

**AR Recon Workshop 2024**  
**Tuesday - Thursday, 22 - 24 October 2024**  
**NOAA Center for Weather and Climate Prediction - College Park, MD**  
*All times EST and inclusive of presentation and questions/discussion*

**Tuesday, 22 October 2024**

*MC: Anna Wilson*

8:30 - 9:00 AM: Arrival & Check-in  
9:00 - 9:30 AM: Welcome & Opening remarks  
AR Recon motivation, Workshop Objectives, RAOP framework  
*Marty Ralph, Center for Western Weather and Water Extremes*  
*Vijay Tallapgrada, NCEP*

**Session 1: Operations, Capability and Observational Strategy**

*Moderator: Aneesh Subramanian, University of Colorado, Boulder*

9:30 - 10:00 AM: Air Force 53rd Wx Recon Squadron AR Recon: Past, Present, and Future  
*Lt. Col Ryan Rickert USAF 53rd WRS*

10:00 - 10:30 AM: NOAA Aircraft Operations Center Update and Plans for 2025  
*NOAA AOC (virtual)*

10:30 - 11:00 AM: ARO Working Group Update, ARO Update and Plans for AR Recon 2025  
*Jennifer Haase, SIO and Bing Cao, SIO*

**11:00 - 11:30 AM: Break**

11:30 - 12:00 PM: Global Drifter Program: Ocean Observations Update and Plans  
*Luca Centurioni, Lagrangian Drifter Laboratory, SIO (virtual)*

12:00 - 12:15 PM: CW3E Field Observations Updates and Plans for AR Recon 2025  
*Anna Wilson, CW3E*

12:15 - 12:30 PM: WindBorne: Observations Update and Plans for AR Recon 2025  
*Todd Hutchinson, WindBorne*

**12:30 - 2:00 PM: Lunch**

**Session 2: AR Recon Flight Planning and Execution**

*Moderator: Chris Davis, National Center for Atmospheric Research*

2:00 - 2:30 PM: AR Recon Sampling Priorities  
*Marty Ralph, Center for Western Weather and Water Extremes*  
*Vijay Tallapgrada, NCEP*

2:30 - 4:00 PM: Panel Discussion - AR Recon Ops 2025 (keep, start, stop); WestPac Ops  
~5 min overviews from:  
*Brian Kawzenuk (Forecast Lead, CW3E)*  
*Shawn Roj (Flight Track Coordinator, CW3E)*  
*Anna Wilson (Mission Director Perspective, CW3E)*  
*Jim Doyle (Adjoint Sensitivity, NRL)*  
*Ryan Torn (Ensemble Sensitivity - ECMWF)*  
*Xingren Wu (Ensemble Sensitivity - GEFS/CMC)*

**Session 3: Evening Session**

4:00 - 6:00 PM: Poster Session

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**Wednesday, 23 October 2024**

*MC: Xingren Wu*

**Session 4: The Importance of AR Recon**

- 8:30 - 9:00 AM: Arrival  
9:00 - 10:00 AM: Keynote Talk  
*Ken Graham, NOAA National Weather Service*  
10:00 - 10:30 AM: AR Recon and Implications for Water Management  
*Cary Talbot, US Army Corps Engineer Research and Development Center*

**Session 5: Modeling, DA and Impact Studies, Part I**

*Moderator: Ryan Torn, SUNY Albany*

- 10:00 - 10:20 AM: CW3E Modeling Status and Future Plans - Overview  
*Luca Delle Monache, CW3E*  
10:20 - 10:40 AM: CW3E DA Infrastructure  
*Colin Grudzien, CW3E (virtual)*  
10:40 - 11:00 AM: Impacts of Dropsonde Data on Satellite Radiance Assimilation in GFS  
*Minghua Zheng, CW3E*  
**11:00 - 11:30 AM: Break**  
11:30 - 11:50 AM: Data Impact for AR Recon with GFS  
*Xingren Wu, NCEP*  
11:50 - 12:10 PM: High-resolution regional model for ARs  
*Keqin Wu, NCEP*  
12:10 - 12:30 PM: Data Impact for Winter Storm with GFS  
*Vijay Tallapragada, NCEP*

**12:30 - 2:00 PM: Lunch**

**Session 6: Modeling, DA and Impact Studies, Part II**

*Moderator: Minghua Zheng, CW3E*

- 2:00 - 2:30 PM: AR source regions and buoy impact studies over the N. Pacific  
*Jim Doyle and Carolyn Reynolds, NRL*  
2:30 - 2:50 PM: An overview of AR Recon drifting buoys and their impacts  
*David Lavers, ECMWF*  
2:50 - 3:15 PM: Impacts of AR Recon dropsondes on IFS precipitation forecasts  
*Jia Wang, CW3E*  
3:15 - 3:30 PM: Modeling, DA, and Impact studies at the University of Colorado Boulder  
*Aneesh Subramanian, CU Boulder*  
3:30 - 3:50 PM: Assessing the impacts of assimilating airborne radio occultation (ARO) observations during an 11-flight sequence of ARs  
*Ivette Hernandez Banos, NCAR*  
**3:50 - 4:15 PM: Break**  
4:15 - 5:30 PM: Panel Discussion on Model Validation and Diagnostics:  
*Moderator: Minghua Zheng, CW3E*  
*Laurel DeHaan (CW3E)*  
*David Lavers (ECMWF)*  
*Carolyn Reynolds (NRL)*  
*James Nelson (NOAA/NWS WPC)*

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**Thursday, 24 October 2024**

*MC: David Lavers*

**Session 7: Scientific Advances in Physical Process Understanding**

*Moderator: Sam Bartlett, CW3E*

- 8:30 - 9:00 AM: Arrival
- 9:00 - 09:30 AM: The Precipitation Prediction Grand Challenge in the West: Advancing the Accuracy and Usefulness of Atmospheric River Forecasts  
*Dave Novak, NOAA NCEP WPC*
- 9:30 - 10:00 AM: A Climatology of West Coast Landfalling AR Forecast Sensitivities  
*Ryan Torn, SUNY Albany*
- 10:00 - 10:30 AM: UFS Physics Development  
*Fanglin Yang, Head of Physics and Dynamics, NOAA NCEP*
- 10:30 - 11:00 AM: Break**
- 11:00 - 11:30 AM: Dropsonde Observations of the Stable Marine Boundary Layer in ARs & Decoupling from the Ocean Surface Through Downward Heat Flux  
*Matthew Simpson, CW3E (virtual)*
- 11:30 - 11:45 AM: WWRP/WCRP/WMO Efforts  
*Chris Davis, NCAR*
- 11:45 - 12:00 AM: Discussion; Q&A
- 12:00 - 1:30 PM: Lunch**

**Session 8: Coordination with other Field Campaigns**

*Moderator: Jin Huang, NOAA*

- 1:30 - 1:45 PM: Coordination opportunities and obstacles - *Opener*
- 1:45 - 2:00 PM: NAWDIC - *Alexandre Ramos, IMKTRO, KIT*
- 2:00 - 2:15 PM: NURTURE - *Steven Cavallo, Univ. of Oklahoma*
- 2:15 - 2:30 PM: AR Testbed - *Jim Nelson, NOAA NWS*
- 2:30 - 2:45 PM: GPEX - *Xubin Zeng, Univ of Arizona (virtual)*
- 2:45 - 3:00 PM: ONR/SAFARI - *Josh Cossuth & Dan Eleuterio, ONR*
- 3:00 - 3:30 PM: Break**
- 3:30 - 3:45 PM: TEPEX - *Aneesh Subramanian, Univ. of Colorado*
- 3:45 - 4:00 PM: NOAA OMAO - NW Pac - *Nancy Hann, NOAA (virtual)*
- 4:00 - 4:15 PM: AR Recon Coordinated Radiosondes - *Allison Michaelis, NIU*
- 4:15 - 4:45 PM: Facilitated Discussion - *How to best coordinate with these other efforts:*  
*Moderator: Jin Huang, NOAA*  
*Xubin Zeng, Univ of Arizona (virtual)*  
*Allison Michaelis, NIU*  
*Nancy Hann, NOAA*  
*Alexandre Ramos, IMKTRO, KIT*

**Session 9: Closing**

- 4:45 - 5:00 PM: Closing Remarks  
*Marty Ralph, Center for Western Weather and Water Extremes*  
*Vijay Tallapgrada, NCEP*