Destination Earth

Flagship initiative of the European Commission

A Highly Accurate Digital Model of the Earth

Destination Earth in support of the green and digital transition

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European Commission

DG CONNECT C

Implemented by ECMWF esa EUMETSAT

Destination Earth

A Highly Accurate Digital Model of the Earth

European Commission

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

To assist in designing accurate adaptation strategies and climate change related mitigation measures

To accelerate the EU's green and digital transition

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

To create and test "what if" scenarios and to integrate impact sector applications for more sustainable development

To support near real-time decision-making at various levels (e.g. EU, national, regional, local)

To go beyond the current complex systems designed mainly for expert use

To scale up existing models and fuse simulation with observation

Implemented by ECMWF esa EUMETSAT

Destination Earth - Implementation

- The Commission (**DG CNECT)** leads in coordination with Member States and Associated Countries
- **Strategic partnerships with:**
  - European Space Agency **(ESA)**
  - European Centre for Medium-Range Weather Forecasts **(ECMWF)**
  - European Organisation for the Exploitation of Meteorological Satellites **(EUMETSAT)**
- Funding under the **Digital Europe Programme**
- Significant Involvement of the EU industry
- Important R&I activities under Horizon Europe to support evolution of Destination Earth
- Synergies with other EU programmes, like Copernicus and the EuroHPC Joint Undertaking

2021-2024

- **Operational cloud-based platform**
- **First two digital twins**

2024-2027

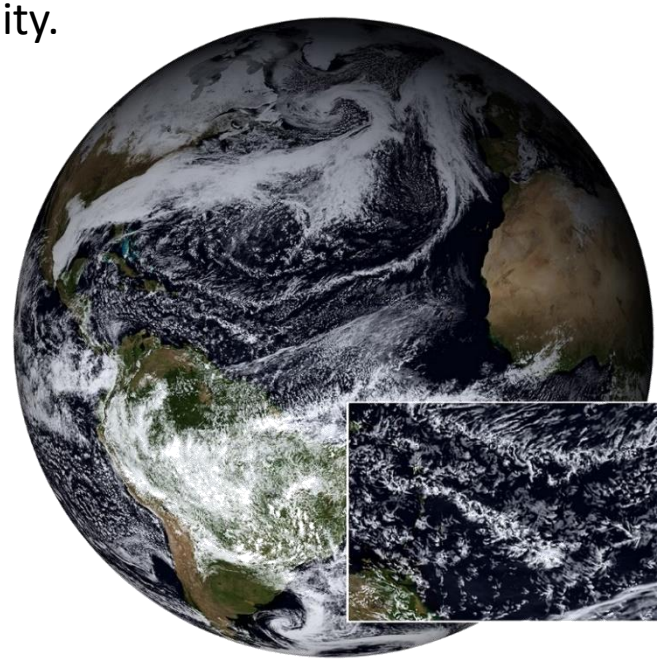
Platform integrates the next operational digital twins and offers services to public sector users

2027-2030

Towards a full "digital twin of the Earth" through a convergence of multiple digital twins on the platform

Destination Earth & Exascale: Bringing science and computing together

- **Achieve a 10-year step-change in progress for Earth-system monitoring and prediction**
- **Earth model resolution at kilometer scale are necessary to map local features**, like river basins and urban areas.
- DestinE will support **near-real time decision-making** with a resolution capturing local events. Such information will be further accompanied by information on uncertainty and quality.
- The **exascale** challenge in numbers:
  - Increase use of observation from 100 million **up to 1 billion** per day
  - Requires at least hundred **(x100)** times the current available HPC computing capacities
  - Achieving a factor of 1000 (x1000) faster model and bigger data processing performance
  - **x1000** increase of data volume available for AI applications
  - PBs/day to be processed for real and near real time simulations



EuroHPC Joint Undertaking

Opportunities for engagement

- The entrusted entities in charge of implementing DestinE will engage – based on a thematic prioritization by the Commission – potential end-users from the respective thematic fields.

- Destination Earth is setting-up an extensive scientific user engagement, to inform but also allow users to provide additional scientific feedback on the evolution of the initiative.

- Use cases and partnerships will enable users to help codesign a system to their need.

Thank you!

http://destination-earth.eu

#DigitalEU #DestinE

European Commission