5_Reports

P. Termonia

5.2 Strategy follow-up

As a reminder, during the strategic workshop in Brussels in 2011, the following points of attention were identified (and reported to the GA in 2011, Report_Strategy_meeting, see website):

	Tour d'ALADIN	Agenda of this GA	meetings
invest (seriously) in code design/development/maintenance,	**Tk**	5_Action on interfacing, 6, 8_potential_merge_with_HIRLAM	ALADIN workshop, meeting in Toulouse, several web conferences, Ankara system meeting
improving the operational suitability of SURFEX,	**Tk**	6_SURFEX	Long stay in Be, SURFEX SC
take care of collaboration,		8_potential_merge_with_HIRLAM	Task force meetings, PAC/HAC, meeting with YW
make effort regarding external funding,	**[opportunity]**	8_SRNWP-EPS	Madrid meeting, SRNWP AC, EUMETNET STAC
"define" our end user.	Au, Cz, Be, Pl, Pt	5_verification, 8_SRNWP_V	Meeting in Lisbon, FR stay

Also from the strategy note:

Move to high resolution -> 1 km	Fr, Tn, and also Cz, Be		EWGLAM, 1 web conf organized by HIRLAM
DA of high resolution data	Hu, Hr, Mo, Si	8_OPERA	LACE DA meeting

Report (as presented to PAC)

- What does HARMONIE mean? Top-down vs. bottom-up;
- a trend toward finite elements in dynamics:
  - (a) a remarkable breakthrough in vertical finite elements and
  - (b) first steps to consider horizontal finite elements;
- the PREP part of SURFEX: expertise building in profiling and optimization;
- 4DensVAR for the convection permitting scales?
- Radar data assimilation in small countries;
- a new momentum in verification and birth of HARP;
- validation of the cycles using the HIRLAM tools: this will not be discussed in this report since I consider it to be the key part of the analysis for further merging between the HIRLAM and the ALADIN consortium, and this is explained in the note prepared by the Task Force.
- Lessons to learn from the COST ES0905 action.

Action on interfacing

One of the priorities presented to PAC on 6-7 May 2013, was the point about « What does HARMONIE mean? Top-down vs. Bottom-up », see the activity report (available on request). In conclusion, in that document,

> The planned impact study and validation of the physics-dynamics interface will get highest priority now. The rather recent scientific innovation in thermodynamics can be an opportunity to define what the model is and how the physics schemes should respond to the underlying data flow, provided the developers agree on the underlying scientific basis. PAC and/or HAC can then reflect on the terminology of the model later.

PAC agreed with this prioritization for the coming year. The scientific part of the question is related to the diversity of the physics parameterizations that exist in the context of HARMONIE. Here I propose a stepwise approach to the scientific and technical issues related to this question.

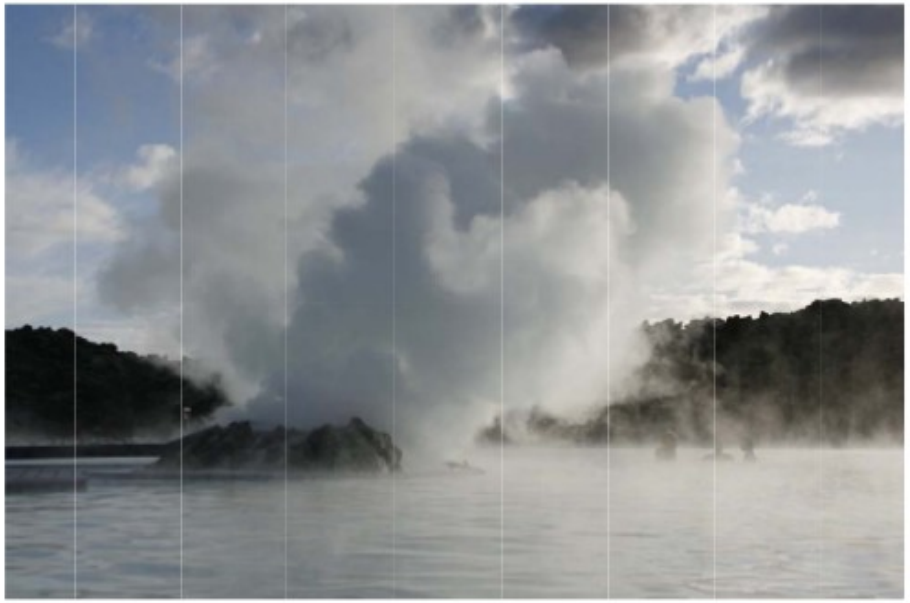
ALADIN-HIRLAM action on interfacing

Involved people:

- Radmila Brožková CHMI),
- François Bouyssel (Météo France),
- Canberk Karadavut (Turkish State Meteorological Service),
- Daan Degrauwe (RMI),
- Neva Pristov (Environmental Agency of Slovenia),
- Laura Rontu (Finnish
- Meteorological Institute)
- Mihály Szücs (Hungarian Meteorological Service),
- Yann Seity (Météo France),
- Piet Termonia (RMI),
- Michiel Vanginderachter (RMI).

	Calendar (months/meetings)										
	2013							2014			
	5-6	WW Brussels (24-28/6)	7-9	CSSI/HMG (video)meeting	10-11	General Assembly (14-15/11)	12	1-4	ALADIN workshop/ ASM	4-5	PAC/HAC
Action 1 : CPTEND_FLEX											
Action 2 : r vs. q, T vs. theta											
Discuss analysis of action 2											
Action 3 : Cleaning of APLPAR											
Action 4 : Redesign of APL_AROME, APLPAR											
Report progress to GA about action 1 to 3.											
ALADIN WS/HIRLAM ASM : present analysis of action 4											
PAC/HAC : provide advice on the scenario's of action 4											

ALADIN - HIRLAM NEWSLETTER
No. 1, September 2013



The Blue Lagoon, Iceland, by Jozef Vivoda

The joint HIRLAM All Staff Meeting 2013 and ALADIN 23st Workshop took place in Reykjavik, Iceland, from April 11th till 15th 2013.

HIRLAM-B Programme, c/o J. Onvlee, KNMI, P.O. Box 201, 3730 AE De Bilt, The Netherlands
ALADIN Programme, c/o P. Termonia, IRM, Avenue Circulaire 3, 1180 Bruxelles, Belgium

Introduction

Tilly Driesenaar and Patricia Pottier

This is the first edition of the combined Newsletter of the HIRLAM and ALADIN consortia. We decided to join forces because the researchers from both consortia are working closer and closer together. Furthermore, the number of contributions is continuously decreasing because we publish increasingly in peer reviewed literature.

This Newsletter is devoted to presentations made by the ALADIN and HIRLAM staff in the joint HIRLAM/ ALADIN Workshop/All Staff Meeting (ASM) that took place on 15-19 April 2013 in Reykjavik, hosted by the Icelandic Meteorological Organisation (IMO). We thank the staff of IMO for providing the pleasant and high tech meeting facilities at the Hilton hotel in Reykjavik. For the first time there we had live internet broadcast, which was appreciated very much by quite a number of distant followers who were not in the opportunity to travel to Iceland.

As usual the scientific part of the programme took place in fully plenary sessions. After a warm welcome by the Dr. Arni Snorrason, director general of IMO, there was a short opening session on Tuesday morning, in which overviews were given of the progress and status of the ALADIN, HIRLAM and LACE programmes. This was followed by six sessions. As usual we had the thematic sessions on data assimilation and use of observations, probabilistic forecasting and LAMEPS, dynamics, model physics, and system aspects and verification. And this year a session operational expericiences was added.The programme is listed in Appendix A and the presentations can be found at http://www.cnrm.meteo.fr/aladin .

We hope you enjoy the first ALADIN-HIRLAM Newsletter!

Verification activities:
A. Deckmyn, N. Pristov, J. Rio, P. Termonia,
C. Zingerle (CSSI), FR funded work

- **valorization of R&D** over a longer past period, is of interest for our policy makes. Ideally one should monitor a score over one or more decades. An example is the weighted NWP index in Austria. However, to do this for the whole consortium, one should (a) have a reference system, and (b) an index might not be relevant for all the countries. So it was felt that it would be best to limit this activities to building up **a portfolio of cases** (example the Portuguese case, the CE flooding, Austria case). These should not be scientific studies but rather descriptions that should be understandable for non meteorologists.

- · **The end users** that use the data in applications. The problems we identified for this are

  - that essentially we lack always relevant data ourselves [e.g. for wind-energy applications, ideally what counts is the power output as a function of the wind to estimate how much value our forecasts are producing. Unfortunately it seems that few, if any, companies are even willing to provide such data. As an alternative we limit ourselves to EV (Economic Value) scores where the cost and the loss of the yes/no decisions does do not need to be specified. In this sense it might be useful to make an estimate of how much of our end users' activities can be reduced to a yes/no decision. It seems at least a good idea to extend HARP as much as possible with such “yes/no” scores like for instance EV.

  - That, on the other hand, often the end users do not actually know what they need for verification either.

Outcome of the ALADIN enquiry about our **end user**, courtesy J. Rio (IPMA)

- Most of the variables identified in the forms are the usual ones. Some of the less frequent are:PBL height, MOCON, TKE, cloud water and ice, visibility, convection index, probability of occurrence of thunderstorms, forest fire index; biometeorological index;
- · From the sample of answers, the verification performed at the several institutes can be considered to be mainly classical (forecast point vs observation point). Even though not explicit, some countries are expected to have implemented object-oriented or fuzzy methods (partly in HARP yet) to address the double-penalty problem inherent to the validation of high resolution forecasts of precipitation or cloud cover;
- · CHMI and ZAMG do verification based on catchment areas. Austria and Slovakia appear to be the only ones to make use operational of SAL (object-oriented verification method); ·
- All or most of the countries supply forecasts for the following sectors: aviation, renewable energies, energy management, public/private companies (construction, transports) and civil protection;
- · In the remaining sectors there are apparently some differences: (1) some institutes have products for specific clients - public and / or private (e.g. at ZAMG), while (2) others supply only general information (e.g. CHMI, Romania), directly from NWP or via their weather center (e.g. Portugal, Romania);
- · Some examples of decisions taken by clients, based on forecast products, are: (1) hydrological warnings based on water level thresholds, (2) concentration of pollutants; (3) airport and sea/harbor/port operations, (4) type and amount of energy production either for consumption or trading, (5) winter road/rail maintenance, (6) security of outdoor events, both in land and sea, (7) estimate of visitors at selected locations and (8) irrigation and protection against severe weather in agriculture.

So the problem of verification/valorization and end users span a wide range

Strategic approach:

- Portfolio of cases
- Develop common tools, to help each country to address their specific needs

Common verification/validation tools

	Compute scores on the fly	Monitoring of the applications in the countries	Validation of new cycles	Science verification	Verify fields or pointwise
ALADIN Performance Monitoring Tool in Ljubljana (APMT)	yes	yes	no	no	pointwise (station data)
HARP	yes	yes (through APMT)	no	yes	both
HIRLAM verification tool: The HARMONIE system	no	no	yes	yes	pointwise

Quality monitoring of the operational runs
By means of the
ALADIN Performance Monitoring Tool (APMT)

Running in Ljubjana

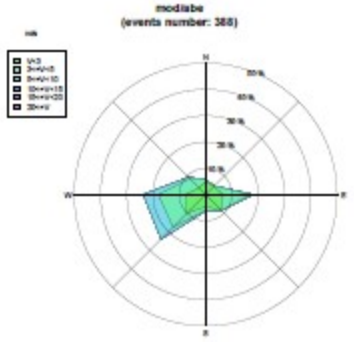
Monthly Reports

Monthly reports

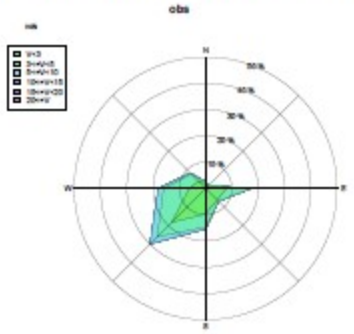
- We will not perform comparisons between the different countries: plots will only contain one country at a time.
- They will only be produced for the 00-UTC runs.
- All stations will be used to compute the scores for one country (i.e. all stations per country vs. limited the model(s) of the country), then create documents, store them to a file system and send them by E-mail to the LTMs without cross country exchange (i.e. the LTMs will only receive the reports for their own country).
- Synthetic qualitative conclusions will or may be drawn by CZ and PT for PAC/GA meetings.

Example APMT Monthly Report (extract to give you an idea of the output)

Wind rose for forecasted wind speed (all 6h ranges, station 6447)



Wind rose for observed wind speed (all 6h ranges, station 6447)



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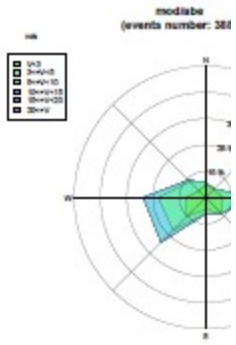
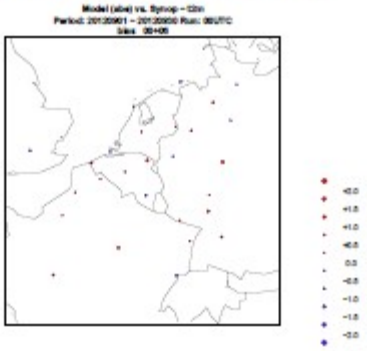
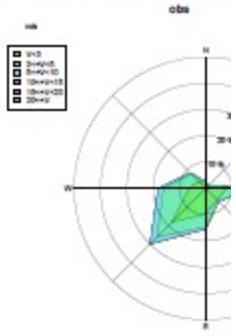


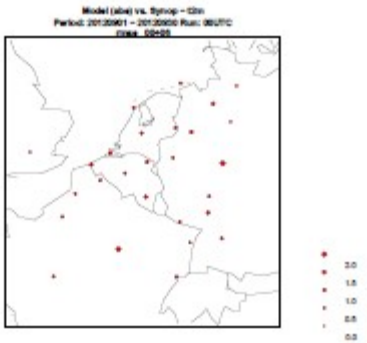
BIAS air temperature at 2m (00+06)



Wind rose for observed wind speed (all



RMSE air temperature at 2m (00+06)



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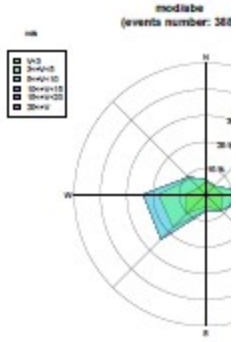
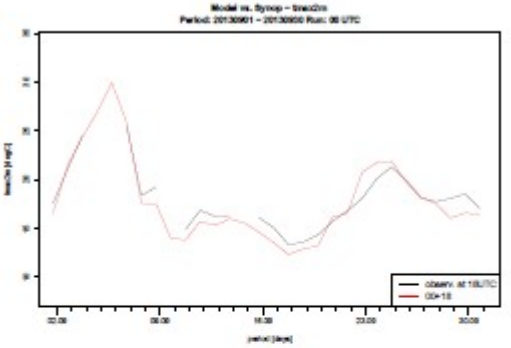
Wind rose for forecasted wind speed (all 6h ranges, station 6447)

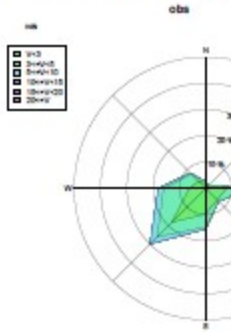


BIAS air temperature at 2m (00+06)

Maximum air temperature at 2m (mean ratios of stations)

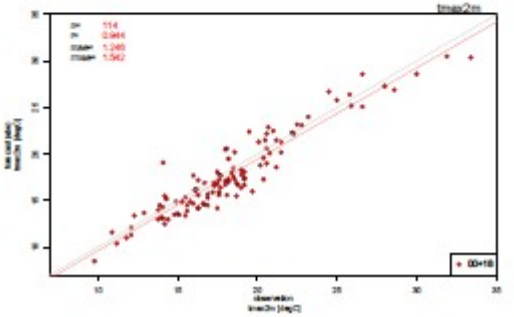


Wind rose for observed wind speed (all



RMSE air temperature

Maximum air temperature at 2m (all stations data)



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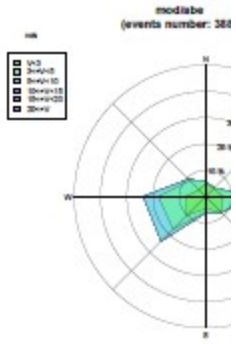

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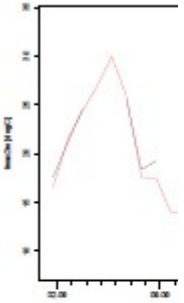
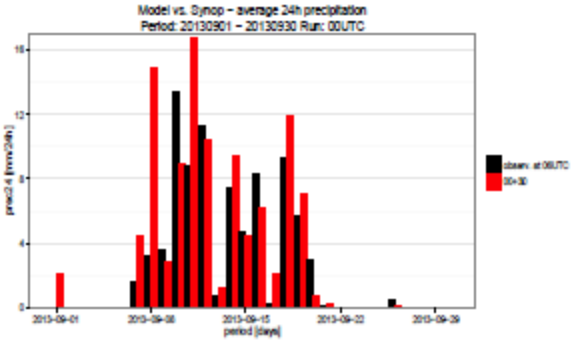
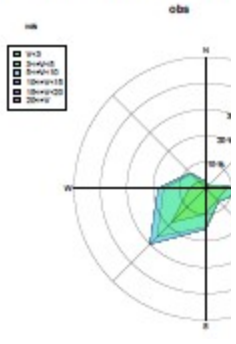
Maximum air temperature at 2m (mean ratios of stations)



24hour precipitation (mean ratios of stations)

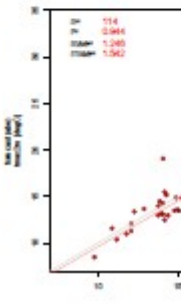


Wind rose for observed wind speed (all

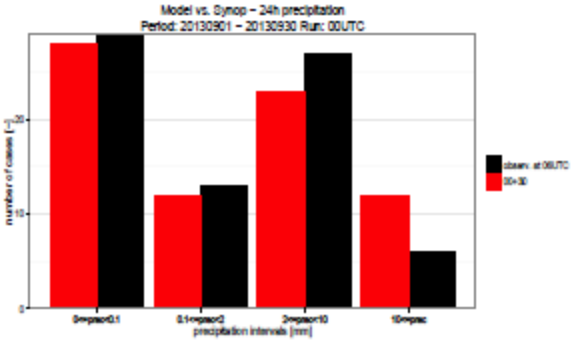


RMSE air temperature

Maximum air ten

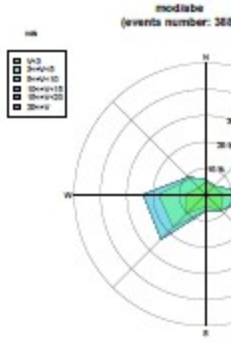


24hour precipitation (all stations data)



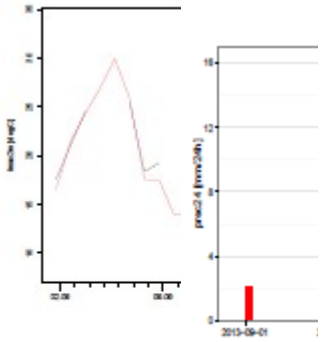
Example APMT Monthly Report (extract to give you an idea of the output)

Wind rose for forecasted wind speed (all 6h ranges, station 6447)



BIAS air temperature at 2m (00+06)

Maximum air temperature at 2m (mean ratios of stations)

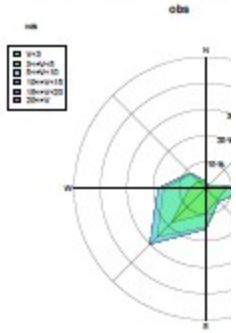


24hour precipitation (all ranges, all stations data)

number of cases in particular ranges of precipitation [mm/24h]

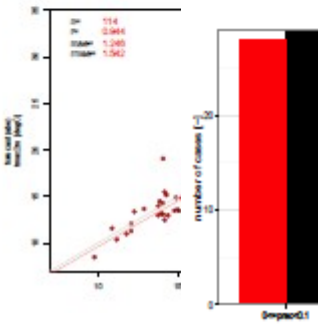
modobs	0<=prec<0.1	0.1<=prec<2	2<=prec<10	10<=prec	sum fc
0<=prec<0.1	25	3	0	0	28
0.1<=prec<2	4	4	4	0	12
2<=prec<10	0	6	15	2	23
10<=prec	0	0	8	4	12
sum obs	29	13	27	6	75

Wind rose for observed wind speed (all



RMSE air temperature

Maximum air ten



24hour precipitation (all ranges, all stations data)

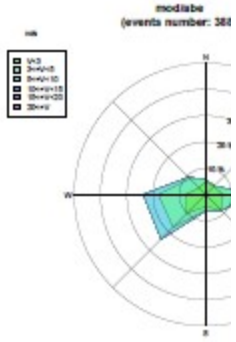
scores for particular ranges of precipitation [mm/24h]

range\score	BIAS	POD	FAR
0<=prec<0.1	0.966	0.862	0.107
0.1<=prec<2	0.923	0.308	0.667
2<=prec<10	0.852	0.556	0.348
10<=prec	2	0.667	0.667

events number: 75 PC=0.64

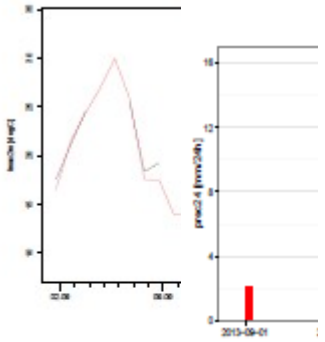
Example APMT Monthly Report (extract to give you an idea of the output)

Wind rose for forecasted wind speed (all 6h ranges, station 6447)



BIAS air temperature at 2m (00+06)

Maximum air temperature at 2m (mean ratios of stations)

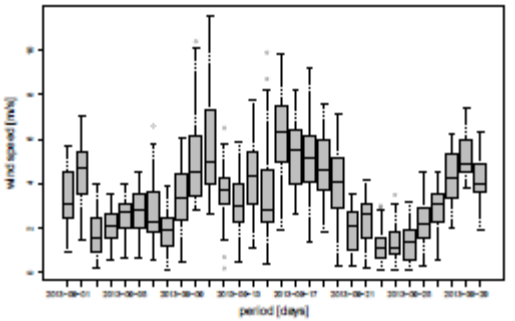


24hour precipitation (al

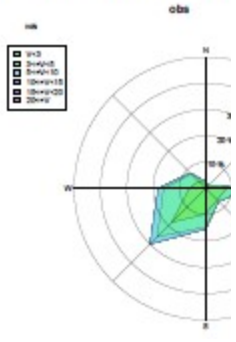
number of cases in particul

modobs	0<=prec<0.1	0.1<=prec<2
0<=prec<0.1	25	3
0.1<=prec<2	4	4
2<=prec<10	0	6
10<=prec	0	0
sum obs	29	13

Boxplots of distribution of wind speed at 10m (all ranges, all stations data)

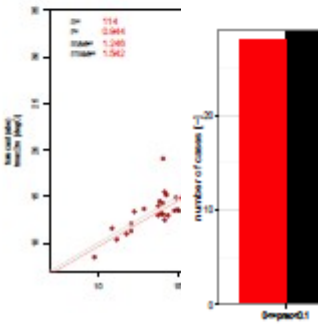


Wind rose for observed wind speed (all



RMSE air temperature

Maximum air ten



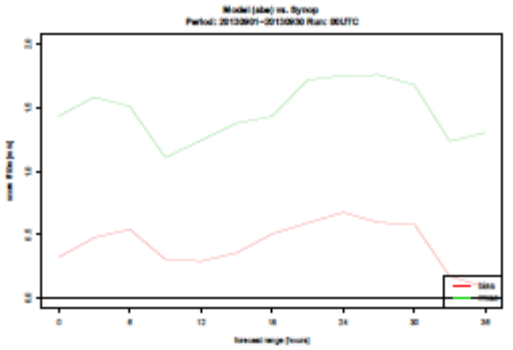
24hour precipitation (al

scores for particul

range\score	BIAS
0<=prec<0.1	0.966
0.1<=prec<2	0.923
2<=prec<10	0.852
10<=prec	2

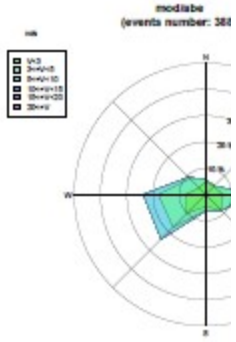
events

Scores for wind speed at 10m (all ranges, all stations data)



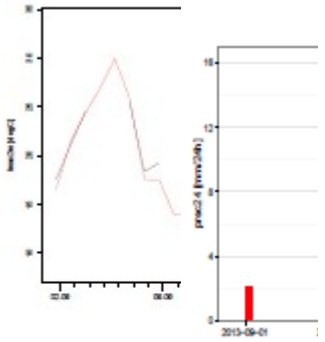
Example APMT Monthly Report (extract to give you an idea of the output)

Wind rose for forecasted wind speed (all 6h ranges, station 6447)



BIAS air temperature at 2m (00+06)

Maximum air temperature at 2m (mean ratios of stations)

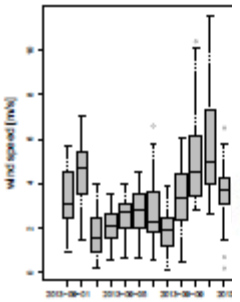


24hour precipitation (al

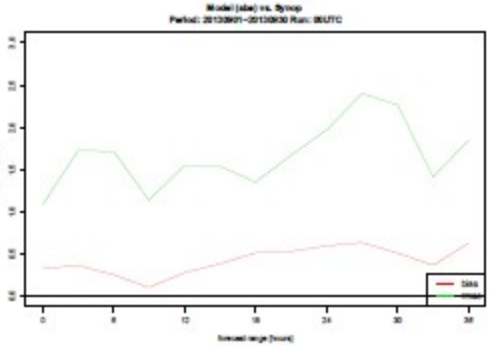
number of cases in particul

modobs	0<=prec<0.1	0.1<=prec<2
0<=prec<0.1	25	3
0.1<=prec<2	4	4
2<=prec<10	0	6
10<=prec	0	0
sum obs	29	13

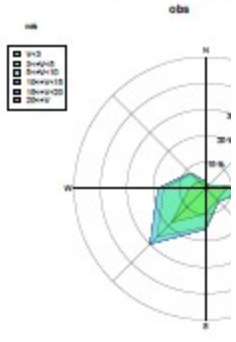
Boxplots of distribution of wind speed at 10m (all ranges, all stations data)



Scores for air temperature at 2m (all ranges, all stations data)



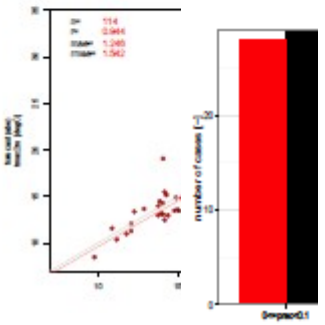
Wind rose for observed wind speed (all



RMSE air temperature

Maximum air ten

24hou



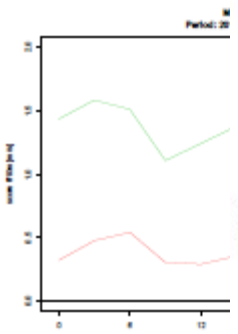
24hour precipitation (al

scores for particul

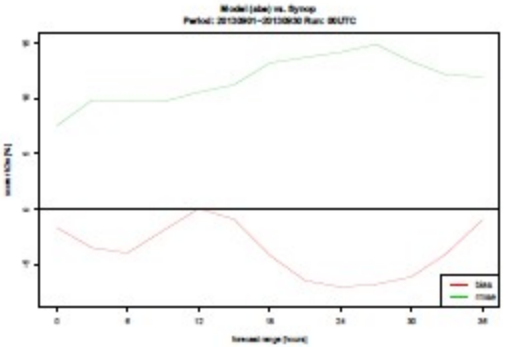
range\score	BIAS
0<=prec<0.1	0.966
0.1<=prec<2	0.923
2<=prec<10	0.852
10<=prec	2

events

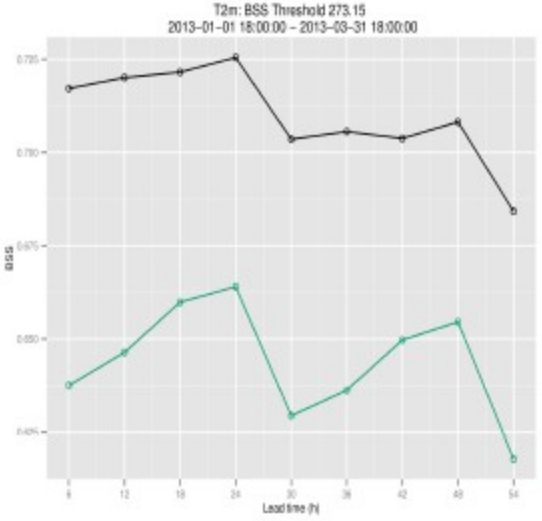
Scores for wind speed



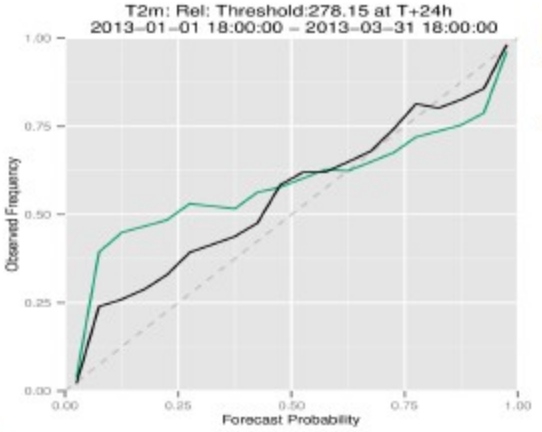
Scores for relative humidity at 2m (all ranges, all stations data)



HARP (e.g. to demonstrate the skill of an EPS system)



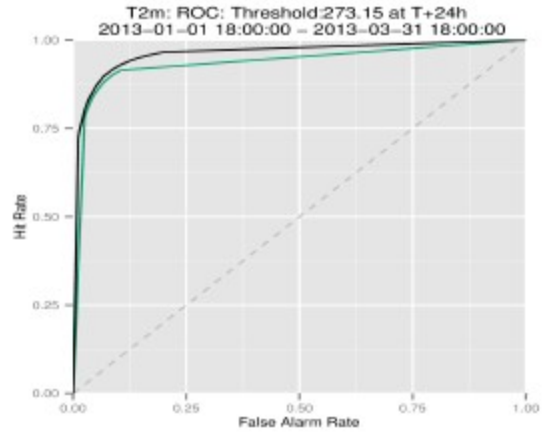
BSS
THR 0



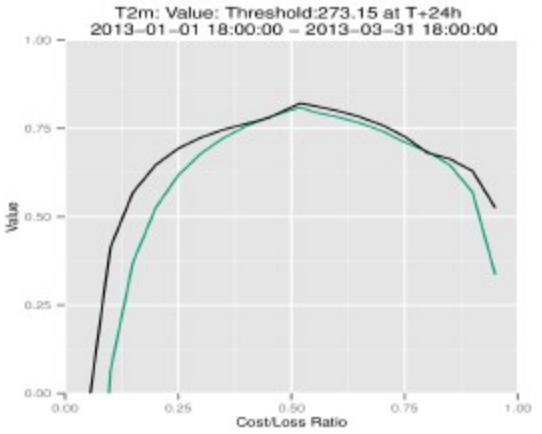
Rel.
THR 5
+24h

T2m

GLAMEPS
EC EPS



ROC
THR 0
+24h



Value
THR 0
+24h

We are considering to organize a forecasters meeting next year, the practical point is the budget, I will make a proposal under point 9

The deliverable could be a few sheets of the portfolio

Discussion

- Take note
- Provide guidance to proceed, in particular
  - on the differentiation of the different verification tools and the idea of building a **portfolio of case studies**.
  - An organization of a forecasters meeting.
- Other countries are invited to also send data to the ALADIN Quality Monitoring Tool.