

RC LACE Research stay report

Topic: ALARO-1 related issues

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The purpose of this one week stay was to collect information on recent ALARO-1 developments and to discuss about short and long term plans. Same time, Luc Gerard was there on ALADIN flat-rate stay and Martin Dian on RC LACE research stay, so we had some common discussions together with Radmila Brožkova and Jan Mašek.

The implementation of ALARO-1 coupling with SURFEX has recently started in Prague. In order to enable scientifically consistent transition from ISBA to SURFEX/ISBA many issues have to be tackled. Rafiq Hamdi, implemented modifications needed for TOUCANS scheme on ALARO and on SURFEX side into cy43t2 branch in Prague in December 2017. The usage of roughness and screen level interpolation in SURFEX/ISBA and in ISBA were carefully checked by Martin Dian. Several bugs and inconsistencies were noticed and have to be corrected. Details are described in the stay report of Martin Dian. The work is going to continue in 2018.

Radmila Brožkova presented her studies on the interaction of shallow and deep convection due to the turbulence transport. Shallow convection cloud cover is quite realistic, but during summer is too large, consequence is a significant delay of onset of summer convection. Thresholds for decision whether there is a cloud or not, for aborting the cloud when computing the vertical profile, and/or when there is stable stratification should be carefully set, they should have also physical meaning. Work was interrupted due to other tasks and will continue in 2018.

Luc Gerard presented his recent work on non-saturated downdraft which is part of the complementary subgrid draught (CSD) parameterization (Gerard 2015). He implemented few fixes into acnsdo code. The main modification concerns the use of a split-implicit formulation, and he had proved that the earlier version gives wrong solutions in particular (winter) cases.

The proposed tuning for acnsdo is quite satisfactory now and can serve as a base in the model setup. He pointed out that validation with 1D MUSC model is very useful.

We were discussing also about LACE research stays at CHMI in 2018, topics will be linked to TOUCANS and ALARO coupling with SURFEX. Next ALARO-1 working days can be organized in first half of year 2019.

Jan Mašek defended his PhD thesis “Broadband radiation scheme fully interacting with clouds” during my visit in Prague. His contribution to the development of ACRANEB2 radiation scheme is really huge. Congratulation and thanks for this work to Jan!

I am glad to take part at this event. This was also opportunity to remember my small contribution to ACRANEB developments, namely during my 2 weeks stay in Prague in January 2004 I was working on statistical weights computation in NER.