

MINUTES COSMO-SAINT

Purpose: Kick-Off Meeting

Date: July 18th 2017

Location: Zurich; MeteoSwiss Headquarters

Participants: Phillipe Steiner, Oliver Fuhrer, Jean-Marie Bettems, Michael Lehning, Sascha Bellaire

Summary:

Main goal of the Kick-Off Meeting held in Zurich was to define the overall goals of the COSMO-SAINT project which has a duration of 2 years and started on July 1st, 2017. The discussion led to the following work tasks.

- The current multi-layer snow cover model (ML-SCM) mainly developed by Ekaterina Machulskaya at DWD will be validated in terms of physics and numerics and improved as needed. The necessity and possibility of moving the multi-layer snow-cover model out of the TERRA code into a new module will be assessed.
- Current requirements of a ML-SCM are mainly predicting the dynamics of the snow cover mass balance on the regional scale as well as on the global scale (ICON). Therefore, an accurate simulation of the snow surface temperature as well as an accurate modelling of phase changes are of paramount importance.
- ML-SCM interaction with atmosphere: an improved snow cover scheme will also require validation and possibly adjustments to relevant parameterizations of surface fluxes; mainly radiation and turbulence

The code base for these developments is the latest release of the COSMO code available at the start of the project (5.04e). GPU directives can be implemented in the course of the project with the support of Xavier Lapillonne. Computing resources will initially be provided on kesch at CSCS, for the development phase, on another CSCS platform for the test phase (a proposal for a development project at CSCS will be submitted).

An important side effect of this project is the expected improvement of the snow analysis, due to the improved first guess. Note however that the adaptation of the snow analysis itself is not part of this project, but should be considered at some point.

Open tasks/questions:

- Preparation of a proposal for '**CSCS Development Project**'; People: Oliver and Sascha
- Preparation of a proposal for '**COSMO Priority Task Project**'; People: Jean-Marie and Sascha
- Invite Ekaterina Machulskaya and possibly Mathias Raschendorfer and Juergen Helmert to SLF in order to discuss **code and implementation** of an improved ML-SCM; People Michael Lehning
- Is the current **documentation** of the multi-layer snow module up to date?
- Is the **tile approach** implemented by Ekaterina in COSMO for the snow cover ready to use? Note also that a development on this topic by Polish colleagues could take place next year (Andrzej.Mazur@imgw.pl)...