Work plan for ALADIN-2 in 2004

D. Giard, G. Hello and J.F. Geleyn,
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The reference documents are available on the ALADIN web site, under item "*Research plans*", i.e at address : http://www.cnrm.meteo.fr/aladin/scientific/2004-program.html. The source code name is ALARO, whatever the use.
The present version takes into account the results from working groups during the 14th ALADIN workshop.
The work program is still quite huge in this second draft, but its scope extends till mid 2005. Only higher priority topics should be considered first, and the program will be refined afterwards (early 2005).

1. Sub-project INTERFACES

Objective

To offer the highest level of options while preserving the efficiency and portability of the model. This concept extends beyond the scope of the ALADIN-2 project, towards the ARPEGE-IFS system at least. It will guarantee a smooth convergence of the ALADIN and AROME projects, making validations easier and offering to all the partners any intermediate choice between AROME and the present operational configurations. For 2004, priority must be given to the physics-dynamics interface.

Working plan for 2004

a Physics-dynamics interface (upperair) & time-step management (× **AROME**)   *COORDINATOR* : J.F. Geleyn

a1. Definition of consistent sets of equations and hypotheses compatible with the ALADIN-NH dynamics and the various physical packages likely to be used (follow-on of the work performed by Pierre Bénard, Joël Stein and Sylvie Malardel for Meso-NH physics).
     – Priority level : 1
     – Who ? : *Martina Tudor, Piet Termonia*

a2. Thorough study of the time-discretization and the organisation of time-stepping.
     – Priority level : 1
     – *Who ? : **Piet Termonia**, Jean-François Geleyn, **Martina Tudor**, Gwenaëlle Hello*

a3. A new physics-dynamics interface must be defined, then designed and coded, first. Once this flexible interface will exist, it will be possible to call either the current ALADIN physics or the Meso-NH physics in the ALARO framework.

- – Priority level : 1
- – Who ? : **Filip Vana**, *Jean-François Geleyn, Gwenaëlle Hello,* **Martina Tudor**

a4. Definition of the set of required diagnostics (which may also impact on the practical implementation of the interface).

- – Priority level : 1
- – Who ? : *Sylvie Malardel, CNRM/GMAP/PROC, CNRM/GMME,* **?**

b Externalisation of the surface   *CONTACT POINTS* **:** F. Bouyssel, P. Le Moigne

b1. Training actions and further work on the externalization of surface for AROME

- – Priority level : 1
- – Who ? : *Valery Masson, Sylvie Donier, Patrick Le Moigne,* **Laszlö Kullmann, Andrey Bogatchev**, *Jean-Daniel Gril,* **Bodo Ahrens**

b2. Optimization of the interface for the lower-resolution configurations

- – Priority level : 1
- – Who ? : *post-doc GMGEC,* **Laszlö Kullmann**, *Gwenaëlle Hello, François Bouyssel*

b3. Definition of the required diagnostics

- – Priority level : 1
- – Who ? : *Sylvie Malardel, CNRM/GMAP/PROC, CNRM/GMME,* **?**

b4. Update of I/Os for surface fields : choice of the optimal configuration, coding and first tests

- – Priority level : 2
- – Who ? : *Ryad El Khatib, Sylvie Malardel,* **Maria Derkova** *(as ALADIN contact point)*

c Assimilation (× ALAROPAC)   *CONTACT POINT* **:** L. Auger

c1. "from Diag-Pack to Var-Pack", or "do we need a surface analysis ?" (this will test whether we have to keep O.I. or not)

- – Priority level : 2
- – Who ? : *Ludovic Auger, Françoise Taillefer,* **Lora Taseva**

d Efficiency and Portability   *COORDINATOR* : R. El Khatib

d1. Further improvement of the xrd library and of the consistency of tools
- Priority level : 1
- Who ? : **Oldrich Spaniel,** *Jean-Marc Audoin, Jean-Daniel Gril, Denis Paradis, ?*

d2. Management of the extension zone (avoiding calling physics there)
- Priority level : 1
- Who ? : *Ryad El Khatib,* **Radmila Brozkova**

d3. Further externalizations : biperiodization, Full-Pos, O.I., ?
- Priority level : 2-3
- Who ? : *CNRM/GMAP*

d4. New file structure
- Priority level : 2
- *Who ? : Jean-Marc Audoin, Ryad El Khatib, Denis Paradis,* **Maria Derkova** *(as ALADIN contact point)*

e Validation tools (× **AROME ,** × **ALARO - 5 km ,** × **ALARO - 10 km**)　　　*COORDINATOR* : J. Stein

e1. Development or refinement of validation / verification tools using radar and satellite data, or new methods (e.g. probabilistic scoring of precipitation, improved use of regional observing networks).
- Priority level : 1
- Who ? : **Tomislav Kovacic, Siham Sbii,** *Joël Stein, Eric Wattrelot ?*

e2. Development (or adaptation) of a set of diagnostics available to all physical packages (the wider the better).
- Priority level : 1
- Who ? : **Tomislav Kovacic, Stjepan Ivatek-Sahdan**, *CNRM/GMAP/PROC, CNRM/GMME, ?*

Remarks

a: The work on equations should be performed first, since it will define what is not allowed in the design of interfaces.

c: This should precise whether we need an "optimal interpolation" analysis for nowcasting.

e: The work should start only in the second half of 2004.

2. Sub-project ALARO – 2 km

Objective

Set up and run the AROME model prototype, assess day-one meteorological quality and computer cost, first scientific improvements and computational optimization. Other ALADIN partners than Météo-France will contribute to nominal AROME on subjects that may go beyond the convergence but can be tackled outside Toulouse because they are of general interest to justify investment from the partners and do not need training on the full Meso-NH model. The 3d prototype (and the 1d version too) is available in Toulouse since May 2004, in a preliminary version, not optimized at all.

Working plan for 2004

a Dynamics   *COORDINATORS* : P. Bénard, R. Brozkova

The work on ALADIN-NH is now regarded as a part of the AROME project, with little change to the actual content of the work package. The following points should be addressed :

a1. Code maintenance, cleaning and optimization, validation aspects (including more case studies). ($\times$ **INTERFACES ,** $\times$ **ALAD1)**
   – Priority level : 1
   – Who ? : *Jozef Vivoda, Martina Tudor, Jan Masek, Pierre Bénard, Gwenaëlle Hello, Yann Seity, **Radmila Brozkova***

a2. Refinement of the ICI NH scheme (ex P/C), including the call to physics. ($\times$ **INTERFACES ,** $\times$ **ALAD1)**
   – Priority level : 2
   – *Who ? : **Jozef Vivoda, Martina Tudor**, Yann Seity*

a3. Lower Boundary Condition (interactions with horizontal diffusions and SL advection, advection of vertical velocity).
   – Priority level : 2
   – Who ? : *Jan Masek, Radmila Brozkova, Petra Smolikova*

a4. Upper Boundary Condition : Radiative condition, adaptation to variable $d4$.
   – Priority level : 2
   – Who ? : *Martin Janousek, Jan Masek, Pierre Bénard, Jozef Vivoda (?)*

a5. Diabatic forcing. ($\times$ **INTERFACES)**
   – Priority level : 3 unless proved of major importance for the physics-dynamics interface
   – Who ? : *Alena Trojakova, Pierre Bénard*

a6. SLHD for NH dynamics.
- Priority level : 3 since it has to work first at operational scales
- Who ? : ***Filip Vana***

a7. Theoretical studies, towards higher resolution (vertical discretization, link between NH and finite elements, problems due to the "terrain-following" coordinate, SRNWP challenges).
- Priority level : 3
- Who ? : ***Jan Masek, Radmila Brozkova***, *Pierre Bénard*, ***Valery Spiridonov***

b Equations (× INTERFACES)

Definition of a consistent set of equations and hypotheses compatible with the ALADIN-NH dynamics and Meso-NH physics (follow-on of the work performed by Pierre Bénard, Joël Stein and Sylvie Malardel). Thorough study of the time-discretization.
This is included in the work plan for the **INTERFACES** subproject.

c Physics -1 : not requiring the AROME (3d) prototype   *CONTACT POINTS* : S. Malardel, P. Jabouille, P. Le Moigne

c1. Learning Meso-NH physics and performing inter-comparison experiments using the ALADIN and AROME 1d models.
- Priority level : 1
- Who ? : ***Martina Tudor, Siham Sbii,*** *Patrick Jabouille, Sylvie Malardel*

c2. Introduction of the operational snow scheme in the AROME surface scheme.(× **INTERFACES**)
- Priority level : 1
- Who ? : ***Andrey Bogatchev***, *Patrick Le Moigne, Eric Bazile (?)*

c3. Test and optimization of the ISBA-dif model (with several vertical layers) for a future use in AROME.
- Priority level : 3
- Who ? : ***Bodo Ahrens (?)***

c4. Development of a 1d lake-model for AROME (then validation and upscaling).
- Priority level : 3
- Who ? : *?*

c5. Further test and validation of the 1d urban model for AROME (then upscaling ?).
- Priority level : 3

– Who ? : *Valery Masson,* **?**

c6. Validation and improvement of fog forecast.(1d model, then AROME prototype)
   – Priority level : 3
   – Who ? : *?*

d Physics -2 : requiring the AROME prototypes   *CONTACT POINTS* : F. Bouttier, Y. Seity

d1. Evaluation of the stability and accuracy of AROME physics with long time-steps, control of the robustness of parameterizations (as was done for the ARPEGE/ALADIN package) (may be performed in 1d first)
   – Priority level : 1
   – Who ? : **Martina Tudor**, *Yann Seity*

d2. Research and development on the 1d turbulent scheme
   – Priority level : 1
   – Who ? : *GMME team*

d3. Validation and improvement of sea fluxes.
   – Priority level : 3
   – Who ? : *?*

d4. Coupling AROME with an interactive chemistry model
   – Priority level : 3
   – Who ? : *Yann Seity, ?*

d5. Phasing with future evolutions of the Méso-NH physics (if any this year, preparation work for future operational applications and scientific classical follow-on of adpated concepts).
   – Priority level : 2 for this (starting) year
   – Who ? : *Yann Seity, Patrick Jabouille*

d6. Minimization of AROME development impacts on operational ALADIN applications. (the AROME prototype will not be phased until later and the only reasonable way to profit from current promising merges (essentially in the physics) is to rely on the forthcoming interface and on the latest ALADIN cycles, in order to avoid future dilemmas). **(× INTERFACES , × ALAD1)**
   – Priority level : 2 for this (starting) year
   – Who ? : *?, Yann Seity, Patrick Jabouille,* **?**

d7. Evaluation of the AROME prototype in specific situations: (once the 3d prototype usable), e.g. : Norwegian area (comparisons with HIRLAM and UM); Mediterranean (MAP cases), Saharian and tropical Africa areas; recent high-impact European mesoscale weather events
- Priority level : 2 for this (starting) year
- Who : *Yann Seity, ?*

Validation of clouds and precipitation using radar and satellite data at AROME resolutions (coordination with the corresponding SRNWP network is required of course) : part of the work on INTERFACES

e Plans for the French AROME team (model)   *COORDINATOR* : F. Bouttier

The model will be developed as a prototype i.e. a non-optimized version to serve as a proof of concept of plugging Meso-NH parametrisations into ALADIN-NH: 1d prognostic turbulence, FM radiation, prognostic cloud microphysics, externalised land surface model. The prototype will then be run on test cases at resolutions ranging between 1 and 10 km for scientific validation, numerical optimization, and computer benchmarking. It will be phased back into the main ALADIN cycle early in 2005, with a second release in 2006.
The model dynamics and physics/dynamics coupling will be done as a part of normal ALADIN activities, adding AROME manpower when possible. The physics itself will be developed by the Meso-NH community in the Meso-NH environment and imported into AROME when ready, the main issues for work in 2004 will be the parametrisation of surface fluxes over sea, the specification of a renewed 3d turbulence scheme and the assessment of a common set of basic hypotheses for AROME and Meso-NH.
- Priority level : 1
- Who : *Yann Seity, Frédéric Duret, Pierre Bénard, Sylvie Malardel, Patrick Jabouille, Joël Stein, François Bouttier, ?*

Remarks

a: The cleaning of NH dynamics will be achieved before summer 2004.

Only pure model issues are listed here. AROME topics of interest in the domain of data assimilation, predictability or coupling are covered by **ALAROPAC** , while verification and interface aspects are mentioned in **INTERFACES** .

3. Sub-project ALARO - 5 km

Objective

To possibly solve the problems inherent to the so-called "grey zone", mainly that convection is partly explicit but not fully resolved (the most advanced work on this topic is the one of Luc Gerard), but other parameterizations may also required attention. It has to be stressed here that, first

"grey-zone" problems appear only in the domain of physical parameterizations, second Météo-France does not want to be involved in this sub-project. The LACE plan for physics is put here by default. The support for experiments is the ALADIN model at the beginning. **There will anyway be strong interactions with the ALAD1 and ALARO-10 km sub-projects.**

COORDINATORS : T. Haiden, L. Gerard

Working plan for 2004

a Deep convection (× ALARO - 10 km)

a1. Enter grey zone (more comparison experiments on 7 km, 4 km, and 2.5 km), maybe it is not as "bad" as anticipated)
  – Priority level : 1
  – Who ? : *Thomas Haiden, Doina Banciu, Georg Pistotnik, ?*

a2. Prognostic scheme of Luc Gerard : The development of an integrated treatment of the moist physics implying a coherent connection between prognostic updraught, micro-physics and downdraught, with a common treatment of subgrid and resolved precipitation and cloudiness, is now at the step of 3D testing. Work is going on, on the issues of stiffness / scheme numerical stability, additional enhancements of the triggering of convection, tuning of the amount of precipitation, and a few other issues. Further 3d validation tests are planned using ARPEGE and ALADIN at different resolutions, with a particular attention to the behaviour in the "grey zone" (7-3km mesh). Controll cases experiments using a pseudo-2d model should also be performed.
  – Priority level : 1
  – Who : *Luc Gerard, Austrian team, ?*

a3. Study of the triggering and development stage of deep convection, using radar and satellite data.
  – Priority level : 1
  – Who : *Franz Wimmer, Martin Bellus, Tomislav Kovacic (?)*

a4. Interaction with the representation of orography (envelope versus mean, first tests)
  – Priority level : 2
  – Who : *Franz Wimmer*

a5. Test of the KFB convection scheme at such scales (implying the introduction of missing elements: continuity with the microphysics of the resolved precipitation, prognostic closure, possibility to have a convective fraction of the mesh size growing towards one).
  – Priority level : 3 (in case of problem with other schemes)
  – Who : *?*

b Shallow convection and low cloudiness (× **ALARO - 10 km,** × **ALAD1)**

b1. Convergence between Xu-Randall and Seidl-Kann schemes, 3d tunings.
- Priority level : 1
- Who : *Alexander Kann*

b2. Experiments on inversion formation and sustenance (including 3d cycling experiments).
- Priority level : 1
- Who : *Alexander Kann, Laszlö Kullmann, Gergely Bölöni*

b3. Requirements for vertical diffusion and vertical resolution to simulate formation of sharp inversions.
- Priority level : 1
- Who : *Thomas Haiden (1d), André Simon (3d)*

c Orographic drag and envelope (× **ALARO - 10 km ,** × **ALAD1)**

c1. Experiments with, and validation of, newly revised scheme without envelope
- Priority level : 1
- Who : *Franz Wimmer, Jean-François Geleyn, Bart Catry, Jure Cedilnik, François Bouyssel, Richard Mladek*

c2 Validation of wind forecasts at high mountain stations.
- Priority level : 1
- Who : *Klaus Stadlbacher*

c3 Evaluation of the "quality" of orography description, new definition of the semi-envelope.
- Priority level : 2
- Who : *Jure Cedilnik*

d Prognostic cloud water(× **ALARO - 10 km)**

d1. Sensitivity studies on orographic precipitation cases.
- Priority level : 1
- Who : *Christoph Wittmann*

d2. Interaction with other developments (Meso-NH microphysics, "Functional Boxes", data assimilation, ...)

– Priority level : 2

– Who : ***Doina Banciu***

Remarks

c: Significant advances achieved along the first 2 months of 2004.

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4. Sub-project ALARO-10 km (validation, upscaling)

Objective

To ensure that developments designed for smaller scales will improve forecast skill at the current operational ones without too much loss of numerical efficiency.

COORDINATOR : G. Hello

Working plan for 2004

a Build and evaluate an ALARO-10 km prototype from the AROME one + the MNH convection scheme (KFB)

a1. Building the prototype

– Priority level : 1

– Who : *Gwenaëlle Hello,* ***Tomislav Kovacic, Jure Cedilnik****, Jean-Marc Audoin*

a2 Comparison of ALADIN and the ALARO prototype at 10 km, evaluation of the impact of the Meso-NH physics and of the overhead.

– Priority level : 1

– Who : *Gwenaëlle Hello,* ***Tomislav Kovacic, ?***

a3. Evaluation of other solutions for the convective scheme.(× **ALARO - 5 km)**

– Priority level : 2 (in case of)

– Who : *Jean-François Geleyn, Gwenaëlle Hello, Jean-Marcel Piriou (?),* ***Luc Gerard, ?***

a4. Definition of an "optimal" choice for the surface, and implementation.(× **INTERFACES)**

– Priority level : 2

– Who : *François Bouyssel,* ***Laszlö Kull mann,*** *Gwenaëlle Hello*

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b Optimization of the parametrizations

b1. Further work on intermittent radiation schemes **(× ALARO - 5 km , × ALAD1)**
- – Priority level : 1
- – Who : *Jean-François Geleyn,* **Neva Pristov,** *Gwenaëlle Hello, Yves Bouteloup*

b2. Sub-grid scale orography: drag/lift, in order to remove the envelope orography **(× ALARO - 5 km , × ALAD1)**
- – Priority level : 1
- – Who : *Jean-François Geleyn,* **Bart Catry,** *François Bouyssel,* **Frank Wimmer , Jure Cedilnik, Richard Mladek**

b3. Triggering of convection **(× ALARO - 5 km , × ALAD1)**
- – Priority level : 1
- – Who : **Thomas Haiden, Martin Bellus,** *Jean-Marcel Piriou,* **Tomislav Kovacic, Luc Gerard**

b4. Adaptation of the parametrizations to long time-steps, especially for micro-physics
- – Priority level : 1
- – Who : *Gwenaëlle Hello,* **Doina Banciu,** *Jean-François Geleyn,* **Luc Gerard,** *Eric Bazile (?)*, **Piet Termonia**

b5. Study of the performance of the prototype in the presence of shallow convection and stratiform clouds.
- – Priority level : 1
- – Who ? *: CNRM/GMAP/PROC,* **?**

Remarks

b: Many common tasks with **ALARO - 5 km** !

5. Sub-project ALAROPAC

Objective

To continue research on issues that concern all scales, roughly as scheduled. Only the main lines are given for data assimilation and predictability, since a detailed description is available in the document written by Claude Fischer.

Working plan for 2004

a Data assimilation   *COORDINATORS :* C. Fischer, G. Bölöni

a1. Algorithmic aspects
- **G**eneral maintenance (phasing and validation, evaluation of a new humidity variable)
- **M**oving to 3d-FGAT
- **E**valuation of the CONGRAD minimizer
  - –Priority level : 1
  - –Who ? : *Claude Fischer,* **Gergely Bölöni,** *Loïk Berre,* **Cornel Soci,** *Karim Yessad ,* **Hungarian newcomer,** *Gérald Desroziers, Bernard Chapnik*
- **I**mplementation and evaluation of a variational quality control
- **U**pdate and evaluation of the TL/AD models
  - –Priority level : 2
  - –Who ? : *Claude Fischer, Patrick Moll,* **Cornel Soci,** *Karim Yessad ,* **André Simon**, *Bernard Chapnik*
- **M**odel imbalances, initialization and the "Jc-dilemma" (watch)
  - –Priority level : 3
  - –Who ? : *Claude Fischer, Dominique Giard*

a2. Cycling
- **A**nalysis-only : further work on 3d-var in ALADIN-HU, first version of 3d-var in ALADIN-France and ALADIN-Roumanie
- **L**arge scale update : DFI-blending in ALADIN-CE, explicit spectral blending in ALADIN-HU,and comparison with Blendvar, Blendvar in ALADIN-NORAF, variational control via the Jk cost-function
  - –Priority level : 2
  - –Who ? : *Hungarian, French, Moroccan, Romanian teams; Dijana Klaric, Radmila Brozkova*

a3. Background error covariance description
- **S**ampling : Ensemble versus NMC methods
- **T**unings : ALADIN-France B statistics, a posteriori diagnostics and retunings, comparison with a Loennberg -Hollingsworth approach
- **S**tructure functions : bi-periodic increments, compactly supported correlations, isotropy and off-diagonal terms in B, multivariate humidity analysis, β-plane, wavelet basis, evaluation via single-obs experiments, ...
  - –Priority level : 1
  - –Who ? : *Loïk Berre,* **Simona Stefanescu,** *Vincent Guidard, Thibaut Montmerle, Bernard Chapnik,* **Wafaa Sadiki, Gergely Bölöni, Kristian Horvath,** *Claude Fischer,* **Roger Randriamampianina, Rachida El Ouaraini, Alex Deckmyn**

a4. Observations and observation operators
- Radar (reflectivity)
    - Priority level : 1
    - Who ? : ***Marian Jurasek,*** *Patrick Moll,* ***Doina Banciu, Rashyd Zaaboul****, Eric Wattrelot, Eric Bazile, Olivier Caumont, Véronique Ducrocq, Claude Fischer, François Bouttier*
- ATOVS (AMSU-A, AMSU-B, HIRS, SSM/I(S))
- MSG
- AIRS
- Screen-level data
- Wind profiler data
- AMDAR data
- QUICKSCAT data
    - Priority level : 2 (mainly continuation of the present work or adaptation to ALADIN)
    - Who ? : *Elisabeth Gérard,* ***Roger Randriamampianina, R. Szotak, Zahra Sahlaoui,*** *Nadia Fourrié, Thibaut Montmerle,* ***Mohamed Dahoui,*** *Thomas Auligné,* ***Malgorzata Szczech,*** *Florence Rabier, Patrick Moll,* ***M. Majek, Gabriella Csima, Hungarian student,*** *Christophe Payan,* ***Lora Taseva***
- Humidity "bogus"
- Ground GPS
    - Priority level : 3
    - Who ? : *Véronique Ducrocq,* ***Fatima Hdiddou (?),*** *Mathieu Nuret, H. Brenot*

a5. Surface analysis
- improvement of the operational initialization of surface variables (data assimilation in ARPEGE or ALADIN, smoothing of the soil wetness index, introduction of soil wetness indices in Full-Pos, ...)
    - Priority level : 2
    - Who ? : *François Bouyssel,* ***Mohamed Jidane,*** *Françoise Taillefer,* ***Stjepan Ivatek-Sahdan (?), ?***
- simplified 2d-var / dynamical optimal interpolation for mean soil moisture (further validation, use of infra-red brightness temperatures), and mean soil temperature
- extraction of high resolution products and impact studies : SST, snow, albedo, ice
- use of snow analysis for T2m forecast, comparison of several snow products
    - Priority level : 3

      – Who ? : **Karim Bergaoui,** *François Bouyssel***,** *Françoise Taillefer,* **Helga Toth, ?**

[+ Var-Pack (× **INTERFACES)**]

b Predictability   *COORDINATORS :* A. Horanyi, J. Nicolau

*b1***.** ALADIN-France EPS
      – Priority level : **2** (must start)
      – Who ? : *Jean-Marie Lepioufle, Jean Nicolau, Loïk Berre*

*b2***.** Ensemble Kalman filter at ZAMG
      – Priority level : **2** (must start)
      – Who ? : **Yong Wang and Austrian colleagues**

*b3***.** ALADIN-Hungary LAMEPS project : optimize global singular vectors (SV) to initialise the LAMEPS, force LAMEPS by perturbations from the French PEACE, evaluate local LAM SVs, develop and/or install diagnostic and performance products
      – Priority level : **2** (must start)
      – Who ? : **Sandor Kertesz, Edith. Hagel, Gabriella Szepszo, Gabor Radnoti**

other contributions : **Mihaela Caian, Jean Nemeghaire,** *GMAP/RECYF team (Alain Joly and co),* **?**

c Coupling   *CONTACT POINTS :* J.-M. Audoin, P. Termonia

*c1***.** Spectral coupling
      – Priority level : 1
      – Who ? : **Raluca Radu, Gabor Radnoti (?)**

*c2***.** Transparent boundary conditions in a spectral model (esp. problem of the extension zone)
      – Priority level : 1
      – Who ? : **Ilian Gospodinov (?), Martin Gera (?), Piet Termonia,** *Fabrice Voitus (?), ?*

*c3***.** The never-ending story of the tendency-coupling for surface pressure (new domains, new options ?)
      – Priority level : 2
      – Who ? : *Jean-Marc Audoin*

c4. Update and validation whenever new fields are introduced
- Priority level : 2
- Who ? : *Jean-Marc Audoin, Ryad El Khatib for 927, ?*

c5. Two-way nesting in a spectral model
- Priority level : 3
- Who ? : ***Martin Gera (?), Fabrice Voitus (?), ?***

c6. Definition of a coupling strategy for AROME (gridpoint and/or spectral, transparent boundary conditions or not, resolution ratios, ...); Impact of the above choices on the format of coupling files; Physical aspects of coupling for AROME
- Priority level : 3 (prospective)
- Who ? : *Fabrice Voitus (?), ?*

Remark

Help is required on coupling !

6. Sub-project ALAD1

Objective

To further improve the skill of the operational suites, including progress in verification and maintenance / update of the source code.

Working plan for 2004

a Update of the operational suites (all of them !)   *CONTACT POINTS : GCO team, F. Bouyssel*

a1. Update of the source code library : a move directly up to cycle 28T1 (ready in June ?) is strongly suggested, since this cleaned library will contain major scientific developments, including the basic code for the AROME and ALARO-10 km prototypes (themselves based on pre-27) apart from the call to Meso-NH physics.
- Priority level : 1
- Who : ***all ALADIN teams***

a2. First update of the operational namelists : checkings for dynamics, move to a more recent version of physics, local retunings (including the verification of orography description).

- – Priority level : 1
- – Who : *all ALADIN teams*

a3. Update of the operational suites considering the outcome from research both in ALARO and in ARPEGE (both up- and down-scaling)
- – Priority level : 2 (unless major improvements come rapidly)
- – Who : *Jean-François Geleyn, Gwenaëlle Hello, **Maria Derkova**, François Bouyssel, and **all ALADIN teams***

a4. First test : coordinated operational implementation of higher resolution databases for orography and surface !
- – Priority level : 2 (not yet ready)
- – Who : *François Bouyssel, Françoise Taillefer, **Mohamed Jidane, Olivier Latinne**, GCO team, and **all ALADIN teams***

b Changes in coupling files   *CONTACT POINT* : D. Giard

b1. Evaluation of the impact of the change of cut-off times in ARPEGE
- – Priority level : 2 (since delayed)
- – Who : *Gérald Desroziers or Bruno Lacroix for informations, **all ALADIN teams** for the expression of constraints*

b2. Enhanced compression of coupling files (for surface fields, for all fields)
- – Priority level : 1
- – Who : *Ryad El Khatib, Denis Paradis, **all ALADIN teams for preliminary tests***

b3. Implementation in ARPEGE of a monitoring of coupling files production (warning index).
- – Priority level : 1
- – Who : ***Piet Termonia**, Karim Yessad, Ryad El Khatib, **all ALADIN teams for the choice of strategy***

c Verification   *COORDINATORS :* J. Jerman, J. Stein, D. Klaric

c1. Operational implementation of the "objective verification project"
- – Priority level : 1
- – Who : ***Slovenian team, helped by all ALADIN teams***

c2. Definition and use of new verification methods (× **INTERFACES ,** × **ALARO-***)
- – Priority level : 2
- – Who : *all ALADIN teams*

c3. "MAP reanalysis" using ALADIN (LACE project)
- Priority level : 3
- Who : ***Stjepan Ivatek-Sahdan, Jure Cedilnik, Yong Wang, Bodo Ahrens, Hungarian team***

c4. Case studies, analysis of forecast failures or success
- Priority level : 2
- Who : ***Doina Banciu, Steluta Alexandru, Maria Derkova, and all ALADIN teams***

d Source code maintenance   *COORDINATOR :* C. Fischer

d1. Phasings : CY28T0 and CY28T1 in spring, CY29T1 in Autumn **(× INTERFACES)**
- Priority level : 1
- Who : *Claude Fischer,* **Adam Dziedzic, Martina Tudor, Gergely Bölöni, Oldrich Spaniel, Stjepan Ivatek-Sahdan**, *Ryad El Khatib, Yann Seity, Gwenaëlle Hello, Patrick Saez, Karim Yessad,* **Nihed Bouzouita, Alena Trojakova, Andrey Bogatchev, Filip Vana, Alex Deckmyn, Cornel Soci**

d2. Update of gmkpack
- Priority level : 1
- Who : *Ryad El Khatib*

d3. Update and cleaning of configuration 923 (up to cycle 28T1), new diagnostic tools and scripts
- Priority level : 2 (risky bet)
- Who : *Dominique Giard,* **Jure Cedilnik**, *Françoise Taillefer,* ***?***

d4. Update of diagnostics for physics in ALADIN (DDH, physical tendencies in DM, model to satellite) **(× INTERFACES)**
- Priority level : 1
- Who : ***Tomislav Kovacic, Stjepan Ivatek-Sahdan, Siham Sbii,*** *Jean-Marcel Piriou, CNRM/GMAP/PROC,* ***who for DDH ?***

d5. Documentation (pursuing the effort)
- Priority level : 2
- Who : *?*

e Finalization of the work on SLHD   *COORDINATOR* : F. Vana

Towards an operational implementation, as far as possible. : Priority level : 1, Who : ***Filip Vana***

f Improvement of the operational version of ARPEGE (model)   *COORDINATOR :* F. Bouyssel

The main developments considered for 2004 by the CNRM/GMAP/PROC team are the following :

- improvement of the radiation scheme
- implementation of Lopez' micro-physics, end of the work on "Functional boxes"
- improvement of soil moisture initialization
- implementation of new databases for surface, vegetation, orography, ...
- improvement of orographic forcing
- ...

Who ? : *CNRM/GMAP/PROC* mainly, help from ALADIN partners welcome however.