WarmWorld - Exascale EarthSystem Models to anticipate changes in a Warmer World

The aim of the BMBF funded four-year project **WarmWorld** is to harness advances in information technology to compute and evaluate climate warming trajectories at unprecedented kilometer-scales, which enable the direct simulation of crucial processes in the climate system, like convective storms and ocean eddies.
Scientists and software engineers from 12 research institutes and universities will work together in four modules:

- “Better”, which is responsible for defining and testing the configurations of the two model systems used: ICON and IFS-FESOM.
- “Faster”, which is responsible for transforming the ICON code base into an open, scalable, modularized and flexible code named ICON-consolidated.
- “Easier”, which will develop novel methods to make climate information visible, accessible, and interoperable.
  “Smarter”, which aims to involve the applied math and informatics communities, to improve the workflow and the model performance.

Central components of the proposed information system will be: (i) an ICON based earth-system model capable of resolving global oceanic and atmospheric coupled circulation systems on kilometer scales, with a throughput of a simulation year per day on future exascale computing facilities; and (ii) workflows designed to abstract the user from the source of information, allowing the creation of analysis frameworks that can be replicated across different information sources.