PP CITTA proposal preparation meeting

Minutes

Date: 9 July 2020

Place: Web conference

Participants: Jan-Peter Schulz (JPS, host), Francesca Bassani (FB), Jean-Marie Bettems (JMB), Edoardo Bucchignani (EB), Matthias Demuzere (MD), Valeria Garbero (VG), Amalia Iriza (AI), Paola Mercogliano (PM), Massimo Milelli (MM), Mikhail Varentsov (MV)

Minutes: Jan-Peter Schulz

Agenda:

1. Implementation of TERRA_URB in ICON
2. External parameters
3. Numerical experiments
4. Further development of the TERRA_URB scheme

1. Implementation of TERRA_URB in ICON

Such a work is difficult to share, or distribute over different people. Mainly JPS has to do this himself, with support by the ICON gate keepers at DWD. The latter prefer neither to be explicitly mentioned in the proposal nor to earn FTEs. Anyway, they agree to support this implementation work.

Furthermore, the assistance of some team members will be needed to solve all questions about TERRA_URB and its implementation. For instance, MV proposed to first implement one urban external parameter in ICON-LAM, e.g. the impervious surface area (ISA or FR_PAVED), and test if the data input and flow is working fine. After successful testing the other external parameters can be added.

PM and EB announced that they will have a new colleague from September 2020 on working on ICON who would like to do tests etc.

2. External parameters

For TERRA_URB in COSMO-CLM two urban external parameters were implemented in EXTPAR: The Impervious Surface Area (ISA = FR_PAVED) and the Anthropogenic Heat Flux (AHF). Meanwhile, their raw datasets are outdated and need to be replaced. Furthermore, several internal parameters which were hardcoded in TERRA_URB as global constants will be replaced by 2-dimensional fields from EXTPAR.

The new urban external parameters for TERRA_URB in ICON(-LAM) are created by MD based on Local Climate Zones (LCZ). Ideally, all external parameters should be created in EXTPAR. Currently, the urban fraction is based on the land use class dataset GlobCover. We assume that the new data source is more relieable than the old one, therefore the data should be corrected, and a consistency check with the additional urban parameters needs to

be made. It appears to be reasonable to do this directly in EXTPAR on the basis of the raw datasets. Alternatively, this may be done in ICON.

The implementation of TERRA_URB needs to be converted from the poor-man's tile approach in COSMO to a real tile approach in ICON. Consequently, the urban external parameters need to be adapted. Presumably, the double counting effect does not need to be corrected for anymore with the real tile approach.

PM and EB announced that there are two more colleagues working on external parameters at CMCC: Alfredo Reder and Carmela Apreda. This work will be coordinated with MD.

3. Numerical experiments

Similar to AEVUS1/2, the numerical experiments will be carried out in a coordinated way in the different model domains of the project partners involved. The domains are Moscow, Turin and Naples.

The colleagues from NMA would like to join the project. Compared to AEVUS1/2 we will get one more domain. AI said that Bucharest would be a good choice. They are interested in this domain and observational data of urban and rural stationas are available. There exists an expert on urban modelling in Romania: Sorin Cheval. AI will contact him to find out possibilities of collaboration.

MV proposed to also add a German city to the project, e.g. Berlin. We will think about this.

4. Further development of the TERRA_URB scheme

This is the task still most open for dicussion and ideas. While the applications of the new model system are still going on, the model development can start in parallel. Anway, also this should be tested when ready.