Tutorial: Interpreting ADCP Data -- Efficiently and Effectively

(Approved for 0.4 Continuing Education Units and 4 Professional Development Hours)

Instructors: Peter Spain, Ph.D. and Paul Devine, M.S.

Overview

ADCPs are now a standard tool used globally for studying ocean currents. These sonar-based instruments can record concurrently 4 different types of measurements (water current profile, echo profile, velocity over ground, and range to bed or surface) that provide compelling views of the ocean. In addition, the ADCP records several indicators of data quality. At times, different types of noise and interference can add complexity. For newcomers, interpreting these diverse data types, their associated displays, and their variability in time, space, and quality can be puzzling.

This tutorial aims to develop a participant's efficiency and effectiveness when processing and interpreting ADCP data. We will teach through lecture and demonstration using a wide range of data sets: time series from moored instruments, spatial sections from moving vessels, and directional wave data. Interested participants can join a hands-on session. After the tutorial, attendees will be able to save time and enjoy more confidence when evaluating their ADCP data sets.

Target Audience

Considering the widespread use of ADCPs, from deep sea to coastal applications and offshore to inshore operations, we expect potential participants will come from a diverse range of companies and fields. For prior knowledge, we expect the audience to have a rudimentary exposure to ADCPs and their data. Specifically this is not a tutorial about how an ADCP works -- rather it's about how to work with ADCP data.

Participants will learn a methodology for reviewing their data, develop understanding of the information content and relationship between the data quality indicators, apply them, see how to discern signal from noise, and practice rapid ways to explore data sets.

Content Details

> Lectures: 60 mins
> > ADCP data types and displays (Spain), 20 mins
> > Methodology for reviewing ADCP data sets (Spain), 20 mins
> > Data quality indicators: information content and relationships (Devine), 20 mins

> Data-skill demos: 45 mins
> > Rapid ways to explore data sets (Spain), 15 mins
> > Using data quality indicators (Devine), 15 mins
> > Discern signal from noise and interference (Spain), 15 mins

Specific ADCP Applications: 60 mins
        Moored - time series (Devine), 20 mins
        Moving - spatial sections (Spain), 20 mins
        Waves -- directional and spectral(Devine), 20 mins

Hands-On session: 30 mins
        For interested participants with own laptops

Sample teaching materials: 3 Amigos PPT

Format

The content will be presented class-room style,requiring whiteboard and dry-erase markers, projector for PPTs (incl. cable, power connection), extension cords and power for two PCs. There will be software demonstrations. We will NOT require an Internet connection.

Instructor Bios:

Peter Spain, Ph.D., Teledyne RD Instruments, San Diego, CA
peter.spain@teledyne.com

Training Experience:
Relevant Published Materials: Author: http://adcp.com/tips/tips.aspx
2002-2005 During formative period of RDI-U online training, taught the majority of classes, approx 25 sessions, http://adcp.com/rdiu/trainers.aspx
2007-2012 Core Adjunct Faculty, National University, Graduate Program in Wireless Communications, taught 5 different classes
Toast Master ATM-Silver

Resume
Hailing from the land downunder, Dr. Peter Spain completed his dissertation in Ocean Physics in 1988 at the Applied Physics Laboratory, University of Washington, after which he was at Scripps Institution of Oceanography. He worked with new instruments used for measuring ocean currents. Since joining RD Instruments
in 1990, Peter has been in Sales & Marketing where he progressed from sales staff to department management and business unit management; today, the common theme to his diverse activities is Technical Marketing. Since 1998, Peter has been Manufacturer's Liaison for the IEEE / OES Current Metering Technology Committee.

Paul Devine M.S., Teledyne RD Instruments, San Diego, CA
paul.devine@teledyne.com

Training Experience:
2003 IEEE/MTS Oceans Tutorial on ADCP waves array
2003 - 2012 TRDI-U webinars: application and software specific, approx 215 sessions
2008-2012: Various International ADCP Training classes: NIO / NIOT India, SOA China, INORE USA

Resume
While in elementary school, Paul first used Lagrangian drifters to map flow patterns near ice breakers on the Delaware river. Paul obtained his Masters degree in Coastal Engineering at the University of Florida where he made Eulerian measurements. Subsequent to a stint as a consulting engineer in Long Beach CA , where he made moving boat ADCP measurement campaigns, Paul has been with TRDI since 1999. He is very excited about collaborating with customers to make them successful in collecting data.