First Workshop on NASA SnowEx Results

Best Western Plus Plaza Hotel, Longmont, Colorado
August 8 – 10, 2017

Agenda

Tuesday, August 8th

8:30 AM – Registration & Coffee

9:00 AM Invited Presentations - Session Chairs: Dorothy Hall & DK Kang

09:00 – Introductions to meeting, venue, etc. (Local Organizers & Dorothy Hall)
09:10 – Jared Entin "NASA, THP and snow"
09:30 – Ed Kim "Overview of SnowEx Year 1 Activities"
09:50 – Kelly Elder "SnowEx ground-based measurement design and strategy"
10:10 – Tom Painter "Quantification and baseline of snow depth, SWE, and albedo for NASA SnowEx from the NASA Airborne Snow Observatory"

10:30 AM – Break

10:50 – HP Marshall "Senator Beck in-situ observations and ground based remote sensing during the 2017 NASA SnowEx Experiment"
11:10 – Chris Hiemstra "Grand Mesa land cover and ancillary datasets"
11:30 – Ludo Brucker "SnowEx ground-based remote sensing activities: formulation, implementation, and accomplishments"

11:50 AM – Catered Lunch and Poster Session #1 including Tutorials on Data Use

Tutorials:

Chris Derksen – An Overview of the Snow MicroPenetrometer Dataset: Raw Measurements to Microstructure Properties
Jinmei Pan and Mike Durand – The SNOWEX Snow Specific Surface Area Measurements and its Potential Application

1:30 PM Airborne Measurements - Session Chair: HP Marshall

01:30 – Charles Gatebe "How the airborne measurements will help to assess the accuracy of snow-covered reflectance and albedo products from satellite measurements for forested landscapes"
01:45 – Chris Crawford "An overview of thermal infrared and visible-to-shortwave infrared instrument calibration activities for SnowEx Grand Mesa"
02:00 – Elias Deeb "Preliminary UAVSAR SnowEx results: airborne L-Band interferometry of snow"
02:15 – Jeff Deems "SnowEx TLS Survey Overview and Results from Senator Beck Basin"
02:30 – Tim Durham "A New Approach for Snow Water Equivalent Mapping Using Wideband SAR"
02:45 - Marco Lavalle "L/Ka-band radar phenomenology: A first look at the SnowEx UAVSAR/GLISTIN data over Grand Mesa"

3:00 PM – Break

3:15 to 3:50 PM Introduction to Working Groups – Chairs: Matthew Sturm and Jared Entin

03:15 – Jared Entin "Why working groups? What will they do? Preparing a community response to the decadal survey"
03:25 – Matthew Sturm "Agreeing to **the Process** by which we evaluate technology/ideas with regards to whether they pass muster in measuring snow"
03:35 - Questions

3:50 to 5:00 PM Session dedicated to Drew Slater – Chair: Jessica Lundquist

03:50 – Jessica Lundquist "Intro to Session and Drew's role in the snow community"
03:55—Chris Derksen "Drew and ESM-SnowMIP"
04:00 – David Lawrence "Drew's scientific contributions to permafrost and snow"
04:15 – Martyn Clark "Drew's scientific contributions to hydrology and snow"
04:30 – Matthew Sturm and Mark Serreze "In Memory of Drew Slater"
04:45 – Chris Hiemstra "Drew in Alaska"

Wednesday, August 9th

8:30 AM Modeling and Snow Measurements – Session Chair: Charles Gatebe

08:30 – Leung Tsang "Transmission of Microwaves through Vegetation Canopy for SWE Applications"
08:45 – Shurun Tan "Radar Remote Sensing of SWE at X and Ku bands: Forward Model and Retrieval"
09:00 – Mike Durand "Testing physically based radar retrieval algorithms for SWE using SnowEx data"
09:15 – Ana Barros "Multiscale Measurements and Modeling of Snowfall and Snow Water Equivalent in Complex Terrain"
09:30 – Chris Derksen "Snow microstructure measurements during SnowEx (snow micropen and SSA measurements)"
09:45 – Andrew Hedrick "Integration of airborne Lidar snow depths to improve snow modeling over mountain regions"

10:00 AM – Break

10:15 AM Working Groups - Chairs: Alex Langlois & Jessica Lundquist

12:30 – 1:30 PM Catered Lunch

1:30 PM Snow and Lake Ice Measurements – Session Chairs: Kelly Elder & Eli Deeb

01:30 – Sean Helfrich "Methodology and Data Collected for GLAWEX'17"
01:45 – Dan McGrath "Resolving spatial variability in snow water equivalent using a ground based GPR system"
02:00 – Joel Gongora "Optimal Sampling Strategies: An Application of Graph Theory"
02:15 – Anne Nolin "Post-wildfire summer greening depends on the previous winter's snowpack"
02:30 – Paul Houser "Ground-based Automatic Weather and Snowpack Observations at SnowEx 2017"
02:45 – Nan Chen "Enhanced cloud/snow identification in snow mixed vegetation/soil areas based on machine learning techniques"
03:00 – Noah Molotch "Observations from snow depth sensor arrays representing diverse forest conditions during NASA's SnowEX 2017 campaign"

3:15 PM – Break

03:30 – Mark Raleigh "Spatial variations in snowpack density in SnowEx: measurements and models"

03:45 – Tingjun Zhang “Comparison of Snow Density Measurements Using Different Equipment”
04:00 – David Shean “Regional snow depth and SWE from space, today, using high-resolution DEMs derived from commercial stereo satellite imagery: Case studies for SnowEx sites and the Pacific Northwest”
04:15 – McKenzie Skiles “Do we really need LiDAR? Applying Structure-from-Motion to Airborne Snow Observatory imagery from SnowEx Year 1 to build high resolution surface models”
04:30 – Ryan Webb “Mobile Radar Results on Grand Mesa"

4:45 PM – ISWGR Business Meeting - Chairs: Alex Langlois & Jessica Lundquist

5:15 – 7:00 PM Poster Session #2 and Tutorials on Data Use

Tutorials:

Charles Gatebe – Handling and Using Airborne BRDF of Cloud Absorption Radiometer
Tom Painter – ASO; title TBD
Aaron Thompson – UWScat Data Products - Use and Interpretation

Thursday, August 10th

8:30 AM Snow Measurements - Session Chair: Tom Painter

08:30 – Jessica Lundquist “Surface temperatures of snow and trees”
forest conditions during NASA's SnowEx 2017 campaign”
08:45 – Danny Marks “Snow Density Modeling in Support of LiDAR and Radar Depth Measurement”
09:00 - Xubin Zheng “Daily 4 km snow water equivalent/depth/cover product”
09:15 – Simon Yeah “Preliminary Results from Fielding an In Situ Three-Frequency Tomographic Radar on Snowpack”
09:30 – Chris Derksen (**INVITED**) "Environment Canada/Canadian Space Agency Terrestrial Snow Mass Mission Concept Study"

09:50 AM – Break

10:00 AM – Working Groups - Chairs: Jessica Lundquist & Alex Langlois

11:15 AM – Discussion and Wrap-up (led by Jared Entin, Ed Kim, Tom Painter, Kelly Elder)

12:00 PM – Main Part of Workshop Ends (lunch on your own)

01:00 PM – Afternoon working group meetings (open to all interested people); the meetings will not likely take up the entire afternoon

Posters (listed alphabetically by first author)

Posters will be displayed all day on 8 & 9 August

1. Jeremy Andreini “Leveraging coincident retrievals from the Airborne Snow Observatory during SnowEx Year 1 to compare and combine LiDAR and Structure from Motion surface models”
2. Mary Jo Brodzik “How do enhanced-resolution brightness temperatures benefit passive microwave algorithms for SWE and melt onset?”
3. William Ryan Currier “Unifying datasets to evaluate the accuracy of LiDAR and understand the variability of snow depth with in various canopy structures: SnowEx data and the Institute for Snow and Avalanche Research (SLF)”
4. Tri Datta “Spatio-temporal patterns of snowmelt and meltwater percolation in the East Antarctic Peninsula (2001-2014)”
5. Roger DeRoo “Inexpensive in-situ snow pack sensors for temperature, density and grain size: First season"
6. Brian Domonkos “1.4, 19 and 37GHz radiometric observations from the Michigan boom truck”
7. Weihui Gu “DMRT Models for Active and Passive Microwave Remote Sensing”
8. Katherine Hale “Examining the Influence of Ice-Bottom Roughness on Active Microwave Observations of Snow-Covered Freshwater Ice”
9. DK Kang “Evaluation of Tb sensitivity to snowpack parameters using existing snow microwave radiative transfer models”
10. Rhae Sung Kim “Multifrequency airborne microwave radiance assimilation approach for the retrieval of snow depth in mountainous area”
11. Alex Langlois “Overview of SnowEx 2017 in-situ passive microwaves measurements: a context for SWE assimilation”
12. Amanda Leon “SnowEx data access and support at NSIDC”
13. Jewell Lund “Ground validation of spectral and broadband snow albedo from the Airborne Snow Observatory during SnowEx Year 1, Senator Beck Basin Study Area, CO”
14. Danny Marks “Simulating snow density for SWE determination from remote sensing measurements”
15. Jinmei Pan “Exploring the possibility to improve passive microwave SWE retrieval”
16. Rajesh Poudyal “BRDF Measurements during SnowEx 2017”
17. Mark Raleigh “What can tree sway data tell us about snow interception in Colorado”
18. Travis Roth “New metrics to measure snow-forest interactions in a maritime environment using ASO lidar”
19. Swati Tak “Monitoring Snow Cover in Ganga Basin of Himalayan Region Using Satellite Remote Sensing”
20. Shurun Tan “Assessment of Background Scattering at X- and Ku-band in Snow Remote Sensing”
21. Ahmet Tekeli “Snowdepth estimations using unmanned air vehicles”
22. Aaron Thompson “Comparison of snow covered vegetation and ground on Grand Mesa with UWScat”
23. Zach Uhlmann “Investigating the effect of forest canopy on small-scale snow depth distribution using terrestrial laser scanning”
24. Carrie Vuyovich “Snow OSSE: Using modeling and data assimilation for the definition of global snow characterization requirements”
25. Hongjie Xie “Snow cover variations and controlling factors at the Upper Heihe River Basin, Northwestern China”