

Memorandum of Understanding IV
among the National Meteorological and Hydrological Services of Central and South Eastern
Europe
for the RC LACE
(Regional Cooperation for Limited Area Modelling for Central Europe)
Programme

1. Preamble

The National Meteorological and Hydrological Services of Austria, Croatia, the Czech Republic, Hungary, Romania, Slovakia and Slovenia, the Members of the RC LACE group, hereinafter referred to as "Members", represented by their directors/general directors:

a) recognizing

- the great importance of the regional co-operation in the field of mesoscale numerical weather modelling in Central and South Eastern Europe,
- the collaborative projects shared for use in operational forecasting, bringing substantial economic and social benefit to Members,
- the promotion of regional co-operation by World Meteorological Organization, in particular in the field of high impact weather;

b) considering

- the well established mutual co-operation among Members in the field of mesoscale numerical weather prediction in Central and South Eastern Europe,
- the mutually beneficial continuation of collaboration with Météo France and other ALADIN partners,
- the objectives and membership in ALADIN Programme,
- the cooperation with the HIRLAM Programme;

c) valuating

- the networking of scientists existing around the Numerical Weather Prediction (NWP) applications in Central and South Eastern Europe,
- the top-end technical achievements already dedicated to high-level forecasting products,
- the success of RC LACE Projects in the period 2008-2012 and implementation of operational products in the fields of observation pre-processing and limited area ensemble prediction;

d) desiring

- to facilitate research and development activities of RC LACE on the Limited Area Model ALADIN for the Central and South Eastern European regions in order to contribute maintaining its quality and associated know-how at world-top level,
- to technically cooperate for reaching a good level of operational applications of ALADIN model at Members' services;

Have agreed as follows:

2. Objectives

- To continue participating to a common NWP endeavour of all Members with the basic aim to acquire and consolidate a long-term oriented "NWP culture" starting from data monitoring and/or treatment up to response through modelling efforts to forecasters' critics and/or requirements.
- To guarantee a quality and reliability of outputs superior to that of the coupling model and similar on average (but better on specific points of interest) to that of other LAM systems inside the EUMETNET/SRNWP network.
- To perform research and development with the aim to continuously improve the quality of products, measured by appropriate statistical scores as well as by the capacity to forecast severe weather events.
- To continue giving high priority to specifically NWP-oriented training, either in multi-national programmes, or in bilateral actions or through the Members' involvement in fostering specific training actions for the whole RC LACE community.
- To contribute to advanced research efforts in coordination with other ALADIN and HIRLAM Partners.
- To enhance cooperation with research institutions and universities and participate in associated interdisciplinary applications.
- To participate to the maintenance of the ALADIN-HIRLAM software and tools.
- To assimilate available observational data in the highest possible resolution.
- To progress at operational applications in the fields on mesoscale modelling and high resolution ensemble prediction systems
- To actively participate in relevant EUMETNET Programmes.
- To contribute to the development and implementation of mainstream applications linked to climate modelling, air quality modelling, hydrology and marine modelling, crisis management, road and air traffic condition applications, and similar.
- To agree on data policy and to establish and follow procedures for the exchange of observational data useful for the purpose of mesoscale data assimilation, verification, very short range prediction, nowcasting, and high impact weather warnings.
- To work in common on any technical project with intention to diminish the costs involved in reaching the above-stated objectives.

3. Council

- RC LACE Council consists of the directors/general directors of each Member. Council is the overall authority of RC LACE. Council is chaired by its President, assisted by Vice President, elected among the Directors, for the period of two years, with one possible re-election. The terms of references for President and Vice President are appended (Annex 1).
- Council shall meet in ordinary session at least once per year. It may meet in extraordinary session at the request of either the President or 1/3 of the Members.
- Council determines the policy of RC LACE, approves its budget, and supervises the execution of the programme. Council takes decisions on the strategic goals of the programme based on documents and reports of the executive and advisory bodies of RC LACE and independent reviewers.

- Council considers for approval any important document of RC LACE, like Strategy, Scientific Plan, progress reports, RC LACE Steering Committee (LSC) reports, Account of Incomes & Expenses Reports and Contracts.
- Council could demand the actions and advises from LSC and Management Group (MG) on matters of interest.
- Council takes the decisions on the MG appointments.
- Council determines RC LACE membership issue and the relation with international projects and organisations.
- Council decisions shall be taken by consensus of all Members on any budgetary issue and on any possible amendment to the present Memorandum of Understanding (MoU). Council decisions on other matters shall be taken by a simple majority of all Members. A vote by correspondence, requiring a simple majority of all Members, may be used to take decisions on minor issues.
- A representative of Météo-France, RC LACE Programme Manager (PM), Chairperson of LSC, ALADIN Programme Manager and other experts invited by the President of the Council may participate at the Council meetings but without voting right.
- Members of the Council could invite their advisors to the Council meeting.

4. Management Group

Management Group is the executive body of RC LACE and comprises Programme Manager (PM), ALADIN-LACE System Coordinator (ASC), Data Manager (DM) and Area Leaders for at least data assimilation, dynamics, physics and predictability. Programme Manager is the chief executive officer of RC LACE. The Terms of References of the Management Group members are appended (Annex 2). The Management Group is appointed by Council for two years with the possibility of prolongation for additional two years period.

5. Steering Committee

RC LACE Steering Committee (LSC) is the advisory body of RC LACE and it consists of a representative from each Member. One representative of Météo-France, non-LACE ALADIN partners and HIRLAM are also taking part in the LSC meetings as observers. The LSC representatives are delegated by Members. The LSC member should not be at the same time the Management Group member. The LSC Chairperson is elected within the LSC members by a simple majority and for a period of two years with one possible re-election. LSC shall evaluate all suggestions and ideas related to NWP issues and it shall meet at least twice a year, once not later than one month before the Council meeting. The Management Group should participate at the LSC meetings (without voting right). LSC shall report to Council. The Terms of References of LSC are appended (Annex 3).

6. Organization of work

RC LACE common work and actions are dedicated to the research and development, implementation and operational deliverable actions and products. Members contribute to the common work by sharing knowledge, experience, technical resources and manpower.

The common research and development activities shall be topic oriented. The topics shall in greatest possible extent follow the ALADIN scientific programme and they shall fall into main

areas, at least: dynamics & coupling, physics & surface, data assimilation and EPS & predictability.

The work is carried out in a “top-down” manner:

- Objectives are defined by the RC LACE Scientific Strategy and executed via Scientific plans including Projects.
- Scientific plan defines the Projects, research and development actions and support activities for the period of up to four years. Scientific plan is adjusted to ALADIN and HIRLAM common plans and actions. Scientific plan considers the achievements and tools developed by ALADIN and HIRLAM Partners and ensures the activities for the implementation at RC LACE environment. Modifications to the Scientific plan can be made by the request of the LSC Members and ALADIN and HIRLAM Partners.
- The Projects focus on research and development efforts, which are on the one hand delivering operational applications, and on the other hand initiating new important research and development activities. The Projects are proposed and led by Area Leaders, and monitored and evaluated by LSC.
- The description of the Projects contains the following most important information: leader; duration; main objectives; deliverables; necessary tasks (work) to achieve the objectives; necessary resources (computer, manpower etc.) to obtain the deliverables; split of tasks between the Members; commitments from the concerned RC LACE members.
- Each Project is accepted by the Council at which time the national commitments are clearly stated and formally approved. Each Project is voluntarily attributed to one Member, thus becoming a Project Responsible Centre for the Project by providing the basic environment necessary for its realisation.
- There are also cross-cutting Projects (where more Area Leaders are concerned. The activities between such Projects are strongly coordinated by the Management Group, especially by the Programme Manager.
- Beside the work on Projects, other research and development activities with longer-term goals, given by the strategic plan are performed. These activities are under the direct control of the Area Leaders.
- The list of the Projects is defined according to the RC LACE priorities proposed by Members and Management Group and evaluated by LSC.
- Projects involving operational products are under the highest priorities of RC LACE Members obligations, RC LACE Management group actions and RC LACE Budget plans.
- Scientific plan is fulfilled by NWP teams and Management Group, either locally and/or in the form of research stays.
- Management Group is responsible for the execution of the Scientific plan, by leading and coordinating the Projects, and their deliverables. Management Group supervises the common operational, technical and scientific work and provides the solutions for the ongoing actions.
- Management Group monitors the progress of the Projects with the emphasis on the product deliverables for all Members. Management Group monitors and assists in portability of deliverables and applications related to operational products,
- Management Group assists Project Responsible Centre and provides the working plan for the staff resources allocated to the Project. Management Group coordinates the need for the working power and ensures resources for the mobility of manpower.
- Management Group proposes the plan of research stays, which might be individual or they may be organised as so-called research group stays, when participants meet at a common

place and work jointly on the Project. The Project tasks and research and development actions shall be opened to anyone within ALADIN Partners, SRNWP partners, research institutions and universities.

- The financing of the stays shall be coordinated by Programme Manager according to the approved proposals. Upon the payment documents issued by Programme Manager, the final approval of these payments shall be made by President of the Council.
- Project Responsible Centre ensures the committed working power and technical environment for the execution of tasks planned in the Project, during the Project duration.
- Management Group can ask Project Responsible Centre for the status-report of the NWP environment and working power dedicated to Project. Management group contributes to the coordination of operational products.
- Project Responsible Centre takes all possible measures to ensure the use of the most recent version of the ALADIN library. In this activity, Members shall be partly assisted by ALADIN-LACE System Coordinator and Programme Manager.
- Execution of the Scientific plan is reported by Management Group and evaluated by LSC twice a year. Overall status on the progress of RC LACE shall be reported to the Council members by LSC also twice a year.
- Reports and documents are available on RC LACE web pages.
- Deliverables are shared in the most efficient manner via secured media, taking into account the proprietary rights of the Members and ALADIN Partners.

7. Budget

- The following regular costs shall be shared among Members:
 - a) Travel cost for research stays and research group stays.
 - b) Travel cost for common trainings and actions.
 - c) Salary supplement or prime of Programme Manager.
 - d) Salary supplement or prime of Area Leaders.
 - e) Salary supplement or prime of ALADIN/LACE System Coordinator and Data Manager.
 - f) Meetings and travel cost for LSC Chairperson.
 - g) Meetings and travel cost of the Management Group, including ASC phasing stays at Météo-France.
 - h) Financial obligations to ALADIN Programme, defined by ALADIN MoU.
 - i) Miscellaneous costs as agreed by the Council.
- Other common RC LACE actions could be financed upon the Council decision.
- The annual contributions of Members shall be paid to the “RC LACE Budget account” established at ZAMG. The contributions shall be paid according to the arrangement approved by the Council. The used currency shall be Euro.
- The Budget shall be drawn by Programme Manager every year, considered by LSC and approved by the Council. The scale of Members’ contributions shall be based on the Rules on RC LACE Budget Contribution (Annex 4)
- The Account of Incomes & Expenses Report shall be presented to Council by Programme Manager at each Council meeting.

8. Commitments of Members

- The Members financially contribute to RC LACE based upon the financial rules (Annex 4) and scale of contributions approved annually by RC LACE Council.
- The Members take part at the Council and LSC and provide manpower to Management Group.
- The Members contribute in manpower and technical resources to the scientific, development, technical and administrative activities of RC LACE based upon the decisions made by the Council.
- Based on the RC LACE Scientific plan the Members contribute to the Projects.
- The Members host the Projects through the frame of Project Responsible Centre for common RC LACE deliverables and operative products.
- The Members will contribute to the Project Responsible Centre with manpower and technical resources. The highest priorities are dedicated to operational products approved by RC LACE Council.
- The Members ensure the technical and administrative help for RC LACE staff and actions with the aim to harmonise the quality of the applications "from the top". This requires in particular good updating of the ALADIN versions, common verification applications and exchange of local data whenever necessary.

9. Entry into force, duration and amendments

The RC LACE MoU-IV will take effect upon signature of all the Members on January the 1st 2013 and be of four year duration, ending on 31st of December 2016. The MoU duration can be extended by the decision of the Council taking into account the constraints by the ALADIN MoU. Amendments will take the effect following the decision of the Council.

10. Adhesion/Denunciation

Any intention from an additional National Meteorological and Hydrological Service to join RC LACE shall be considered by the Council on case-by-case basis and in conformity with ALADIN MoU. Similarly, any intention of a Member to withdraw from RC LACE shall be considered by the Council.

RC LACE programme may at any time be terminated by the Council decision with at least two years notice.

Signatures

by the representatives of the National Meteorolo

as

Director of ZAMG, Austria

.....

Director of DHMZ, Croatia

.....

Director of ČHMU, Czech Republic

.....

President of OMSZ, Hungary

h
.....

General Director of Administratia
Nationala de Meteorologie, Romania

.....

Director General of SHMU, Slovak Republic

.....

Director of Meteorological Office, ARSO, Slover

.....

Signed on

13th of November 2012 in Vienna.