9th EARSeL workshop on Land Ice and Snow

3 - 5 February 2020, Bern, Switzerland

Remote Sensing of the Cryosphere: Monitor what is vanishing

FINAL WORKSHOP PROGRAMME

EARSeL

EUMETSAT

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Swiss Academy of Sciences
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UNIVERSITÄT BERN

OESCHGER CENTRE
CLIMATE CHANGE RESEARCH

Monday, 3rd February

Welcome and opening

08:00 – 09:30	*Registration and coffee*
09:30 – 10:00	**Chair LISSIG / EARSeL (Stefan Wunderle)** *University of Bern* Welcome

Cryosphere and climate

Chair: Stefan Wunderle

10:00 – 10:20	**Carolin Richter (invited)** *WMO - GCOS* Needs and Opportunities for Observing the Cryosphere
10:20 – 10:40	**Alexander Trishchenko***, Calin Ungureanu, Junhua Li, Dustin Whalen, Vladimir Kostylev, Yi Luo **Canada Centre for Remote Sensing, NRCan, Canada* Coastal Sea Ice in the Beaufort Sea Region from CCRS MODIS Composites Products Since 2000
10:40 – 11:00	**Helga Weber***, Martin Stengel, Kathrin Naegeli, Stefan Wunderle, Rainer Hollmann **University of Bern, Switzerland* Is it Cloud or Snow? – Influence of Cloud Retrieval on AVHRR GAC Snow Records
11:00 – 11:20	**Kirsikka Heinilä*,** Olli-Pekka Mattila, Sari Metsämäki, Kari Luojus, Gabriele Schwaizer, Thomas Nagler, Burak Simsek, Joanna Ossowska **Finnish Environment Institute, Finland* The Copernicus Global Land Service Lake Ice Extent Product For Northern Hemisphere
11:20 – 11:40	**Kati Anttila***, Terhikki Manninen, Emmihenna Jääskeläinen, Aku Riihelä, Panu Lahtinen **Finnish Meteorological Institute, Finland* Seasonal Snow Melt Season Timing In Northern Hemisphere From 1982 to 2015 Derived From CLARA-A2 SAL Data
11:40 – 13:00	*Lunch break*

Snow cover (regional to global scale) I

Chair: Richard Kelly

13:00 – 13:20	**Patricia de Rosnay* (invited),** Gianpaolo Balsamo, Yvan Orsolini, Emanuel Dutra, Boqi Liu, Retish Senan, Wenli Wang, Martin Wegmann, Kun Yang, Congwen Zhu **ECMWF, United Kingdom* Impact Of Snow Cover Data Assimilation Over The Tibetan Plateau On Medium Range Numerical Weather Prediction
13:20 – 13:40	**Sari Johanna Metsämäki***, Kari Luojus, Matias Takala, Jouni Pulliainen, Mwaba Hiltunen, Kirsikka Heinilä, Gabriele Schwaizer, Thomas Nagler **Finnish Environment Institute, Finland* Multisensor Approach For Fractional Snow Cover And Snow Water Equivalent Retrievals
13:40 – 14:00	**Thomas Nagler***, Helmut Rott, Joanna Ossowska, Gabriele Schwaizer, Eirik Malnes, David Small, Kari Luojus, Sari Metsämäki, Lars Keuris, Simon Pinnock **ENVEO IT GmbH, Austria* Advancements of Snow Cover Monitoring Based on Synergy of Sentinel-1 SAR and Sentinel-3 SLSTR

14:00 – 14:20	Semih Kuter, **Zuhal Akyurek*** **METU, Turkey* Exploring the Recent Developments in Snow Cover Mapping by Machine Learning Algorithms

Poster Session I Chair: Richard Kelly

14:20 – 14:40	Short poster presentations (2min/poster)
	Gwendolyn Dasser*, Hendrik Wulf, David Small **University of Zurich, Switzerland* Analysis Of Backscatter Timeseries For Cryospheric Applications
	Johanna Nemec, **Gabriele Schwaizer***, Thomas Nagler, Michael Aspetsberger **ENVEO IT GmbH, Austria* Physically Based Cloud Gap Filling Of Satellite Snow Products
	Thomas Nagler*, Gabriele Schwaizer, Sari Metsämäki, Lars Keuris, Helmut Rott, Bojan Bojkov **ENVEO IT GmbH, Austria* Development of a Snow Monitoring System for EUMETSAT EPS-SG / METimage
	Soumita Patra*, Kathrin Naegeli, Stefan Wunderle **Birla Institute of Technology, India; University of Bern, Switzerland* Accuracy Study Of Snow Cover Maps Based On AVHRR Data With Different Spatial Resolution
	Jie Zhang*, Veijo Pohjola, Rickard Pettersson **Uppsala University, Sweden* Potentials of Advanced Microwave Scanning Radiometer 2 (AMSR2) Brightness Temperature for Improving Snow Depth Retrieval in Sweden
	Zuhal Akyurek*, Ali Nadir Arslan, Kenan Bolat, Simone Gabellani, Silvia Puca, Burak Simsek, Semih Kuter, Matias Takala, Alexander Toniazzo **METU, Turkey* EUMETSAT HSAF Snow Cover Products: 10 Years On
	Angelika Humbert, Niklas Neckel, **Ludwig Schröder***, Veit Helm, Robin Zindler **Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Germany* Supraglacial Hydrology at 79°N Glacier, Greenland – Lessons learned and Challenges
	Baptiste Vandecrux*, Jason Box, Kenneth Mankoff, Alexander Kokhanovsky **Geological Survey of Denmark and Greenland, Denmark* Greenland Ice Sheet Surface Albedo And Optical Properties From The Sentinel-3 OLCI Instrument
14:40 – 15:30	*Poster session with coffee break*

Albedo of the Cryosphere Chair: Yves Bühler

15:30 – 15:50	**Aku Riihelä***, Kati Anttila, Terhikki Manninen **Finnish Meteorological Institute, Finland* A Comparative View Into Trends In Arctic Cryosphere's Surface Albedo During 1982-2015; Sea Ice, Seasonal Snow, And The Greenland Ice Sheet
15:50 – 16:10	**Jason Box***, Baptiste Vandecrux, Alex Kokhanovsky, Kenneth Mankoff **GEUS, Denmark* Albedo of the cryosphere from Sentinel-3
16:10 – 16:30	**Terhikki Manninen***, Roberta Pirazzini, Kati Anttila **Finnish Meteorological Institute, Finland* Surface Roughness Effect on Snow Albedo

16:30 – 16:50	**Silvan Leinss***, Henning Löwe, Martin Proksch, Anna Kontu **ETH Zürich, Switzerland* Modeling the Evolution of the Structural Anisotropy of Snow
16:50 – 17:10	**Roberta Pirazzini***, Petri Räisänen, Juha Lemmetyinen, Terhikki Manninen, Teruo Aoki, Ghislain Picard, Jouni Peltoniemi, Martin Schneebeli, Marco Pasian, Masashi Niwano, Henna-Reetta Hannula, Kati Anttila, Anna Kontu, Leena Leppänen, Pedro Fidel Espin Lopez, Amy Macfarlane, Outi Meinander, Ines Olivier, Teijo Arponen, Jonas Svensson, Jianwei Yang, Lorenzo Silvestri, Aleksi Rimali, Laurent Arnaud **Finnish Meteorological Institute, Finland* Improvement Of The Snow Albedo Retrieval Combining Optical And Microwave Sensors: Ground-based Observations From The SnowAPP Campaign (Sodankylä, Finland)
18:30	**Ice Breaker reception** *Haus der Universität, Schlösslistrasse 5, 3012 Bern*

Tuesday, 4th February[1]

New technologies to observe the Cryosphere	Chair: Sari Metsämäki
9:00 – 9:20	**Hannah Augustin*,** Martin Sudmanns, Dirk Tiede, Stefan Wunderle, Christoph Neuhaus, Andrea Baraldi **University of Salzburg, Austria* Semantic Earth Observation Data Cube as New Access to AVHRR Data for Land Ice and Snow Cover Monitoring
9:20 – 9:40	**Yves Bühler***, Lucie Eberhard, Pascal Sirguey, Aubrey Miller, Andreas Stoffel, Mauro Marty **WSL Institute for Snow and Avalanche Research SLF, Switzerland* Photogrammetric Snow Depth Mapping: How good can we get?
09:40 – 10:00	**Andreas Wiesmann***, Rafael Caduff, Charles Werner, Othmar Frey, Henning Loewe, Martin Schneebeli, Matthias Jaggi, Mike Schwank, Reza Naderpour, Thorsten Fehr **GAMMA Remote Sensing AG, Switzerland* Wide Band Scatterometer Measurements of Alpine Snow
10:00 – 10:30	*Coffee break*

Glaciers and ice caps	Chair: Kathrin Naegeli
10:30 – 10:50	**Michael Zemp (invited)** *University of Zurich, Switzerland* Internationally Coordinated Glacier Monitoring: From Early Warning Indicators Towards Memorials Of The Climate Crisis
10:50 – 11:10	**Lea Geibel***, Johannes Marian Landmann, Daniel Farinotti **ETH Zurich, Switzerland* Comparing Automated Classifications of Snow on Glaciers Based on Sentinel-2 Imagery
11:10 – 11:30	**Martina Barandun***, Robert McNabb, Kathrin Naegeli, Etienne Berthier, Matthias Huss, Martin Hoelzle **University of Fribourg, Switzerland* Region-wide Estimate Of Annual Glacier Mass Balance For The Tien Shan And Pamir From 2000 To 2018.

11:30 – 11:50	**Sahra Abdullahi***, Birgit Wessel, Martin Huber, Achim Roth **German Aerospace Center (DLR), Germany* Investigation and estimation of penetration-related TanDEM-X elevation bias – A study over the Greenland Ice Sheet
11:50 – 12:10	Alexander Raphael Groos, **Thalia Bertschinger*** **University of Bern, Switzerland* The Potential Of Low-Cost UAVs And Open-Source Photogrammetry Software For High-Resolution Monitoring Of Alpine Glaciers: A Case Study From The Kanderfirn (Swiss Alps)
12:10 – 13:30	*Lunch break*

Snow cover (regional to global scale) II — Chair: Alexander Trishchenko

13:30 – 13:50	**Richard Kelly***, Qinghuan Li, Nastaran Saberi and Margot Flemming *University of Waterloo, Canada Estimation of Regional to Global Snow Depth using AMSR2 Observations and SMSA
13:50 – 14:10	**Karl Rittger***, Nicoleta Cristea, David Shean, Tony Cannistra, Michelle Hu, Kat Bormann, William Kleiber, Thomas Painter **University of Colorado, United States* Multi-Platform, Multi-Sensor Snow Surface Properties
14:10 – 14:30	**Céline Portenier***, Stefan Wunderle **University of Bern, Switzerland* Regional Snow Line Elevation Retrieval Using Public Webcam Images

Poster Session II — Chair: Alexander Trishchenko

14:30 – 14:50	Short poster presentations (2min/poster)
	Hendrik Wulf*, Dirk Scherler, Noel Gorelick **University of Zurich, Switzerland* Global Assessment of Supraglacial Debris-Cover Extents
	Alexander Trishchenko *Canada Centre for Remote Sensing, Canada* Minimum Snow/Ice Cover Extent over Northern Circumpolar Landmass at 250-m Spatial Resolution from MODIS and VIIRS: Climatic Trends and Suitability for Annual Updates of Glacier Inventory since 2000
	Amaury Dehecq*, Alex Gardner **ETH Zurich, Switzerland* Towards A Unified Estimate Of Mountain Glaciers Contribution To Sea Level Rise since 1975
	Martina Barandun*, Andrés Rivera, Bernard Grobety, Ling Fang, Kathrin Naegeli, Margit Schwikowski **University of Fribourg, Switzerland* Light Absorbing Impurities In The Olivares Basin, Central Chile
	Andrew Tedstone*, Joseph Cook, Christopher Williamson, Stefan Hofer, Jenine McCutcheon, Tristram Irvine-Fynn, Martyn Tranter **University of Fribourg, Switzerland* Algal Growth and Weathering Crust Structure Drive Variability in Western Greenland Ice Sheet Ice Albedo
	Rosamaria Salvatori*, Roberto Salzano, Sabina Di Franco, Giuliano Fontinovo, P Plini **CNR- Polar Science Institute (ISP), Italy* Snow-Ice Spectral library (SISpec) 2.0

	Xiaodan Wu, Kathrin Naegeli, Andreas Wiesmann, Carlo Marin, **Stefan Wunderle*** **University of Bern, Switzerland* Validation of Snow Extent Time Series Derived from AVHRR GAC Data at Himalaya-Hindukush
	Juval Cohen*, Juha Lemmetyinen, Kimmo Rautiainen, Tuomo Smolander, Juho Vehviläinen, Jouni Pulliainen **Finnish Meteorological Institute, Finland* Assessment of a Sentinel-1 Based Soil Frost/Thaw Detection Method for Various Boreal Forest Conditions
14:50 – 16:00	*Poster session with coffee break*

ESA CCI+ Snow	Chair: Lothar Schueller
16:00 – 16:20	**Thomas Nagler***, Chris Derksen, Kari Luojus, Carlo Marin, Sari Metsämäki, Lawrence Mudryk, Kathrin Naegeli, Claudia Notarnicola, Arnt-Borre Salberg, Andreas Wiesmann, Stefan Wunderle **ENVEO IT GmbH, Austria* The Snow Climate Change Initiative: Generation of a Long Term Global Snow Climate Data Record from Multi-Sensor Satellite Data
16:20 – 16:40	**Gabriele Schwaizer***, Carlo Marin, Sari Metsämäki, Kathrin Naegeli, Thomas Nagler, Claudia Notarnicola, Arnt-Børre Salberg, Rune Solberg, Andreas Wiesmann, Stefan Wunderle, Anna Maria Trofaier **ENVEO IT GmbH, Austria* Development Of A Homogeneous Global Climate Data Record Of Snow Cover Fraction In The Frame Of ESA CCI+ Snow
16:40 – 17:00	**Kathrin Naegeli***, Andreas Wiesmann, Xiaodan Wu, Christoph Neuhaus, Rainer Hollmann, Martin Stengel, Stefan Wunderle **University of Bern, Switzerland* Towards a Global Time Series (1982 - 2018) of Snow Cover Extent Based on AVHRR GAC Data
17:00 – 17:20	**Kari Luojus***, Matias Takala, Juha Lemmetyinen, Jouni Pulliainen, Mikko Moisander, Chris Derksen, Lawrence Mudryk, Thomas Nagler, Gabriele Schwaizer **Finnish Meteorological Institute, Finland* Development of Long Term Hemispherical Snow Mass Satellite Data Records in the ESA Snow CCI Project
17:20 – 17:40	**Carlo Marin***, Claudia Notarnicola, Sari Metsämäki, Valentina Premier, Kathrin Naegeli, Arnt-Børre Salberg, Gabriele Schwaizer, Rune Solberg, Andreas Wiesmann, Stefan Wunderle, Thomas Nagler **eurac research, Italy* Validation of ESA CCI+ Snow Products
19:00	**Conference Dinner** *Restaurant Zum Äusseren Stand, Zeughausgasse 17, 3011 Bern*

[1] *Fun Run* 7:00 – 8:00 for registered participants

Wednesday, 5th February

Snow hydrology	Chair: Kari Luojus
08:20 – 08:40	**Zuhal Akyurek***, Semih Yildiz, Andrew Binley **METU, Turkey* Quantifying Snow Water Equivalent by Integration of Unmanned Aerial Systems (UAS) and Ground Penetrating Radar (GPR) Surveys
08:40 – 09:00	**Matias Takala***, Ali Nadir Arslan, Zuhal Akyürek, Kari Luojus, Jouni Pulliainen, Kenan Bolat, Burak Simsek **Finnish Meteorological Institute, Finland* Development Of The New Snow Water Equivalent Product H65 In EUMETSAT H SAF Project
09:00 – 09:20	**Rune Solberg***, Øivind Due Trier, Øystein Rudjord **Norwegian Computing Center, Norway* Remote Sensing of Snow Properties with Sentinel-3 versus MODIS
09:20 – 09:40	**Clare Webster***, Richard Essery, Giulia Mazzotti, Christian Ginzler, Tobias Jonas **WSL Institute for Snow and Avalanche Research SLF, Switzerland* High Resolution Remotely Sensed Forest Datasets Facilitate High Spatio-temporal Estimates Of Snow Surface Shading For Snowmelt And Land Surface Reflectance Modelling
09:40 – 10:20	*Coffee break*
Operational monitoring of the Cryosphere	Chair: Patricia de Rosnay
10:20 – 10:40	**Lothar Schueller** *EUMETSAT, Germany* EUMETSAT – Satellite Application Facilities: an overview
10:40 – 11:00	**Niilo Siljamo***, Otto Hyvärinen **Finnish Meteorological Institute, Finland* Operational Satellite-based Daily H SAF Snow Extent Products
11:00 – 11:20	**Kerttu Kouki***, Niilo Siljamo **Finnish Meteorological Institute, Finland* Comparing H SAF Snow Extent Product with MODIS and Landsat Data in Spring 2016
11:20 – 11:40	**Gabriele Schwaizer***, Sari Metsämäki, Joanna Ossowska, Kirsikka Heinilä, Thomas Nagler, Lars Keuris, Johanna Nemec, Kari Luojus, Mwaba Hiltunen, Burak Simsek **ENVEO IT GmbH, Austria* The Copernicus Global Land Monitoring Service For Snow Cover Fraction
11:40 – 12:00	**Burak Simsek***, Matias Takala, Ali Nadir Arslan, Kari Luojus, Zuhal Akyurek, Kenan Bolat **Finnish Meteorological Institute, Finland* EUMETSAT HSAF AVHRR-Based Fractional Snow Cover Products
12:00 – 12:15	**Closing (Stefan Wunderle)**

Further information is available at:

www.earsel.org/SIG/Snow-Ice/workshops.php

or from the workshop organization committee

Dr. Stefan Wunderle (stefan.wunderle@giub.unibe.ch)
Dr. Kathrin Naegeli (kathrin.naegeli@giub.unibe.ch)
Céline Portenier (celine.portenier@giub.unibe.ch)
Heide Bierbrauer (secretariat@earsel.org)