The main outcomes and decisions from the final discussions on the ALARO-1 Working Days 16-19 February 2010, Budapest, Hungary

The last session, on Friday was chaired by Neva Pristov who made a short overview of the presentations and proposed some questions for discussion.

Presentations were focused on overview of current developments: (moist) turbulence and diffusive transport, radiative issues,condensation/evaporation associated processes including also deep convection. In few additional presentations general and connected topics were presented (physical-dynamical interplay, time step organization in physics computation, DDH). Participants from eight countries already using ALARO-0 reported about their experience, local implementations and evaluation. The two exercise sessions were prepared with the aim to increase knowledge on the code developing and maintaining.

During the discussion the main tasks for the next few months have been discussed. The short synthesis is following:

TOUCANS
developments will continue (consistent inclusion of a moist mixing length (based on moist N), preparation of the TOM terms) and it is expected that coding can be finished in few months. Few questions still have to be solved, one is linked with description of the influence of moisture on buoyancy via density effects, the other one with the computation of the TOM's terms for qt in case of non-zero SCC. The later one is a compact/isolated problem, Piet and Karl-Ivar can help with reviewing the problematic. Jean-Francois will send them mathematical descriptions with equations but in case, the recently expressed ideas of Pascal Marquet will be used, this topic disappears from itself.
Contributors: Jean-Francois, Ivan, Filip, Radmila

When the code is available an external look would be appreciated with the aim to have additional independent checking. A short instructions for the literature (which article is linked to which part of scheme) and the routines in the code will be prepared.
Contributor: maybe new colleague to hu-team will be interested

3D turbulence
Theoretical work has started for the 3D turbulence. A scheme where horizontal part can be obtained from SLHD, is proposed. There are still some open issues to be addressed but most of the components exist.
Contributors: Filip, Ivan

3MT
A new scheme based on the concept of virtual unresolved cloud is prepared by Luc for the updraft part of computation. Preliminary tests show a significant decrease (not a complete extinction) of the convective contribution when the mesh-size decreases from 8 to 1km. Extensive validation (also with independent code checking) is following and after final incorporation into code.
Contributors: Luc, Doina, Radmila (including into code), Karl-Ivar (validation)

Radiation
The description of radiation can be improved, three possible topics are identified:

- review the solar gaseous transmission functions
- more spectral intervals as possibility
- development of a time intermittent scheme
Contributor: Tomas (the solar gaseous transmission functions),
the other two topic have lower priority (if someone is interested he/she is welcome)

Microphysics
Implementation of more complete description of microphysics process (including prognostic graupel) has started with the extraction of 28 processes from ICE3. At the same time additional problems have been identified.
Contributor: Meral

Rash-Kristjansson CC02 scheme
A group of people can do the brainstorming how to incorporate the Rash-Kristjansson CC02 scheme into the TOUCANS/3MT structure
Contributor: Jean-Francois, Lisa, Doina, Karl-Ivar, Neva

Validation of ALARO-1 developments will not be easy task because all of these developments (time step reorganization in physics computation, TOUCANS, radiation, 3MT) have to be tested together. For ALARO-0 this was easier, it was done in 2 steps, first microphysics (LSTRAPO) and in second step 3MT was added. For this purpose a good diagnostics environment and validation tools are essential. Question of academic validation in ALADIN world has arisen. Maybe a group can be set up.
Contributor: Ivan, call for volunteers

Which future cycle can be taken as a base for wider ALARO-1 validation has still to be discussed. How complicated is the phasing depends mainly on modifications inside aplpar, cptend,mf_phys

Others miscellaneous topics
Validation of new DDH data flow structure for ALARO, check if all contributions are included,
Contributor: Lisa, Tomislav

Communications with Meteo-France is ongoing for the physics-dynamics interplay; a small proto-type with aim to learn the idea about process architecture will be prepared on request of Meteo-France
Contributor: Daan

SURFEX about current status information should be obtained from Meteo-France, Magnus is ready to help. There are efficiency, compatibility and benefit (link to CANARI) questions to be solved.

Diagnostic of 2 m temperature has to be rechecked, Jean-Francois is going to include Laszlo's proposal for improvements (dependency on situation based on Richardson number). Verification can be done in Austria (Christoph) and Romania (Doina) some improvement is expected, problem will probably remain but should be smaller.

Participant have no special comments about the working days organization. Although some doubts at begin open schedule was successful, longer and shorter presentation compensated each other. Working conditions were excellent. Exercises were well acknowledge, also reports from countries using ALARO-0 were very useful, showing deficiency in model forecast.