

AGENDA
7th Annual Forecast Informed Reservoir Operations (FIRO) Workshop
Scripps Institution of Oceanography, U.C. San Diego, La Jolla, CA
Virtual Workshop
August 4-6, 2020

Purpose

The Annual FIRO Workshop organized by the Center for Western Weather and Water Extremes (CW3E) at Scripps Institution of Oceanography, University of California San Diego (UCSD), brings together experts on Forecast-Informed Reservoir Operations (FIRO), including its underlying science, engineering, forecasting and policy dimensions, with a broader community of interested organizations, programs and individuals. It fosters discussion of current experiences, opportunities, and challenges related to assessing FIRO viability and to implementing associated methods and tools. It also considers FIRO's potential applicability to additional facilities. The Workshop provides a forum to share recent advances and lessons learned, and to discuss the next steps in advancing the science, predictions, engineering tools, and policies that can enhance the viability of FIRO at the reservoirs being examined currently, and that can potentially increase the range of conditions and facilities for which it could be useful.

Organizing Committee

F. Martin Ralph (Workshop Co-Chair), UCSD/Scripps Institution of Oceanography/CW3E
Cary Talbot (Workshop Co-Chair), USACE/ERDC
Curt Aikens, Yuba Water Agency (Co-Chair Yuba-Feather FIRO)
Jay Jasperse, Sonoma Water (Co-Chair Lake Mendocino FIRO)
John Leahigh, California Dept. of Water Resources (Co-Chair Yuba-Feather FIRO)
Greg Woodside, Orange County Water District (Co-Chair Prado FIRO)
Arleen O'Donnell, Eastern Research Group

DAY 1 - Tuesday August 4 - Current FIRO Activity Update and Progress Report

8:30-9:00 **Coffee and Logistics – WebEx Log-in and Tutorial**

9:00-9:15 Intro Remarks – FIRO Workshop Organizing Committee - Cary Talbot, Jay Jasperse, Greg Woodside, John Leahigh, John James, Marty Ralph

9:08 - 9:15 Welcome activity

Session 1 **Linking Science and Policy - Moderator Julie Kalansky**

9:15-9:35 Improving Forecast Skill and Enabling FIRO through Atmospheric Rivers Research – Marty Ralph

9:35-9:55 Atmospheric River Reconnaissance: Filling Key Gaps – Anna Wilson, CW3E

9:55-10:15 Atmospheric Rivers Reconnaissance: Results that Matter – Vijay Tallapragada, National Centers for Environmental Prediction

10:15-10:30 Discussion

10:30-10:40 Break

Session 2 FIRO Progress and Results - Moderator Rob Hartman

10:40-11:40 FIRO Project Results Panel

- Lake Mendocino Final Viability Assessment Preview and Results of WY 20 – Jay Jasperse, Sonoma Water
- Prado Dam Preliminary Viability Assessment Scenarios and Limitations - Greg Woodside, Orange County Water District
- Yuba-Feather Work Plan – Key Objectives and Scope - John James, Yuba Water Agency and John Leahigh, CA DWR

11:40-11:55 Questions and Discussion

11:55 - 12:00 Preview Day 2 and Wrap Up

DAY 2 - Wednesday August 5 - Considerations as FIRO is Expanded

8:30-8:35 Log-in and Welcome

Session 3 Future FIRO Applications - Moderator Rob Hartman

8:35-9:35 What's New and Environmental Considerations

- FIRO Screening-Level Assessments - Cary Talbot, USACE ERDC and Elissa Yeates, USACE ERDC
- Howard Hanson Dam – Logan Osgood-Zimmerman, USACE Seattle District.
- Truckee River- Laurie Nicholas, Project Manager, Bureau of Reclamation
- Water Control Manual Update Process – Joe Forbis, USACE Sacramento District Office

9:35-10:00 Questions and Discussion

10:00-10:15 Break

Session 4 CANCELLED

Session 5 Improving Forecast Skill for FIRO - Moderator Forest Cannon

- 10:15-11:15 Forecast Challenges and Efforts to Improve AR and Precipitation Prediction: Examples from FIRO Projects
- California Nevada River Forecast Center (CNRFC) Forecasting Developments - Alan Haynes, CNRFC
 - Efforts to Address AR and Precipitation Forecasting Challenges in FIRO Watershed – Forest Cannon, CW3E
 - Machine Learning Methods to Advance AR and Precipitation Forecast Skill - Luca Delle Monache, CW3E

11:15-11:40 Questions and Discussion

11:40-Noon Preview Day 3 and Wrap Up

DAY 3 - Thursday August 5 Emerging Directions

8:30 – 8:35 Log-in and Welcome

Session 6 Water Control Manuals for the Future - Moderator Elissa Yeates

- 8:35-9:35 Emerging Directions: Water Control Manuals for the Future
- Update on USACE Nationwide Review of WCMs and FIRO – Sean Smith, Principal Hydrologic and Hydraulic Engineer, USACE
 - Hydrologic Engineering Management Plans: A Key Component of FIRO Assessment - Rob Hartman, Robert K. Hartman Consulting Services and Mike Konieczki, HDR Inc.
 - Leveraging Final Viability Assessment Results for Water Control Manual Updates - Nick Malasavage, USACE San Francisco District
 - FIRO Adaptive Water Control Plans – A Framework - Joe Forbis, USACE and Rob Hartman, Robert K. Hartman Consulting Services

9:35-9:50 Questions and Discussion

9:50-10:00 Break

Session 7 Emerging Directions in Hydrology - Moderator Rob Hartman

- 10:00-10:45 Emerging Directions in Hydrology
- Evolving the Hydrologic Ensemble Forecasting System - Jay Jasperse, with Alan Haynes NOAA NWS and Ernie Wells NOAA NWS
 - Simulation of Hydrology, Stream Flow, and Reservoir Levels in the Upper Russian River Watershed in Support of FIRO at Lake Mendocino -

Chuck Downer, Research Hydraulic Engineer, ERDC

- National Water Center Update and Collaboration Opportunities – Ed Clark, Director National Water Center

10:45-11:00 *Questions and Discussion*

11:00-11:10 **Break**

Session 8 **Emerging Directions in Forecasting Hazards and Longer Time Horizons -**
Moderator Alan Haynes

11:10 - 11:55 Emerging Directions in Forecasting

- Forecasting Potential for Hazard Management: Wildfires, Landslides and Debris Flows, Oh My!– Nina Oakley, CW3E
- AR Forecasts and Post Wildfire Hydrology Prediction – Ian Floyd, ERDC
- Seasonal to Sub-seasonal Forecasts Science and Application - Mike Anderson, CA DWR

11:55-12:10 *Questions and Discussion*

12:10-12:15 Closing Remarks from Workshop Organizing Committee