

Destination Earth

EU flagship initiative



3rd Workshop on "Resilience to Natural Hazards through AI Solutions Building Capacity on AI for Disaster Preparedness

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DG CONNECT.C

European approach to Al





World's first comprehensive regulation on Artificial Intelligence

Al developed and used in the EU is trustworthy

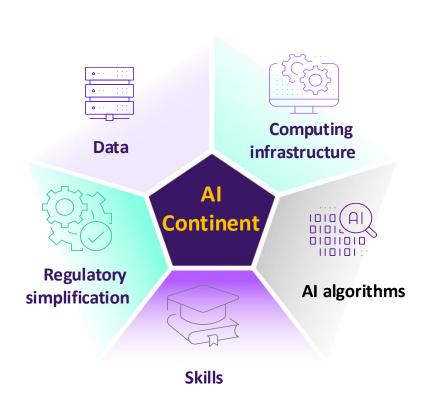
Safeguards to protect people's fundamental rights, democracy and the rule of law

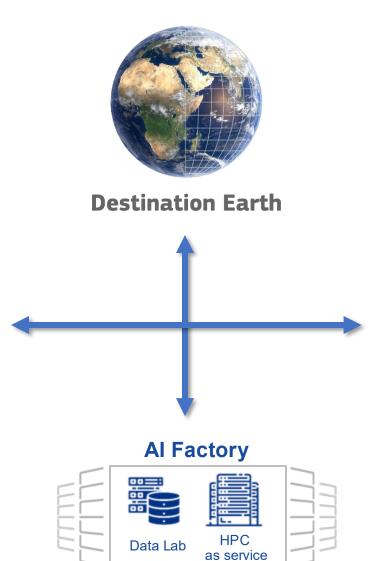
Establish a harmonised internal market for AI in the EU

Uptake of AI and creating a supportive environment for innovation and investment

European approach to Al & DestinE











Destination Earth

A Highly Accurate Digital Twin of the Earth

Monitor, simulate and predict natural phenomena and the impact of human activity on Earth

Assist in designing accurate adaptation strategies and climate change related mitigation measures

> Accelerate the EU's green and digital transition

Leverage existing and new data sources and EU's advanced digital and computing infrastructure















Support decision-making at various levels (e.g. EU, national, regional, local)



Make complex simulation systems more accessible to a large range of users and applications



Scale up existing models and boost the exploitation of Al-based ones



Funding under the **Digital Europe Programme** (≈500 MEUR)











DestinE, Apply AI Strategy and the AIF synergies





Destination Earth



Climate and Environment Flagship

Destination Earth will Deploy an open-source Al Earth-system frontier model and related Alpowered applications and services that allow for better weather forecasts, Earth monitoring, and "what-if" scenarios

Al-based local digital twins helping to predict risks and reduce impacts of climate change through better preparedness and resilient urban and rural planning + services for improved disaster management and crisis relief



- ✓ Al Infrastructure Supporting the advancement of Earth-system modelling
- ✓ Shared Data Ecosystems and Sovereignty
- ✓ End-to-End Al Journey for DestinE
- ✓ Capacity Building and Skills Development
- ✓ Accelerating Europe's Twin Transition



Weather-induced extreme events DT



EXTREMES DT: A MAGNIFYING GLASS ON EXTREME WEATHER EVENTS



Global and daily simulations of extreme weather 4 days ahead at 4.4km

On-Demand regional simulations 2 days ahead at 750m to 500m Impact-sector models: user-relevant information for societal impacts

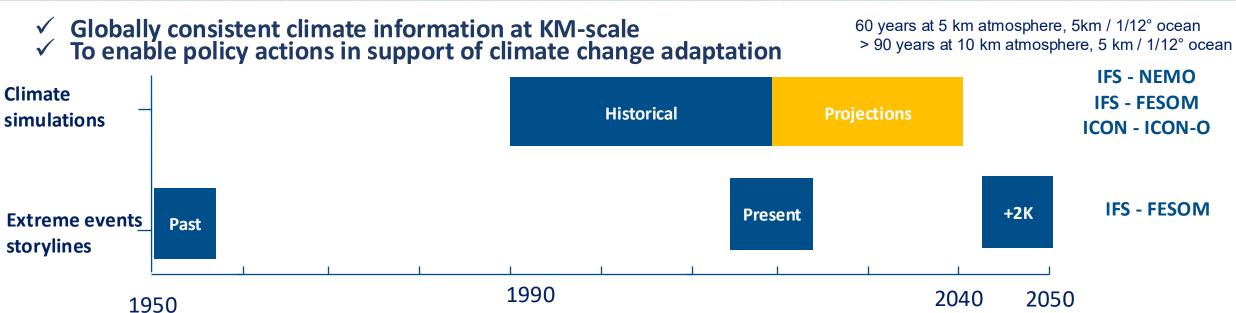
How will an approaching storm affect the renewable energy production in my wind park, and how does it affect others?





DestinE Climate Change Adaptation Digital Twin







How do heatwaves look
like in a +2° or +4° warmer
world and how should I
adapt my city?

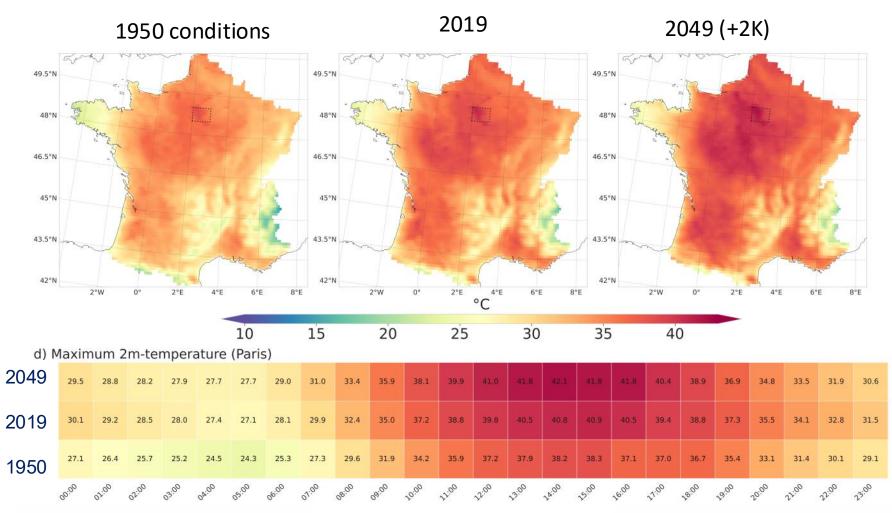


Replaying past extreme events into the future (or past)



"What-if" the 2019 heatwave occurred in 1950 or 2049?

IFS-FESOM with large-scale nudged towards ERA5 (2018-2023)

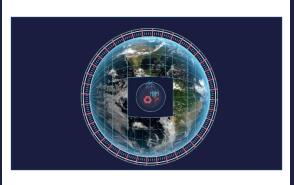


Maximum 2m temperature (Paris)

Exploiting AI in DestinE

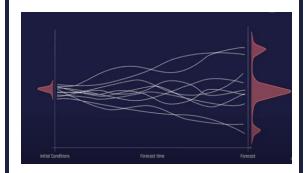


Al Climate simulator



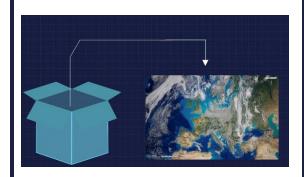
- To explore "what if" scenarios in a changing climate.
- A climate emulator which can be used for enhanced interactivity and uncertainty quantification.

European ML foundation Quantify uncertainty



- Develop and deploy multipurpose ML workflows for various applications and from data to trained models.
- ML-based approaches will also be used to quantify uncertainties in both the Climate and on-demand Extremes DTs.

Al Forecast in a box



- To augment DestinE's interactive features.
- ML prediction systems are packaged together with the product generation pipeline for delivery to users .

LLM – Chatbots (weather & climate)



- A comprehensive climate and weather aware conversational AI system.
- To enhance the access to complex information.
- Combining LLMs with digital twin data to revolutionize the way users interact with climate and weather data.





Thank you!

https://destination-earth.eu/
https://platform.destine.eu/
https://digital-strategy.ec.europa.eu/en/policies/destination-earth

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