



Tunisian National Institute of Meteorology

ALADIN Forecasters Meeting

ALADIN experience with convective situations

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Engineer of meteorology

21-23 October 2015, Lisbon

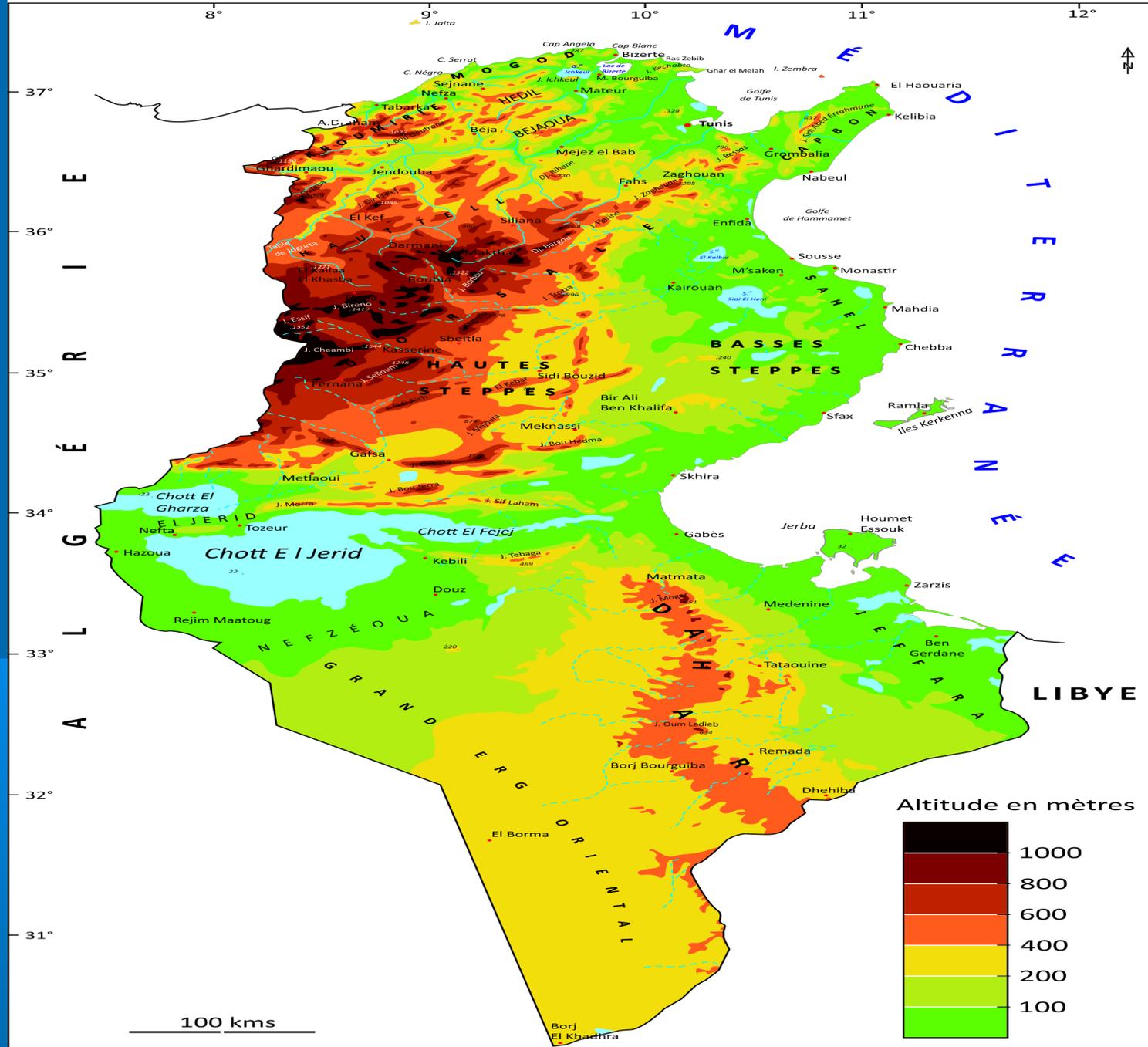
Plan

- **Introduction**
- **Experiences: Missed situation by Aladin model**
- **Challenges**
- **Expectations**

Introduction

Geographical distribution in Tunisia

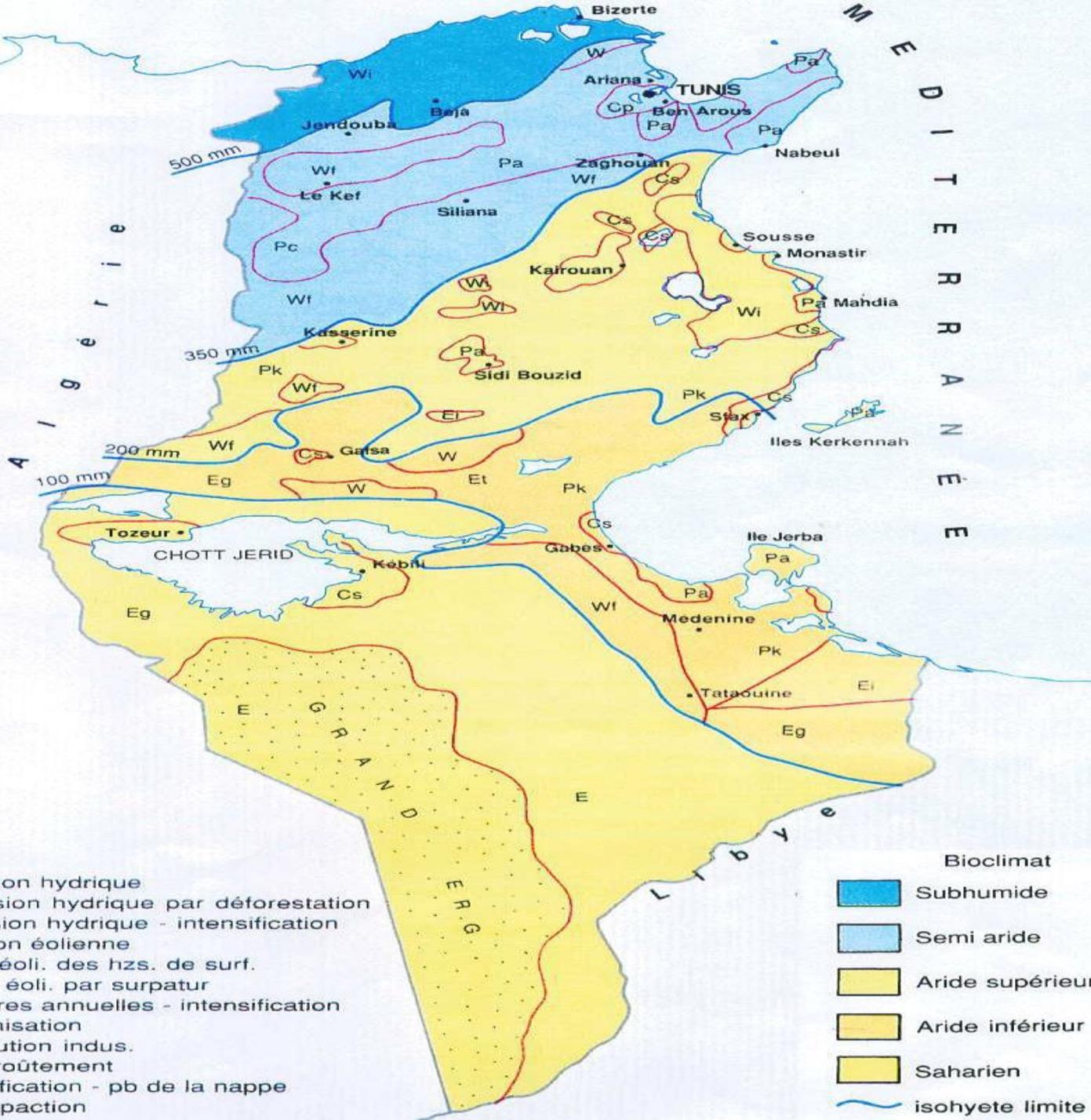
Le relief de la Tunisie



Cartographie: Jaziri Brahim, 2015.

Introduction

Tunisian Climate



W: érosion hydrique
 Wf: érosion hydrique par déforestation
 Wi: érosion hydrique - intensification
 E: érosion éolienne
 Et: éro. éoli. des hzs. de surf.
 Eg: éro. éoli. par surpatur
 Ei: cultures annuelles - intensification
 Cs: salinisation
 Cp: pollution indus.
 Pk: encroûtement
 Pa: aridification - pb de la nappe
 Pc: compaction

- Bioclimat**
- Subhumide
 - Semi aride
 - Aride supérieur
 - Aride inférieur
 - Saharien
 - isohyete limite

Introduction

Available models used in forecasting weather

ARPEGE

- There are three versions of ARPEGE model availables on SYNERGIE station.
- The most usseful version is Arpege 0.5 with 50 kilometers of resolution.
- It offers several parameters more than others models like ALADIN or CEP occurred on SYNERGIE station.

Tools on ARPEGE

Applicatif Modèle

Modèles

Groupes

- Tous
- ECMWF
- UKMO
- Aero

ARP-EUR05/0.5

ARP-RETIM10/1.0

ARP-RETIM25N/2.5

ARP-RETIM25S/2.5

ALA-TUNISIE

UK/1.25

CEP-NORD/2.5

CEP/2.5

PRESYG/1.0

Paramètres

PRESSION	Pmer	Z	P	T	Hu	Td	TPw
HAUTEUR	Vent	FF	Flux	TA	VV	PV	NebT
PV	RRtt	NGtt	Cape				

ARP / 0.5 - Pression

	Ana	00	03	06	09	12	15	18	21	24	27	30	33	36	39	42	45	48	54	60	66	72	78	84	90	96	102	ALL	
ALL																													
200HPA																													
250HPA																													
300HPA																													
400HPA																													
500HPA																													
600HPA																													
700HPA																													
800HPA																													
850HPA																													
900HPA																													
925HPA																													
950HPA																													
1000HPA																													
SOL																													

ATTIONNAIRES

Réseau 12/10/2015 00:00 UTC Durée des cumuls

Masquer

Résumé

Modele/Domaine ARP-EUR05/0.5

Paramètre P SOL

Réseau/Ech lun. 12/10/2015 00:00 (ech 00H)

Validité lun. 12/10/2015 00:00

Domaine Tunisie

Ecran

Tunisie

Tunisie_Aladin

AfriqueNord

FormatB

Domaine

Valider
Quitter
Taille normale
Aide

ALADIN TUNISIA

- This model has been declared operational on 23 Mars 2004.
- It offers mostly the same parameters showed on Arpege with a resolution of 12.5 km.

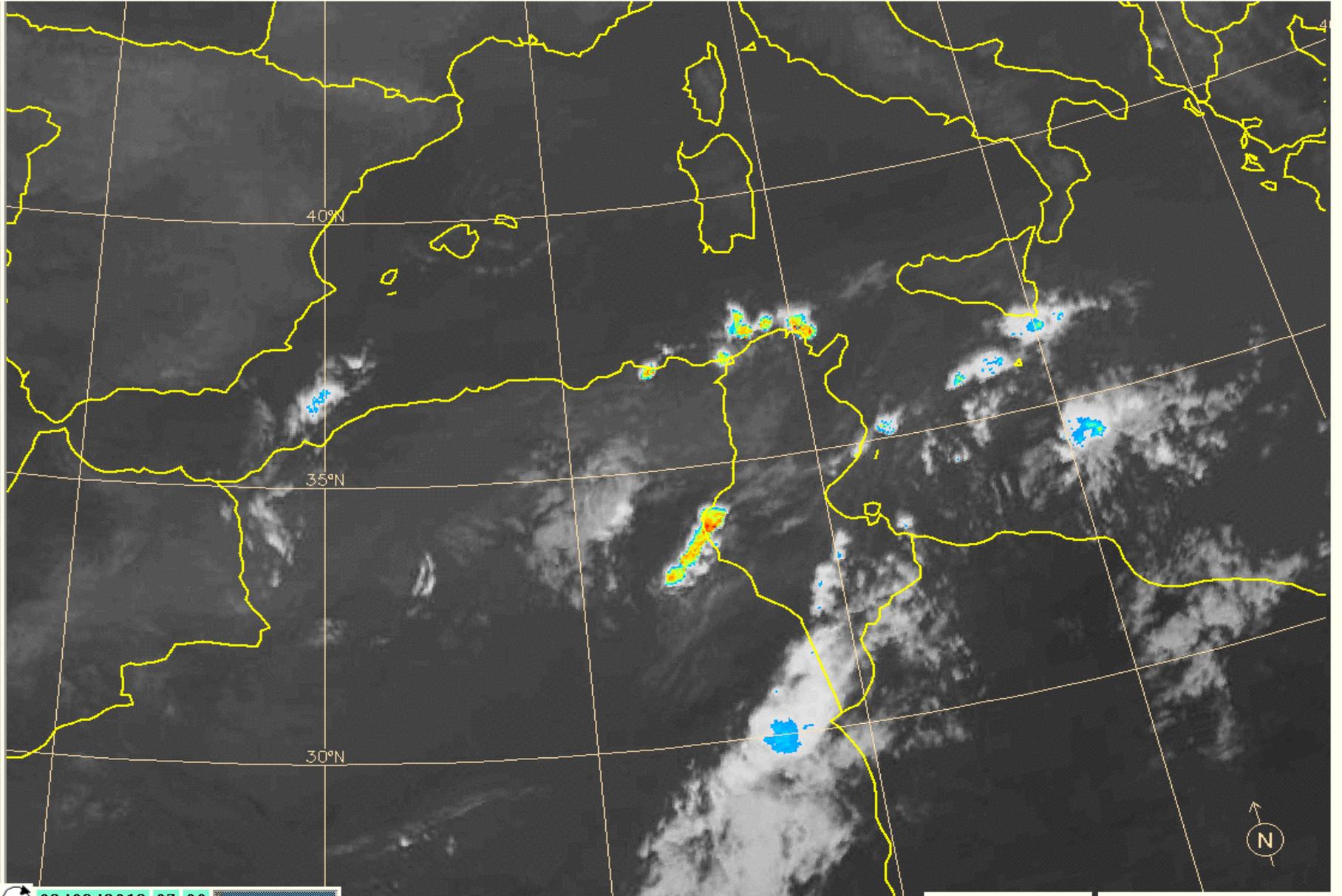
Experiences

Convective situation of 03 September 2013

- Violent Thunderstorm in Gafsa.
- Among the phenomena:
- Windspeed reaching 83 km/h in Kebili, 94 km/h in Gafsa, 115 km/h in Jerba, 108 km/h in Sfax, 86 km/h in Monastir, Sandstorm in Tozeur and Kebili
- 30 mm in 3h in Gafsa and 30 mm in Jerba of which 22 mm in 10 mn,
- 23 mm in 3h in Kebili,
- 21 mm in 3 h in Tozeur, 20 mm in Sidi Bouzid of which 8 mm in 3 mn,
- 40 mm in Mahdia, 20 mm in Kairouan,
- 45 mm in Zaghouan
- Fall of hail in places (forecasted and not observed)



Source du photo:<http://forums.infoclimat.fr/topic/18340-tunisie-meteorologie-et-climatologie/page-134>

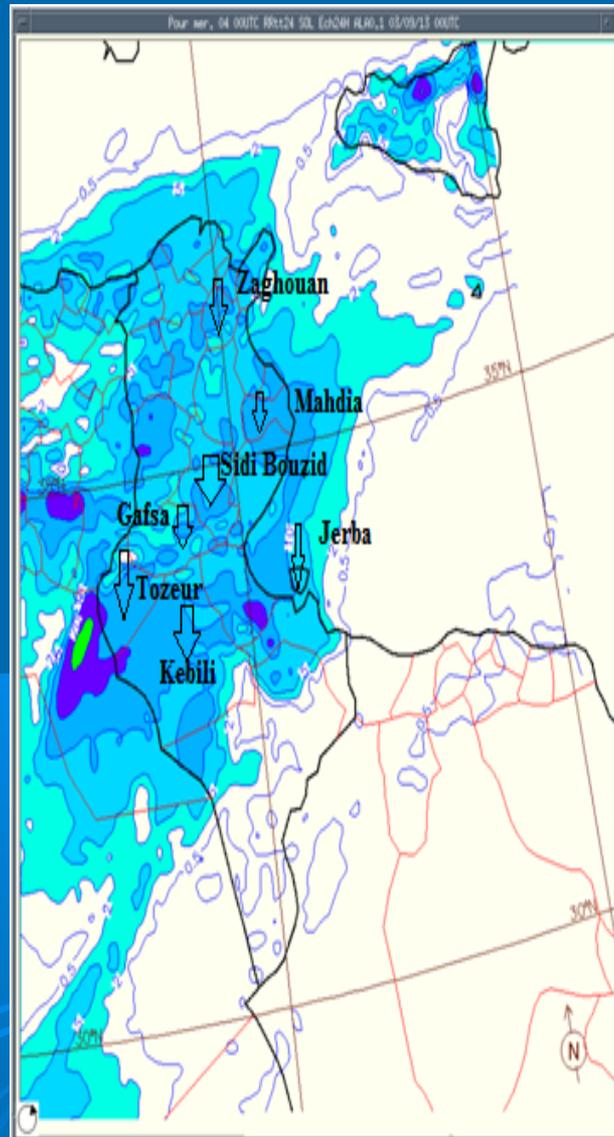
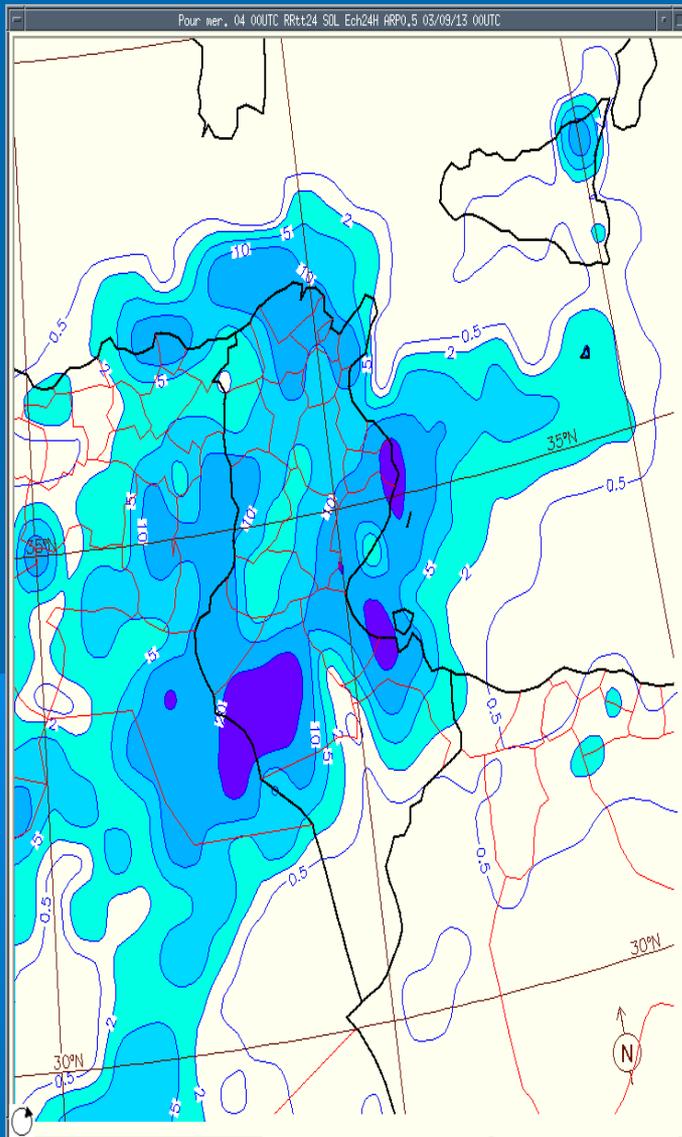


03/09/2013 07 00

14 deg C

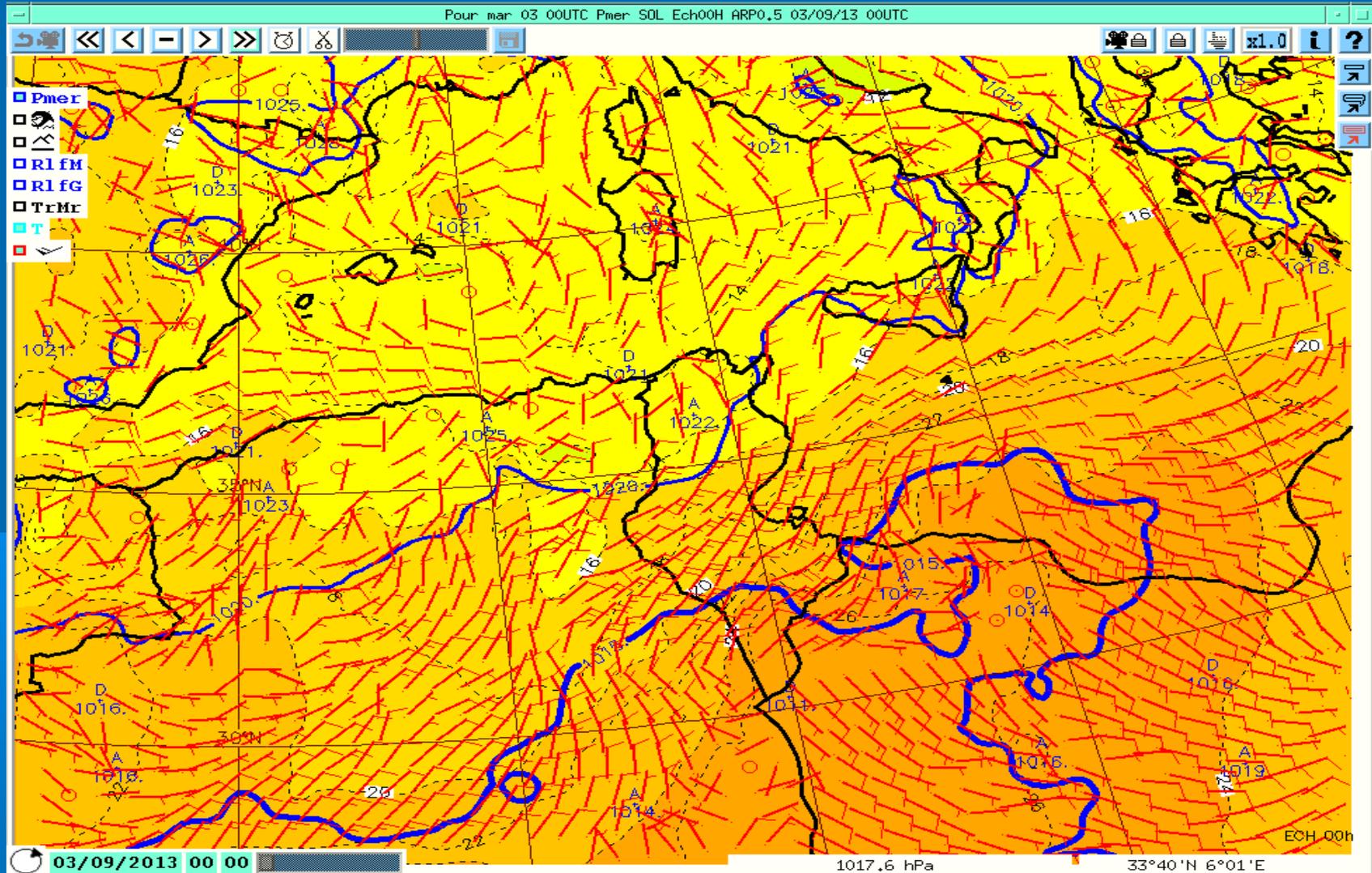
36°19'N 5°42'E

Accumulated precipitation for 24 hours forecasted by ARPEGE and ALADIN Models

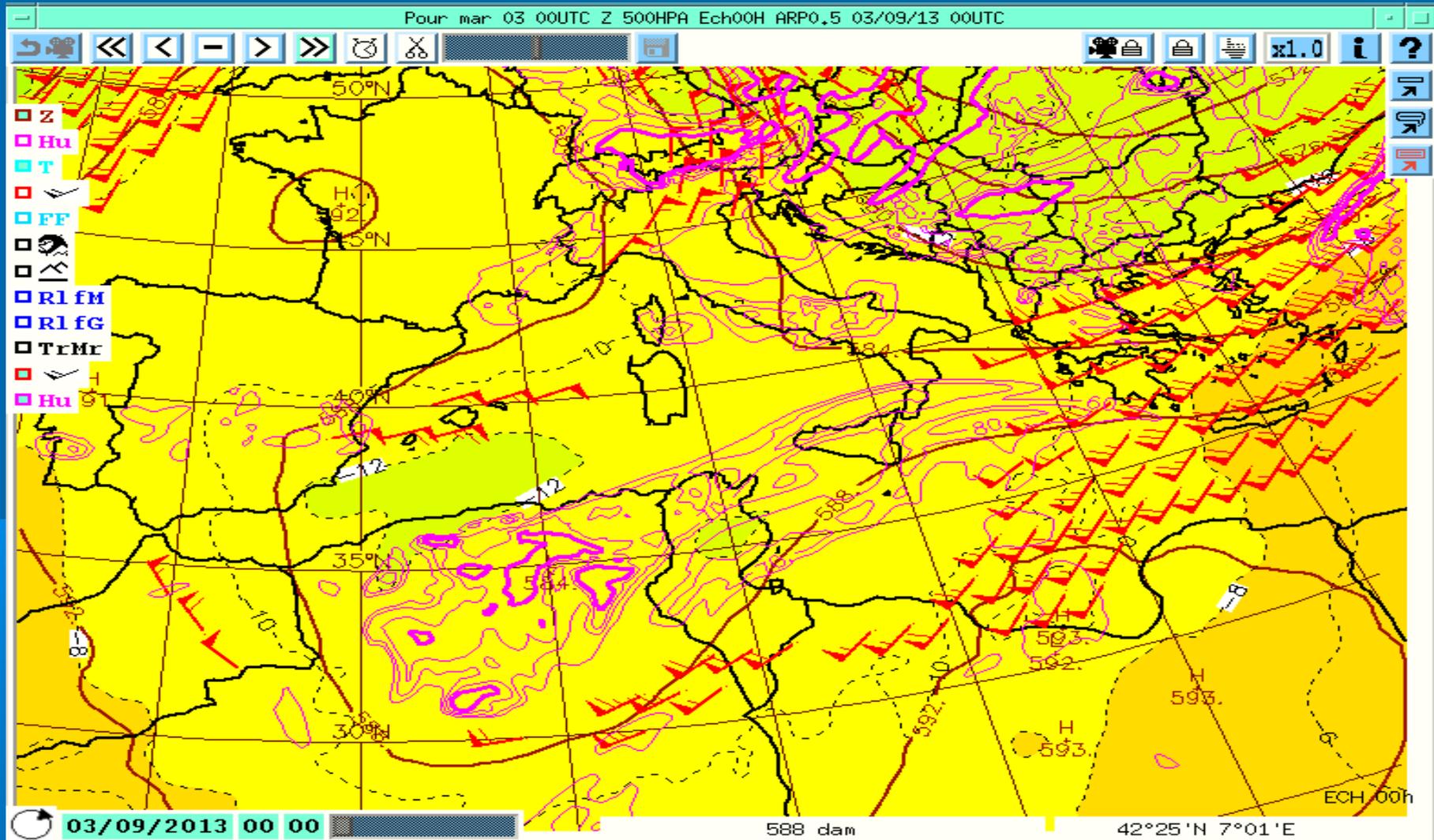


- *30 mm in 3h in Gafsa
- *30 mm in Jerba of which 22 mm in 10 mn i
- *23 mm in 3h in Kebili,
- *21 mm in 3 h in Tozeur
- *20 mm in Sidi Bouzid of which 8 mm in 3 mn,
- *40 mm in Mahdia,
- *20 mm in Kairouan,
- *45 mm in Zaghouan

P (sea level)+Wind(10 m)+T (850 hPa)

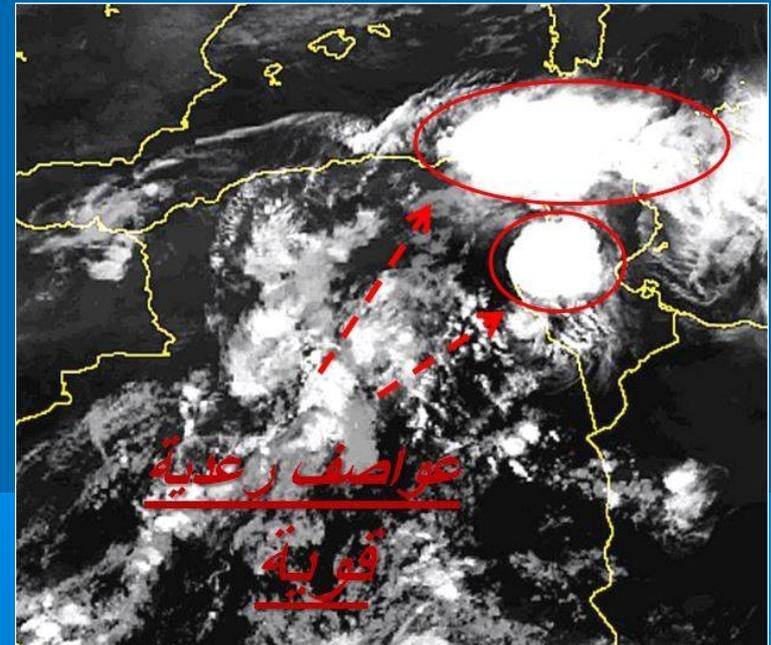


Z+T+HU (500 hPa) + Jet 1.5 PVU (50 kt)

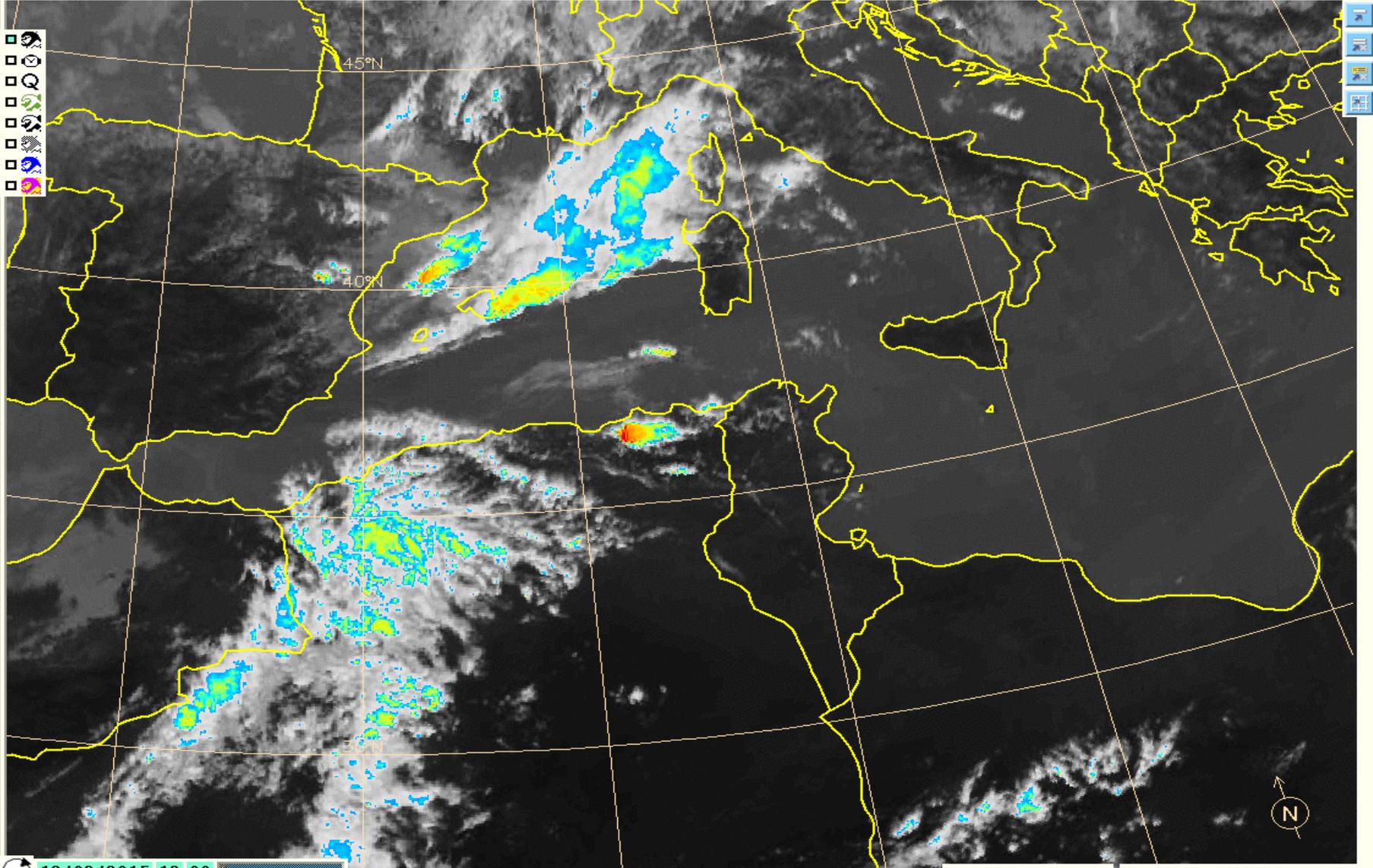


Convective situation of 18 August 2015

- 47 mm in Zaghouan of which 32 mm accumulated in 40 min
- 27 mm in Siliana of which 18 mm recorded in 10 min,
- 24 mm in Ain Drahem
- 22 mm in Kairouan of which 10 mm rained in 8 min
- 18 mm in Ennfidha Sousse
- 15 mm in Haouria
- wind speed observed is 90 km/h in Siliana,
- 86 km/h in Monastir,
- 72 km/h in Kasserine,
- 97.2 km/h in Tozeur ,
- 79.2 km/h in Kebili,



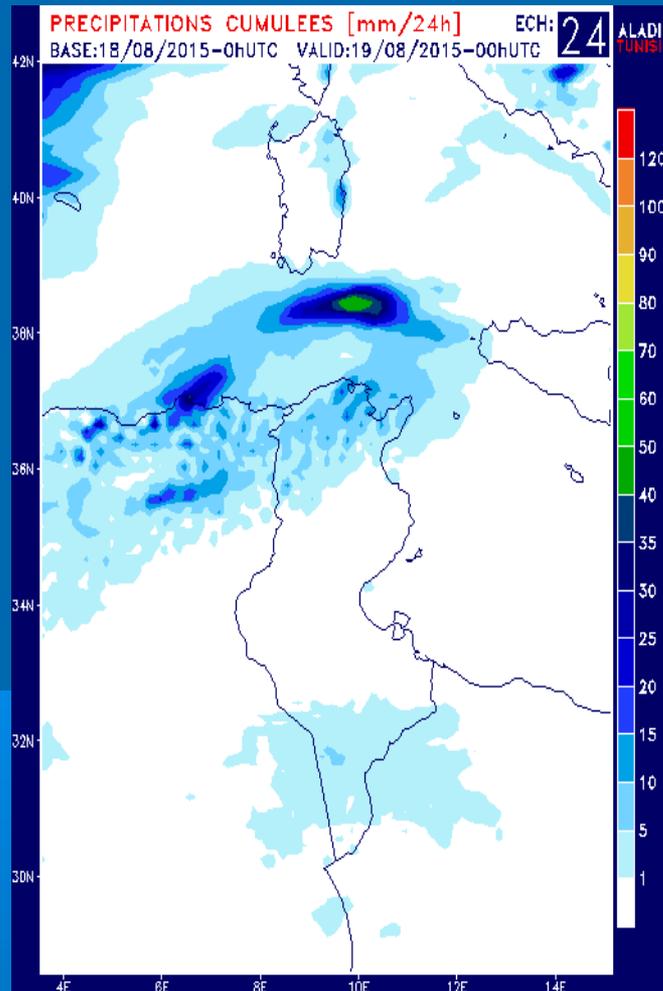
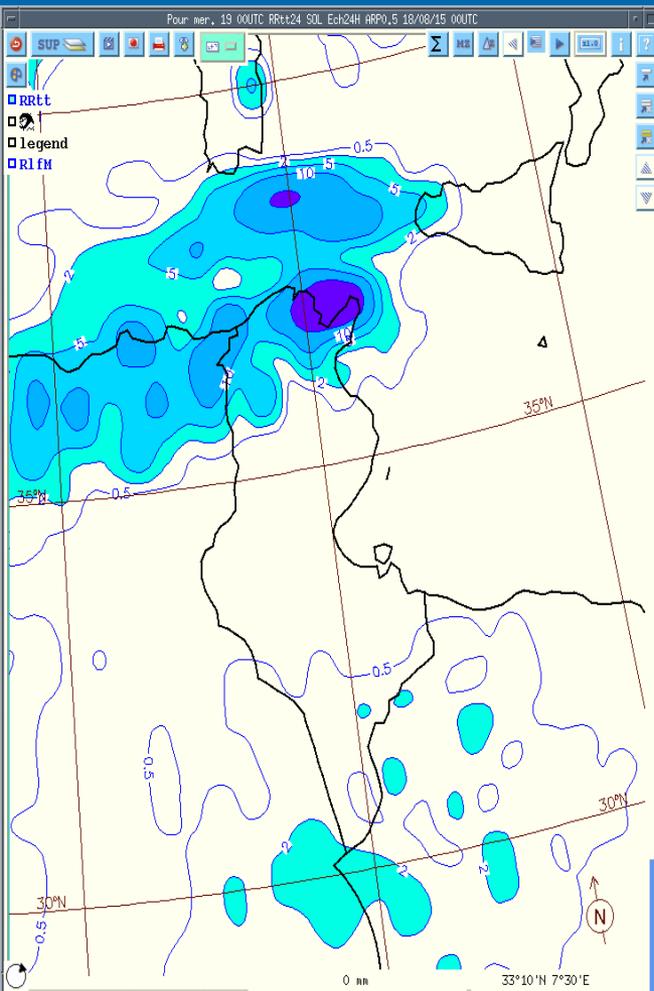
- Source photo: <http://forums.infoclimat.fr/topic/18340-tunisie-meteorologie-et-climatologie/page-169>



18/08/2015 12 00

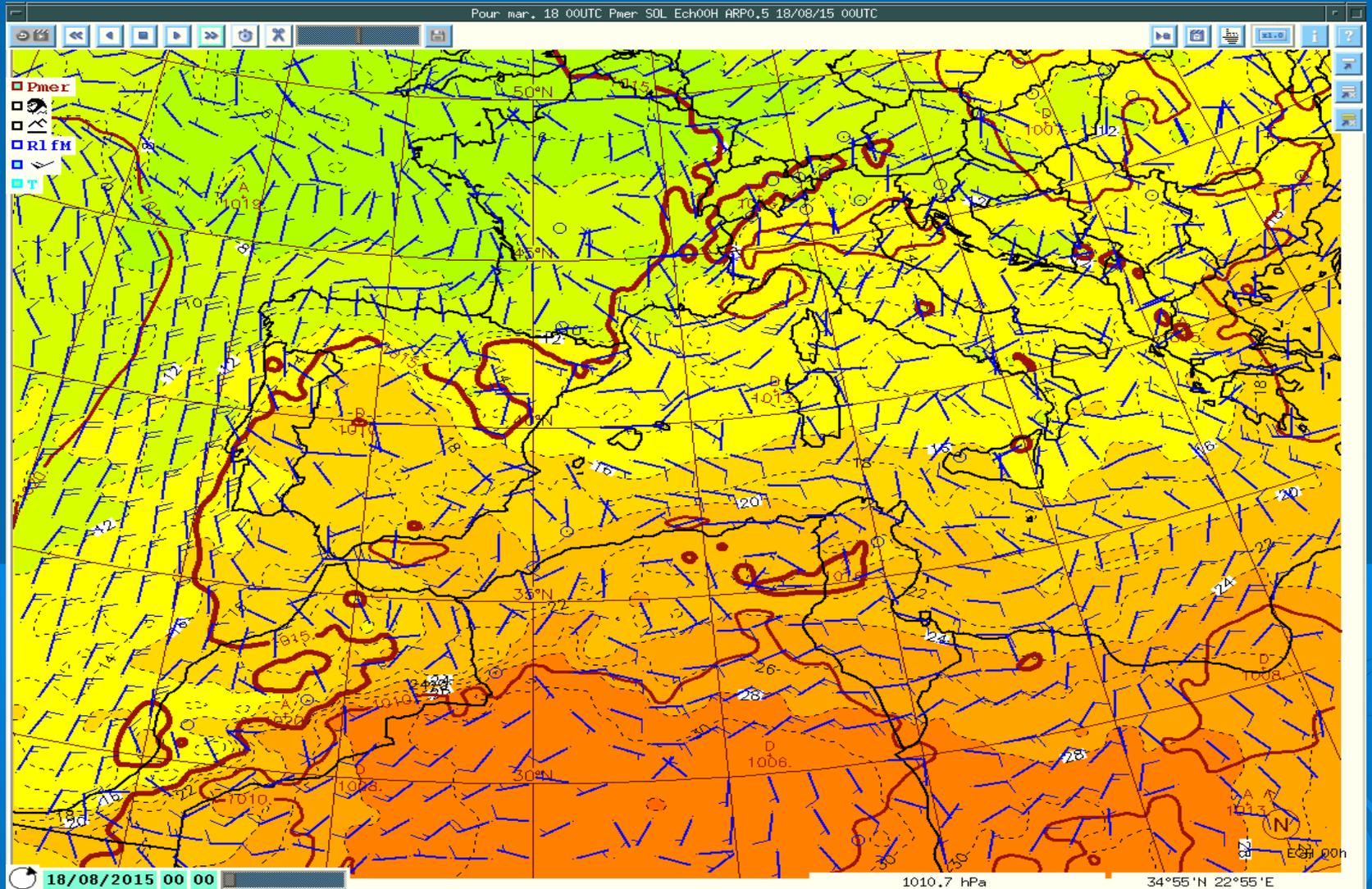
36 deg C 32°33'N 20°55'E

Accumulated precipitation forecasted by ARPEGE and ALADIN Models

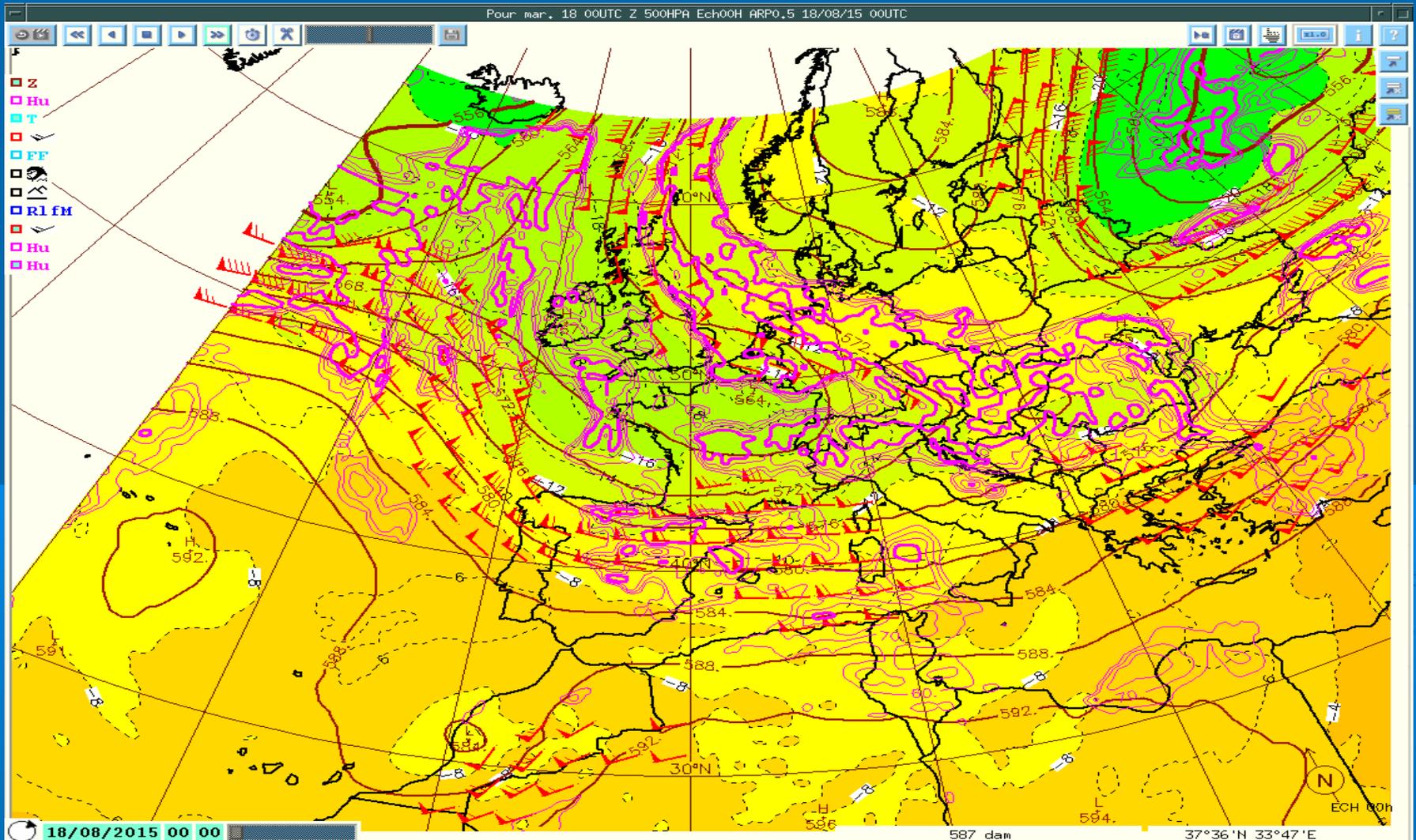


- 27 mm in Siliana
- 47 mm in Zaghouan
- 24 mm in Ain Drahem
- 22 mm in Kairouan
- 18 mm in Ennfidha Sousse
- 15 mm in Haouria (Nabeul)
- 16 mm in Jerba
- 30 mm in Gafsa
- 22 mm in Kairouan

P(sea level)+Wind (10 m)+T (850 hPa)



Z+T(500) +HU (700 hPa) + Jet 1.5 PVU (seuil 50 kt)



CHALLENGES

We use practically 3 models :

- ARPEGE to elaborate short-term forecasts.
- ALADIN to confirm or have more details in our forecasts.
- ECMWF to prepare medium-term forecasts.

We use also GFS and WRF from the internet model to make our forecast reinforced .

EXPECTATIONS

- To have more forecast models with high resolutions for Tunisia to get a credible forecast.
- A radar is a necessity and a very powerful tool to get a precise forecast.
- Statistical calibration of some variables like temperature, wind speed and sector, and rain would be a helpful tool to produce a more reliable forecast.

**THANK YOU FOR
YOUR
ATTENTION**