

# WG3B activities – Proposal

## TASKS

(green: resources allocated / blue: contribution by CLM-Community / red: missing resources, request to StC / grey: on hold)

Responsible person	Topic	PT/PP	Availability
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### 1.1 External parameters – Data sets

<b>J.Helmert / DWD</b>	<b>Land use - GLOBCOVER</b>	-	<b>09.2012</b>
<ul style="list-style-type: none"> <li>&gt; dx=300m, more recent data than GLC2000.</li> <li>&gt; Already included in EXTPAR, tests have started at DWD.</li> </ul>			
<b>J.Helmert / DWD</b>	<b>Soil type - Harmonized World Soil Database</b>	-	<b>09.2012</b>
<ul style="list-style-type: none"> <li>&gt; dx=1km, more recent data than FAO, some information on the vertical structure of the soil.</li> <li>&gt; Work is being done in the CLM community, preliminary work started at DWD</li> </ul>			
- / -	<b>Topography - ASTER GDEM</b>	-	
<ul style="list-style-type: none"> <li>&gt; dx=30m, higher resolution than GLOBE (dx=1km), raw data still have experimental status</li> <li>&gt; Required for very high resolution COSMO runs</li> </ul>			
<b>JM.Bettems / MeteoSwiss</b>	<b>Vegetation - MODIS calibrated phenology model</b>	-	<b>09.2012</b>
<ul style="list-style-type: none"> <li>&gt; Historical records of vegetation characteristics reveal a substantial inter-annual variability of the start of season, which may limit the usefulness of climatology based data set. A framework has been developed by R.Stöckli et al., using a prognostic phenology model with parameters constraint by MODIS data, which can provide an offline gridded forecast of the vegetation characteristics taking into account the actual evolution of the weather. [Stöckli 2008].</li> <li>&gt; The impact of that approach on the quality of the COSMO forecast will be evaluated.</li> </ul>			
<b>(internally defined) / DWD</b>	<b>Solar albedo - MODIS derived product</b>	-	<b>12.2012</b>
<ul style="list-style-type: none"> <li>&gt; "Background albedo" derived from MODIS data, prepared at MPI Hamburg.</li> <li>&gt; Will replace soil type / soil humidity based albedo.</li> </ul>			

## 1.2 External parameters – Algorithms

- G.Vogel / DWD**                      **Improved representation of root depth yearly cycle**                      -                      **09.2012**
- > Stand alone simulations of annual cycle at SRNWP data pool sites.
  - > Comparison between the currently parameterized and satellite-based annual cycles of PLCOV and LAI
  - > Development/refinement of a coupling scheme of rooting depth with satellite-based PLCOV values
  - > Documentation of the effects of the modified treatment of the rooting depth on soil moisture
- ???**                                      **Scale separation for Z0 and SSO**                                      -                                      **Q4 2011**
- > Currently double counting of subgrid scale effects.
  - > Proposed solution requires a minimum set of modifications to the EXTPAR software:
    - (1) Filter raw topo data set to produce a new data set on the same grid but with all scales smaller than 3km filtered out (this has to be done only once for every raw topo data set, and should not necessarily be integrated in EXTPAR)
    - (2) Adapt EXTPAR to base the computation of SSO on the filtered data set (as option)
    - (3) Adapt EXTPAR to base the computation of z0 on the filtered data set (as option)
- Discussion with Mathias R.

## 1.3 External parameters – Tools

- J.Förstner / DWD**                      **Web portal**                                      -                                      **12.2011**
- > Offer transparent access to external parameters, for whole COSMO community.
  - > Finalize and make public.
- ???**                                      **Orographic radiation correction**                                      -                                      **Q4 2011**
- > Algorithm for orographic radiation correction in official COSMO release, operational at MeteoSwiss.
  - > Code for generating associated parameters available, but very slow. Optimization required.

## 2. TERRA improvements

<b>A.Yurova / Roshydromet</b>	<b>Mire parametrization</b>	<b>PT</b>	<b>Q4 2012</b>
<ul style="list-style-type: none"> <li>&gt; The goal of this task is to incorporate a mire parameterization into the TERRA land surface scheme used in COSMO model. It is planned to investigate the influence of mire parameterization on the components of the heat and water balance simulated by TERRA and compare them with available observations.</li> </ul>			
<b>G.Vogel / DWD</b>	<b>Revision of rainfall interception and surface water treatment</b>		<b>09.2012</b>
<ul style="list-style-type: none"> <li>&gt; Transfer of the interception part from the GME into the TERRA module</li> <li>&gt; Evaluation of the interception effects by stand-alone runs</li> <li>&gt; Studies of impact on partitioning of infiltration, evapotranspiration, and runoff.</li> <li>&gt; Studies of impact on surface and 2m temperature.</li> </ul>			
- / -	<b>Orography dependent surface runoff</b>	-	-
<ul style="list-style-type: none"> <li>&gt; Possible contribution from A.Yurova / Roshydromet : similar work is done at the Moscow State University</li> </ul>			
- / -	<b>Parameterization of water table depth</b>	-	-
<ul style="list-style-type: none"> <li>&gt; Interest by A. Yurova, she developed an approach to evaluate this quantity during her PhD</li> <li>&gt; Interest by F.Grazzini, some simple balance based approach is used at ARPA-SIMC</li> </ul>			
<b>B. Ahrens / Uni Frankfurt</b>	<b>Add support for vertically dependent soil information</b>	-	<b>09.2012</b>
<ul style="list-style-type: none"> <li>&gt; Some information is available, e.g. texture as in BUK over Germany and soil horizon in HWSD.</li> <li>&gt; Implement and test new numerics for the Richards equation</li> </ul>			
<b>E.Machulskaya / DWD</b>	<b>Multi-layers snow model</b>	-	<b>Q2 2012</b>
<ul style="list-style-type: none"> <li>&gt; Debug (numerical problems are still present) and test.</li> </ul>			
<b>I.Rozinkina / Roshydromet</b>	<b>Snow pack density</b>	-	<b>Q1 2012</b>
<ul style="list-style-type: none"> <li>&gt; Current parametrization of snow pack density is sometimes significantly wrong; this may in particular lead to systematic source of errors in the snow analysis cycle</li> <li>&gt; A new parametrization of the snow pack density is proposed and will be tested</li> </ul>			

### 3. Other parametrizations

<b>JP.Schulz / DWD</b>	<b>FLake</b>	-	<b>on-going</b>
<ul style="list-style-type: none"><li>&gt; Update of external-parameter fields, extend with detailed national information</li></ul>			
<b>E.Machulskaya / DWD</b>	<b>Subscale treatment of surface heterogeneities</b>	-	<b>Q2 2012</b>
<ul style="list-style-type: none"><li>&gt; Implementation and tests of tile &amp; mosaic.</li><li>&gt; Application for partial snow cover.</li><li>&gt; Application with FLake (work is underway, Ekaterina Machulskaya and Jürgen Helmert)</li></ul>			

### 4. Infrastructure

<b>JM.Bettems / MeteoSwiss</b>	<b>Data pool</b>	-	<b>on going</b>
<ul style="list-style-type: none"><li>&gt; Regular update</li><li>&gt; Improve documentation of sites</li><li>&gt; Consolidate data sets (in particular Cardington)</li><li>&gt; New sites at Valday / Ru and at Debrecen / Hu</li><li>&gt; Add data format (+ NetCDF)</li><li>&gt; Open data set to academic community</li></ul>			