

A European network for a harmonised monitoring of snow for the benefit of
climate change scenarios, hydrology and numerical weather prediction

ESSEM COST Action ES1404



Workshop

Towards a better harmonization of snow observations, modeling and data assimilation in Europe

COST Action ES1404 Harnosnow

**30-31. October, 2018
Budapest, Hungary**

www.harnosnow.eu/snowconference

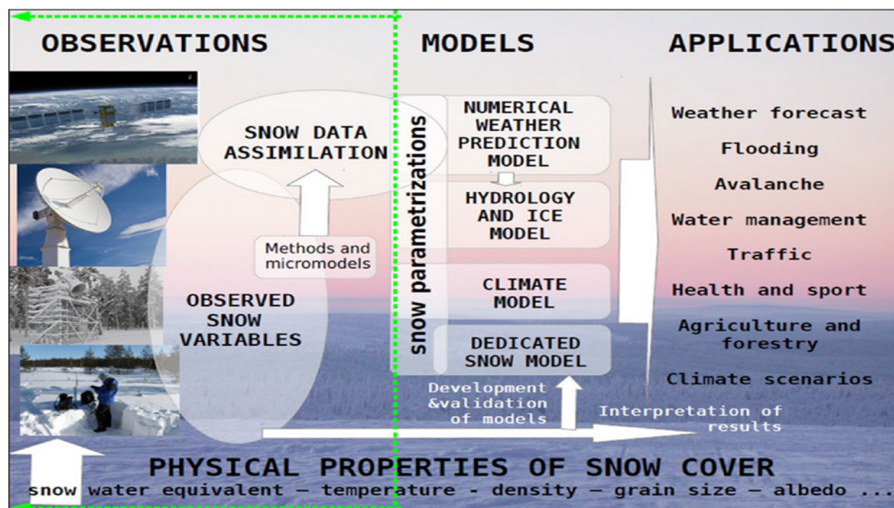
COST Action ES1404 Harnosnow: A European network for a harmonised monitoring of snow for the benefit of climate change scenarios, hydrology and numerical weather prediction

Aim: To enhance the capability of the research community and operational services to provide and exploit quality-assured and comparable regional and global observation-based data on the variability of the state and extent of snow.

Overall Objectives & Benefits:

1. **Establish a European-wide science network** on snow measurements for their optimum use and applications benefitting on interactions across disciplines and expertise.
2. **Assess and harmonise practices, standards and retrieval algorithms** applied to ground, air- and space-borne snow measurements
3. Develop a **rationale and long term strategy** for snow measurements, their dissemination and archiving.
4. **Advance snow data assimilation** in European NWP and hydrological models and show its benefit for relevant applications.
5. **Establish a validation strategy** for climate, NWP and hydrological models against snow observations and foster its implementation within the European modelling communities.
6. **Training of a new generation of scientists** on snow science and measuring techniques with a broader and more holistic perspective linked with the various applications.

www.harnosnow.eu



30 October 2018

8h-8h40 Registration

8h50 Welcome talks

Intercomparison of measurement methods, remote sensing product and assessment of their errors chaired by Leena Leppänen, Nacho Lopez Moreno

9h10 Remote Sensing of Snow: an overview -- Giovanni Macelloni

9h30 Retrieval of snow albedo from space and potential errors -- Charles Gatebe

9h50 Intercomparison and assessment of fractional snow cover products retrieved from optical remote sensing -- Igor Appel

10h10 Seasonal snow depth derived from satellite sub-meter stereo images in Iceland -- Andri Gunnarsson

10h30 Coffee break & posters

11h00 Differences on snow density and snow water equivalent estimation using different snow tubes: instrumental bias, variability induced by observers and influence of snow and terrain conditions -- Juan Ignacio López Moreno

11h20 Intercomparison of snow measurement methods in Turkey -- Arda Sorman

11h40 Overview of the European In-Situ Snow Measurements obtained through the Harmosnow WG1-WG2 survey. -- Roberta Pirazzini

12h00 10 min Discussion

12h10 Lunch

Snow data assimilation methods in NWP, hydrology, and other disciplines chaired by Ekaterina Kurzeneva, Carlo De Michele

13h40 Snow data assimilation methods for hydrological, land surface, meteorological and climate models: Results from the COST HarmoSnow survey -- Juergen Helmert

14h00 Data Assimilation of Satellite Snow Products through Hydrological Modelling in Mountainous Catchments -- Aynur Sensoy Sorman

14h20 Snow data assimilation at Deutscher Wetterdienst -- Martin Lange

14h40 10 min Discussion

On the representation of errors in NWP, hydrological and climate models chaired by Vera Potopová, Martin Lange

14h50 Error statistics in Data Assimilation for NWP: perspectives for snow -- Ekaterina Kurzeneva

15h10 The application of snow observations in agrometeorological models -- Vera Potopová

15h30 Comparison of statistical downscaling methods of satellite-based snow water equivalent product -- Justinas Kilpys

15h50 10 min Discussion

16h00 Coffee break & posters

Harmonization strategies across international organizations and other activities chaired by Patricia De Rosnay, Ali Nadir Arslan

16h30 HarmoSnow and Global Cryosphere Watch – Common goals and aspects -- Charles Fierz

16h50 Global Cryosphere Watch (GCW) Snow Watch activities for improved data reporting and exchange -- Patricia de Rosnay

17h10 European Space Agency snow activities -- Tânia Casal

17h30 10 min Discussion

17h40 **Posters lightning talks (1:30 min each)** chaired by Katalin Gillemot, Ghislain Picard

18h30 **Posters and light buffet dinner**

31 October 2018

Actions and methods for training snow scientists and observers chaired by David Christian Finger, Martin Schneebeli

- 8h30 Field Measurements for Snow Science in North America: Programs and Training -- Kelly Elder
- 8h45 Experiences from the Snow Science Winter Schools -- Martin Schneebeli
- 9h00 10 min discussion on the future of teaching snow science

Recommendations on measurement methods and instrumentation chaired by Ladislav Holko, Charles Fierz

- 9h10 Ground Measurements for Field Campaigns: Parameters, Priorities and Problems -- Kelly Elder
- 9h30 Overview of in situ snow albedo measurements -- Roberta Pirazzini
- 9h50 Snow chemistry of seasonal snow cover – effort towards a guideline for environmental monitoring purposes -- Wolfgang Schöner
- 10h10 10 min Discussion
- 10h20 Coffee break & posters

Snow observation reporting and dissemination chaired by Giovanni Macelloni, Samantha Pullen

- 10h40 Insights of the European Snow Booklet -- Anna Haberkorn
- 11h00 Enhancing data quality and data publication with the MeteoIO library -- Mathias Bavay
- 11h20 Automatic snow measuring stations network in CHMI -- Šimon Bercha
- 11h40 3D-snow mapping, a comparison of methods leading to a standardized measurement and post processing protocol -- Alexander Prokop
- 12h00 10 min Discussion

12h10 Lunch

Intercomparison of snow models and future of snow modeling across disciplines chaired by Marie Dumont, Jürgen Helmert

- 13h30 ESM-SnowMIP: Concept, first results and plans -- Gerhard Krinner
- 13h50 Snow modelling : current status and future avenue -- Marie Dumont
- 14h10 A multi-layer snow cover model for numerical weather prediction and climate models -- Sascha Bellaire
- 14h30 Impacts of meteorological data elevation coverage on a hydrologic model for mountainous watersheds -- Lampros Vasiliades
- 14h50 Coffee break & posters
- 15h10 Modeling and operational forecast of hazardous wet snow load at the Hungarian Meteorological Service -- Somfalvi-Tóth Katalin
- 15h30 Evaluation of Point Based Snowpack Modeling for SNOTEL Sites in Turkey -- Arda Sorman
- 15h50 10 min Discussion

16h00 **Closing remarks**

16h10 **End**

Posters

Intercomparison of measurement methods, remote sensing product and assessment of their errors

- P 1.1 Unmanned Air Vehicle Based Snow Depth Comparisons -- Ahmet Emre Tekeli
- P 1.2 Accuracy Assessment of EUMETSAT-HSAF Fractional Snow Cover Product (H12) for 2017-2018 Snow Season in Turkey by Using Sentinel-2 MSI Data -- Semih Kuter
- P 1.3 Use of satellite-based products for snow monitoring in Romania -- Anisoara Irimescu
- P 1.4 New 21-m platform for snow and soil remote sensing observations in Sodankylä -- Leena Leppänen
- P 1.5 Cross-sensor and cross-country validation of satellite products of snow cover in Finland, Italy and Turkey -- Gaia Piazzì
- P 1.6 Snow depth estimation using digital imagery -- Cemal Melih Tanis
- P 1.7 Eddy Covariance flux measurements over lake Vanajavesi (Finland) -- Rui Salgado

Snow data assimilation methods in NWP, hydrology, and other disciplines

- P 2.1 The value of satellite retrieved snow cover images to assess water resources and the theoretical hydropower potential in ungauged mountain catchments -- David Finger
- P 2.2 Towards a ensemble simulation system for snowpack state with assimilation of satellite data -- Marie Dumont
- P 2.3 The effect of varying weights in multi-objective calibration on model performance and time stability of model parameters -- Patrik Slezíak

On the representation of errors in NWP, hydrological and climate models

- P 3.1 Assessing Spatio-temporal snow cover patterns in a mountainous Mediterranean watershed using conceptual modelling and remote sensing -- Cenk Donmez
- P 3.2 Numerical simulation of snow formation using bin microphysics scheme -- István Geresdi

Harmonization strategies across international organizations and other activities

- P 4.1 Harmonization of remote sensing observation on snow fraction to fill a gap in snow products -- Igor Appel

Actions and methods for training snow scientists and observers

- P 5.1 Colorado Mountain College Avalanche Science Program, a college-level training program for avalanche safety workers -- Kelly Elder
- P 5.2 The X-Snow project: citizen science for homogenizing snow measurements -- Marco Tedesco
- P 5.3 Snow Microwave Radiative Transfer (SMRT) model - Training the community -- Picard Ghislain
- P 5.4 Training on snow & atmosphere science in Master at Université Grenoble Alpes: the Lautaret pass field work week -- Picard Ghislain

Recommendations on measurement methods and instrumentation

- P 6.1 Snow measurements in Republic of Macedonia -- Aleksandra Stevkov
- P 6.2 Evaporation over ice/snow surfaces and lakes: eddy covariance measurements in Antarctica. -- Elena Shevnina
- P 6.3 Measurement of Snow at Hungarian Meteorological Service and a Short Review of Snow Climate in Hungary -- Róbert Tóth
- P 6.4 Modelling snow water equivalent in the coastal zone of Hornsund fiord -- Bartłomiej Luks

Snow observation reporting and dissemination

- P 7.1 Expeditionary measurements of snow in the Jizerské hory Mountains and the Giant Mountains in the Czech Republic between 1983 and 2018 as a means of obtaining extreme seasonal snow data -- Ilona Zusková
- P 7.2 Snow melt and light-absorbing impurities of soot and dust in Iceland and Finland -- Pavla Dagsson-Waldhauserova
- P 7.3 Interactive snow profile edition with niViz -- Mathias Bavay

Intercomparison of snow models and future of snow modeling across disciplines

- P 8.1 Comparison of 50-year return period wet snow loads based on weather station data between 1965-1990 and 1991-2016 in Hungary -- Somfalvi-Tóth Katalin
- P 8.2 MWDiEM, a new tool to model the granular nature of snow avalanches -- Katalin Gillemot
- P 8.3 Digital mapping of wind deposited snow in the Low Tatras, Slovakia -- Anna Seres