"Convergence" days (24-25 Sept. 2008, Toulouse): summary of the working group on "physics/dynamics" interfaces

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29 September 2008

A) Documentation. The existing code for multi-phasic equations (H and NH) is not described in an updated documentation. This is quite problematic since some inconsistencies are suspected between physical and dynamical computations.

Proposed actions:
1) Status of the existing documentation (estimated time: 1 month, person: ?)
2) Defining the level of detail of the needed documentation (estimated time: 2 months in a forum)
3) Writing the documentation (estimated time: 3 months, person: ?)

B) Physics/Dynamics interface. There is an agreement to try to develop a common "physics/dynamics" interface for ARPEGE/ALARO/AROME physics which would be an evolution of the current interface "CPTEND_NEW" (Catry et al., 2007) used for ARPEGE/ALADIN/ALARO physics. This interface should have the flexibility to include more prognostic water species (in particular graupel and hail) and to allow the sedimentation of all prognostic hydrometeors. The MAPFI concept proposed by ALADIN partners should be easier to implement now with the new dataflow coded for DDH diagnostics by O. Rivière and J.-M. Piriou. An evolution of this "CPTEND_NEW" interface towards offering the possibility to work either with microphysical pseudo-fluxes or with microphysical tendencies also seems feasible and will be studied at CNRM.

Proposed actions:
1) CNRM would like to study the possibility and write a proposal for an evolution of CPTEND_NEW towards offering the possibility to work either with microphysical pseudo-fluxes or with microphysical tendencies (2 months, F. Bouyssel & S. Malardel)
2) Feasibility study of taking into account falling clouds (B. Catry)
3) Writing a unique general routine (evolution of "CPUTQY") for AROME, ALARO, ALADIN, ARPEGE (volunteer (?) under K. Yessad's expertise)
4) Discussion of the chosen physics/dynamics interface

C) Physics interfaces. Little effort was devoted in the last years to the improvement of our physical interfaces "APLPAR" and "APL_AROME", priority being rather given to the improvement of physical parameterisations. With the "operational use" of ALARO+3MT, AROME and "CBR+KFB" in ARPEGE/ALADIN-MF, it is time to devote more attention to improving physical interfaces.

Proposed actions:
1) Write a proposal for cleaning the physical interfaces APLPAR and APL_AROME (E.Bazile, Y. Bouteloup, Y. Seity, R. Brožková)

2) On the step 1 done, study the feasibility and interest of merging APLPAR and APL_AROME in a single physical interface routine
3) Development of a general interface to call *any* of the radiative parameterisations currently used in IFS, ARPEGE, ALARO, AROME and HIRLAM, and mandatory afterwards for calling any new RT code. (Y. Bouteloup, Alaro staff, Hirlam staff)

D) Position of physics in the dynamics. It would be very desirable to have the code flexibility allowing an easy testing of having the dynamics before the physics. There is an on-going research work on that topic which is rather a medium term objective. (R. Hamdi, P. termonia)

DDH actions (O. Rivière and J.-M. Piriou)
26/09/08

- Add dynamics terms (SL, SI, spec. Hor. Diff.):
    - Write a proposal to be distributed to ALARO partners
    - Code (~ 6 months, F. Voitus + partner ?)
- New dataflow:
    - For Arome (O. Rivière): CY35T1 (November 08) => to be extensively tested
    - For Arpège/Aladin/Alaro (O. Rivière) : CY35T2 in parallel to old dataflow (used by ECMWF !) => to be then tested widely within the community
    - Documentation in English (O.R., Nov. 08)
    - Remove old dataflow from code: contact with ECMWF needed; not before CY37 (supervision: O.R)
    - Modernization of DDH operator with respect to new dataflow (supervision: O.R)
- Strategy for intercomparison of model versions: no action planned before the outcome of the MAPFI treatment (to avoid duplication of work)