

Minutes of the PT AEVUS Meeting in Ghent (Belgium) on May 24st, 2019, 09:00 16:30

Participants: E. Bucchignani (CIRA), M. Milelli (ArpaP), J.-P. Schulz (DWD), M. Varentsov (RHM), V. Garbero (ArpaP), M. Demuzere (Ruhr University Bochum)

TOP 1. Introduction

- Edoardo welcomes the participants, gives an overview about the status of the PT and gives overview of the agenda.

TOP 2. Presentations

- Matthias explains the current state of urban input parameters for COSMO/TERRA_URB and explains the concept of local climate zones. There is a brief discussion on the LCZ potential for COSMO.
- Valeria presents setup and results for simulations by ARPA Piemonte. Latest model shows consistent results for which the difference between an urban and a non-urban run decreased in the rural areas. This suggests that the problem of artificial heating in the rural areas is solved. However, Valeria mentions that, besides the heating downwind of the city, there is also some rare cooling. Mikhail indicates that these could be just a stochastic feature. Hendrik suggests some analysis that could shed further light on this.
- Mikhail presents his setup and results, and shows consistent model behaviour for ISA=0 and AHF=0 identically matching the results with TERRA_URB switched off. Yet, there appear to be some issues, but they seem to be related to diagnosis of the fields. Skin-layer temperature formulation gives still problems (similar as for Valeria) with an unexpected low diurnal cycle.
- Hendrik presents his results for Brussels which appear to be consistent with Valeria/Massimo and Mikhail, ie., removal of artificial heat and problems with skin-layer formulation. Jan-Peter mentions that this is unexpected and this needs to be investigated.
- Jan-Peter presents his online and offline results on bare soil evaporation (itype_evsl=4) and skin-layer temperature (itype_canopy=2) with the latest Cosmo version. They give both substantial improvements, so his general recommendation is to use these schemes. Dry periods were too dry; moist periods were too moist. This was corrected with itype_evsl=0; also better daytime surface temperatures. Itype_canopy=2 improves the diurnal cycle: higher daytime temperatures, and lower nighttime temperatures. All tests were done in online simulations under COSMO-D2 and under the COSMO-EPS ensemble. Improved results also for the online simulations when applying itype_evsl=4 and itype_canopy=2. However, the options are not yet in the operational COSMO code (but it is in the ICON code)
 - also upper air variables seem better, or at least not worse
 - 5.06a → itype_evsl and itype_canopy are available
 - 5.05 has already all the updates (yet itype_canopy=2 seems to give problems

- Edoardo presents results for mid-Italy. However, he gets problems with his high-resolution setup, which need to be investigated. Valeria suggests trying a binary from ARPA.
- Valeria suggests comparing the skin-temperature formulation between 5.05_urb4 and 5.06a.
- The issue with the skin-layer temperature should be solved by propagating the urban parameterization and tile approach from cosmo 5.05_urb4 into the latest cosmo version (5.06a or 6.0). Jan-Peter mentions that this is on the todo list of Ulrich Schättler.
- We need to work with a common namelist. The options are provided in the user's Guide of cosmo 5.05 on page 110 onwards.
- Mikhail/Valeria raise the issue of data consistencies (also relevant for AEVUS2). For example, the skin-layer conductivity and roughness parameter (assigned to the rural tile) may lead to double counting of urban effects.

TOP 3. Open discussion

- Concerning the PT, Massimo suggests to close it with a small report (in September) showing that we have a stable release of COSMO+TERRA_URB (v5.05_urb4) which works well (with itype_canopy=1). We should also provide a list of key parameters with a suggested value.
- During the COSMO GM 2019 in Rome (Italy) we will have a PT AEVUS meeting presenting the final results and the proposal of AEVUS2
- Edoardo shows a proposal concerning the follow up PT AEVUS2
 - The goals are: to (1) improve/update the input datasets in EXTPAR, (2) test them with COSMO, (3) show the added value of the urban new parameters, (4) provide recommendations on urban input parameters and the usage and consolidation of different data sources to the COSMO consortium / CLM community. Perhaps we could think about the implementation into ICON.
 - Massimo mentions that a draft for the AEVUS2 proposal should be ready around mid-June to be approved by COSMO SMC asap (via email) and then by STC in September.
 - The team of Edoardo will make a proposal for the new project.
 - Matthias suggests his involvement into AEVUS2. He would be glad to provide input especially regarding his work on LCZ parameters.