

Hydroacoustics Workshop 2004

March 22-26, 2004 -- San Diego, CA

Tuesday, March 23, 2004

8:00 - 9:30		General Session		Aviary Ballroom
8:00 - 8:25	Welcome / Workshop Overview / Introductions	Kevin Oberg	Office of Surface Water (OSW)	
8:25 - 8:45	The Use of Hydroacoustics in the USGS - Past, Present, and Future	Steve Blanchard	Chief, OSW	
8:45 - 9:30	The REMUS AUV: Freshwater Applications and New Capabilities	Ben Allen	Oceanographic Institute	
9:30 - 10:00	Break			KonTiki
10:00 - 11:30		Technical Sessions		
	Hydroacoustics in Basic Data Programs	Brian Loving		Toucan
1	Progress toward a Hydroacoustics-only Surface Water Program	Ron Knapp	USGS-IN	
2	Overview of the USGS Hydroacoustics Program in Florida	John Shelton	USGS-FL	
3	Overview of Environment Canada's Hydro-acoustic Implementation Project	Jeff Woodward	Environment Canada	
4	Hydro-Acoustics in Environment Agency UK Monitoring	Nick Everard	Environment Agency	
	Acoustic Profilers and Modeling I	David Mueller		Macaw
1	Use of ADCP's in Calibrating 3-D Models of San Francisco Bay Delta Estuary	Peter Smith	USGS-CA	
2	Reproducing the ADCP observations at Upper Klamath Lake Oregon using the UnTRIM model	Ralph Cheng	USGS-NRP	
3	ADCP Velocity Measurements for Model Validation in the U.S. Geological Survey's Multi-Dimensional Surface Water Modeling System (MD_SWMS)	Rich McDonald	USGS-NRP	
4	Use of ADCP Data to Calibrate and Validate Two-Dimensional Hydrodynamic Models of the Ohio River	Chad Wagner	USGS-NC	
11:30 - 13:00	Workshop Luncheon			On the lawn

13:00 - 14:30

Technical Sessions

Index Velocity Ratings

Marc Stewart

Toucan

- 1 Index Velocity Ratings and Comparison of Meters Used For Indexing
- 2 Significance of 13-Hr ADCP Measurement Sessions for Index Ratings at Tidal Streams
- 3 Comparison of Two Index Velocity Methods
- 4 Index Velocity Rating Including Wind

John Goodson	SFWMD
Eduardo Patino	USGS-FL
Jeff East	USGS-TX
Gary Wall	USGS-NY

Acoustic Profilers and Modeling II

Chad Wagner

Macaw

- 1 Calibration of Hydrodynamic Models with ADCP Data
- 2 Using ADCP data for calibration of a hydrodynamic model of the Tanana River
- 3 Evaluating Flow Disturbance Effects on ADCP's
Exploratory Study of the Influence of the Wake Produced By
- 4 Hydroacoustic Instruments (ADCP) On the Water Velocities within Control Volume

Dave Holtschlag	USGS-MI
Jeff Conaway	USGS-AK
David Mueller	USGS-OSW
Jorge D. Abad	University of Illinois

14:30 - 15:00 **Break**

KonTiki

15:00 - 16:30

Technical Sessions

Moving Boat Measurement Deployments

Jeff Woodward

Toucan

- 1 Environment Canada Development testing of the Ocean Science Remote Control Boat
- 2 Measuring Discharge with ADCPs Using Tethered Boats
- 3 Bank Operated Cableway System for ADCP Discharge Measurements
- 4 Remote Control Cableway Rover for Conducting ADCP discharge Measurements

Murray Jones	Environment Canada
Brian Loving	USGS-KS
Brian Pessah	Environment Canada
Deborah Folk	Environment Canada

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Acoustics and Suspended Sediments I

Jeff Gartner

Macaw

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|---|--|--------------|--------------|
| 1 | Sediment Surrogate Monitoring in the USGS | John Gray | USGS-OSW |
| 2 | Bedload Measurement with an aDcp | Colin Rennie | U. of Ottawa |
| 3 | The Use of Acoustic Backscatter to Measure Suspended Sand Concentration in Coastal Regions | Daniel Hanes | USGS-GD |
| 4 | Acoustic Backscatter as a Surrogate for Suspended Sediment | Mark Landers | USGS-GA |

17:00 - ? **Dinner on your own**

19:00 - 21:00 **Data Review Clinic**

Boardroom West

Wednesday, March 24, 2004

8:00 - 9:30

Technical Sessions

Flow Measurements under Ice

Paul-Emile Bergeron

Toucan

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|---|--|-----------------|-----------------------|
| 1 | Measurement of flow under ice using an ADCP and computation of ice-effected discharge with an Argonaut SL | Jason Lambrecht | USGS-ND |
| 2 | Channel Discharge Computation with AVM Data | Dapei Wang | Environment
Canada |
| 3 | ADP Winter Discharge Measurements | Murray Jones | Environment
Canada |
| 4 | Measurements of Discharge under Ice at a Small Stream in Central Illinois Using Price AA Meters and ADCP's | Kevin Oberg | USGS-OSW |

Acoustics and Suspended Sediments II

Marinna Martini

Macaw

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|---|---|---------------|-------------------------------------|
| 1 | Comparison of Acoustic and Optical Backscatter Observations | Deanna Sereno | University of
California Berkely |
| 2 | Acoustical backscatter and moving bed conditions during streambed scour events | Jeff Conaway | USGS-AK |
| 3 | Evaluation of a laser-acoustic system for continuously monitoring suspended-sediment concentration and grain size in the Colorado River in Grand Canyon | David Topping | USGS-NRP |

Wednesday, March 24, 2004 -- continued

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Vendor Session 1

Cockatoo

9:30 - 10:00 **Break**

KonTiki

10:00 - 11:30

Technical Sessions

Comparison Measurements I

John Shelton

Toucan

- 1 Measuring Discharge in the Upper Rhine Delta
- 2 Index Velocity Comparisons in Central Florida Streams Using Sontek Shallow-Water and Sidelooker Velocity Meters
- 3 FlowTracker Comparison Measurements in Indiana
- 4 Comparison of Coventional and Sontek FlowTracker Discharge Measurements

Aad Hartman

Rijkswaterstaat
Division East-
Netherlands

Molly Wood

USGS-FL

Mike Rehmel

USGS-IN

Wayne Hyde

Environment
Canada

Hydrographic Surveying

Wade Kress

Macaw

- GIS Processing and Analysis: Predevelopment and Current
- 1 Bathymetry and Topography of Nebraska's Largest Man-Made Lake
 - 2 Accuracy Assessment of Bathymetric Maps and Area/Capacity Tables created with Data Collected from Reservoirs using Boat-Mounted Survey-Grade Echosounding Equipment
 - 3 Sediment Deposition Mapping in Iowa Reservoirs using Multi-Frequency Technology
 - 4 Characterizing the Seafloor Using Multibeam Bathymetry and Acoustic Backscatter Data

Sonja Sebree

USGS-NE

Joe Richards

USGS-MO

Jason McVay

USGS-IA

Peter Dartnell

USGS-GD

Vendor Session 2

Victor Levesque

Cockatoo

11:30 - 13:00 **Lunch on your own**

Wednesday, March 24, 2004 -- continued

13:00 - 14:30

Technical Sessions

Comparison Measurements II

Mike Rehmel

Toucan

- 1 Hydroacoustic Comparison Measurements on Small Illinois Streams
- 2 Comparison Measurements in Two Small Rivers: Hydroacoustic Instruments, Current Meters, and Salt Dilution
- 3 Comparison of ADCP Discharges with British Standard Structures
- 4 Evaluation of Multiple ADCP Measurements From Prince Albert, Saskatchewan

Kevin Johnson	USGS-IL
Erland Moe	NVE
Nick Everard	Environment Agency
Jeff Woodward	Environment Canada

Innovative Hydroacoustics Applications

Kevin Oberg

Macaw

- 1 Use of ADV's and uplooking ADCP's in the Everglades
- 2 Hydroacoustics Measurements in America's Everglades
- 3 Using a Workhorse 300 kHz HADCP to Measure Open Channel Flows
- 4 Acoustic Doppler Velocimeter Performance Curves For Sampling The Flow Turbulence

Ray Schaffranek	USGS-NRP
Clinton Hittle	USGS-FL
Jim DeRose	USGS-CA
Carlos Marcelo Garcia	University of Illinois

Vendor Session 3

John Goodson

Cockatoo

14:30 - 15:00 **Break**

KonTiki

15:00 - 16:30

Free time

18:30 - ? **Workshop Dinner and Poster Session**

KonTiki

Thursday, March 25, 2004

8:00 - 9:30

Technical Sessions

Processing Tidal Data

- 1 Sampling Theory & Spectral Analysis: A Primer
- 2 Computation of the Daily Mean for Tide-Affected Flow Stations
- 3 Presentation of OSW Technical Memo on Computing Flow in Tidally Effected Streams
- 4 Discussion

Phil Turnipseed

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| Marinna Martini | USGS-GD |
| Peter Smith | USGS-CA |
| Robert Mason | OSW |

Toucan

Thursday, March 25, 2004 -- continued

Error Analysis and Estimation

- 1 Comparison of AVM discharge error estimates using first-order and index-velocity based methods
- 2 Uncertainty of Flow Estimates by Index-Velocity Measurements at Culverts
- 3 Laboratory Evaluation of a SonTek Argonaut-SW Flowmeter
- 4 Uncertainty Analysis for Discharge Measurements: Point Acoustic Meters

Christer Jonsson

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| Tom Over | USGS-IL |
| Juan Gonzalez | SFWMD |
| Tracy Vermeyen | Bureau of Reclamation |
| Janice Fulford | USGS-HIF |

Macaw

9:30 - 10:00

Break

KonTiki

10:00 - 11:30

Technical Sessions

Techniques for In-situ Velocity Measurements

- 1 From Instrumentation to Information: The Evolution of Acoustic Doppler Special Studies
- 2 Developing a Remote, Autonomous, Real-Time Velocity Mapping System
- 3 Deployment of an Uplooking ADCP in the Hudson River

Jeff Gartner

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| Jay Cuetara | USGS-CA |
| Aaron Blake | USGS-CA |
| Liz Nystrom | USGS-NY |

Toucan

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Methods Development and Quality Assurance

Greg Stewart

Macaw

- 1 Overview of USGS Policies on ADCP Discharge Measurements Kevin Oberg
- 2 Environment Canada Procedures and Standards for ADCP Qm's Jeff Woodward
- 3 Precision of GPS Differential Corrections: Influence on ADCP Velocity and Discharge Estimates Francois Rainville Environment Canada
- 4 A Call for Help: Clearinghouse for Comparison Measurements David Mueller USGS-OSW

11:30 - 13:00 **Lunch on your own**

Thursday, March 25, 2004 -- continued

13:00 - 14:30 **Technical Sessions**

Alternatives to DGPS with Moving Bed

Jon Hortness

Toucan

- 1 Moving Bed Tests on the MacKenzie River, NWT Roger Pilling Environment Canada
- 2 Section-by-Section ADCP Measurements Made During Flood Events Kevin Johnson USGS-IL
- 3 Computing Discharge in the Presence of a Moving Bed from a Moving Boat Without GPS David Mueller USGS-OSW
- 4 Alternative Methods to Identify and Quantify Significant Moving Bed Effects Francois Rainville Environment Canada

Visualization of Acoustic Profiler Data

Jim DeRose

Macaw

- 1 Integration of Hydroacoustic Mapping and Fish Telemetry for Investigating Physical Habitat David Gaeuman BRD
- 2 Visualizing ADCP Measurements Used In Flow Modeling Dave Holtschlag USGS-MI
- 3 Tools for Spatial Analysis of ADCP Channel Surveys Randal Dinehart USGS-CA
- 4 Panel discussion on visualization tools

14:30 - 15:00 **Break**

KonTiki

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Thursday, March 25, 2004 -- continued

15:00 - 16:30	General Session		Aviary Ballroom
15:00 - 15:15	Future Developments in Hydroacoustics - USGS Perspective	Kevin Oberg / David Mueller	USGS - OSW
	Future Developments in Hydroacoustics - Environment Canada Perspective		
15:15 - 15:30		Pat McCurry	Environment Canada
15:30 - 16:10	Open Discussion on Hardware/Software Needs	Everyone	
16:10 - 16:30	Awards/Workshop Summary	Steve Blanchard	Chief, OSW
17:00 - ?	Dinner on your own		
19:00 - 21:00	Data Review Clinic		Boardroom West

Friday, March 26, 2004

8:00 - 16:30 **Vendor Plant Tours**