

The UNIL logo is a stylized, cursive script of the word 'Unil' in white, positioned in the top right corner of the slide.

UNIL | Université de Lausanne

Expertise Center for  
Climate Extremes (ECCE)

# ECCE INAUGURAL EVENT

## Presentation of ECCE

*Erwan Koch*

09.02.2024

## Inter-faculty center of the University of Lausanne

- Faculty of Geosciences and Environment (FGSE)
- Faculty of Business and Economics (HEC)

## Topics

- Forecast of weather/climate extremes and of their impacts
- Assessment of the risks associated with weather/climate extremes (current and future climates)



## Missions

- Produce interdisciplinary research geared towards societal needs
- Offer services to public institutions (municipalities, cantons, confederation) and private companies

# ECCE in brief



Daniela Domeisen (FGSE)



Tom Beucler (FGSE)



Erwan Koch (FGSE/HEC)



Hansjoerg Albrecher (HEC)



Valérie Chavez (HEC)



Grégoire Mariéthoz (FGSE)



Nadav Peleg (FGSE)









Eric Jondeau (HEC)

## Executive and Scientific Board

## Additional members

- PhD-Students/Postdocs Committee
- Advisory Board

# Unique value proposition

-  Academic experts directly serving society
-  Modeling of the physical events and their impacts
-  Multi and inter-disciplinary approach
-  Independent benchmark
-  Major platform in extreme-value theory (EVT)
-  Research

# Potential services

- ➔ Help cantons and municipalities with their climate plan (physical risk assessment + adaptation strategy)
- ➔ Address the methodological needs of, e.g., MeteoSwiss or FOEN
- ➔ Develop models for (re-)insurance companies or brokers
- ➔ Develop an independent benchmark
- ➔ Helping companies with the assessment of their physical climate risk (in link, e.g., with the TCFDs)

## Address some of the current challenges

- Modeling of «secondary perils», droughts, wildfires, compound events, supply chain risk
- Uncertainty quantification in «bottom-up» models
- Impact of climate change on various perils
- Downscaling at a sufficiently high resolution



## For «understood» perils

- Improve current methods (e.g., to account for clustering of windstorms)
- Increase resolution
- Tailor existing models (e.g., calibration) to specific questions/regions



# Some starting projects

- Machine learning and EVT-based downscaling of extremes in weather/climate models
- Post-processing methods for outputs of numerical weather prediction/climate models that preserve:
  - Inter-variable dependencies
  - Spatial consistency of the fields
- Modelling of surface runoff risk (bottom-up approach)
- Spatial diversification for insurance companies
- Actuaries climate index for Switzerland
- Risk model for hail



# Additional activities

- Monthly ECCE seminars (hybrid)
- Monthly ECCE informal meetings for young researchers (on-site)
- Monthly coffee and cakes for people interested in ECCE-related topics and activities
- Monthly ECCE Weather Club, jointly with MeteoSwiss (online)
- Follow-up of climate extremes in Switzerland, with writing (articles targeted towards the general public)
- Continuing education on climate risk



We are looking forward to serving society, so don't hesitate to contact us!

FOR MORE INFORMATION,  
[WWW.UNIL.CH/ECCE](http://WWW.UNIL.CH/ECCE)



© Stnazkul | Dreamstime



© Pixabay



© Lukas Jonaitis | Dreamstime



© Zenobilis | Dreamstime



© Elantsev | Dreamstime



© Dan Ross | Dreamstime



© Onepony | Dreamstime



© Dalius1000 | Dreamstime



© Nuralya | Dreamstime



© Peter Lovás | Dreamstime



© OnAir2 | Dreamstime



© Ralph W. Iambrecht