

ALADIN 07/08: achievements, problems & outlook

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Main achievements since Oslo (1/4)

- **Turkey** became officially ALADIN Member on 1/1/08 => 16 Full Members.
- The **ALADIN Strategic Document** was produced in its final version on 6/2/08 (and was quite appraised). We are now on the march towards a 4-year gliding plan.
- RC-LACE is now in transition towards a **project-oriented type of planning**. 5+1 projects:
 - ALADIN Verification Data Base Technical Action (=> SRNWP);
 - ALADIN-LAEF: Research and Application;
 - Development of an operational DA system for LACE;
 - Towards an operational implementation of the NH dynamics;
 - Operational ALARO configuration at scales ~5km mesh-size;
 - *RC LACE Reference System (dependency on the above ones).*
- On the side of applications:
 - Good progress for **ALADIN-Climate** activities;
 - **INCA** is becoming more and more 'ALADIN-popular'.

Main achievements since Oslo (2/4)

- The new financial mechanisms are nearly stabilised:
 - The backlog of 2006/2007 in money flow is progressively being wiped out;
 - In the 2006 kick-off year, **31** k€ of ‘flat rate money’ helped financing **14** missions and **6** scientific stays;
 - In 2007, on the same basis, **55** k€ helped financing **13** missions and **12** scientific stays;
 - For 2008, the (ambitious) plans are **81** k€ for **13** missions and **21** scientific stays; furthermore the choice of the stays followed a procedure more of ‘demand’ than of ‘offer’, even if still of the mixed type;
 - All this is beside RC-LACE activities and Météo-France’s various supports (maintenance, networking, ...).



Main achievements since Oslo (3/4)

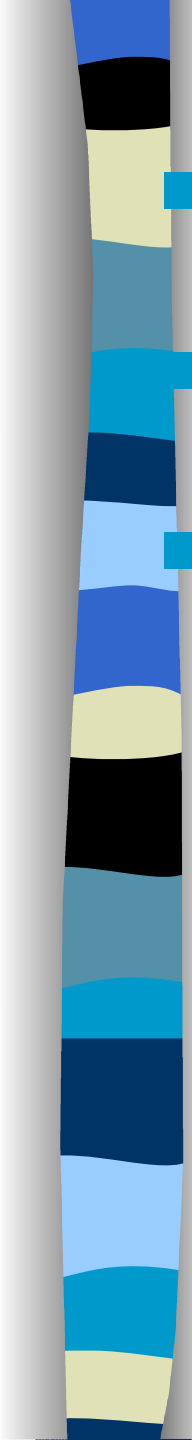
- Further progress has been registered for the change of emphasis in the role of LTMs, their increased coordination and the links between transversal and local activities.
- The central problem on this side is still the difficulty to move manpower from over-staffed to under-staffed activities => next challenge.
- System, maintenance and associated issues are still rather 'plain sailing'.
- HARMONIE still has a stabilising role to play in the new evolution of the C-SRNWP Programme of EUMETNET, even if some earlier ambitions had to be postponed.



Main achievements since Oslo (4/4)

- Survey of the progress on the common part of the HIRLAM and ALADIN plans indicate a correct rate of realisation, even if perhaps a bit slow overt the past year. In fact:
 - In Bratislava we envisaged the working practices;
 - In Sofia we went to the methodology;
 - In Oslo we look at the details for difficult issues;
 - In Brussels we **should** start assessing the outcomes, but careful inspection shows that this is only **unevenly** the case;
 - In De Bilt we shall hopefully be in a less contrasted situation, once AROME is operational in Toulouse;
 - Later we should avoid being bored by ‘routine topics’!

Long-lasting problems

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- The ‘dynamics’ and the ‘DA ancillary’ aspects are understaffed.
 - Computing resources for the EPS projects are becoming a serious bottle-neck.
 - The situation for the ‘physics’ (taken here directly at the HARMONIE level) has changed its ‘worries’, ***but perhaps not for the best:***
 - The risk of building-up ‘fortresses’ where scientific and environmental characteristics protect each other has been acknowledged; some pilot projects (under the name ‘**convergence**’) were launched to overcome the trend (action fostered by ‘Meteo-France’ CPPN);
 - However there is still a big gap in the interpretation of these efforts’ target: (A) **possibility of scientific co-development** vs. (B) **facilitated cross-use of still isolated components.**

The AROME perspective

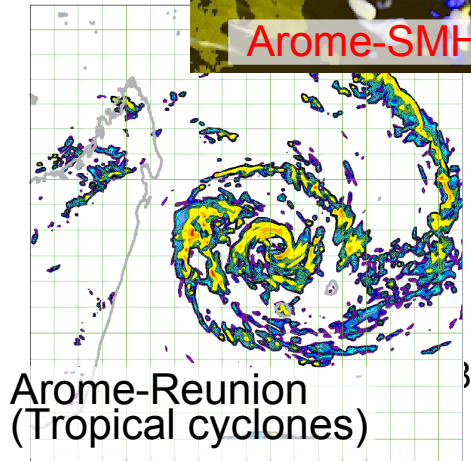
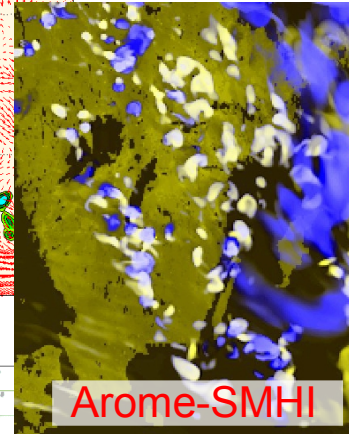
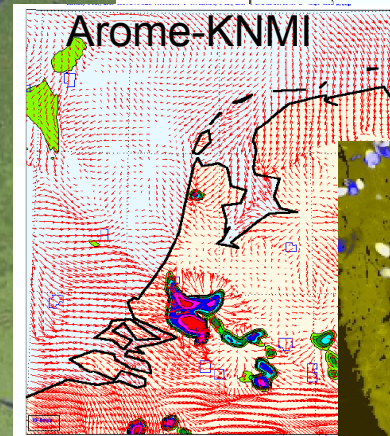
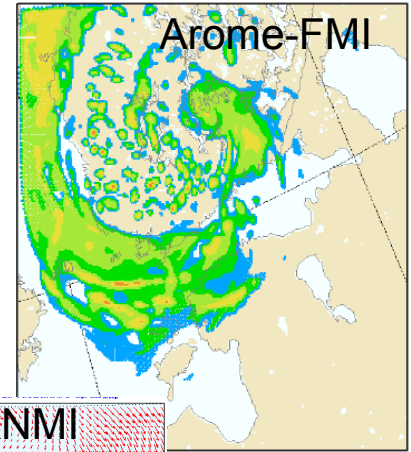
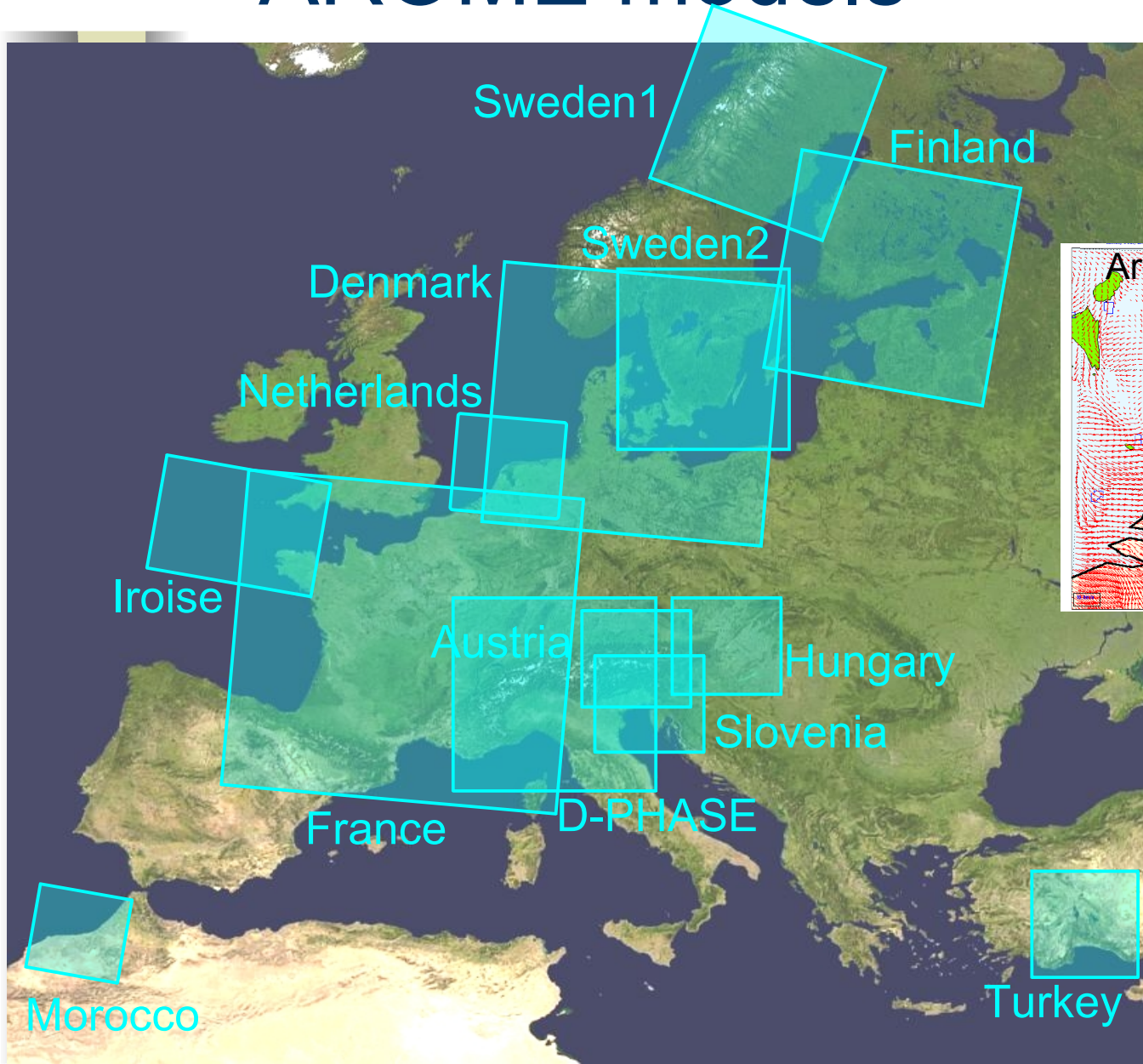
■ Progress since Oslo:

- preoperational evaluations done in France and several HIRLAM countries, with now a good knowledge of model & DA performance (both **clearly beneficial**)
- complete NWP production suite now available
- model is numerically cheaper than previously thought
- successful **2nd Arome training course (Lisbon, Feb 08)**

■ Current problems:

- use by ALADIN partners is limited (lack of operational interest in NWP on small domains ?)
- not much work with **data assimilation** (though essential for small-scale predictability)
- research on atmospheric physics is still very limited and concentrated in Toulouse

Some of the already tested AROME models

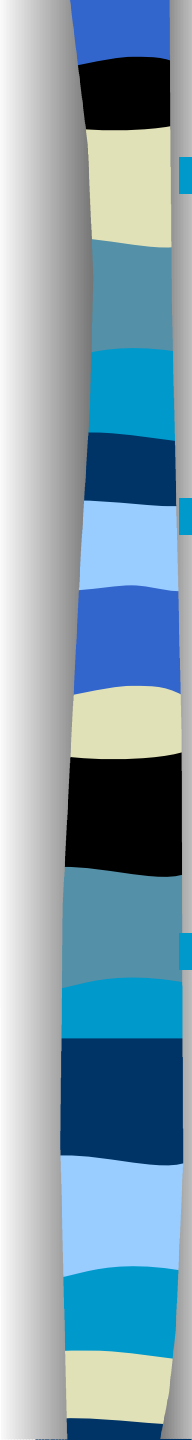




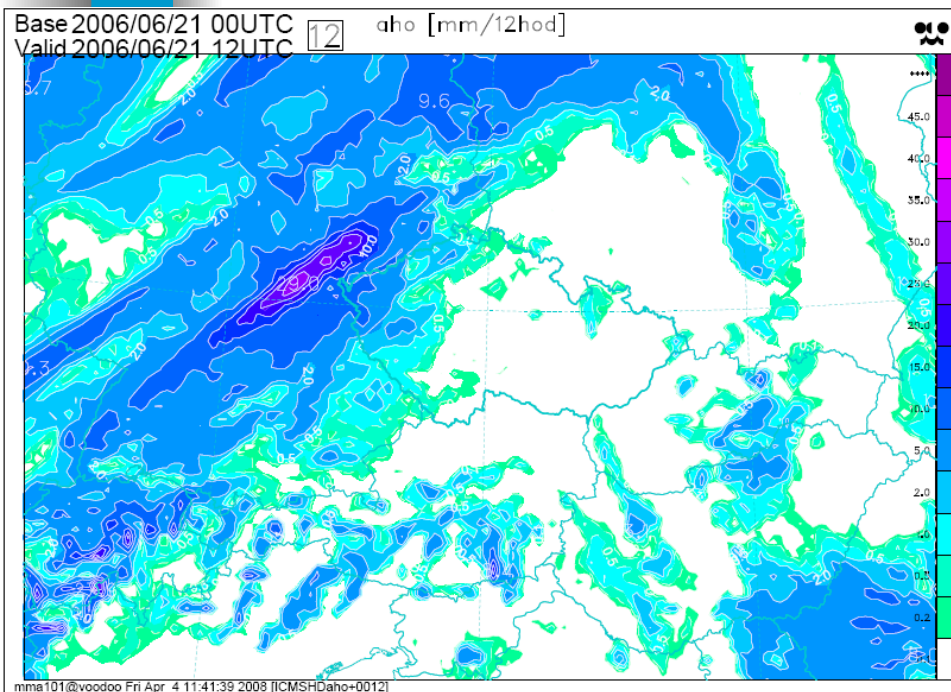
The AROME perspective

- Outlook for 2008-2010:
 - emphasis on **improving current model** and DA (young, with much room for incremental progress)
 - cleaning of the model software (including study of the "convergence" proposals); strong link with the ARPEGE/ALADIN-France physics scientific progress
 - new developments will cope with specific problems (nordic surfaces, coupled ocean, subgrid microphysics, high vertical resolution, surface analysis, assimilate radar reflectivity...)
 - HIRLAM cooperation will become more important as **HARMONIE** activities increase.

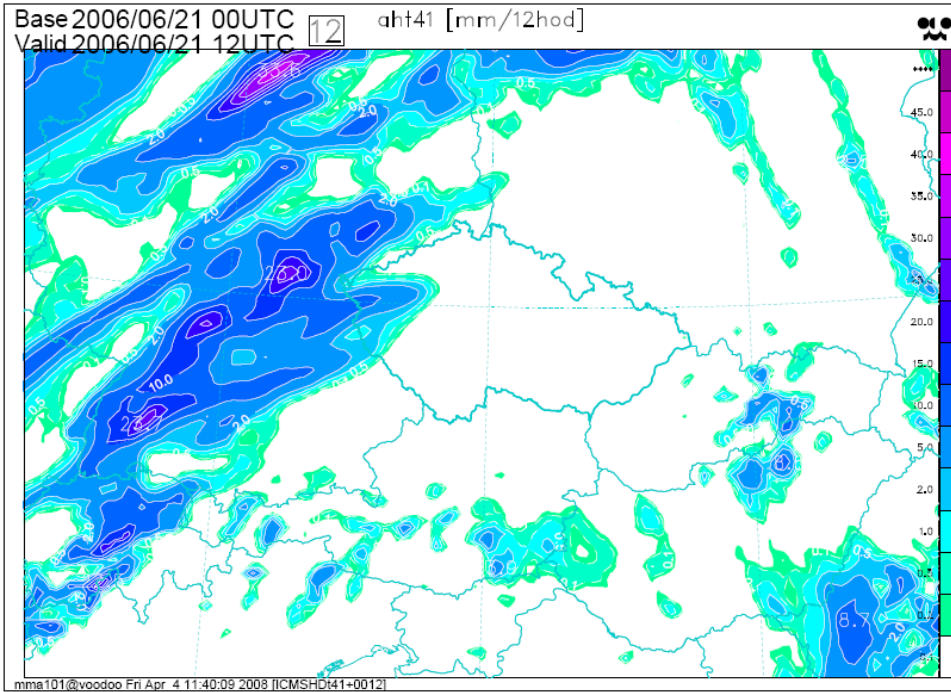
About '3MT'

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- It is a part of the ALARO-0 development, but its multi-scale character does not restrict its use to its prime target, i.e. the so-called 'grey-zone' scales ($\delta x \sim 5\text{km}$)
 - It can work with several levels of scientific sophistication for:
 - Convective Entrainment and Closure specifications,
 - Microphysics,
 - Thermodynamic adjustment.
 - Basically it is a way to do '*as if*' deep convection was resolved but *without* needing to go to scales where this is true, thanks to:
 - Prognostic and diagnostic 'memory' of convection;
 - A unique micro-physical treatment beyond all sources of condensation.

3MT: outcome for 9km mesh precipitations



Without 3MT



With 3MT

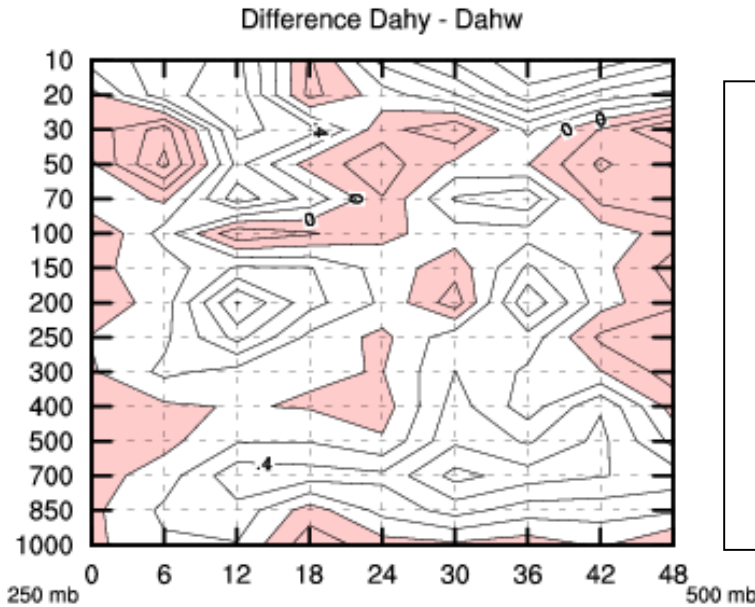


When speaking about ‘convergence’

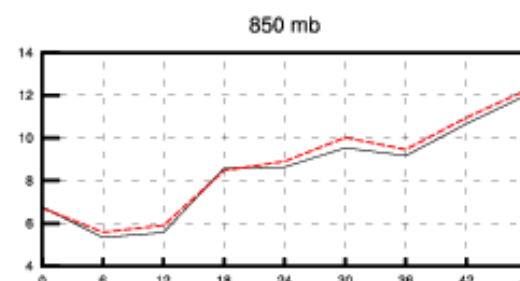
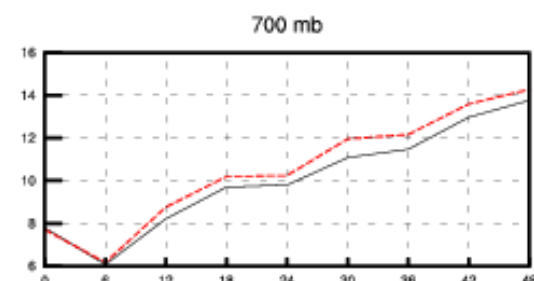
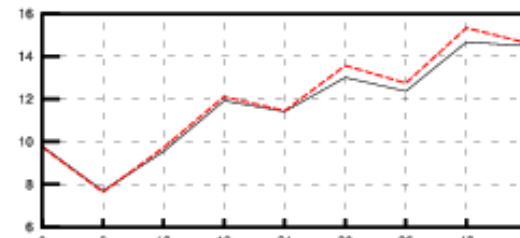
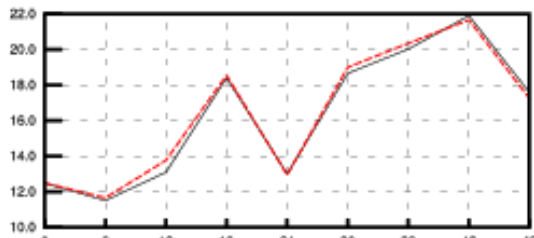
- Phys-dyn interfacing rules are a point of ‘friction’.
- Because of the ‘*as if*’, 3MT is an interesting way of testing things like they should be in AROME, without running AROME.
- One can in particular test the impact of enthalpy conservation in a system where all the water cycle explicitly undergoes the transition vapour => cloud => precipitating species!
- And the result, even if roughly expected, is instructive:

Impact of replacing $Q = d(C_p \cdot T) / dt |_{\text{phys}}$ by $Q = C_p \cdot dT / dt |_{\text{phys}}$ (at 9km mesh with 3MT)

Small but stable and non-negligible impact



Red = improvement
 Transparent = degradation
 Similar signals for T, Hu
 Neutral for wind



--- DaHy
 — DaHw

~0.3 m loss at 24h-48h in the troposphere =>
 ~half a year of overall progress for NWP at mid-latitudes



Outlook (Brussels => De Bilt)

- What will be the evolution of the ALADIN Consortium's cohesion following the AROME operational switch in Toulouse?
- How will (I) the HARMONIE pursued transition to actions with deliverables and (II) the new SRNWP structure and actions influence the answer to the above question?
- Will the declination “**Strategic Document => 4-year Plan => yearly workplan**” be successful?
- QUO VADIS ALADIN (repeat of the workshop motto from 3 years ago) ???



Conclusion

Try to keep a part of this mixed bag in mind
during the next four days

and

enjoy all the spirit and strength of such a big
gathering of people who know how to both
argue and progress together.