

COSMO PP CITTA' kick-off meeting

Minutes

Date: 4 Nov. 2021

Place: Web conference

Participants: Jan-Peter Schulz (JPS, host), Marianna Adinolfi (MA), Carmela Apreda (CA), Francesca Bassani (FB), Edoardo Bucchignani (EB), Carmine De Lucia (CDL), Julia Fuchs (JF), Valeria Garbero (VG), Christoph Gebhardt (CG), Amalia Iriza-Burca (AIB), Adam Jaczewski (AJ), Pavel Khain (PK), Yoav Levi (YL), Massimo Milelli (MM), Dmitrii Mironov (DM), Alfredo Reder (AR), Leenes Uzan (LU), Mikhail Varentsov (MV), Andrzej Wyszogrodzki (AW)

Minutes: Jan-Peter Schulz

Agenda:

1. Introduction
2. New urban external parameters in EXTPAR
3. Implementation of TERRA_URB in ICON
4. Miscellaneous

1. Introduction

JPS gave an introduction to the meeting. The main goal is to coordinate the work in the different tasks, in particular between the responsible persons, respectively.

2. New urban external parameters in EXTPAR

CA presented a detailed survey of the existing datasets for deriving urban external parameters. For the comparison of the datasets she focussed on the field of the impervious surface area (ISA). It turned out that the dataset ECOCLIMAP-SG (ECOCLIMAP second generation) is a good candidate for our purposes. It contains 23 natural land cover classes and additionally 10 urban land cover classes, the latter based on the concept of local climate zones (LCZs).

One issue is that the intervals of the ISA values allow for some degree of freedom. CA showed for the example of Milan a comparison of ECOCLIMAP-SG with the IMD ISA-dataset. The latter is regarded as being very reliable in terms of resolution and accuracy. The idea is to adjust or calibrate ECOCLIMAP-SG towards IMD with respect to the classes of ISA values. This method looks promising for providing quantitatively realistic maps of ISA and other urban canopy parameters for TERRA_URB in ICON.

CA used ArcGIS to process and convert the original raw dataset of ECOCLIMAP-SG into NetCDF and provided it to the project team members. AJ started the work to implement the dataset in EXTPAR and presented the first steps.

Next tasks:

- a) Currently, the dataset covers only Europe, but a global coverage is needed.
- b) Two LCZs are missing, e.g. LCZ 4, this needs to be clarified.
- c) Adjust ECOCLIMAP-SG to IMD. This will likely be done in the look-up tables in ICON.
- d) Test more cities, e.g. Moscow, Warsaw, etc.

Additional remark to task a) : CA provided a few days after the meeting a global version of ECOCLIMAP-SG in NetCDF.

3. Implementation of TERRA_URB in ICON

JPS presented a proposal for the different steps of the implementation:

- a) Porting of TERRA_URB from the COSMO to the ICON model par for par. Implement namelist switches (`lterra_urb`, `lurbfab`, `itype_eisa`) and fields (`sa_uc`, `ai_uc`, `alb_red_uc`, `w_imp`, `w_isa`) for TERRA_URB in ICON. Keep land use classification GlobCover and hardcoded global constants for testing the functionality of TERRA_URB in ICON.
- b) Once the functionality is confirmed and the new urban canopy parameter fields are available from EXTPAR, implement them in ICON, likely together with a new land use classification (ECOCLIMAP-SG).
- c) Extended tuning of ICON for ECOCLIMAP-SG, with first TERRA_URB switched off, after successful tuning switched on.

It was agreed that this is a good way to proceed.

4. Miscellaneous

The presentations and the minutes of this meeting are put in the new repository of PP CITTA' on the COSMO webpage.

The next meeting of PP CITTA' is planned at ICCARUS 2022.