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## SNOWTALKS

## A PhD Training course on multidisciplinary issues related snow and climate change effects on it

## March 19 – 23, 2012, Abisko Scientific Research Station, Sweden

#### Reading material:

Please get familiar with the following texts, if possible make printouts and bring those with you. These texts will be used in the group work during the course.

* SWIPA Scientific Report, chapter 4. Changing Snow Cover and its Impacts, Convening lead authors: Terry V. Callaghan, Margareta Johansson (link to Sprend will be sent by email)
* What Determines the Current Presence or Absence of Permafrost in the Tornetra¨sk Region, a Sub-arctic Landscape in Northern Sweden? Margareta Johansson, Torben R. Christensen, H. Jonas Akerman and Terry V. Callaghan, Ambio Vol. 35, No. 4, June 2006 (pdf)
* A new climate era in the sub‐Arctic: Accelerating climate changes and multiple impacts, Terry V. Callaghan, Fredrik Bergholm, Torben R. Christensen, Christer Jonasson,Ulla Kokfelt, and Margareta Johansson, GEOPHYSICAL RESEARCH LETTERS, VOL. 37, 2010 (pdf)
* Global Health Action, CLUSTER: VULNERABLE POPULATIONS IN THE ARCTIC (pdf)
* Sámi traditional ecological knowledge as a guide to science: snow, ice and reindeer pasture facing climate change, Jan Åge Riseth et al. Polar Record 47 (242): 202–217 (2011). (pdf)
* Climate change and the Sámi reindeer industry in Norway. Probable needs of adaptation, Jan Åge Riseth, I Lie, B Holst, S-R Karlsen, H Tømmervik, Climate Change: Global Risks, Challenges and Decisions IOP Publishing, IOP Conf. Series: Earth and Environmental Science 6 (2009) (pdf)
* Multi-Decadal Changes in Tundra Environments and Ecosystems: Synthesis of the International Polar Year-Back to the Future Project (IPY-BTF), Terry V. Callaghan, Craig E. Tweedie, Jonas Åkerman, Christopher Andrews, Johan Bergstedt, Malcolm G. Butler,Torben R. Christensen, et al., AMBIO (2011) 40:705-716
* Megatrends, TemaNord 2011 *(for reference and additional reading if needed)*
* Multi-Decadal Changes in Snow Characteristics in Sub-Arctic Sweden, Cecilia Johansson, Veijo A. Pohjola, Christer Jonasson, Terry V. Callaghan, AMBIO (2011) 40:566–574

## Detailed program

#### Sunday, March 18th

Arrivals

18.00 Dinner

#### Monday, March 19th

8.45 Welcome

#### Long-term environmental changes

9.00 A new climate era in the sub-Arctic: Accelerating climate changes and multiple impacts, Prof Terry Callaghan (University of Sheffield, UK & Royal Swedish Academy of Sciences)

9.45 The effect of snow on permafrost,

 Dr. Margareta Johansson (Lund University, Sweden)

10.30 Discussion

*10.45 Coffee break*

11.00 Changes in methane fluxes as a result of increased temperature in tundra regions,

 Prof Bo Svensson (Linköping University, Sweden)

#### Student presentations

11.45 Decoupled Phenology Above- and Belowground Along an Altitudinal Gradient in the Subarctic, Gesche Blume-Werry (Abisko Naturvetenskapliga Station, Sweden)

11.55 Ecosystem-atmosphere modelling of pan-Arctic methane exchange under present and future climate, Nitin Chaudhary (Lund University, Sweden)

12.05 Soil organic carbon in continuous Permafrost terrain; two case studies from NE Greenland and NE Siberia, Juri Palmtag (Stockholm University, Sweden)

12.15 Development of a coupling model system for climate sensitive planning applications

 Shiho Onomura (University of Gothenburg, Sweden)

 Discussion

*13.00 Lunch*

14.00 Dog sledging (meet outside for pick up, wear warm clothes!)

*17.00 Dinner*

#### Tuesday, March 20th

#### People health and well-being

9.00 Climate change and human health, Prof Birgitta Evengård (Umeå University, Sweden)

9.45 Assessing the effects of climate change on health and lifestyle in sub-arctic areas in Sweden - The Northern Sweden Population Health Study, Prof Ulf Gyllenstein (Uppsala University, Sweden)

10.30 Discussion

*10.45 Coffee break*

11.00 Effects of snow and ice on humans and human activities,

 Prof Arja Rautio (University of Oulu, Finland)

#### Student presentations

11.45 Integrating Knowledge: A Synthetic Model, Mirjam Hirsch (Center for World Indigenous Studies, Germany)

11.55 Vital Statistics of the Finnish Population, 1750-1850, Alisa Nurminen (University of Oulu, Finland)

12.05 Influence of urban vegetation on thermal comfort in cities, Janina Konarska (University of Gothenburg, Sweden)

 Discussion

12.45 Introduction to the assignment, Case Year 2025

*13.00 Lunch*

14.00 Student work in groups, Case Year 2025

*15.30 Coffee break*

15.45 work cont.

*17.00 Dinner*

#### Wednesday, March 21st

#### Adaptation to climate change

9.00 Climate change, impacts and adaptation in the sub Arctic:  a case study from the northern Swedish mountains, Prof Terry Callaghan (University of Sheffield, UK & Royal Swedish Academy of Sciences)

9.45 Some local experiences  of impact and adaptation to climate change,

 Ass Prof Christer Jonasson (Abisko Research Station)

*10.30 Discussion*

*10.45 Coffee break*

11.00 WhatIf? Game (Introduction Christer Jonasson)

*13.00 Lunch*

14.00 WhatIf? Game cont.

*15.30 Coffee*

15.45 WhatIF? Game cont. if needed

*17.00 Dinner*

#### Thursday, March 22nd, 2012

#### Changes in snow

09.00 Snow change methodology. Combining Sámi traditional knowledge and physical measurements, Dr Jan Åge Riseth (Norut Northern Research Institute Tromsø, Norway)

#### Student presentations

09.45 How do reindeer populations manipulate their own food supply?

 Helene Prouillet-Leplat (Umeå University, Sweden)

10.05 Measurements of energy fluxes in a snow pack during wintertime

 Christian Stiegler (Lund University, Sweden)

10.15 Snowstorm Tracking in the Swedish Mountains

 Selena Cordeau (Uppsala University, Sweden)

10.25 Snow conditions in Finland south of the Arctic Circle in 1919–2010

 Henna-Reetta Hannula (University of Turku, Finland)

 Discussion

*10.45 Coffee break*

11.00 Introduction to the afternoon’s work (Jan Åge Riseth)

 Field work part one (Jan Åge Riseth)

*13.00 Lunch*

14.00 Basic snow physics, creation and metamorphosis,

 Dr Cecilia Johansson (Uppsala University, Sweden)

 Field work part two (Cecilia Johansson)

*15.30 Coffee break*

15.45 Field work cont.

*17.00 Dinner*

#### Friday, March 23rd, 2012

9.00 Finishing up the field work assignments (if needed)

 Wrap up

*10.45 Coffee break*

11.00 Wrap up continues

 Concluding marks

*13.00 Lunch*

14.00 Departures, cars leave at 14.00 to Kiruna airport