

DESTINATION EARTH

A NOVEL INFORMATION SYSTEM FOR A RESILIENT SOCIETY

Florence Rabier

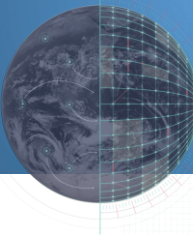


Funded by
the European Union

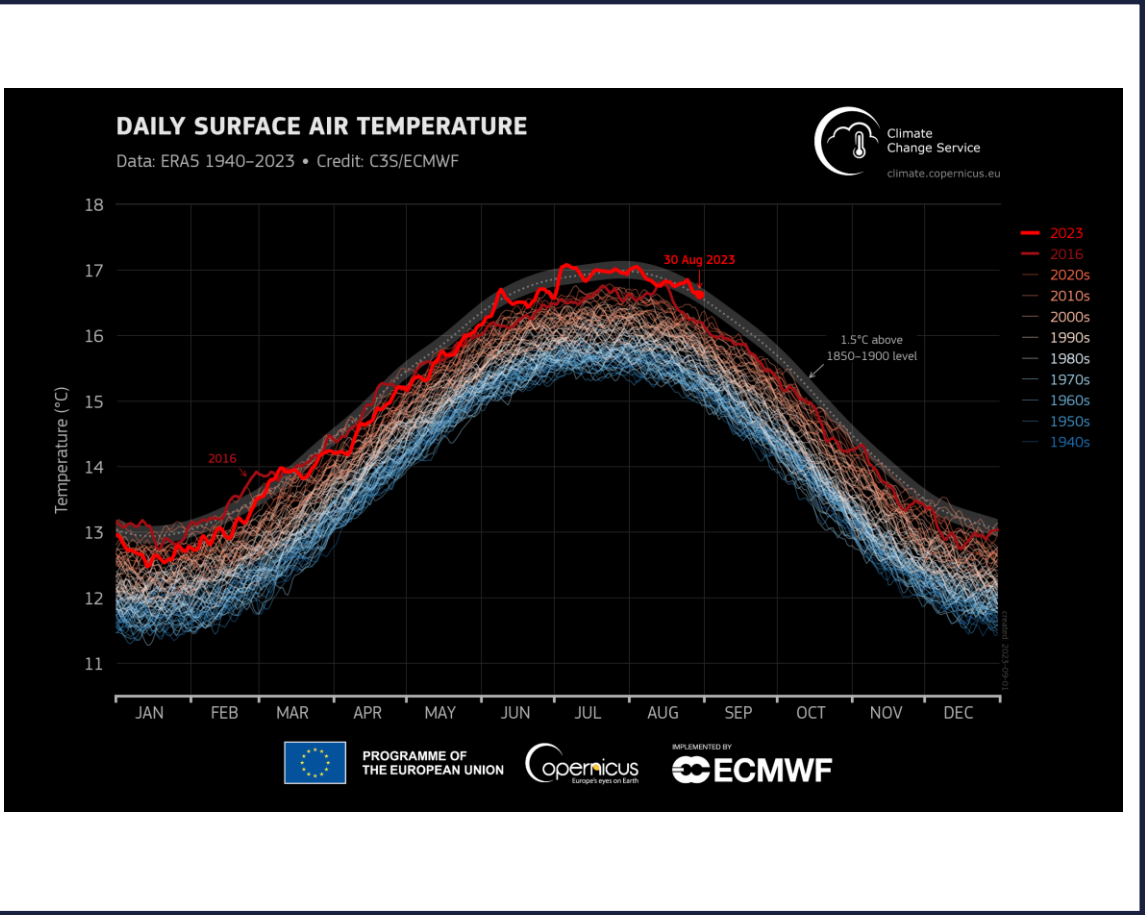
Destination Earth

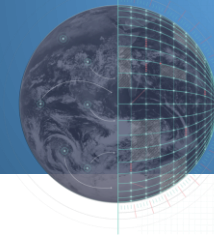
implemented by



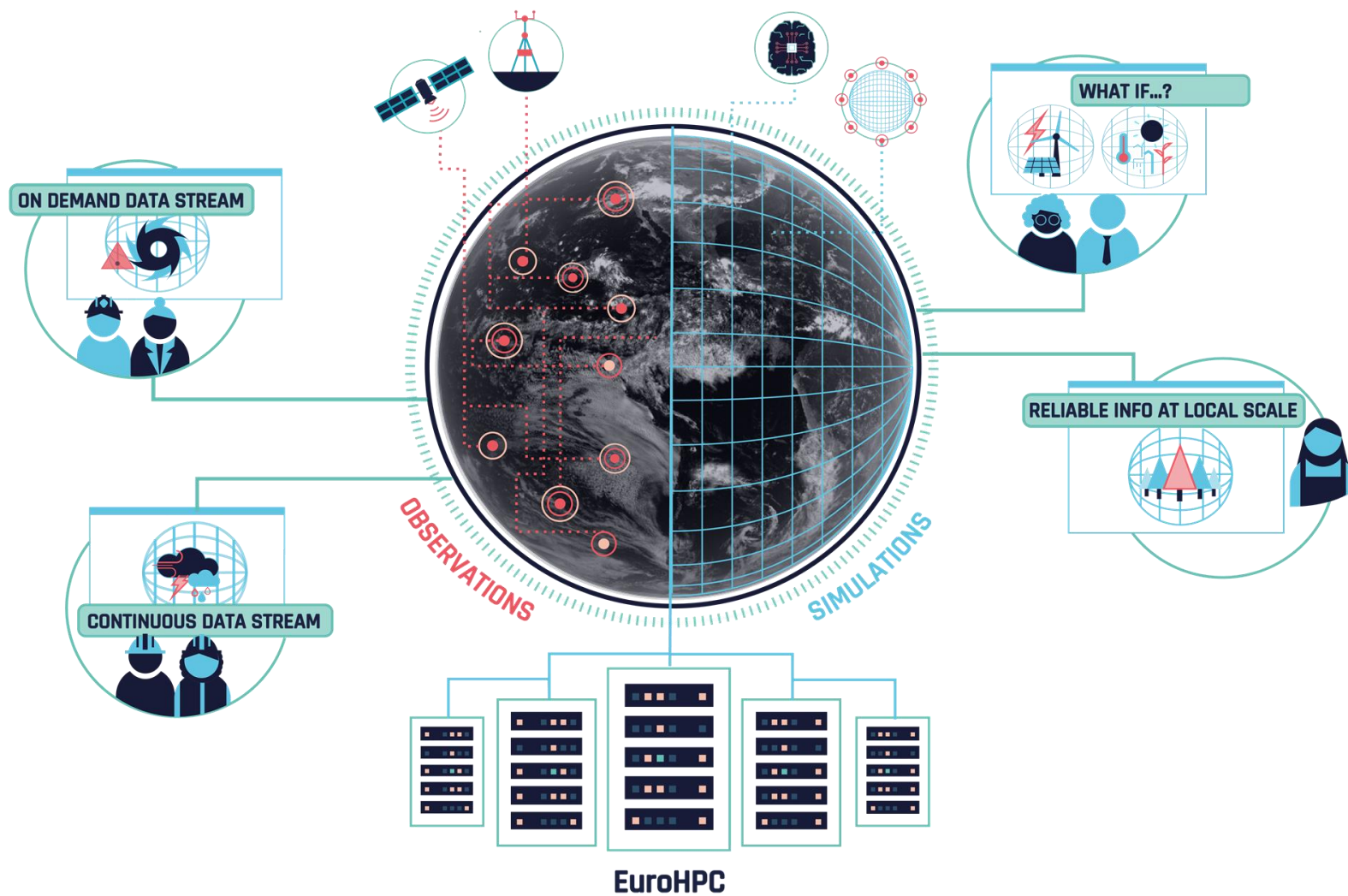


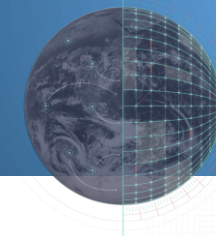
CLIMATE CHANGE AND INCREASE OF EXTREME EVENTS





DESTINE: A NOVEL INFORMATION SYSTEM

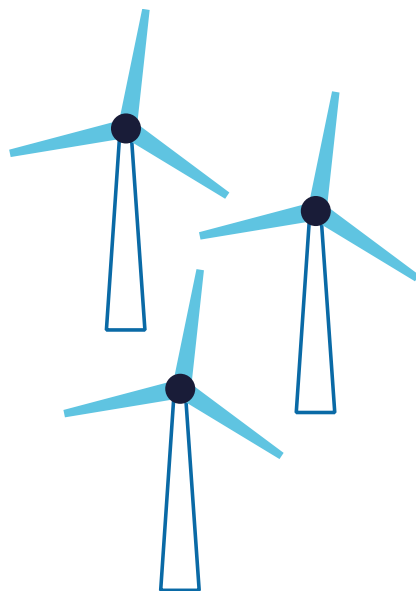




SIMULATE SCENARIOS AND TAILOR INFORMATION

To optimise the use of renewable energies

How will an approaching storm affect renewable energy production?

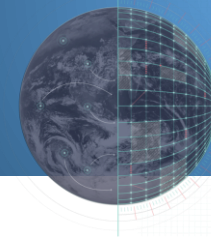


To explore possible future scenarios

How would heatwaves look like in a +2° or +4° world and how should we adapt our cities?

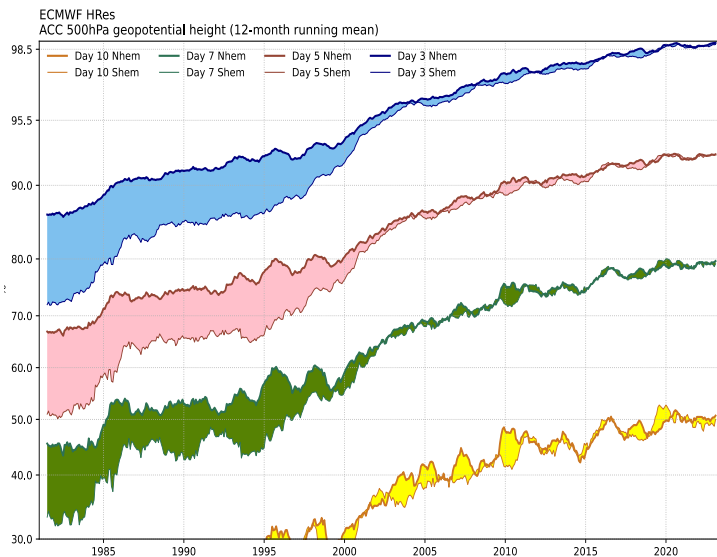


BUILDING ON A RICH PAST

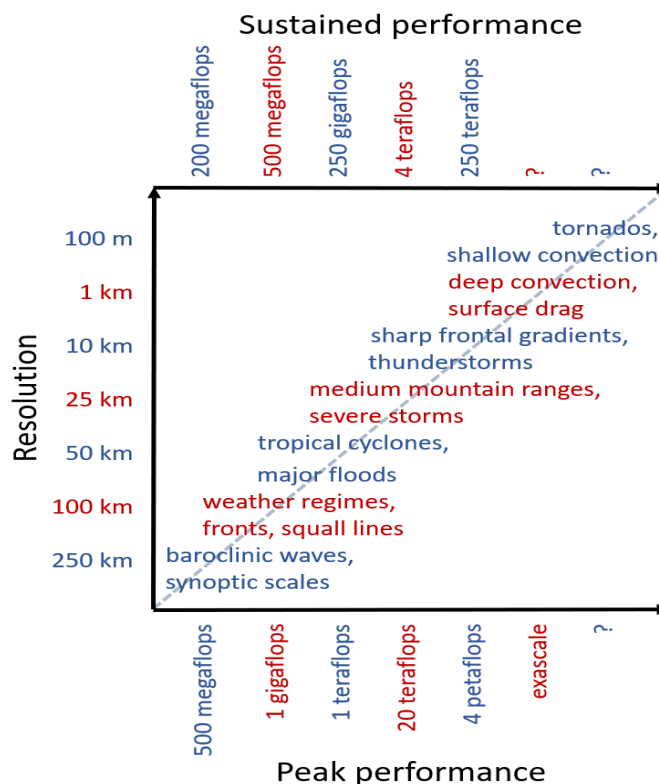


EXPLOITING INVESTMENTS IN SCIENCE, TECHNOLOGY, AI

The quiet NWP revolution (1980 - today)



The digital revolution (2020 – today)



The machine learning revolution (2022 – today)

arXiv > physics > arXiv:2307.10128

Physics > Atmospheric and Oceanic Physics

[Submitted on 19 Jul 2023]

The rise of data-driven weather forecasting

ECMWF unveils alpha version of new ML model

13 October 2023
The AIFS team

ECMWF is today launching a newborn companion to the IFS (Integrated Forecasting System), the AIFS, our Artificial Intelligence/Integrated Forecasting System (one "I" covering both Intelligence and Integrated).

The AIFS is barely a few months old and proudly entering its alpha version. Its arrival signals the strengthening of ECMWF's efforts in the field of machine learning (ML), which we have been navigating for a few years now. The AIFS forms one of three components of our new ML project, which began in summer 2023 and aims to expand our applications of machine learning to Earth system modelling.

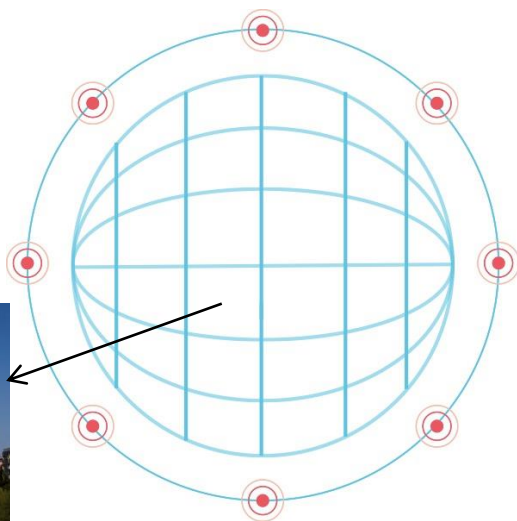
Recent posts

ECMWF unveils alpha version of new ML model



CURRENT SYSTEMS

Earth System models & observations



Limited resolutions

Small-scale processes not represented

Separation of earth system & impact sector models

Impact sectors



Limited ways to change experiment design or output

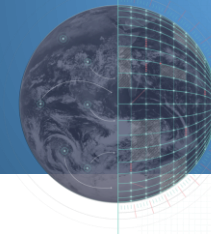
Limited versatility to access and interact with the data

Pre-defined configurations & simulation run times (every 7 years for climate!)

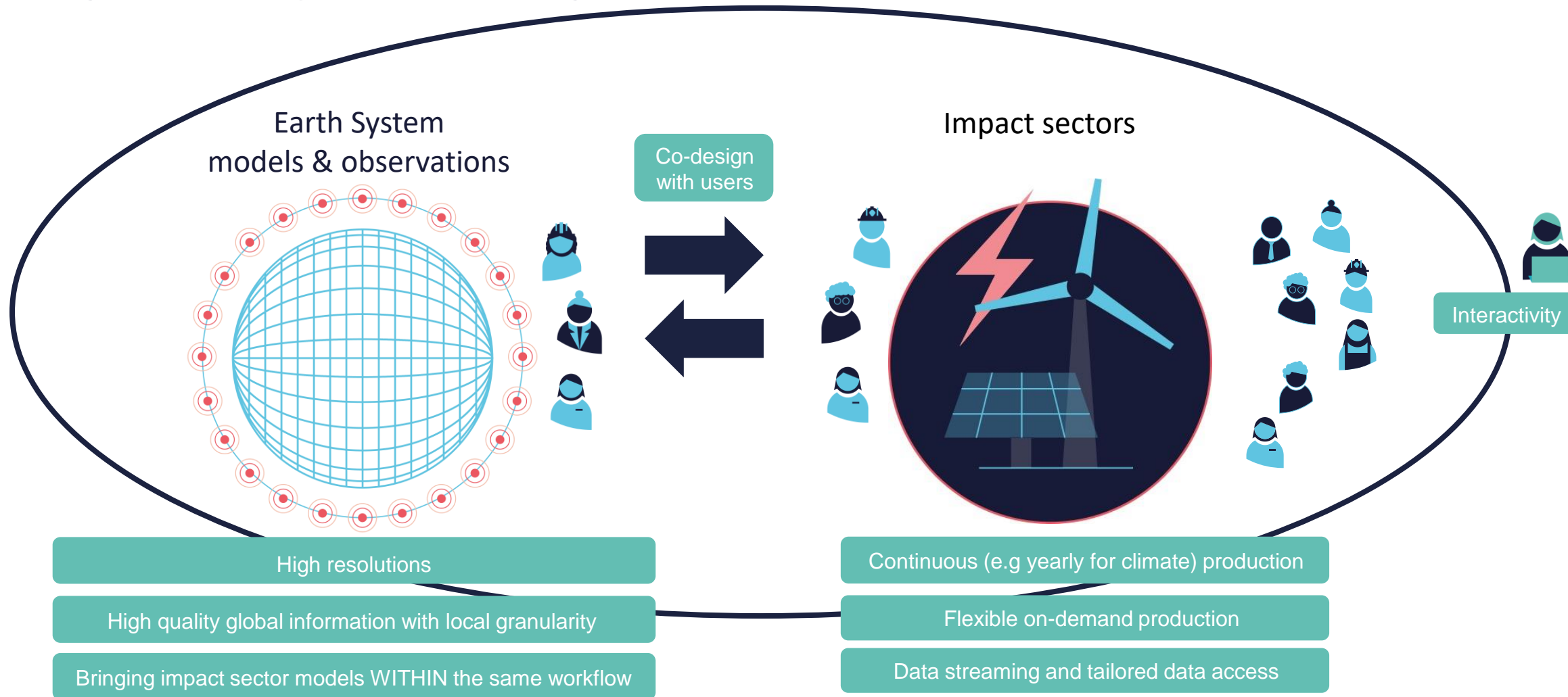
Users

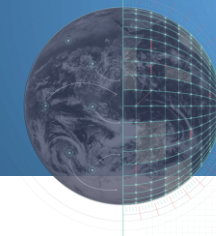


**DESTINE TAKES OUR DECISION-MAKING
CAPABILITIES TO THE NEXT LEVEL**



DESTINE DIGITAL TWINS





DESTINE AIMS AT ESTABLISHING

Unprecedented interactivity

An interactive information system at the forefront of science & digital technology & ML/AI

Growing user base

Initial uptake from European policy makers, DGs of EC, national services and science community

Showcasing the value of EuroHPC

Running complex Earth system models on EuroHPC systems

First operational Digital Twins

End-to-end workflows for operational global extremes & climate DTs at km-scale resolution

High-end big-data management

State-of-the-art software & cloud services for data access and near data processing (DTE, DESP, DEDL)

Added-value in different sectors

Demonstrated use for different impact sectors