

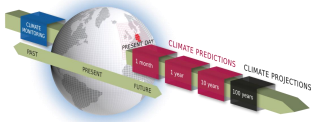


ICON-Seamless - Land-Atmosphere Aspects

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and many more colleagues actively engaged in the expert group



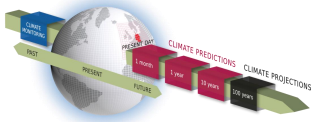
Motivation

Background

- MPI-M stopped the further development and maintenance of ECHAM and ICON-A

Decision

- develop a plan (science and resources) to develop seasonal and decadal climate simulations based on ICON-NWP and ICON-O
- explore seamless prediction with **one homogeneous, integrated seamless system for NWP, seasonal and decadal climate prediction**



Strategic goal: New ESM based on NWP with unified LSM + ICON-O and Sea-Ice for climate simulations/projections, and data assimilation

Why?

Benefit?

Answering questions on:

- Adaptions of parameterizations for seamless forecasts
- Performance of ICON-ESM on different spatial and time scales

- ESM based on NWP+ ICON-O and Sea-Ice for climate simulations/projections
- Future unified LSM framework for ICON seamless

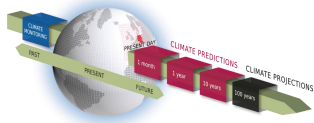
Result?

Who?

Involved partners:

For first steps: DWD (FE/KU),
MPI-M, KIT, DKRZ

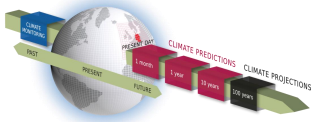




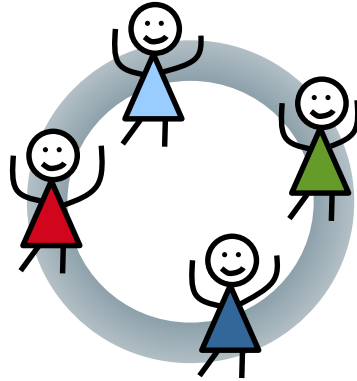
Goals

- ❖ pre-operational climate prediction system ICON-Seamless for seasonal and decadal climate prediction by **2024**
- ❖ computing performance of ICON-Seamless approx. **100y/d**
- ❖ preparation/first steps of consolidated **long-term development**

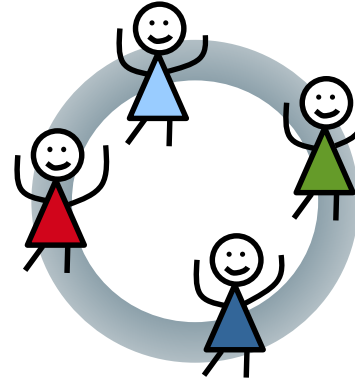




Board of Directors



Coordination Group



Atmosphere



Land-Atmosphere



Ocean-Atmosphere



Data Assimilation

Fotos Pixabay

Expert Groups

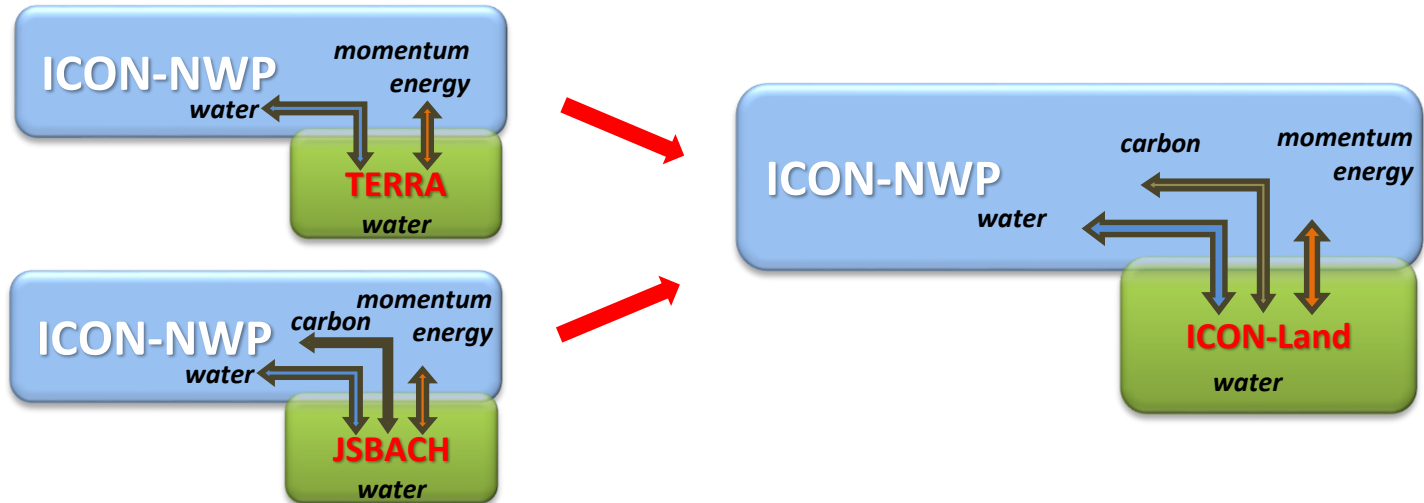


Expert Group Land-Atmosphere - Aim

- Development of the future land component of the ICON-Seamless for weather and climate



HASS87054





Comparison functionality **TERRA** - **JSBACH**

TERRA	ICON-Land/JSBACH
<ul style="list-style-type: none">+ Multi-layer soil model+ TILE approach for subgrid land-use heterogeneities+ Lake model	<ul style="list-style-type: none">+ Bio-geo-chemistry (full carbon cycle within ESM)+ Dynamic vegetation (soon in JSBACH4)+ Land cover change (disturbances, land use, forest management)+ Hydrologic discharge model (river routing)

Jürgen Helmert and many more colleagues



Plans

WP1: Implementation of JSBACH with vertical diffusion (VDIFF) in ICON-NWP

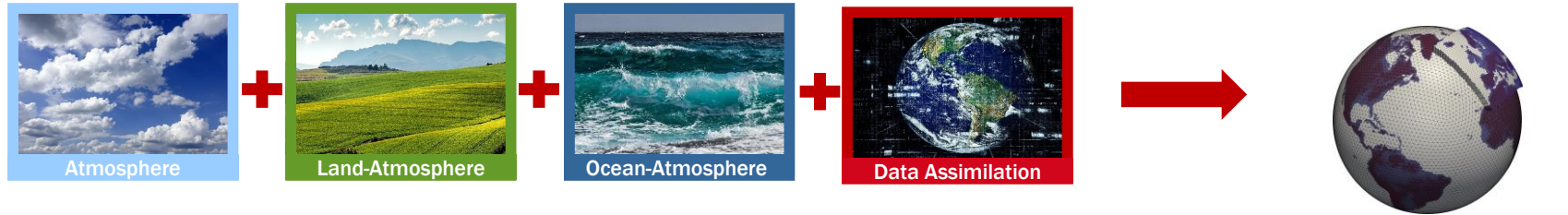
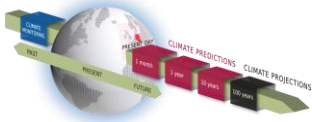
- technical implementation
- provision of external parameters for JSBACH via EXTPAR
- coupling of ICON-ART and JSBACH/VDIFF
- climate and NWP experiments for parameter adaptation of JSBACH in ICON-NWP

Major milestone after about 1.5 years: Decision about further development

Long-term development (completion > 5 years)

WP2: Development towards an integrated boundary layer scheme for weather and climate

WP3: Synthesis of an integrated land surface model for weather and climate



ICCARUS Working Group Meeting

- working group meeting on **16 March 2021 13:30 – 17:30 CET**
- everyone is welcome to participate and contribute