



SCEWERO

STRENGTHENING THE RESEARCH CAPACITIES FOR **EXTREME WEATHER** EVENTS IN **ROMANIA**

GA 101149597

Summer School on AI Use for Climate Extremes

Program

22-24 JUNE 2026
CLUJ-NAPOCA, ROMANIA

Day 1: Introduction

Monday, 22 June 2026

8:45 - 9:15 ~ Registration & welcome coffee

9:15 - 9:30 ~ ICE BREAKER ~ Adina Croitoru & Enrico Scoccimarro

9:30 - 10:15 ~ **A smooth introduction to machine learning algorithms**

Fundamental machine learning models for regression and classification tasks

Lecturers: [Isidoros Iakovidis](#)

10:15 - 11:00 ~ **Introduction to Climate Extremes: Models and Data**

Climate extremes, their representation in state-of-the-art models, and data availability for analysis.

Lecturers: [Albert Martinez Boti](#) & [Lorenzo Sangelantoni](#)

11:00 - 11:30 ~ Tea & Coffee Break

11:30 - 12:30 ~ **An Introduction to Heatwaves**

Definitions, drivers & impacts of extreme temperatures

Lecturer [Ronan McAdam](#)

12:30 - 14:00 ~ Lunch Break

14:00 - 14:40 ~ **Forecasting Heatwaves**

Forecasting on seasonal timescales with dynamical and AI-driven models

Lecturer [Ronan McAdam](#)

14:45 - 15:30 ~ **AI-based forecasts of HW: driver selection, verification and explainability**

How to optimize the setup of an AI-based forecasts for a robust scientific interpretation

Lecturer [Antonello Squintu](#)

15:30 - 16:00 ~ Tea & Coffee Break

16:00 - 17:00 ~ **Extreme precipitation, intro weather & seasonal prediction**

Understanding precipitation estimates across various modelling approaches and perspectives

Lecturers [Leonardo Aragão](#) & [Enrico Scoccimarro](#)

Day 2

Tuesday, 23 June 2026

9:30 - 10:15 ~ Data-driven forecast of intense precipitation

Locally tailored drivers and data-driven models for seasonal forecasting of intense precipitation in Europe

Lecturer [Eugenio Fella](#)

10:15 - 11:00 ~ Severe weather through hail probability

Extreme precipitation contextualised as severe weather events and described by AI probabilistic models.

Lecturer [Leonardo Aragão](#)

11:00 - 11:30 ~ Tea & Coffee Break

11:30 - 12:30 ~ Cyclones: from the Tropics to the Mediterranean

An introduction to cyclones in different regions and their dynamic drivers.

Lecturer [Leone Cavicchia](#)

12:30 - 14:00 ~ Lunch Break

14:00 - 15:00 ~ AI tools for cyclone detection and prediction

How to use AI/ML tools to improve the predictive skill for extreme events, with a focus on seasonal predictions

Lecturer [Leone Cavicchia](#)

15:00 - 15:30 ~ Tea & Coffee Break

15:30 - 16:15 ~ An Introduction to Droughts and Compound Events

Definitions, types of droughts, and an overview of compound events and their classifications

Lecturers [Elena Xoplaki](#) & [Isidoros Iakovidis](#)

16:15 - 17:00 ~ Ethics in AI for Climate Science

Ethics in the use of AI in climate research and decision-making

Lecturer [Elena Xoplaki](#)

Day 3

Wednesday, 24 June 2026

9:00 - 10:00 ~ AI for Drought Events

Utilizing parametric and non-parametric indices to sharpen drought detection

Lecturers [Elena Xoplaki](#) & [Isidoros Iakovidis](#)

10:00 - 10:30 ~ Tea & Coffee Break

10:30 - 12:00 ~ AI for Compound Events

Implementing dimension reduction techniques to identify extreme hazard events

Lecturers [Elena Xoplaki](#) & [Isidoros Iakovidis](#)

12:00 13:30 ~ Lunch Break

13:30 -14:30 ~ Downscaling applications to enhance the accuracy of Global Climate Models

Encompassing the advantages and disadvantages of the two downscaling approaches: dynamic and statistical

Lecturers [Lorenzo Sangelantoni](#) & [Leonardo Aragão](#)

14:30 -15:30 ~ Statistical downscaling using machine learning techniques

Bridging global seasonal forecast knowledge with local decision-making processes

Lecturer [Leonardo Aragão](#)

15:30 -16:00 ~ Tea & Coffee Break

16:00 - 16:45 ~ AI for continental-scale super high-resolution downscaling

Applying convolutional neural networks and statistical learning methods to transform coarse global projections into km-resolution data at continental scales.

Lecturer [Isidoros Iakovidis](#)

16:45 ~ Closing and Q&A