Snow Science Winter School

Martin Schneebeli, WSL Institute for Snow and Avalanche Research SLF

Juha Lemmetyinen, Finnish Meteorological Institute

4th Snow Science Winter School

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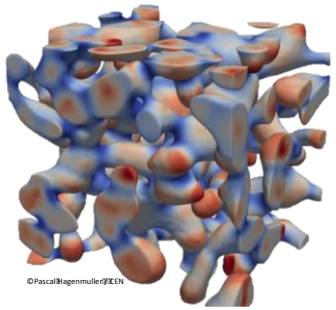
11-17 February 2018
Col du Lautaret, France

OSUG
Observatoire des Sciences de l'Univers de Grenoble
SLF
FMI

Field-based training course on snow measurements and snow models:

- State-of-the-art snow measurement techniques
- Understanding the physical processes in the snowpack
- Understanding snowpack models (Crocus, SNOWPACK)



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- For graduate students and post-docs
- Corresponds to 3 ECTS
- Unique opportunity to know the snow from the other side

cnrs
METEO FRANCE
IGE
Station Alpine Joseph Fourier

For more information visit www.slf.ch/more/snowschool

IASC
SCAR
IACS
EGU European Geosciences Union
EPFL ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

5th Snow Science Winter School

SLF
FMI

17-23 February 2019
Hailuoto – Finland

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Field-oriented training course on snow measurements:

- State-of-the-art snow measurement techniques
- Understanding the physical processes of the snowpack
- Optical and microwave snow remote sensing
- Focus on snow on sea ice

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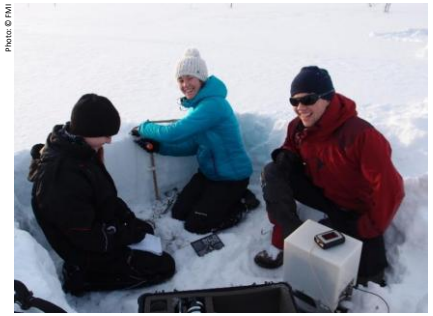
Photo: © FMI



- For graduate students and post-docs
- Corresponds to 3 ECTS
- **Apply before Nov. 6, 2018**

For more information visit
www.slf.ch/more/snowschool

esa
IACS
IASC
EGU

Goal

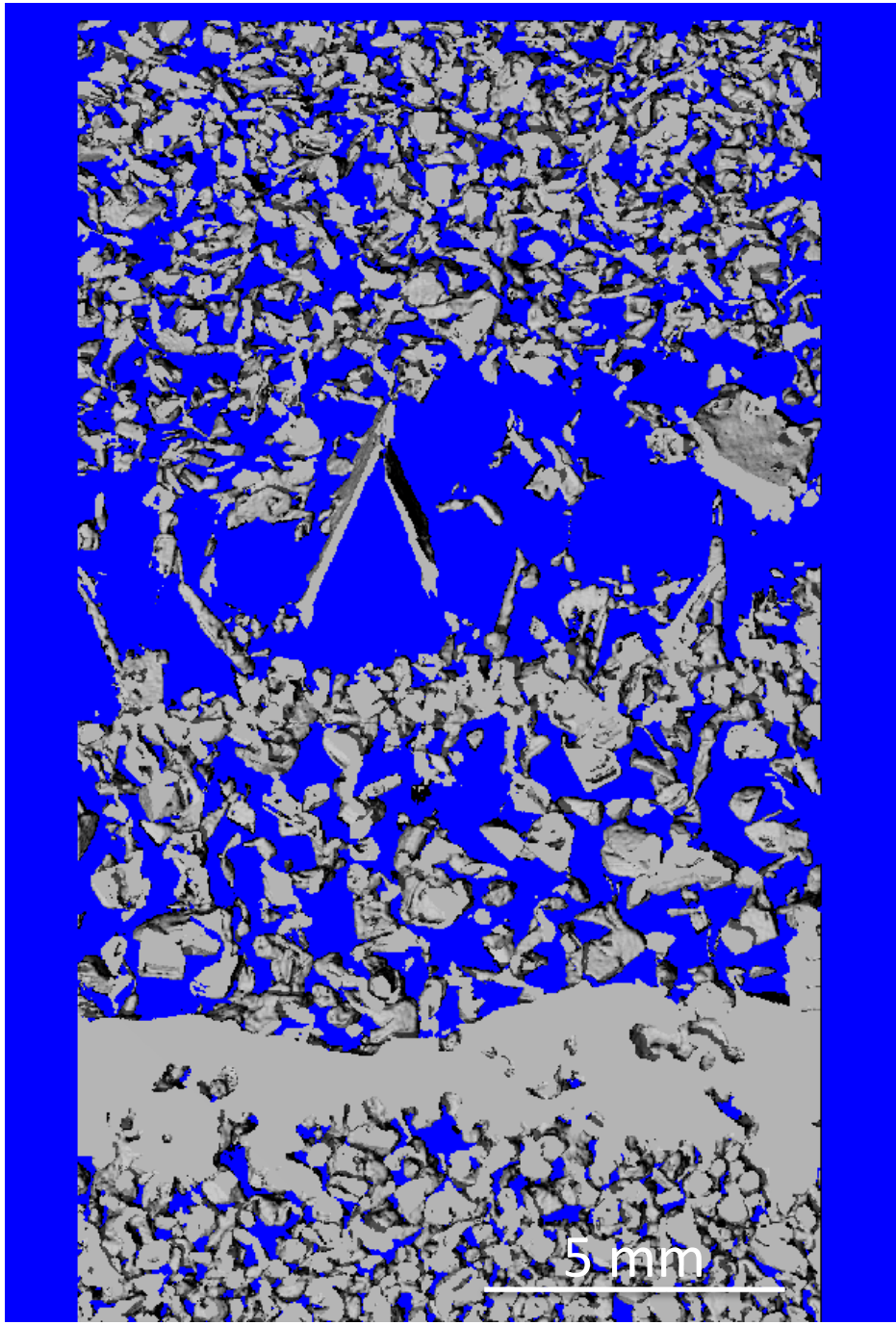
- teach what you can't learn in universities about snow
- bring the the "new" instruments and tools available for practical experience
  - SnowMicroPen
  - Near-Infrared Photography
  - Snow casting
  - IceCube,
- connect to the experts by lectures
- give young snow scientists from different communities to meet each other

Overview of snow science winter schools

2015 Sodankylä,	arctic snow, tundra and taiga
2016 Davos / Preda, Switzerland	alpine snow, snow microstructure
2017 Sodankylä, Finland	arctic snow, remote sensing
2018 Col du Lautaret, France	alpine snow, snowpack models
2019 Hailuoto, Finland	snow on sea ice

Evolution of snow science

- from a descriptive science to a measuring science
- snow microstructure too complex to be measured by magnifying glass



Course structure and Topics

- about 25 students selected from about 60 applications
- small groups of 3-4 students work together with one expert
- gender and nation balance for students and experts
- students write a report at the end of the course
- course is listed at EPFL Lausanne as 3 ETCS point course

classroom and field lectures

Topics

- Practical experience to understand snow as a geological material

- Advanced snow measuring techniques
- Instrument demonstrations and use
- Field experience
- Safety in the field
- Evaluation and reporting of the measured data

Feedback

- high satisfaction (surveys)
- steady improvements in course structure
- course rather too "dense"

What is missing?

- course is too short to teach deeper understanding and concepts

  it would be helpful to have a preparatory online course
- availability of modern tools is limited, and leads to the continous use of outdated methods (grain size by eye, grain shape, one-dimensional snow profile)
  - international instrument service would be useful (difficult by custom barriers….)
- immediate application of curriculum not always possible
  - specific course for more advanced scientists?

Conclusion

- Snow Science Winter School is an effective way to bring together young snow scientists
- Knowledge of modern measurement methods broadens
- Strongly supported by many organizations with the support of senior scientist
- Contionous sponsors (WSL, FMI) to make course available at very modest cost
- Thanks to EGU, ESA, HarmoSnow, IACS, IASC,MicroDICE, SCAR for very valuable support!

Thanks!