

MINUTES OF THE SOIL AND VEGETATION WORKING GROUP



Coordinators: Merja Tölle and Maria Raffa

22nd September 2017, COSMO-CLM Assembly, Graz, Austria

Moderator: Merja Tölle

WG SOILVEG Webpage:

<http://www.clm-community.eu/index.php?menuid=242&downloadid=1731&reporeid=0>

Participants: Merja Tölle, Oscar Brousse, Marcus Breil, Mario Raffa, Edoardo Bucchignani, ...

- **Opening/Agenda**

- Adoption of the Agenda
- Adoption of the minutes of the last Meeting of SOILVEG
- Coordinator Merja Tölle, co-coordinator Mario Raffa

- **Current Developments / News / Discussions**

Review of strategy of the science plan for COSMO-CLM:

Aim to establish an earth system model encompassing all relevant components of the climate system like dynamical vegetation.

TERRA is planned to be further developed with respect to consider dynamical vegetation, urban structure, changes to the groundwater table, a vertical inhomogeneous soil texture, river routing, as well as sea and lake ice surfaces. It is intended to perform an intercomparison of the impact of the different land surface schemes TERRA, Community Land Model, and Veg3D over different regions to elaborate the advantages of each approach. In addition, a participation in the global offline experiments protocol Global Soils Wetness Project phase 3¹ (GSWP3) is planned with the Community Land Model and TERRA.

Furthermore, it is necessary to better understand the role of land-atmosphere interactions at the regional scale. Therefore, it is of great importance to implement processes like e.g. the dynamical change of vegetation, the thawing of the permafrost, the transient change of land use (natural or anthropogenic), or the soil-moisture precipitation feedback at the regional climate.

For urban land investigations respective high resolution parameterizations are already implemented in COSMO-CLM (Schubert et al., 2012; Trusilova et al., 2013; Wouters et al., 2012). The outcome of these parameterizations is compared and the impact to the regional climate is assessed in Trusilova et al. (2014).

¹ <http://hydro.iis.u-tokyo.ac.jp/GSWP3/>

- **Status TERRA-URB** (presentation by Oscar Brousse)
 - Release TERRA_URB v2.2 on the basis of cclm_sp_2.4.tgz in April.
 - available on redmine (for SOILVEG members only under <http://redc.clm-community.eu/projects/wg-soilveg/files>)
 - documentation is provided along the package on redmine, or at https://www.researchgate.net/publication/316240397_User_guide_for_TERRA_URB_v22_The_urban-canopy_land-surface_scheme_of_the_COSMO_model)
 - integration in upcoming release COSMO 5.6 is under development by Ulrich Schättler (cfr. project AEVUS).
- **Status Veg3D simulations for FPS LUCAS** (Marcus Breil)

Idealized test cases were performed in relation to the new initiative FPS LUCAS. Results are presented on the poster “First results of the CCLM-VEG3D simulations in Phase 1”. A poster award was received.
- **Status and discussion of FPS LUCAS** (presentation by Merja Tölle)

New initiative FPS on land use accepted by CORDEX including land-use forcing (changes in land cover and land-use management). Three phases. Start with idealized run (e.g. on vegetation), then second phase on realistic scenarios including land use. Third phase using high-resolution models. Urban models could be included in this phase.
- **Status TERRA**

New initiative to compare CLandM and different versions of TERRA in NWP mode. This is endorsed by the COSMO consortium (TERRA NOVA PT)
- **Status TERRA/Community Land Model/Veg3D over different regions**
 1. Introduce TERRA into the [GSWP3 experiment](#). Unfortunately never got to that stage. Main bottleneck here was a fully operational stand-alone version of the most recent TERRA model. But see above point on TERRA NOVA PT.
 2. Combine all our efforts of running CCLM and CCLM2 over various continents. For that, information was gathered from the community, which is summarized [here](#).
- **Reminders**
 - **WG Minutes 2016**

Online.
 - **New Publications**

Please send important literature related to SOILVEG to be collected.

 1. Wouters, H., Demuzere, M., Blahak, U., Fortuniak, K., Maiheu, B., Camps, J., Tielemans, D., and van Lipzig, N. P. M.: The efficient urban canopy dependency

- parametrization (SURY) v1.0 for atmospheric modelling: description and application with the COSMO-CLM model for a Belgian summer, *Geosci. Model Dev.*, 9, 3027-3054, <https://doi.org/10.5194/gmd-9-3027-2016>, 2016.
2. Demuzere, M., Harshan, S., Järvi, L., Roth, M., Grimmond, C. S. B., Masson, V., Oleson, K. W., Velasco, E. and Wouters, H. (2017), Impact of urban canopy models and external parameters on the modelled urban energy balance in a tropical city. *Q.J.R. Meteorol. Soc.*, 143: 1581–1596.. doi:10.1002/qj.3028
3. Wouters, H., De Ridder, K., Poelmans, L., Willems, P., Brouwers, J., Hosseinzadehtalaei, P., Tabari, H., Vandenbroucke, S., van Lipzig, N. P. M., Demuzere, M. (2017), Heat stress increase under climate change twice as large in cities as in rural areas: A study for a densely populated midlatitude maritime region, *Geophys. Res. Lett.*, 44, 1–11, doi:10.1002/2017GL074889.
4. Tölle, M. H., S. Engler, H.-J. Panitz, 2017: Impact of abrupt land cover changes by tropical deforestation on South-East Asian climate and agriculture, *Journal of Climate*, 30, 2587-2600, DOI: 10.1175/JCLI-D-16-0131.1.
5. Mikhail (?) et al. 2017: Results of comparison between TEB and TERRA_URB for Moscow, Russian journal "MSU Vestnik. Series 5. Geography".

- **Update of the Groups related to CLM_SOILVEG**

Please update the information on the topic browser.

- **Update Project Information on the CLM Main Page**

All projects concerning CLM-SOILVEG should be described via the topic browser. There are no project information provided on the SOILVEG homepage.

Projects connected to TERRA-URB:

- CORDEX.be*: Combining regional downscaling expertise in Belgium: CORDEX and beyond, (KU Leuven (Hendrik))
- AEVUS*: COSMO Priority Task: Analysis and Evaluation of TERRA_URB Scheme (ÆVUS), led by Paola Mercogliano (CIRA, Italy)
- REACT*: Remote Sensing for Epidemiology in African CiTies
- U-ADAPTEx*: Urban ADAPTation to projected hydro-climatic Extremes: from maritime to continental Europe and Russia. proposal submitted to ERA-NET_RUS, led by university of Romania, together with Ghent University (Hendrik) and Moscow Lomonosov University (Mikhail))
- Russian project:

TERRA_URB is involved in Project of Russian Science Foundation №17-77-20070 "An initial assessment and projection of the bioclimatic comfort in Russian cities in XXI century against the context of climate change".

- **Any Other Business**

None.

- **Place and Date for the next Meeting of the SOILVEG**

After the COSMO/ICON/ART/CLM user seminar (ICCARUS) at the headquarters of the German Weather Service together with WG3b in Offenbach in March 2nd, 2018.