Preliminary results of direct ALADIN 00 UTC output verification of surface weather parameters for six regions over Tunisia

(Evaluation period : September - December 2001)

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INTRODUCTION

The work described here was motivated by the need to quantify the extent to which forecasts of ALADIN surface parameters are being reliable.

In order to best apprehend the operational performances of ALADIN_Tunisie model, we tried in this experimental phase to start an operational evaluation by installing a computational monitoring procedure, being inspired by experimentations of some European ALADINers countries applied to ALADIN/LACE model (Hungary, ...) in this field, with respect to the INM proper objectives in term of forecast quality.

This first synthesis relates to the period from 05 September to 31 December 2001.

METHOD OF EVALUATION

– **Intervals of forecast** : 06-18 UTC, 18-30 UTC et 30-42 UTC.

– **00UTC surface analysis** : Weather types :

- Anticyclone A
- Cyclone C
- Eastern part of the cyclone Ce
- Western part of the cyclone Cw
- Eastern part of the anticyclone Ae
- Western part of the anticyclone Aw
- Weak pressure gradient Wp
- Zonal flow Z

– **Locations :** we have divided the whole domain into six regions

Region I North-East	**Region II** North-West	**Region III** Center-East	**Region IV** Center-West	**Region V** South-East	**Region VI** South-West
Tunis	Jendouba	Kairouan	Thala	Gabes	Gafsa
Bizerte	Tabarka	Monastir	Kasserine	Jerba	Kebili
Zaghouan	Béja	Sfax	Sidi-Bouzid	Medenine	Tozeur
Kélibia	El-Kef			Tataouine	El-Borma
Nabeul	Siliana			Remada	

This cutting out makes apart the coast regions from the others (of relief). However, the region 1 (North-East) has been moved away (moved apart) from this synthesis because of the land-sea mask which did note have been considered here.

– **Controlled parameters** 10m wind, Cloudiness, 06h UTC temperature, 12h UTC temperature, precipitation quantity, surface humidity .

Evaluation method for the different parameters

• **Total cloudiness :**

OBS./FOR.	0	1-2	3-6	7-8
0	3	+2	+1	+1
1-2	+2	3	+2	+1
3-6	+1	+2	3	+2
7-8	+1	+1	+2	3

• **10m wind:**

3 : for difference in wind (between the forecast and observed value) = ±2m/s

2 : for difference in wind (between the forecast and observed value) = ± 3m/s

1 : for difference in wind (between the forecast and observed value) > 3m/s

• **2m temperature:**

3 : for difference in temperature (between forecast and observed value) = ± 2 K

2 : for difference in temperature (between forecast and observed value) = ± 2-4 K

1 : for difference in temperature (between forecast and observed value) > 4 K

• **precipitation quantity :**

OBS./FOR.	0 mm	<2 mm	2-10 mm	>10 mm
0 mm	3	+2	+1	+1
< 2 mm	+2	3	+2	+1
2-10 mm	+1	+2	3	+2
> 10 mm	+1	-1	+2	3

• **2m Humidity :**

3 : attributed to the difference obs./forecast = ± 10 %

2 : attributed to the difference obs./forecast = ± 10-20 %

1 : attributed to the difference obs./forecast > 20 %

The scores for the range 18h-30h are missed seeing that the observations of humidity are picked out of the BQR (Bulletin Quotidien de Renseignement) not including this range, but not of the SYNOP messages.

RESULTS OF THE EVALUATION

• Systematic Underestimation over the three ranges 06-18, 18-30 et 30-42 for the different controlled parameters excepted the case for the precipitation for which an overestimation has been seen over all the six regions.

• Degradation of the Global rate of successful forecast for the range 30-42 regarding the others , particularly for the case of the cloudiness.

• The error is more important (marked , pronounced) during the night for the temperature as well as the wind.

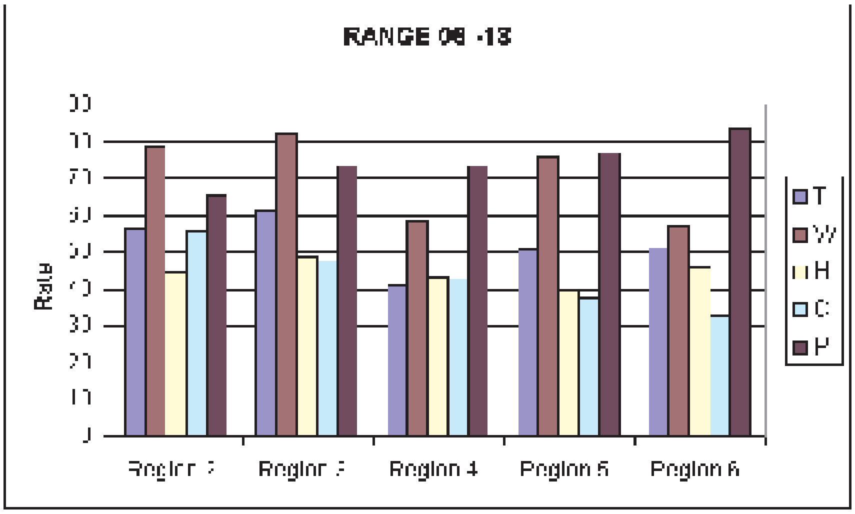
• The forecast is basically better for the wind over the entire domain than it is for the other parameters.

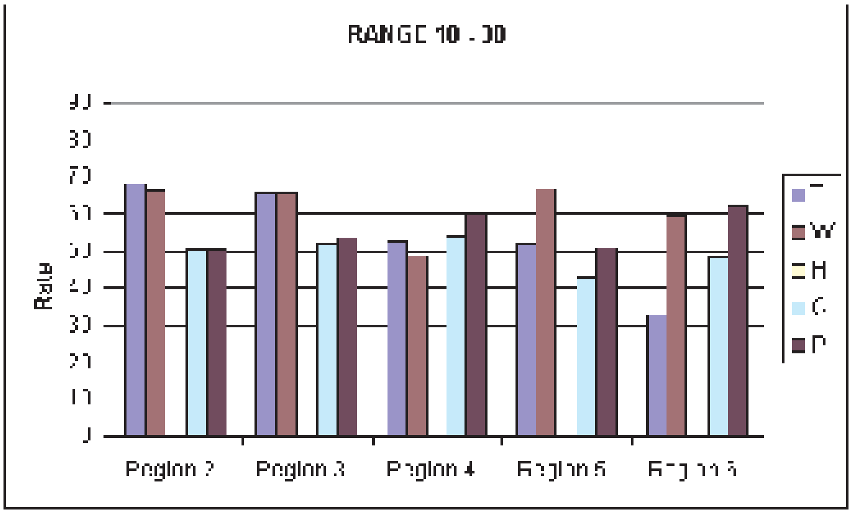
• The anticyclonic weather types (45 A cases) as well as the cyclonic types (33 C cases) predominate in the most cases but don't affect seriously the forecasts quality.

• The wind seems to be insensitive to the weather types.

Fig.1 - Rate of Global Successful Forecast of the different parameters per region (in %)

Calculated from the ratio of the forecasts number (with score 3) over the entire 25 principal stations. The observed data for humidity are not available for the range 18-30.





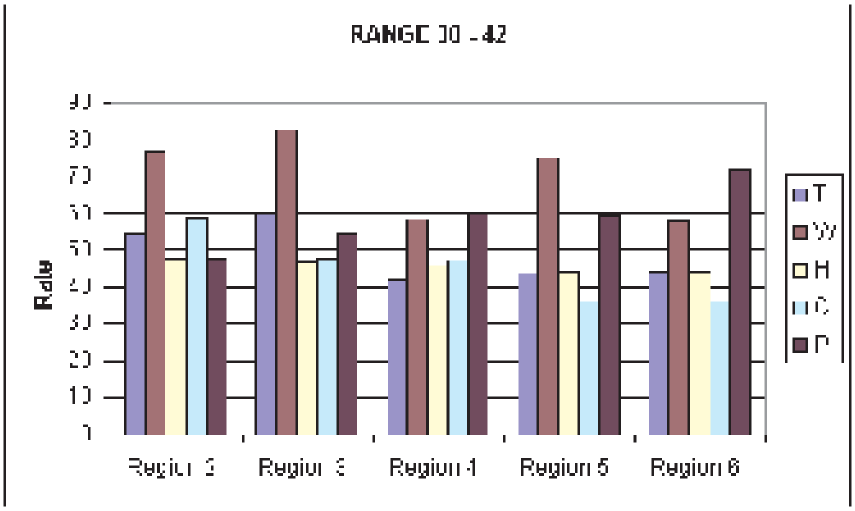


Fig.2 - Rate of Global Successful Forecast (in %), per weather type and parameter

Calculated from the ratio of the forecasts number (with score 3) over the entire 25 principal stations. The observed data for humidity are not available for the range 18-30.