universität innsbruck
Institut für Atmosphären- und Kryosphärenwissenschaften

austrian polar research institute

FWF Austrian Science Fund

Land-terminating Ice Cliffs across Scales

Rainer Prinz, PhD
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Jakob Abermann (University of Graz), Jakob Steiner (University of Graz), Marie Schroeder (University of Innsbruck)

APRI, 27.11.2025, Innsbruck

Naomi Ochwat, PhD

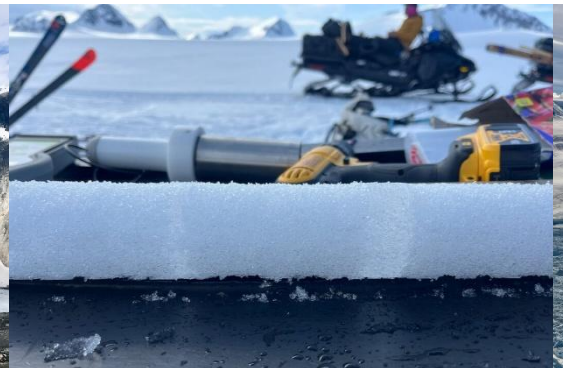
Antarctic and Arctic Glaciologist

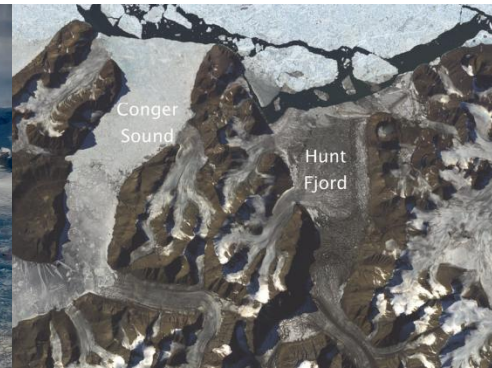
https://naomiochwat.weebly.com/

Naomi's research focuses on using **remote sensing** and **field observations** to study ice dynamics and firn processes.

- Wave ogives in Alaska
- Ice shelves in Antarctica and Greenland
- Tidewater glaciers on the Antarctic peninsula

She's particularly interested in tipping points and ice sheet instabilities.

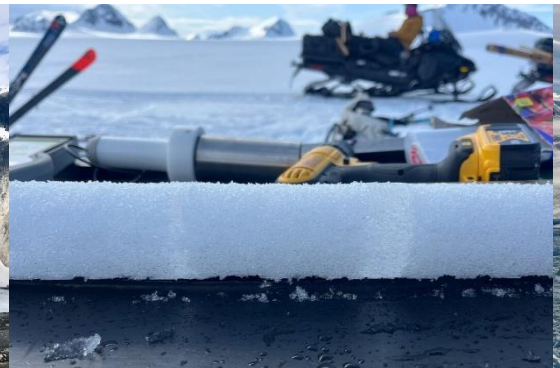


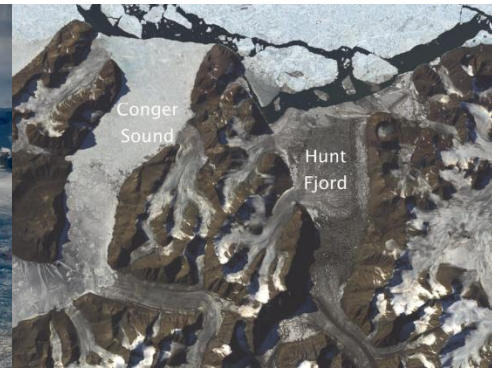


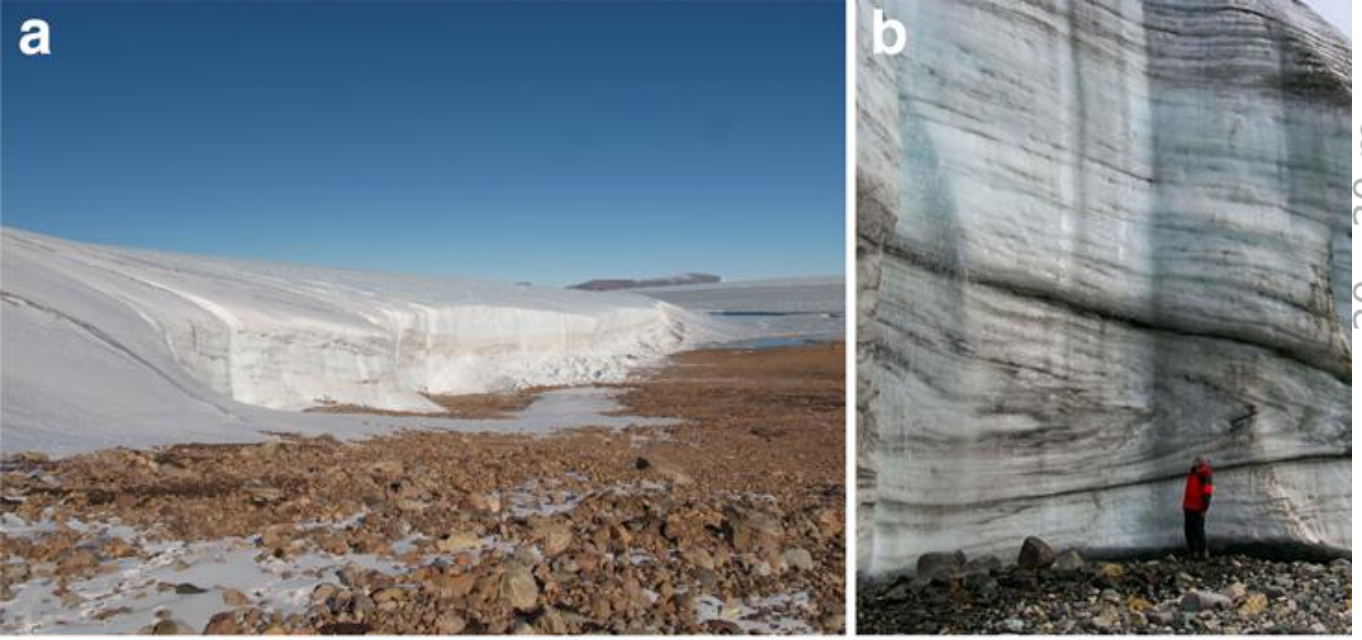
Christian Wild, PhD

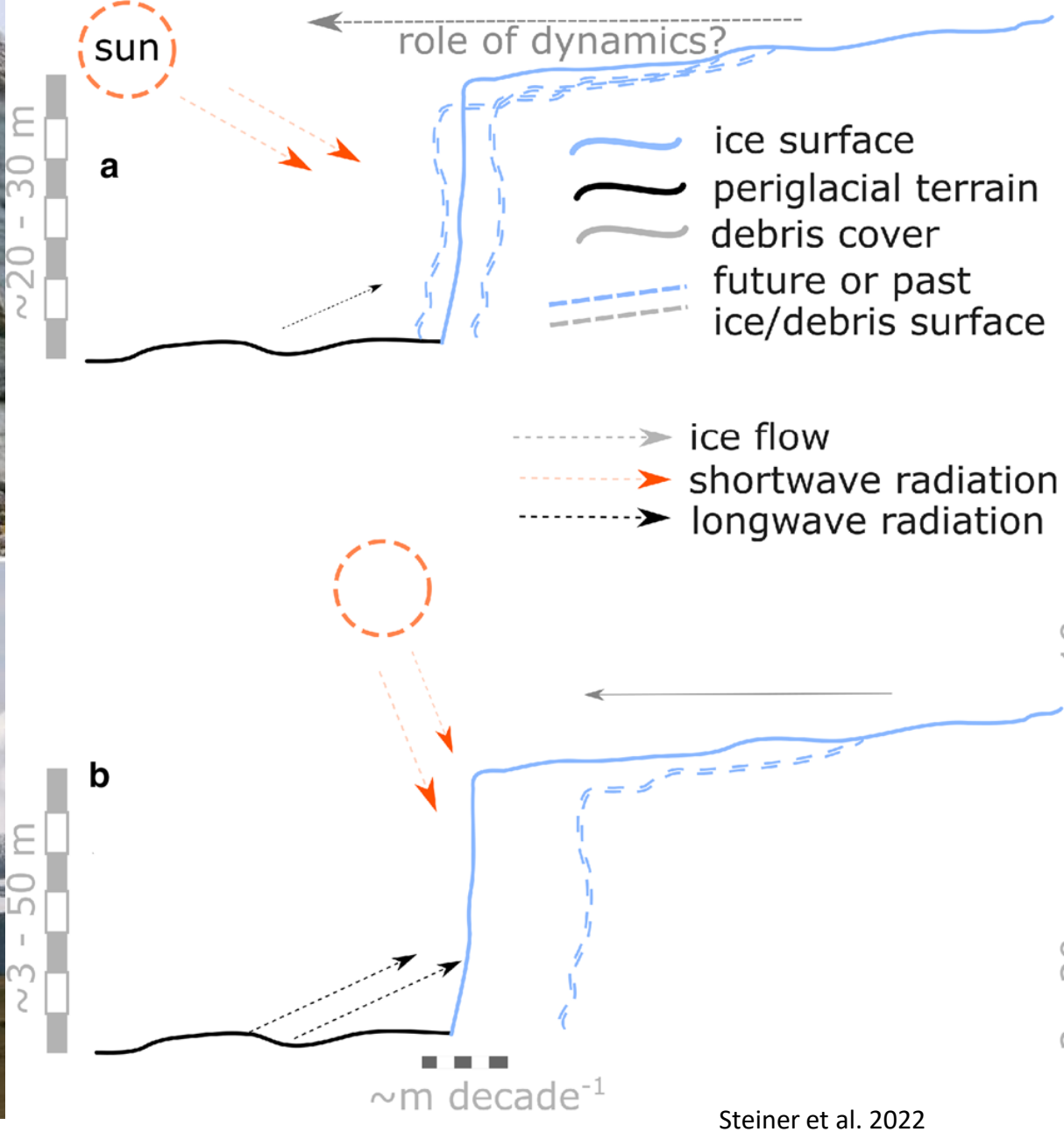
Antarctic Glaciologist

- Antarctica’s contribution to global sea-level rise
- Ice shelve destabilization from atmospheric and oceanic warming
- Integrating satellite remote sensing with numerical ice-sheet modeling, validated by hands-on polar fieldwork
- Veteran of nine polar expeditions, including multiple missions to Thwaites Glacier (“the doomsday glacier”)
- Collaborates closely with the New Zealand and U.S. Antarctic Programs, the Alfred Wegener Institute, the Korean Polar Research Institute, and China’s National Arctic and Antarctic Research Expedition





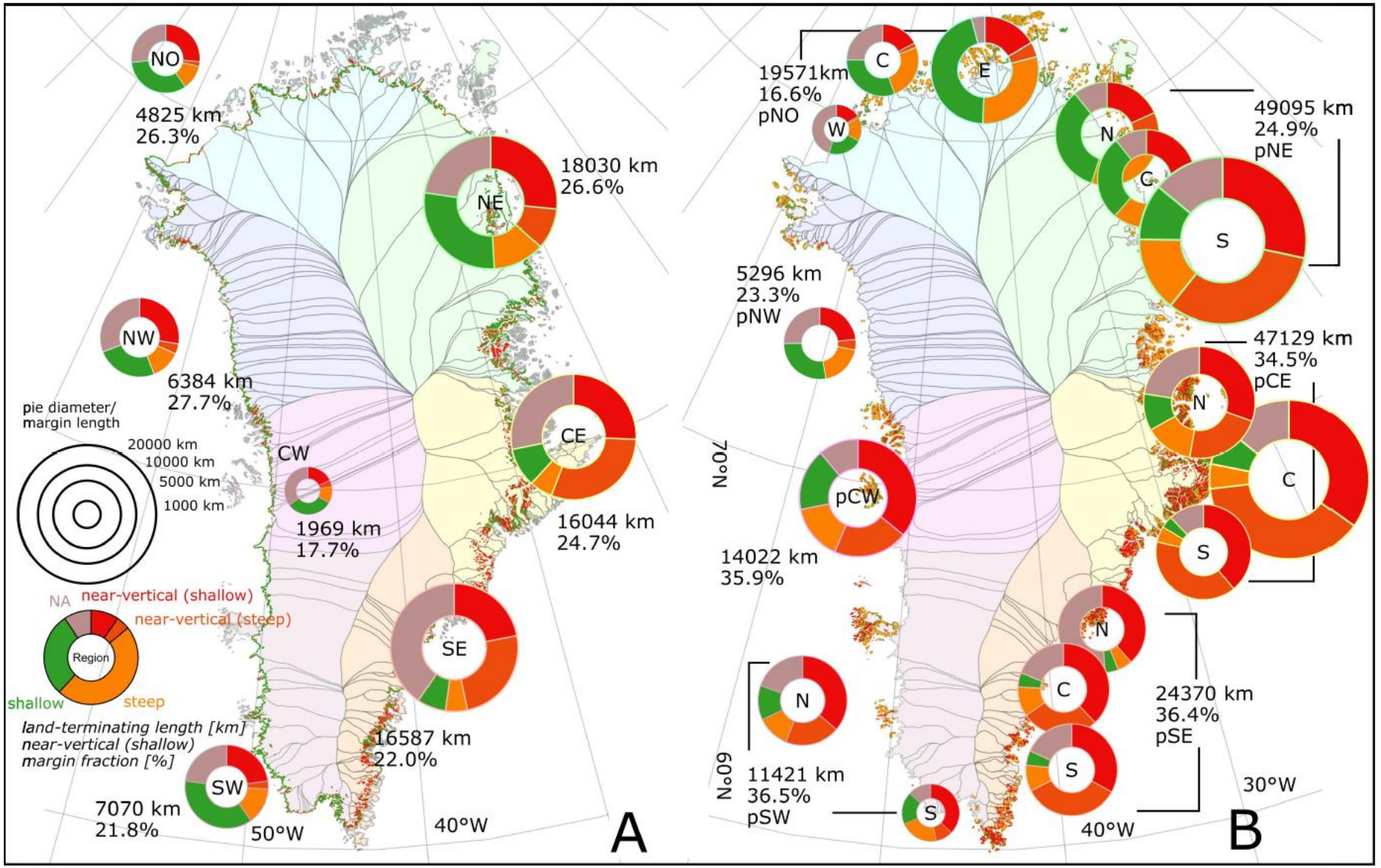




Steiner et al. 2022

The terrestrial ice margin morphology in Kalaallit Nunaat (Greenland)

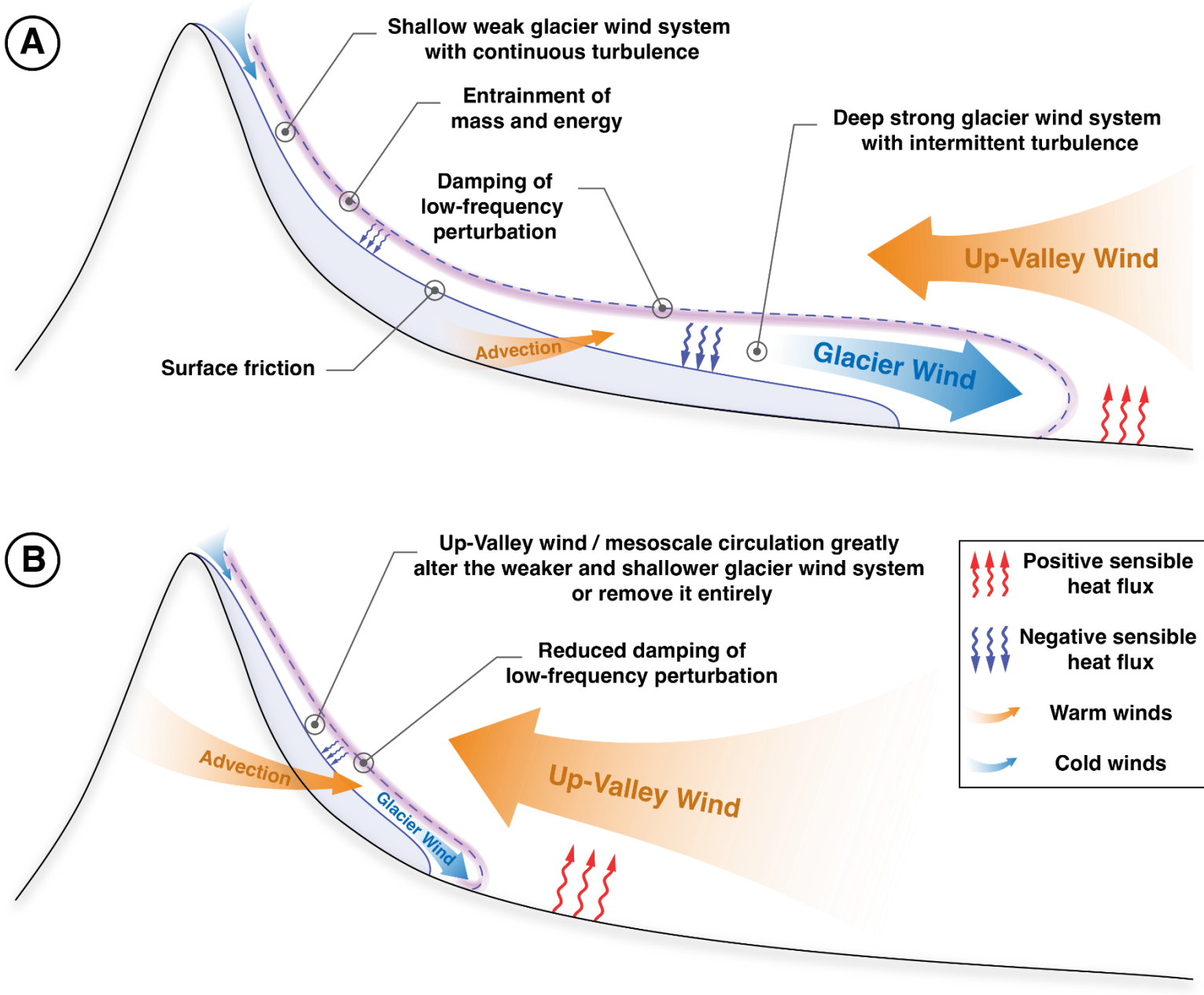
Steiner et al. 2025, in review



Near-vertical: >45°

Steep: 20°-45°

Shallow: <20°



Glacier-Atmosphere Interactions and Feedbacks in High-Mountain Regions - A Review

ATMOSPHERIC SCIENCES

ATMOSPHERE | FEEDBACKS | GLACIER | INTERACTIONS | MOUNTAINS

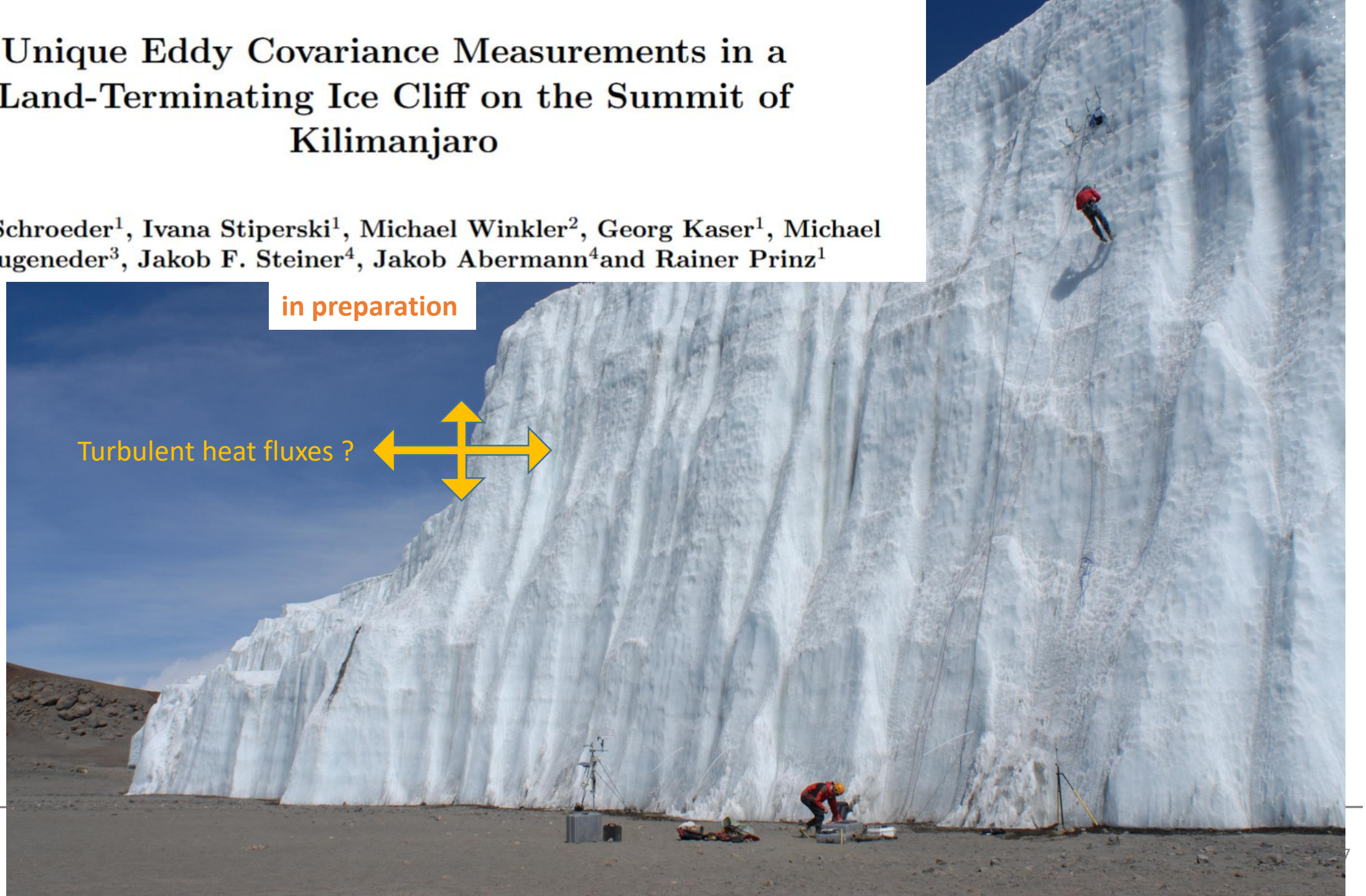
Tobias Sauter, Benjamin William Brock, Emily Collier, Alexander Georgi, Brigitta Goger, Alexander Raphael Groos, Kristine Flacké Haualand, Michael Haugeneder, Arindan Mandal, Rebecca Mott, Lindsey Nicholson, Rainer Prinz, Dylan Reynolds, Manuel Saigger, Thomas Edward Shaw, Jean Emmanuel Sicart, Ivana Stiperski, Annelies Voordendag

Sauter et al. 2025, in review

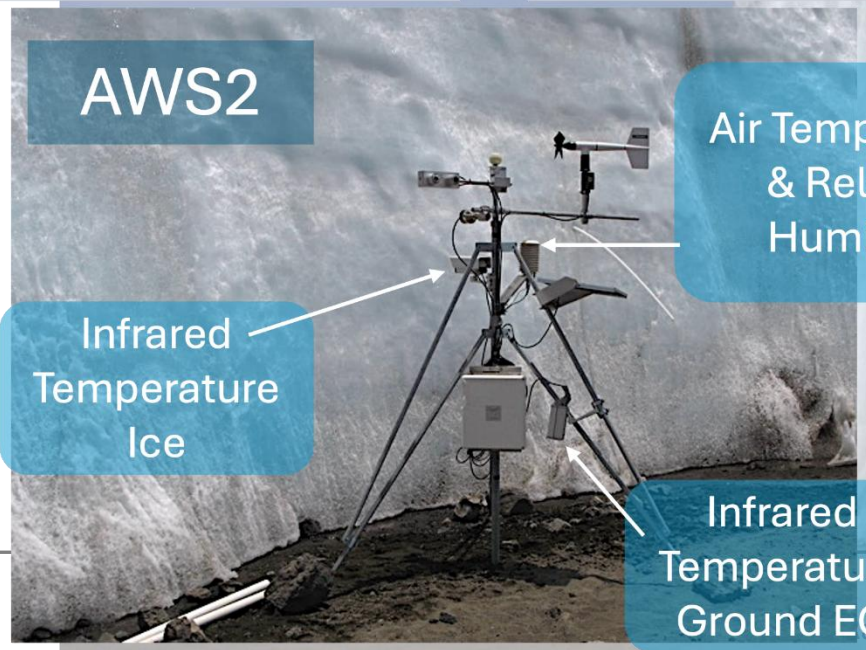
Unique Eddy Covariance Measurements in a Land-Terminating Ice Cliff on the Summit of Kilimanjaro

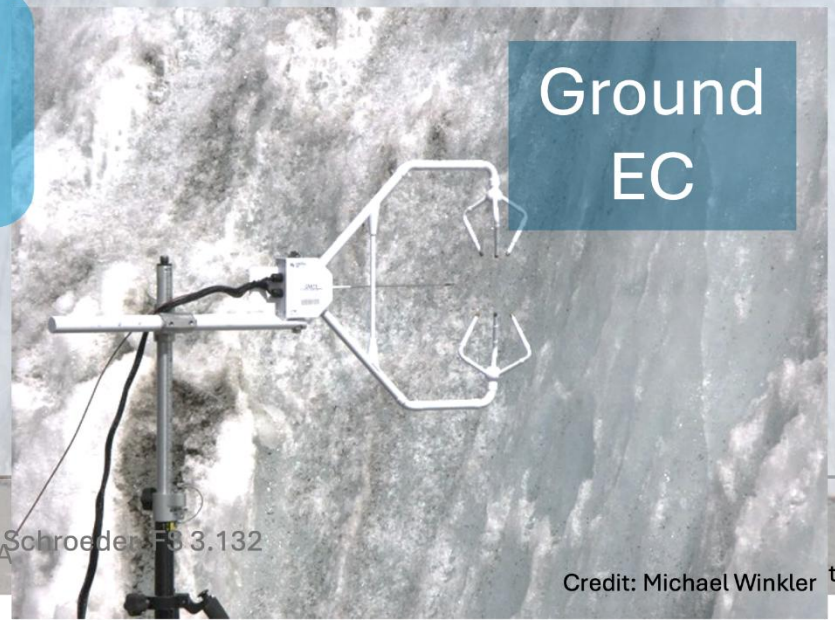
Marie Schroeder[1], Ivana Stiperski[1], Michael Winkler[2], Georg Kaser[1], Michael Haugeneder[3], Jakob F. Steiner[4], Jakob Abermann[4]and Rainer Prinz[1]

in preparation

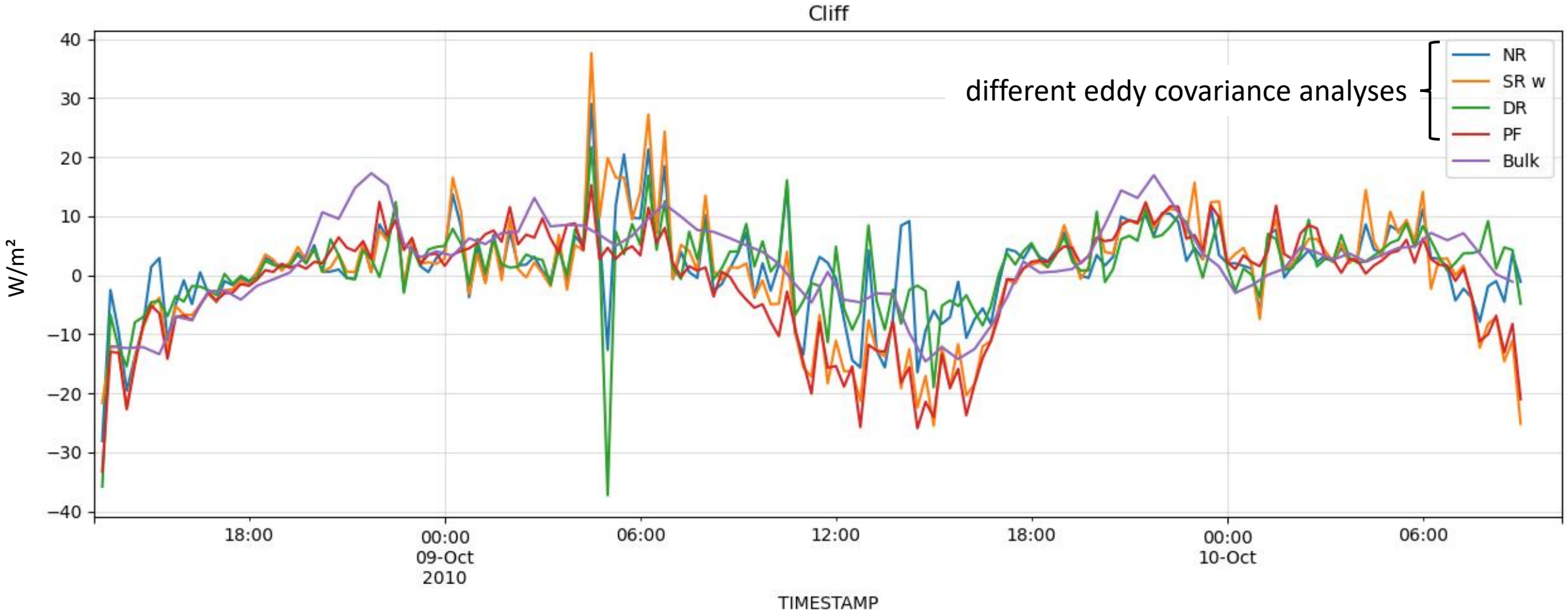


High Frequency (20Hz)	Low Frequency (10min)
• Cliff EC + Ground EC (Eddy Covariance = EC) • 3D sonic anemometer measuring 3D wind • Finewire thermocouple measuring temperature fluctuations • Cliff EC: Krypton hygrometer measuring absolute humidity fluctuations	• AWS2 • Air Temperature and Relative Humidity at Cliff EC





Sensible heat flux in a vertical ice cliff on Kilimanjaro



Schroeder et al. 2025, in prep

Outlook

- Distribution of land-terminating ice cliffs in Greenland ✓
- Micrometeorology of ice cliffs ✓
- Energy balance of the Red Rock ice cliff in Greenland
- Ice dynamics of the Red Rock ice cliff in Greenland
- Large scale climate signal from changing ice cliffs in Greenland?