

Short report on LACE Project 2003/A Kick-off Meeting

Shallow convection and PBL cloudiness

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Introduction

The purpose of the 1-day meeting was to assess the state of work within the project, to identify and discuss problems and coordinate the next steps.

1. Prognostic cloud water (Lopez scheme)

Alexander and Laszlo have started to experiment with Luc Gerard's version of the Lopez scheme. It technically works in 1-d both at HMS and ZAMG, but in 3-d it does not work yet at ZAMG if it is run on more than 1 processor. Alexander and Laszlo will try to find the cause by one-to-one comparison of their code and namelist changes. Next steps (after the technical problems are solved): to compare the cloud liquid water of the prognostic scheme with the operational one, both in 1-d and 3-d, for some defined stratus cases (see Section 4).

Laszlo will spend 3 months in Toulouse (May-July), half of the time for phasing, and partly to work with Eric Bazile on physics. Due to the rapid developments associated with AROME, the exact topic has not yet been defined by M.F. Laszlo will be able work on the prognostic cloud water during April, and again from August onwards. Alexander will continuously work on the evaluation of the prognostic scheme during the coming months.

2. Subgrid-scale cloudiness (MESO-NH type scheme)

Thomas presented a short comparison of the subgrid-scale cloudiness schemes used in ALADIN and MESO-NH. The scheme used by HIRLAM was also mentioned briefly. Thomas has started to develop an off-line 1-d model that mimics some of ALADIN physics, for easy testing of different routines, modifications, etc. As a first step, the vertical diffusion as used in ALADIN was implemented. The next step will be to compare two sub-grid cloudiness schemes in this framework: the standard one (acnebn), and one that is similar to what is used in MESO-NH.

3. Radiation

For the ability of a stratus layer to maintain itself against mixing across the inversion and against warming from the surface it is crucial that the lw and sw radiative fluxes within the cloud and below are modelled realistically. Helga will study the profiles of lw and sw fluxes in stratus cases (both for the reference scheme acnebn, and for the Seidl/Kann inversion cloudiness modification). She will also compare the behaviour of the ALADIN radiation scheme with that of the Graals scheme (April-June). Helga will be in Prague during July/Aug, working on 3dvar/blending.

4. Additional data & tools

It was found that for the stratus problem there is no urgent need for additional datasets, since radiosoundings, satellite images, and synops describe the phenomenon reasonably well (due to its large horizontal extent) but a catalogue of stratus cases will be set up, for reference. The off-line 1-d model (written in C) which is being developed at ZAMG will be made available within LACE until the end of summer 2003.