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Open Forum

Part 2

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Sergi González-Herrero

SLF/WSL

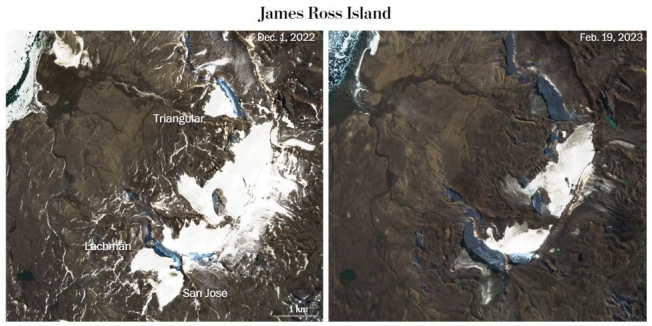
IMPACT OF CLIMATE CHANGE ON SNOWMELT ON THE ANTARCTIC PENINSULA

Sergi González-Herrero, Michael Matějka, Kamil Láska, Michael Lehning

1. Motivation

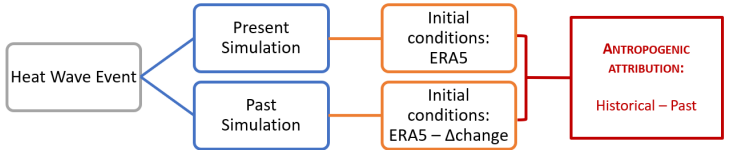
Several major heatwaves in Antarctic Peninsula

How climate change contributed physically and impacted on snow?



2. Methods

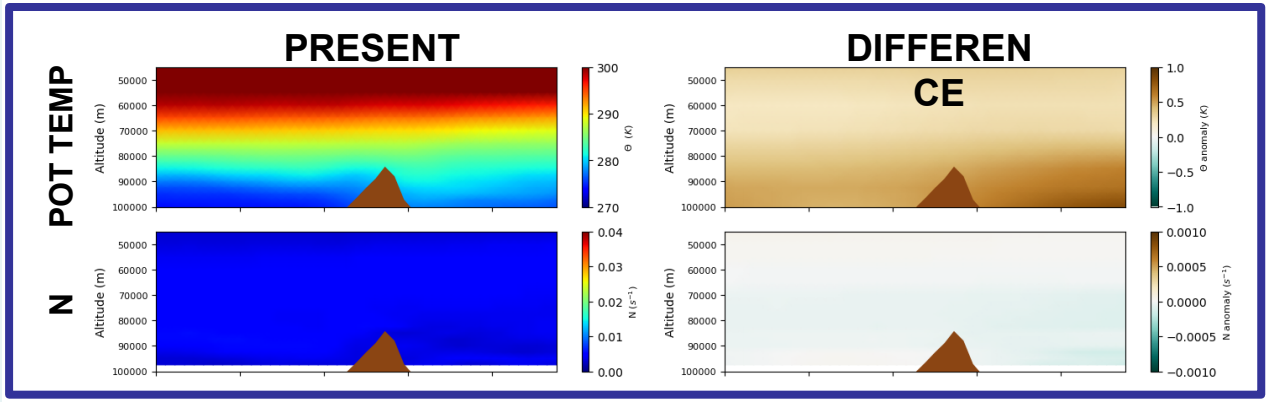
Pseudo Global Warming simulations with CRYOWRF



Weather Research Forecast WRF + SNOWPACK surface model + Blowing snow scheme

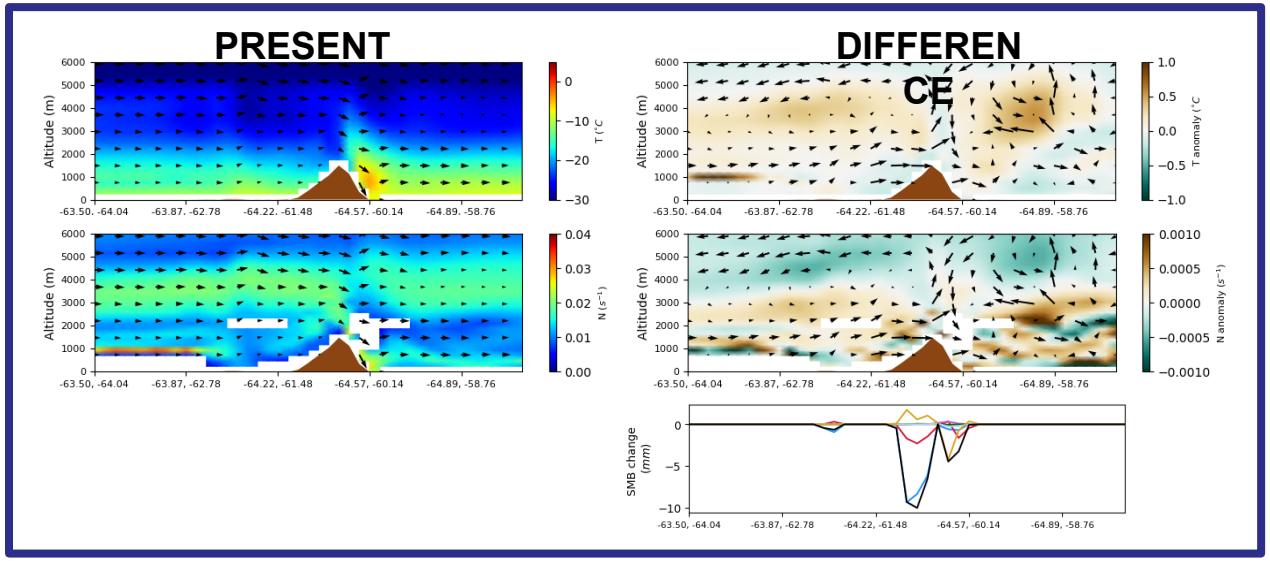
3. Results

INPUT DATA



Interestng feedbaacks: ↑ T but ↓ vapour → + N at 2000-3000m but – Water release → → + Wind but - Fohen → - T increase leeside → - Qs

CRYOWRF



4. Conclusions

- ❖ We show possible compensating effects in Foehn with climate change and regulated snow SMB loss
- ❖ Antarctic Peninsula processes are more complicated than those shown by ERA5+CMIP6

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Lucie Malard

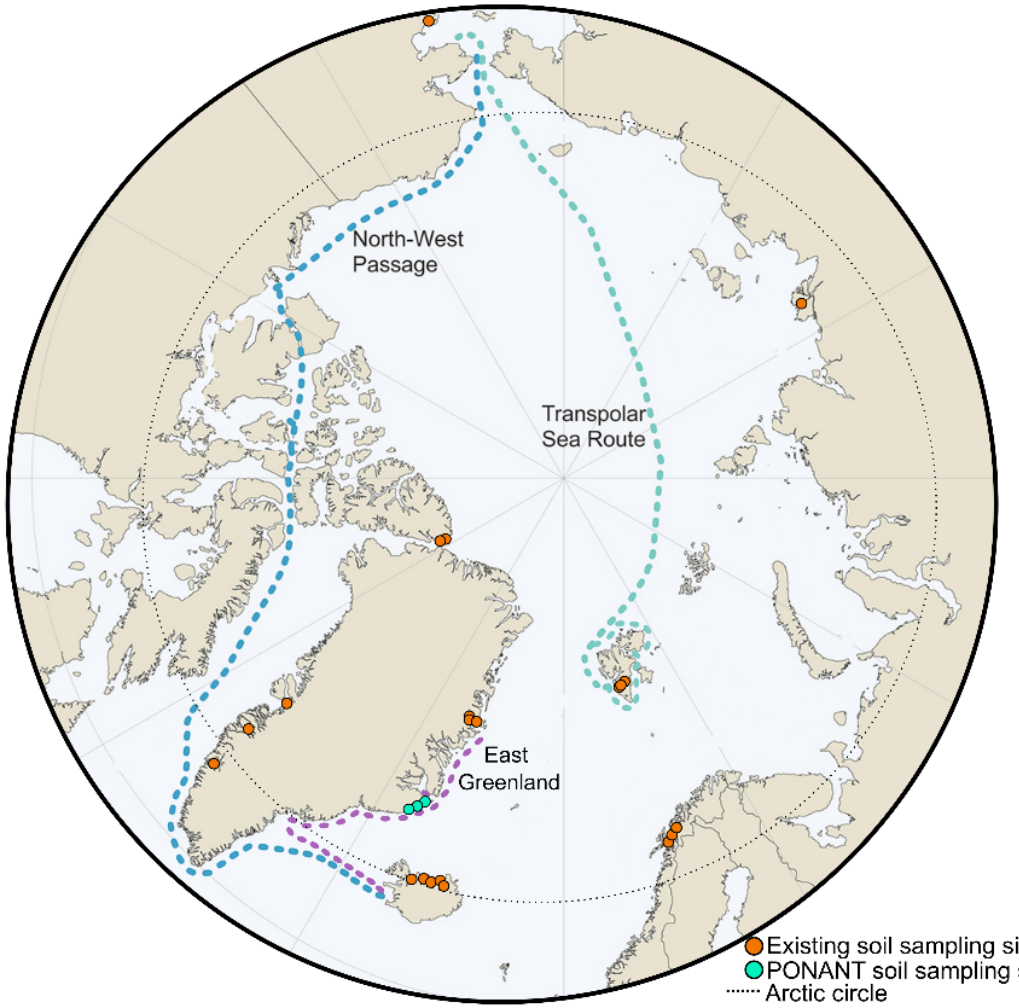
University of Lausanne

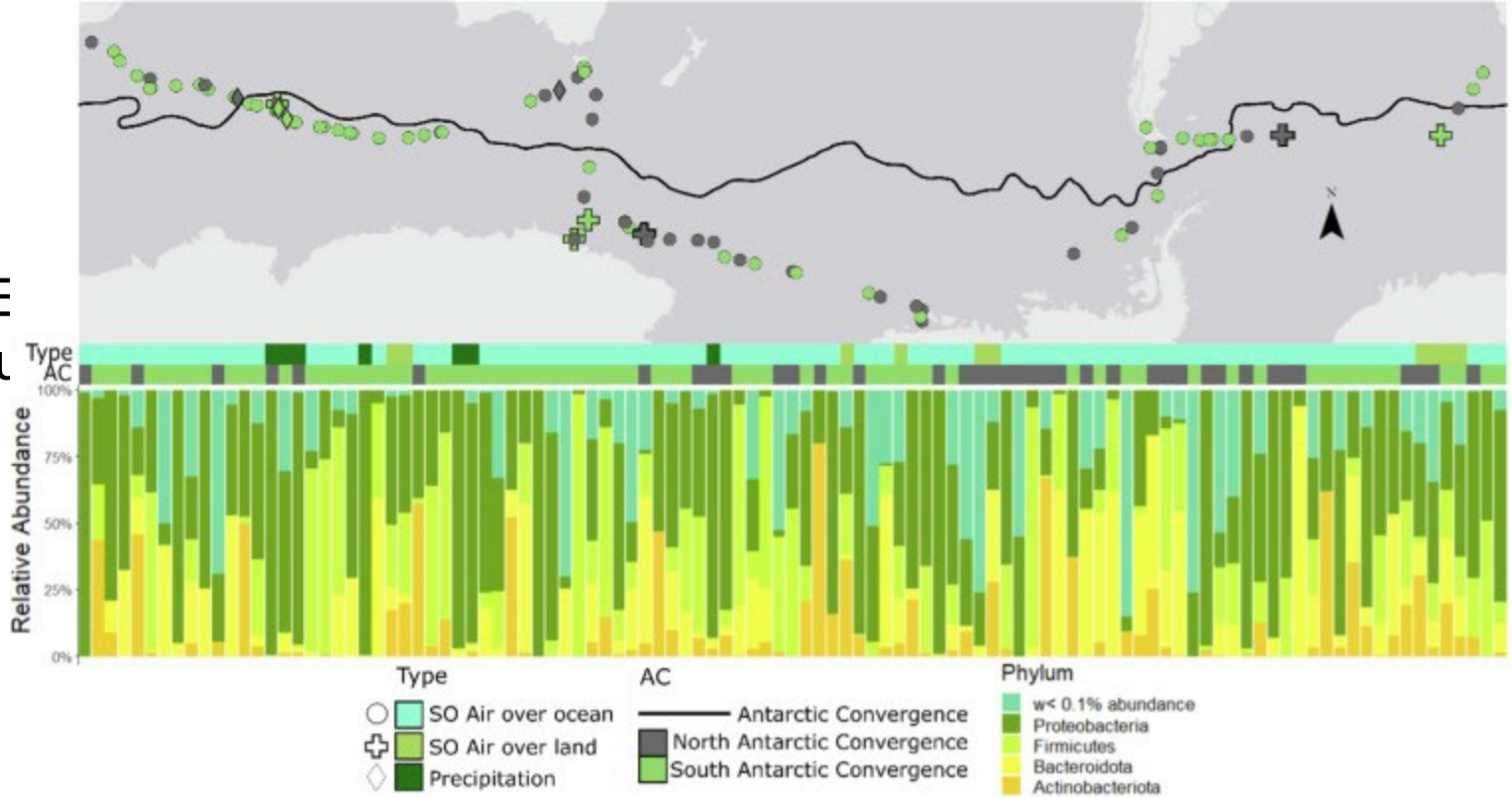
Pol'Air

Lucie Malard, Postdoc at UNIL

➔ soon to be Ambizione Fellow at UNIGE

➔ Starting a Polar Microbial Ecology grou





Some projects:

MicroArctic – Marie Curie ITN

ACE – SPI funded

ArcticAir – SPI exploratory gra

SLIDE – BAS funded

SCAN ME

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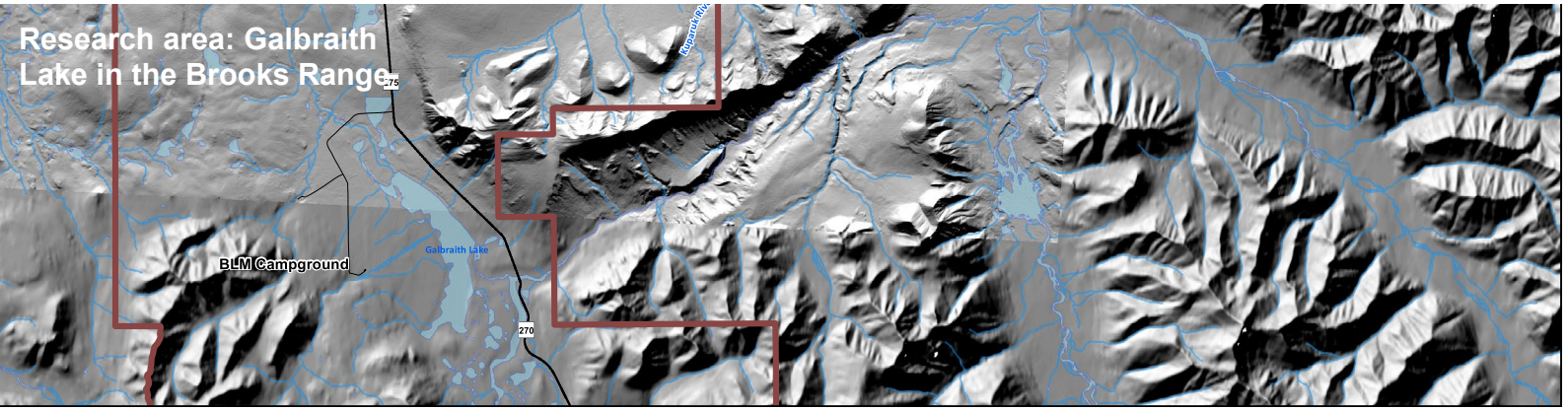
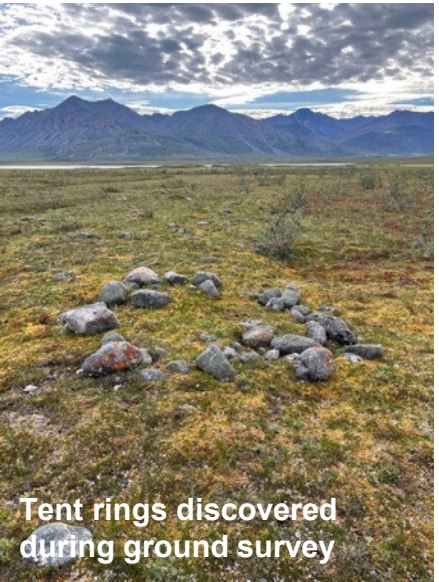
Noah Steuri

University of Bern

ALANA

Arctic Landscape Archaeology in Northern Alaska





Dr. des. Noah Steuri
Institute of Archaeological Sciences
University of Bern

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Max Polzin

EPFL





A versatile, robust, lightweight, adaptive robot platform (for cryospheric research)





As it locomotes **G**ood **O**ver **A**ll **T**errain, our robot is named **GOAT**. It is constructed around a lightweight, fibreglass frame using wheels to drive or swim and winches to automatically transform its shape from driving to a spherical configuration. Its versatility and ability to carry and protect a sensory payload in its center, makes it suitable for applications in extreme environments such as cryospheric research.



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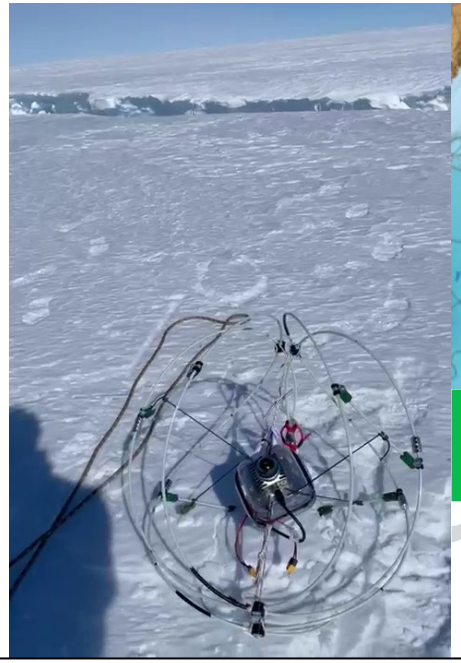
The robot rappels into moulins to explore the pathways taken by draining surface meltwater. Equipped with cameras, it records high-resolution pictures of the icy walls.
(Mer de Glace, France)

The robot is lowered on a tether into a crevasse. Equipped with a 3D LiDAR scanner, it collects pointclouds that can be used to reconstruct the geometry of the crevasses. (Semper crevasses, Greenland)




Max Polzin, max.polzin@epfl.ch

CREATE Lab EPFL

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Carmen Siegenthaler

ALPS Swiss Alpine Museum

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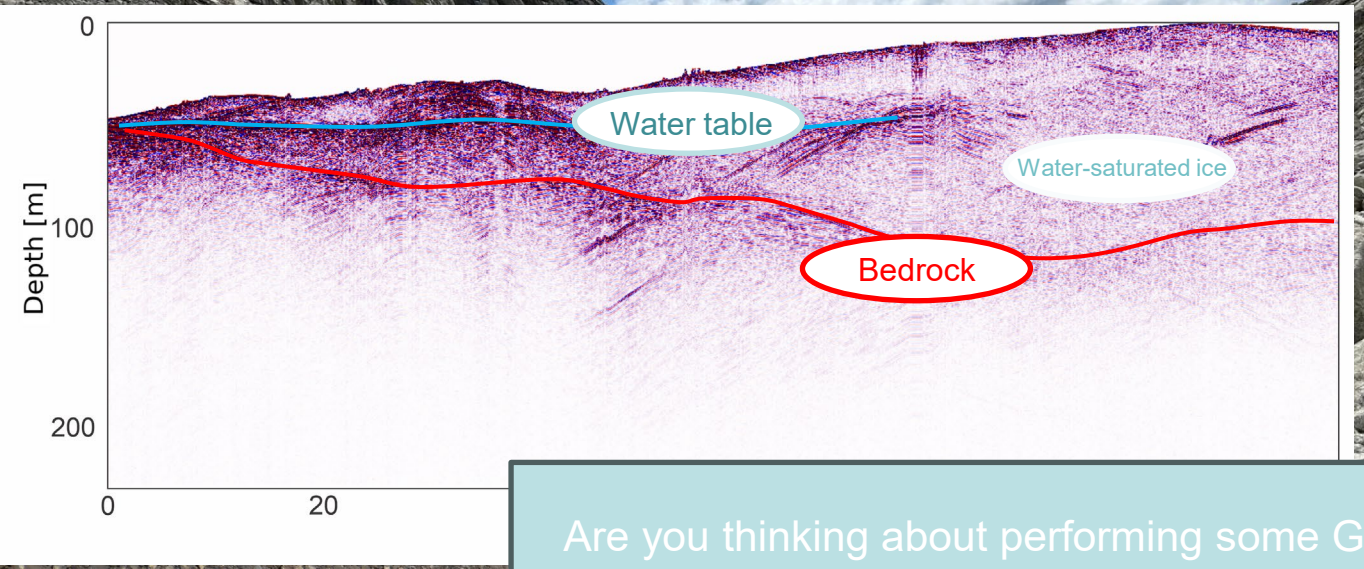
Ilaria Santin

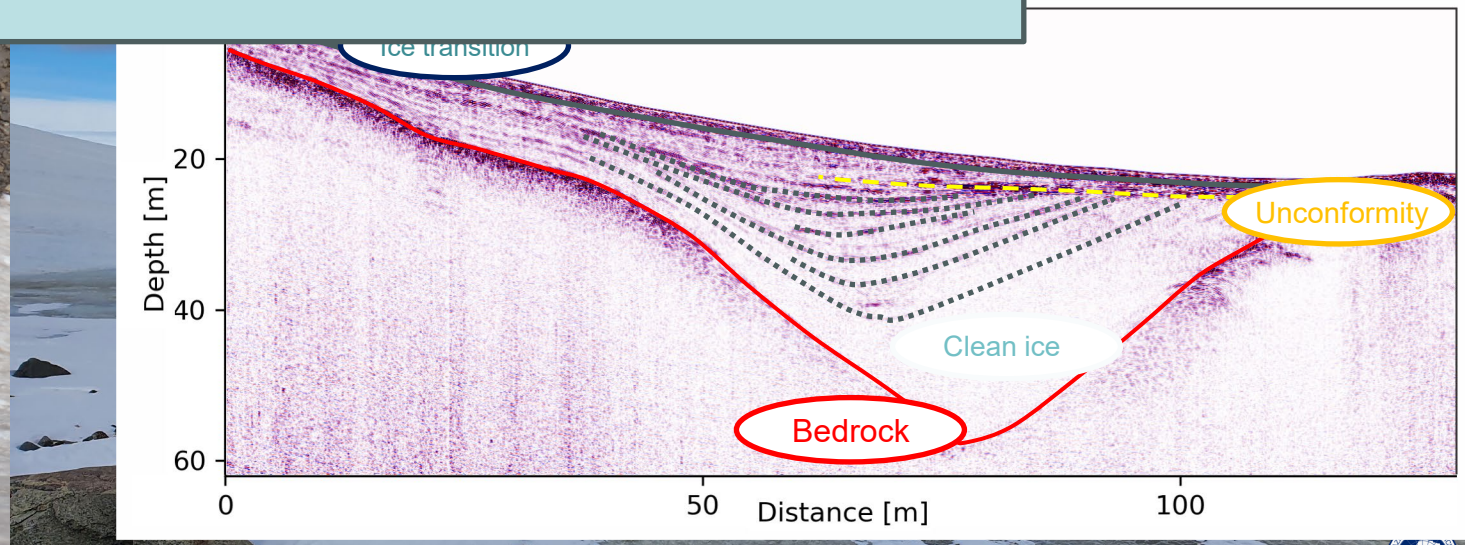
ETH Zurich

UNVEILING GLACIERS SECRETS WITH GROUND PENETRATING RADAR

PhD Ilaria Santin – ETH Zürich
santin@vaw.baug.ethz.ch



Are you thinking about performing some GPR surveys? Let's discuss together!



Laboratory of Hydraulics,
Hydrology and Glaciology

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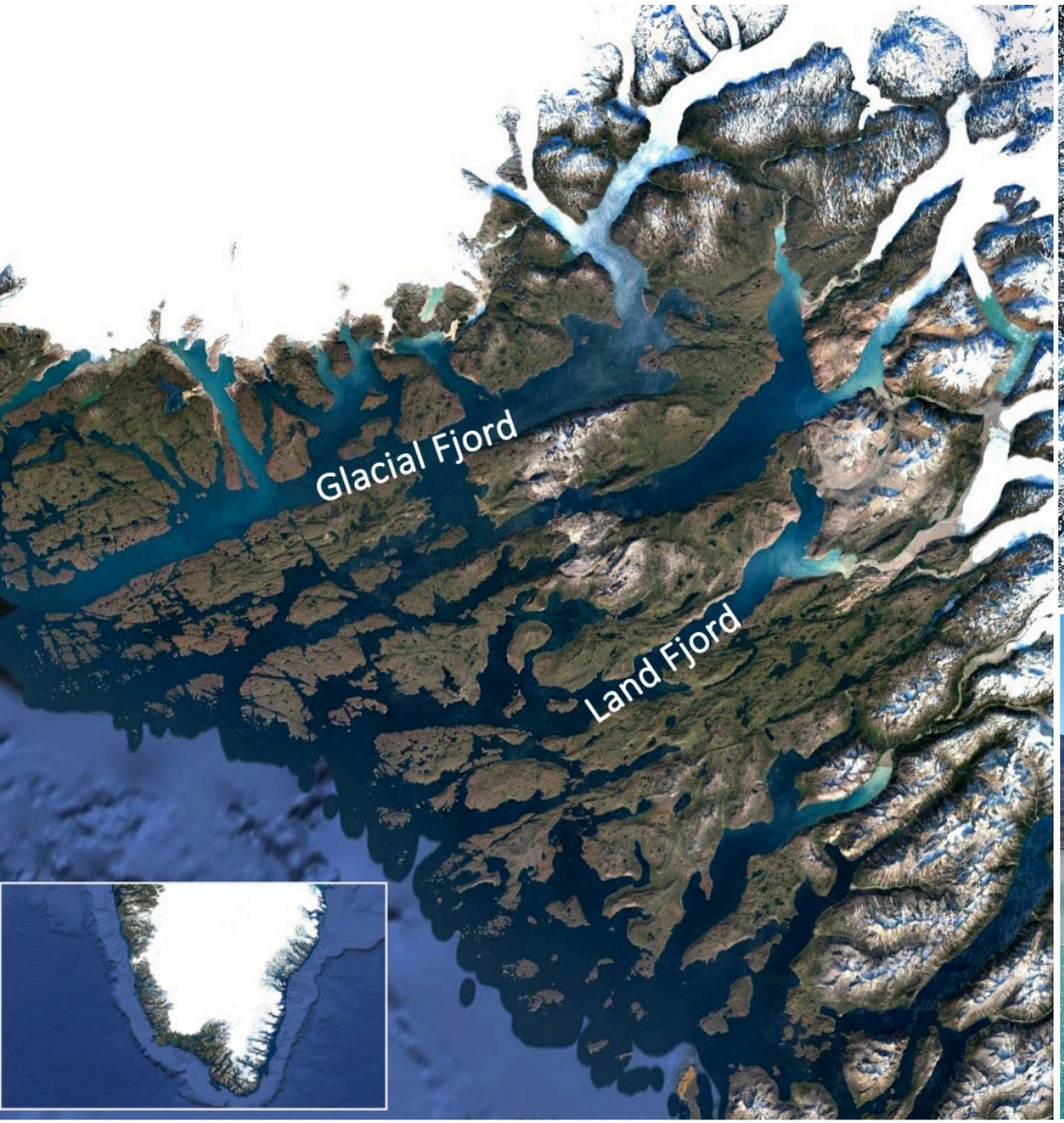
Maxi Castrillejo

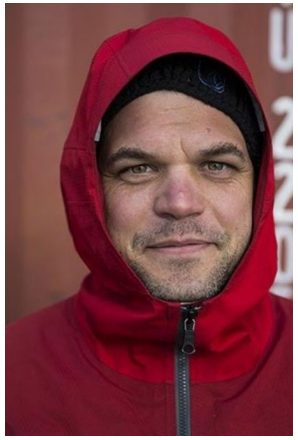
University of Lausanne

CARVICE: The fate of the marine biological carbon pump in the face of vanishing (sea-)ice



Amelia Deary

Maxi Castrillejo



Samuel Jaccard

Sarah Fawcett

Funded by: Fonds national suisse

BOAT Biogeochemical Oceanography Across Time

UNIL | Université de Lausanne
Institut des sciences de la Terre

UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD

SWISS POLAR INSTITUTE

Kathrin Naegeli

University of Zurich

CRYO-SPIRIT

Bhutan's Cryosphere Under Change - Understanding and Awareness

contact: nadine.salzmann@slf.ch



- 03/2024 – 02/2028 (SNSF SPIRIT)
- PIs: N. Salzmann (SLF), D. Gurung (RUB)
- PP: R. Gugerli (MeteoSwiss), S. Lhamo (NCHM), K. Naegeli (UZH), C. Pellet (PERMOS, UniFR)
- PhD 1: Pema Eden (RUB, CNR)
  "Baseline study on permafrost in Bhutan and assessing its associated risks"
- PhD 2: vacant, Bhutanese, within WP2
- Postdoc: vacant, Swiss-based, ~50%, 3 years

Motivation:
High-mountain communities suffer from increasing risks with climate change and extremes!

WP1 Cryosphere baseline data

- focus on SNOW and PERMAFROST
- multi-scale observations
- integrative cryospheric monitoring

WP2 Impacts, risks & vulnerabilities

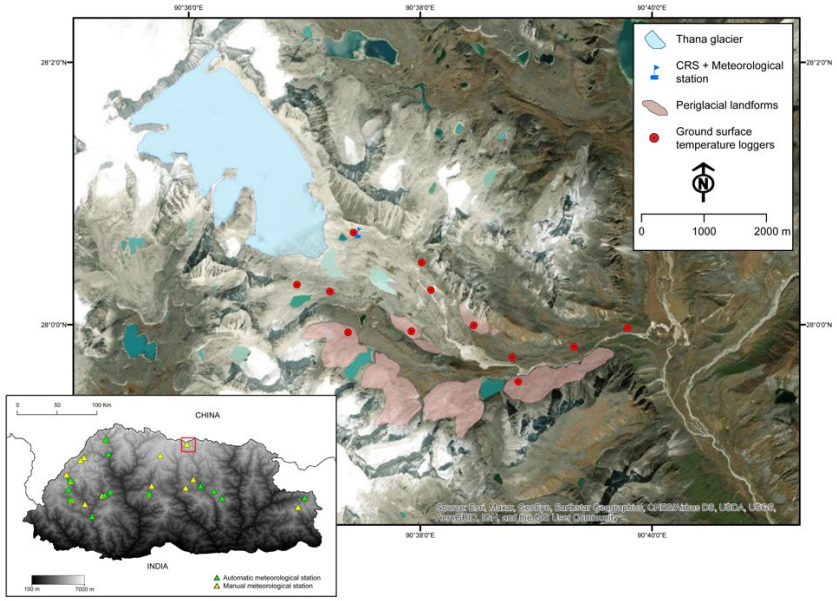
- case-studies & hot spot identification
- workshops / interviews
- gender specific vulnerabilities

WP3 Capacity building

- University module development
- teach-the-teacher training
- student exchange

SENDAI FRAMEWORK
FOR DISASTER RISK REDUCTION 2015-2030

SUSTAINABLE DEVELOPMENT GOALS



in the next weeks …

- cryospheric teaching activities at RUB
- fieldwork: snowfox, permafrost monitoring network, AWS replacement
- NHCM mass balance measurements (Thana glacier)
- international workshop on "Climatic Extremes and Disaster Risk Reduction"

We are open for collaboration - Please get in touch

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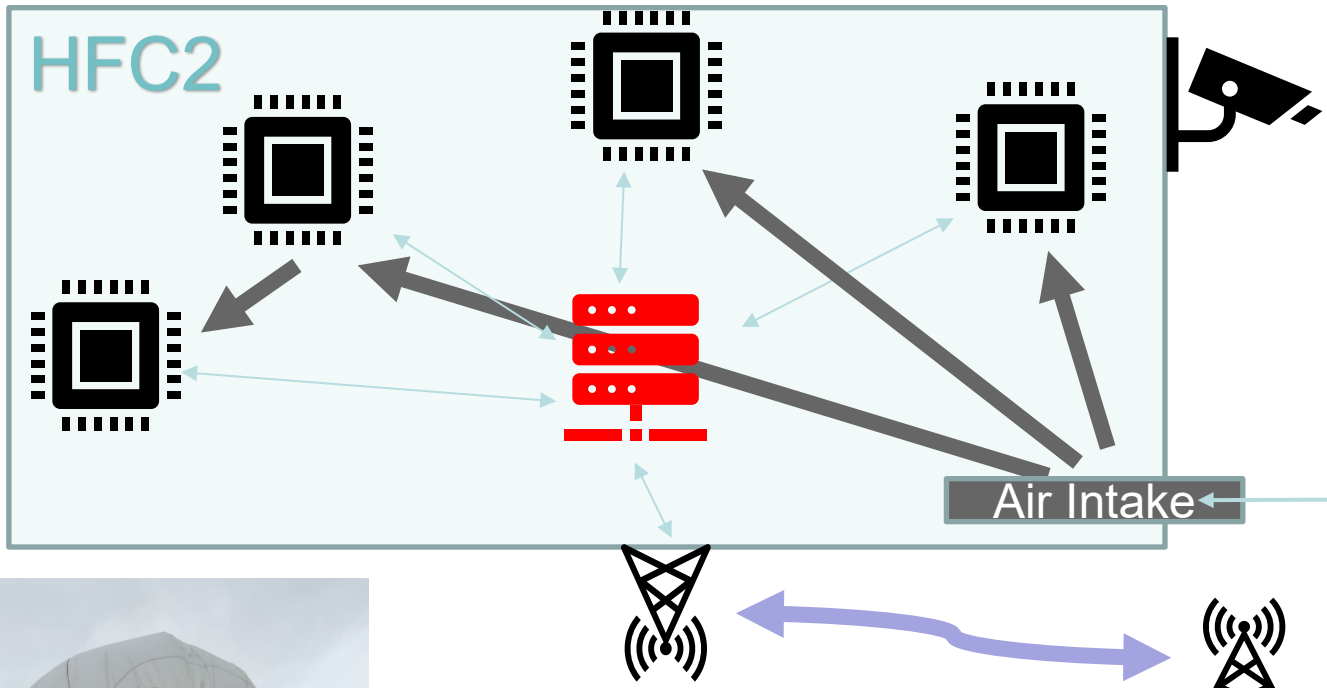
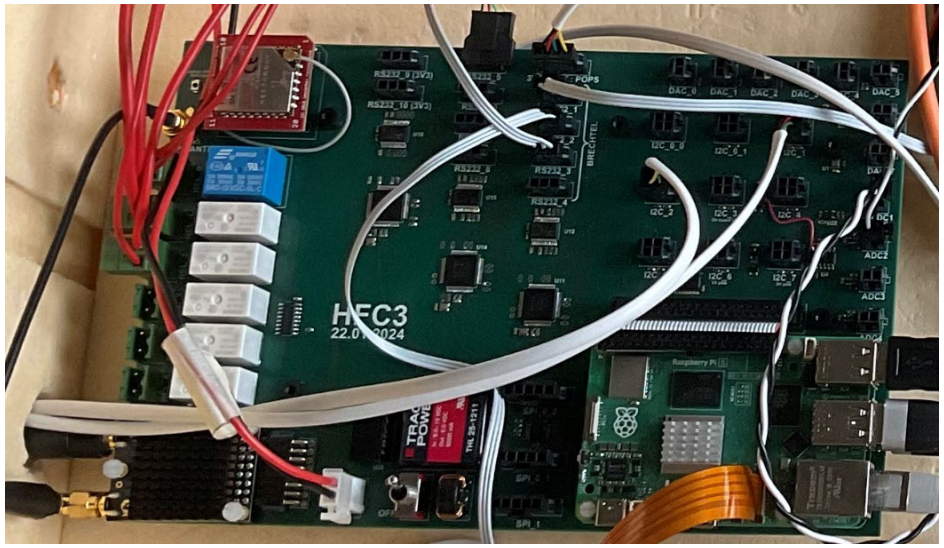
Marc Nicollerat

HES-SO Valais-Wallis

Helikite Flight Computer 2.0





Main board of the computer, powered by a Raspberry Pi

The base station…

- Retrieves the information from the RF link
- Displays main information, draws graphics
- Allows to send commands to the computer

The flight computer…

- Collects the information from the different analysers
- Gets position and altitude from a GNSS
- Measures temperatures and voltages
- Regulates temperature regulation with using relays
- Stores the information locally
- Transmits part of the info to ground via a RF link
- Accepts commands from the base station (management)

Collaboration between EPFL-EERL
And HES-SO ISI
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