Minutes

COSMO GM 2020

Parallel Session: Friday 04 September 2020

WG 3b, PT AEVUS 2 & PP CITTA

Chair: Jean-Marie Bettems, **Minutes**: Paola Mercogliano

Agenda		
08:45 – 09:00	**JM. Bettems**	**Set-up and welcome**
09:00 – 09:05	**P. Mercogliano**	**Opening & Introduction**
09:05-09:45	**M. Varentsov (MV), H. Wouters, Uli Schaettler (US)**	**Short overview on the status and planning of the ongoing developments/versions of TERRA_URB:** **TERRA_URB / COSMO official version (U. Schaettler)** **TERRA_URB developments/upgrades on urban canopy and vegetation parameters (M. Varentsov, H. Wouters,)** **WUDAPT-related work (M. Varentsov, H. Wouters,),**
09:45 - 10:00	**M. Varentsov**	**Activities and Updates Roshydromet**
10:00 – 10:15	**V. Garbero**	**Activities and Updates ArpaP - PoliTO**
10:15 – 10:30	**F. Repola, C. Apreda**	**Activities and Updates CIRA - CMCC**
10:30 – 11:00		***Break***
11:00 – 11:15	**J.-P. Schulz**	**Introduction to the new PP Città**
11:15 – 12:30	**All**	**Open discussion**

Action: JM suggests organizing a meeting with people working on the SAINT project to discuss the interaction between TERRA_URB and snow cover scheme. This activity also could also be a potential activity to be introduced in the next PP_CITTA'. JP will send the contact list by email.

Action: due to some bugs found when TERRA_URB= true and lemiss=true and now fixed in the new COSMO version, MV suggests to re-run simulation over Naples and Turin to avoid inconsistencies and to compare the results with Moscow.

Action: the PT_AEVUS team highlights that external parameters are becoming more and more important due to the increasing resolutions of the model. All agree on organizing a meeting with people working in EXTPAR to define a common methodology to assess the problems of the double counting methods in order to avoid duplication of the activities. Paola and Katie will take the action to organize a small meeting between the 2 teams (also including JM + EXTPAR responsible in Citta)

RHM (Mikhail) shows the different works performed during the year (slides available in the WG3b repository). He describes different datasets on urban canopy parameters. Then he shows results obtained assuming different values of the parameter itype_vdif. Simulations over Moscow for different test cases with LCZ based urban external parameters and with custom made reference datasets seems to show some improvement with respect to the reference external urban parameters.

An extra heating over urban areas seems to be present due to the new vertical diffusion scheme. MV suggests using the vertical diffusion scheme (itype_vdiff=1). US informs that unfortunately this won't be taken into consideration in COSMO, while if these problems are also reported in ICON these will be solved.

ARPA PIEMONTE (Valeria) provides an overview of PT AEVUS2 and the different subtasks, along with the story of the code development (slides available in the WG3b repository). Then she shows results about the testing of new external parameters and of the calibration of the model for urban areas, considering several key parameters, over a domain including Piemonte region. The extpar dataset has been modified to prevent the double counting effect on urban tile. She reports that the new ICON turbulence scheme performs better than the old one and that TERRA_URB improves temperature representation in urban areas during the day but overheats during night. It results that the best configuration includes terraurb on, itype_canopy 2 and direct downscaling from 9 to 1 km. Finally, different sources of external parameters (even based on LCZ) have been compared, but further investigations are needed to draw conclusions.

CMCC-CIRA (Francesco) presents the status of activities on PT_AEVUS 2 (slides available in the WG3b repository). The CMCC is a new member of COSMO consortium. The results about the calibration of the model for urban areas are shown, considering several key parameters, over a domain located in southern Italy including Campania region. The results highlight that the ICON turbulence scheme improves the performances both for temperature and for relative humidity while there are not strong improvements of the performances over urban stations considering TERRA_URB switched on. Urban and rural stations have been classified using the Wilconox test and the UHI intensity has been computed for selected stations. Also, ongoing activities at CMCC regarding external parameters are presented (Carmela). The external field ISA has been compared with new global products available. Another activity is the removal of the double counting effect in an ArcGIS environment, but coordination is needed. The conversion of the algorithm in Python language is in progress.

DWD (Jan Peter) introduces the new PP CITTA' with a duration of 3 years (slides available in the WG3b repository) which will be led by Jan-Peter Schulz. It represents the continuation of PT AEVUS2 and is joined by several institutions (ARPAP, CIRA, CMCC, PoliTO, DWD, KIT, NMA, RHM, RUB, VITO). The main aim of the PP is the development of an urban surface

parameterization for ICON but also to address the other items highlighted during the work performed in PT_AEVUS and PT_AEVUS2. A further test case will be integrated over Bucharest; proposals of new areas as test cases will be also appreciated, in particular German urban areas. The participation of other colleagues to PP CITTA' and FTEs are still under discussion.