



**2024 IEEE/OES THIRTEENTH
CURRENTS, WAVES,
TURBULENCE MEASUREMENT
(CWTM) WORKSHOP**

Coastal Studies Institute, University of East Carolina, Wanchese, 17- 20 March 2024

CWTM Workshop Program

Sunday, March 17 6:00 – 8:30 PM Come and join us for the CWTM 2024 **Icebreaker** in the Pioneer Theater (109 Budleigh St Manteo, NC. 27954); Appetizers with two free drinks (beer, wine, soft drinks; cash bar option). Registration Desk Open – pick up your ID badges

Monday, March 18, 7:00 AM – 8:00AM

Continental Breakfast – Room 242



8:00 AM - 8:20 AM

Welcome & Introduction – Room 252

Introduction: Rick Cole, General Co-Chair, 13th CWTM Workshop

IEEE-OES Sponsor: Mal Heron, OES AdCom Member

Discussion on CWTM 2024 Papers to Xplore/JOE: Mal Heron, Weimin Huang, TPC Co-Chairs

Welcome from CSI: Dr. Michael Muglia, Coastal Studies Institute

8:20 AM - 8:50 AM

**Keynote: Ocean Research at CSI
Speaker: Michael Muglia**

8:50 AM - 10:30 AM

**Session 1:
Currents I – HF Radar 1
Chair: Hugh Roarty**

(8:50 AM) Stokes Drift Mapping Using a Single High-Frequency Radar

Abigaille AD Dussol, Université du Québec à Rimouski

Cédric Chavanne, Université du Québec à Rimouski

(9:15 AM) Latest Methods for Automated Evaluation & Change Detection of HFR Antenna Response

Dale Trockel, CODAR Ocean Sensors Ltd.

Joshua Trockel, CODAR Ocean Sensors Ltd.

Chad Whelan, CODAR Ocean Sensors Ltd.

Laura Pederson, CODAR Ocean Sensors Ltd.

(9:40 AM) High Frequency Surface Radar Studies of Inertial Oscillations in a Coastal Embayment

Joe Craig, *Dept of Fisheries and Oceans*
Eric Gill, *Memorial University*
Brad deYoung, *Memorial University*

(10:05 AM) Surface Aggregation Patches in Coastal Waters Monitored by HF Radar

Malcolm Heron, *Portmap Remote Ocean Sensing Pty Ltd*
Huyen Tran, *Helzel Messtechnik GmbH*
Jan Widera, *Helzel Messtechnik GmbH*
Herman Peters, *3Xi Advies B.V*
Roberto Gomez, *Helzel Messtechnik GmbH*
Thomas Helzel, *Helzel messtechnik GmbH*
Pieter Dekker, *3Xi Advies B.V*

10:30 AM - 11:00 AM

Networking – Room 242



11:00 AM - 12:40 PM

**Session 2:
Waves I - X-band Radar & Satellites
Chair: Jochen Horstmann**

(11:00 AM) Wave Field Retrieved by Coherent X-band Radar

Ruben Carrasco, *Helmholtz Zentrum Hereon*
Jose-Carlos Nieto-Borge, *Universidad de Alcala de Henares*
Joerg Seemann, *Helmholtz Zentrum Hereon*
Jochen Horstmann, *Helmholtz Zentrum Hereon*

(11:25 AM) Enhanced Estimation of Significant Wave Height From Rain-contaminated X-Band Radar Image Sequences

Zhiding Yang, *Memorial University of Newfoundland*
Weimin Huang, *Memorial University of Newfoundland*

(11:50 AM) Wave Density Spectra Estimation with LSTM from Sentinel-1 SAR in the Baltic Sea

Sander Rikka, *Tallinn University of Technology*
Sven Nomm, *Tallinn University of Technology*
Victor Alari, *Tallinn University of Technology*
Martin Simon, *Tallinn University of Technology*
Jan-Victor Björkqvist, *Norwegian Meteorological Institute*

(12:15 PM) Ocean Swell Height Estimation From Spaceborne GNSS-R Data Using Tree Model Based Machine Learning Methods

Jinwei Bu, *Kunming University of Science and Technology*
Qiulan Wang, *Kunming University of Science and Technology*
Xinyu Liu, *Kunming University of Science and Technology*
Linghui Li, *Kunming University of Science and Technology*
Yongfeng Zhang, *Kunming University of Science and Technology*

12:40 PM - 2:00 PM

Lunch – Room 242



2:00 PM - 3:40 PM

Session 3:
Currents II – ADCP & Other
Chair: Nathan Laxague

(2:00 PM) Enhancing the Versatility of a 4-beam ADCP: Horizontal Use Case

Lorraine A Heilman, *NOAA NOS CO-OPS*

Robert M Heitsenrether, *NOAA*

Shaena Rausch, *NOAA*

Edward Roggenstein, *NOAA*

Evan Price, *Nortek Group*

(2:25 PM) Currents, Waves and TKE Measurement for Tidal-stream Development Using 5-beam ADCPs

Michelle L Barnett, *Sonardyne International Ltd*

Eloi Droniou, *DynamOcean SARL*

Marion Huchet, *DynamOcean SARL*

Thomas Comerford, *Sonardyne International Ltd*

Thomas Culverhouse, *Sonardyne International Ltd*

(2:50 PM) High Resolution Current Maps Retrieved from Drone Based Video

Jochen Horstmann, *Helmholtz-Zentrum Hereon*

Marius Cysewski, *Helmholtz-Zentrum Hereon*

Ruben Carrasco, *Helmholtz Zentrum Hereon*

Thomas Lanne, *Institut Polytechnique de Paris*

(3:15 PM) Waves, Currents, and Suspended Sediment Measurements Around Hybrid Nature-Based Solutions

Navid Tahvildari, *Old Dominion University*

Ali Shahabi, *Old Dominion University*

Andre De Souza De Lima, *George Mason University*

Tyler Miesse, *George Mason University*

Celso Ferreira, *George Mason University*

3:40 PM - 4:10 PM

Networking – Room 242



4:10 PM - 6:00 PM

Session 4:
Exhibitor Presentations/Reception
Chair: Rick Cole

(4:10 PM) Teledyne, *Paul Devine*

(4:25 PM) Sonardyne, *Michelle Barnett, Thomas Comerford*

(4:40 PM) Helzel Messtechnik GmbH, *Huyen Thanh Tran*

(4:55 PM) Nortek, *Jeremiah Ness, Caroline Simms, Evan Price*

(5:10 PM) Flynn Technical Solutions, *John Flynn, Henry Lobe*

(5:25 PM) Pacific Gyre, *Andrew Sybrandy*

(5:40 PM) IEEE OES, *Mal Heron*

Tuesday, March 19, 7:00 AM – 8:00AM

Breakfast - Room 242



8:00 AM - 8:40 AM

**Panel Session: Promotion of UN Decade of
Ocean Science for Sustainable Development
Chair: Mal Heron**

(8:00 AM) Scope and Direction of the UN Decade of Ocean Science for Sustainable Development
Mal Heron, Portmap Remote Ocean Sensing Pty Ltd

(8:10 AM) Role of ADCPs in the DOOSFSD
Michelle Barnett, Sonardyne International Ltd

(8:15 AM) Role of Buoys in the DOOSFSD
Jim Thomson, University of Washington

(8:20 AM) Role of HF radar in the DOOSFSD
Eric Gill, Memorial University

(8:25 AM) Role of X-Band radar in the DOOSFSD
Weimin Huang, Memorial University

(8:30 AM) Open discussion

8:50 AM - 10:30 AM

**Session 5:
Waves II – Buoy & ADCP
Chair: Rick Cole**

(8:50 AM) "Wireless Waves", 20 Years On
Michelle Barnett, Sonardyne International Limited
Rick Cole, *RDSEA International, Inc*
Neil Trenaman, *AUUSV Inc.*
Thomas Culverhouse, *Sonardyne International Limited*

(9:15 AM) Multiscale Measurements of Hurricane Waves Using Buoys and Airborne Radar
Jacob R Davis, University of Washington
Jim Thomson, *University of Washington*
Brian Butterworth, *NOAA*
Isabel Houghton, *Sofar Ocean*
Chris Fairall, *NOAA*
Elizabeth Thompson, *NOAA*
Gijs de Boer, *NOAA*

(9:40 AM) The Next Wave: Buoy Arrays for Deterministic Wave Prediction in Real-time
Jim Thomson, University of Washington
Alex Fisher, *Washington State Dept. of Ecology*

Curtis Rusch, *University of Washington*

(10:05 AM) Hurricane Effects on South Florida Sea Level

William E Baxley, FAU

Gary Zarillo, *Florida Institute of Technology*

10:30 AM - 11:00 AM

Networking - Room 242
Supported by UN Decade of Ocean
Science for Sustainable
Development



11:00 AM - 12:40 PM

Session 6:
Turbulence
Chair: Jim Thomson

(11:00 AM) Measuring Turbulence From Wave-following Platforms

Kristin Zeiden, University of Washington

Jim Thomson, *University of Washington*

(11:25 AM) Validation of High-resolution ADCP Measurements of TKE Dissipation Influenced by Waves

Elias Marchetti, University of Plymouth, now at University of Bath

Thomas Culverhouse, *Sonardyne International Ltd.*

Thomas Comerford, *Sonardyne International Ltd.*

Alex Nimmo-Smith, *University of Plymouth*

(11:50 AM) Toward a Machine-Learning Facilitated LES of Turbulent Flow Around Solid Body

Hassanali Marefat, Memorial University of Newfoundland

Jahrul Alam, *Memorial University of Newfoundland*

Kevin Pope, *Memorial University of Newfoundland*

(12:10 PM) CWTM Workshop: Whence & Whither

Mal Heron, Portmap Remote Ocean Sensing Pty Ltd

Sandy Williams, *Woods Hole Oceanographic Institution*

Hugh Roarty, *Rutgers University*

12:40 PM - 2:00 PM

Lunch - Room 242



2:00 PM - 3:40 PM

Session 7:
Waves III - Other
Chair: Weimin Huang

(2:00 PM) The Suppression of Ocean Waves by Biogenic Slicks

Nathan Laxague, University of New Hampshire

Christopher Zappa, *Lamont-Doherty Earth Observatory of Columbia University*

Shantanu Soumya, *University of New Hampshire*
Oliver Wurl, *University of Oldenburg*

(2:25 PM) Passive Infrared Sea State Sensing

Steven P Anderson, *Arete*
Alex Campbell, *Arete*

(2:50 PM) Coastal Oceanographic Observations off of North Carolina

Caroline Lowcher, *East Carolina University*
Michael Muglia, *East Carolina University*
Trip Taylor, *East Carolina University*

(3:15 PM) HF Radar for Sustainable Development in Coastal Waters

Huyen Tran, *Helzel Messtechnik GmbH*
Malcolm Heron, *Portmap Remote Ocean Sensing Pty Ltd*
Jan Widera, *Helzel Messtechnik GmbH*
Herman Peters, *3Xi Advies B.V*
Roberto Gomez, *Helzel Messtechnik GmbH*
Thomas Helzel, *Helzel messtechnik GmbH*
Pieter Dekker, *3Xi Advies B.V*

3:40 PM – 4:10 PM

Networking - Room 242



4:10 PM – 4:30 PM

Group Photo – CSI Front door



5:00 PM - 6:00 PM

Visit Tour – Jennette's Pier (7223 S Virginia Dare Trail, Nags Head, NC 27959)

6:00 PM - 8:30 PM

Gala and Awards – Jennette's Pier Oceanview Hall



Continue Next Day!

WEDNESDAY, March 20, 8:00 AM - 8:50 AM Breakfast - Room 242



8:50 AM - 10:30 AM

Session 8:
Other CWTM Topics
Chair: Eric Gill

(8:50 AM) Use of In Situ Air-Sea-Wave and Direct Covariance Flux Observations to Constrain a Model for Seastate-Dependent Sea Spray-Mediated Air-Sea Heat Fluxes in High Winds

Benjamin W Barr, *WHOI*

Hyodae Seo, *WHOI*

Carol Anne Clayson, *WHOI*

James Edson, *WHOI*

(9:15 AM) Determining the Origin and Fate of Oceanic eDNA

Hugh J Roarty, *Rutgers University*

Brendan V Henley, *Rutgers University*

Timothy Stolarz, *Rutgers University*

Jason Adolf, *Monmouth University*

Josh Kohut, *Rutgers University*

(9:40 AM) Determining the Seasonality of Oceanic eDNA Source Waters

Brendan V Henley, *Rutgers University*

Timothy Stolarz, *Rutgers University*

Hugh J Roarty, *Rutgers University*

Jason Adolf, *Monmouth University*

Josh Kohut, *Rutgers University*

(10:05 AM) Distributed Acoustic Sensing (DAS) of Seafloor Fiber Optics Enables Meter-scale Resolution of Surface Waves in the Coastal Ocean

Madison M Smith, *Woods Hole Oceanographic Institution*

Jim Thomson, *University of Washington*

Hannah Glover, *Oregon State University*

Meagan Wengrove, *Oregon State University*

Michael Baker, *Sandia National Laboratories*,

Robert Abbott, *Sandia National Laboratories*

Jacob R Davis, *University of Washington*

Seth Zippel, *Oregon State University*

Wenbo Wu, *Woods Hole Oceanographic Institution*

10:30 AM - 11:00 AM

Break - Room 242



11:00 AM - 11:50 AM

**Session 9:
Sensors
Chair: Michael Muglia**

(11:00 AM) Enhanced Underwater Acoustic Channel Estimation using BSMVC Method

Feiyun Wu, *Jimei University*

Dan Song, *Jimei University*

(11:25 AM) Vulnerabilities of Location-aware Underwater Acoustic Sensor Networks

Ruqin Zhao, *Northwestern Polytechnical University*

Bingyu He, *Northwestern Polytechnical University*

11:50 AM - 12:30 PM

**Review & CWTM 2024:
Chair: Weimin Huang**

12:30 PM - 2:00 PM

Box Lunch – Room 242



END OF THE 2024 IEEE/OES/CWTM WORKSHOP

Thank you for attending and participating. See you in 2028!