

# Central role of climate reanalysis in the context of adaptation to climate change: the example of the Copernicus Climate Change Service

## Adaptation in the international Agenda & need of global to regional scale information

- Adaptation to climate change has increasingly become a prominent focus on the international agenda
- Adaptation definitions in the IPCC
- European context : The European Mission on Adaptation to Climate Change
- Which aspects of adaptation requiring observations?

### **GCOS role**

- Bridging the gap between global climate information and local decision-making is challenging.
- The "top-down" global approach must connect with the "bottom-up" local perspective, where climate change is one of many factors.
- To support adaptation decision-making at all levels worldwide, the key question is: how useful are global data sets for local adaptation applications?

# GCOS & Adaptation

- C4. New and improved reanalysis products
- E1. Foster regional engagement in GCOS
- F1. Responding to user needs for higher resolution, real time data
- F3. Improve monitoring of coastal and Exclusive Economic Zones
- F4. Improve climate monitoring of urban areas

- The latest GCOS Implementation Plan (2022) gave increasing importance to adaptation and identified a set of specific actions, all potentially relevant **in reducing observational gaps for adaptation applications.**
- By recognizing the relevance of climate reanalysis in effectively integrating various types of observations, **Action C4** focuses on enhancing reanalysis products.
  - developing higher-resolution products
  - implementing regional reanalysis and regionalization strategies,
  - improved bias characterisation
  - reduced errors
  - reducing data latency.

# C3S Global and regional reanalysis in the adaptation context

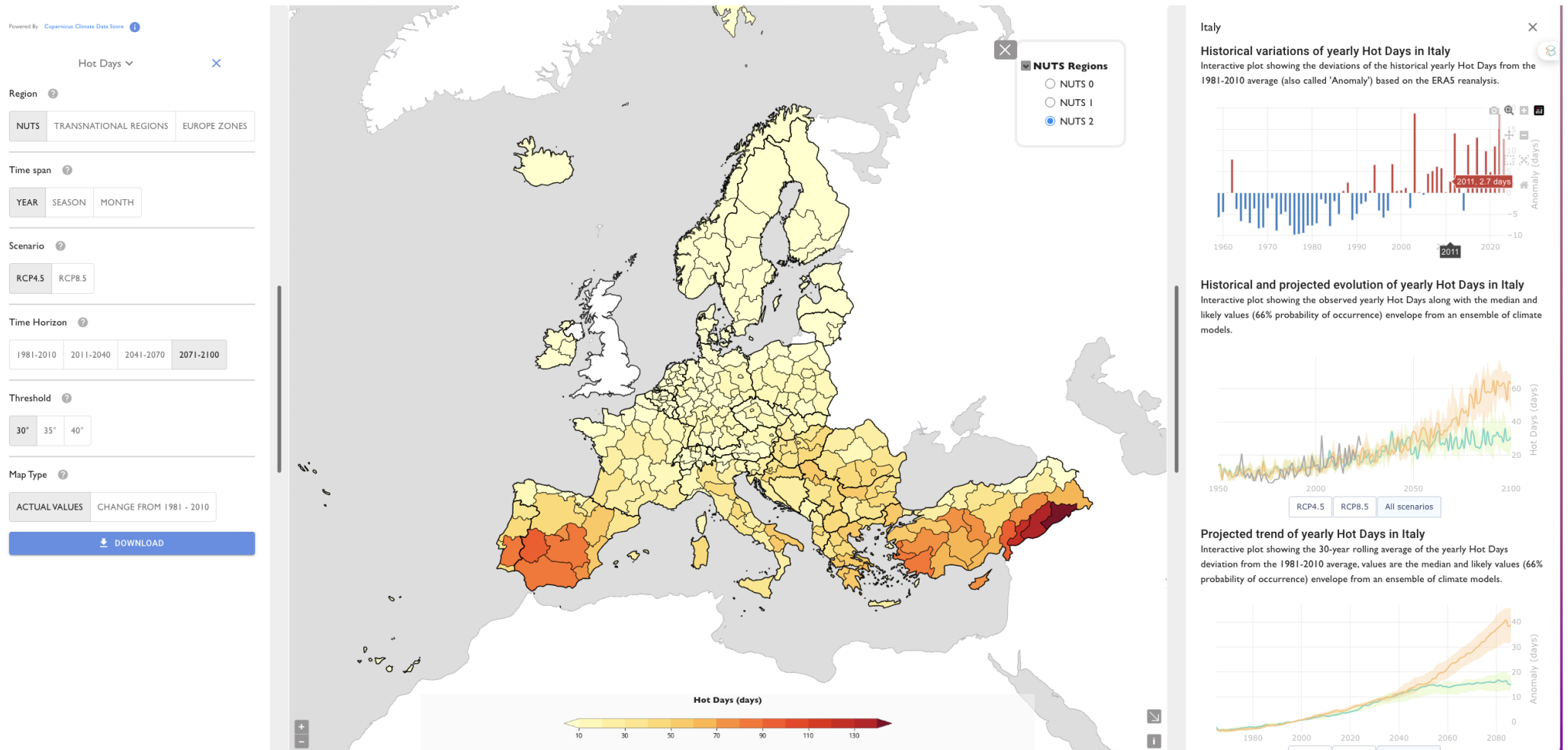
- Climate reanalysis plays a crucial role in informing adaptation strategies
- By analyzing historical climate data, reanalysis provides valuable insights into past climate trends, extreme weather events, and combined with climate projections also potential future scenarios.
- Integrating climate reanalysis with local independent observations can enhance the capacity to apt to climate change, fostering a more sustainable and climate-resilient environment.
- Additionally, reanalysis helps identify urgent adaptation priorities, highlights the interlinkages between adaptation and economic development, and underscores the need for policy interventions to overcome knowledge gaps, behavioral barriers, and market failures hindering effective adaptation.
- Leveraging climate reanalysis data is essential for informed decision-making and proactive measures to mitigate the impacts of climate change.

## Why ?

- Complete & convenient: combines vast amounts of observations into 'maps without gaps' using the laws of physics and advanced data assimilation techniques.
- Consistent: uses the same physical model throughout the entire period.
- State-of-the-art: uses the best available observations (e.g., reprocessed) and latest available model and data assimilation system at highest feasible resolution.

# Example 1

The Mission on Adaptation to Climate Change focuses on supporting EU regions, cities and local authorities in their efforts to build resilience against the impacts of climate change. The use of reanalysis in the European Climate Data Explorer, in collaboration with EEA



# Example 2

C3S Reanalysis to support the EIB Climate Adaptation Plan: strengthen investment and technical support to protect projects from the impact of more extreme weather and increase climate resilience of existing and new infrastructure.

