



Hydrology and Climate Impacts

Bachelor seminar HS 23

Prof. Dr. Manuela Brunner

Dr. Raul Wood

Amber van Hamel

Joren Janzing



ETH zürich

Contact:

manuela.brunner@env.ethz.ch

Goal: Study water
and climate
extremes in
mountain regions
under global change

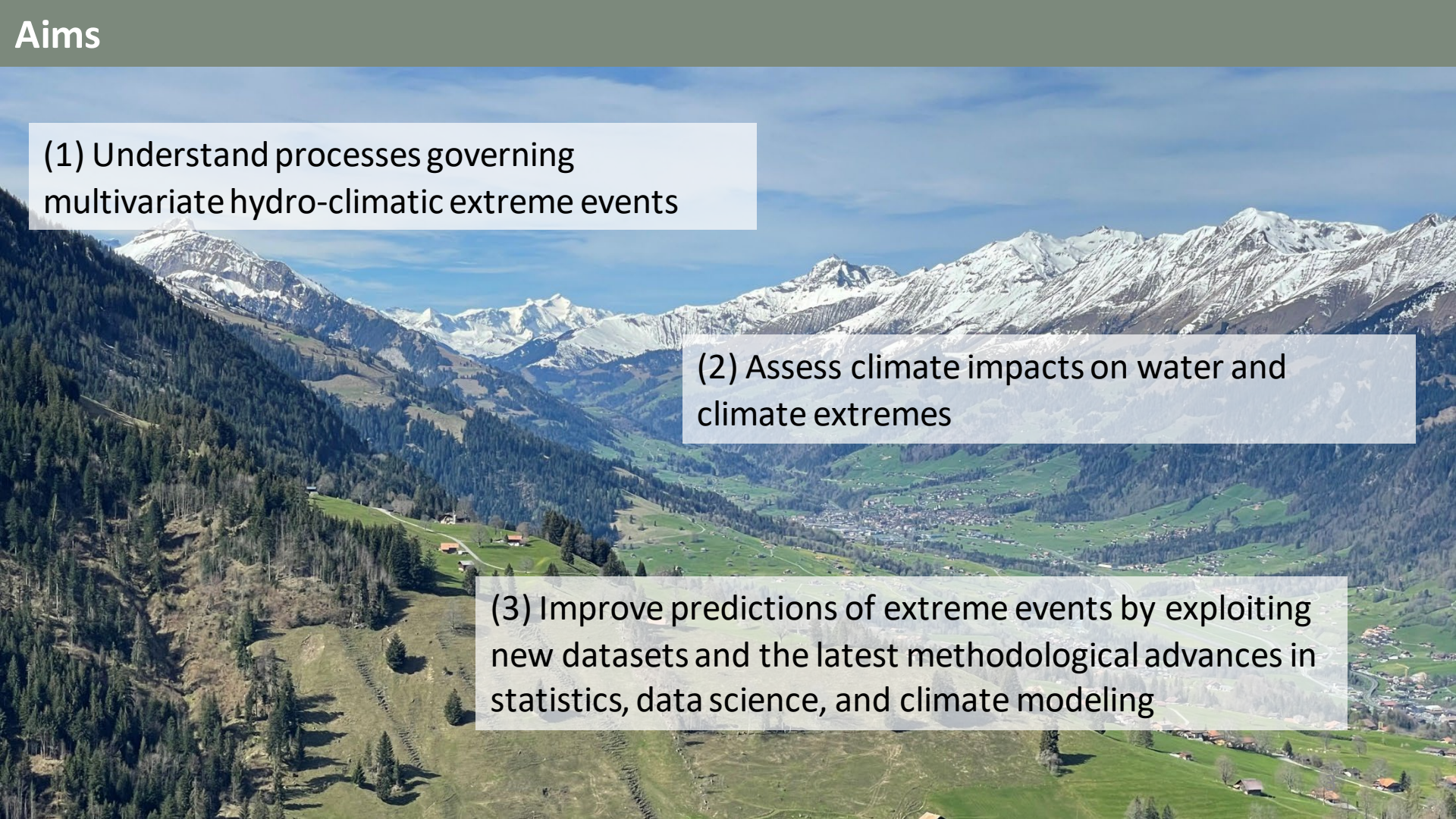


Aims

(1) Understand processes governing multivariate hydro-climatic extreme events

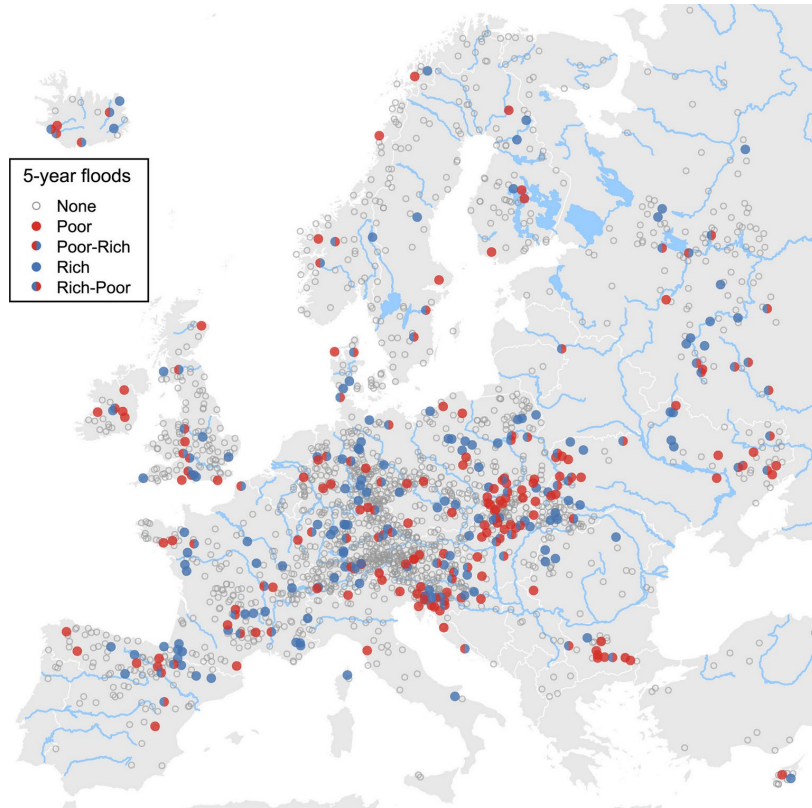
(2) Assess climate impacts on water and climate extremes

(3) Improve predictions of extreme events by exploiting new datasets and the latest methodological advances in statistics, data science, and climate modeling



Detecting flood-rich and flood-poor periods in annual peak discharges across Europe: Lun et al. 2020, Water Resources Research

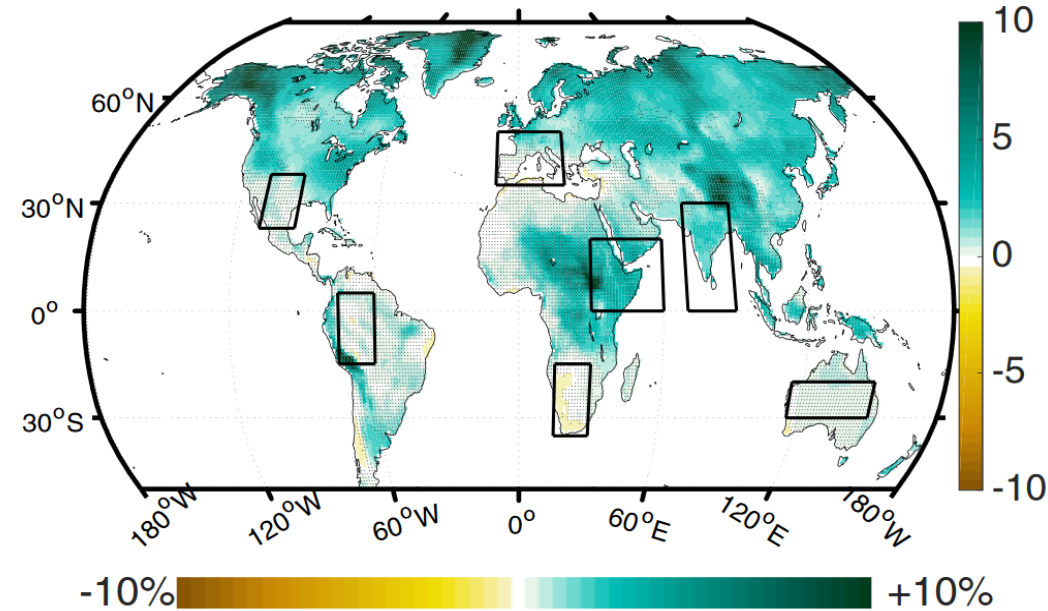
Analysis of flood-rich and flood-poor periods in flood discharge records



Lun et al. 2020, WRR: <https://doi.org/10.1029/2019WR026575>

Twenty-first century hydroclimate: A continually changing baseline, with more frequent extremes: Stevenson et al. 2022, PNAS

Analysis of changes in decadal megadroughts and megapluvials and short term precipitation extremes



Stevenson et al. 2022, PNAS:

<https://www.pnas.org/doi/epdf/10.1073/pnas.2108124119>

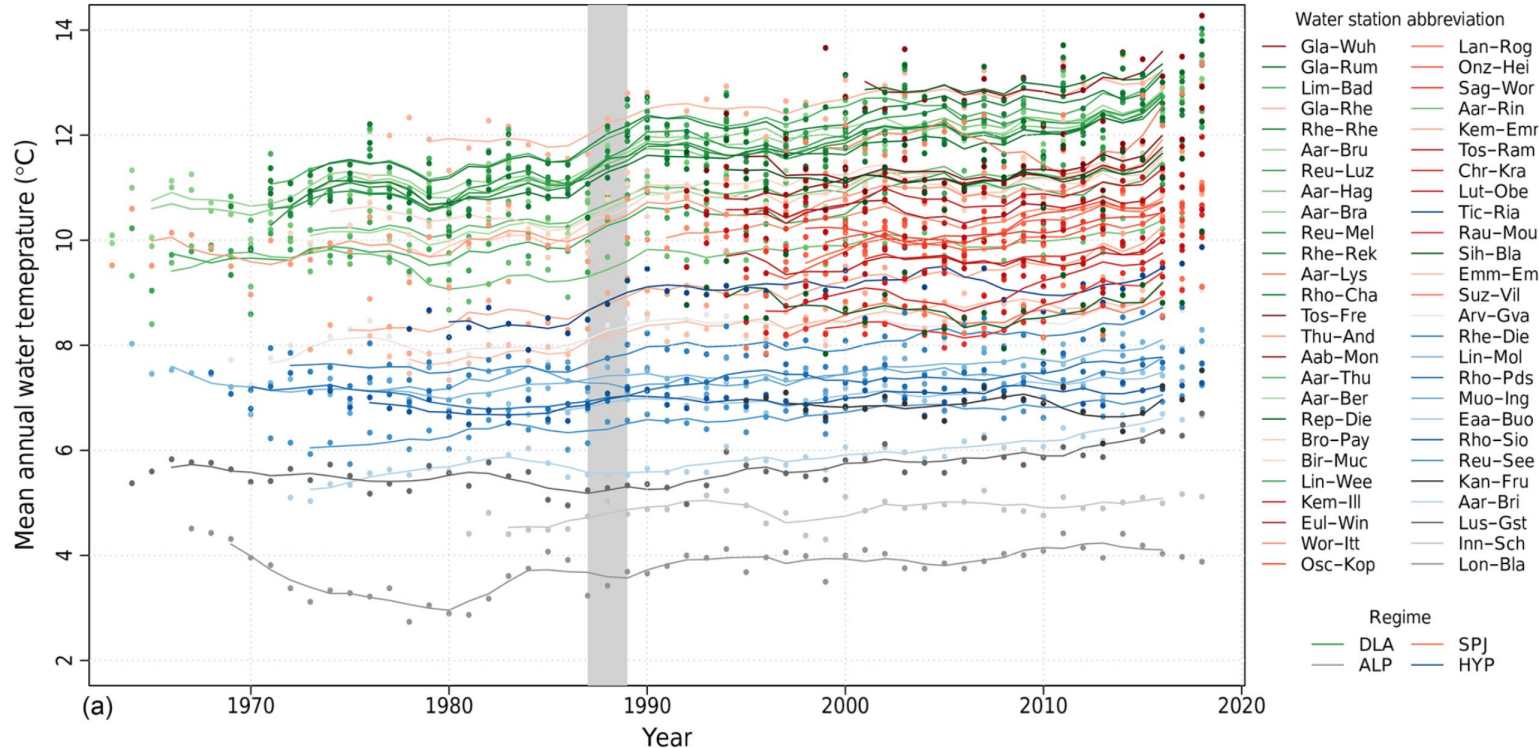
**Less frequent
wet extremes**



**More frequent
wet extremes**

Stream temperature and discharge evolution in Switzerland over the last 50 years: Michel et al. 2020, Hydrology and Earth System Sciences

Analysis of the evolution of stream temperature and discharge in Switzerland



Presentations

12.10.2023 from 10:15-12:00



Hydrology and Climate Impacts in Mountain Regions



ETH zürich

Institute for Atmospheric and
Climate Science



WSL Institute for Snow and Avalanche
Research SLF



manuela.brunner@slf.ch
manuela.brunner@env.ethz.ch