



# 5<sup>th</sup> EARSeL Workshop

## Remote Sensing of Snow and Glaciers Changing Climate – Changing Cryosphere

11 - 13 February 2008

Department of Geography, University of Berne,  
Switzerland

u<sup>b</sup>

UNIVERSITÄT  
BERN

### Monday, 11 February 2008

9:30 – 10:50	<i>Registration / Coffee</i>	
10:50 – 11:00	<b>Welcome</b>	Stefan Wunderle
11:00 – 11:30	<b>Why we should use remote sensed data – or why not?</b> Potential and limits of satellite data for climate issues	<b>Chair: Stefan Wunderle</b> Hans v. Storch <sup>1</sup> (invited), Mathias Zahn <sup>1,2</sup> , Anne Blechschmidt <sup>2</sup> , Stiig Wilkenskjeld <sup>1</sup> , Heinz Günther <sup>1</sup> , Stephan Bakan <sup>2,3</sup>  1 Institute for Coastal Research, GKSS Research Centre, Germany 2 Meteorological Institute of the University of Hamburg, Germany 3 Max-Planck Institute of Meteorology, Germany
11:30 – 12:00	Assessment of snow cover of northern Eurasia for climate model validation and related GMES snow monitoring services	Jouni Pulliainen <sup>1</sup> , Matias Takala <sup>1</sup> , Panu Lahtinen <sup>1</sup> , Anna Kontu <sup>1</sup> , Jarkko Koskinen <sup>1</sup> , Heikki Järvinen <sup>1</sup> , Sari Metsämäki <sup>2</sup> , Miia Eskelinen <sup>2</sup> , Yriä Sucksdorff <sup>2</sup> , Juha-Petri Kärnä <sup>3</sup> , Kari Luojus <sup>3</sup>  1 Finnish Meteorological Institute 2 Finnish Environment Institute 3 Helsinki University of Technology
12:00 – 12:30	Arctic Sea Ice in 2007: A Year to Remember	Julienne C. Stroeve <sup>1</sup> , Sheldon Drobot <sup>1</sup> , James Maslanik <sup>1</sup> , Walter Meier <sup>1</sup> , Ted Scambos <sup>1</sup> , Mark Serreze <sup>1</sup>  1 NSIDC, University of Colorado
12:30 – 14:00	<b>Lunch</b>	
14:00 – 14:30	<b>A step forward – new sensors and new missions</b> New Missions of ESA's Living Planet Programme in the context of the IGOS-Cryo Theme	<b>Chair: Rune Solberg</b> Mark Drinkwater <sup>1</sup> (invited)  1 European Space Agency
14:30 – 15:00	CoReH <sub>2</sub> O – A dual-frequency SAR mission for improved snow and ice observations	Helmut Rott <sup>1</sup> , Donald Cline, Christian Haas, Claude Duguay, Richard Essrey, Giovanni Macelloni, Eirik Malnes, Jouni Pulliainen, Helge Rebhan, Simon Yueh  1 University of Innsbruck
15:00 – 15:30	<b>Poster session (4 minutes/3 slides per poster)</b> Thin Sea-ice Thickness as inferred from Passive Microwave and In Situ Observations	<b>Chair: Rune Solberg</b> Kazuhiro Naoki <sup>1</sup> , Jinro Ukita, Fumihiko Nishio <sup>1</sup> , Masashige Nakayama  1 Center for Environmental Remote Sensing, Chiba University, Chiba, Japan
	Rapid avalanche detection using optical remote sensing data	Yves A. Buehler <sup>1</sup> , Tobias W. Kellenberger <sup>1</sup>  1 RSL Department of Geography, University of Zurich
	Retrieval of snow physical parameters using ground-based spectral pyranometer	Katsuyuki Kuchiki <sup>1</sup> , Teruo Aoki <sup>1</sup> , Etsuko Tanaka, Hiroki Motoyoshi, Tomonori Tanikawa  1 Meteorological Research Institute, Tsukuba

Effect of sun-crust on spectral reflectance on snow

Tomonori Tanikawa<sup>1</sup>, Teruo Aoki<sup>2</sup>, Konosuke Sugiura, Akihiro Hachikubo<sup>1</sup>, Hiroyuki Enomoto<sup>1</sup>

1 Kitami Institute of Technology  
2 Meteorological Research Institute, Tsukuba

Quantitative high-resolution stratigraphy of snow

Martin Schneebeli<sup>1</sup>

1 Swiss Federal Institute for Snow and Avalanche Research SLF

Simulation of spaceborne microwave radiometer measurements of snow cover from in-situ data and emission models

Anna Kontu<sup>1</sup>, Jouni Pulliainen<sup>1</sup>

1 Finnish Meteorological Institute

15:30 – 16:30

**Poster presentation / Coffee break**

16:30 – 17:00

**A step forward – new sensors and new missions II**

Microwave Backscattering Measurements of Alpine Snowcover - Ground based microwave measurements of snow in support of the CoRe-H<sub>2</sub>O mission

**Chair: Teruo Aoki**

Andreas Wiesmann<sup>1</sup>, Tazio Strozzi, Christian Mätzler, Charles Werner, Urs Wegmüller

1 GAMMA Remote Sensing

17:00 – 17:30

X- and Ku-band Snow Backscatter Signatures from the SARALPS-2007 Campaign; SARALPS-2007

Keith Morrison<sup>1</sup>, Helmut Rott<sup>2</sup>, Thomas Nagler<sup>2</sup>, Helge Rebhan, Patrick Wursteisen<sup>4</sup>

1 Cranfield University  
2 University of Innsbruck  
3 ENVEO, Austria  
4 European Space Agency

18:30 – 21.30

**Ice breaker**

University main building (Kuppelsaal)  
Hochschulstrasse 4  
Ch-3012 Bern

	<b>Continental Snow Cover</b>	<b>Chair: Thomas Nagler</b>
08:30 – 9:00	The onset of snow melt estimated from SMMR and SSM/I data in Eurasia	Mathias Takala <sup>1</sup> , Jouni Pulliainen <sup>1</sup> 1 Finnish Meteorological Institute
09:00 – 09:30	Diurnal thaw and refreeze during spring snowmelt from QuikScat over entire Siberia - A sensitivity and time series analyses	Annett Bartsch <sup>1</sup> , Richard A Kidd, Wolfgang Wagner 1 Vienna University of Technology
09:30 – 10:00	Mapping Arctic albedo and cryosphere from MODIS for the International Polar Year at the Canada Centre for Remote Sensing	Alexander P. Trishchenko <sup>1</sup> , Yi Luo <sup>1</sup> , Konstantin V. Khlopenkov <sup>1</sup> , William M. Park <sup>1</sup> 1 Canada Centre for Remote Sensing
	<b>Poster session (4 minutes/3 slides per poster)</b>	<b>Chair: Teruo Aoki</b>
10:00 – 10:40	Glacier Monitoring by remote sensing and GIS techniques in open source environment	Eva S. Malinverni <sup>1</sup> , Claudia Croci, Fabrizio Sgroi 1 Dardus – Universita'Politecnica Marche
	Snow Cover Monitoring using Multi-temporal ENVISAT/ASAR Data	Linda Valenti <sup>1</sup> , David Small, Erich Meier 1 Remote Sensing Laboratories - University of Zürich
	Using Satellite Product Snow Cover Maps in Snowmelt Runoff Modeling and Impact Studies in the Eastern Part of Turkey	Emrah Pekkan <sup>1</sup> , Aynur Sensoy <sup>1</sup> , Arda Sorman <sup>1</sup> , A. Unal Sorman 1 Anadolu University
	Fineline detection of the Northern Patagonia Icefield using ERS-1 data - An example from San Rafael Glacier	Masamu Aniya <sup>1</sup> , Gonzalo Barcaza 1 University of Tsukuba
	EuroCryoClim: A new initiative for the development of an operational cryospheric climate monitoring system	Rune Solberg <sup>1</sup> , Lars-Anders Breivik, Rune Engeset, Stein Tronstad 1 Norwegian Computing Centre
	Towards combined spectrodirectional reflectance measurements and detailed snow microstructure studies	Stefan Rey <sup>1</sup> , Jürg T. Schopfer <sup>1</sup> , Martin Schneebeli <sup>2</sup> , Mathias Kneubühler <sup>1</sup> , Klaus H. Itten <sup>1</sup> 1 RSL Department of Geography, University of Zurich 2 Swiss Federal Institute for Snow and Avalanche Research SLF
	Snow influences on shrub occurrence in an Alaskan tundra inferred from remotely sensed data	Keiji Kushida <sup>1</sup> 1 Institute of Low Temperature Science, Hokkaido University, Japan
	Impact of Climate Change on Himalayan Glaciers and Glacial Lakes	Pradeep Mool <sup>1</sup> , Samjwal Bajracharya <sup>1</sup> , Deo Raj Gurung <sup>1</sup> , Basanta Shrestha <sup>1</sup> 1 ICIMOD, Nepal
	Glacier Lake Outburst Flood Hazard Mapping – Imja Tsho Case Study	Birendra Bajracharya <sup>1</sup> , Deoraj Gurung <sup>1</sup> , Lokap Rajbhandari, Basanta Shrestha <sup>1</sup> 1 ICIMOD, Nepal
	Monitoring Daily Snow Cover over the Western Arctic using AVHRR and MODIS Imagery	Richard Fernandes <sup>1</sup> , Konstantin Khlopenkov <sup>1</sup> , Alexander Trishchenko <sup>1</sup> 1 Canada Centre for Remote Sensing
10:40 – 11:30	<b>Poster presentation / Coffee break</b>	
	<b>Spectral characteristics of snow and ice</b>	<b>Chair: Helmut Rott</b>
11:30 – 12:00	Physically based snow albedo model and satellite retrieved snow parameters	Teruo Aoki <sup>1</sup> , Taichu Tanaka <sup>1</sup> , Etsuko Tanaka <sup>1</sup> , Katsuyuki Kuchiki <sup>1</sup> , Hiroki Motoyoshi <sup>1</sup> , Tomonori Tanikawa 1 Meteorological Research Institute, Tsukuba
12:00 – 12:30	The behaviour of snow and snow-free surface reflectance in the boreal forest area	Mia Eskelinen <sup>1</sup> , Jouni Pulliainen <sup>1</sup> , Anna Kontu <sup>1</sup> , Hanne Suokanerva, Sari Metsämäki <sup>1</sup> 1 Finnish Environment Institute

12:30 – 13:00	Snow cover change detection with laser scanning range and brightness measurements	Sanna Kaasalainen <sup>1</sup> , Harri Kaartinen, Antero Kukko, Henri Niitymäki 1 Finnish Geodetic Institute
13:00 – 14:00	<b>Lunch</b>	
	<b>Multisensoral / multitemporal snow and ice</b>	<b>Chair: Jouni Pulliainen</b>
14:00 – 14:30	Time-series fusion of optical and SAR data for snow cover area mapping	Rune Solberg <sup>1</sup> , Ragnar B. Huseby <sup>1</sup> , Hans Koren <sup>1</sup> , Eirik Malnes 1 Norwegian Computing Centre
14:30 – 15:00	Multi-sensor remote sensing observations of the near past and present structure and dynamics of Wilkins Ice Shelf (Antarctic Peninsula)	Matthias Braun <sup>1</sup> , Angelika Humbert, Albert Moll 1 Center for Remote Sensing of Land Surfaces, University of Bonn
15:00 – 15:30	<i>Coffee break</i>	
	<b>Snow hydrology</b>	<b>Chair: Jouni Pulliainen</b>
15:30 – 16:00	Demonstration activities for snow cover monitoring and hydrology using satellite data	Thomas Nagler <sup>1</sup> , Helmut Rott <sup>1</sup> , Florian Mueller <sup>1</sup> , Petra Malcher <sup>1</sup> 1 ENVEO, Austria
16:00 – 16:30	AWARE project - the geo-service for snowmelt runoff modelling in Alpine environment	Anna Rampini <sup>1</sup> , Paola Carrara <sup>1</sup> , Monica Peppe <sup>1</sup> , Massimo Antoninetti <sup>1</sup> 1 IREA-CNR
16:30 – 17:00	Assimilation of snow melt information from SAR in the water balance and runoff model PROMET	Bach Heike <sup>1</sup> , Florian Appel <sup>1</sup> , Natali Ohi, Monika Prasch, Ulrich Strasser, Wolfram Mauser 1 Vista Remote Sensing in Geosciences
17:00 – 17:30	Temporal Evaluation Of Snow Depletion Curves Derived By Optical Satellite Data For Simulating Snowmelt Runoff in Turkey	Gokhan Marim <sup>1</sup> , Aynur Sensoy <sup>2</sup> , Unal Sorman <sup>3</sup> 1 Middle East Technical University, Department of Geodetic and Geographic Information Technologies 2 Anadolu University 3 METU Geodetic and Geographic Information Technologies
19:30 – 23.30	<b>Conference Dinner</b> Haus der Universität Schlösslistrasse 5 CH-3008 Bern	

Wednesday, 13 February 2008

8:30 – 9:00	<b>Snow monitoring in mountains</b> Snow Cover Mapping over the mountainous areas in Europe with MSG-Seviri	<b>Chair: Alexander Trishchenko</b> Serdar Surer <sup>1</sup> , Orhan Gokdemir, Zuhal Akyurek <sup>1</sup> , Unal Sorman <sup>1</sup>  1 METU Geodetic and Geographic Information Technologies
9:00 – 9:30	Analysis of short-term trends in snow cover variability in the European Alps - based on operational sub-pixel snow mapping with NOAA AVHRR data	Fabia Huesler <sup>1</sup> , Stefan Wunderle <sup>1</sup> , Nando Foppa <sup>2</sup>  1 Remote Sensing Research Group, University of Bern 2 Federal Office of Meteorology and Climatology Meteowiss
9:30 – 10:00	Alpine Snow Cover Climatology – a Swiss GCOS Pilot Project	Gabriela Seiz <sup>1</sup> , Andreas Asch <sup>1</sup> , Nando Foppa <sup>1</sup> 1 Federal Office of Meteorology and Climatology Meteowiss
10:00 – 10:30	<i>Coffee break</i>	
10:30 – 11:00	<b>Glacier monitoring</b> Mapping Little Ice Age glacier maximum in Jotunheimen, Norway, using aerial photography and LANDSAT imagery	<b>Chair: Alexander Trishchenko</b> Sabine Baumann <sup>1</sup> , Liss A. Andreassen, Stefan Winkler <sup>1</sup>  1 University of Wuerzburg
11:00 – 11:30	Topography of glaciers and ice caps with Spot 5 HRS devices	Jérôme Korona <sup>1</sup> , Etienne Berthier <sup>1</sup> , Marc Bernard, Frédérique Rémy <sup>1</sup>  1 OMP-LEGOS
11:30 – 13:00	<b>Lunch</b>	
13:00 – 13:30	<b>Glacier monitoring II</b> Measurements of the Rhone Glacier velocity and topography using in-situ real-aperture RADAR	<b>Chair: Stefan Wunderle</b> Charles Werner <sup>1</sup> , Tazio Strozzi <sup>1</sup> , Andreas Wiesmann <sup>1</sup> , Andreas Bauder, Urs Wegmüller <sup>1</sup>  1 Gamma Remote Sensing AG
13:30 – 14:00	Satellite radar interferometry and feature tracking for measuring Everest region glacier recession	Duncan J. Quincey <sup>1</sup> , Adrian Luckman <sup>1</sup>  1 Centre for Glaciology, Aberystwyth University
14:00 – 14:30	GlobGlacier: Mapping the worlds glaciers and icecaps from space for improved climate change impact assessment	Frank Paul <sup>1</sup> , Andreas Kaab <sup>1</sup> , Helmut Rott <sup>2</sup> , Andrew Shepherd, Tazio Strozzi  1 Department of Geography, University of Zurich 2 University of Innsbruck
14:30 – 14:40	<b>Closing session</b>	

Further information is available at:

<http://www.geography.unibe.ch/lenya/giub/live/research/remotesensing.html>

or from Fabia Huesler ([huesler@giub.unibe.ch](mailto:huesler@giub.unibe.ch))

or Stefan Wunderle ([swun@giub.unibe.ch](mailto:swun@giub.unibe.ch))