

Report
on
ORV Sagar Kanya Cruise No. SK146A

Period: 8-11 June 1999
Port of Embarkation: Marmugoa
Port of Disembarkation: Marmugoa

August 1999

National Institute of Oceanography
Dona Paula, Goa 403 004, India

Summary

ORV Sagar Kanya Cruise (No SK146A) was conducted in the Arabian Sea off Goa during 8-11 June, 1999 for testing new current profiling system LADCP (Lowered Acoustic Doppler Current Profiler) and also for demonstrating the acquisition and processing procedures of LADCP data to the cruise participants by the Engineer from M/S Sontek, USA, the manufacturer of the system. The cruise started from Marmugoa on 8 June 1999 evening. One test was conducted to evaluate the performance of the system by lowering through the water column upto 3000 m depth along with CTD. The performance of the LADCP system and the test results were found satisfactory. The ship returned to Marmugoa on 11 June 1999 (FN) after completing the cruise.

Introduction

A new current profiling system, viz., Lowered Acoustic Doppler Current Profiler (LADCP) of M/S Sontek, USA was acquired recently by NIO for use in the BOBMEX programme under Indian Climate Research Programme (ICRP). LADCP facilitates obtaining current profile upto deeper depths (> 3000 m) when it is used in conjunction with CTD (unlike in the case of vessel mounted ADCP, VM-ADCP) whose profiling range is limited to the upper 200 meters. Necessary testing of LADCP's performance and training to the cruise participants by the Engineer from M/S Sontek are part of the purchase agreement with the suppliers/manufacturers of the system. Accordingly, a short duration (3-day) cruise was proposed off Goa.

Cruise details and operations

ORV Sagar Kanya sailed on 8 June 1999 / 1750 hrs IST from Marmugao with participants from NIO and NORINCO and the Engineer from M/S Sontek, USA. Table 1 gives the list of the participants and the ship's officers for the cruise of ORV SK146A.

ORV Sagar Kanya sailed due west from Marmugoa (Goa) harbour on 8 June 1999 in order to reach a location 15°20'N and 70°30'E where the depth is around 3200 m. The cruise track is given in Fig. 1. VM-ADCP and weather stations were operated during this cruise. Necessary preparations were started to secure the LADCP to the rosette frame of CTD. The battery package and transducer parts of LADCP were fastened with steel ropes on either side of CTD frame and it was seen that the balance was maintained without any tilt.

The ship was stopped at the location 15°20.0'N & 70°29.9'E between 0242 and 0630 hrs IST on 10 June 1999 where the water depth was about 3200 m and the equipment was operated upto 3000 m depth. The data stored

in memory unit of the system were downloaded to PC using Sontek's software. The raw LADCP datasets acquired were examined and were found satisfactory. After the test operations, the ship was set to sail back to Marmagao harbour. The raw datasets of LADCP, together with corresponding navigation and CTD data sets were processed using Dr. Eric Firing's (Univ. of Hawaii) software available on Internet to the LADCP data user community. Matlab (Version 5.2) software brought by Sontek Engineer was used for this purpose. Necessary compatible format (GGA format) of GPS output were obtained before incorporating navigation (GPS) data in the processing procedures. Relevant software programmes for acquisition and processing of LADCP data were demonstrated to the participants by Sontek engineer during the sailing period.

The ship returned to Marmugoa on 11 June 1999 / 1115 hrs IST after completing the cruise.

Recommendations:

1. The output data of GPS can have a common format (GGA format) for processing raw data of the VM-ADCP and Lowered ADCP.
2. Differential GPS is recommended on board ORV Sagar Kanya for processing ADCP data in order to further improve the accuracy limits of current velocity.

Acknowledgement

The financial support given by the Department of Science & Technology (DST), Govt. of India, New Delhi for procuring LADCP under the grant-in-aid project "BOBMEX-PILOT" is greatly acknowledged. We also thank the Department of Ocean Development (DOD), Govt. of India, New Delhi for allotting ship time of 3 days for this LADCP test cruise before commencement of the Main BOBMEX 1999 programme. NIO participants appreciate the support given by NORINCO team and the cooperation of the Master, officers and crew members of ORV Sagar Kanya during the cruise.

Table 1

A) Scientific / Technical Compliment:

- | | | |
|------------------------------------|---|-----------------|
| 1. V. Ramesh Babu, Chief Scientist |) | |
| 2. V.S.N. Murty |) | |
| 3. Y.V.B. Sarma |) | |
| 4. M.T. Babu |) | |
| 5. E.P. Rama Rao |) | |
| 6. S. Prasanna Kumar |) | |
| 7. A.K. Saran |) | NIO |
| 8. A.M. Almeida |) | |
| 9. B. Chakraborty |) | |
| 10. O.P. Sreejith |) | |
| 11. V. Tilvi |) | |
| 12. Daryl B. Slocum | - | M/S Sontek, USA |
| 13. Praveen R. Rodrigues |) | |
| 14. Razak M. Ismail |) | NORINCO |
| 15. P.S. Manmohan |) | |
| 16. K.M. Jayakrishnan |) | |

B) Ship's Officers Compliment:

	Rank/Rating
1. Capt. T.S. Sodhi	Master
2. P.G. Prakash	C/O
3. D. Bhattacharjee	2/O
4. Dhruv Singh	NWKO
5. Mohd I.A. Walge	J/O
6. S. Srinath	R/O
7. Dr. A. Mohd John	M/O
8. J. D'Costa	P/O
9. R.G.S. D'Silva	P/O
10. Arnab Ghosal	CEO
11. R. Chaudhury	2EO
12. H.K. Jain	3EO
13. M.N. Muralidharan	3EO
14. Kuldeep Sengar	TME
15. A.R. D'Cruz	EL/O
16. T.P. Gairola	EL/O
17. L.M.F. Rodrigues	Catrg. Off.

**Cruise track of SK 146A onboard ORV Sagar Kanya
(8 -11 June, 1999)**

For testing Lowered Acoustic Doppler Current Profiler (LADCP)

