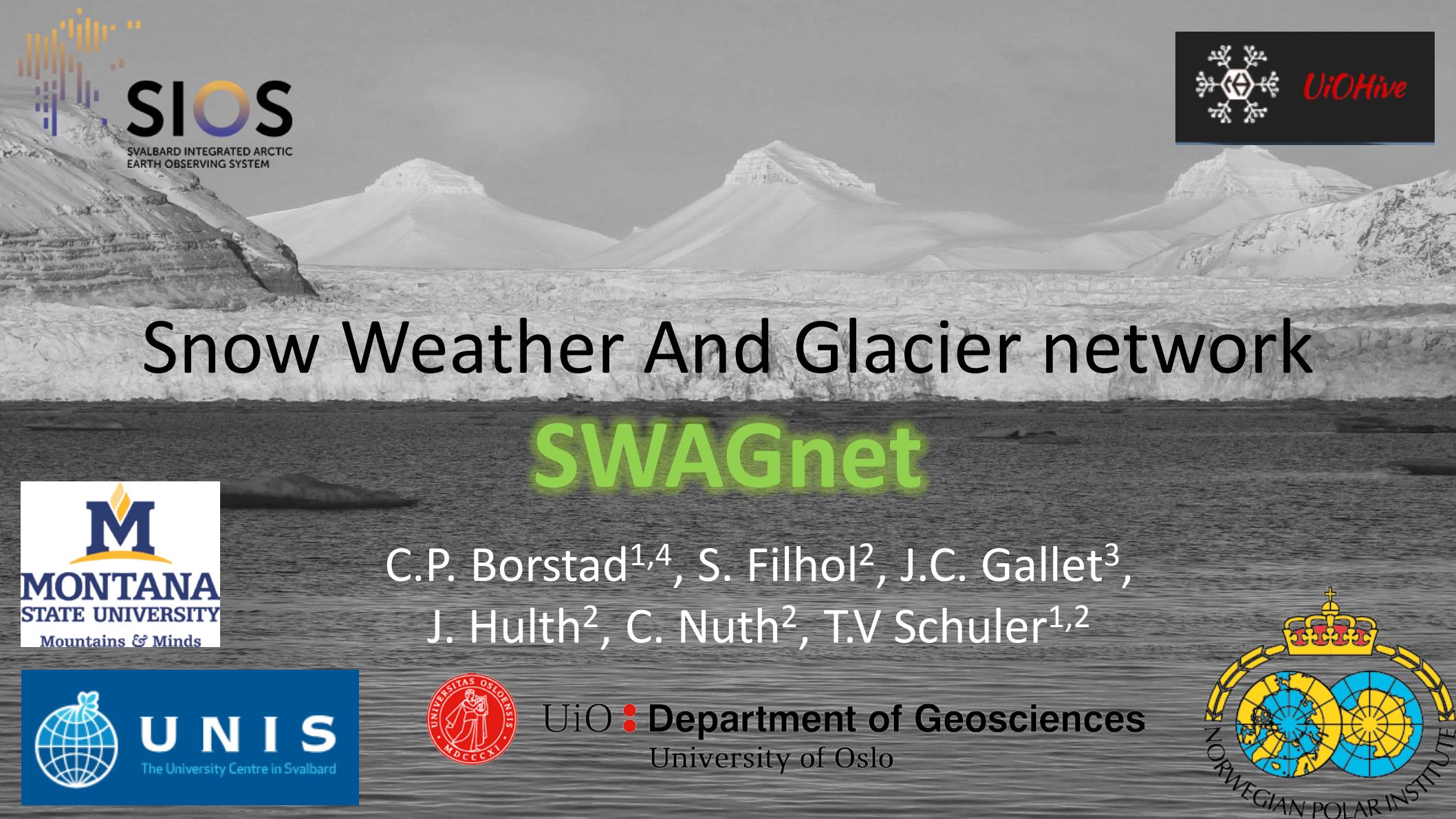
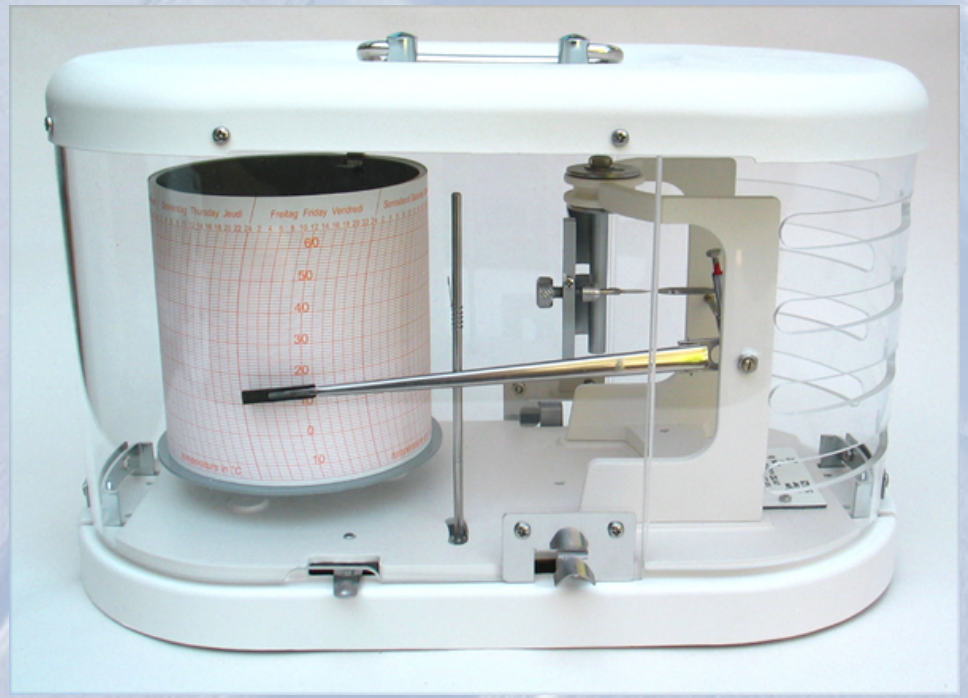

SIOS
SVALBARD INTEGRATED ARCTIC EARTH OBSERVING SYSTEM
UiOHive
Snow Weather And Glacier network
SWAGnet
C.P. Borstad[1,4], S. Filhol[2], J.C. Gallet[3],
J. Hulth[2], C. Nuth[2], T.V Schuler[1,2]
MONTANA STATE UNIVERSITY
Mountains & Minds
UNIS
The University Centre in Svalbard
UiO : Department of Geosciences
University of Oslo
NORWEGIAN POLAR INSTITUTE

Recording data

Technological development during my time as a student…



This millenium: New aspects

Low-cost, distributed systems

real time data

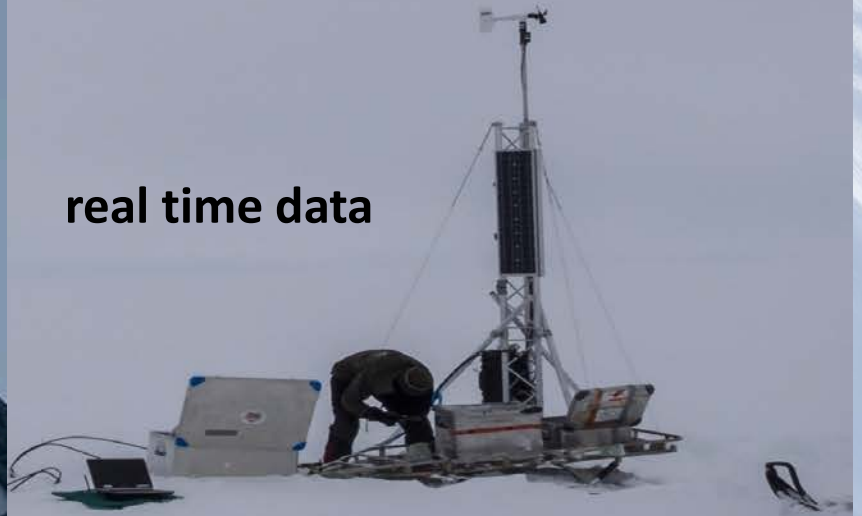


Photo by Thorben Dunse, 2016

UiO weather WSN: *From sensing to data*

A custom-made full-stack system designed around the specific needs for geosciences

Sensors (v1):
- T_{air}, P, RH
- Snow depth
- 16 bands VIS-NIR outgoing
- Wind speed and dir
- $T_{surface}$
- GPS lat/long
- Tsnow profile

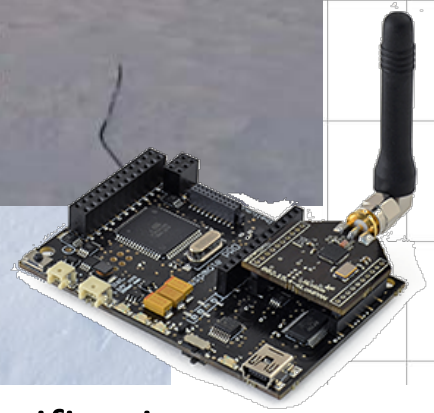
Logger:
- power management
- sensor sampling
- communication
- data storage

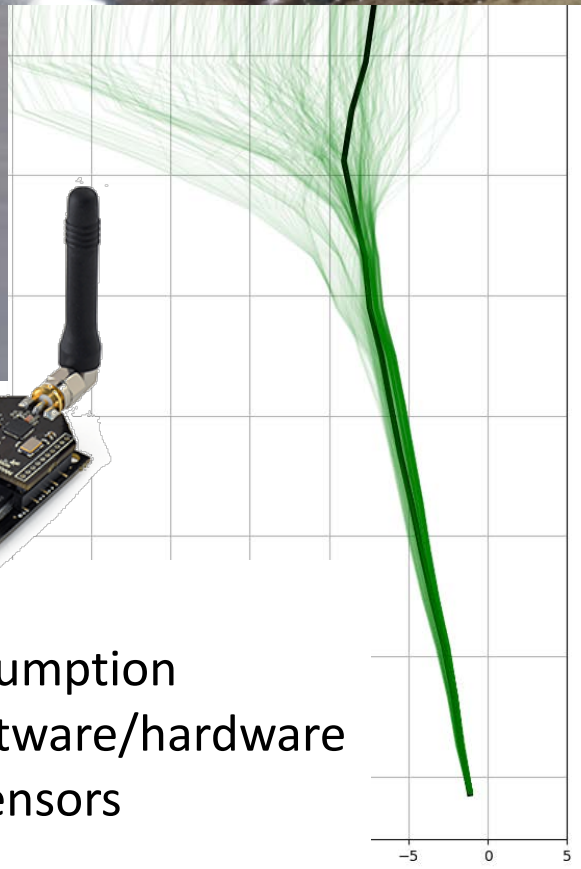
Communication:
- Local IoT: Lora/xbee
- Iridium
- 4G

Database:
- long term storage
- data readily available
- data visualization
- adapted maintenance

All-in-one beam:

Sensors + power management + logger + radio





Specifications:

- Low power consumption
- Open source software/hardware
- Analog/digital sensors
- Low cost

Kongsvegen
SWAGnet

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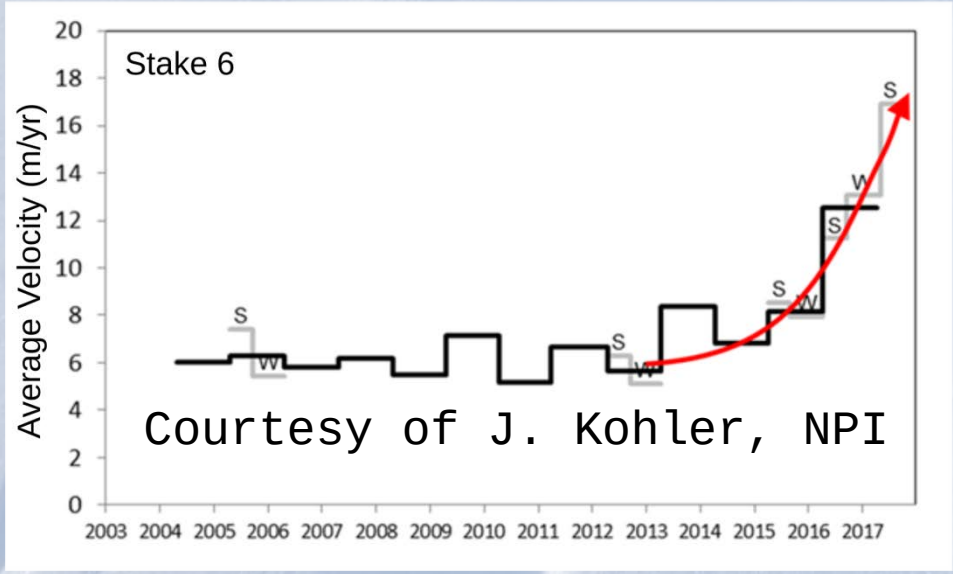
Access grant…

Kongsvegen on the way to a new surge?



Access may become prohibitivly expensive…

Summary

- Bring together:
  - Distributed, low-cost systems
  - Real-time data transfer
  - Geoscientists
  - Informatics/microelectronics

- SIOS deployment in steps:
  - Sensor stations, transmit system health
  - Gateway, network communication