



FINNISH METEOROLOGICAL INSTITUTE

COST ACTION ES1404

A EUROPEAN NETWORK FOR A HARMONISED MONITORING OF SNOW FOR THE BENEFIT OF CLIMATOLOGY, HYDROLOGY AND NUMERICAL WEATHER PREDICTION

Ali Nadir Arslan (Chair of the Action, FMI)



COST is an intergovernmental framework for European Cooperation in Science and Technology, allowing the coordination of nationally-funded research on a European level.

COST is an EU-funded programme that enables researchers to set up their interdisciplinary research networks in Europe and beyond. They provide funds for organising conferences, meetings, training schools, short scientific exchanges or other networking activities in a wide range of scientific topics.



- ❑ COST Actions are pan-European, bottom-up science and technology networks open to researchers from academia and industry or to policy stakeholders.**
- ❑ COST does not fund research itself, but supports networking activities carried out within COST Actions.**
- ❑ Every COST Action lasts for up to four years and requires the participation of researchers from at least 5 COST Member Countries.**



AIM OF THE COST ACTION ES1404

HARMOSNOW

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.



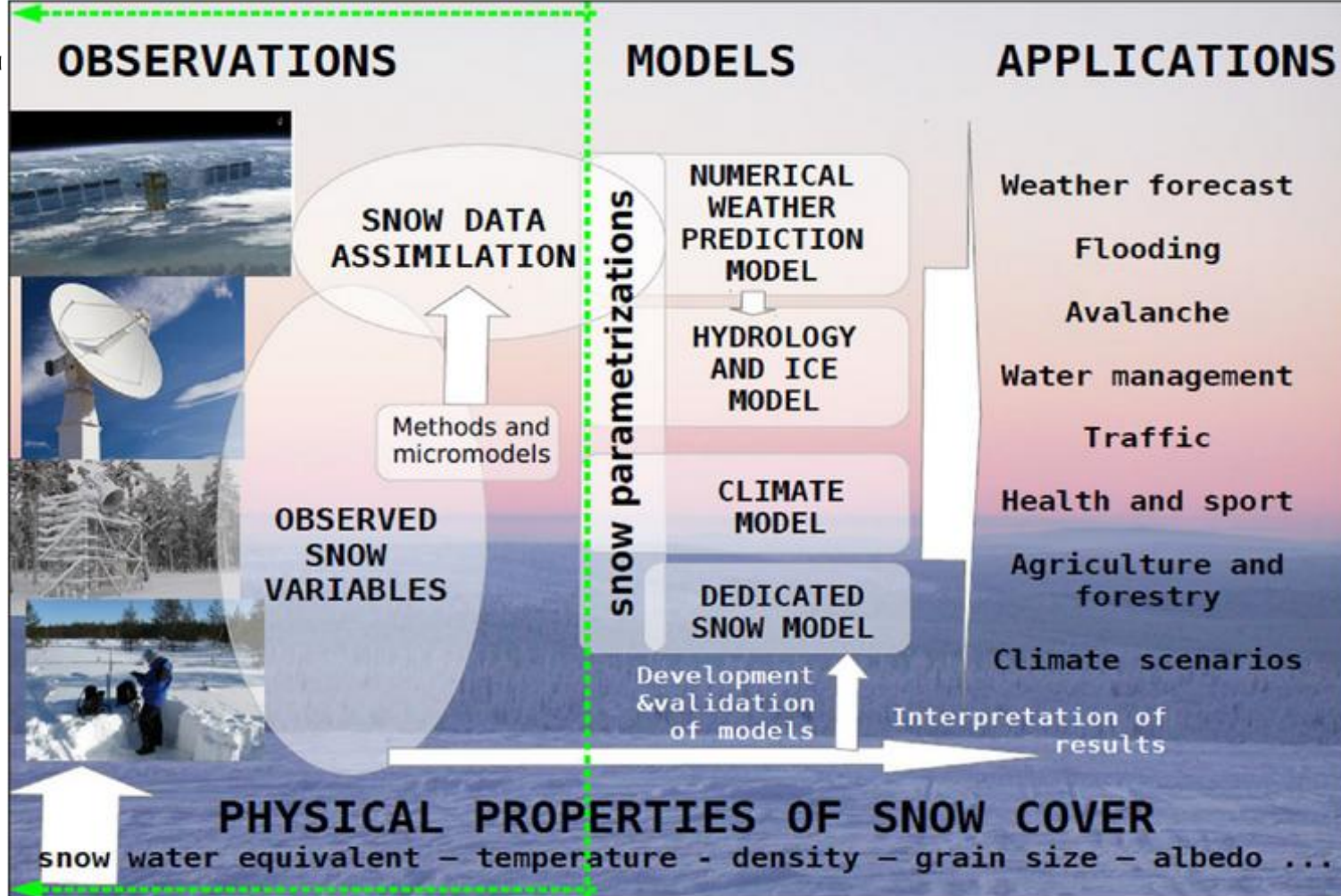
Overall Objectives & Benefits

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 => Foster their acceptance by key snow network operators at the international level.
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.



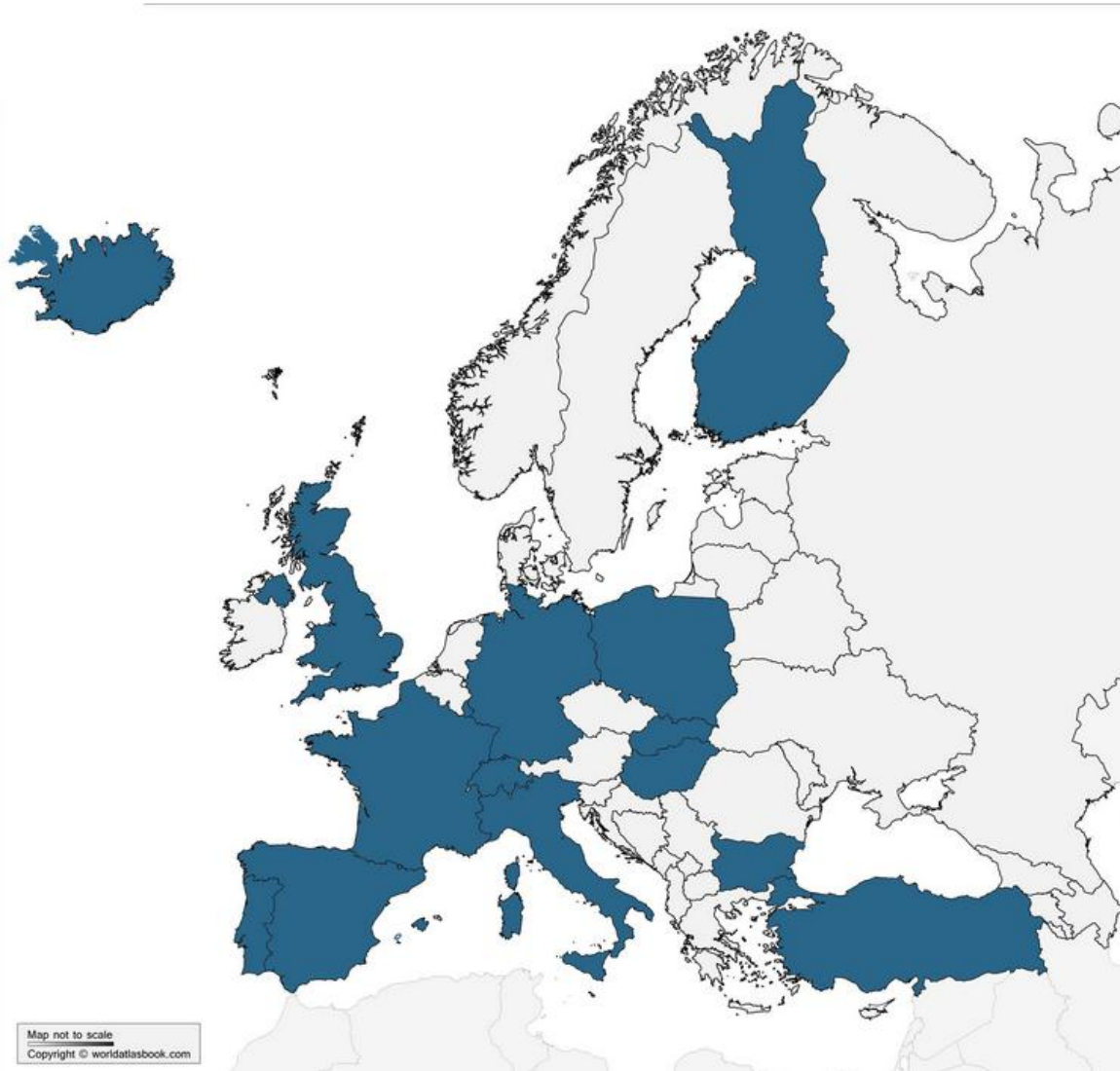
Overall of Deliverables

- Web data portal of snow observations and links to existing NRT snow databases
- Synthesis and strategic recommendations report
- Review and practical guide on snow measurements for users needs
- Catalogue of snow measurement instrumentation and best practices
- Review on snow data assimilation in European NWP and hydrological models
- Multi-disciplinary articles in scientific journals



Three Working Groups:

- WG1: Physical characterization of snow properties
- WG2: Instrument and method evaluation
- WG3: Snow data assimilation and validation methods for NWP and hydrological models



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Participations

Country	Date	Status
▶ Austria	31/07/2014	Confirmed
▶ Belgium	05/04/2016	Confirmed
▶ Bosnia and Herzegovina	04/09/2014	Confirmed
▶ Bulgaria	10/03/2015	Confirmed
▶ Czech Republic	06/06/2014	Confirmed
▶ Denmark	27/06/2014	Confirmed
▶ Estonia	19/06/2014	Confirmed
▶ Finland	11/06/2014	Confirmed
▶ France	10/07/2014	Confirmed
▶ Germany	18/06/2014	Confirmed
▶ Greece	17/03/2016	Confirmed
▶ Hungary	13/10/2014	Confirmed
▶ Iceland	28/05/2014	Confirmed
▶ Ireland	20/10/2015	Confirmed
▶ Italy	19/08/2014	Confirmed
▶ Lithuania	03/10/2017	Confirmed
▶ Luxembourg	18/06/2014	Confirmed
▶ Netherlands	01/07/2014	Confirmed
▶ Norway	09/10/2014	Confirmed
▶ Poland	29/05/2014	Confirmed
▶ Portugal	28/10/2014	Confirmed
▶ Serbia	12/02/2016	Confirmed
▶ Slovakia	07/08/2014	Confirmed
▶ Slovenia	08/10/2014	Confirmed
▶ Spain	01/09/2014	Confirmed
▶ Sweden	25/09/2014	Confirmed
▶ Switzerland	15/07/2014	Confirmed
▶ Turkey	18/08/2014	Confirmed
▶ United Kingdom	22/05/2014	Confirmed

Total: 29

COST International Partner Countries

Institution Name	Country
Snow and Mountain Research Center of Andorra (CENMA-à€IA)	Andorra
Yuei-An Liou	Taiwan



WORKSHOPS

1. Workshop on "Parameterization of Lakes in Numerical Weather Prediction and Climate Modelling", May 7 - 9, 2015, **Évora, Portugal**
2. 6th National Seminar on Snow on the day of Pyry, November 2, 2015, **Helsinki-Finland**
3. Workshop on Snow Data Use, February 15 - 16, 2015, **Chopok, Slovakia**
4. Harnosnow Joint Event on International Workshop, 1st Field Campaign & Meetings, March 1-3, 2016, **Erzurum-Turkey**
5. Workshop on Remote Sensing Products of Cryosphere using Sentinels, April 18, 2016, **Vienna-Austria**
6. Workshop on in-situ snow albedo measurements: toward a snow albedo intercomparison experiment, August 24 - 25, 2016, **Helsinki-Finland**
7. Workshop: Snow Monitoring and Modeling Initiatives in Spain Based On Ground and Satellite Data, in collaboration, November 2, 2016, **Granada-Spain**
8. Workshop on Melting snow and ice data for real-time maps and hydrological models, February 28, 2017, **Reykjavik, Iceland**
9. International Conference: Snow - An Ecological Phenomena, September 19 - 20, 2017, **Smolenice-Slovakia**
10. 7th National Seminar on Snow on the day of Pyry, November 1, 2017, **Helsinki-Finland**

- ✓ 2 Field Campaigns organized
- ✓ 25 Short Time Scientific Missions Funded
- ✓ 3 questionnaires conducted

**TRAINING SCHOOL IS PLANNED
March 12-16, 2018, Bormio-Italy**



ESSEM COST Action ES1404

- Home Page
- Name
- About COST
- About ES1404 Action
- Structure
- Working Groups
- Quarterly Update
- Training Schools
- IT Site
- Gallery
- Meetings
- Workshops
- References
- Contact
- Internal Page

Introduction to ESSEM COST Action ES1404

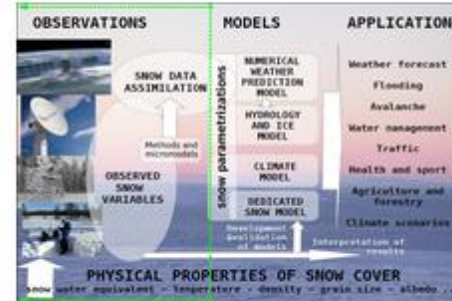
This COST action on SNOW aims at building a better connection between snow measurement and models, between snow observers, researchers and forecasters, for the benefit of various stakeholders and the entire society.

Aim of the Action

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 evolution of snow.

Overall Objectives & Benefits

- Establish a European-wide science network on snow measurements for their optimum use and applications benefiting on interactions across disciplines and expertise.
- Assess and harmonise practical standards and retrieval algorithms applied to ground, air- and space-borne snow measurements. Foster their acceptance by key snow network operators at the international level.
- Develop a rationale and long-term strategy for snow measurements, their dissemination and archiving.
- Advance snow data assimilation in European NWP and hydrological models and show its benefits for relevant applications.
- Establish a validation strategy for climate, NWP and hydrological models against snow observations and foster its implementation within the European modelling communities.
- 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.



Participating Countries

Countries that participate in the action are: Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Iceland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



Participating countries

Workshop

7th National Seminar on Snow on the day of Pyry in collaboration with the COST ES1404 Action ("Bizzard") will be held on November 1, 2017.

PhD Research Fellowship in Cryospheric Sciences and atmospheric water cycle dynamics available

6th Snow Science Winter School will be held between 11-17 February 2018 in Col de Lauterance, France.

Snow measurement field school will be held between January 9 - 11, 2018 in Fraxas, Colorado.

The article on automated monitoring of snow cover by webcams by Arslan et al.

"Automated Webcam Monitoring of Fractional Snow Cover in Northern Great Conditions" is published.

International Conference: Snow - An Ecological Phenomenon will be held in Smolenice, Slovakia between 19 - 20.09.2017.

6th IAC Meeting will be held in Smolenice, Slovakia on 19.09.2017.

Heat WG Meetings will be held in Smolenice, Slovakia on 20.09.2017.

Event agenda for the 2nd Field Campaign will be held in Reykjavik, Iceland between 20 February - 2 March 2017, are updated.

Agenda and practical information for 2nd Field Campaign will be held in Reykjavik, Iceland between 20 February - 2 March 2017, are updated.

MORE INFORMATION:

WWW.HARMOSNOW.EU

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Thank you for your attention!

