Newsletter – *July 2013*

# ASB Systems Pvt. Ltd.

## Always Delivering Credible Profiles

The third in our series on ADCPs, in this issue we focus on ADCPs used for coastal and marine applications.

The widespread use of Acoustic Doppler current profiler represents a breakthrough in the measurement of ocean currents and a major advance in our capability to test dynamic processes occurring in the ocean. ADCPs have revolutionized the field of ocean current measurement in much the same way that CTDs (conductivity-temperature-depth sensors) revolutionized hydrography; instead of point samples, one obtains profiles of ocean currents. The shipboard ADCP measures profiles in the upper ocean from a ship underway; the lowered ADCP (LADCP) descends on the CTD package for a full ocean depth profile.

ADCPs have been an integral part of the World Ocean circulation experiment, an initiative aimed to establish the role of the World Ocean in the Earth's climate system.

While much has been done and reasearched in this field as is evident from the numerous case-studies available online, we try to show-case some application milestones, in this issue.

## In this issue…



*Customer satisfaction is our prime objective*

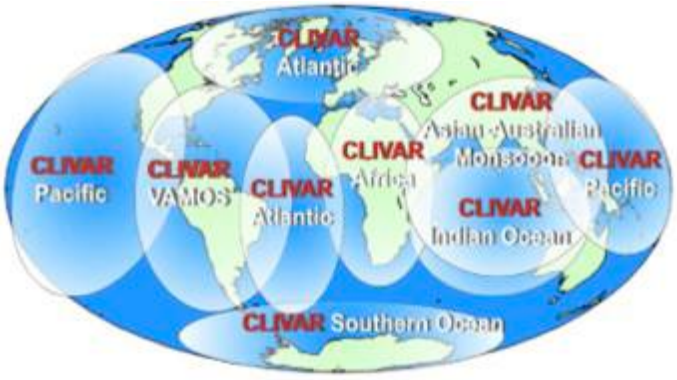
Back in the early 1980s, RD Instruments revolutionized current measurement by developing the industry's first acoustic Doppler current profiler. At that time, the ADCP significantly altered the face of current measurement , as a single instrument was now able to remotely-profile the velocity and direction of currents throughout the water column, as opposed to capturing only an isolated point measurement. In essence, a single ADCP could now do the job of a full string of single-point current meters.

The cornerstone of RDI's ADCP products, introduced in 1990, is the application of patented broadband signal processing technology, which allows for the collection of high-resolution data over an extended range, with reduced power consumption. The Workhorse Long Ranger 75kHz ADCP was introduced in 1998, and quickly became the standard, extended-range profiler for open ocean applications.

Below we have tried to present some significant ADCP applications over the years…

**The CLIVAR program (1995)** -

CLIVAR (Variability and predictability of the ocean-atmosphere system) is one of the four core projects of the World Climate Research Programme (WCRP). CLIVAR's mission is to facilitate observation analysis and prediction of changes in the Earth's climate system, with a focus on ocean-atmosphere interactions, enabling better understanding of climate variability, predictability, and change, to the benefit of society and the environment in which we live.




RDI ADCPs have been used in the CLIVAR program in the form of Shipboard ADCPs (SADCP) and an ADCP Data Assembly Centre was formed for the acquisition, review, documentation, archival, and distribution of shipboard ADCP data sets.

CLIVAR Panels and working groups made up of senior and early career scientists from around the world meet regularly and interact to coordinate and facilitate research activities in their respective domains world-wide. From India, INCOIS and Indian Institute of Science members are a part of the current CLIVAR Indian Ocean Panel.

**Jurong Town Corporation, Singapore (2000) –**

This was the World's largest land reclamation project of the time. Singapore's foremost industrial landlord and developer, Jurong Town Corporation, had begun their latest phase in development of Jurong Island by awarding two big reclamation contracts totaling $5.14 billion. Land reclaimed at Jurong Island was to meet the demands of the growing petroleum, petrochemical, and chemical industries. Nine RDI Workhorse ADCPs were procured to measure currents in the joint venture.

These ADCPs were intended to monitor the current patterns in the reclamation area to ensure safe operations.

**Dubai Municipality** –


The Coastal Zone & Waterways Management Section (CWMS) is part of the Environment Department which is under the Health, Safety and Environment Control Sector of the Dubai Municipality. The CWMS oversees the sustainable development and the utilization of Dubai coastal and marine environment through the formulation and implementation of Integrated Coastal Zone Management (ICZM) plans and procedures within the scope of responsibilities of Dubai Municipality.

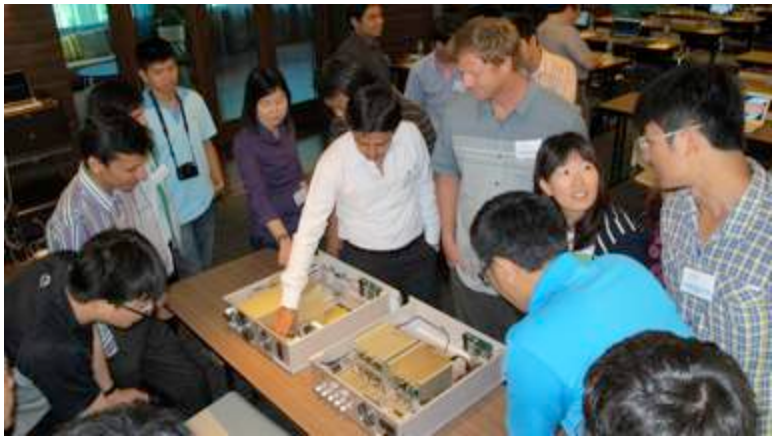
This forecasting aims to provide information on waves, current, surface elevation, wind, oil spill and inundation along Dubai coastline and the Arabian Gulf. Teledyne RDI's 1200 kHz and 600 kHz and 300 kHz Horizontal ADCPs are deployed at nearshore, offshore and Creek mouth locations, respectively. A total of seven ADCPS (four nearshore, two offshore one in the Dubai Creek) are operated by the CWMS. The H-ADCP deployed at Dubai Creek mouth measures the cross sectional current flow through the Dubai Creek across a range of approximately 70 m from the transducer head.

Nearshore ADCPs are deployed at approximately 6-8 m water depth in a 500-kg concrete frame resting on the seabed. The ADCP frame is fitted with a 316 stainless steel gimbal to compensate for a sloping seabed and maintains the ADCP transducers in a vertical upward orientation. Offshore ADCPs are deployed at a depth of approximately 16-20 m, with the same system of concrete block and gimbal. The term "bin size" is representative of the distance between vertical sampling areas monitored by an ADCP, where nearshore ADCPs measure every 0.35 m and offshore ADCPs take current readings every 0.75 m. All ADCPs (except for the H-ADCP) record current speed and direction, peak wave period, significant wave height, peak wave direction, water temperature and water level. The H-ADCP measures water temperature, current speed and current direction across the creek.

The program has been successful in monitoring the Dubai coastline since 2000, and real-time data is available online on the Government’s website.

# Thailand Training – Codar Ocean Sensors

Codar Ocean Sensors, manufacturers of HF radars had organized an "Advanced technical training" course at Pattaya, Thailand, from 27th – 30th May'13. The training course was meant for technicians and users of HF radars, and was focussed on various aspects of HF radar operation like installation, site selection, evaluation of cross spectra, calibration and data processing.



Prominent participating organisations were Thai Geo-informatics and space technology development agency, Thai meteorological department, Vietnam administration for sea and islands and Taiwan ocean research institute, alongwith Codar representatives from other countries like China, India, Taiwan, Japan and Thailand.

Maxwell Hubbard, Technical Support Services Engineer, Allison Mendes, Asst. Operations Manger, Bruce Nyden, Technical Support Services Manager and William Rector, Head of Software Development Department shared their experiences with the trainees.
Kunal Savla and Harish Gupta were the participants from ASB Systems, and the training event has helped them add to their knowledge base.

***Info: CODAR Ocean Sensors**, located in Mountain View, California, conducts research, design, manufacturing and support of high frequency (HF) radar systems primarily for ocean current and wave monitoring. CODAR founders began working in the field of HF radar as early as the 1960's. CODAR has produced approximately 80% of all HF radars ever built worldwide.*