



AROME/ALADIN: M-F's view of various links between the projects

- a multi-face problem: from 'spirit' to 'phasing-merging'
- new challenges for science, on a wide front
- technical requirements for the NWP project
- the human aspect: generations inside the ALADIN project
- the technical transition from ALADIN to AROME
- a 'win-win' deal => separation between common aims and specific means



The challenge: keep the spirit, ...

- ✚ Paradox: the basic choices for AROME are a tribute to the ALADIN collaboration, but in future the aims of the two sides of the partnership will remain different: code convergence will be slow (but steady) while the meteorological and computational goals will only converge on the timescale of a decade or so.
- ✚ A brutal trial to enforce scientific or computational convergence can only be counterproductive on both sides: good/expensive versus bad/cheap dilemmas ...
- ✚ In the ALADIN spirit, the common scientific goals (to M.-F. and to Partners) and the need for a common computational software (for reasons of manpower) have lead up to now to the strong constraint of a tight and systematic phasing with the ARPEGE/IFS backbone, assured equally by M.-F. and the Partners.

The challenge: ... but for 'something completely different'

- ✱ The « phasing constraint » has produced the (partially) illusionary impression that the scientific innovation must be heavily bound to the ARPEGE/IFS compatibility.
- ✱ To allow for a continuation of the proposed collaboration in the frame of AROME, the « phasing constraint » implication must be relaxed and a new scientific and technical cooperation must be invented (scientific because of the 2.5 versus 10 km divergences and technical because of computational resources, at least).
- ✱ With the necessary end of the constraint comes however the risk of too dispersed interests



Scientific challenges: a new science

- ☀ Compared to the ALADIN « way of thinking », AROME applications call for a renewed scientific (and mental) approach (***for progress elsewhere without slowing down AROME-2.5km***):
 - For many fields, the logic for Aladinists should be: how can I upscale a development or an idea from the 2.5 km scale to the 10 km scale ? Can I generalize my problem to any scale from 2.5 to 10 km ?
 - Innovation is more than ever demanded !
 - Specific field: the physics « grey zone »



Technical requirements

- ✦ The amount and variety of technical skills has increased steadily in ALADIN, since the beginning of the project:
 - Forecast hydrostatic and NHS, TL & AD models
 - Initialisation, changes of geometry (Full-Pos)
 - Optimal analyses: CANARI, 3d-var
 - Data: databases, pre-processing, quality control
- ✦ The bet of a high-standard system with limited manpower only works thanks to the very specific exercise of « phasing with ARPEGE/IFS »
- ✦ Any NWP system must undergo regular code refreshments
- ✦ AROME should not be less demanding in technical skill and manpower than ALADIN is. For instance, an ALADIN phasing requires: 9 to 12 person.months + Météo-France local support (about 3 to 6 person.months)



Generations in the ALADIN project

- ✦ The « *pioneers* »: those who developed the original ALADIN code starting by learning ARPEGE (91-95) – scientific recognition and detailed technical knowledge
- ✦ The « *settlers* »: those who installed or helped installing local ALADIN versions, participated in new challenges (D.A., NHS) and to regular phasing – more specialized scientific knowledge and approximate technical skills (96-00)
- ✦ The « *natives* »: those who learned ALADIN at home, making less travels to Toulouse, got more remote supervision (emails) or advices. They participated partially in the new NHS or blending / 3d-Var work (01-).



Next generation ?

- ✦ The necessity to form and train a fourth generation around the anticipated AROME/ALADIN connections is striking (the « *born-again* » ?). However, different ways to create this next generation are possible (and can be used in parallel):
 - Re-train the Aladinists to Arome according to possibilities and willingness (the « recycling » approach)
 - Organise a drastic participation of Aladinists to the first steps of Arome, so that they need to learn the new system from scratch (and hopefully repeat under new conditions the « pioneer » approach)



The transition from ALADIN to AROME

- ✦ In Toulouse, the software for AROME will first converge softly to ALADIN (and vice versa)
- ✦ At the time when AROME applications will be mature, there will be a sudden change from ALADIN to AROME at Météo-France
- ✦ ALADIN partners who will join the AROME project must then also switch to AROME without delay (~3 months):
 - They must have installed the *last* ALADIN cycle *long enough in advance* (~3 months) to avoid a too drastic shock in their NWP system (better to be prepared on a yearly time-scale)
 - They need at home the required *experience and skill* on the new system (idem)



The path to a new 'win-win' target

- ✦ The 'initial' ARPEGE/ALADIN project was (and still is) successful because relying on a scientifico-political opportunity and on a transversal need
- ✦ More alike IFS/ARPEGE, the proposed convergence of ALADIN & AROME builds on a *long term* challenge and on *complementarity* of various paths to reach it
- ✦ Preserving the mutually beneficial spirit thus does not mean enforcing an impossible uniformity but keeping a community of efforts around (temporarily) diverging implementation strategies => *need for new cooperative 'tools and forces', with guarantees on each side*
- ✦ Obvious link with a *somewhat more networked approach*



Conclusion

- ✦ One aim of the Prague discussions : will there be an « **Arome Limited Area Decentralised International Network** » ?