

Climate modeling : from understanding the past to predicting the future

A short course for Master students in Earth Sciences, in Geography and in Computing Sciences of one week, to be held at the Université Bourgogne Europe in Dijon from the 22th to the 26th of June 2026



Organized by : Emmanuelle Pucéat (Earth Sciences), Emmanuelle Vennin (Earth Sciences), Eric Leclerc (Computing Sciences), Albin Ullmann (Geography)

Masters involved from the University of Burgundy :

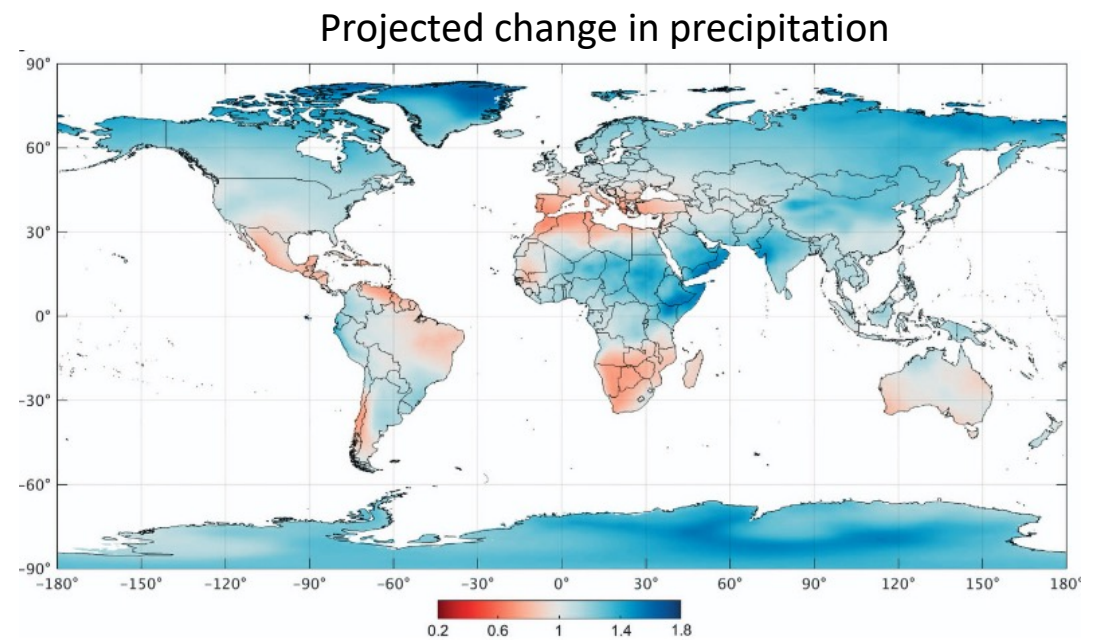
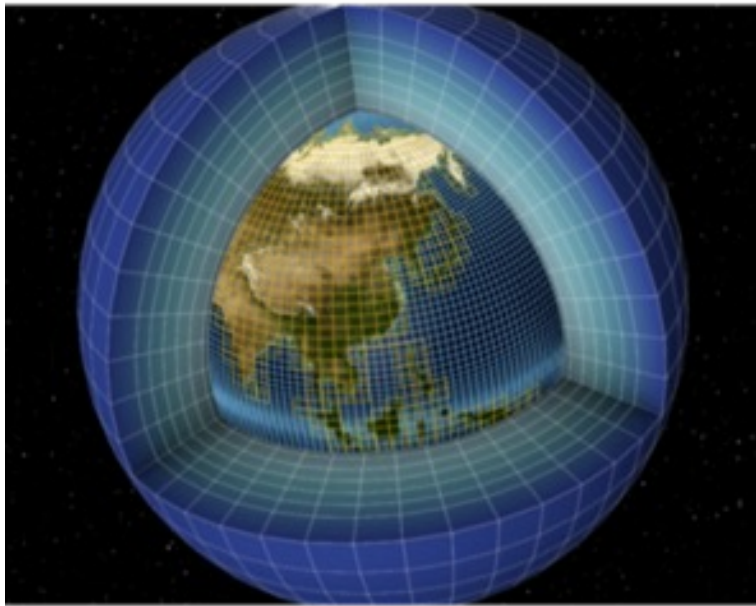
- Master Sedimentology, Paleontology, Geochemistry et Georessources (SP2G),
- Master Databases – Artificial Intelligence (BD-IA),
- Master Climate Change, Adaptation, Territories (CClimAT)

+ open to Master students from the Forthem Universities (no fees)

To be held : over one week, from the 16th to 20th of June 2025 at the University of Burgundy

Objectives :

- offer a short course in english on **climate model handling** and on the **analyses of their outputs** to Master students (preferably first-years) who have a background in computer sciences, earth sciences, or physical geography.
- **complement** their main cursus in earth sciences, computer sciences, physical geography, giving them an originality within these formations and opening additional perspectives for them (jobs, PhD, ...)



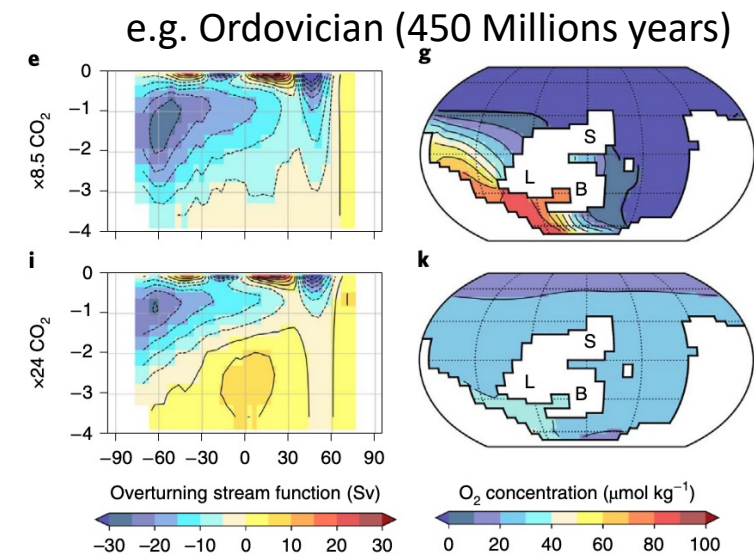
Beck et al., 2018 Scientific Data

Day 1 :

- Students in computing sciences => lectures and practicals on the components of the climate system and on paleoclimatic archives
- Students in Earth Sciences and Physical Geography => lectures and practicals on the GNU/Linux system, on computing languages bases, and in high performance computing.

Days 2 and 3 : perform simulations using a simplified model to understand climate variations over geological time scales (GENIE)

- lecture on the different types of existing climate models and on how to use the GENIE model
- practicals on GENIE, how to perform runs, and how to extract and analyse outputs
- work in groups of 3 on a scientific question to apply the acquired knowledge on practical case (identifying simulations to perform to answer the question, performing runs, analysing outputs, presentation to other students of the programme)

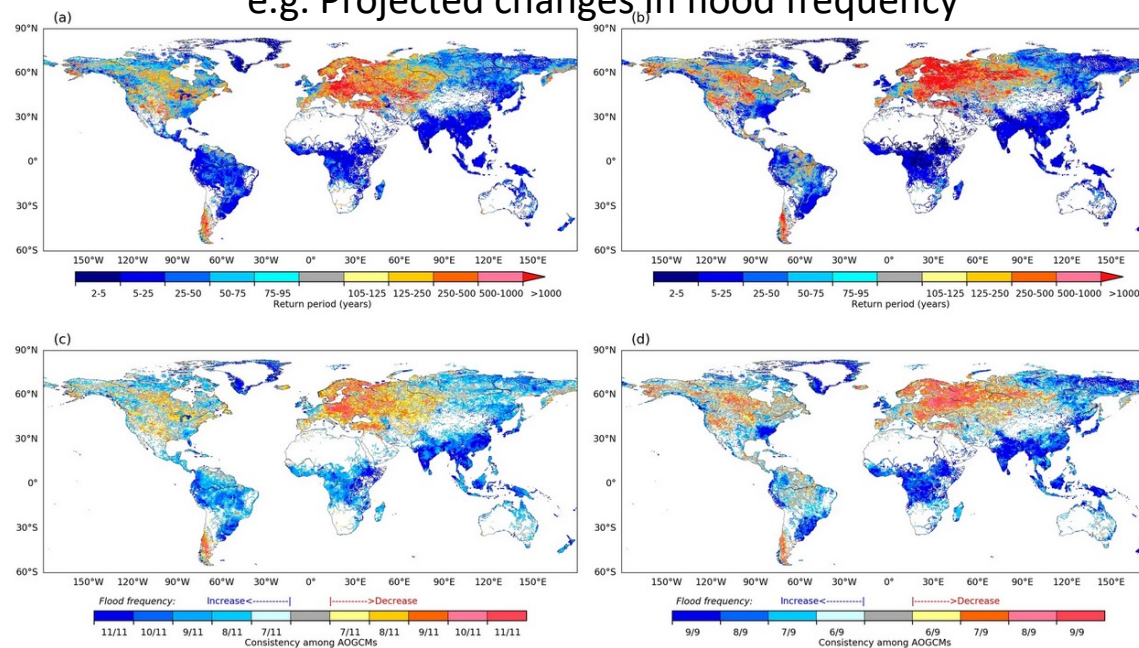


Pohl et al. (2021, Nature Geosciences)

Days 4 et 5 : using outputs from high resolution climate models to predict future climate change

- presentation of the CMIP6 programme (simulations at disposal, from different models)
- practicals to become more familiar with outputs, how to use them to obtain pertinent information on simulated climates
- work in groups of 3 on a scientific question to apply the acquired knowledge on practical case (identification of pertinent data available in CMIP6, analysis of results, presentation to other students)

e.g. Projected changes in flood frequency



Hirabayashi et al., 2021 Scientific Reports