Bilteni
La lettre d'informations
Hírlevelek
Revista Periodica
Novice, zanimivosti
رسالات إخبارية
Spravodaj
Nieuwsbrieven
Новости
Новини
Zpravodaj

Newsletter

Number 16 **July 1999 - September 1999**

This Newsletter presents you the principal events concerning ALADIN during the quarter of year mentioned above. The news about work or events outside Toulouse are related with informations that you sent (for disponibility constraints, the "deported" work deals with the previous quarter).

So, reading this Newsletter, you will know everything about ALADIN activities (more precisely everything I was told about) between July 1999 and September 1999 (except for the work realized outside Toulouse : between April 1999 and June 1999).

Please do bring to my notice anything that you would like to be mentioned in the next Newsletter (number 17) before the 25th of January 2000.

Any contribution concerning announcements, publications, news from the ALADIN versions on workstations or on big computers, verifications results, ... will be welcome. This deadline is particularly important for the report of the deported work each representative should sent every quarter.

If needed, please contact :

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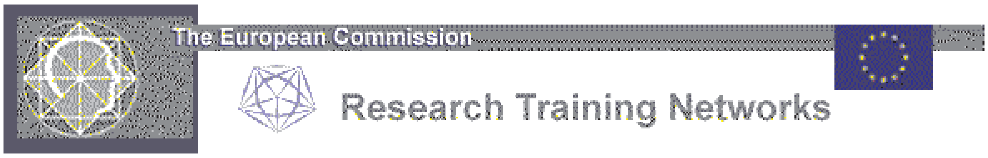
Main event : ALATNET

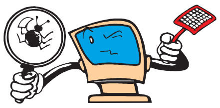
Only one main event but it is really a main main main ... event from its future impact on ALADIN in case of definite acceptation (with the new boost ALATNET could give to ALADIN) and ... its current impact on the work of the teams involved in the preparation of the contract with the European Union.



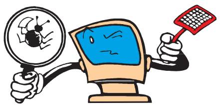
- **ALATNET** is an acronym for **ALA**din **T**raining **NET**work.
- Since the 4th of June, it was only a promising application for one of the horizontal programs of the European Union Last spring, we took an opportunity to obtain significant funding for the ALADIN project from the European Union, through the 5th Framework Program for Research and Development. More precisely, we applied to one of the 3 Horizontal Programs, entitled "Improving human research potential and the socio-economic knowledge base", part A-1 "Research Training (RTN) Networks", which aims to support the training of young researchers and exchanges between teams (more details about our proposal could be found in the previous Newsletter or in our server).
- Last October, it has been favorably evaluated by the Commission services and the negotiations of the contract could begin.
- A first version of the Contract Preparation Forms was sent to Brussels on November the 3rd : 40 pages for the administrative part with 900 numbers in many tables (but much more have been calculated to obtain something reasonable) and 20 pages with the description of ALATNET (technical annex).
- A few days later, the Commission asked us to introduce some modifications both in the administrative part and technical annex. It has been done and new documents were sent on November the 10th.
- These new documents will be verified soon by the Commission and, if ALATNET pass this second evaluation, the contract could be signed before the end of the year or at the very beginning of 2000. These final documents will be available on this server ... or on an ALATNET server (if ALATNET is accepted, an ALATNET server will be created).

Then, ALATNET will be able to begin its real life with less paperwork (unfortunately probably not less paperwork but surely different ones) and new topics such as ALATNET research stays in leading centers, ALATNET exchanges between teams, ALATNET visits, ALATNET participations to workshop, ALATNET school, ALATNET statistics, ... First of all, a call for ALATNET candidatures will be published through the SRNWP network; young ALADIN researchers and young researchers from outside the ALADIN community will have the opportunity to work together on ALATNET. All details in the future ALATNET server if ... keep your fingers crossed ...

The year 2000 approaches ...



Your correspondents for this problem :
claude.fischer@meteo.fr
jean-francois.estrade@meteo.fr.



Météo-France operational service has made a proposal for the forecast facilities on January 1st, 2000:

- In case there is a breakdown in transmissions, there would be no possibilities to retrieve any coupling files from Toulouse for the r00 run of January 1st.
- Thus, we propose to provide extra operational-like coupling files produced on the basis of the ARPEGE run of December 31st, r00. to be explicit, instead of files from 0 to 48 h, we can provide on this run files until 96 h (January 4th, 0 UTC). this would enable you to rerun forecasts locally on January 1st for longer periods, though the initial conditions would of course be "old" ones.
- We will prepare the extra coupling files only for those centers which do explicitly ask for them , so Claude Fischer is waiting for your replies. No reply to Claude is considered as no demand.

Météo-France has tested the year-2000 move on cycle CY21T1/AL11. Therefore, this is the only cycle we consider as safe, officially. However, it makes sense for the dynamic adaptation to perform the tests on an older cycle, since we have not found errors in the forecast mode. For the analysis, this might not be true (see Jean-François Estrade on this point). The tests for IAA connections are anyway independent of this issue. The installation of AL11 is recommended before end of this year. This point is also related to the cleaning of the Fortran 90 code, which implies a more careful installation and potential not yet anticipated compiler problems on some platforms.

Here are the general procedures for testing the move to January 1st, 2000 :

- further tests in Toulouse: a test ALADIN/France forecast starting on December 31st, r12 and going to January 1st, 6 UTC (18 h) has been made; this is to make sure that the coupling inside ALADIN recognizes properly the sequence of dates of the ELSCF* files and passes the 1/1/2000.
- test coupling files for deported validation: Météo-France has run a test 24h operational suite (ARPEGE/ALADIN/France) starting on January 1st, 2000 and produced a complete set of coupling files for the Toulouse-dependent centers. If you wish some guidance on how to proceed for your local tests, please contact directly Jean-François Estrade

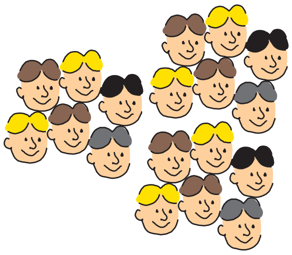
Guessing game : are you a good ALADIN Newsletter reader ?

My first name is a famous cyclone; I share my name with a famous method and its inventor; who am I ? ... (indication : I am an ALADINer).

Conferences/Workshops/Announcements

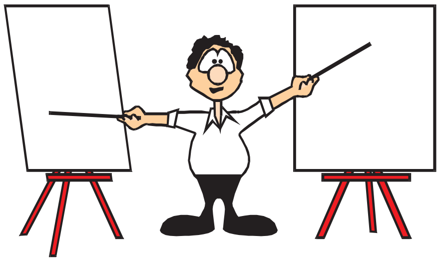
1. 1999 EWGLAM/SRNWP joined meetings hold in Bratislava on October 11-15th, 1999

Organized by the Slovak Hydrometeorological Institute, the 1999 combined EWGLAM/SRNWP meetings took place in Bratislava.



As usual, during the EWGLAM meeting (11-13rd October), the participants could attend international projects presentations with ALADIN, HIRLAM, UKMO, ECMWF and LACE and, this year, a new group : "Cosmo-Consortium" with Germany, Greece, Italy and Switzerland as partners (see map on the next page). Then, some 18 national posters were introduced. The scientific presentations dealt with different themes (complete agenda available on ***http://www.shmu.sk/ewglam*** or in the next EWGLAM Newsletter).

Then, during the SRNWP meeting (14-15th October), reports from Lead Centers were presented :



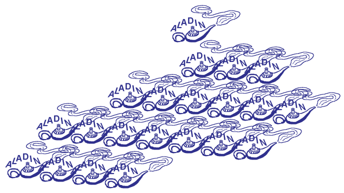
- report from LC for 4D-Var (UKMO)
- report from LC for non-Hydrostatic modelling (DWD)
- report from LC for numerical techniques (Météo-France)
- report from LC for soil/surface parametrization and assimilation (INM)
- report from LC for statistical adaptation (Austria).

A summary of the 1999-2001 decided or envisaged activities was presented and the discussions dealt mainly around the exchange of software, common works, invitations to workshops, contact persons, ...

The next EWGLAM/SRNWP meetings will take place in Toulouse on October 9-14th, 2000 (special topic will be numerical convergence) and, as proposed by its representative, Poland will organize the 2001 EWGLAM/SRNWP meetings.

2. *ALADIN evening meeting*

The EWGLAM/SRNWP meetings are not only the opportunity to attend good scientific presentations and informal reception or to visit forecast center, castle, downtown and restaurants ... an evening is usually dedicated to an ALADIN meeting. This time is was on Wednesday evening, just after the end of the EWGLAM session (and before another ALADIN meeting ... at the restaurant).



20 people from 9 ALADIN countries were present (nobody from Bulgaria, Morocco, Portugal, Romania and Moldavia could attend). Main discussions were about :

- The scientific program for next year :

A scientific program for next year will be presented to the next Assembly of Partners (the preliminary document is available on our server, see annexe).

Among the subjects for 2000, the orphan ones were identified and some of them were attributed to volunteers during this meeting. Others are still free.

- The ALADIN school on high resolution modelling :

This school will be mostly theoretical and will not be organized for the formation of newcomers. Of course, people attending to this school should have then the opportunity to go on working on ALADIN after the school (some of the people trained during the last general purpose training exercise did not work on ALADIN after the school for many many months or years...). Commitments on this subject will be asked to the Directors for the Assembly.

- Common ALADIN verification :

Météo-France have funding for initiating this work on verification with a 2 month stay in Toulouse in 2000. A call for volunteer is hereby announced.

- Maintenance :

The situation is critical with a participation less and less important from some countries, whereas Météo-France's effort is increasing every year. Some promises of some participations were made; hopefully they will be kept ...

The next phasing (March 2000) will be rather a small one with mainly ODB and some cleaning of the code. A more important phasing will begin in October after the EWGLAM meeting.

- Assembly of Partners

A first draft of the agenda of the Assembly was prepared. Since then, it has been completed and proposed (and approved) to/by the participants (see above).

- Next EWGLAM meeting in Toulouse

They 2000 meeting will be in Toulouse and an effort will be made to have at least one participant of each ALADIN countries. The dates of the stays in Toulouse will be chosen in order to offer the opportunity of attending this meeting to the maximum of people (some stays could end just before the meeting and others, such as phasing stays, could begin just after the meeting). This will be a huge organization effort at the same time when the EWGLAM meeting should be prepared ...

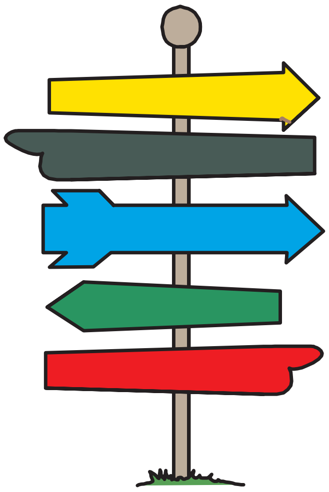
The important question of which excursion will be organized during the next meeting was touched during a contradictory debate ... The subject is still open and suggestions are welcome.

3. Seventh ALADIN Workshop in Ljubljana on November 17-19th, 1999

The subject of this workshop is "Recent and planned operational exploitation of ALADIN model". Report in the next Newsletter (For additional information please consult http://www.rzs-hm.si/OpTiM/lace/workshop99.html).

4. Assembly of ALADIN Partners in Lisbonn on December 6th, 1999

The next Assembly of the ALADIN Partners will take place in Lisbonn on Monday 6th of December 1999. An invitation has be sent to the Directors of the 14 NMSs involved in the ALADIN project. The agenda was designed during the last ALADIN evening meeting in Bratislava and proposed to the members. Main topics will be :

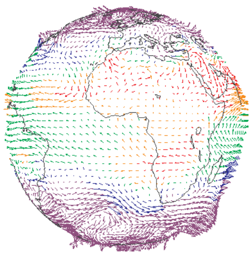


- Preparation of the revised 2000 ALADIN Memorandum of Understanding with, mainly, the potential intermediate status between nothing and full membership and the review of the policy in commercialization
- ALATNET
- Approval of the revised second Medium-term (1999-2001) research plan for ALADIN
- 2000 ALADIN Partners commitments and 1999 commitments assessment
- Commitments for the ALADIN school on high resolution modelling
- Strategical orientations on data assimilation and non-Hydrostatic modelling
- Assessment of the 1999 scientific programme and presentation of the 2000 scientific programme
- Technical overview of the project at the end of 1999 and 2000 perspective
- Commitments for maintenance effort
- Verification's project
- ...

Report in the next Newsletter.

For additional information please contact: mario.almeida@meteo.pt

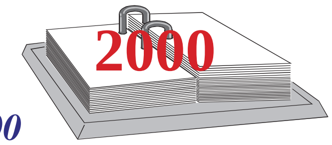
5. "Atelier de Modélisation de l'Atmosphère" (A.M.A.) to be held in Toulouse on November 30th - December 2nd, 1999



This year, the main topics of the A.M.A. will be "Modèles". A "call for contributions" has been sent in June within the French speakers community (communications and posters will be in French).

For additional information please contact : ama99@meteo.fr or consult http://www.cnrm.meteo.fr/ama/

6. ALADIN events in 2000



- An ALADIN school on high resolution modelling will be organized during the spring 2000 probably in the Czech Republic.
- During last ALADIN workshop in Bucarest, 8th ALADIN workshop (modeler meeting) was proposed to be held in Poland by M. Jerczynski. Dates could be 14-16 June, 2000 (to be confirmed after checking this proposal has not colliding with other important events in meteorological and Aladin communities; please contact us in that case).
- Belgium has also candidated and could organize then the 9th ALADIN workshop (forecaster meeting) presumably in fall 2000.
- 5th Assembly of ALADIN partners, probably Ocotber/November 2000 with the crucial question of hte MoU renewal on the table.

7. Other events in 2000

- SRNWP Workshop on Mesoscale Variational Assimilation", UKMO/Bracknell, Monday 8th - Wednesday 10th May 2000
- EWGLAM/SRNWP joined meetings, Météo-France/Toulouse, 9-13th October, 2000.
- SRNWP workshop on statistical adaptation, ZAMG/Vienna, beginning of December 2000.
- A.M.A., Météo-France/Toulouse, November or December 2000.

Map "The ALADIN Project within the European collaborations in Numerical Forecast

Contacts & Informations

1. ALADIN on the Web

These informations (and many many others ...) are available on our ALADIN server :

http://www.cnrm.meteo.fr/aladin/

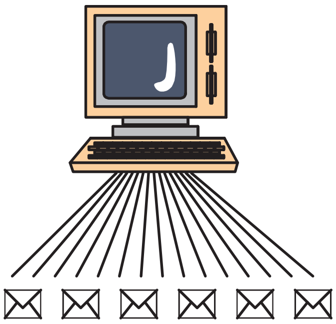
2. Public ftp

Some documents (please see the list of the documents in annex) are also available on a public ftp : ***cnrm-ftp.meteo.fr***, under the directory ***/pub-aladin***. Please connect on user anonymous and use you e-mail address as your password.

You can access to the postcript files on this public ftp also through the web server with : ***http://www.cnrm.meteo.fr/aladin/contact/ftp.html***

3. Mailing lists

Some mailing lists also exist to make our correspondence smoother; for example :



- the general list : ***aladin@meteo.fr***,
- the RC LACE list : ***aladin_lace_talk@chmi.cz***,
- the AWOC list : ***awoc@meteo.fr***,
- the list for questions and/or problems encountered with ALADIN : ***alabobo@meteo.fr***,
- ...

4. Remote access to Météo-France machines

Many of you have a remote access to Météo-France machines. Autorizations for these access must be yearly renewed. Eric Escalière (eric.escaliere@meteo.fr) is your only point of contact for these access. The Toulouse "garde-barrière" has been replaced by a new machine this automn (the so-called "halo" is dead). The connection procedures should have been modified from your side ...

Money Funding asked for some cooperations based on the ALADIN project

1. French "Ministère des Affaires Etrangères" support (MAE)

Money for 1999 support is now available and most of the stays could begin ... at the beginning of 2000 !...Most of them are already planned.

The requests for 2000 support have been sent to the Ministery.

More details can be asked to Arlette Rigaud (Météo-France/DGS/IE, arlette.rigaud@meteo.fr).

2. Bilateral supporting grants

Balaton, Barrande, Proteus, Portugal are bilateral programs who can support short visits in both sides. The countries involved in these programs can easily be guessed considering the programs names. The French fundings are used to pay the per-diem (in France) of the visitors and to pay the travel of French people to your NMS, and vice-versa.

For 1999, most of the exchanges have been completed or will be completed in the next weeks (for example, work on diagpack was fostered in Budapest thanks to such grants, see article in this Newsletter).

The reports of 1999 actions and the 2000 renewal demands have already been sent for some programmes (depending of the deadline for each of them). The request for new demands should usually be prepared in spring.

3. Météo-France support for maintenance, ...

The amount of Météo-France support for 2000 will be similar to the 1999 one. It will be dedicated to phasing and cleaning (one phasing in March for OBD, another in automn after EWGLAM meeting), installation of ODB, start of objective verification work, ...

4. ALATNET funding ?

See "Main events".

The operational ALADIN models

It is always very difficult to obtain contributions about the operational versions. The above tables below try to summarise the status of all these versions. Please do protest in case of mistakes et do send me ... a report or, at least, just the changes introduced since this status was prepared...

1. Status report of the operational ALADIN versions

ALADIN can now run on a wide range of computers, from single workstations to vectorial computers in shared or distributed memory.

ALADIN is now running operationaly on a cluster of worstations under Linux (see ALADIN/Slovenia).

12 operational ALADIN suites are presently running in various NMS.

7 coupling domains are produced operationaly at Météo-France. Forecasts are available on 12 integration domains.

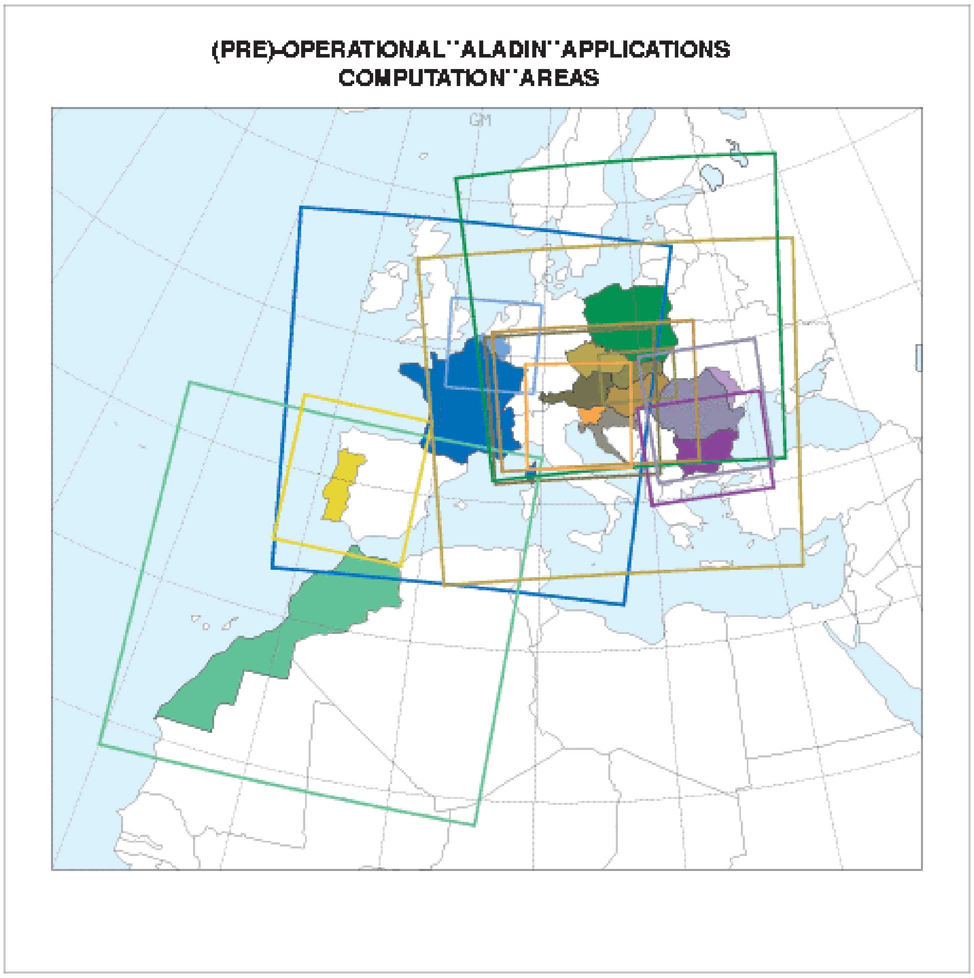
On vectorial computer

Model	**Machine**	**System**	**Mesh size**	**Grid points (extension zone)**	**Vertical levels**	**Coupled with**	**Range of forecast**	**latitude,longitude SE corner**	**latitude,longitude NE corner**	**operational cycles**
ALADIN-BELGIUM	CRAY J916, 12 processors	Unicos 9.0.0	7.7 km	97*97 (108*108)	31	ALADIN-FRANCE (36h) then ARPEGE	48 h	47.47, 0.11	53.47, 9.60	AL11T2/CY-21T2
ALADIN-FRANCE	FUJITSU VPP700, 24 processors, 6 used	Unix System 5	9.9 km	277*277 (288*288)	31	ARPEGE	36 h	33.14,-11.84	56.96, 25.07	AL11/CY21-T1 + cycora
ALADIN-LACE	NEC SX4C/3A, 3 processors	SuperUX 7.2	12.2 km	229*205 (240*216)	31	ARPEGE	48 h	34.00, 2.18	55.62, 39.08	AL11
ALADIN-MAROC	CRAY J916, 6 processors	Unicos 8.0.4	16.7 km	169*169 (180*180)	31	ARPEGE	48 h	18.31,-19.98	43.12, 9.99	AL08

On workstation

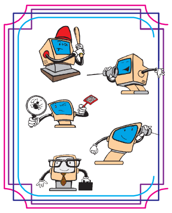
Model	**Machine**	**System**	**Mesh size**	**Grid points (extension zone)**	**Vertical levels**	**Coupled with**	**Range of forecast**	**latitude,longitude SE corner**	**latitude,longitude NE corner**	**operational cycles**
ALADIN-AUSTRIA	DEC Alpha 600	Digital Unix	9.6 km	133*117 (144*128)	31	ALADIN/LACE	48	41.37, 5.89	51.82, 21.85	AL08 AL11T2 is in installation

ALADIN-BULGARIA	SUN Ultra Sparc 60	Solaris 2.7	9.0 km	63* 79 (72* 90)	31	ARPEGE	48 h	39.79, 20.01	46.41, 31.64	AL09.053 AL11 in test & planned for december
ALADIN-HUNGARY	SGI Origin 2000, 8 processors		8.0 km	189*133 (200*144)	31	ALADIN/L-ACE	48 h	42.08, 6.34	51.77, 26.06	AL09 AL11 already installed on SGI
ALADIN-POLAND	IBM RS/6000 SP2	AIX 3.2	13.5 km	169*169 (180*180)	31	ARPEGE	48 h	41.42, 5.56	61.16, 40.19	AL09
ALADIN-PORTUGAL	DEC Alpha 500	Digital Unix	12.7 km	79* 89 (90*100)	31	ARPEGE	48 h	34.94,-12.42	44.97, -0.71	Al08T3 AL09 in test
ALADIN-ROMANIA	DEC Alpha 500	Digital Unix 4.2	10.0 km	89*89 (100*100)	27	ARPEGE	48 h	41.11, 20.69	49.80, 32.13	AL09.07 AL11 in test
ALADIN-SLOVAKIA	DEC XP1000WS EV6 processors	Digital Unix	7.2 km	79*53 (90* 64)	31	ALADIN/L-ACE	48 h	46.92, 16.02	50.27, 23.65	AL09.07 AL11 installed AL11T2 planned for fall-99
ALADIN-SLOVENIA	Cluster 5 x Alpha PCA56 533 MHz	Linux	8.3 km	97*97 (108*108)	31	ALADIN-LACE	48 h	42.33, 8.69	49.44, 18.97	AL11



2. AWOC : More workstation friendly ALADIN12 code

(more details jure.jerrman@rzs-hm.si)



During the phasing of ALADIN 12 some efforts were also made to provide a more workstation friendly code. It is known fact that Fujitsu compiler comparing to workstations compilers is more tolerant which means that quite a lot of routines don't compile on workstations (in ALADIN 11T2 there were more than 80 such as routines on DEC workstation) in the first try. The errors are usually very simple like multiple declarations of variables in USE MODULE block, declaration of array with dimension declared later on in declaration part, etc. In order to decrease the time needed for installation of new versions of ALADIN on workstation the routines with such as problems were fixed (on the base of problems list for True64 - former DEC compiler). Hopefully the modifications will enter the next export version of ALADIN 12.

It was decided that such cleanings should be done on regular basis. All users of workstation version of ALADIN are kindly invited to report their problems to ALABOBO list (alabobo@meteo.fr) and if the required modifications will not be too complicated, they will be introduced in the next export version.

3. Workstation version at Austrian Meteorological Service

(more details yong.wang@zamg.ac.at)

In the last time, no changes were introduced in ALADIN/Vienna, but there are some undergoing actions, e.g. coupling the trajectory model of our environmental department with ALADIN/Vienna, a new GUI (Graphic User Interface) tool and a verification tool.

4. The operational implementation of ALADIN-Belgium

(more details luc.gerard@oma.be)

Operational suite

These last 3 months have essentially been devoted to the reorganization of the operationnel account ALADIN prevision Belgium.

- 1) An increase in operational reliability by the introduction of many additional securites throughout the scripts chain.
- 2) Larger facilities of management of the account, thanks to the assistance of a global control script. This one allows amongst other things:

  - A simplified management of the cron for the daily forecasts.

  - An easy restart of jobs following a problem.

  - To visualize in reel time and details all the tasks to be done by the operationnal forecasts and restarts.

- Virtually all the operations done within the scripts are coupled by a function which generate a specific code, dependent on the operation and successes of this one. The whole of these codes is then interpreted continuously by an additional script, to produce a report in the form of a text.

- To realize an automatic restart, partial or complete of jobs, according to the error codes possibly encountered.

Operational developments

- Upgrading to 8 more powerfull processors entrained a considerable gain on runtime.
- AL11 with new tunings and compiled on the new processors runs about 2 times faster then AL09 compiled on the old processors. This lead us to integrate the youngest physical developments (CYCORA), including the downdraught parameterization, in the operational forecast.

  Example: respective performances for the forecast run (analysis 1 Oct 1999 at 00 UTC):

  AL09 operational: 9350 sCPU, 2050s Wallclock for a 48h forecast

  AL11 standard : 3660 sCPU, 674s Wallclock for a 36h forecast

  AL11 CYCORA : 3790 sCPU, 747s Wallclock for a 36h forecast

  Please also note that the runtime of a timestep is more dependent on the atmospheric situation when the downdraught parameterization is enabled.
- AL11: operational in Belgium since 4 Oct 1999.
- Implementation of the CRAY version and feedback to Toulouse of the main fixes and source corrections, which were subsequently included in version AL11T2/CY21T2.
- Double chain tests were completed with conventional and CYCORA tunings. We decided to include them soon into the operational chain (substraction of large scale precipitation from moisture convergence feeding the convective scheme, accounting for pressure gradients between cloud and environment, CAPE dependency for entrainment, cloud mass flux dependency for detrainment, downdraught parameterization,...). We saw no spectacular differences, but for this we should better choose specific situations, and the small gain in resolution between the coupling model Aladin-France (9.9 Km) and the coupled model Aladin Belgium (6.97 Km) could also justify the low impact. Further mesh reduction, with possible introduction of the non-hydrostatic model shoud now be studied.
- Tests for MPI compilation: following some bugs in CRAY f90 (conflicts between module usage and data passing in ''taskcommon'') for which the solution was awaited very long, some unacceptable conditions imposed by SGI to provide a cc compiler version suitable for MPI compilation (they want to sell the full C++ package), the tests were halted with no deadline.

5. Workstation version at Bulgarian Meteorological Service

(more details valery.spiridonov@meteo.bg or andrey.bogatchev@meteo.bg)

Since 15 of May, ALADIN/bulgaria application became operational. The 48 hours forecast was calculating every night, using the 12-h ARPEGE forecast from 12 UTC as initial condition. Since The 15 of June, the 48 hours forecast was calculated twice per day using the 12 -h ARPEGE forecast from 12 and 00 UTC.

The model is running on work station SUN Ultra Sparc 60 with following configuration:

- Processor clock rate 360 MHz
- Memory - 256 MB;
- Disk storage ~ 50 GB
- Operational system - SOLARIS 2.7
- Compilers - FUJITSU FORTRAN 4.1 professional and corresponding C++ compiler as well as other tools (work bench, debugger, visual analyzer, math libraries)
- Geometry: &NAMFPD

  NLAT=72,

  NLON=90,

  RLATN(1)=46.40865,

  RLATS(1)=39.79419,

  RLONW(1)=20.01355,

  RLONE(1)=31.63768,

  NFPLUX=79,

  NFPGUX=63,

  NFPZONL=8,

  NFPZONG=8,
- Geometry: &NAMFPG

  FPRPK=.707107,

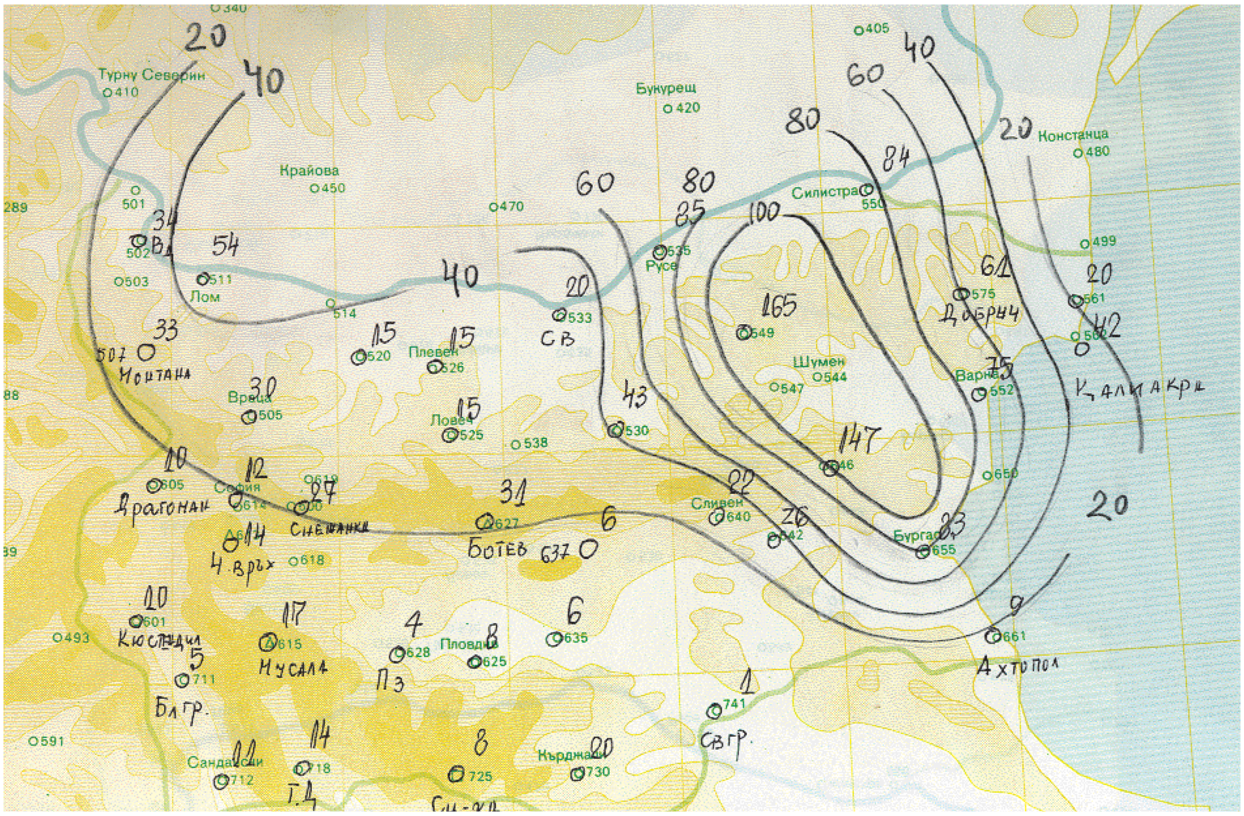
  FPLON0=25.0,

  FPLAT0=45.0,

  NFPSOTRP=1,

The computation flow is driven by two basic scripts. The first one is responsible for the proper connection with the PICKUP-s, properly asking questions, analyses of the answers and finally for transferring and checking the consistency of the files with the initial and boundary conditions. One important action of this script is that if the connection is not possible using the default Internet provider, it tries using the second one. In any case it works properly.

The second script is responsible for all activities, related with ee927, integration, off-line post processing, visualization and creating a specific files for the end users. This one first of all checks if all necessary information is available. If not, the script sleeps 10 minutes and after that, it repeats the check. This action can be satisfied in two ways: the first - all information is available and the procedure can go on, and the second on given time out the procedure exits without creating any products, writing only the log files.


Турну Северин
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Букурещ
Констанца
Силистра
Русе
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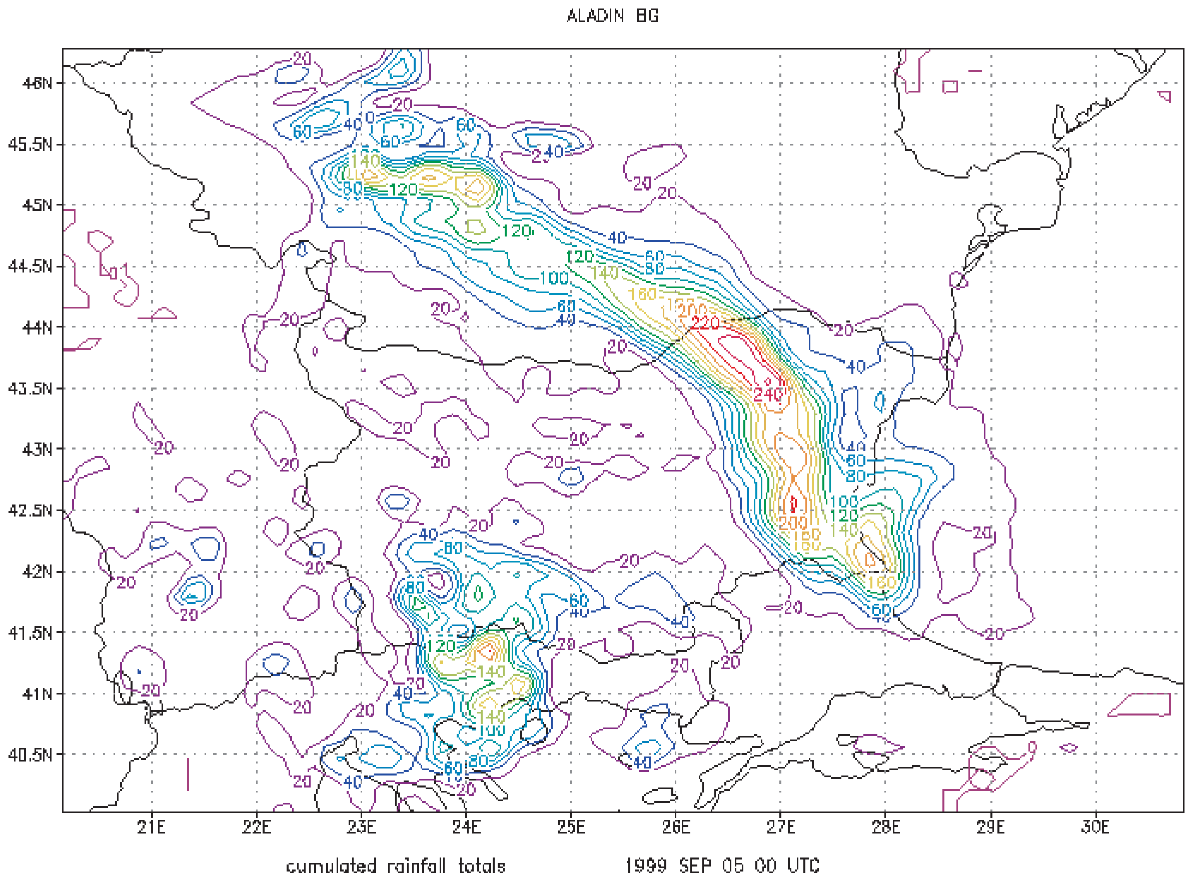
Шумен
Варна
София
Сливен
Бургас
Пловдив
Сандански
Кърджали


ALADIN BG
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cumulated rainfall totals
1999 SEP 05 00 UTC

If the information check is successful the procedure continues with the change of the geometry, integration, of-line post processing, visualization and creating a file for end users. The result of every step is analyzed by the script. If there would occur return code different from normal one, the procedure will stop making the corresponding records in the log files. The performance of the first script depends on a speed of an Internet link. The second one depends on the work station load. Usually the are no active users (I mean users making heavy computations) during the run of the operational script. All this computations were done for ~ two hours.

The visualization tool is GRADS (Grid Analyses and Display System). All images of the forecasted fields at first step are saved as GRADS meta files and finally as GIF files. All forecasted fields from today and yesterday forecasts are available for displaying on Intranet server of our department. There is an additional possibility for movies using the ACDSee 32 program.

An example of a forecast of a heavy precipitation over east Bulgaria is given at the previous page.

6. Operational ALADIN-FRANCE in Météo-France

(more details francis.pouponneau@meteo.fr)

Since March 1999 the maximum forecast range of Aladin-France is 48 hours for 00 H basis (still 36 hours for 12 hours basis) and forecasters in each center will soon be able to visualize the forecast between 36 and 48 hours.

7. Workstation version at French Meteorological Service

(more details jean-marc.audoin@meteo.fr)

On the workstation SUN, with the compilator F90 fujitsu, the ALADIN version (al11_main.01 + cy21t1_main.01 with bugfix al11_bf.04,cy21t1_bf.04) has been implemented. As usual, some tests for the configuations 001 and Fpos, have been made on the French domain with comparison with VPP Fujitsi .

The xrd library of the export version export_AL11T2_01 has been put on SUN plaform, and tests have been made with the tool progrid to validate it.

This version export_AL11T2_01 is going to be implemented.

8. Workstation version at Hungarian Meteorological Service

(more details horanyi@met.hu)

There was less activity during the last quarter regarding the workstation version of ALADIN due to the summer holidays and also due to the fact that Gabor Radnoti was working in Prague and Andras Horanyi had been in Toulouse during the month of July.

Nevertheless the following activities were carried out during this period:

- 1. The adaptation of AL11t1 version of the ALADIN code (it was not yet put into operations).
- 2. Test runs for the eclipse of 11th of August.
- 3. Further development of diag.pack in a two weeks team work by Vincent Casse, Jure Jerman and Gabor Radnoti (the summary of their work can be found elsewhere in this Newsletter).

- 4. Automatic forecast generation based on the products of the ALADIN/HU model.

9. Operational ALADIN-LACE in CHMI

(more details can be asked to Project Leader or Prague Team Leader)

Evolution of the ALADIN/LACE application

The main change in the ALADIN/LACE operational configuration occurred on **9th August 1999**, 12 UTC run, when it moved from cycle AL09 with LFGELS bugfix to **AL11 with eclipse bugfix**. The change allowed to simulate the solar eclipse effect on the show-wave solar radiation flux in the forecasts valid for 11 August.

The switch to the new settings of the convection parameterisation as the result of the CYCORA tuning is scheduled to the end of November.

Parallel tests

In parallel with the regular operations the following tests are run to assess impacts of various modifications. The main test in the reported period were:

- Family of parallel tests in frame of the CYCORA action. The most remarkable impact was seen in the test when the operational version of ALADIN/LACE (therefore without CYCORA settings) was fed by the coupling files originating from the parallel test of ARPEGE with CYCORA settings. The CYCORA impact on ALADIN itself remained neutral (because of the continental character of the domain ?).
- Validation of AL11 with eclipse bugfix giving no significant change in the scores compared to the operational version.

More detailed information on the parallel tests of ALADIN/LACE can be found at

http://www.chmi.cz/meteo/ov/lace/aladin_lace/partests/.

Technical developments

Further progress was made in the development of the local observation database in the CMAFOC format for verification and diagpack purposes, in future also for data assimilation purpose.

Important step towards a new operational suite of ALADIN/LACE addressing the new functions (namely 4 runs per day, ARPEGE and ALADIN data assimilation) was made: Roman Zehnal (SK) ported the SMS (Supervisor-Monitor-Scheduler, developed at ECMWF) software to the local system and Metod Kozelj (SI) created an embryo of the operational suite. The further development will go on with the aim to switch to the new operational suite in early 2000.

Research and Development

See part "Prague work".

10. Operational ALADIN-MAROC in MAROC-Météo

(more details mehdi.elabed@meteo.ma)

The ALADIN model is running in Morocco with ISBA assimilation cycle twice a day with 16,5 km resolution, 675s time step and 31 levels. The model version is still based on cycle AL08 (the problem for compilation of the xrd library still remains). The operational suite of ALADIN uses data from the local Moroccan "Base de Données Météorologiques" (works about the portage of the BDM on workstation is finished).

For Model control and monitoring, an operational system of control has been installed and a three monthly review of control of ALADIN on Morocco area is quarterly published.

For model development, some studies about statistic balance of the forecast error for the 3D-Var on Morocco area have been done and the characterization of the Meteorological situation using ALADIN (or ARPEGE) analysis has been performed. Efforts are still focused on the improvement of the forecast of the precipitation field and on the implementation of a system of regional forecast using nested model.

11. Workstation version at Polish Meteorological Service

(more details zijerczy@cyf-kr.edu.pl)

The opportunity to shift operational computations from IBM RS/6000 SP2 to new machine, namely SGI Origin-2000, has emerged. Version AL09 of the Aladin model was installed and test runs were carried out. The change of computer is accompanied by change of the model configuration. New domain will cover 2270~km~x~2270~km area instead of 1040~km~x~1040~km covered by currently being applied.

New operational setup:

- machine:

  SGI Origin-2000, 32 x R10000 250 MHz CPU's,

  16 GB RAM, 36 GB HDD, OS IRIX 6.5

- model version: AL11
- mesh size: 169x169x31 (C + I)
- resolution: 13.5 km

12. Workstation version at the Portuguese Meteorological Service

(more details mario.almeida@meteo.pt)

ALADIN is still pre-operational. Until the end of August, misses of the runs were due to problems with the settings of our local configuration, line/router problems and unavailability of LBC fields in Toulouse.

We are still running version Al08, but tests with version 09 are almost finished and soon will be introduced into a new WorkStation. Later on, a redefinition of the geographical area and mesh size is planned.

13. Workstation version at the Romanian Meteorological Service)

(more details cordoneanu@meteo.inmh.ro)

About the operational ALADIN (cycle 9) in Bucharest:

- Hardware and software platform

  -DEC ALPHA Station, 600 MHz, 256 MB

  -Digital UNIX 4.0D, FORTRAN 90

- Integration domain

  -100x100x31 points

  -10.2 km horizontal resolution

- Characteristic

  -twice per day integration in dynamical adaptation mode

  -2 tl semilagrangean scheme with 540 seconds timestep

  -48 hours forecast range

  -integration time 2.0 hours

- Model output verification

  -Objective verification against SYNOP and TEMP data

  -Subjective verification

- Visualisation of numerical output

  -MESSIR-VISION system

  -NCAR Graphics

  -VIS 5D

- Interface to

  -air pollutant transport and diffusion models (MEDIA and others)

  -hydrological models

  -Wave model over Black Sea

About research and development ALADIN activity

- High resolution model experiences

  -non-hydrostatic integration over subdomains of Romania

  -use oh high resolution surface data from LANDSAT-TN satellite(100m resolution) over Bucharest

- Statistical adaptation of ALADIN output

  -temperature for all National Network surface stations

- Study and development of physical parameterisation (convection)

14. Workstation version at Slovak Meteorological Service

(more details olda.spaniel@mail.shmu.sk)

Main events during 1999:

- In March 1999 DEC Alpha WS was upgraded considerably. Model was successfully ported on this upgraded computer and after a short testing and validation period ALADIN/SLOK became fully operational in April 1999. By that time model products are available on-line at the Central Forecasting Office (CFO).
- In May 1999 a new model version was implemented (release AL09 + CY19T1, export 07), which - among others - enabled to use new surface parametrization (surface frozen water reservoir). This new version became operational - in coordination with all ALADIN operational applications - on 26/05/1999.
- During summer, two new products from ALADIN/SLOK were prepared: meteograms for 22 cities in Slovakia and renewed/modified version of the diagnostic tool for plotting vertical cross sections over the model domain (ASCS tool). All products are available at CFO.
- New cycle CY21T2/AL11T2 was implemented and tested, but it's not in operational yet.

Basic characteristics of the workstation:

- DEC Alpha XP1000, 640 MB of memory, 12 GB HDD
- Digital F90 compiler; native C compiler

Basic characteristics of ALADIN/SLOVAKIA:

- size of the domain 79x53 grid points
- horizontal resolution 7.18 km
- vertical resolution 31 levels
- time step 337.5 s
- length of the forecast 48 hours
- frequency of the outputs 1 hour
- runs : twice per day (00 UTC and 12 UTC)
- mode dynamical adaptation
- coupling model ALADIN/LACE (12.2 km resolution)
- physics and dynamics the same as ALADIN/LACE

Operational configurations:

- ee927 preparation of initial and lateral boundary condition

- e001 model forecast postprocessing (into model levels and standard pressure levels)
- FULL-POS

Main products:

- surface parameters in map form (2m T, 2m Tmax, 2m Tmin, 2m relative humidity,10m wind, precipitation, cloudiness)
- meteograms for 22 cities over Slovakia
- input for ASCS tool (explained in visualization part)

15. Workstation version at Slovenian Meteorological Service

(more details jure.jerman@rzs-hm.si)
ALADIN/SI operational report, April - June 1999
OpTiM group, Hydrometeorological Institute of Slovenia

Recent developments in the operational suite of ALADIN/SI

The operational suite of ALADIN at the HMIS was based on AL08, with two daily runs for 48 hours ahead, coupled with ALADIN/LACE on the usual domain.

The operational production includes surface and p-levels 2D charts, point forecasts, areal precipitation forecasts, space cross sections, pseudo-temps and dynamic adaptation of surface wind.

However, on November 24, after two weeks of observation, the operational suite was moved on the cluster of 5 workstations (w. 533 MHz Alpha processor, please refer to J. Jerman's contribution in previous newsletters for all details).

AL11 is used. Accordingly the schedule was modified:

- ee927 is done immediately when an ALADIN/LACE file arrives, on father workstation (pannus0)
- after the second coupling file arrives, the integration starts on 4 baby stations (pannus1 - pannus4)
- drawing of the fields is done simultaneously on pannus0
- after the integration ends, one baby station computes the space cross-sections, while the three others perform the dynamic adaptation of surface wind
- meanwhile, point forecasts are made on father station.
- This schedule is still tied by the speed of transfer of boundary conditions.

In near future the change of resolution will be investigated, enabled by some free resources. We will not switch to NH version in envisageable time.

PhD Studies

The former RFR no longer exists but PhD studies go on in Toulouse or at home ...

1. Doina BANCIU : "Specific small scale diabatic forcing in ALADIN at the limit of the hydrostatic assumption" :

The deep convection parameterization developments, which are now in operational suite (i.e. the downdraft parameterization, the entrainment rate depending on the vertical integral buoyancy, an enhanced detrainment rate at the cloud top, the Gregory-Kershaw approach for momentum convective redistribution, modification of the saturated adiabat computation, limitation of the available humidity for convective updrafts and the treatment of the turbulent fluxes) were intensively tested using the 1D version of the ARPEGE/ALADIN model for the TOGA-COARE case-1. All the tested modifications showed a good potential for solving the convection scheme deficiencies. The problem of the precipitation intermittence and the time step dependency was studied. (*NDRL: an important contribution of Doina to the so-called "CYCORA" modifications, see article in this Newsletter*).

The 2D model version was used as well to asses the impact of these developments. The model was initialized (horizontally homogenous) by the sounding considered characteristic for the TOGA-COARE case-1 and the convection was initiated by a temperature and humidity perturbation (see: GCSS Working Group on Precipitating Connective Cloud Systems Model Intercomparison: Tropical Oceanic Convection of TOGA-COARE, case 1, http:/cnrm.meteo.fr). Even if the model was not able to simulate correctly the evolution of the squall line (for the horizontal resolution about 7.3 km) the introduction of the above modifications increased the "life" time of convective activity.

The 3D simulations of the squall line of July 21, 1992 (CLEOPATRA case) were used for tuning the free parameters of the convection scheme. The results have shown more realistic features of the squall line structure for high resolution. There are still some problems for "intermediate" horizontal resolution (for instance about 12 km) when the displacement speed is too high. A first attempt to make the precipitation fraction evaporated to produce the downdraft dependent of the vertical wind shear was done.

2. Ilian GOSPODINOV : "Conservation Properties of 2 Time Level semi-Lagrangian" :

During the last period the work was concentrated on completing the trajectory scheme for the 3D model. The horizontal acceleration contains two parts - dynamical and physical tendencies. They both must be present. The physical tendencies has been introduced in the code for obtaining the SL trajectories and it has been tested. The result was stable behavior with minor impact of the new terms.

The more interesting part of the work was concentrated on the vertical SL trajectory computation. In the environment of a hydrostatic model there is no tendency for the vertical velocity since the momentum equation on vertical is reduced to hydrostatic diagnostic one. Thus only uniform motion is assumed on vertical. However it is valid only in case of regular z coordinate. In the case of nonlinear hybrid σ vertical coordinate an acceleration term appears which can be analytically derived. There is no physical tendencies on vertical. The new vertical acceleration computations has been introduced in the code and tested. Stability of the new developments has been proved. However work has still to be done in order to prove accuracy of the latest modifications.

The perspectives for the next three months include some more work on two problems. The first one is to make some tests with the "Shallow Water" version of the global model and prove conservation of the trajectory scheme. The second is to test the 3D trajectory scheme on a particular strong case where the vertical part of the trajectory computations would be important and eventually prove accuracy.

3. Filip VANA : "The dynamical and physical control of kinetic energy spectra in a NWP spectral semi-Lagrangian model"

The work is at a stage that in developed ideal 3D frontogenetic framework are tested different sL interpolators. As a first step, the already implemented interpolators have been tested. By extending the time-step to almost the limit of stability of sL scheme it was possible to obtain states where one tested case failed while another was producing almost reasonable results. This stage was considered as a testing tool for the forthcoming research. The failed case will be denoted like case 2 (because all NxLAG switches are set to value 2) while the successful case will be denoted as the case 3. (The case 3, i.e. NxLAG=3 corresponds with the operational configuration.)

The assumption had been defined that just several points from the case 2 are responsible for the failure and to interpolate sL amount for them by interpolator used for case 3 will revert the failure to the result identical with the case 3. The only thing was to define such criterion according that the interpolators would be applied.

By chance taken criterion as absolute horizontal wind speed was working when about 30% of points were interpolated by the more diffusive (and less accurate interpolator). The conclusion of that is that assumption is right and such criterion must exist. Next step was just to define such criterion which is supposed to be a function of derivatives of the flow field.

Several authors recommended different combinations for such criterion (Lipschwitz condition, Pudykiewicz et al.(1985), Sadourny and Maynard(1995),...) so we were testing all of them but with no one a successful result has been obtained. Such criterions defined according spectral derivatives were not able to fully revert the case 2 to case 3 even when applied the more diffusive interpolator to more than 50% of points.

Several things were tested to avoid this unpleasant situation and finally it has been found that two things were responsible for the failure of the suggested method which is theoretically correct. The first one was the fact that in strong flow along frontal zone stationary waves were propagating affecting through derivatives as well the criterion and as a consequence such criterion was not able to act at the proper points. This problem was cured by adding some decentralization to the 3TL sL scheme used. The second problem is coming from the fact that ALADIN model is a spectral one. To study such phenomena as the frontal collapse in spectral model logically create well known Gibbs effect on all fields near the frontal zone. This effect is spoiling not only the values of fields itself but mainly field derivatives. For the normal hydrostatic sL computation the flow derivatives are not used but in this case when taken to determine the criterion the effect of the Gibbs waves is really well visible. To avoid the influence of it to the criterion, the criterion were computed from the centered difference of a smoothed flow field. The field of flow was smoothed with a Gauss weights which is usually used to damp Gibbs effect. This works almost perfect the only disadvantage of this method is loose of computing efficiency due to the smoothing process. The CPU time has increased about 10 times which can be slightly decreased by more effectively written code but not to the state comparable with current time used for model computation. Another solution to avoid the Gibbs effect is to use instead of quadratic truncation just the linear one. This will be studied.

Nevertheless to use decentering and smoothed flow fields to compute flow derivatives was enabling to revert case 2 to one identical with case 3 acting by more diffusive interpolator to no more than just 15% of points. (This amount is measured just for the most sL "problematic" layer so there is a good assumption that for the whole atmosphere it can be even less points to be necessary to cure.) As a probably best theoretically grounded criterion, has been taken the total deformation of the horizontal wind field which works really fine.

The next step will be to extend this switching method between just two already implemented interpolators to some more general method enabling for example combination of several interpolators. Some research to make computation of the criterion more efficient is also necessary. Then probably will be the time to compare the effect of this flow dependent diffusion method with the real horizontal diffusion in model.

The following figures are illustrating the criterion for the lowest model level (i.e. level when frontal zone reach the highest values of gradients) after 12 hours of integration computed as just the deformation of flow field (Figure1) and the same criterion computed from the smoothed flow field and with decentering dumping the stationary waves during the model integration (Figure2). From the second figure is possible to find that even after smoothing the bigger Gibbs waves are remaining (note the white ring inside the black area) but it is not strong enough to spoil the results of model integration.

figure 1

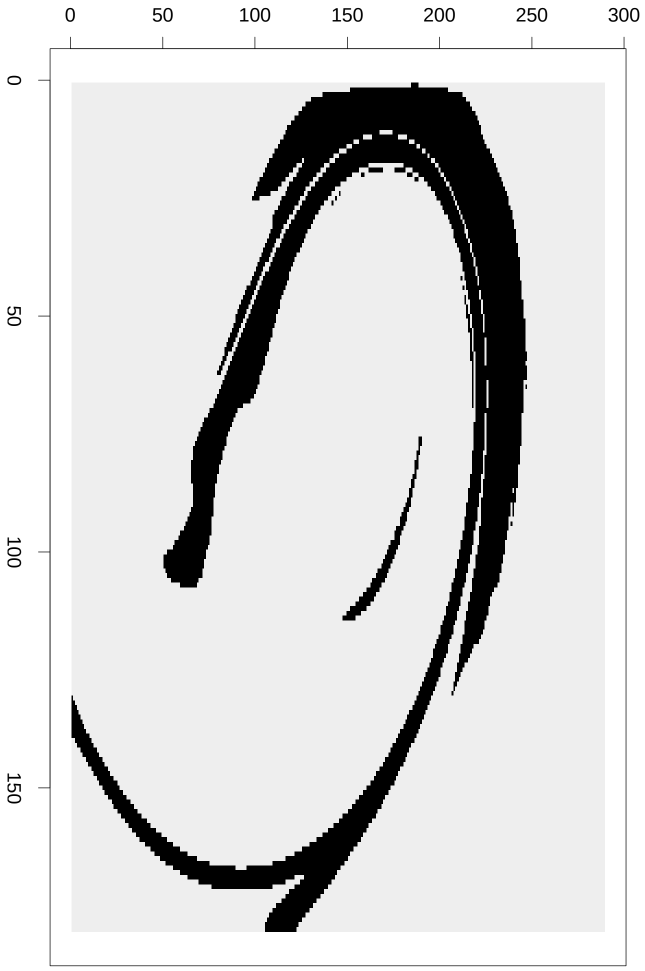


figure 2

4. Mark ZAGAR : "Prediction of small-scale events through second level dynamic adaptation of the planetary boundary layer"

Final report in the next Newsletter after the PhD defense.

ALADIN saves lifes

(more details mark.zagar@rzs-hm.si)

On Sunday, 21st November, a 42-year old windsurfer, Rajko Dolinsek from Ljubljana, decided to challenge his fate at famous Piran surfing point, in strong bora wind and waves reaching 4 meters of height. After he felt into the water few times and became exhausted, the wind and the swell started to push him towards the open sea. The police and navy started a rescue operation, which was hampered by strong wind and high seas. Finally, in the early evening, the surfer used the slight improvement in the weather conditions and managed, using his hands and his surfing board, to reach the coast.

In an interview to the national newspaper he said that, according to ALADIN, the wind had been forecast to ease up at 18 UTC, what indeed happened, and that he has not at any time during his adventure felt his life was endangered. In fact the ALADIN forecast was giving him hope and necessary strength.

A step to the local use of orography at higher resolution: Introduction of the local orography data

(more details mehdi.elabed@meteo.ma or neva.pristov@rzs-hm.si)
The complete version is on delage: ~mrpe691/report/c923/report_e923.ps

Running Aladin model with high resolution (few kilometers) needs a good description of the "climate" parameters at high resolution.

The orography data set used now for creating the operational climate files is a global, 2'30" orography data prepared (by E. Legrand) from a global, 30" orography data (GLOBE or GTOPO30). This resolution is sufficient for running Aladin model at grid distance greater than approximately 5 km. But with finer resolution we need better description of the orography.

The question is how to include finer orography data which usually cover only a limited area and sometimes does not cover the whole domain of the model integration. The aim of this study is to try to improve the representation of model orography using a local, finer data set, which is not necessary covering the domain of model integration and is not a complete data set.

1. Possibilities to include local orography data

On the basis of the discussions several possibilities arose:

- a) Preparing an Aladin Orography file

  File with the orography data can be included in the step one of the e923 configuration using the key LNORO. In this case a new orography and a new land sea mask (if asked) are used. It is read from an Aladin file (name is neworog) and after checking the frame, it undergoes the biperiodisation and spectral fit if grid point orography is read. The advantage is the standard format of files (FA) but it is supposed that the fine orography covers the whole area (however, there is a way to avoid this).

- b) Inside the code

  This would be done like it is done now for the computation of the fields using vegetation data. This possibility seems to be complicated to implement since the local files have different format (not FA files). After several discussions we concluded that this possibility is improper since the e923 configuration is already quite complicated, having several steps.

- c) Outside the code

  In this case first a new orography data set with higher resolution would be created. From the local fine data and from the operational data an intermediate, new orography data set can be created. This possibility does not imply any changes to the Aladin code, concerning the format of the files and it can be adapted easily in each country. This would also give unified definition and methods when creating new data sets between Aladin consortium partners.

Finally we decided to create a new orography data set which can be used at the first step of the configuration e923. This is a safe method and can be adapted without any changes in the ALADIN model code.

2. Creation of the orography data set

The basic data for creating new set are local orography data in high resolution. Since only sub-grid mean orography height is usually available and than some information about topography variability, about slopes, and about number of peaks are required the resolution of orography data set can not be the same as the local orography data. We also have to consider which data should be used in the areas of no high resolution data.

Orography data set

Files needed for the first step of the configuration e923 can be named orography data set. The following files are included:

Oro_Mean	Mean orography Hmean (mean of H)	m
Oro_Max	Maximum orography Hmax (max of H)	m
Oro_Min	Minimum orography Hmin(min of H)	m
Sigma	Sub-grid standard deviation of Hmean	m

Nb_Peaks	Number of sub-grid peaks	
Hmax-HxH-Hmin_ov4	mean of (Hmax-Hmean)(Hmean-Hmin)/4	m2
Dh_over_Dx_Dh_over_Dy	mean of dHmean/dx*dHmean/dy	m2/km2
Dh_over_Dx_square	mean of (dHmean/dx)**2	m2/km2
Dh_over_Dy_square	mean of (dHmean/dy)**2	m2/km2
Water_Percentage	Land/Sea mask	% of water
Urbanisation	Fraction of urbanisation	% of city

Oro_Max and Oro_Min are not needed directly for e923, they are used to get data in Hmax-HxH-Hmin_ov4.

Methodology

At the beginning three kinds of grids should be defined:

- Local grid which contains the local data base with high resolution orography data
- Basic grid which is used to generate the operational climate files (2'30'')
- Target or final grid which contains the data orography set in an intermediate resolution (between the local and the basic grid).

The idea is first to interpolate the available data (orography,...) from a local to a target grid. Over the areas with no data the values are set to missing value. Then also the fields from the basic grid are transferred onto the target grid. Finally the missing values from the first step are replaced with the values from the second one.

Interpolation from the local to the final grid

For each point of the final grid a box equal to the mesh of the target grid is defined. The value in the target grid point is computed from the values in points of local grid inside this box (see figure 1). In boxes where there is no local value a missing value is taken.

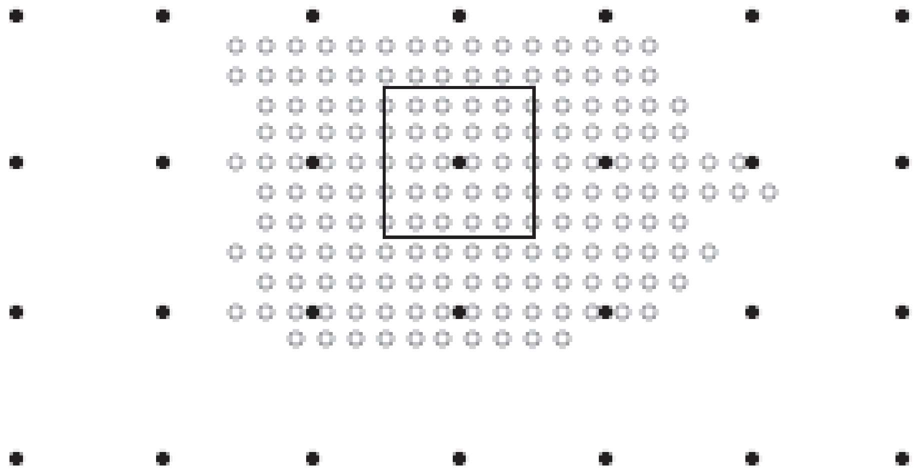


Figure 1: One example of a possible local (empty circles) and final grids (black circles) with the final grid box.

- Mean height of orography in the target grid point is the average of the values of the local grid points which are inside the box.
- Sigma is the value of standard deviation of the orography height inside the box.
- Derivatives are calculated in the local points and then averaged over the points in the box.
- Inside every box of the final grid the number of peaks is calculated according to points of the local grid.
- For calculation of Hmax-HxH-Hmin_ov4 three types of data are needed for each local grid point: the orography height (H), the minimum (Hmin) and the maximum (Hmax) sub-grid heights for the point. If all data are present than for each point of local grid value of (Hmax-H)*(H-Hmin)/4 is calculated and the value in the point of target grid is the average over the local points. But usually only the height is available and in this case the values are set to missing value.
- For calculation of Water_Percentage Hmax and Hmin are also very useful. It can be supposed that there is water if Hmin and Hmax are equal to zero. If those data are not available, values in local grid should be evaluated in different way, maybe from coast lines. If local data for proportion of water are available then they are averaged inside the boxes, otherwise they are put to missing value.
- If local data for Urbanisation are available then they are averaged inside the boxes, otherwise they are put to missing value.

Interpolation from the basic grid to the final grid

Interpolation from the basic data grid to the final grid is done by taking the value of the nearest point of the basic grid to the point of the final grid. This is done for all fields.

Merging the data into final grid

In this step all values of the final grid are filled, which is a merge between the two results obtained from interpolation from the basic grid to the final one and from the local to the final grid. If there is a missing value the values issued from the basic grid are selected, otherwise the value issued from the local data is taken.

3. Example

In Slovenia, data for orography height in 100 m resolution are available, but this is the case only inside the borders (the Western part of Slovenia can be seen on figure 2). We combine these data with the basic orography in resolution of 2’30" (see figure 3). For presentation of results one smaller domain located around the west border of Slovenia is chosen. The target, final resolution is 4 times better than the basic one. The result of merging the two orographies can be seen on the figure 4. In the area where local data are available these data are used (more detailed topography on the figure 4), while in the other parts the data from basic grid are used.
For selected domain there are 48x48 points in the basic grid, and 192x192 points in the target one. So the value of one point in basic grid is first prescribed to 16 points in the target grid. The value of the point in the target grid where local data are available is calculated as an average over the points inside the target box. When local grid points cover whole target box there are 96 local grid points inside the box.

4. Conclusions

To use the local orography data for the creation of ALADIN climatological files, a procedure was developed outside the ALADIN code. The orography data set needed for the first step of configuration e923 can be prepared in similar way as it is now but using also available local data. More about the program (how to use it, where it can be found) is written in the complete version.
There are still some tests to be done regarding creation of ALADIN climatological file at the basis of this data orography set. There are some problems to be expected. Slopes are much steeper when

resolution of data is higher, so values in derivative fields can be very different. The number of sub-grid peaks depends on the amount of points inside the final box.

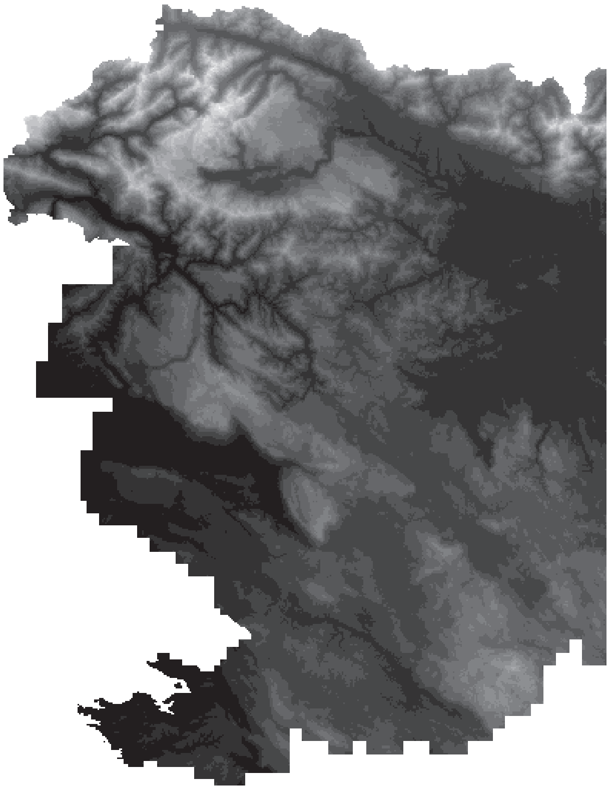


Figure 2: The orography of the Western part of Slovenia in the local grid (resolution 100 m, 950x1240 points).

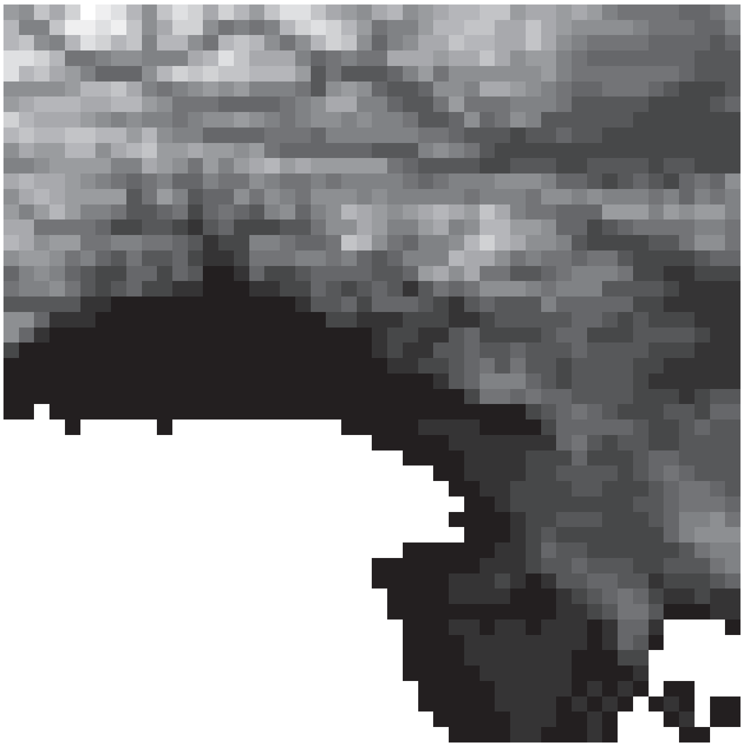


Figure 3: The orography for selected domain in the basic grid (resolution 2'30", 48x48 points). The domain includes the Western part of Slovenia, the Northern part of Adriatic Sea, the Istrian peninsula the Eastern part of Italy, and a part of Southern Austria.

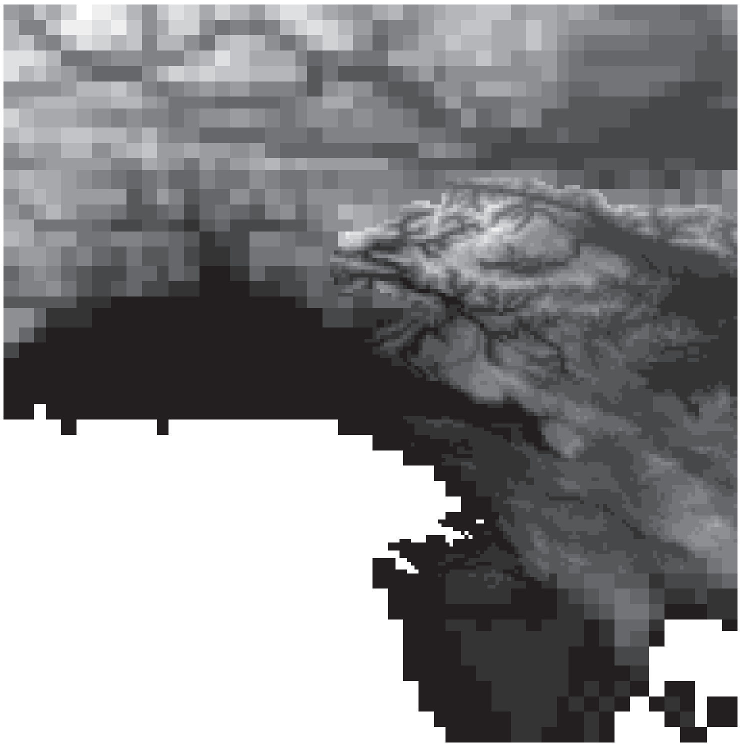


Figure 4: The orography for selected domain in the final grid (resolution 37.5", 192x192 points).

ALADIN 2D version of ALADIN and associated tools

(more details vivoda@synoptik.shmu.sk)

There was need to introduce 2d-plane version of ALADIN. There were a few objectives for this:

- 1. to test existing dynamics in idealized conditions where analytical solutions are known
- 2. to prepare a tool for model development where dynamics can be easily controlled

The (y,z) 2d plane model has been developed in Toulouse during the summer 1999 and model changes have been phased into CY21 and according to references the 2d plane model is working properly now.

To run 2d plane model it is necessary to do:

- 1. to use CY21T1/AL11 or later
- 2. to prepare an initial field for the idealized test
- 3. to prepare LBCs if needed

- 4. to set the model namelist consistently with 2d model and with your idealized test
- 5. to run diagnostics

Model cycles

Correct cycles of model can be fetched from Toulouse whenever it is necessary and we will not discuss this point here.

Initial conditions and LBCs

To prepare initial conditions and LBCs you need to run the program ACADFA(ACADemical FA file).

This program allows you to prepare idealized flow regimes characterized by constant wind, dry atmosphere, temperature profile defined by constant Brunt Vaisala frequency (BVF), constant pressure at mean sea level and Agnesi shape obstacle. Height and half width of obstacle together with BVF and wind speed define the character of the regime (hydrostatic or nonhydrostatic regime, linear or nonlinear regime). The initial filed is hydrostatically balanced.

Namelist settings

There is not too much that has to be set in the namelist to run 2d model once you have initial conditions and LBCs. You have to set the following variables in the namelist:

- LMESSP=3D.FALSE. (2d model is running in SM but it can be run in more than one task)
- NPROMA=3D5 (this is a recommendation)
- NGRSP=3D0 (no spectral subpacking)
- NBZONL=3D0
- LMAP=3D.FALSE.

Previous switches have to be set to get reasonable results from technical point of view. Next switches are more scientific and they are from new namelist NAMPONG and they define characteristics of sponge. This sponge was introduced to solve the problem of waves reflecting from model top.

- LEPONGE=3D.TRUE. (turn on sponge)
- REPONCO=3D10.0, (dimensionless sponge intensity)
- REPONBT =3D 4000., (bottom of the sponge layer in meters)
- REPONTP =3D 6200., (top of the sponge layer in meters)
- RV00 =3D4.0, (background wind speed)
- RT00 =3D285., (background temperature for LIZOT=3D.TRUE. or surface temperature for LIZOT=3D.FALSE.)
- RAGNESI=3D400., (height of the Agnesi shape obstacle)
- RWIDTH =3D400., (half width of the Agnesi shape obstacle)

- LIZOT =3D.FALSE., (isothermal or non isothermal atmosphere)
- RBRVAF =3D0.01, (Bruint Vaisala frequency to define temperature profile in the case of LIZOT=3D.FALSE.)
- RTB00(1:NFLEVG), (background temperature profile at full levels for LIZOT=3D.FALSE., since temperature is not horizontally constant; in this case RTB00 represent averages of temperature at each model level)

The model variables are coupled with the background variables (RT00,RV00,RTB00) during the model execution exactly in the same way as it is done in the lateral coupling case. The background variables are usually equal to the initial conditions. The weight function is fully defined by REPONCO,REPONTP and REPONBT. Vertical velocity is coupled with zero in the case of nonhydrostatic model run rather than pseudovertical divergence. Pressure departure is coupled with zero also for nonhydrostatic run.

Diagnostics

To perform diagnostics, a new tool has been developed. This tool allows you to calculate true vertical velocity (in m/s) on model levels, vertical momentum flux at constant height levels and surface drag.

Input to this program is the ICMSH file directly. Any new calculation could be easily added into this program.

Experiments using 2d plane model

We tried to repeat idealized simulations which can be found in (Bubnova, 1995). We have focused on two regimes:

- 1. Linear hydrostatic
- 2. Nonlinear non-hydrostatic

Both regimes have been tested with eulerian, semi-lagrangian 3-time level and semi lagrangian two-time level. Nonhydrostatic version of the model has been initialized using (LNHDYN=3D.TRUE.) for all experiments.

Linear hydrostatic regime

Model setting was as follows:

- Time step 120s
- Mesh size 3200m, number of points in the horizontal 192, truncation 63, coupling zone width 8 points
- The obstacle is Agnesi shape with height 1m and half horizontal width 16000m
- Background and initial state is isothermal with temperature 239.5K (equivalent to 0.02s-1 BV frequency), wind is constant at each level 8m/s
- 201 vertical levels with approximate distance 100m

Result after 2200 time steps are presented on figure 1.

Nonlinear nonhydrostatic regime

Model setting was following:

- Time step 2s
- Mesh size 80m, number of points in the horizontal 180, truncation 59, coupling zone width 8 points
- The obstacle is Agnesi shape with height 400m and half horizontal width 400m
- Background and initial state is constant Bruint Vaisala frequency 0.01s-1 ,wind is constant at each level 4m/s
- 101 vertical levels with approximate distance 100m

Result after 4000 time steps are presented on figure 2.

Changes to enhance number of model levels

If someone wishes to run ALADIN with more than 100 or even more than 200 vertical levels, he (she) has to carry out the following steps (valid for CY21T1/AL11). These steps are a redefinition of parameters used to define the size of statically allocated variables (variables are set to 300 for example):

- 1. Set JPXNIV=3D300 in facomp.h
- 2. Set JPMXXLEV=3D300 in echien.F90
- 3. Set JPMXLE=3D300 in pardim.F90
- 4. Set JPMXLEV=3D300 in yomarg.F90
- 5. Set JPOPLEV=3D300 and JPOGGLEV=3D300 in yomppc.F90

This is a general list. Default values in the operational model are 100 for facomp.h and 200 for the rest of changed parameters.

Then all routines dependent on previous modules and includes have to be recompiled etc

Future plans

There are troubles to get good initial condition for nonlinear nonhydrostatic regime using ACADFA. The solution we currently get from file prepared by ACADFA is not analytical. Results presented here for the nonlinear non-hydrostatic regime have been reached using initial conditions prepared by R.Bubnova in 1995. So, first thing we have to solve is correction of this ACADFA shortcoming.

Next plan is to use 2d-plane version to stabilize 2-time level semi-lagrangian scheme for the non-hydrostatic version of ALADIN. This is pretty important in order to prepare conditions for operational running of non-hydrostatic ALADIN.

All programs mentioned here are available. It is enough to contact *vivoda@synoptik.shmu.sk*

Figure.1. Vertical velocity perturbation after 2200 time step for linear hydrostatic flow regime. Test has been performed with eulerian advection scheme and nonhydrostatic model version.

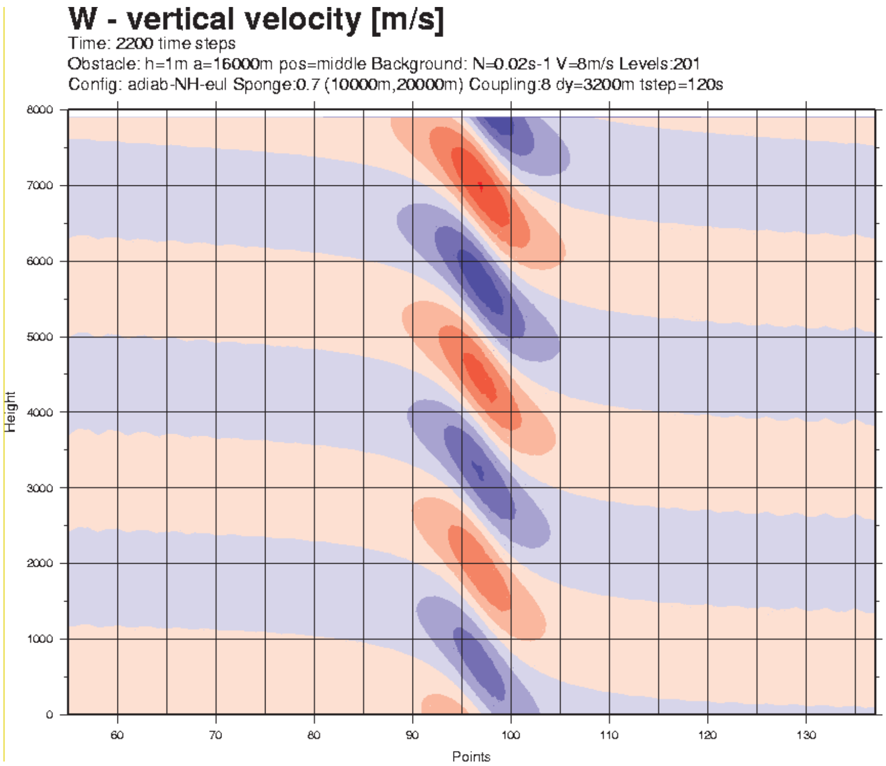
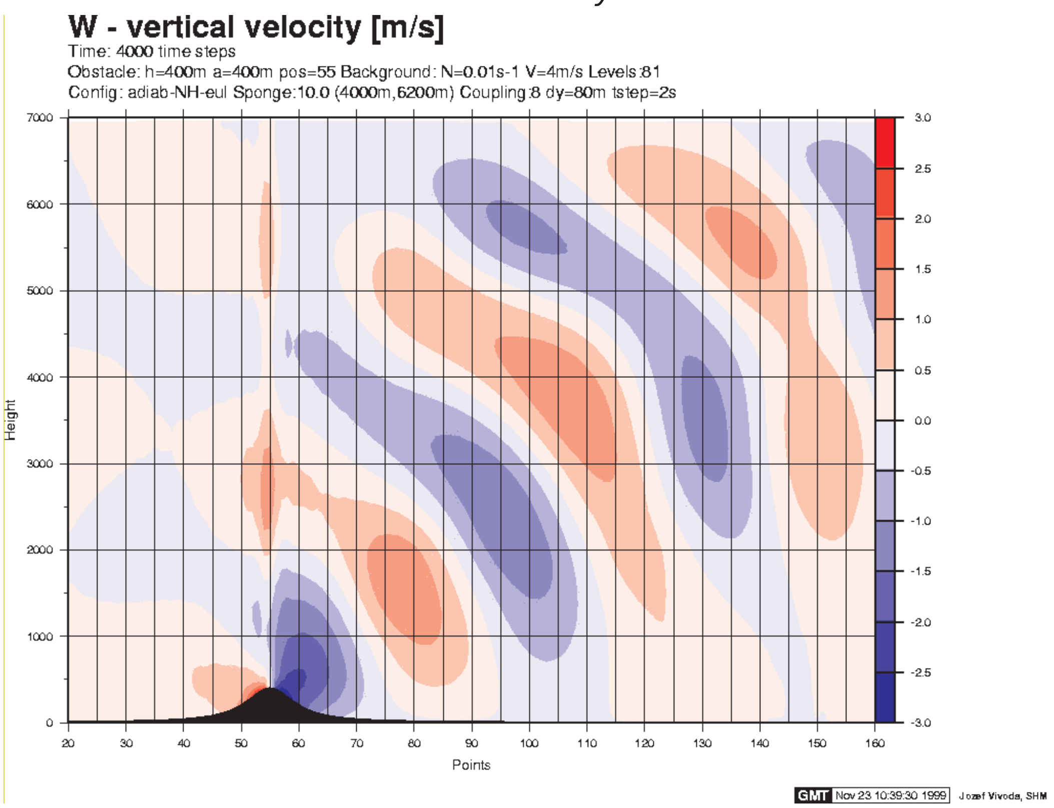


Figure 2. Vertical velocity perturbation after 4000 time step for nonlinear nonhydrostatic flow regime. Test has been performed with semilagrangian three time level advection scheme and nonhydrostatic model version.



CYclogenesis COnvection RAdiation modifications package

the so-called CYCORA suit

Latest developments about cyclogenesis, convection and radiation were compiled and tested in a parallel suit in Météo-France with additional testing performed with ALADIN/LACE in Prague and ALADIN/Belgium in Brussels. After some tunings, the proposed modifications have been validated and are fully operational in ARPEGE and ALADIN/France. They had benefied from the work of .E. Bazile, D. Banciu, M. Bellus, J. Boutahar, J.-F. Geleyn, L. Gérard, V. Pastircak, C. Madeira, J.-M. Piriou, M. Sandev, A. Simon on :

- Recent developments for the deep convection parametrization in the ARPEGE/ALADIN model such as :

    the downdraft parametrization,

    a Gregory-Kershaw approach for momentum convective redistribution,

    the modification of the saturated adiabat computation,

    a limitation of the available humidity for convective updraft parametrization,

    an enhanced detrainment rate at the cloud top,

    a new formulation of the entrainment rate;

- Recent developments for the vertical turbulent transport and associated clou-cover parametrizations such as :

    a vertically varying limitation for the very stable case parametrization,

    a new version of the stratiform cloud-cover parametrization including sub-inversion cloudiness.

Bogussing techniques used at Meteo-France to improve tropical cyclone tracks forecasting

Isabelle Soulan and Miloud Bessafi (Meteo-France/DIRRE/CRC La Reunion),
Ryad El Khatib (Meteo-France/CRNM/GMAP),
Jean-Marie Willemet (Toulouse and Universite de La Reunion)

1. Introduction

Like most of the atmospheric models, ARPEGE does not locate the tropical cyclones with enough accuracy. That is why the CRC (Cyclone Research Cell) of Meteo-France in La Reunion island has been developping two bogussing techniques to improve the initial conditions of ARPEGE and the subsequent tracks forecastings. The first one, after an idea of Jean-Frangois Geleyn, is using ALADIN to position the tropical cyclone at the right place. Then the ALADIN "guess" is re-injected in the global model ARPEGE. The second one is easier : we just force the global model to assimilate the mean sea level pressure of the center of the cyclone (calculated by the Dvorak method).

2. Bogussing with ALADIN

We use the observed position of the tropical cyclone to make a limited area centered on this point. If the tropical cyclone seen by the model is inside this area, we translate the dynamic fields in a non-uniform manner so that the tropical cyclone reaches the observed position while the points near the borders of the domain remain at the same place. This translation technique, using basically the post-processing tools, enables a soft replacement of the ARPEGE fields by the ALADIN fields over and near the cyclone. For the time being, only one kind of translation has been tested : we multiply the translation vector of the center of the tropical cyclone by a cubic fonction of the latitude and a cubic fonction of the longitude. Other functions will be tested later.

We only have a few experiments available, but the preliminary results are rather good : the new ARPEGE fields are not too distorted and the forecasted tropical cyclone track is better than without this bogus. But the low in the center of the cyclone is not deeper.

3. Prospects

The forecasters of the RSMC (Regional Specialized Meteorological Centre) for tropical cyclone of La Reunion use the Dvorak method to calculate the position and the minimum of pressure for each cyclone within their area of responsibility. As ARPEGE does not locate well the tropical cyclones, this data is usually rejected during the assimilation cycle. But when we force the model to accept it, an intense tropical cyclone is taken into account though the forecasted cyclone track is not as good as we could have expected. So we intend to apply the two bogussing techniques simultaneously. We hope to improve significantly the skill of ARPEGE to forecast tropical cyclones tracks and intensities.

We shall also try to take advantage of the high resolution of ALADIN by running a short range forecast before the translation : that way we hope to get in the background a deeper low at the center of the cyclone before the next assimilation cycle.

4. References

Agricole Wills et BenAmadi Yahaya

Evaluation d'une nouvelle mithode d'assimilation de cyclones tropicaux faisant appel au couple Arpege etire-Aladin. Rapport de stage de recherche, Mastere de l'ENM, annee 1996/1997.

Goolaup Premchand et Felix Randrianavalona

Assimilation de cyclones tropicaux a l'aide des modeles Arpege etire-Aladin. Rapport de stage de recherche, Mastere de l'ENM, annie 1995/1996.

"DIAGPACK"

Short report on the work on "DIAGPACK" performed in September 1999
by Vincent Casse (Meteo France), Jure Jerman (Hydromet. Institute of Slovenia) and Gabor Radnoti (Hungarian Met. Service)
in the framework of French-Hungarian ans Slovene-Hungarian bilateral cooperations
(a complete paper version -with figures- can be asked to Gabor)

Introduction

DIAGPACK (diagnostic package) is meant to be a software package that enables the user to analyse and diagnose some mesoscale features of the atmospheric boundary layer in such a way that the emphasis is not on the subsequent model forecast, but on the most accurate description of the instantaneous state of the boundary layer. The first component of such a package, that our work was fully dedicated to, is to create a version of "CANARI" objective analysis (hereafter CANARI-DIAGPACK) that produces analysed fields of boundary layer by the use of an earlier model forecast and boundary layer observations. In the forecast model these quantities are derived from the model state vector and this is the reason why a different approach is adopted for directly analyzing them fully independently from the model state and observations of the upper air. To achieve this goal some modifications of the code of analysis and some new setting of namelist parameters were required. This was designed by V. Casse in early 1999 (DIAGPACK by V. Casse, February, 1999) and, based on this, the first version of the modified CANARI code was developed by G. Radnoti in March, 1999 in Prague. This development was on the AL09/CY19T2 version of the code. The purposes of this 2 week common action were:

- to update and debug the CANARI-DIAGPACK code for the current model version AL11/CY21T1-2 so that it can enter the next research cycle (probably AL11/CY21T2). A necessary minimum condition is to be able to reproduce earlier "analysis in forecast mode" by the use of the new code within an acceptable threshold.
- to validate CANARI-DIAGPACK with single observation experiments, where the expected analysis increments are known in advance. - To provide a first tuning for CANARI-

DIAGPACK with full set of boundary layer observations on a single case. - Tests with distributed memory version of CANARI

1. Updating the code and reproducibility of "CANARI in data assimilation mode" (hereafter CANARI-DATASS)

This work consisted of the merging of the modifications (bug corrections) that have been done in Toulouse and Budapest since the first code version. We have to mention that during this 2 weeks we were working on the AL11/CY21T1+CANARI-DIAGPACK version of the code, while in Toulouse the base cycle for this code is AL11/CY21T2. Nevertheless, from the scientific point of view these two versions are equivalent and porting the most recent version of the code to the main library AL11/CY21T2 will be straightforward. Experiments for reproducing CANARI-DATASS with the new code and proper namelist will be done later on in Toulouse in a parallel suite. The reference results are not fully reproducible because of diminishing vertical correlations between boundary layer data and the corresponding upper air both for model vs. obs and for obs vs. obs (see CACOVA and CATRMA) , the expectation is neutral or slightly improved scores for boundary layer parameters. As a first check for quasi-reproducibility we made a single observation test (one simulated TEMP observation containing boundary layer observations and upper air observations at a single pressure level). The analysis increments are realistic.

2. Single observation experiments

In these experiments we were using a simulated SYNOP observation in the middle of our analysis domain. We tried different combinations of T2m, Hu2m, U10m and V10m. Simultaneously we examined the impact of the characteristic lengths of correlations between obs and guess and standard deviations of guess errors for the different variables. In the new code these are namelist driven (NAMCANAPE). (Here we have to remark that the standard deviations are taken by the CANARI code as it is only in the case if the stretching parameter RCALPH in NALORI is set to zero.) To see clearly the analysis increments free of noise we also executed an analysis without any observations which eliminates from the analysis increments the impact of compacting fields and spectral fitting. From these we can conclude, that in accordance with our expectations, in case of T2m and Hu2m observation the increment fields are circular with the correct center; maximum value and breakdown; (the impact of characteristic length and standard deviation is also as expected). In the old reference CANARI-DATASS version it was not the case because of the impact of pressure difference between the points because of the impact of pressure difference between the points through the vertical correlation. In the case of wind observation we examined separately the impact of U10m and V10m such that one component was changed with respect to the guess while the other was exactly the guess value. In this case the increment field of the modified component had symmetrically a primary maximum center and additional secondary maxima in accordance with the fact that the characteristic lengths correspond to vorticity and divergence and not for the wind components themselves. The increments of the opposite components have symmetrically 4 maxima (2 with positive, 2 with negative sign). When the characteristic lengths of divergence and vorticity are the same these will merge into one circular pattern. The experiments showed these features exactly according to the expectations.

3. Experiments with full set of SYNOP observations

Some initial efforts were done in direction of tuning DIAGPACK. For two different situations tests were performed with different tuning of namelist parameters.

Description of experiments

Available GTS SYNOP data together with data from Hungarian automatic station were used. Experiments were performed on Aladin/HU domain with the guesses taken from Aladin/HU model. 2m temperature fields, 10m wind fields and 2m humidity fields were analysed.

Tests were done with respect to two groups of namelist parameters, both coming from namelist NAMCANAPE:

- horizontal characteristic lengths for analysis -standard deviation of the guess

First the impact of horizontal characteristic lengths was studied. Values used were -25000m, 50000m (reference test), 100000m for ref_a_t2, ref_a_h2, ref_a_vor10, ref_a_div10 (with ref_sigt2=3K, ref_sigh2=30%, ref_sigvl=6m/s)

Second, standard deviations of the guess were varied

- small standard deviations (ref_sigt2=1.5K, ref_sigh2=15%, ref_sigvl=3m/s)
- big standard deviations (ref_sigt2=6K, ref_sigh2=60%, ref_sigvl=12m/s). Horizontal characteristic lengths in this experiment were kept at 50000m

Behaviour of CANARI-DIAGPACK was as expected, analyses better fit to the observations if bigger value of guess standard deviation is used.

With smaller values of guess standard deviations the differences between analyses and guess are smoothed, but the the pattern in difference fields is preserved.

In order not to introduce too much noise into the guess with bigger value of guess standard deviation or on the other hand to use the observations in proper extent it is worth to respect the rule that

(Sigma)_guess / (Sigma)_obs should remain between 1/2 and 2.

One can very easily conclude that experiments performed with smaller characteristic length better fit to the observations. But this is not what we always want, too good fit to observations might not be realistic and it may introduce some noise into the analyses. Choice of characteristic horizontal lengths depends on scale on which we want to introduce new informations into the guess.

Better fit to the observations should be achived with decreasing of horizontal characteristic lengths rather than with increasing standard deviation of the guess.

In this experiment the guess of analysis was a very good forecast. This experiment should be repeated for some less successful case, where we expect larger departure between analysis and guess.

4. Tests with distributed memory version of CANARI

Our time was partly dedicated to make tests with distributed memory version of CANARI. That is important if we consider a possible operational application of DIAGPACK on any distributed memory platform in the future. To do this we successfully implemented the so called obsort package that splits the observation files and creates separate observation files for the individual processors. Some bug corrections were also necessary in the basic code of CANARI that will enter the next cycle.

Comparision timings for analyses of boundary layer parameters (T2m, RH2m, wind10m) with full set of observations for shared (CANARI) and distributed memory (OBSORT + CANARI) were done. User times in seconds were: SM: 131 s, DM(1 processor): 162 s, DM(2 processors): 90 s

5. Conclusions and plans

The results of our modifications as confirmed by the performed tests give a good chance that a stable and safe code can enter the next cycle that can be a good start for building up a diagnostic package DIAGPACK. Some further modifications are planned to make possible that boundary layer parameters have a direct impact on upper air analysis through vertical cross correlations (e.g. T2m obs on T upper air analysis) without the counterpart. This would be useful for later CAPE (convective available potential energy) computations that require an accurate description of the lower atmosphere. On the other hand it can result in better reproducibility of the CANARI results in data assimilation mode. This development will involve only some simple modification on routine CACOVA and introduction of some vertical correlation function between boundary layer observations and upper air model fields. Also the routine CATRMA will be modifyed for the safety reason with introduction of correlation function between boundary layer and upper air observations. We plan to introduce these modifications together with the rest of the code into AL11/CY21T2.

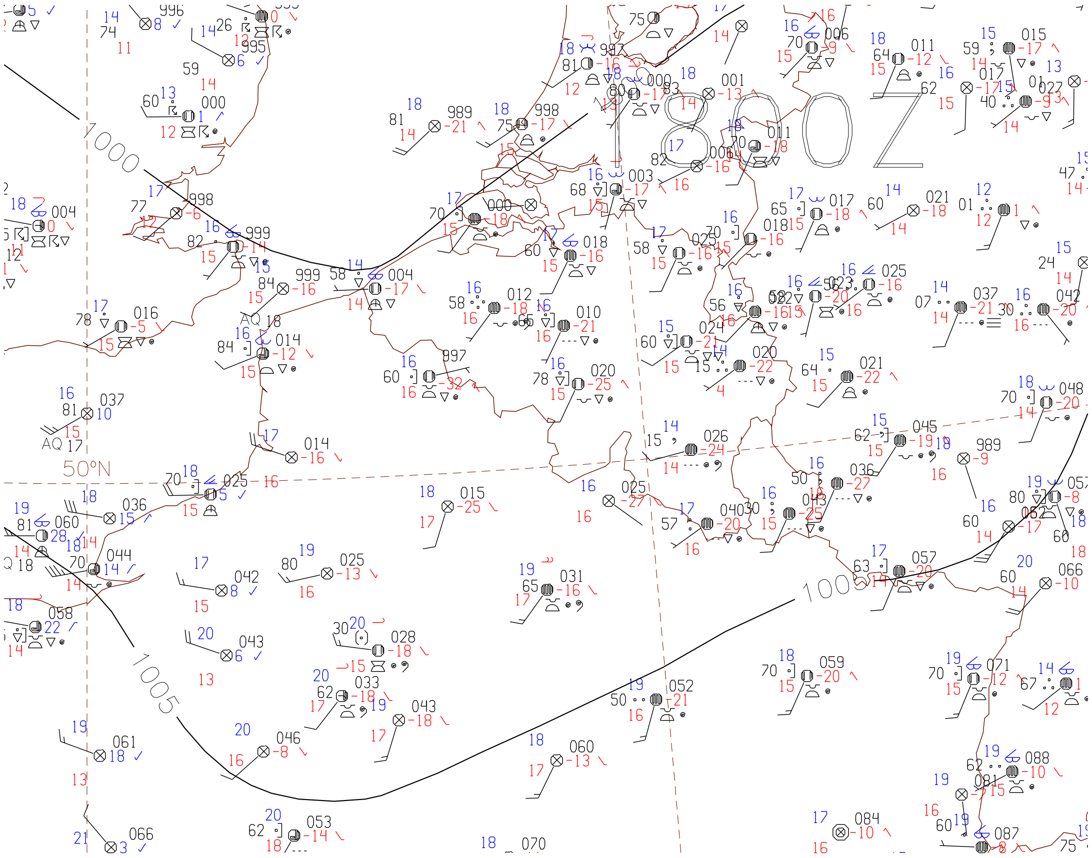
Forecast of a strongly convective situation with ALADIN/Belgium

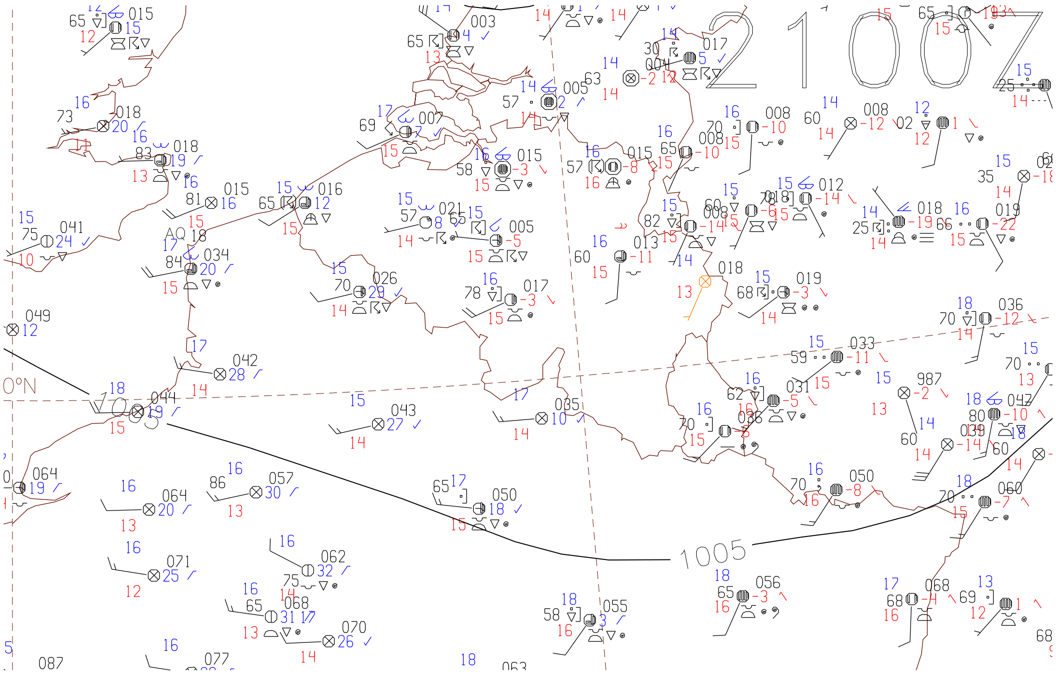
(more details Josette.Vanderborght@oma.be)

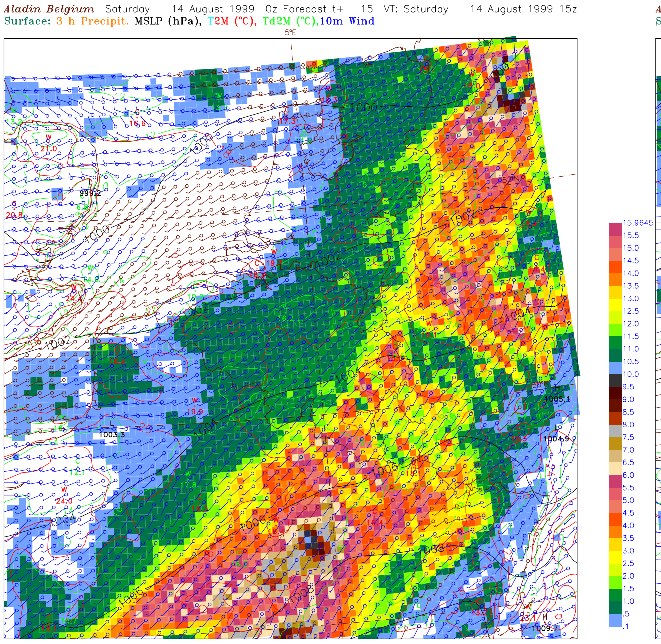
The atmospheric situation of the 14 of August 1999 was characterised by an active low, coming from the North of France, passing over Belgium and going later over the Netherlands. In Belgium, a convective cluster with thunderstorms and also locally a tornado (between 1800Z and 1900Z), especially between TOURNAI and BRUSSELS (some tens of kilometer west of Brussels) were observed.

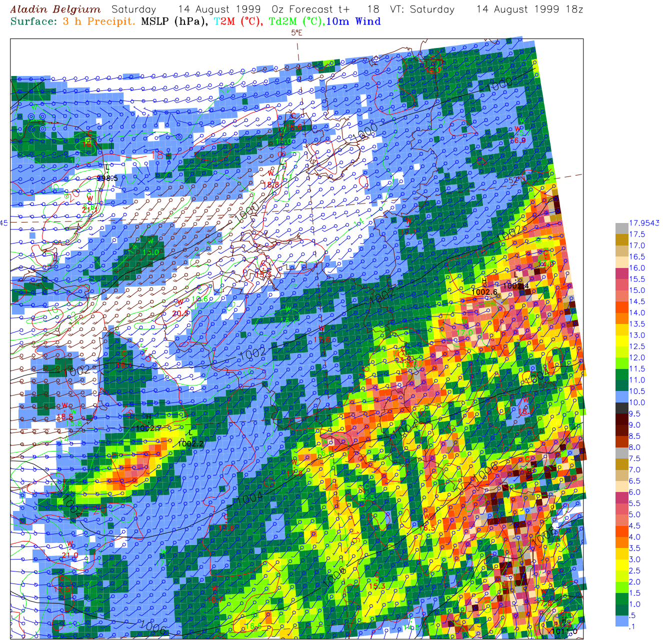
Three synoptic surface maps illustrate this atmospheric situation, observed respectively at 1800Z, 2100Z, and on August 15 at 0000Z, in a slightly bigger area then the ALADIN BELGIUM domain.

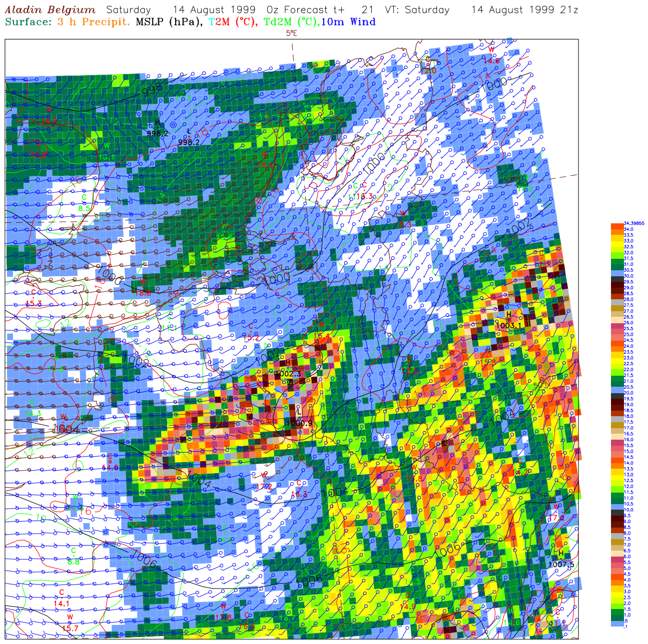
The 3 charts of the ALADIN BELGIUM model (for the run of 14/08/1999 at 0000Z) show, for the same dates, the forecasted 10m wind, the 2m temperature, the sea-level pressure and the cumulated precipitation during the previous 3 hours. They point out the presence of a severe perturbation, round 2100Z at small scale some tens kilometres south of Brussels. Only the geographical localisation is imprecise.


1800Z
1000
1005
50°N


2100Z
1005


Aladin Belgium Saturday 14 August 1999 0z Forecast t+ 15 VT: Saturday 14 August 1999 15z
Surface: 3 h Precipit. MSLP (hPa), T2M (°C), Td2M (°C),10m Wind


Aladin Belgium Saturday 14 August 1999 0z Forecast t+ 18 VT: Saturday 14 August 1999 18z
Surface: 3 h Precipit. MSLP (hPa), T2M (°C), Td2M (°C),10m Wind


Aladin Belgium Saturday 14 August 1999 0z Forecast t+ 21 VT: Saturday 14 August 1999 21z
Surface: 3 h Precipit. MSLP (hPa), T2M (°C), Td2M (°C),10m Wind

Scores on ALADIN-FRANCE during the third quarter of 1999 : Comments on cloud cover and precipitations forecasts scores

(more details francis.pouponneau@meteo.fr)

COMMENTS OF CLASSICAL SCORES AGAINST SYNOP THIRD QUARTER 1999

The scores (bias and root mean squared error) plotted on the next figure correspond to the scores calculated against surface observations SYNOP over the domain ALADIN-FRANCE. Scores are averaged over the three months of the third quarter 1999, for each 6 hours time step.

We use about 200 synoptic stations over the domain.

MSLP :

The RMS rises with time step from 0.6 to 1.8 hPa. For the bias there are two phenomena :

* a diurnal cycle (bias maximun at noon)
* a decrease with time range

CORRECTED TEMPERATURE

Bias shows an overestimation on afternoon (forecast range 12 and 36 hours) and an underestimation at night and morning. The RMS is about 2° with a diurnal cycle amplitude about 1°.

HUMIDITY

There is a diurnal cycle of the error of the rms (amplitude about 8%) and an underestimation of humidity.

COMMENTS OF CONTINGENCY TABLE THIRD QUARTER 1999

Next table are the cloud cover and precipitation contingency table for the 36 hours forecast range of ALADIN-FRANCE. Classes are used the verification of NWP models in EUROPE (EWGLAM).

CLOUD COVER

The percent of correct is 50%. The high nebulosity class (7-8) is more observed than forecasted : 34 against 17% . While clow and medium cloud cover classes are more forecasted than observed.

CLOUD COVER

9907-9909	MODEL :	ALADIN			00 H start
	AREA :		FRANX01	Forecast Range	36 H
83 days					
			Forecast		
		0 - 2	3 - 6	7 - 8	SUM
	0 - 2	**16.5%**	6.9%	0.5%	23.9%
Obs.	3 - 6	12.1%	**23.4%**	6.2%	41.7%
	7 - 8	4.4%	19.5%	**10.6%**	34.5%
	SUM	33.0%	49.8%	17.2%	20054 obs
Correct :	50.4%	Rousseau :	0.23	Heidke :	0.24

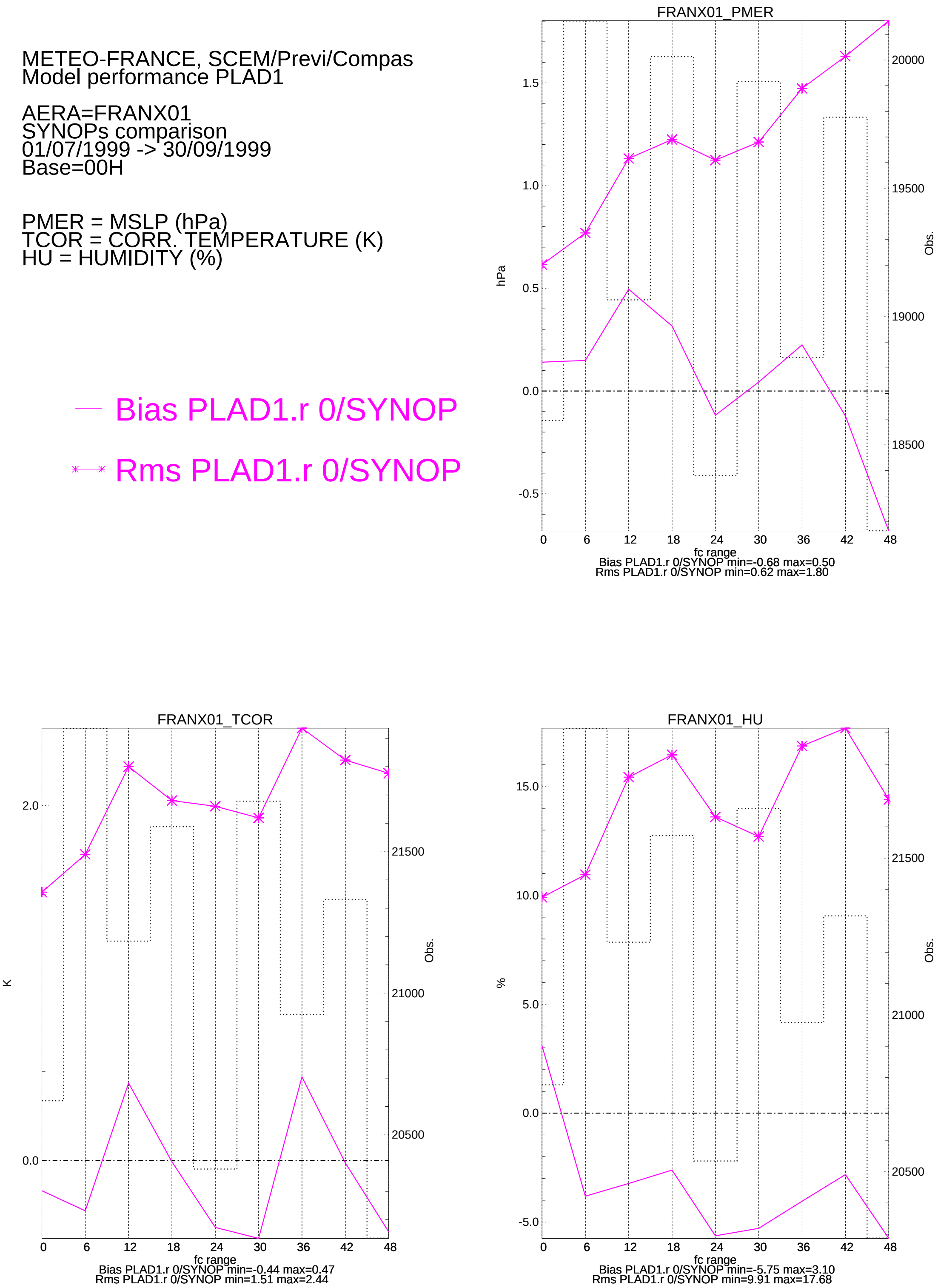
PRECIPITATIONS

The percent of correct is almost 74%. "Light precipitation" class have been more forecasted than observed, nearly two times more. It is the opposite for "no rain" class : 73 again 82%. Climatology of heavy and moderate rain is quite good.

PRECIPITATIONS

(Class limits 0:0.1:2:10 mm /6h)

9907-9909	MODEL :	ALADIN				00 H start
	AREA :	FRANX01			Forecast Range	36 H
83 days						
			Forecast			
		NO rain	LIGHT	MODERATE	HEAVY	SUM
	NO rain	**66.8%**	12.6%	2.2%	0.3%	81.9%
	LIGHT	4.2%	**4.5%**	1.7%	0.2%	10.6%
Obs.	MODERATE	1.3%	2.7%	**1.9%**	0.3%	6.2%
	HEAVY	0.2%	0.4%	0.4%	**0.2%**	1.3%
	SUM	72.6%	20.2%	6.2%	1.0%	21043 obs
Correct :73.5%		Rousseau :0.29			Heidke :	0.30



COMMENTS OF SCORES AGAIN TEMPS THIRD QUARTER 1999

GEOPOTENTIAL

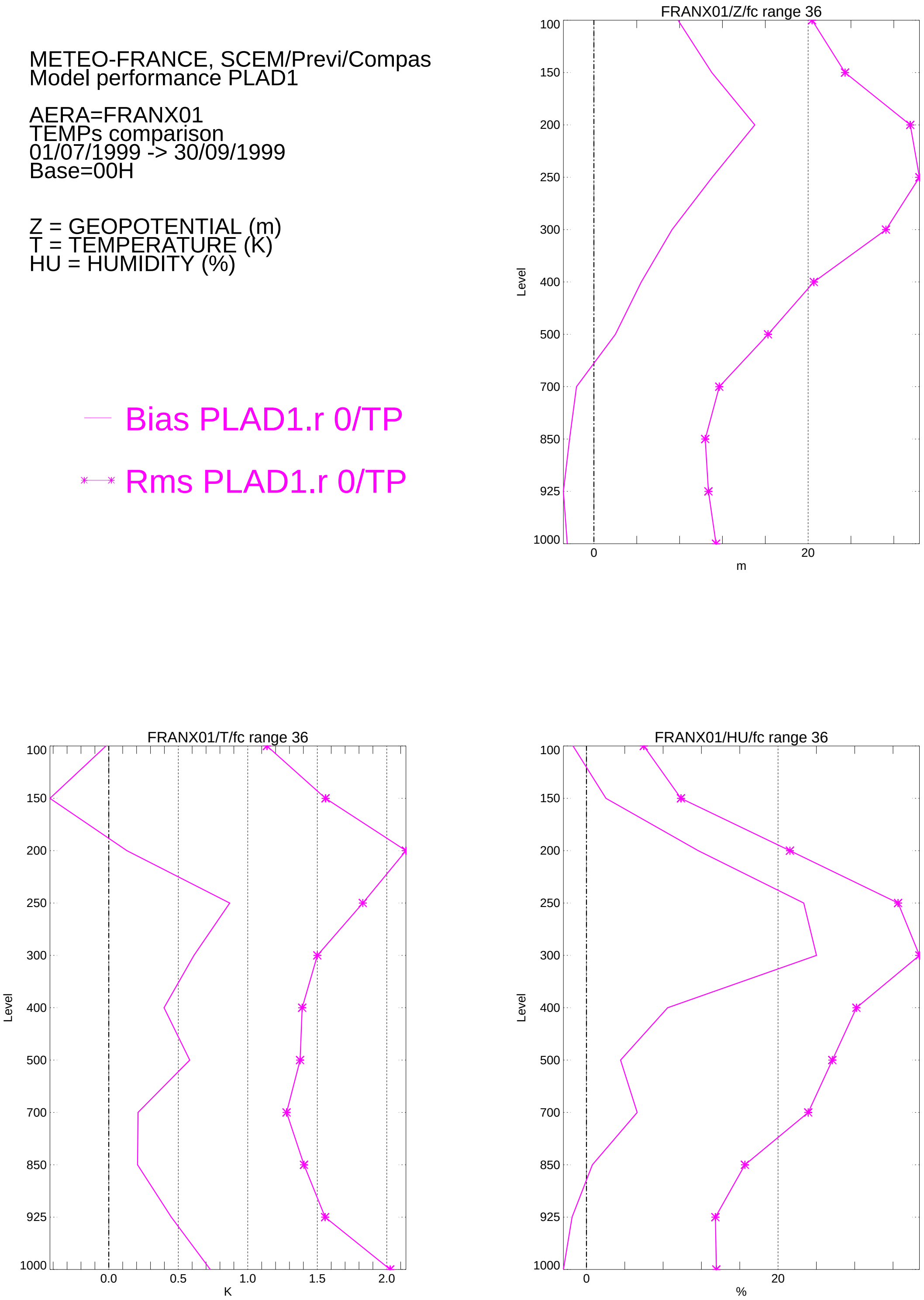
Bias shows an underestimation for the 700 hPa level and an overestimation above 700 hPa. RMS increases from 700 hPa to 200 hPa, decreases over 200 hPa.

TEMPERATURE

The temperature is overestimated in the troposphere and underested in highter levels. RMS is maximum low level and at the tropopause and varies from 1.2 to 2°.

HUMIDITY

The bias shows an overestimation except in first low layers. The RMS increases up to 300 hPa.



Participations in the ALADIN project

The statistics about the participations in the ALADIN project and the ensuing compilation of the ALADIN developments are drawn up from the contributions sent by the representative of each country. Please find in annex the graphics illustrating the last summary of the participation in the ALADIN project.

Prague (RC-LACE) and Toulouse actions are registered immediately (i.e. at the end of September 1999 for the current statistics) while a tree months' lag is applied to the deported contributions (i.e. at the end of June 1999 for the current statistics).

In this Newsletter, you can find a more complete sample of the statistics that are produced; others can be drawn up on request.

In the next three parts ("Deported developments during the second quarter of 1999", "ALADIN developments in Prague/LACE during the third quarter of 1999" and "ALADIN developments in Toulouse during the thrid quarter of 1999"), you will find the list of the ALADIN developments (in Prague, in Toulouse and outside) except those detailed in the previous pages : PhD studies, developments for workstation versions or operational suites, ... during the quarters concerned by this Newsletter. The following informations concerning the deported developments are obtained from informations you sent.

Deported developments during the second quarter of 1999

During this quarter, 45 persons have worked on ALADIN "at home" (i.e. in their NMS : not in Toulouse) and their global effort represents about 60 people.month during this period.

1. In Austria

- LACE Project Scientific Officer duties (T. Haiden),
- Verification tool for WS version (K. Stadlbacher),
- FA to NETCDF conversion and application of Fullpos to generate input fields for a trajectory model (Y. Wang).

2. In Belgium

- Objective validation of ALADIN-Belgium (B. Schenk),
- ALADIN validation during exceptional meteorological situations (J. Neméghaire, J. Vanderborght),

- CANARI assimilation (O. Latinne),
- Performance analysis (F. Chomé),
- Various adaptations of the convective scheme, Preparation of a detailed documentation in english under LaTex for Aladin's Physics (the documentation will be very soon available on the public ftp or through the ALADIN web), Enhancements of local post-processing tools, Arpege Files and archives and Operational work (L. Gerard).

3. *In Bulgaria*

- Preparing and starting the operational scripts of AL09, control of operational runs (A. Bogatchev, V. Spiridonov).

4. *In Croatia*

- no report from Zagreb this quarter again.

5. *In Czech Republic*

- Study of the tropical cyclone simulation by ALADIN (D. Dufkova),
- Development of postprocessing tools for ALADIN and operational monitoring of ALADIN/LACE (D. Dvorak),
- Development of Kalman filtering of ALADIN forecasts (Z. Huthova),
- Verification of ALADIN/LACE (R. Mladek),
- Study of diffusion properties of semi-Lagrangian scheme (F. Vana).

6. *In Hungary*

- Migration from DEC to SGI platform, new operational domain and resolution, (A. Horanyi, G. Radnoti, T. Szabo),
- diag-pack (G. Radnoti),
- Subjective evaluation of ALADIN (S. Jenki, M. Sallai).

7. *In Moldavia*

- nothing reported this quarter.

8. *In Morocco*

- 3D-Var in ALADIN/Maroc, preparation of the quartely publication on objective evaluation of ALADIN/Maroc (W. Sadiki),
- Operational work, 2000 tests, modification of operational CHAGAL for 2000, comparison of CANARI and 3D-VAR (R. Ajjaji),
- Characterization of meteorological situations from analyzed fields (M. El Abed),
- Porting on workstation Sun Ultra 5 (H. Haddouch),
- Cyclogenesis study (J. Boutahar).

9. In Poland

- Administration and organisation, (M. Jerczynski),
- Administration of operational system (M. Jerczynski, W. Owcarz),
- Development of post-processing-on-demand system (W. Owcarz),
- Development of verification software (A. Dziedzic, M. Szczech),
- Enhancement of visualisation system (J. Woyciechowska).

10. Portugal

- nothing reported this quarter.

11. In Romania

- Code maintenance and tests (D. Banciu, C. Soci),
- Dead convection parametrization (D. Banciu),
- Preparation of a coupling interface ARPEGE/ALADIN-REGCM2 for climatic integration experiments (C. Boroneant, M. Caian),
- Intercomparison of the models used in the operational forecast by semi-objective and objective validation (D. Otilia).

12. In Slovakia

- Database for ALADIN/LACE productss and observations (J. Vivoda),
- Vizualisation of ALADIN/LACE products (M. Konakovska),
- Verification of surface parameters for ALADIN/LACE and ALADIN/Slovakia, visualization of verification results (M. Bellus),
- Maintenace of ALADIN/Slovakia (M. Siroka),
- Workstation version ALADIN/Slovakia (O. Spaniel).

13. In Slovenia

- CANARI (N. Pristov),
- Diagnostics of precipitations from dynamically adapted wind fields (M. Zagar),
- Research work on cluster installation, study of suitable methods for meteorological support of longer sailing competitions with optimal path method, ... (J. Jerman).

14. Deported work by Météo-France people

- in Prague : Further CYCORA tuning work (J.-F. Geleyn),
- in Prague : Installation of NMC statistics on NEC (C. Fischer)
- in Budapest : work on DIAG-PACK (V. Cassé, see article in this Newsletter).

ALADIN developments in Prague during the third quarter of 1999

Most of the LACE partners were represented in Prague during this quarter (10 people from 5 countries) and worked on various subjects.

- Blending by digital filter

The idea (initially suggested by Vincent Cassé) of blending of long waves from the ARPEGE analysis with short-wave signal obtained by the ALADIN short-range forecast (the guess) using digital filter has been described in the previous ALADIN Newsletter.

The further research on blending has been carried on, focusing on the investigation whether the digital filter initialisation of the initial state of ALADIN (i.e. after blending) is still needed (so called external DFI). The results are not completely conclusive but suggest that certain initialisation will be still necessary in the production forecast due to presence of noise in the first few hours of the model integration. However, the filtering may be somehow weaker than it is in the case of usual dynamical adaptation because the small-scale features built by blending are already partly filtered out by the internal DFI. Another important result is that external DFI is not needed within the blending cycle for short range forecasts preparing the guess. A series of tests aiming to determine the weaker filter will be launched once the parameters of blending (lower truncation and properties of internal DFI) are tuned on several cases.

Treatment of the surface prognostic variables represents another problem in the blending. The suggested solution takes the difference of the ARPEGE guess and analysis projected to the ALADIN grid (via EE927) giving the ARPEGE analysis increment and adding this increment to the ALADIN guess.

The research on the blending is currently carried on by Dijana Klaric (HR), Stjepan Ivatek-Sahdan (HR), Radmila Bubnová (CZ) and Jean-François Geleyn (FR).

- Variational data assimilation

The 3D VAR development in ALADIN went on in RC LACE Prague Team.

Results of the summer ALADIN 3DVAR action at Toulouse was ported to ALADIN/LACE library. Meanwhile the necessary background error statistics for LACE domain (using the NCEP method) were calculated over 90 days by a common effort of Claude Fischer (FR), Mária Siroká (SK) and Radmila Bubnová (CZ). Currently the single observation experiments are working and experiments with the full observation dataset can be run now. Further research is oriented towards deeper diagnostics on the background error statistics.

Yong Wang (AT) started the study of the influence of the vertical interpolation procedure APACHE on the structure of the background errors of ALDIN/LACE. The results are not yet conclusive due to the lack of sufficient data series on the archive machine.

Couple of days in September two experts from Météo-France worked with RC LACE Prague Team with the aim to port nearly the complete ARPEGE data assimilation/forecast suite to the local system. Some work is still necessary to optimize the ARPEGE suite and to synchronize it with the ALADIN suite (intended implementation in the new, SMS-based operational suite), address some issues of shared memory (TOVS handling and minimization are not implemented for multitasking) but the essential part is done. It is estimated that the remaining work will be finished before the end of 1999 and that the next year RC LACE computing center would be able to cope with some exceptional perturbations in the ARPEGE production.

- Dynamics

Jozef Vivoda (SK) concentrated in September on the resuscitation of the 2D vertical plane version of ALADIN to further enable the idealised experiments, especially focusing on the non-hydrostatic semi-Lagrangian scheme. The 2D version works now in AL11. He also introduced a new feature of the sponge on the model top and developed a new diagnostic tool computing the vertical velocity, surface drag and the vertical momentum flux.

David Dvorák (CZ) currently runs various configurations of the semi-Lagrangian scheme on the idealised case of the frontal collapse with the focus on the scheme stability.

- Diagnostic package

Meriem Zitouni (HR) ported the last developments in the diagpack to the local library and carried on the work on the implementation of the land-sea contrast into the surface structure function allowing more appropriate analysis along the coastal lines.

Since diagpack is designed to provide information to forecasters some convection diagnostic indices calculated from the analyses state would be welcome. These indices are usually two-dimensional so their incorporation into FullPos would not be appropriate. Instead a tool for computation of some stability indices has been developed by Harald Seidel (AT). This tool works on the fullpos files and the results are added to the input file. The work will go on.

- Verification package

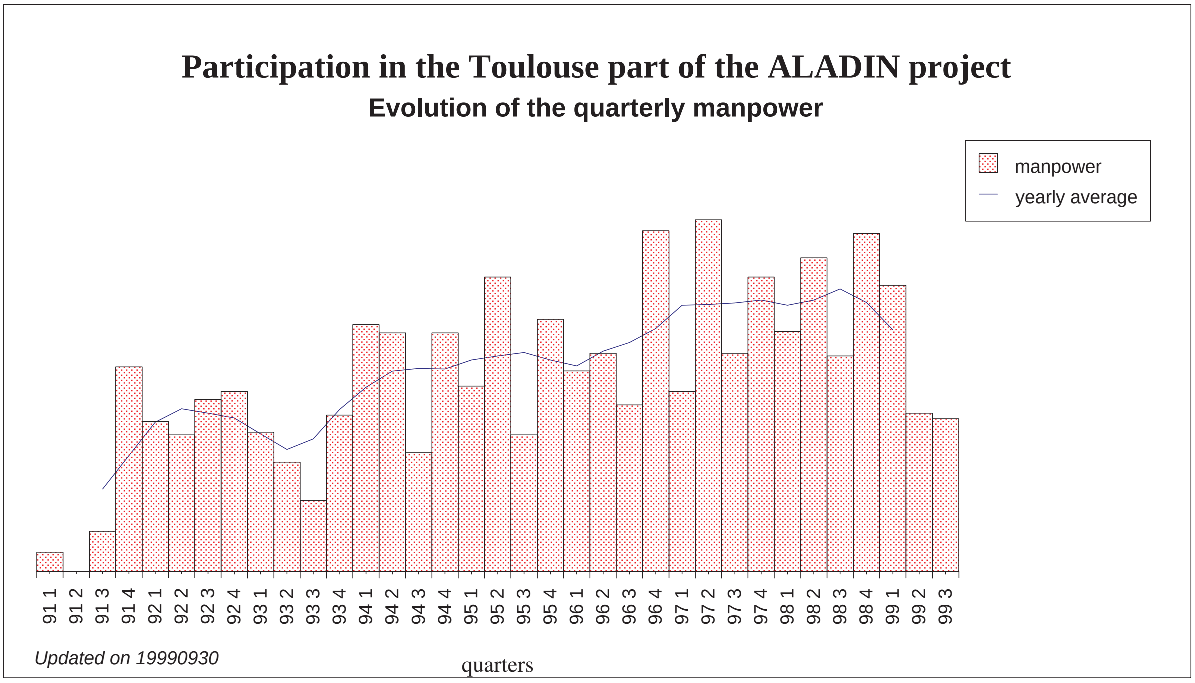
Some minor improvements were made in the verification package veral. An embryo of a precipitation subpackage of veral was developed but it still suffers by some missing data in the local CMAFOC observation files.

The verification generally suffered by the local lack of a steady archiving facility.

ALADIN developments in Toulouse during the third quarter of 1999

From a statistical point of vue, the comments of the previous quarter is still available ...

"During the last months, GMAP offices have given to all ALADIN visitors and GMAP people the *impression that they were less crowded than usual. The effort in Toulouse during this quarter was the smaller one for years !...*" ...this was for the second quarter ... for the third quarter it is even worse !..



"*Less than 30 persons (and less than 60% of visitors) coming from 8 countries on only 3 different fundings*" for the second quarter... and less than "*less*" for this quarter. Many thanks to Elisabeth Gerard who joined ALADIN team in GMAP (she replaces Patrick Le Moigne) ... without her, statistics would have been even worse !...

... but with ALATNET (if ALATNET runs of course), ... it will be much better !..

1. Main events in Toulouse this quarter

Nothing else to report except was is already presented in the other parts of this Newsletter.

2. Other visitors research or development studies that ended during this quarter

- Second workshop on variational configurations in ALADIN

End of second workshop on variational configurations in ALADIN with the participation of R. Bubnova, C. Fischer, A. Horanyi, W. Sadiki, M. Siroka and C. Soci. See article in the previous Newsletter.

- A new orography in ARPEGE/ALADIN

Thanks to the work of two students, Philippe Marguinaud and Youssef Moudden, for the ARPEGE part and Vladimir Ivanovici for the ALADIN part and the diagnostic tools, a new parameterization of the envelope orography has been introduced. It remains close to the mean orography at the largest scales so as to better preserve the global mass, and close to the previous envelope at small scales so as to keep the blocking effect of enhanced mountains. This is achieved in configuration 923 by adding a spectral term to the cost function used in the minimization of orography. André Simon is currently testing whether this new orography could be successfully coupled with the "lift" parameterization proposed by F. Lott and already used in the ARPEGE/Climat code.

3. Other research or development studies by the Toulouse permanent staff

- External tools around ALADIN :

Chagal : new version of Chagal on VPP (dino) and SUN (ext4) arrived! : a new parameter gives the possibility to choose the format of the output file (see new documentation on ALADIN web: *http://www.cnrm.meteo.fr/aladin/concept/documentation.html*)

for more info please run : chagal -?

- Full-Pos :

Some improvments have been introduced in Full-Pos (see article about bogussing) and a new documentation is available both on public ftp (poscript file, see annexe) and on-line on ALADIN wed server (*http://cnrm.meteo.fr/aladin/concept/documentation.html*).

Annexes :

New statistics are presented in 5. The comparison between Toulouse/Prague/Deported work are now available since the beginning of Prague work registration and not only since the beginning of Deported work registration. The three sorts of statistics (Toulouse only, with Deported work since the last quarter of 1995 and with Prague work since the third quarter of 1998) correspondant to three main steps in the project life. The total statistics are a good indication of the global evolution.

Other new statistics could appear soon, with ALATNET follow-up in the five centers... if ALATNET runs of course !...

1. List of documents available on public ftp : cnrm-ftp.meteo.fr, under the directory /pub-aladin on the user anonymous

- **statisti.ps**, **updated on 19/10/99** (16 pages) : NEW graphics statistics of the participation in the ALADIN project. Statistics on September 30, 1999 for the Prague and the Toulouse parts and on June 30, 1999 for the Deported work.

- Toulouse_stays.ps, ***updated on 19/10/99*** : visitors expected in Toulouse in 1999 (provisional document).

- ***news16.ps*** : ALADIN Newsletter 16 (color postscript), updated on 26-11-99 (64 pages)

- ***news16bw.ps*** : ALADIN Newsletter 16 (black & white postscript), updated on 26-11-99

- ***news16_map..ps : ALADIN Newsletter 16 (page 8) :*** map to be printed in A3 format (***news16_map_small.ps,*** in A4 format).

- **doc_cycora_nebcvpp.ps** : documentation of the modifications introduced operationaly in ARPEGE and ALADIN on October 20th : CYclogenesis COnvection Radiation.

- **aladintheque.ps** : list (with abstracts) of 144 ALADIN documents available in paper format, updated on 04-08-99
- **phasersguide.ps** : the ALADIN phaser's guide, updated on 30-07-1998
- **minutes_assembly.ps** : Minutes of the 3rd Assembly of ALADIN Partners, Prague, November 6th, 1998.
- **kip.ps** : final report of the ALADIN-KIT action
- **RFR.ps** : Final report on the progress of the research at Météo-France/GMAP in the scope of the Reseau Formation Recherche, for five PhD students from countries of Central and Eastern Europe (Prof. J. Rakovec)
- **MoUnew.ps** : New version of the Memorandum of Understanding
- ***plan1999.ps*** : the 1999 working plan prepared by the 3-headed team created during the last Assembly of Partners to make a new proposal for the Second Medium-Term Research Plan for ALADIN

- ***comp1999.ps*** : Completion of the 1999 Working Plan.
- ***progress1999.ps*** : Report of the 1999 progress

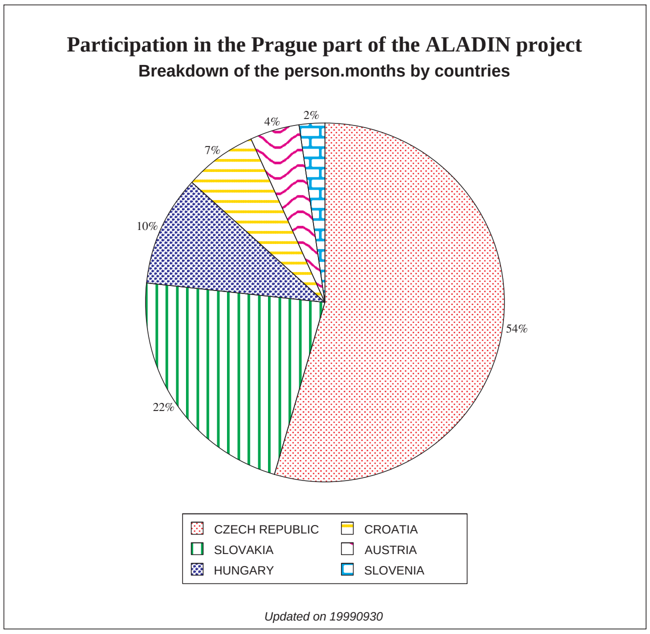
- ***newplan2001.ps*** : Second medium-term (1999-2001) research plan for ALADIN (new version prepared in April 1999 by the 3-headed team created during the 3rd Assembly of ALADIN Partners to initiate and coordinate the exchanges, collect proposals and prepare the discussions for the next Assembly).

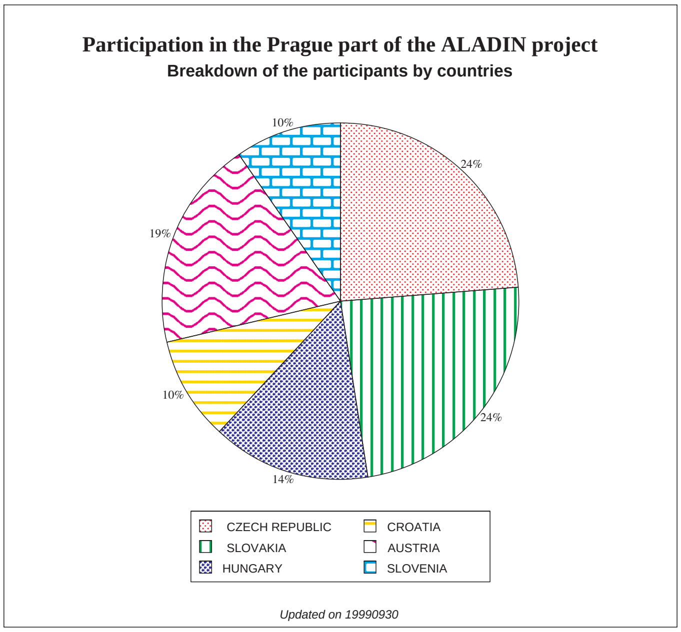
- ***program2000.ps*** : 2000 Working Plan: a very preliminary version, including only known firm proposals, which has to be completed by every ALADIN team according to the research topics defined in the framework of ALATNET (as soon as it is accepted and studies are defined), the research topics to be addressed locally (as soon as possible), the expected contents of MAE stays (in Toulouse) or LACE stays (as soon as possible).

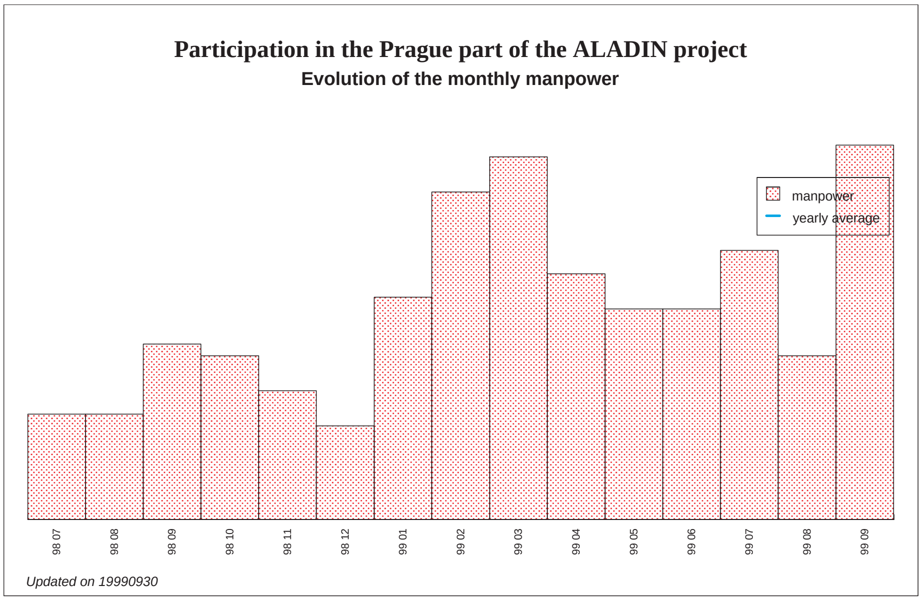
- ***canari_doc.ps*** : the CANARI documentation, updated on May, 1999.

- ***fullpos_doc.ps*** : a new documentation on FULL-POS, updated on August 1999.

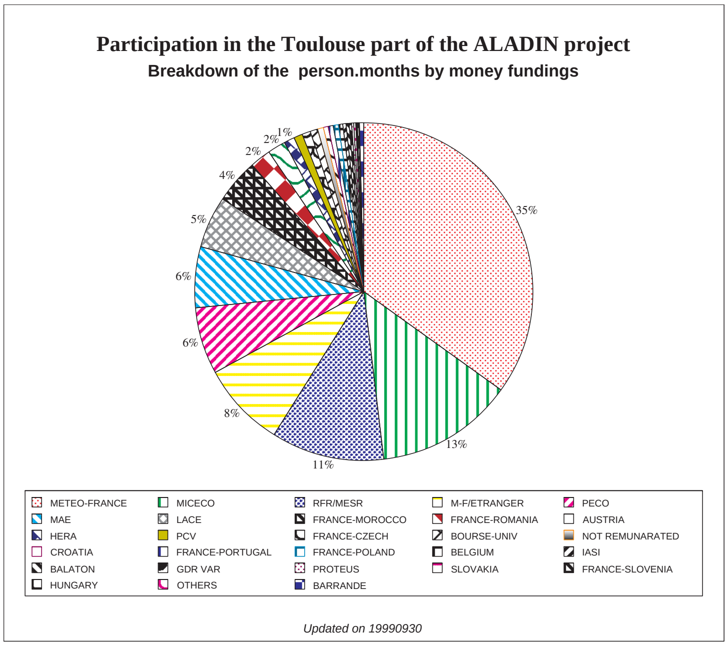
2. Participation in the Prague part of the ALADIN project

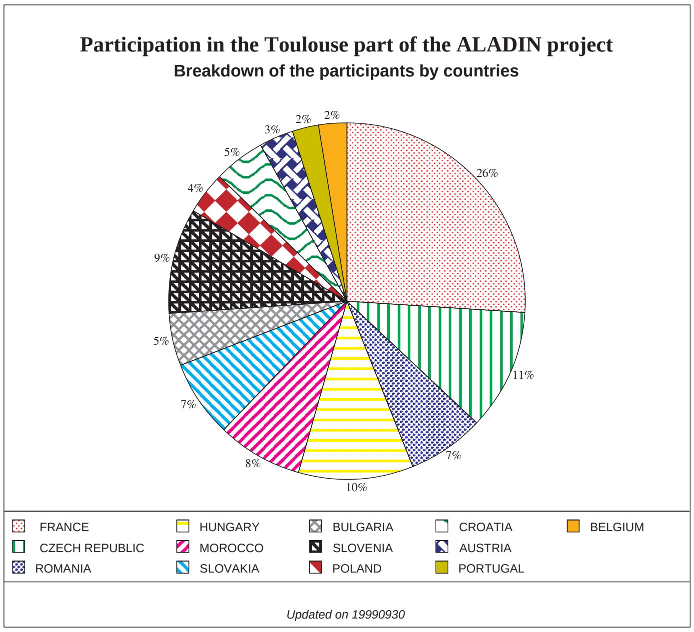


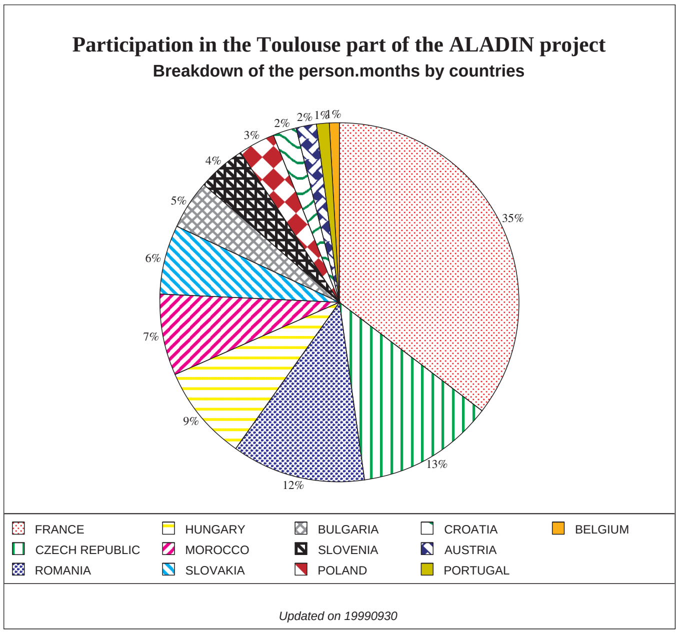


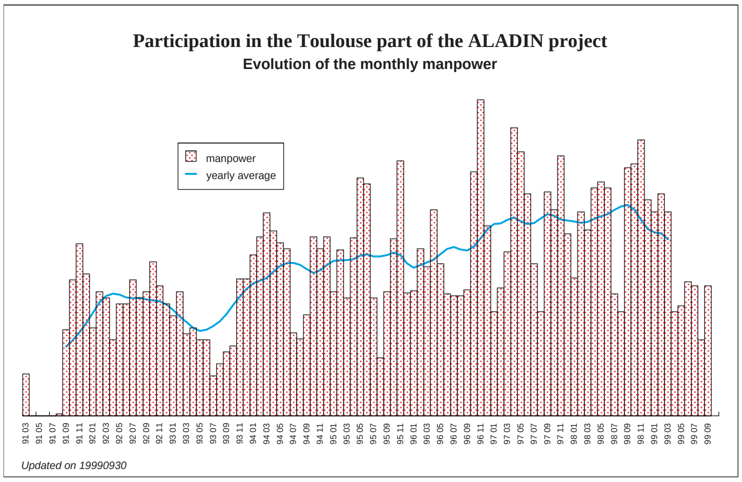


3. Participation in the Toulouse part of the ALADIN project

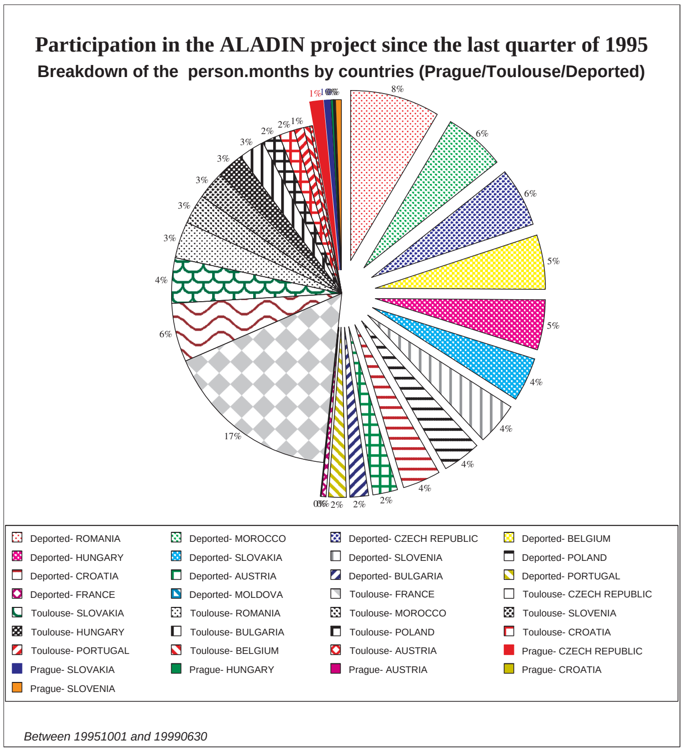


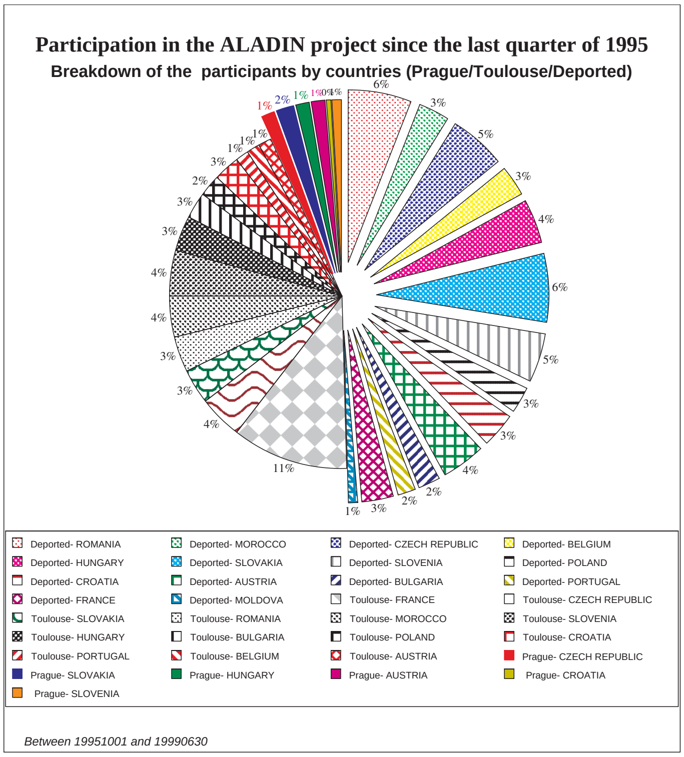


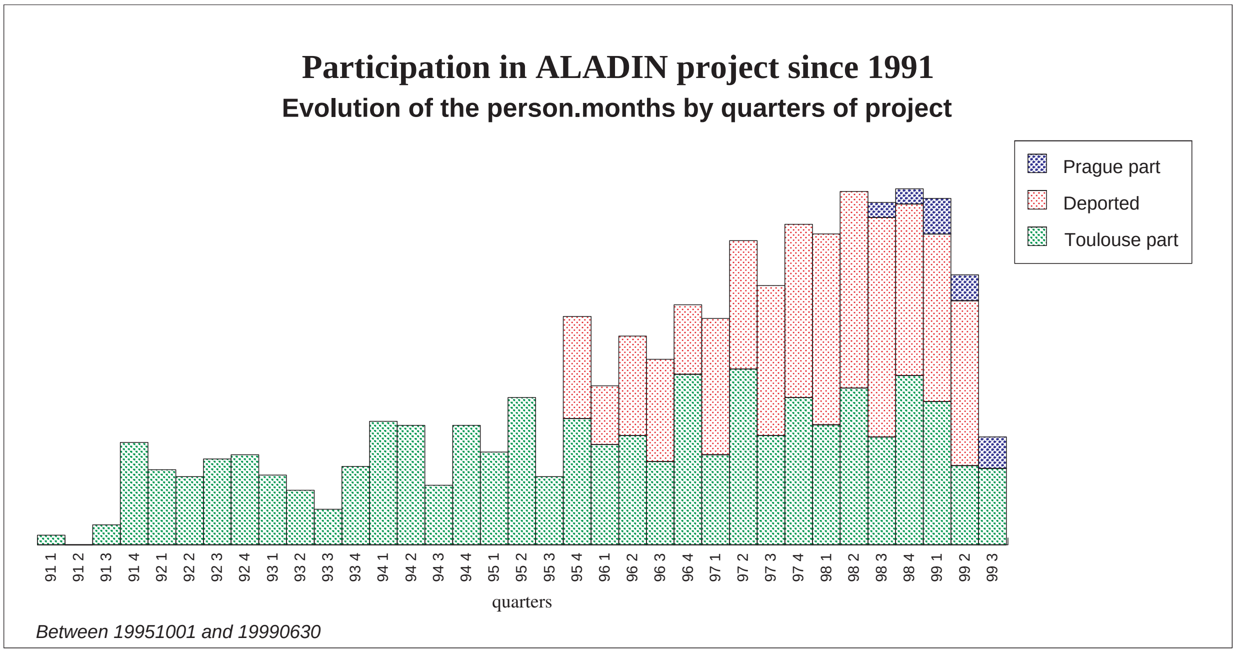




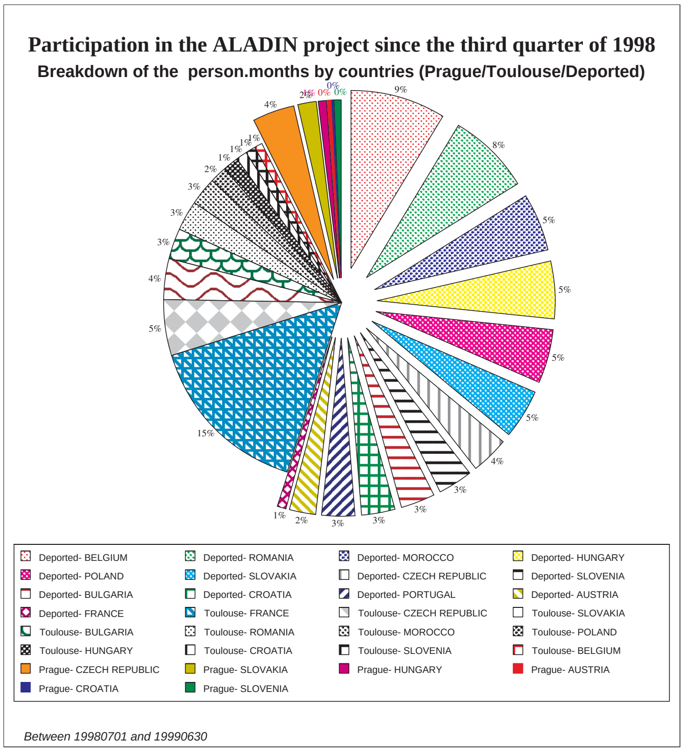
4. Prague/Deported/Toulouse participations in the ALADIN project since the beginning of Deported work registration

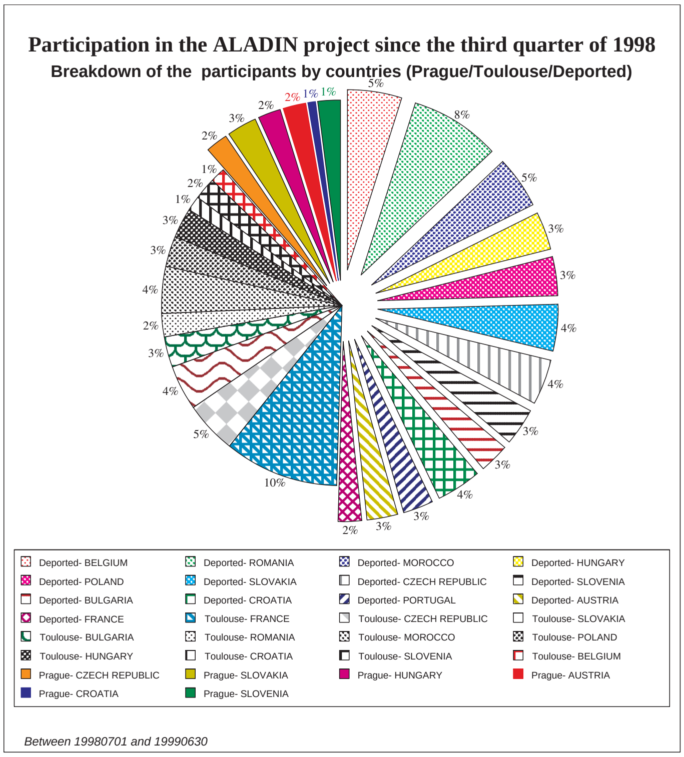




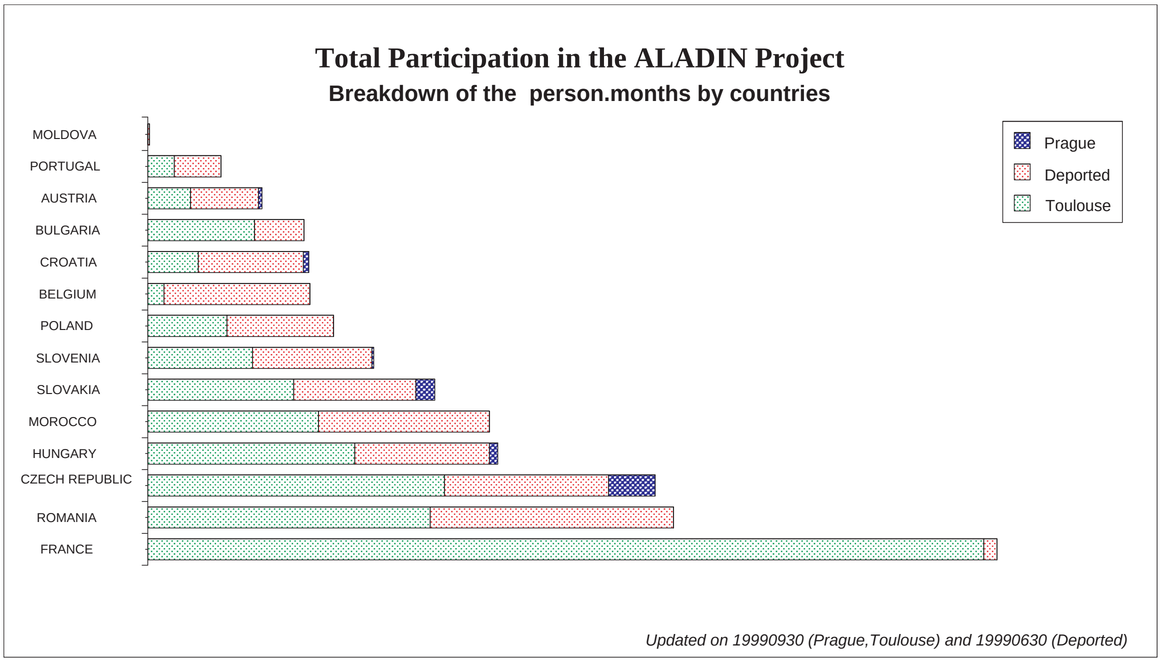


5. Prague/Deported/Toulouse participations in the ALADIN project since the beginning of Prague work registration



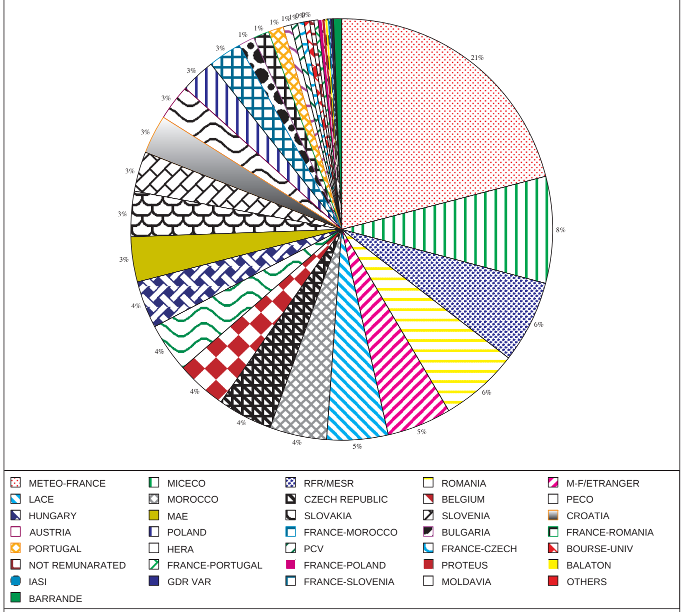


6. Total participation in the ALADIN project



Total Participation in the ALADIN project

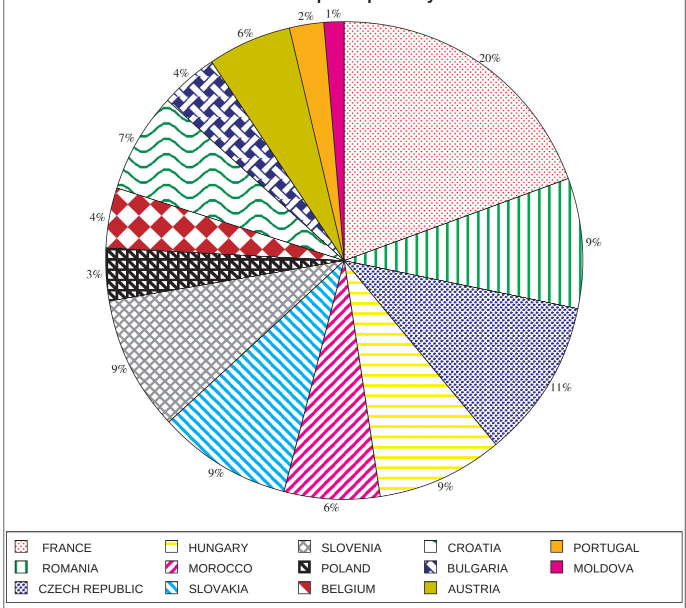
Breakdown of the person.months by money fundings



Updated on 19990930 (Prague,Toulouse) and 19990630 (Deported)

Total Participation in the ALADIN project

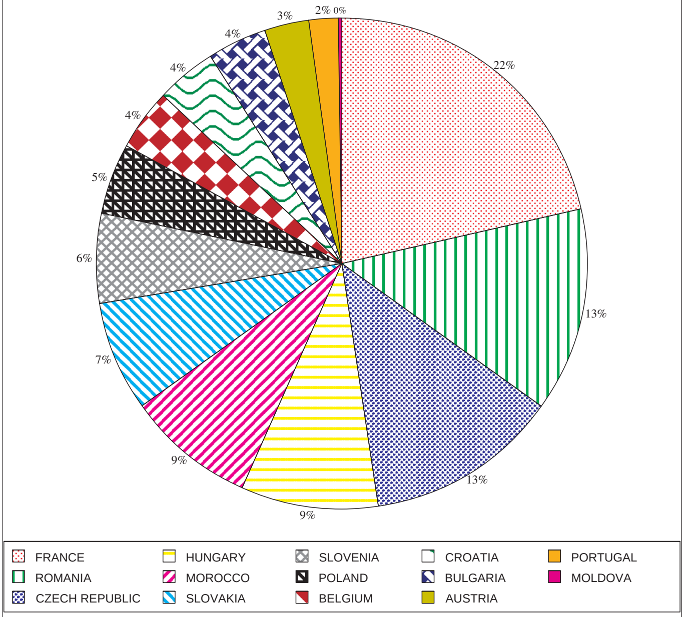
Breakdown of the participants by countries



Updated on 19990930 (Prague,Toulouse) and 19990630 (Deported)

Total Participation in the ALADIN project

Breakdown of the person.months by countries



Updated on 19990930 (Prague,Toulouse) and 19990630 (Deported)

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