

JOINT ALADIN-HIRLAM OBJECTIVES

Agenda: 4.4

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On behalf of CSSI, HMG and ALADIN-HIRLAM scientists

Hungarian Meteorological Service

CONTENT

- History
- Procedure for the common planning
- Basic elements of the common plans

HISTORY (1)

- September, 2003: Informal contacts from HMG
- October, 2003: HIRLAM Advisory Committee discussions about mesoscale non-hydrostatic modelling (NH inside spectral HIRLAM)
- December, 2003: HIRLAM Council, positive principle support
- January, 2004: Wish for full code cooperation

HISTORY (2)

- March, 2004: mesoscale model training workshop in Toulouse
- April, 2004: HIRLAM request for ALADIN license for research use
- June, 2004: HIRLAM Council, approval for code cooperation
- October, 2004: ALADIN Assembly discussions (resolution)

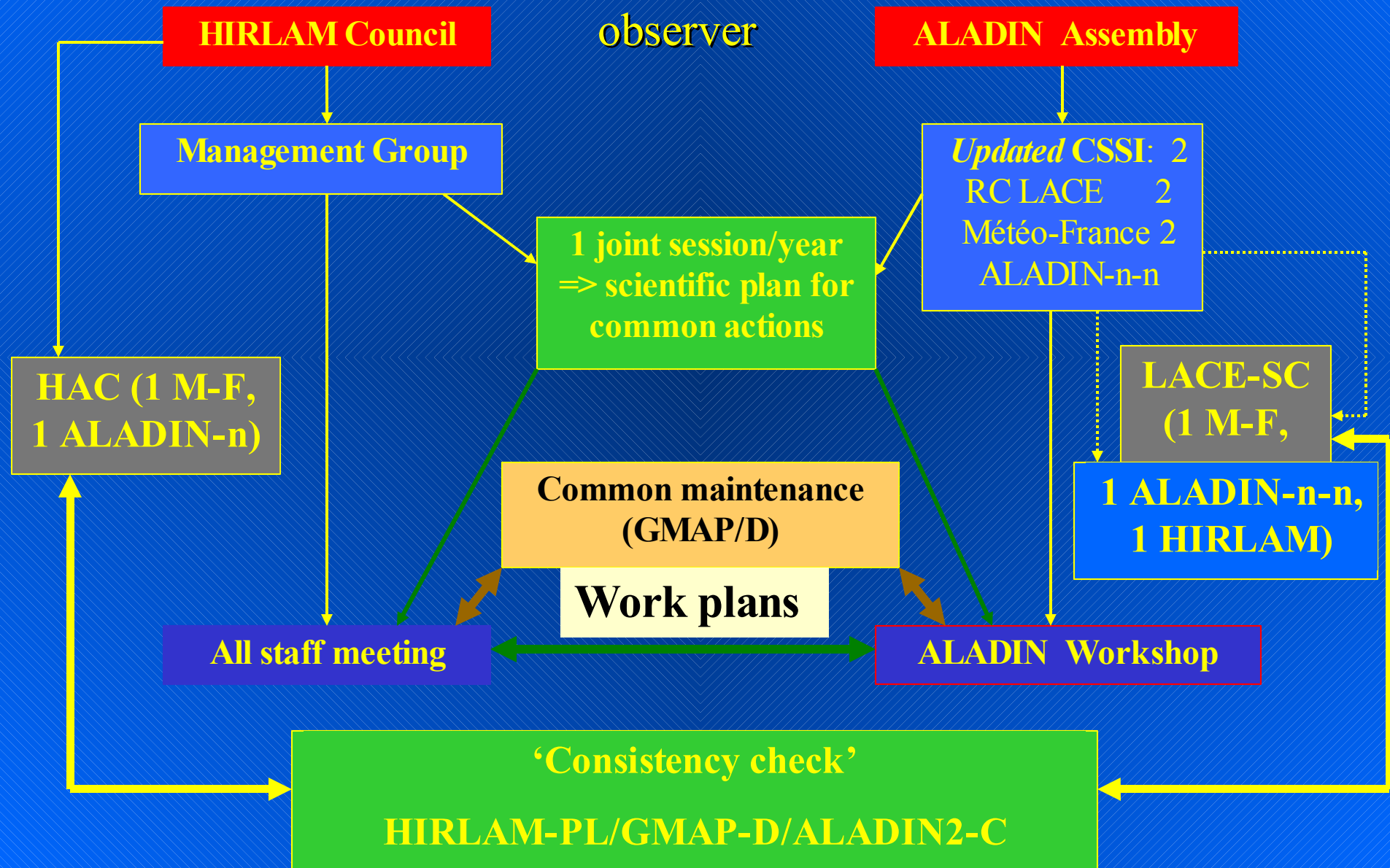
HISTORY (3)

- December, 2004: HIRLAM Council, first representation and presentation of ALADIN
- April, 2005: Formal decision (resolution) about the HIRLAM-ALADIN cooperation
- June, 2005: meeting of CSSI and HMG, planning procedure
- October, 2005: ALADIN Assembly, presentation of the common plans

COMMON SCIENTIFIC PLANNING: RESOLUTION OF THE ALADIN ASSEMBLY

“The ALADIN Committee for Scientific and Strategic Issues (CSSI) and the HIRLAM Management Group (HMG), should establish, on behalf of the ALADIN and HIRLAM scientists and relevant bodies, a joint science plan addressing common issues, that would become part of the respective ALADIN and HIRLAM science plans”

A proposal for planning and supervision of the HIRLAM-ALADIN common work



COMMON SCIENTIFIC PLANNING: HMG-CSSI MEETING

- How shall we work together? What do we want to achieve together?
- Principles of code collaboration
 - IFSARPEGE as backbone
 - System of common cycles
 - Solidarity on the maintenance burden
 - Training is needed: workshop (November, Budapest), participation of HIRLAM at phasings in Toulouse
 - HIRLAM commitment: annual 2 man-year for code maintenance

COMMON SCIENTIFIC PLANNING: HMG-CSSI MEETING

- Common scientific planning
 - Identification of emerging topics of common interest, nomination of contact persons
 - End of summer: detailed common thematic plans
 - Beginning of October: synthesis of common plans
 - End of the year (Assembly, Council): presentation of the plans

COMMON SCIENTIFIC PLANNING: HMG-CSSI MEETING

SUBJECT	ALADIN	HIRLAM
Dynamics and coupling	R. Brozkova	P. Uden
(Atmospheric) physics	J-F. Geleyn, G. Hello	B. H. Sass, L. Rontu
Surface	D. Giard	B. Navascues, S. Gollvik, E. Rodriguez
Data assimilation	C. Fischer	N. Gustafsson, H. Schyberg
Predictability	A. Horányi	B. W. Schreur
Verification and diagnostics	J. Stein, J-M. Piriou	G. Cats, C. Fortelius
System	J. Jerman, E. Sevault	G. Cats

COMMON SCIENTIFIC PLAN: DYNAMICS and COUPLING

- OBJECTIVE: efficient, stable and accurate NH dynamical core
- STRATEGIC ISSUES:
 - Well posed and transparent boundary conditions
 - Development of the TL and AD of the SL advection scheme (towards 4d-var)
 - Development of Vertical Finite Element (VFE) discretisation
 - “Smaller” issues: variations of map factor, horizontal pressure gradient in the presence of sharp orography.....

COMMON SCIENTIFIC PLAN: ATMOSPHERIC PHYSICS

- **OBJECTIVE:** increase the realism of the physics schemes with high level numerical efficiency considering all the constraints and benefits of code cooperation (more and more options)
- **STRATEGIC ISSUES:**
 - Basic equations and interfacing problems
 - Design of common validation and diagnostic tools
 - Improvement of existing and design of new physical parametrisations (scientific and algorithmic aspects)

COMMON SCIENTIFIC PLAN: SURFACE (PHYSICS, DATA ASSIMILATION, PHYSIOGRAPHIC DATA)

- OBJECTIVE: design of common interfaces for physics (technical tasks needed to be solved urgently)
- STRATEGIC ISSUES:
 - Externalisation of the surface schemes
 - Interfacing with upper air physics, data assimilation etc.
 - Externalisation of surface data assimilation
 - New climate generation tools based on higher resolution surface data
 - Refinements in parametrisations (lakes, sea-ice etc.)
 - Increased use of satellite data (EUMETSAT SAF products)

COMMON SCIENTIFIC PLAN: DATA ASSIMILATION

- **OBJECTIVE:** development of meso-gamma scale data assimilation system
- **STRATEGIC ISSUES:**
 - Code convergence on variational data assimilation
 - Developments for higher resolution (structure functions, observations, regularised physics etc.)
 - Increased use of satellite data for the surface

COMMON SCIENTIFIC PLAN: PREDICTABILITY

- OBJECTIVE: optimal share of work (important topic without real European coordination)
- STRATEGIC ISSUES:
 - How to account uncertainties in initial and boundary conditions, model formulation etc.
 - Link between data assimilation and predictability
 - Strong need for kick-off (brainstorming) meeting

COMMON SCIENTIFIC PLAN: VERIFICATION and DIAGNOSTIC

- OBJECTIVE: common new mesoscale verification tools
- STRATEGIC ISSUES:
 - What are the best tools to verify mesoscale models?

COMMON SCIENTIFIC PLAN: SYSTEM

- **OBJECTIVE:** establish common computer environments for running the model
- **STRATEGIC ISSUES:**
 - Harmonisation and utilisation of the best combination of existing tools
 - Training (participation on phasing, workshop)

FINAL REMARKS

- Common ALADIN-HIRAM scientific planning: truly international European cooperation effort
 - Almost 100 persons involved
 - 18 countries
- Main objectives, strategic issues are identified, which serves as a good basis for starting the work
- Assembly is asked to give support for all this!!