	Radio Officer
H.K. Jumani	-	Medical Officer
A.D. Carneiro	-	Catering Officer

4. INTRODUCTION

Cruise 26 of O.R.V. Sagar Kanya was multidisciplinary one covering environmental and meteorological aspects of the central and adjoining Bay of Bengal. This cruise also provided scope for the people teaching at the universities to work on board the research vessel and acquire practical experience in handling scientific instruments in the field.

5. OBJECTIVES AND ORIGINAL CRUISE PLAN

Major objectives of this cruise were:

i) To study the cyclogensis and the withdrawal phase of southwest monsoon;

ii) Deployment of current meter arrays to collect data on depthwise distribution of currents and water level variations.

The cruise was planned from Mormugao and was of 33 days duration covering a total distance of about 14,000 line kilometers. Of this, 9000 line kilometers were covered under IMD programme in the central and adjoining Bay of Bengal. The IMD tracks were originally planned of 1 degree latitude space, covering an area between 19°N 86°E, 19°N 92°E and 11°N 81°E, 11°N 92°E. Since the work involved based on the above plan was quite large and could not have been completed within the total number of days alloted for their programme,

IMD scientists modified the programme to 1.5° latitude interval. Fig. 1 shows the cruise track adopted for IMD work and also 3 locations of the current meter moorings deployed during NIO programme related to data collection on currents and tides.

6. CRUISE DETAILS

I.M.D. Programme

India Meteorological Department team participated in this cruise in order to collect surface weather data and upper air, wind and temperature observations to understand the cyclogensis and withdrawal phase of South West monsoon.

These studies were conducted in an area between 19°N 86°E, 19°N 92°E and 11.5°N 81°E, 11.5°N 92°E in the Bay of Bengal. The above area was divided into six major tracks (East - West direction) at 1.5° latitude interval. The surface weather observations were made regularly at international synoptic hours. Daily observations related to the vertical thermal profile of the atmosphere were made using radio sonde ascents at 0500 hours and 1700 hours regularly.

NIO Programme

The work related to NIO programme consisted of deployment of current meter arrays at three locations viz. off

Madras, off Machilipatnam and off Visakhapatnam.

In order to fulfill the objectives successfully a trial mooring was prepared and deployed off Cuddalore at a water depth of about 45 meters.

Performances of the acoustic release (transponder) and the deck unit were tested. Acoustic release and the deck command unit were found to work satisfactorily.

First current meter mooring consisting of 2 Aanderaa RCM 4 current meters was deployed on 20th September, 1986 off Madras at location 13°35'N 80°25'E (Fig. 1). The water depth here was about 28 metres. The bottom current meter was at about 8 meters from the seabed and the top one was at 20 meters from the seabed. A typical sketch of the mooring along with its components/instruments is shown in Fig. 2. This mooring was later successfully retrieved on 9th October, 1986, and a very useful data of about 19 days duration was obtained.

The second mooring similar to that in Fig. 2 consisting of two current meters was deployed on 21st September '86 off Machilipatnam at location 16°07'N and 81°30'E. Here the water depth was about 35 m. Position of the bottom and top current meters in the mooring was at 8 meters and 20 meters from the seabed. This mooring was later retrieved on 10th October '86.

The third mooring which also consisted of two current meters, similar to that in Fig. 2 was deployed on 22nd Septemper '86 at location 17°43'N and 83°26'E off Visakhapatnam. The depth of water here was about 48 meters. Top and bottom current meters in the mooring were at 20 m and 8 m from the seabed. This mooring was later successfully retrieved on 11th October '86.

7. LOSSES/DAMAGES

The top current meter with one set of viny floats was found missing in the second mooring deployed off Machilipatnam.

Inspection of mooring line seemed to suggest that the top current meter along with one set of viny floats must have been cut loose due to fishing trawler passing over it.

8. ACKNOWLEDGEMENTS

The help and cooperation extended by the Captain, Ship's Officers and Crew are gratefully acknowledged.

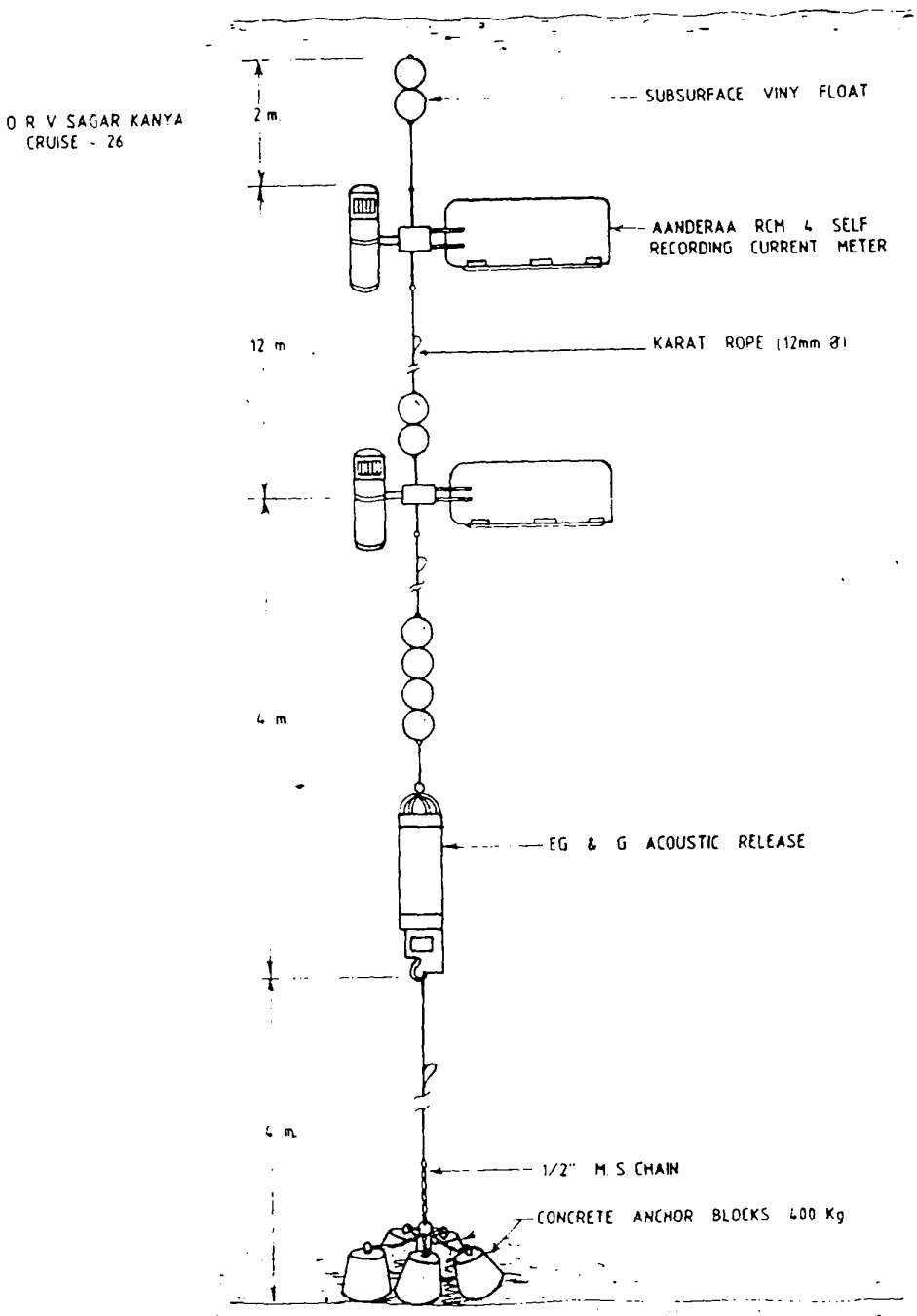

Fig 2. TYPICAL CURRENT METER MOORING