



# **Atmospheric River Reconnaissance Workshop**

## **Programme**

# Tuesday Agenda

The time displays according to the selected time zone.

**The selected timezone is Europe/London**

08:30 to 09:30	<b>Opening</b>	
08:30 to 09:15	<b>Arrival and registration</b>	
09:15 to 09:30	<b>Opening remarks</b> <a href="#">Video recording</a>	Florian Pappenberger (ECMWF)
09:30 to 14:00	<b>Session 1: AR Recon in Water Year 2023 - Part I</b> Moderator: David Lavers (ECMWF)	
09:30 to 10:00	<b>AR Recon Motivation and Achievements</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Marty Ralph (CW3E)
10:00 to 10:20	<b>US Air Force Reserve Command Perspective on AR Recon: Past, Present, and Future</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Ryan Rickert (53 WRS Hurricane Hunters)
10:20 to 10:40	<b>AR Recon 2023 Airborne Radio Occultation (ARO) Observations in Zonal ARs and Cutoff Lows</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Jennifer Haase (Scripps Institution of Oceanography, UCSD)
10:40 to 11:10	<b>Group photo and coffee break</b>	
11:10 to 11:25	<b>Mesoscale Analysis of Landfalling Atmospheric Rivers in California during December 2022 and January 2023</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Brian Kawzenuk (Center for Western Weather and Water Extremes)
11:25 to 11:45	<b>Impacts of Long-Duration Weather Balloon Observations on North American Forecasts</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Todd Hutchinson (WindBorne Systems)

11:45 to 12:00	<b>Overview of US West Coast Observations: Radiosondes and Ground-Based Hydrometeorological Networks</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Anna Wilson (Scripps Institution of Oceanography, UCSD)
12:00 to 12:30	<b>Discussion</b> <a href="#">Video recording</a>	
12:30 to 14:00	<b>Lunch break</b>	
14:00 to 15:30	<b>Session 2: AR Recon in Water Year 2023 - Part II</b> Moderator: Anna Wilson (Center for Western Weather and Water Extremes)	
14:00 to 14:15	<b>NOAA G-IV Status Review</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Richard Henning (NOAA Aircraft Operations Center)
14:15 to 14:30	<b>Diagnosing Forecast Sensitivity of Atmospheric Rivers Using an Adjoint</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	James Doyle (Naval Research Laboratory)
14:30 to 15:00	<b>Application of Ensemble Sensitivity during the 2022/2023 AR-Recon Season</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Ryan Torn (University at Albany, SUNY)
15:00 to 15:30	<b>Importance of AR Recon Observations to Water Management</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Cary Talbot (US Army Corps of Engineers)
15:30 to 16:00	<b>Discussion</b> <a href="#">Video recording</a>	
16:00 to 16:30	<b>Break</b>	
16:30 to 18:30	<b>Session 3: Poster session</b> Location: Weather Room	
16:30 to 18:30	<b>Reception and poster session</b>	

# Wednesday

## Agenda

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09:15 to 09:30	<b>Welcome</b>	
09:20 to 09:30	<b>Welcome to day 2</b>	Marty Ralph (CW3E)
09:30 to 14:00	<b>Session 4: Modeling, DA and Impact Studies - Part I</b> Moderator: Jon Rutz (Center for Western Weather and Water Extremes)	
09:30 to 10:00	<b>NOAA Aircraft AR support: now and future</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Nancy Hann (NOAA)
10:00 to 10:30	<b>Unifying Targeted Aircraft Reconnaissance Observations for Improving Atmospheric River and Winter Storm Forecasts</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Vijay Tallapragada (NOAA/NWS/NCEP/EMC)
10:30 to 10:50	<b>Impact of Dropsonde Data on NCEP Operational GFS Forecasts from 2022-2023 Atmospheric River Reconnaissance</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Xingren Wu (Axiom at EMC/NCEP/NOAA)
10:50 to 11:05	<b>Coffee break</b>	
11:05 to 11:25	<b>Atmospheric River Analysis and Forecast System (AR-AFS): Atmospheric River Reconnaissance 2023 Dropsonde Data Impact Study</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Keqin Wu (Lynker at ECM/NCEP/NOAA)

11:25 to 11:45	<b>Sub-Seasonal Prediction skill of GEFSv12 for Atmospheric Rivers and Associated Precipitation Forecasts over the U.S. West Coast</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Murali Nageswara Rao Malasala (NOAA)
11:45 to 12:15	<b>Improving Sampling Strategies for Atmospheric River Reconnaissance</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Luca Delle Monache (CW3E/SIO/UCSD)
12:15 to 12:30	<b>A Review of AR RECON Modeling, DA and Impact Studies at the U. S. Naval Research Laboratory</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Carolyn Reynolds (Naval Research Laboratory) James Doyle (Naval Research Laboratory)
12:30 to 13:30	<b>Lunch break</b>	
13:30 to 17:00	<b>Session 5: Modeling, DA and Impact Studies - Part II</b> Moderator: Xingren Wu (NOAA/National Centers for Environmental Prediction/Environmental Modeling Center)	
13:30 to 14:00	<b>The Utility of a Two-dimensional Forward Model for Bending Angle Observations in Regions with Strong Horizontal Gradients</b>	Michael Murphy (GMAO, NASA Goddard Space Flight Center)
14:00 to 14:20	<b>Observing System Experiments for the 2023 AR Recon Season</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	David Lavers (ECMWF)
14:20 to 14:30	<b>Special presentation</b> <a href="#">Video recording</a>	
14:30 to 15:00	<b>ARO at ECMWF: current activities and future plans</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Sean Healy (ECMWF)
15:00 to 15:45	<b>ECMWF 48r1 celebration</b>	
15:45 to 16:30	<b>The World Weather Research Programme: Activities and Plans Relevant to AR Recon</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Chris Davis (National Center for Atmospheric Research)

16:30 to 17:00	<b>Ocean surface and subsurface measurements for AR Recon and subseasonal AR predictability</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Timothy Higgins (University of Colorado Boulder) Aneesh Subramanian (University of Colorado Boulder)
19:00 to 22:00	<b>Workshop dinner</b>	
19:00 to 22:00	<b>Bel and the Dragon, Reading town centre</b>	

# Thursday Agenda

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10:00 to 10:05	<b>Welcome</b>	
10:00 to 10:05	<b>Welcome to day 3</b>	Vijay Tallapragada (NOAA/NWS/NCEP/EMC)
10:05 to 14:00	<b>Session 6: Scientific Advances in Physical Process Understanding</b> Moderator: Sam Bartlett (Center for Western Weather and Water Extremes)	
10:05 to 10:35	<b>Precipitation efficiencies in a climatology of extratropical cyclones</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Helen Dacre (University of Reading)
10:35 to 11:05	<b>The effects of diabatic heating in WCBs on jet stream perturbations and predictability</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	John Methven (University of Reading)
11:05 to 11:35	<b>The North Atlantic Waveguide, Dry Intrusion, and Downstream Impact Campaign (NAWDIC)</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Christian Grams (IMK-TRO, Karlsruhe Institute of Technology)
11:35 to 12:00	<b>Aircraft dropsonde observation of atmospheric rivers associated with tropical cyclones in the western North Pacific</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Kazuhisa Tsuboki (Nagoya University)
12:00 to 12:30	<b>Discussion</b>	
12:30 to 14:00	<b>Lunch break</b>	
14:00 to 15:30	<b>Session 7: The Future of AR Recon</b> Moderator: David Lavers (ECMWF)	

14:00 to 15:45

**Panel discussion on new directions  
and closing remarks**

- Marty Ralph, Center for Western Weather and Water Extremes
- Vijay Tallapragada NOAA/National Centers for Environmental Prediction/Environmental Modeling Center
- Florian Pappenberger, European Centre for Medium-Range Weather Forecasts

[Video recording](#)

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# NAWDIC Workshop 2023

## Agenda

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09:00 to 15:45	<b>NAWDIC Workshop 2023</b> Moderator: David Lavers (ECMWF)	
09:00 to 09:20	<b>NAWDIC-HALO and NAWDIC-KITcube: Seamless observation strategy from synoptic- to micro-scale</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Christian Grams (IMK- TRO, Karlsruhe Institute of Technology)
09:20 to 09:40	<b>AR Recon and potential collaborations with NAWDIC</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Marty Ralph (CW3E)
09:40 to 10:00	<b>CAPRI - The UK contribution to NAWDIC</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	John Methven (University of Reading)
10:00 to 10:10	<b>French contribution to ground-and airborne measurements of the lower troposphere during NAWDIC</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Julian Quinting (Karlsruhe Institute of Technology)
10:10 to 10:30	<b>U.S. plans for contributions to NAWDIC</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Steven Cavallo (University of Oklahoma)
10:30 to 10:50	<b>Hydrological Perspective</b> <a href="#">Presentation slides</a> <a href="#">Video recording</a>	Andrew Wade (University of Reading)
10:50 to 11:20	<b>Coffee break</b>	
11:20 to 12:30	<b>Breakout Groups (Assigned)</b> <ul style="list-style-type: none"><li>• Group 1: Atmospheric Rivers Moderator: Julian Quinting, Rapporteur: Jim Doyle</li><li>• Group 2: Dry Intrusions Moderator: Christian Grams, Rapporteur: Anna Wilson</li></ul>	

12:30 to 14:00

**Lunch break**

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14:00 to 15:20

**Case Study**

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15:20 to 15:45

**Breakout Groups Report Out and Closing Discussion**

Christian Grams (IMK-TRO, Karlsruhe Institute of Technology)

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