# SnowHydrology 2026

## Program

The 5th International Conference on Snow Hydrology is held in Jaca (Spanish Pyrenees, Huesca) from 2nd to 6th February 2026. This program provides an overview of the conference schedule, including keynotes, oral sessions, PICO poster sessions, and poster sessions. All sessions are listed in chronological order, with timestamps for each. The poster listings are shown below each day, organized by session.

We also take this opportunity to remind you of the guidelines for all presentation types:

### Oral presentations

These contributions will be presented in dedicated sessions, as indicated in the conference schedule.

Oral presentations will have a duration of **10 minutes**. Authors may choose whether or not to include a discussion. If a discussion is included, the presentation must be limited to **8 minutes**, followed by **2 minutes of discussion**.

### PICO presentations

These contributions will be presented in dedicated sessions to the entire conference room. A PICO contribution consists of a **2-minute public presentation** (with up to 3 slides), followed by a **regular poster presentation** (maximum size: **90 cm wide × 160 cm high**).

### Poster presentations

Classical poster format with a maximum size of **90 cm wide × 160 cm high**.

**Please note:**
Due to limited space, posters for both PICO and Poster presentations will be displayed **only on the specific day assigned to each session**.

## Monday, February 2nd

**17:00-18:30** Registration

**18:30-20:00** Registration + Icebreaker (sponsored by ASO)

# Tuesday, February 3rd

## 8:15-8:45 Registration

## 8:45-9:15 Opening Remarks

## 9:15-9:45 KEY NOTE: Marie Dumont *CNRM, Centre d'Études de la Neige, France*

**What is the snow grain size? An historical perspective and an attempt for unification**

## 9:45-10:30 ORAL SESSION A - Snow Hydrology

1. **Ripening and melt processes in marginal Australian snowpacks**
   Duanne White, Phil Campbell, Sarah Thompson, Natasha Harvey, Justin Mann
   *University of Canberra, Australia*
2. **Adapting forests to enhance winter snow storage and gradual snowmelt**
   Joschka Geissler and Markus Weiler
   *University of Freiburg, Germany*
3. **Snow hydrology in the mediterranean Andes Cordillera: insights from experimental catchments, remote sensing and numerical modeling**
   James McPhee, Diego Blanch, María Courard, Yerel Morales, Elizabeth Ramirez, Cristóbal Sardá, Paloma Palma, Tamara Muñoz, Noemí Villagra, Javiera Bustamante
   *Universidad de Chile, Chile*
4. **The role of snowmelt, glacier melt and rainfall in streamflow dynamics on James Ross Island, Antarctic Peninsula**
   Michal Jenicek, Ondrej Nedelcev, Michael Matejka, Kamil Laska, Zbynek Engel, Jan Kavan
   *Charles University, Czech Republic*
5. **Snowmelt contributions to groundwater recharge and streamflow discharge at a hillslope scale in the Australian Snowy Mountains**
   Celine Anderson, Duanne White, Cath Hughes, Leah Moore
   *The Australian National University, Australia*

## 10:30-11:15 COFFEE BREAK AND POSTERS – Snow Hydrology / Measuring Snow and Snow Sensors / Optical Properties of the Snowpack – LAP

## **11:15-12:15** ORAL SESSION B – Snow Hydrology

1. **Advancing snow hydrology through stable water isotopes: insights from isotope-enabled modeling of hydrological partitioning in the Swiss Alps**
   Harsh Beria, Lionel Benoit, Natalie Ceperley, Bettina Schaefli
   *ETH Zurich, Switzerland*
2. **Improving the understanding of the snow-streamflow nexus as the basis for a hydrological forecasting system in regulated Mediterranean mountains catchments**
   Rafael Pimentel, Javier Aparicio, María José Polo
   *University of Cordoba, Spain*
3. **From climate to streamflow: The role of multivariate bias adjustment and spatial downscaling on hydrological simulations in a mountainous region**
   Michael Matiu, Francesco Toldo, Filippo Di Marco, Diego Avesani, Bruno Majone
   *University of Trento, Italy*
4. **Multi-criteria hydrologic modeling using MODIS snow cover and SMAP soil moisture satellite products**
   Ayca Eylen, Arda Sorman, Aynur Sensoy
   *Eskisehir Technical University, Turkey*
5. **Including snow redistribution in snow hydrology modelling: bridging the gap from research to operational modelling at nation-scale**
   Louis Quéno, Giulia Mazzotti, Jan Magnusson, Tobias Zolles, Tobias Jonas
   *WSL Institute for Snow and Avalanche Research SLF, Switzerland*
6. **SnowInflow: Optimized inflow forecasts for the snowmelt period**
   Jan Magnusson, Jens Oprel, Karoline Holand, Andreas Stordal, Gaute Lappegard
   *WSL Insitute for Snow and Avalanche Research SLF, Switzerland*

## **12:15-12:30** PICO I – Snow Hydrology

- **Snow melting phases detection using apparent thermal inertia, radar data and numerical modelling**
  Olga Gatti, Biagio Di Mauro, Carlo Marin, Roberto Garzionio, Giacomo Bramati, Valentina Premier, Claudia Notarnicola, Simone Pettinato, Edoardo Cremonese, Paolo Pogliotti, Roberto Colombo
  *Università degli Studi di Milano-Bicocca, Italy*
- **Hydro-meteorological regime of Alpine catchments under recent climate change. A case study from Northern Italy and Southern Switzerland.**
  Leonardo Stucchi, Maurizio Maugeri, Veronica Manara, Diego Jacopino, Daniele Bocchiola
  *Politecnico di Milano, Italy*

- **Can streamflow observations constrain SWE reconstructions? Lessons from idealized experiments**
  Pau Wiersma, Jessica Lundquist, Jan Magnusson, Nadav Peleg, Bettina Schaefli, Grégoire Mariéthoz
  *University of Lausanne, Switzerland*
- **Operational process-enabled hydrologic modeling for water management decision-support: A Case Study in California's Sierra Nevada**
  David Gochis, Jeff Deems, Thomas Painter, Logan Karsten, Kevin Sampson, Kat Bormann
  *Airborne Snow Observatories, Inc., USA*
- **Investigations into flooding of snow on sea ice and snow ice formation: cold laboratory experiments with snow and sea ice, and remote sensing of slush.**
  Alicia Fallows, Rosemary Willatt, Tom Mitchell, Daniel Feltham
  *University College London, UK*
- **Comparative Evaluation of Three Approaches for SWE and Runoff Modeling in Mountain Catchments: Insights from the SnowTinel Project**
  Giacomo Bertoldi, Michele Bozzoli, Valentina Premier, Carlo Marin, Emanuele Cordano, Giuseppe Formetta, John Mohd Wani, Matteo Dall'Amico, Federico Di Paolo, Stefano Tasin
  *Eurac Research, Italy*

## **12:30-13:30** ORAL SESSION C – Measuring Snow and Snow Sensors

1. **Snow-hydrological contribution to signals from a superconducting gravimeter on top of Mount Zugspitze, European Alps**
   Franziska Koch, Simon Gascoin, Korbinian Achmüller, Paul Schattan, Elias Bögl, Roberta Facchinetti, Jakob Knieß, Carolin Rempfer, Cesar Deschamps-Berger, Michael Lehning, Till Rehm, Karl-Friedrich Wetzel, Karsten Schulz, Christian Voigt – *BOKU University, Austria*
2. **MESSENGER-SWE: in-situ SWE measurement using optical fibre sensing mats**
   Adam Christopher Funnell, Peter James Thomas – *NORCE Research, Norway*
3. **Implementation of an Automated Height-Adjusted Arm for Snowpack Turbulent Flux Measurement**
   Andrew Schwartz, Marianne Cowherd, Megan Mason, Mia Jones, Kiana Tsao
   *UC Berkeley Central Sierra Snow Lab, USA*
4. **An update of WMO best practices for precipitation measurements**
   Samuel Buisan, Craig Smith, Michael Earle, Yves-Alain Roulet, Mareile Wolff, Isabelle Ruedi – *AEMET, Spain*
5. **Tree sway monitoring for improved parametrization of canopy snow interception in cold, wet climates**
   Emmanuelle Barrette, Vincent Vionnet, Benjamin Bouchard, Daniel F. Nadeau
   *Université Laval, Canada*

## **13:30-15:30** LUNCH BREAK

## **15:30-16:00** ORAL SESSION D – Measuring Snow and Snow Sensors

1. **Extracting Site-Specific Controls on Snow-Permafrost Interactions from Distributed Temperature Profiles Using Data-Model Integration**
   Ian Shirley, Chen Wang, Zelalem Mekonnen, William J. Riley, Baptiste Dafflon
   *University of Barcelona, Spain*
2. **Using High-Frequency GPR as a Non-Destructive Method to Monitor Liquid Water Content and Hydrological Behaviour During Rain-on-Snow Events in Contrasting Eastern Canadian Environments**
   Katrine Trottier, Michel Baraër, Daniel Nadeau
   *École de Technologie Supérieure (ÉTS), Canada*
3. **Dry snow metamorphism at high spatial and temporal resolution: impact of temperature, temperature gradient, and initial snow**
   Oscar Dick, Benoît Laurent, Neige Calonne, Pascal Hagenmuller
   *Météo France, CNRM, CEN (Snow Research Center), France*

## **16:00-16:15** PICO II – Measuring Snow and Snow Sensor

- **Peak SWE and other stories our deepening view of mountain snowpack dynamics**
  Jeff Deems, Kat Bormann, Tom Painter, Mark Robertson
  *Airborne Snow Observatories, Inc., USA*
- **Sweet Snow Measurements using a Cosmic Radiation Neutron Rover**
  Steven Fassnacht, Christina C. Chow, Jeffrey D. Niemann, Jeffrey E. Derry, Elayna R. Bump – *Colorado State University, USA*
- **Design and Field Implementation of an Open and Low-Cost Gamma-Ray Device for SWE and Environmental Monitoring**
  Víctor Berdejo-Arceiz, Víctor Herraiz-López, Borja Latorre, Ayla Marzo-Lorente, Leticia Gaspar, Adrián Subías Martín, Samuel T. Buisan, Rafael Alonso
  *Universidad de Zaragoza, Spain*
- **High-Density Snowpack Monitoring Through Temperature Profiling**
  Alejandro Martínez-Foronda and Luis Durán
  *Universidad Complutense de Madrid, Spain*
- **Laboratory characterization of snow dielectric properties using microwave probes**
  Emanuele Mariani, Fabian Wolfsperger, Carlo Marin, Barbara Cosciotti, Sebastian Emanuel Lauro, Elena Pettinelli, Elisabetta Mattei
  *Università degli Studi Roma Tre, Italy*

## **16:15-17:00** ORAL SESSION E – Optical Properties of the Snowpack - LAP

1. **Are microplastics melting snow? An optical property and radiative forcing assessment in the Western US**
   McKenzie Skiles, Chris Donahue, Janice Brahney
   *University of Utah, USA*
2. **Dark microplastics trigger changes on snow metamorphism that depend on snow initial density**
   Isabel Marín Beltrán, Javier Bandrés, Pablo Domínguez Aguilar, Jorge Pey, Jesús Revuelto, Juan Ignacio López Moreno
   *Centro de Ciências do Mar do Algarve (CCMAR), Portugal*
3. **Impacts of High Latitude Dust and snow-dust storms on cryosphere**
   Pavla Dagsson-Waldhauserova, Outi Meinander, IceDust members
   *Agricultural University of Iceland, Iceland*
4. **Presence and Potential Sources of Snow Impurities Along a Greenland Ice Sheet Gradient from the WindSled Expedition**
   Jorge Pey, Isabel Marín Beltrán, Juan Ignacio López Moreno, Javier Bandrés, Ramón Larramendi – *Instituto Pirenaico de Ecología, Spain*
5. **Mixing UAV and in situ measurements to understand the spatio temporal variability of snow impurities in a Pyrenean site**
   Pablo Domínguez-Aguilar, Jesús Revuelto, Javier Bandrés, Eñaut Izagirre, Francisco Rojas-Heredia, Pablo Ezquerro, Jorge Pey, Juan Ignacio López-Moreno – *Instituto Pirenaico de Ecología, Spain*

## **17:00-17:15** PICO III – Optical Properties of the Snowpack – LAP

- **Snowmelt enhancement by light-absorbing impurities: observational and modelling insights from the Spanish Central Pyrenees**
  Javier Bandrés, Jorge Pey, Jesús Revuelto, Eñaut Izagirre, Esteban AlonsoGonzález, Pablo Domínguez-Aguilar, Juan Ignacio López-Moreno
  *Instituto Pirenaico de Ecología, Spain*
- **SnowDISOR: A Monte Carlo Model for Light Propagation in snowpack layers with micro- and nano-particle inclusions**
  Alejandro Sánchez Reina, Jesús Revuelto, Antonio Sarsa, Sol Carretero Palacios, Alberto Jiménez Solano – *Universidad de Córdoba, Spain*
- **Radiative impact of mineral dust during the melting season at Plateau Rosa and Cime Bianche (Aosta Valley, Pennine Alps)**
  Claudia Ravasio, Giacomo Traversa, Roberto Garzonio, Olga Gatti, Paolo Pogliotti, Sepehr Norouzi, Carlo De Michele, Stefania Gilardoni, Leon Roussel, Roberto Colombo, Biagio Di Mauro – *University of Milano – Bicocca, Italy*

## **17:15-18:00** COFFEE BREAK & POSTER – Snow Hydrology / Measuring Snow and Snow Sensors / Optical Properties of the Snowpack – LAP

## **18:00-18:30** ORAL SESSION F – Optical Properties of the Snowpack – LAP

1. **Atmospheric transport of light-absorbing impurities across the Tasman Sea: Hyperspectral insights into bushfire and dust impacts on New Zealand glaciers**
   Noah Molotch, Patrick Saylor, Alice Hill, Thomas Painter, Charles Miller
   *University of Colorado, USA*
2. **Assessing a Distributed Process-based Snowmelt Model informed by Remotely Sensed Snow Albedo Across the Upper Colorado River Headwater Basins**
   J. Michelle Hu, Joachim Meyer, Alvaro Robledano, Mathis Leeman, S. McKenzie Skiles
   *University of Utah, USA*
3. **Recent iSnobal model enhancements: Assessing improvements from an updated representation of the radiative balance in the Upper Colorado River Basin (USA)**
   Alvaro Robledano, Matthew Olson, Joachim Meyer, J. Michelle Hu, McKenzie Skiles
   *University of Utah, USA*

## POSTERS ON TUESDAY, February 3rd

### SNOW HYDROLOGY

- **Snowmelt Controls on Seasonal Baseflow Fractions Across Mountains**
  Johnmark Nyame Acheampong, Michal Jeníek
  *Charles University, Czech Republic*
- **Hydrological contribution of a debris-covered glacier: the case of Belvedere**
  Paolo Dezuanni, Leonardo Stucchi, Sonia Morgese, Lucia Ferrarin, Davide Fugazza, Daniele Barbone, Daniele Bocchiola
  *Politecnico di Milano, Italy*
- **The Fast and the Slow: Snowmelt Dynamics and Runoff Partitioning in Czech Mountain Catchments**
  Mateja Fabei, Michal Jeníek, Johnmark N. Acheampong
  *Charles University, Czech Republic*
- **Monitoring snow and ice fed mountain streams: the IdroStelvio network**
  Davide Fugazza, Leonardo Stucchi, Luca Pedrotti, Daniele Bocchiola, Guglielmina Adele Diolaiuti
  *University of Milan, Italy*
- **How much snow is there on Earth?**
  Simon Gascoin
  *CESBIO, France*

- **How montane forests shape snow cover dynamics across the central European Alps**
  Vincent Haagmans, Giulia Mazzotti, Clare Webster, Tobias Jonas
  *WSLInstitute for Snow and Avalanche Research SLF, Switzerland*
- **Scientists' Warning on the Loss of Snow**
  Giulia Mazzotti, Kate Hale, Simon Gascoin, Giulia Mazzotti, Michelle Hu, Anna Kontu, Steve Margulis, Joachim Meyer, Noah Molotch, Karl Rittger, McKenzie Skiles, Jack Tarricone
  *IGE/INRAE, France*
- **No Snow, No Flow: Tracing Snowmelt Shortages Through Agricultural and Hydropower Chains**
  Guillermo Rodríguez-López, Ignacio Cazcarro, Miguel Ángel Almazán-Gómez, Juan Ignacio López-Moreno, Jesús Revuelto
  *Universidad de Zaragoza, Spain*

## OPTICAL PROPERTIES OF THE SNOWPACK – LAP

- **Integrating field observations and snowpack modelling to assess snow impurity effects in the Central Pyrenees**
  Javier Bandrés and Josep Bonsoms
  *IPE*-CSIC, Spain
- **High resolution mapping of algae and dust on snow in an Alpine proglacial environment**
  Biagio Di Mauro, Olga Gatti, Claudia Ravasio, Gabriele Bramati, Roberto Garzonio, Roberto Colombo
  *National Research Council of Italy, Italy*
- **UAV-Based Insights Into HDRF and Albedo Dynamics in Boreal Snow Environment**
  Henna-Reetta Hannula, Roberta Pirazzini, Julia Martin, Aleksi Rimali, Eric A. Sproles, Antti Mikkonen, Hannakaisa Lindqvist and Aku Riihelä
  *Finnish Meteorological Institute, Finland*

# Wednesday, February 4th

## 8:30-10:00 ORAL SESSION G – Snowpack Modelling

1. **The daunting hurdles in snow modeling**
   Matthieu Lafaysse and Kévin Fourteau
   *CNRM, Centre d'Etudes de la Neige, France*
2. **Evaluation of the thermal core of the Helmut Snowpack model**
   Basile de Fleurian, Patrick Leibersperger, Kevin Fourteau, Lisa Bouvet, Neige Calonne, Matthieu Lafaysse, Mathias Bavay, Michael Lehning, Marie Dumont
   *Centre d'Études de la Neige, France*
3. **A new snow metamorphism scheme in Crocus improves simulations of SSA and radar backscatters in northern environments**
   Vincent Vionnet, Julien Meloche, Nicolas R. Leroux, Kevin Fourteau, Benoit Montpetit, Kate Hale, Chris Derksen
   *Environment and Climate Change Canada, Canada*
4. **Modelling Major Arctic Rain-on-Snow Events with Snow Model Crocus-SVS2**
   Érika Boisvert-Vigneault, Melody Sandells, Nick Rutter, Vincent Vionnet, Alexandre Langlois, Hannah Bloom
   *University of Northumbria at Newcastle, UK*
5. **Advances in Needleleaf Forest Snow Modelling: New Insights from Western and Northern Canada**
   Alex Cebulski, John Pomeroy, Bill Floyd
   *University of Saskatchewan, Canada*
6. **Inferring precipitation information from multi-year aerial snow depth observations to improve snow energy balance model inputs**
   Joachim Meyer, Andrew Hedrick, Hans-Peter Marshall
   *Boise State University, USA*
7. **High-Resolution Snow Water Equivalent Modeling in Franco-Italian Alpine Parks: The ACLIMO Project**
   Théo Rétif, Simon Gascoin, Laura Sourp, Emma Denise, Camille Rogeaux
   *CESBIO, France*
8. **High-resolution snow trends simulations in Sierra de Guadarrama**
   Álvaro González-Cervera and Luís Durán
   *Universidad Complutense de Madrid, Spain*
9. **Snowpack Dynamics Across Scales: the Canadian Hydrological Model in the Pyrenees**
   María Courard, Chris Marsh, Josep Bonsoms, Isabelle Gouttevin, Hugo Merzisen, Juan Ignacio López Moreno, Jesús Revuelto
   *Instituto Pirenaico de Ecología CSIC, Spain*

## **10:00-10:15** PICO IV – Snowpack Modelling

- **snowMapper v1.0: an open-source model for reconstructing high-resolution daily snow cover over mountainous areas**
  Konstantis Alexopoulos, Ian Willis, Hamish Pritchard, Giorgos Kyros, Vassiliki Kotroni, Kostas Lagouvardos
  *Scott Polar Research Institute, Cambridge, UK*
- **Iberian mountains snow cover in global km-scale climate simulations: verification and future changes in the nextGEMS IFS-FESOM model.**
  Diego García-Maroto, Elsa Mohino, Luis Durán, Álvaro Gonzaléz-Cervera
  *Univerisidad Complutense de Madrid, Spain*
- **Combining NARX and LSTM artificial neural networks for predicting snow cover area under climate change scenarios**
  Jose David Hidalgo Hidalgo, Enrique Merino Arribas, David Pulido Velazquez, Steven Fassnacht and Antonio-Juan Collados Lara
  *Instituto Geológico y Minero de España (IGME-CSIC), Spain*
- **Towards improved estimates of high-elevation snow: combining processed-based snow modelling and glaciological datasets**
  Giulia Mazzotti, Kaja von Rotz, Louis Quéno, Marin Kneib, Matthias Huss, Moritz Oberrauch, Jan Magnusson, Tobias Jonas
  *IGE/INRAE, France*

## **10:15-11:00** COFFEE BREAK AND POSTERS – Snowpack Modelling / Remote Sensing of the Snowpack / Snow Data Assimilation

## **11:00-13:15** ORAL SESSION H – Remote Sensing of the Snowpack

1. **UAV-based hyperspectral imaging to evaluate uncertainties in multispectral remote sensing and modeled snow reflectance**
   Eric A. Sproles, Duilio Fonseca-Gallardo, Shannon Hamp, Joe Shaw, Erich Schreier, Henna Hannula-Retta, Roberta Pirizzini, Riley Logan – *Montana State University, USA*
2. **Snow cover variability over the Italian territory: a focus on the Alps and Appennines chain from MODIS and AVHRR data**
   Cecilia Almagioni, Davide Fugazza, Veronica Manara, Maurizio Maugeri
   *Università degli Studi di Milano, Italy*
3. **Assessment of Snow Depth in Fugleberget Catchment, Hornsund, Svalbard Using Terrestrial Laser Scanning and A-Melt Snowmelt Modeling**
   BartBomiej Luks, Ekaterina Rets, Joanna Pluto-Kossakowska, Daniel Kpski, Adam Nawrot – *Institute of Geophysics Polish Academy of Sciences, Poland*

4. **UAV LiDAR surveys and machine learning improves snow depth and water equivalent estimates in the boreal landscapes**
   Maiju Ylönen, Hannu Marttila, Joschka Geissler, Anton Kuzmin, Pasi Korpelainen, Timo Kumpula, Pertti Ala-Aho
   *University of Oulu, Finland*
5. **Integrating UAV-derived snow metrics with thermal monitoring of soil, air and vegetation in a marginal snowpack environment in the Pyrenees**
   Francisco Rojas-Heredia, Jesús Revuelto, Juan Ignacio López-Moreno
   *Instituto Pirenaico de Ecología, Spain*
6. **Exploring Snow Depth Variability in Burnt Forests**
   Amy Clark, Nick Rutter, Leanne Wake, Jeff Deems
   *Northumbria University, UK*
7. **An assessment of SWE reconstructions and interpolations with Airborne Snow Observatory data**
   Thomas H Painter, Kat J Bormann, Jillian Gaylor, Cara Piske, Jeff Deems
   *Airborne Snow Observatories, Inc., USA*
8. **Testing a Tower-Based P-band Signal of Opportunity Approach for SWE Retrieval**
   Manuela Girotto, Rashmi Shah, Thomas Van Der Weide, Hans-Peter Marshall, Andrew Schwartz
   *UC Berkeley, USA*
9. **Approaching Broadly Applicable Model for Snow Permittivity Through Full-Wave FEM Simulations**
   Víctor Herráiz-López, Adrián Subías Martín, Iñigo Salinas, Carlo Marin, Rafael Alonso
   *University of Zaragoza, Spain*
10. **From Physical Modeling to Electromagnetic Simulation: Understanding Snowpack Stratigraphy Using an SFCW Radar**
    Adrián Subías Martín, Víctor Herráiz-López, Iñigo Salinas, Samuel T. Buisán, Rafael Alonso
    *University of Zaragoza, Spain*
11. **Sentinel-1 snow depth retrievals in mountainous regions, supported by tower-radar experiments**
    Hans Lievens, Isis Brangers, Hans-Peter Marshall, Jaron Vandenbroucke, Emma Tronquo, Devon Dunmire, Bert Cox, Jarne Van Mulders, Tobias Jonas, Francesca Carletti, Mathias Bavay, Gabrielle De Lannoy
    *Ghent University, Belgium*
12. **The role of liquid water and surface roughness on the multitemporal Sentinel-1 backscatter during snowmelt: from high-resolution field measurements to radiative transfer modelling**
    Francesca Carletti, Carlo Marin, Chiara Ghielmini, Riccardo Barella, Mathias Bavay, Michael Lehning
    *Institute for Snow and Avalanche Research SLF, Switzerland*

## **13:00-13:30** PICO V – Remote Sensing of the Snowpack

- **Airborne Snow Observatories - high-accuracy depth, SWE, and albedo mapping for 4-D snowpack monitoring**
  Kat J. Bormann, Cara R. Piske, Jeff S. Deems, Thomas H. Painter
  *Airborne Snow Observatories, Inc., USA*
- **Evaluating Satellite Snow Cover Detection Using Time-Lapse Cameras in Northern Spain**
  Adrián Melón Nava and Javier Santos González
  *Universidad de León, Spain*
- **Snow Depth Retrieval from Passive Microwave Remote Sensing Based on CLMA-Net**
  Tao Che, Liyun Dai, Gong Yucheng
  *Chinese Academy of Sciences, China*
- **Towards the assimilation of VIIRS snow cover into a distributed ensemble simulation system**
  N. Imperatore, M. Lafaysse, S. Gascoin, M. Dumont, S. Guével, A. Mauss, J.-B. Hernandez, M. Verna
  *CNRM, CEN, France*

## **13:30-15:30** LUNCH BREAK

## **15:30-16:00** ORAL SESSION I – Remote Sensing of the Snowpack

1. **Towards InSAR-Based Seasonal Snow Monitoring: Preparing for NISAR and the Road Ahead to ROSE-L**
   Jack Tarricone, Ross T. Palomaki, Zach Hoppinen, Randall Bonnell, Shadi Oveisgharan, Jorge Jorge Ruiz, Hans-Peter Marshall, Elias J. Deeb, Carrie Vuyovich, Richar R. Forster, Steven A. Margulis, Simon Yueh, Ryan W. Webb, Dan McGrath, Juha Lemmetyinen, Kelly Elder, Rashmi Shah, Xiaolan Xu, Mario Chaubell, Micah Johnson, Micah Sandusky, Mark Robertson, Thomas Painter, Curtis Beutler
   *NASA GSFC, USA*
2. **Detecting rain-on-snow events using passive microwave satellite data**
   Kerttu Kouki, Andreas Colliander, Aku Riihelä
   *Finnish Meteorological Institute, Finland*
3. **Repeat-pass differential InSAR for Snow Water Equivalent Retrieval of boreal areas**
   Jorge Jorge-Ruiz, Juha Lemmetyinen, Ioanna Merkouriadi, Manu Holmberg, Jouni Pulliainen, Jaan Praks
   *Finnish Meteorological Institute, Finland*

## **16:00-17:00** ORAL SESSION J– Snow Data Assimilation

1. **Snow Data assimilation using Sentinel-2 for the Cantabrian Mountains (Northern Iberia)**
   Tomàs Cardona-Sastre, Esteban Alonso-González, Kristoffer Aalstad, Simon Filhol, Adrián Melón-Nava, Javier Santos-González, Andrés Merino Suances
   *Universidad de León, Spain*
2. **Improving distributed snowpack estimates in complex terrain through the joint assimilation of in situ and spaceborne snow observation**
   Moritz Oberrauch, Bertrand Cluzet, Jan Magnusson, Tobias Jonas
   *WSL Institute for Snow and Avalanche Research SLF, Switzerland*
3. **Evaluating Snow Dynamics with Multiple Forcing and Assimilation Strategies for a Mediterranean Catchment in Türkiye**
   Aynur Şensoy, Mevlüthan Sakall, Aynur Şensoy, Arda Şorman, Francesco Avanzi, Simone Gabellani
   *Eskisehir Technical University, Turkey*
4. **Towards High-Resolution Snow Water Equivalent Estimates at Global Scale Based on Satellite Data Assimilation**
   Ezra Beernaert, Jaron Vandenbroucke, Kari Luojus, Hans Lievens
   *Ghent University, Belgium*
5. **Assimilation of synthetic radar backscatters at Ku-band improves SWE estimates**
   Nicolas R. Leroux, Vincent Vionnet, Courtney Bayer, Julien Meloche, Marco Carrera, Bernard Bilodeau, Franck Lespinas, Maria Abrahamowicz, Arlan Dirkson, Mark Buehner, Benoit Montpetit, Chris Derksen
   *Environment and Climate Change Canada, Canada*

## **17:00-17:15** PICO VI – Snow Data Assimilation

- **Improving Snowpack Simulations in Forested Areas Using Ensemble-Based Data Assimilation**
  Esteban Alonso-González, Adrian Harpold, Jessica D. Lundquist, Cara Piske, Laura Sourp, Kristoffer Aalstad, Simon Gascoin
  *Instituto Pirenaico de Ecología, Spain*
- **Assimilation of multichannel passive microwave data for improved estimates of snow microstructure**
  Mel Sandells, Esteban Alonso-González, Richard Essery, Leena Leppänen, Nicolas Leroux, Franck Lespinas, Julien Meloche, Vincent Vionnet
  *Northumbria University, UK*
- **Exploring the value of Sentinel-1 data for improving snowpack simulations in the Mediterranean Andes Cordillera**
  Diego Blanch, James McPhee, Maria Courard, Carlo Marin, Valentina Premier, Riccardo Barella – *Advanced Mining Technology Center, Chile*

- **Improving Physically-Based Snow Melt Modeling at the Sub-Grid Scale: Optimizing Terrain-Related Roughness and albedo decay time Using Satellite-Derived Snow Cover Fraction as a Model Constraint**
  Carlo Marin, Tonelli Cristian, Premier Valentina, Braitenberg Carla, Marin Carlo
  *Eurac Research, Italy*
- **Global ensemble-based mountain snow reanalysis**
  Kristoffer Aalstad, Esteban Alonso-González, Joel Fiddes, Andreas Kääb, Norbert Pirk, Désirée Treichler, Sebastian Westermann, Stefan Wunderle, Yeliz Yilmaz
  *University of Oslo, Norway*

## **17:15-18:00** COFFEE BREAK AND POSTERS – Snowpack Modelling / Remote Sensing of the Snowpack / Snow Data Assimilation

## **18:00-18:30** ORAL SESSION K– Snow Data Assimilation

1. **From Sentinel 1 to CROCUS: A new data assimilation approach to snowline detection and monitoring**
   Bastien Delacroix, Fatima Karbou, Mathieu Fructus, Matthieu Lafaysse, Bertrand Cluzet
   *Météo-France, CNRS, France*
2. **Assimilating soil temperature into the spatially-distributed snow model openAMUNDSEN**
   Andreas Kollert, Andreas Mayr, Simon Gascoin, Karl Hülber, Martin Rutzinger
   *Department of Geography, University of Innsbruck, Austria*
3. **Advancing the JAMSTEC Arctic Regional Reanalysis (JAMSTARs): A Nested Data Assimilation Approach for Improved Mountain Snowpack Representation**
   Kazuyoshi Suzuki, Milija Zupanski, Steven R. Fassnacht, Yuki Sekiya, Takashi Dan, Hotaek Park, Hideki Kobayashi, Olga Makarieva, Tetsuya Hiyama
   *JAMSTEC, Japan*

## POSTERS ON WEDNESDAY, February 4th

### SNOWPACK MODELLING

- **Intercomparison of SWE measurements with snowpack model and true snow precipitation**
  Samuel Buisan, Jorge Monforte, José Luís Collado
  *AEMET, Spain*
- **Towards a better representation of the physical properties of Arctic snowpacks in the SVS2-Crocus model**

Laurence Charbonneau, Daniel F. Nadeau, Vincent Vionnet, Marie Dumont, Kévin Fourteau
*Université Laval, Canada*

- **Evaluating iSnobal model performance in wildfire-impacted basins in Colorado, USA: the role of landcover parametrizations**
  Helen Flynn, Daniel McGrath, Joachim Meyer, Noah G. Caldwell, Camille Stevens-Rumann, Stephanie K. Kampf, Steven R. Fassnacht, Andrew R. Hedrick, Kelly Elder
  *Colorado State University – Geosciences, USA*
- **Thermodynamics of snow: a fundamental truth or a simple tool?**
  Kévin Fourteau, Kaoane Jondeau, Clément Cancès, Marie Dumont
  *Centre d'Études de la Neige, France*
- **A 20-Year, 50-meter Reanalysis Dataset of Snow Water Equivalent and Ice Melt for the extra-tropical Andes**
  Carlo Marin, James McPhee, Valentina Premier, Riccardo Barella, Diego Blanch, Paloma Palma, Ezequiel Toum, Jeroen Dries, Patrick Henkel, Markus Lamm, James Thornton, Mariano Masiokas
  *Eurac Research, Italy*

## REMOTE SENSING OF THE SNOWPACK

- **Improving snow fraction estimation from Sentinel-2 data for the Copernicus Land pan-European HR-WSI production**
  Zacharie Barrou Dumont, Matthieu Denisselle, Florence Marti, Simon Gascoin
  *Magellium, France*
- **Snowpack and forest in a mid-latitude mountain massif: the Pyrenees since 1950**
  César Deschamps-Berger, Simon Filhol, Giulia Mazzotti, Florence Mazier
  *GEODE, Université Toulouse 2, France*
- **Evaluating the performance of X-band and C-band SAR data over mountain areas and snow coverage. Tena Valley case of study.**
  Pablo Ezquerro, Nacho López, Jesús Revuelto, Oriol Monserrat, Claudia Pérez, Marc Oliva, Josep Ventura, Pedro Espín
  *Instituto Pirenaico de Ecología, Spain*
- **Interannual Consistency of Snow Depth Distribution: Extended Multi-Year Analysis from Dischma Valley, Switzerland**
  Christian Göhrig, Pia Ruttner, Yves Bühler
  *SLF, Switzerland*
- **Comparison of snow microwave radiative transfer models to represent Sentinel-1 C-band backscatter in the European Alps**
  Jonas-Frederik Jans, Firoz Borah, Zhenming Huang, Ghislain Picard, Leung Tsang, Hans Lievens
  *Ghent University, Belgium*
- **A possible paradigm change in drone flight planning for faster acquisition in complex terrain - Leveraging existing potential in UAV based photogrammetry for snow depth mapping**
  Jakob Knieß, Paul Schattan, Franziska Koch, Karl-Friedrich Wetzel1
  *University of Augsburg, Germany*

- **Integration of in situ and remote sensing observations and machine learning for snow depth modeling in Sierra Nevada**
  Julio Miguel Lopez, David Pulido, Antonio Juan Collados, Jose Pedro Sánchez, Jesús Revuelto, Jose David Hidalgo, Juan Carlos García, Carlos Carnicero, Nemesio Heredia, Luis Carcavilla, Steven Fassnacht, Cesar Husillos, Arturo Jesus León
  *Instituto Geológico y Minero de España (IGME-CSIC), Spain*
- **A Multi-Satellite Approach to Snow Monitoring in the Cantabrian Mountains Using Google Earth Engine**
  Adrián Melón Nava
  *Universidad de León, Spain*
- **Variability of Snow Cover in the Cantabrian Mountains, Spain: A Multi-Watershed Satellite-Based Analysis from 2000 to 2024**
  Adrián Melón Nava and Amelia Gómez Villar
  *Universidad de León, Spain*
- **Pyrenean Glacier Retreat and its relation with snow distribution: Insights from UAV**
  Jesús Revuelto, Eñaut Izagirre, Francisco Rojas-Heredia, Ixeia Vidaller, Ibai Rico, Alfredo Serreta, Pierre René, Juan Ignacio López-Moreno
  *Instituto Pirenaico de Ecología, Spain*
- **Integrated Satellite-Based Monitoring of Snow Cover Variability in the Mediterranean Region**
  Mohsin Tariq, Francesco Avanzi, Luca Ciabatta, Mauro Rossi, Marco Donnini, Angelica Tarpanelli, Manuela Girotto, Christian Massari
  *IRPI-CNR, Italy*
- **Evaluating Snow Cover Fraction Retrieval Across Methods and Multispectral Sensors**
  Sara Tegoni, Riccardo Barella, Carlo Marin, Umberto Morra di Cella, Biagio di Mauro, Jesús Revuelto
  *Eurac Research, Italy*

## SNOW DATA ASSIMILATION

- **SNOWBALL: Synergy of models, observations, and remote sensing for Arctic snow and ice**
  Arttu Jutila
  *Finnish Meteorological Institute, Finland*
- **Gaussian Processes to optimize and accelerate Spatio-temporal Snow Data Assimilation**
  Marco Mazzolini, Marianne Cowherd, Kristoffer Aalstad, Manuela Girotto, Esteban Alonso-González, Désirée Treichler.
  *University of Oslo, Norway*
- **Assimilating hydrological variables with particle filters to improve distributed snow modeling and spatial precipitation patterns**
  Cristóbal Sardá, María Courard, Gonzalo Cortés, James McPhee
  *Universidad de Chile, Chile*

# Thursday, February 5th

## 9:00-9:30 KEY NOTE: JOHN POMEROY *University of Saskatchewan, USA*

**Prospects and Opportunities for Advancing Snow Hydrology in the Decade of Action for Cryospheric Sciences**

## 9:30-9:45 PICO VII – Snow Avalanches

- **Long-Term Snow Avalanche Dynamics in the Spanish Central Pyrenees**
  Juan A. Ballesteros-Cánovas
  *MNCN-CSIC, Spain*
- **Spatial Perception of Avalanche Hazard Based on Terrain Mapping and User Behavior Analysis**
  B. Aguirre-Noguera, M. Bacardit, I. Moner, J. Gavaldà, E. Farías-Torbidoni, J. Revuelto, M. Pons
  *Institut Nacional d'Educació Física de Catalunya, Spain*

## 9:45-10:30 ORAL SESSION L – Snow Climatology

1. **Attributing Greenland Ice Sheet Extreme Melt Events to Climate Change**
   Josep Bonsoms, Sergi González, Xavier Fettweis, Marc Lemus-Cánovas, Marc Oliva, Juan I. López-Moreno
   *University of Barcelona, Spain*
2. **Rain and Snow after Peak Needs to be Considered to Model Melt**
   Steven Fassnacht, Enrique Morán Tejeda, Brian M. Steen, Antonio-Juan Collados Lara, Daniel McGrath, Stephanie Kampf, Helen Flynn, Noah Caldwell, Camille Stevens-Rumann, Joachim Meyer
   *Colorado State University, USA*
3. **Rain-on-snow events under the influence of atmospheric rivers: insights from observational data in the cold and humid climate of eastern Canada**
   Nadeau Daniel F., Alexis Bédard-Therrien, François Anctil, Sara-Ann Piscopo, Daniel F. Nadeau
   *Laval University, Canada*
4. **Snowpack Energy Exchange During Rain-on-Snow Events in Boreal Environments of Eastern Canada**
   Dmitry Pershin, Daniel F. Nadeau, Michel Baraër, Pierre-Erik Isabelle, Benjamin Bouchard
   *Université Laval, Canada*

5. **Estimating sublimation in complex alpine terrain with a combined modelling and monitoring approach including superconducting gravimetry**
   Elias Bögl, Sergi Gonzàlez-Herrero, Michael Lehning, Korbinian Achmüller, Christian Voigt, Karsten Schulz, Franziska Koch
   *BOKU University, Austria*

## **10:30-11:15** COFFEE BREAK AND POSTERS – Snow Climatology / Physical, Chemical and Biological Properties of the Snowpack / Snow Avalanches

## **11:15-12:30** ORAL SESSION M – Snow Climatology

1. **Water vapor transport: the missing piece to better describe the Arctic snowpack?**
   Lisa Bouvet, Kévin Fourteau, Neige Calonne, Marie Dumont, Laurent Arnaud, Oscar Dick, Mathieu Fructus, Pascal Hagenmuller, Daniel Kramer, Alexandre Langlois, Yves Lejeune, Julien Meloche, Jacques Roulle, Arvids Silis, Louis Védrine, Vincent Vionnet
   *Météo-France, CNRM, Centre d'Études de la Neige, France*
2. **Variations in Snow Properties and Stratigraphy Driven by the Urban Heat Island Effect in the Moscow Area**
   Anton Komarov et al. – *Alfred Wegener Institute (AWI), Germany*
3. **A century of snow accumulation on Axel Heiberg Island, Canadian high-Arctic**
   Laura Thomson and Sofia – Guest *Queen's University, Canada*
4. **Six decades of snowfall trends in Sierra Nevada Mountain range: spatiotemporal analysis**
   María José Polo, María José Pérez-Palazón, Rafael Pimentel
   *University of Cordoba, Spain*
5. **30 years (1991-2021) Snow Water Equivalent reanalysis dataset over the Padan Plain, Italy**
   Federico Di Paolo, Matteo Dall'Amico, Ballarin Filippo, Robin Castellani, Federico Di Paolo, Anna Paola Lonardi, Stefano Tasin, Chiara Zambon – *Waterjade Srl, Italy*
6. **Trends, Low-Frequency Variability and Teleconnection Patterns of Wintertime Weather and Snowfall in Sierra de Guadarrama**
   Luis Durán, Álvaro González-Cervera and Belen Rodríguez-Fonseca
   *Universidad Complutense de Madrid, Spain*
7. **High-Resolution Reanalysis Insights into Climate Variability over High Mountain Asia**
   María Santolaria-Otín, Charles Amory, Martin Ménégoz, Xavier Faïn, Fanny Brun, Christopher Mayer, Astrid Lambrecht
   *Institut des Géosciences de l'Environnement (IGE), France*

## **12:30- 13:30** OPEN DISCUSSION Led by James McPhee

## **13:30-15:30** LUNCH BREAK

## **15:30-16:15** ORAL SESSION N – Snow Climatology

1. **Spatial and Temporal Variability of Snow in the Andes using MODIS Snow Product 2000-2024**
   Freddy Saavedra, Ana Hernández-Duarte, Alex Caro, Antoine Rabatel, Steven Fassnacht, Thomas Condom, Stephanie Kampf, Mariano Masiokas, Carlos Romero, Yael Aguirre, Daniela González, Valentina Contreras, Javier Medina, Pablo Arancibia
   *Universidad de Playa Ancha, Chile*
2. **Drivers of snow drought are topography-dependent**
   Marianne Cowherd, Stefan Rahimi, Lucas Vargas Zeppetello, Manuela Girotto
   *Montana State University, USA*
3. **Drought, snowmelt, and vegetation stress in the Pyrenees: insights from ecohydrological modeling**
   Emmy Stigter, Katrina Gelwick, Emmy Stigter, Michael McCarthy, Maximiliano Rodríguez Moreno, Alvaro Ayala, Franziska Zilker, Sergio Contreras, Nacho López-Moreno, Simone Fatichi, Dirk Karger, Achilles Jouberton, Francesca Pellicciotti, Walter Immerzeel
   *Utrecht University, Netherlands*
4. **Three decades of snow water equivalent dynamics in the Po River Basin, Italy: Trends and Implications**
   John Mohd Wani, Kelly E. Gleason, Matteo DallAmico, Federico Di Paolo, Stefano Tasin, Gaia Roati, Marco Brian, Francesco Tornatore, Riccardo Rigon
   *University of Trento, Italy*

## **16:15-16:30** PICO VIII – Snow Climatology

- **Global snow surface sublimation hotspots based on ERA5-Land**
  Adrià Fontrodona-Bach, Harsh Beria, Denis Groshev, Thomas E. Shaw, Catriona Fyffe, Francesca Pellicciotti
  *Institute of Science and Technology Austria (ISTA), Austria*
- **Snow evolution during past droughts in the Central Apennines**
  Maximiliano Rodriguez, Alvaro Ayala, Michael McCarthy, Catriona Fyffe, Thomas Shaw, Achille Jouberton, Emanuele Romano, Simone Fatichi, Francesca Pellicciotti
  *Institute of Science and Technology Austria (ISTA), Austria*

- **Snowpack in spanish national parks in 2050**
  César Deschamps-Berger, Ignacio Lopez-Moreno, Laura Sourp, Sylvia Terzago, Jesus Revuelto, Francisco Roja, Marion Reveillet
  *GEODE, Université Toulouse 2, France*
- **Snow droughts around the Mediterranean during the 2000-2024 period**
  Laur Sourp, Simon Gascoin, Lionel Jarlan, Vanessa Pedinotti, Lahoucine Hanich
  *Magellium/CESBIO, France*
- **Assessing recent snow trends in the Sierra Nevada (Spain) by using a cellular automata model**
  Jose David Hidalgo Hidalgo, David Pulido Velazquez, Antonio Juan Collados Lara
  *Instituto Geológico y Minero de España (IGME-CSIC), Spain*
- **Snow Droughts in the Pyrenees (1959–2022): Trends, Structural Breaks, and emerging Asymmetries**
  Guillermo Rodríguez-López, Juan Ignacio López-Moreno, Jesús Revuelto
  *Universidad de Zaragoza, Spain*

## **16:30-17:00** ORAL SESSION O – Physical, Chemical and Biological Properties of the Snowpack

1. **Isotopic composition of snow ($\delta^{18}O$, $\delta^{2}H$) in the Central Pyrenees (Spain): characterization and climatic controls**
   Aída del Amo Martínez, Maria Leunda, Guillermo Pérez-Villar, Reyes Giménez, Antonio Delgado-Huertas, José Ignacio López-Moreno, Ana Moreno, Miguel Bartolomé
   *Universidad Autónoma de Madrid, Spain*
2. **Isotopic Records and Black carbon Effects in the Godwin-Austen Snowpack: A Radiative and Geochemical Perspective from the Central Karakoram**
   Nicolás González-Santacruz, Francisco Fernandoy, Jorge Pey, Kumiko Goto-Azuma, Motohiro Hirabayashi, Jon Arrizabalaga-Iriarte, Raúl R. Cordero, Sarah Feron, Sérgio Henrique Faria
   *Basque Centre for Climate Change (BC3), Spain*
3. **Snow Microstructure Regulates Isotopic Fractionation During Snow Sublimation**
   Shaakir Shabir Dar, Olga Silantyeva, John Hult, Valtteri Hyöky, Pertti Ala-aho, Hannu Marttila, Jeffrey Welker, Lena M Tallaksen
   *University of Oulu, Norway*

## **17:00-17:15** PICO IX – Physical, Chemical and Biological Properties of the Snowpack

- **Snow-Driven Recharge of Alpine Karst Aquifers: Isotopic Evidence from the Collarada Massif (Central Pyrenees)**
  Reyes Giménez, Ana Moreno, Marc Luetscher, Miguel Bartolomé
  *Instituto Pirenaico de Ecología, Spain*
- **A tale of bacteria, viruses and snow: soil microbial diversity in the Pyrenean cryosphere**
  Carlos Manso, Samuel Cirés, David Velázquez, Juan Ignacio López-Moreno, Eñaut Izagirre, Ixeia Vidaller, Jesús Revuelto, Estela Nadal-Romero, Erik Cammeraat
  *Universidad Autónoma de Madrid, Spain*

## **17:15-18:00** COFFEE BREAK AND POSTERS – Snow Climatology / Physical, Chemical and Biological Properties of the Snowpack

## **18:00-18:15** WRAP-UP SESSION – FUTURE SNOWHYDRO AND CLOSURE

## POSTERS on THURSDAY, February 5th

### SNOW CLIMATOLOGY

- **Approaches to estimate snow partitioning to sublimation and melt fluxes across diverse environments in the CryoSCOPE project**
  Pertti Ala-aho, Harsh Beria, Shaakir Shabir Dar, Marius G. Floriancic, Aditya Mishra, Chandan Sarangi, Siyuan Wang
  *University of Oulu, Norway*
- **Elevation-dependent warming in the Pyrenees: Observed trends, new elevational transects and driversdetection**
  Pere Esteban Vea, Marc Prohom Duran, Jordi Cateura Sabri, Juan Ignacio López-Moreno, Jordi Cunillera Grañó
  *Servei Meteorològic de Catalunya, Spain*
- **Changes in duration and intensity of snow droughts and their hydrological impacts in the Snowy Mountains (Australia)**
  Juan Ignacio López-Moreno, Nik Callow, Sérgio M. Vicente-Serrano, Shane P. Bilish
  *Instituto Pirenaico de Ecología, Spain*

- **Snowpack signals and noise: stable isotope insights from the Cordillera Darwin Icefield (54-55ºS)**
  Eñaut Izagirre, Sérgio H. Faria, Francisco Fernandoy, Dieter Tetzner, Juan Ignacio López-Moreno, Iñaki Antiguedad
  *Instituto Pirenaico de Ecología, Spain*
- **Depth hoar impacts on permafrost and greenhouse gas fluxes**
  Hotaek Park, Kazuyoshi Suzuki, Steven R. Fassnacht
  *JAMSTEC, Japan*