Projekt: 677 Antragszeitraum: 01.01.2024 - 31.12.2024

Projekttitel: Model development and support for the MESSy system (FZJ-IEK-8 part)

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The Modular Earth Submodel System (MESSy) is “a software framework that combines components, which are numerical representations of our Earth system. Examples of components are atmosphere, land and ocean models, and more.

The unique feature of MESSy is a modular structure that facilitates continuous development and flexible model configurations. The concept has been established by a consortium of institutions with leading expertise in Earth System Modelling and the framework is continually further developed” (www.messy-interface.org). MESSy models are most commonly applied in the field of chemistry climate modelling on global and regional scale.

The PI of this accounting project is one of the core developers of the MESSy system and is among others the main developer of the MECO(n) (MESSy-fied ECHAM and COSMO models nested n-times) system. Additionally, she is the maintainer of quite some infrastructure and process submodels in MESSy.

This project is applied for (a) to ensure the support for the existing models (maintained by IEK-8) for the whole MESSy consortium and (b) to drive forward further technical developments of the MESSy system. Currently, the most important code development projects being worked on within this project are:

- The (further) development and testing of ICON/MESSy
- The subsequent porting of MESSy submodels to GPU and the establishment of an infrastructure expansion to allow for a most efficient strategy for minimising the data copies between host and device in a model setup where only parts of the model are ported to GPU.

As most of the MESSy consortium members do have accounts at DKRZ and as Levante is one of the HPC clusters ICON is mainly developed on, the support and further developments of MESSy are best to be performed at DKRZ.