



# WESTERN SNOW CONFERENCE

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**Updated 4/7/23**

90th Annual Western Snow Conference  
April 17-20, 2023

du Bois South Union  
Northern Arizona University, Flagstaff, Arizona  
Mountain Standard Time (not Daylight Savings Time)

<http://westernsnowconference.org>  
[westernsnowconference@gmail.com](mailto:westernsnowconference@gmail.com)

**Monday, April 17:**

du Bois Center, 1<sup>st</sup> floor “Aspen A”

9:00 – 1:00            Short Course(includes lunch):

*"Practical Applications and Integration of Airborne Snow  
Observatory data into Hydrologic Models and Runoff Forecasting"*

The short course will provide participants with the latest advances in Airborne Snow Observatory (ASO) data and modeling methods and products. We will discuss ASO Inc.'s work to improve snow albedo modeling and verification. We will hear about practical applications and the integration of ASO data into hydrologic models and runoff forecasting. We will wrap up by highlighting the advancement of the science behind ASO and plans for expanding ASO across the Western United States and the mountains of the globe.

1:00 – 5:00            Vendors Setup, Poster Paper Setup

2:00 – 5:00            WSC Executive Committee Meeting

5:30 – 7:00            Registration and Hospitality–Mother Road Brew Pub  
7 S. Mikes Pike St, Flagstaff, AZ 86001

## **Tuesday, April 18**

du Bois Center, 2<sup>nd</sup> floor “Ballroom”

7:00 – 8:00 Author’s Breakfast

7:00 – 8:30 Conference Registration, Vendor Setup, Poster Setup

### **CONFERENCE OPENING SESSION**

8:30 – 8:45 Opening Remarks and Welcome– Teri Smyly, WSC General Chair

8:45 – 9:15 State of the Water Year Roundtable, featuring Bo Svoma

### **ORAL SESSION I: *Wildfire & Environmental Influences on Snow & Water***

9:15 – 9:30 2019 Museum Fire - Flood Risk Modeling, Mitigation Planning and Recovery Monitoring– Joe Loverich

9:30 – 9:45 Post-wildfire Snowmelt Rates Using Burned SNOTEL Sites– Jeremy Giovando

9:45 – 10:00 Response of Land Surface Albedo to Fire Disturbance in the Sierra Nevada Seasonal Snow Zone over the MODIS Record– Jillian Gayler

10:00 – 10:30 **Break**

10:30 – 10:45 Impact of forest structure and disturbance on net water input to soil at contrasting snowpack sites in Arizona, USA – Ravinda Dwivedi

10:45 – 11:00 Analyzing 22 years of snow darkening and dust radiative forcing from MODIS in the Upper Colorado River Basin– Patrick Naple

11:00 – 11:15 Record high dust-on-snow deposition in the Wasatch Mountains: Is the shrinking Great Salt Lake to blame? – Otto Lang

11:15 – 1:00 **Lunch(on your own)**

## **ORAL SESSION II: *Flow Forecasting & Water Operations***

- 1:00 – 1:15            Integration of Airborne Snow Observatory Data into Operations in the Truckee and Carson Basins – Scott Fennema
- 1:15 – 1:30            Inclusion of NOAA Climate Prediction Center temperature forecasts within NWS ensemble water supply forecasts for Bradley Lake AK.– David Streubel
- 1:30 – 1:45            Evaluation of NOAA and Snow Survey YSI Temperature Correction Equations for Bias-Reducing SNOTEL Temperature Data– Joel Atwood
- 1:45– 2:15            **Break**
- 2:15 – 2:30            Towards Snowpack Runoff Decision Support– Anne Heggli
- 2:30 – 2:45            Mysteries of "Missing" Snow - A Climatological Analysis of Water Fluxes in the Upper Colorado River Basin – Daniel Hogan
- 2:45 – 3:15            **Vendor Introductions**
- 3:15 – 3:30            **Poster Introductions**
- 3:30 – 5:30            **Posters and Vendor Displays**

### ***Poster Presentations:***

Do Feedback Cycles Between Snow Accumulation and Vegetation Growing Conditions Drive Subarctic Ecosystem Conversions?– Johanne Albrigtsen

ERA5 Snowpack in Alaska: Operational Uses and Climate Trends–Jesse Robinett

Operational iSnobal Modeling with Distributed Soil Temperatures–Mark Robertson

Multitemporal Snow Water Equivalent, Thermal, and Radiation Monitoring using Drone and Ground Surveys to Inform High Resolution Snow Modelling in Arizona's Forests– Patrick Broxton

Quantifying Large-scale Changes in Snow Disappearance Date After Wildfires Across Western U.S.–Arielle Koshkin

Observed Increased Daily Temperature Variability in the Southern Rocky Mountains of Colorado–Brian Steen

At what spatial resolution do hydrologic models need to simulate snow for streamflow timing and volume?–William Currier

Center for Western Weather and Water Extremes Hydrometeorological Network and Applications–Ava Cooper

Constructing Snow Cover Across Burned Forests Using Aerial Structure from Motion–Siobhan Ciafone

Investigating the Impacts of Wildfires on Downstream Hydrology in Snowmelt Dominated Watersheds in the Western Oregon Cascades–Sage Ebel

Post-fire Impacts on Spring-flow and Low-flow Hydrology in Snow-dominated Watersheds–Hannah Van Dusen

Multi-Decadal Changes in Perennial Snowfields of Yosemite National Park–Jackson Hawkins

Retrieval of snow properties from LiDAR pulse broadening–David Lefevre

Testing Sentinel-1 SAR Snow Depth Retrievals at the Catchment Scale in the San Juan Mountains–Adrian Marziliano

Towards Developing a Novel Ultrasound Laser System to Quantify the Mechanical and Microstructural Properties of Snow–Chris McCaslin

A Semi-Automated Approach to Clean Hourly Snow Depth and Snow Water Equivalent Data–Anne Heggli

### **Wednesday, April 19**

du Bois Center, 2<sup>nd</sup> floor “Ballroom”

9:00 – 9:20            Announcements– Kevin Richards, Conference Chair

#### **ORAL SESSION III: *Snow Processes & Distribution***

9:20 – 9:40            Enhancing Snowpack through Cloud Seeding: A Climatology Study for Arizona– James Walter

9:40 – 10:00        Daily Downscaled Snow Water Equivalent Data with 500 Meter Resolution for 1950-2100 – Fatemeh Zakeri

- 10:00 – 3:00      **Guest Tour:** Visit the South Rim of the Grand Canyon.  
Transportation provided; lunch on your own.
- 10:00 – 10:20      Snow, Soil Frost, and Hydrologic Connectivity in Peatland  
Dominated Watersheds – Mariel Jones
- 10:20 – 10:40      Insights from a SAR-derived snowmelt runoff onset record for the  
Western U.S. from 2015-present – Eric Gagliano
- 10:40 – 11:00      WSC Diversity, Equity, and Inclusion Committee
- 11:00 – 1:00      **Lunch (on your own)**
- 1:00 – 1:20      The Sublimation of Snow (SOS) project: deployment and initial  
results – Ethan Gutmann
- 1:20 – 1:40      Using long short-term memory network to estimate snow water  
equivalent in Sierra Nevada – Engela Sthapit
- 1:40 – 2:00      Enhancing snowpack compaction process in the Noah-MP LSM –  
Ronnie Abolafia-Rosenzweig
- 2:00 – 2:20      Six consecutive seasons of high resolution snow depth maps over  
Grand Mesa from VHR satellite stereo images – Michelle Hu
- 2:20 – 3:00      **Western Snow Conference Annual Business Meeting**  
All Attendees

## **CONFERENCE BANQUET & AWARDS**

- 6:00 – 7:00      Hospitality
- 7:00 – 9:00      Banquet and Awards

## **Thursday, April 20**

- 9:00–3:00      **Technical Tour Option 1:** Short walk (ADA accessible) in beautiful  
Oak Creek Canyon followed by lunch and gallery tours in Sedona.
- 9:00 – 5:00      **Technical Tour Option 2:** Vigorous hike in Long Canyon outside  
Sedona filled with Anasazi ruins and art.