

Proposal for a clarification of guidelines and acronyms for work around ALADIN and AROME

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version including corrections from the "extended CSSI" meeting (Prague, 13/02/2004)
and some further ones to limit misunderstandings at the Météo-France level.

1. Name of the consortium : ALADIN

2. Models

Here we define a model as a source code package than can be used in different configurations and at different scales to cover the whole range of LAM NWP applications.

ALADIN, to start with, and ALARO, to end with. *AROME* is a specific use of the ALARO library, for very high resolution applications.

At the very beginning, only ALADIN is available. The first prototypes (for *AROME* and *ALARO-10km*) should be ready by mid-2004. Evolutions will differ till ALARO replaces ALADIN everywhere, but about 90% of the code will be common. The first ALARO library will result from the inclusion of the prototypes in the ALADIN one, scheduled for 2005.

Pragmatically, ALADIN should be used only till a suitable declination of ALARO (for operations) or a prototype (for research) is ready / available locally.

3. Names and objectives of the consortium projects :

1991 - 2003 : ALADIN(-1) (Aire Limitée Adaptation dynamique Développement INternational)
-> building and putting in operations the ALADIN model

2004 – 2014 : ALADIN- 2 (Arome Limited Area Decentralized International Network)
-> building the ALARO model from the ALADIN model, so as to keep full benefit from developments at all scales and by all ALADIN partners (maybe also HIRLAM contributions)
-> putting *AROME* or another declination of ALARO in operations

4. Research methods / axes

ALADIN - 1 :

thematic axes of research

going towards smaller scales for each scientific topic («downscaling»)

ALADIN - 2 :

A big change !

- downscaling is replaced by an upscaling towards operational mesh-sizes of the results of research at higher resolution, for some topics.
- axes of research by scale range, with 3 domains identified :
 - 7-20 km (present operational horizontal resolutions)
 - 4 - 7 km (so-called grey zone)
 - 2 - 3 km (AROME target, resolved convection)
- transversal actions :
 - for coupling, data assimilation and predictability
 - toolbox concept & maintenance (to ensure a smooth convergence)
 - validation (to ensure operations benefit from research at small scales)

These last two transversal actions are the key of the success of the project.

The only restriction to contributions is that Météo-France doesn't consider research on the specific «grey zone» problems. On the other hand, there are now contributions from the CNRM/GMME group in ALADIN (-2) research, via AROME.

5. Description and proposed naming of the ALADIN-2 sub-projects

This is of course to be refined by the 2004 work plan, then the next medium-term research plan. The names of the research domains are chosen so as to avoid confusion with the names of projects or models.

toolbox concept and maintenance :

name : *INTERFACES* (instead of ALADIN- 2, far too confusing)

main actions :

- to allow a flexible use of ALARO via the "toolbox" approach,
- to easy exchanges between groups and models (up to the ARPEGE level),
- to allow testing and using various physical packages (Meso-NH, "ALADIN", "Climat",...),
- to ensure cost efficiency and portability.

tools : ALARO (apart from general phasing)

very high resolution (model) :

name : *ALARO – 2 km*

main actions :

- contribution of ALADIN-2 to the AROME project, for physics and dynamics
- improvement of (ALADIN) NH dynamics
- adaptation and refinement of (Meso-NH) physics
- clean physics-dynamics interface
- ...

tools : *AROME* prototype, as soon as ready (ALADIN in the first months)

grey zone (model) :

name : *ALARO* – 5 km (instead of ALADIN- 2, again)

main actions :

- specific problems in physical parameterizations (convection, orography)
- improvement or development of a cheaper physics package
- coupling problems
- ...

tools : ALADIN then ALARO, once the «interface of interface» for physics, at least, ready

validation / upscaling (model) :

name : *ALARO* – 10 km

main actions :

- to ensure that developments designed for smaller scales will improve forecast skill at the present operational scales

tools : corresponding ALARO prototype mainly, but also ALADIN and Meso-NH for comparisons (+ HIRLAM ?)

all - resolutions :

name : *ALAROPAC* (for Predictability, Assimilation, Coupling aspects)

main actions :

- most assimilation and predictability issues
- coupling problems for forecast and assimilation
- ...

tools : ALADIN or ALARO (transition from ALADIN to ALARO allowed later)

For these three topics, there is no "grey zone" problem, and downscaling is considered.

operations :

name : *ALAD1*

main actions :

- update / improvement of operational suites (mainly benefiting from *ALARO-10 km*)
- case studies
- ...

tools : mainly ALADIN first, *AROME* or ALARO with other choices once operational

Building ALADIN-2

3 big bricks :

ALAD1 : basis (*rooted in reality*)
ALARO- 2 km
ALAROPAC

2 pillars :

ALARO- 10 km : main
ALARO- 5 km : safety

cement : INTERFACES

