



WESTERN SNOW CONFERENCE



www.westernsnowconference.org

Updated February 28, 2013

Final Program

2013 Western Snow Conference

Jackson, Wyoming

April 15-18 2013

Snow King Resort
Jackson, Wyoming

<http://westernsnowconference.org>
westernsnowconference@gmail.com

Monday April 15

8:30 – 2:30

Short Course – lunch included - [Grand View Lodge](#)
New Strategies and Techniques in Long Range Weather & Streamflow Forecasting - Many agencies, utilities, and irrigators use long-range forecasts for hydropower planning, reservoir operation, agricultural decisions, or to hedge one way or another. This forum will provide a discussion on the different and current weather and streamflow forecasting techniques, the advancement of long-range forecasting and accuracy, a timeline of when agricultural decisions are made, and much more.

3:00 – 5:00

Executive Committee Meeting - [Grand View Lodge](#)

5:30 – 7:00

Registration and Hospitality – Peter Palmer (General Chairman's Suite)

Tuesday April 16 – [Grand View Lodge](#)

7:00 – 8:00

Author's Breakfast

7:30 – 8:30

Conference Registration
Vendor Setup & Poster Paper Setup

CONFERENCE OPENING SESSION

8:30 – 8:40

Opening Remarks - Ron Abramovich, Conference Chair

8:40 – 8:50

Welcome - Peter Palmer, WSC General Chair

8:50 – 9:20

Guest Speaker – Astor Boozer, Regional Conservationist - West, USDA Natural Resources Conservation Service, Washington, DC

9:20 – 9:30

Vendor Introductions: Peter Palmer

ORAL SESSION I – Current and Future Snow

- 9:30 – 10:00 **State of the Water Year Address**
B.C. Moore
- 10:00 – 10:30 **Break**
- 10:30 – 11:00 **Analysis of Historical and Future Snow Conditions for the National Climate Assessment**
K. Kunkel
- 11:00 – 11:30 **Understanding Trends in Snow Accumulation, Water Availability and Climate Changes using Snow Telemetry and Streamflow Observations in the Missouri River Headwaters**
T. Matthews and J. Hendrikx
- 11:30 – 1:00 **Lunch**

ORAL SESSION II – Modeling - SWE

- 1:00 – 1:30 **Estimating SWE at NWS Climatological Stations**
P. Farnes
- 1:30 – 2:00 **The Effect of Physiographic Parameters on the Spatial Distribution of Snow Water Equivalent and Snow Density Near Peak Accumulation**
K. Wetlaufer
- 2:00 – 2:15 **Poster Introductions**
- 2:15 – 3:30 **Break - Poster and Vendor Exhibits**
- Synoptic Evolution of Extreme Snowfall Events Across the Northern Rockies**
J. Abatzoglou, A. Peterson, A. Lute, and R. Barbero
- Impact of Climate Change on Water Availability for Algae-based Biofuel**
B.C. Moore, M. Wigmosta and A. Coleman
- Comparison of Snowfall Between a Standard Precipitation Gauge and Snow Board Measurements**
B. Starr and K. Elder
- Analysis of Five Years' Snowmelt Lysimeter Outflow Data**
R. Osterhuber
- Synthetic Year-Independent Spatio-Temporal Patterns of Snow Depletion**
R. Qualls and A. Arogundade

An Algorithm to Compute Traditional Snowfall Observations Using Ultrasonic Snow Depth Sensors at U.S. Automated Weather Stations

W. Ryan and N. Doesken

A Regression-Based Approach for Combining Ground-Based Observations, Distributed Models, and Remotely Sensed Data for Real-Time SWE Estimates

D. Schneider

ORAL SESSION III – Airborne Observations

3:30 – 4:00 **Airborne Snow Observatory: Next Generation of Basin Snow Measurement, Modeling, and Forecasting**

B.J. McGurk and T.H. Painter

4:00 – 4:30 **Measuring Under-Canopy Snow Accumulation Using Airborne and Ground Based Sensors in the Southern Sierra Nevada, California**

P.B. Kirchner, T.H. Painter, R.C. Bales, K. Musselman, and N. Molotch

Wednesday April 17 – [Grand View Lodge](#)

9:30 Spouse/Visitor breakfast and tour
(see below for more information)

8:30 – 8:45 Announcements – Ron Abramovich

ORAL SESSION IV – Observation of Snow

8:45 – 9:15 **Snow Cover Estimation Using IKONOS and Landsat**

E. Czyzowska, W. van Leeuwen, S. Marsh, K. Hrshboeck, and W. Wisniewski

9:15 – 9:45 **Observing the Elusive Intermittent Snow using Traffic Camera Images**

N. Wayand

9:45 – 10:15 **Design and Implementation of a Snow Measurements Network using Wireless Sensor Networks in the American River Basin of California**

R. Rice, R. Bales, D. Marks, B. Kerkez, S. Glaser, M. Conklin and P. Womble

10:15 – 10:45 **Break - Poster and Vendor Exhibits**

10:45 – 11:15 **Measuring Snowpack Sublimation Using the Bowen Ratio Energy Balance Method**

G.A. Sextone and D.W. Clow

- 11:15 – 11:45 **Downward Trends in Snowpack Water at Monitoring Sites in the Rocky Mountain Region**
G.P. Ingersoll and G. Port
- 11:45 – 12:15 **Characteristics and Interannual Variability of Extreme Snowfall Events**
A. Lute, K. Hegewisch and J. Abatzoglou
- 12:15 – 1:30 **Lunch**

ORAL SESSION V – Modeling Snow

- 1:30 – 2:00 **Variability of Snow Sublimation in the Upper Colorado River Basin**
M. Phillips
- 2:00 – 2:30 **Modeling of Snowpack Accumulation and Losses in Mountainous Terrain for both Snowpack Storage Mapping and Watershed Storage Estimates**
H. Froyland, J. Stackhouse and E. Schiefer
- 2:30 – 3:00 **Break: Exhibits and Vendors**

ORAL SESSION VI – Melt and the Environment

- 3:00 – 3:30 **Using the Utah Energy Balance Snow-Melt Model to Quantify Snow and Glacier Melt in the Himalayan Region**
A.S. Gupta and D.G. Tarboton
- 3:30 – 4:00 **The Effect of Seasonal Variations in Water Table Elevations on Systems Designed to Cleanup Sites Impacted by Leaking Underground Storage Tanks**
B. Comey
- 4:00 – 4:15 **Technical Tour Announcements and Special Events at Dinner**
- 4:15 – 4:45 **Annual Business Meeting – Peter Palmer, General Chair**
- 4:45 – 5:30 **Awards Committee Convenes – Jolyne Lee, TBA**

CONFERENCE BANQUET & AWARDS – Wednesday, April 17 - [Grand View Lodge](#)

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

Guest Speaker—Jim Woodmencey - Weather or Not in Jackson Hole

Jim is a meteorologist, climber, skier, and founder of Mountain Weather in Jackson Hole, Wyoming. Jim graduated with a B.S. degree in Meteorology from Montana State University in Bozeman in 1982. While attending college he worked as a mountain guide in the summers teaching climbing and guiding peaks in the Cascades and Alaska. After graduation Jim spent 14 summers as a Climbing Ranger and received the Department of the Interior Valor Award

for a rescue on the Grand Teton. In 1991 he started Mountain Weather which began as forecasting for the local helicopter skiing service in Jackson and has since evolved into providing almost one-stop shopping for weather information for the mountains around the world.

Thursday April 18, 8:30 am – 4:30 pm
Wildlife and Snow Hydrology Technical Tour

The tour includes lunch and will begin and end at the Snow King Resort. Phil Farnes will be your trip guide and narrator along with Alltrans Charters, wildlife experts, and other local characters such as Mike Beus USBR Upper Snake Operations, and Bodean Barney, Wyoming State Engineers Office and 3rd generation native in the valley. This is an once-in-a-lifetime tour that is not available anywhere else. Phil spent a lot of his career studying the snow and interactions with wildlife and vegetation in the greater Yellowstone area. Come and learn about these relationships and how they may help you better understand what is happening in your own backyard. The technical tour will be exploring:

- National Elk Refuge at edge of Jackson - Depending on green-up Elk and Bighorn Sheep may have migrated up country or may still be around. Turnouts on road offer great views of the Tetons.
- Trip to Gros Ventre Slide - The slide happened in June 1925 forming Slide Lake across Gros Ventre River that broke in May 1927 and killed six people in Kelly. Along the way, you'll get a good view of Tetons and location where much of the western movie Shane was filmed (Alan Ladd, Jack Palance, Van Hefflin). We'll also go through Antelope Flat which is a big game wintering area.
- Schwabacher Landing - Outstanding view of Tetons with reflection in the beaver pond.
- Head north for buffet lunch at Heart Six Ranch 4 miles east of Moran Junction. Cabins available to extend your stay in the valley.
- Oxbow Bend turnout - Another great photo location of Mt. Moran and Snake River. Possible moose and swans in area.
- Jackson Dam and informational discussion about the dam and history.
- South to Jenny Lake/String Lake if roads are open. More photo areas.
- South to Moose Visitor Center (Grand Teton Nation Park) – Newer facility worth viewing includes many new displays, bookstore, and 23 minute video.
- Return to Jackson via Teton Village which is at the base of Jackson Hole ski area if roads are open.

Wednesday, April 17 9:30 am
Spouse/Visitor Breakfast & Museum Tour

First enjoy a leisurely breakfast compliments of WSC then head out for a day of discovering beautiful Jackson Wyoming. The Jackson Valley and Yellowstone Visitor's Center in Jackson is a great way to begin the day and plan the day's events. Enjoy a delicious lunch and view an exhibition at the National Museum of Wildlife Art before walking and shopping around the downtown Jackson area.