

Advanced Earth System Modelling Capacity (ESM)

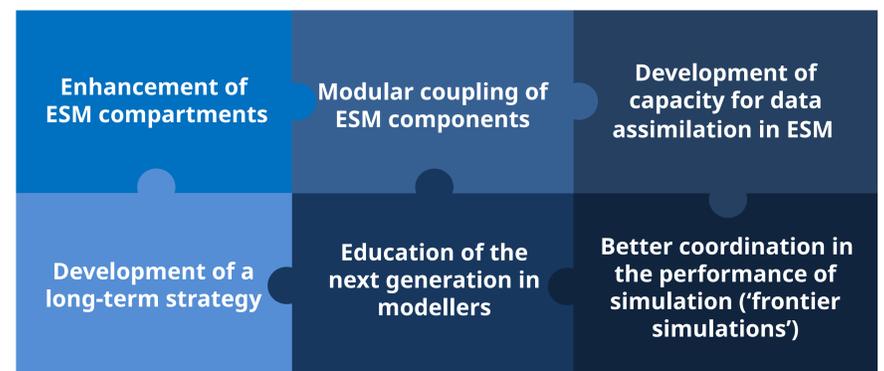
The ESM project started on 1 April 2017 funded by the Helmholtz Association over a period of three years. The project comprises eight Helmholtz Research Centers and aims to improve the representation of the components of the Earth system and their coupling, as well as to perform a series of selected numerical experiments to address Grand Challenges (Frontier Simulations). A long-term strategy for the development of an Earth System Modelling capacity is also an objective of the project.



ESM Kick Off Meeting, 30-31 May 2017 at GERICS, Hamburg

Scientific-technical objectives

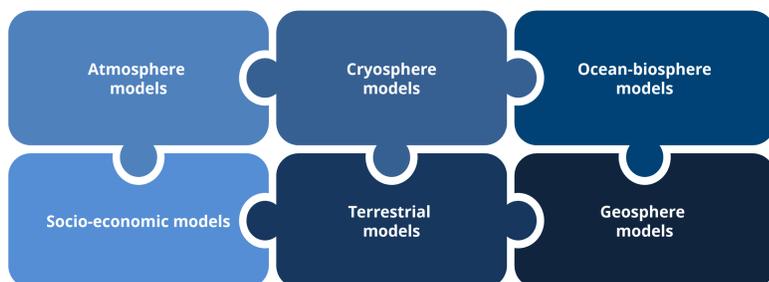
- **Improve** the representation of **key-processes** in Earth system model compartments
- Establish a **coordinated approach** towards the **coupling** of Earth system model compartments and to include new components
- **Develop** an Earth system **data assimilation framework** to effectively combine models and observations
- **Establish diagnostic capacity** to help prioritizing future directions in Earth system model development
- **Provide** effective and open access to **Earth system modelling data**



Workpackages

WP 1: Earth system model development

- Enhanced Earth system compartments (Atmosphere, Ocean-Cryosphere-Biosphere, Terrestrial, Geosphere)
- Coupling of Earth system compartments



WP 2: Earth system data assimilation

- Implementation of data assimilation in Earth system model compartments
- Development of coupled Earth system data assimilation capacity



WP 3: Frontier simulations

- Multiscale global change projections
- Monsoon systems in a changing climate
- European hydro-meteorological extremes
- Cross-compartmental matter cycling: From land to sea
- Georeservoirs
- Data and HPC management

WP 4: Strategic development

- Development of an Earth system modelling strategy (2020–2040)
- Development of an Earth system modelling implementation plan for PoF-IV
- Education

Education & Training

ESM Summer School 2019

- 9-19 September 2019, Bad Aibling
- <https://www.esm-project.net/training-opportunities/esm-summer-school-2019/>

More information

<http://www.esm-project.net/>

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