



Étude d'Événements Météorologiques Intenses en Corse

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M1 SOAC

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Pont vers Aiti (Haute Corse), le 24/11/2016

Introduction

- Laboratoire d'Aérodologie (Toulouse)
- Equipe AOC (Atmosphère Océan et Couplage)
 - 20 permanents + 10 visiteurs
- 3 phénomènes étudiés
 - 1-2 octobre 2015 : Médicane
 - 14 octobre 2016 : Activité Electrique
 - 24 novembre 2016 : High Precipitation Event (HPE)



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Comment bien simuler cet événement?

Plan

- Introduction
- Cas du 24 Novembre 2016
 - Situation météorologique observée
 - Simulations
 - Résultats - Analyse
- Conclusion

Jeudi 24 Novembre 2016



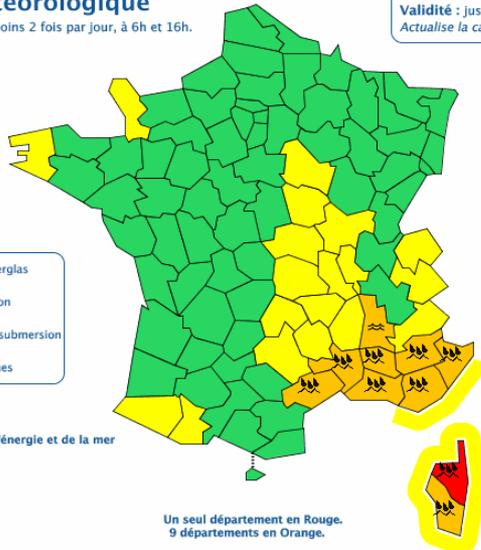
Vigilance météorologique

La carte est actualisée au moins 2 fois par jour, à 6h et 16h.

Diffusion : le Jeudi 24 novembre 2016 à 11h30
Validité : jusqu'au vendredi 25 novembre 2016 à 06h00
Actualise la carte du jeudi 24 novembre 2016 à 10h07

- Une vigilance absolue s'impose des phénomènes dangereux d'intensité exceptionnelle sont prévus...
- Soyez très vigilant, des phénomènes dangereux sont prévus ...
- Soyez attentif si vous pratiquez des activités sensibles au risque météorologique ...
- Pas de vigilance particulière.

Les vigilances pluie-inondation et inondation sont élaborées avec le réseau Vigicrues du Ministère de l'environnement, de l'énergie et de la mer



Un seul département en Rouge.
9 départements en Orange.

Consultez le [bulletin national](#)

L'épisode pluvio-orageux très actif en cours sur les régions méditerranéennes se poursuit aujourd'hui et la nuit prochaine : cumuls de précipitations très importants attendus notamment en Corse, avec risque de crues

Cliquez sur la carte pour lire les [bulletins régionaux](#)

Conseils des pouvoirs publics :
 Précipitations/Rouge – Informez-vous (radio, etc.), évitez tout déplacement et restez chez vous. – Conformez-vous aux consignes des pouvoirs publics. – Respectez la signalisation routière mise en place. – Ne vous engagez en aucun cas, à pied ou en voiture, sur une voie immergée ou à proximité d'un cours d'eau.
 Crues/Orange – Renseignez-vous avant d'entreprendre vos déplacements et soyez très prudents. Respectez, en particulier, les déviations mises en place. – Ne vous engagez en aucun cas, à pied ou en voiture, sur une voie immergée.





Situation météorologique observée

Situation météorologique observée

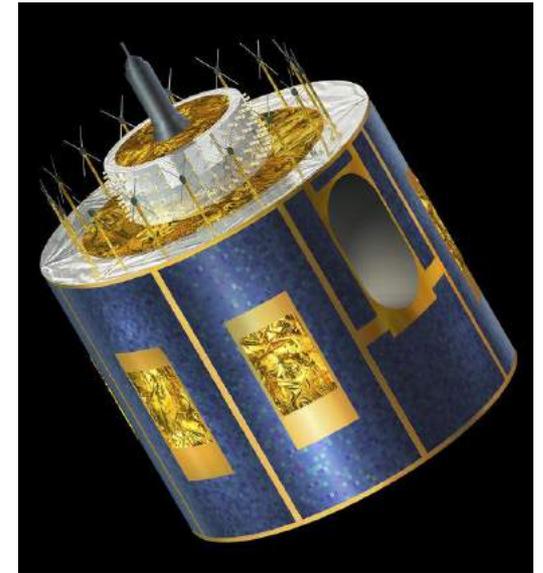
Outils pour l'observation



Saetta

Météosat 10 (IR)

Radar et Pluviomètres
MétéoFrance

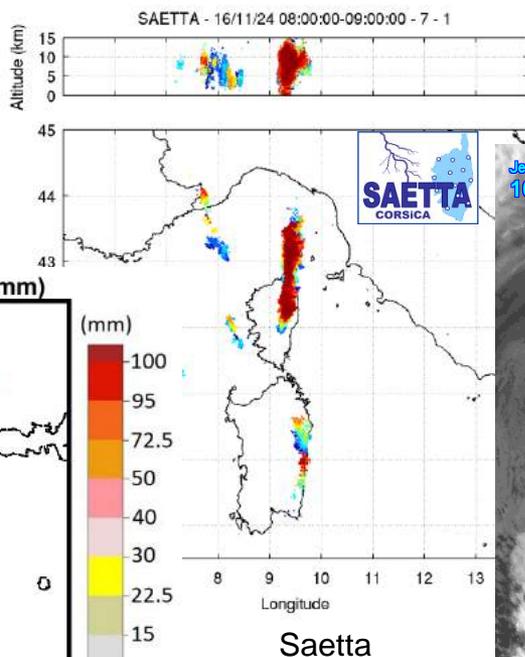
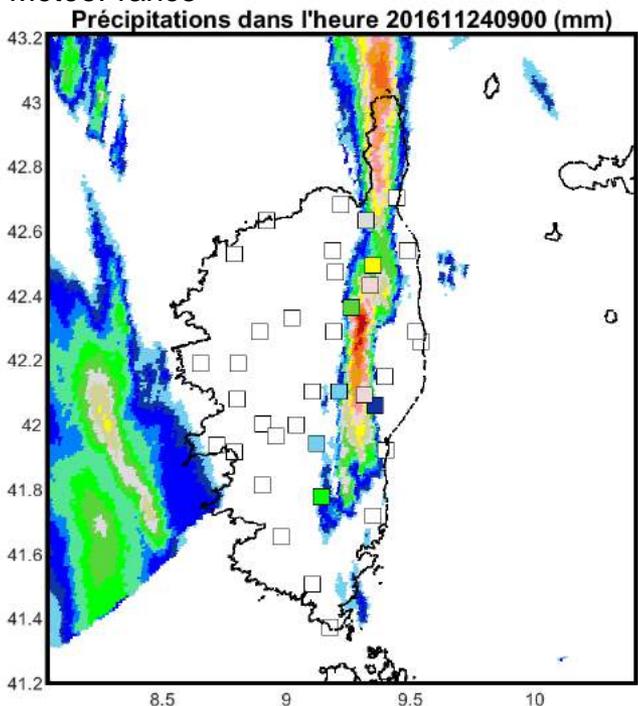


Bilan de la journée

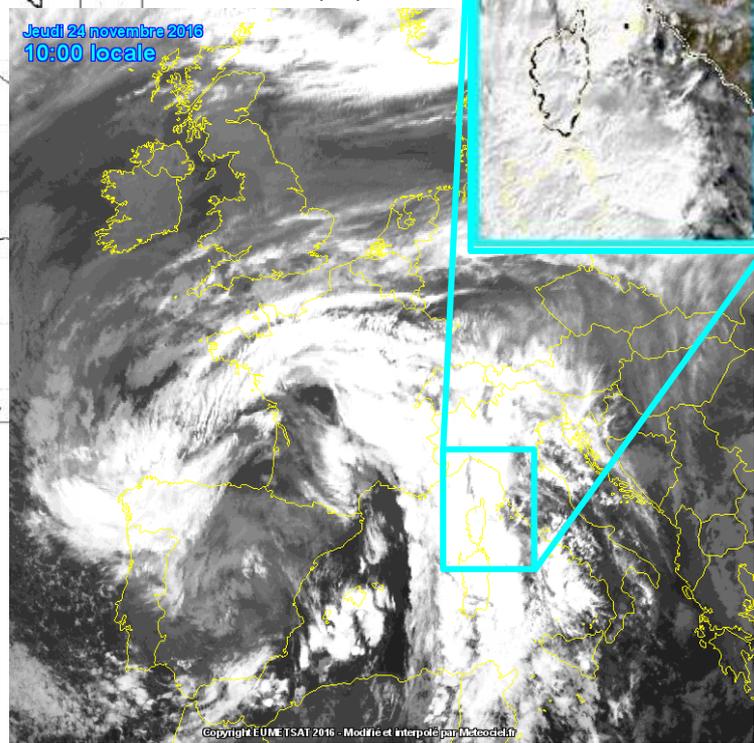
- 0h-11h : Cumulonimbus sur la Corse

9h UTC

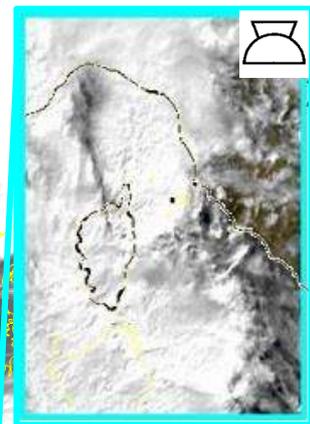
Radar et Pluviomètres
MétéoFrance



Météosat 10 (IR)



Météosat 10 (VIS)

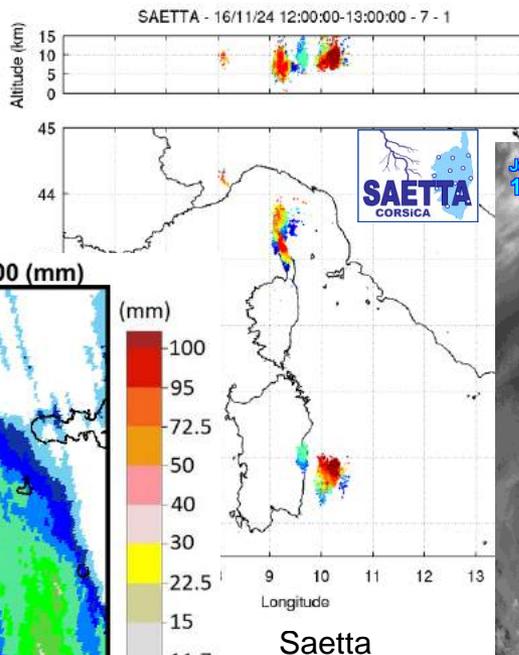
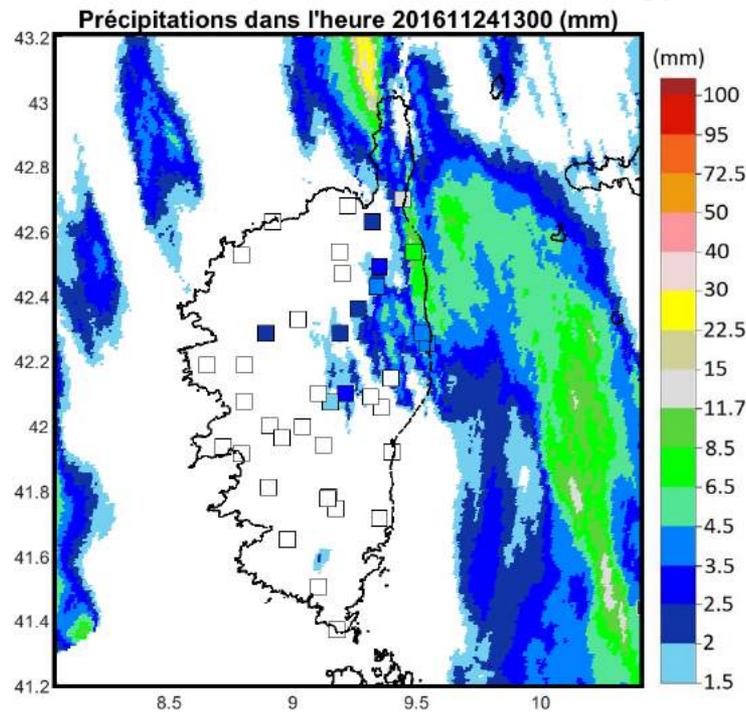


Bilan de la journée

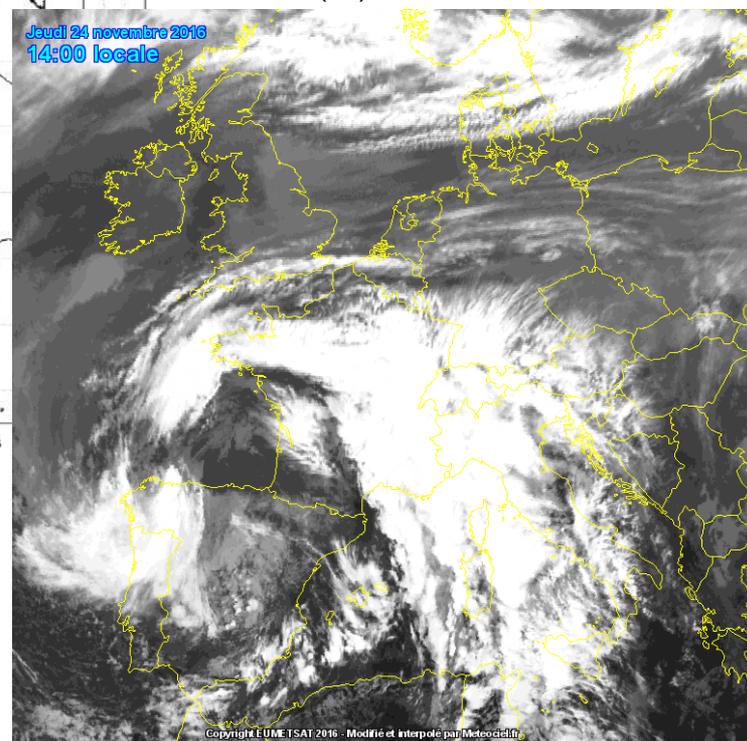
- 10h-17h : avant du front froid

13h UTC

Radar et Pluviomètres
MétéoFrance



Météosat 10 (IR)

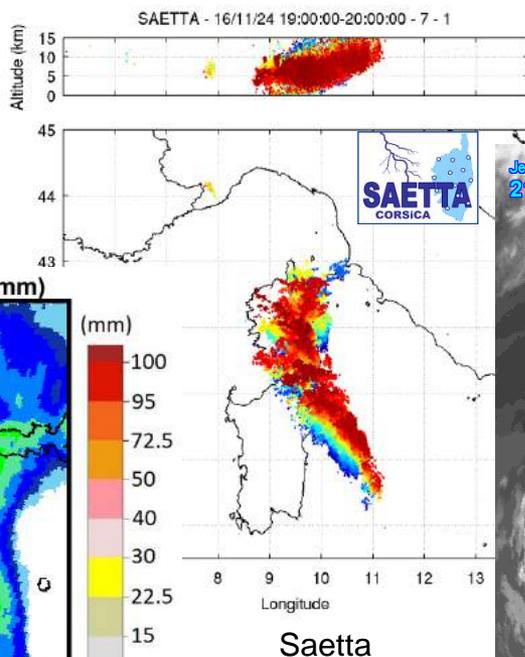
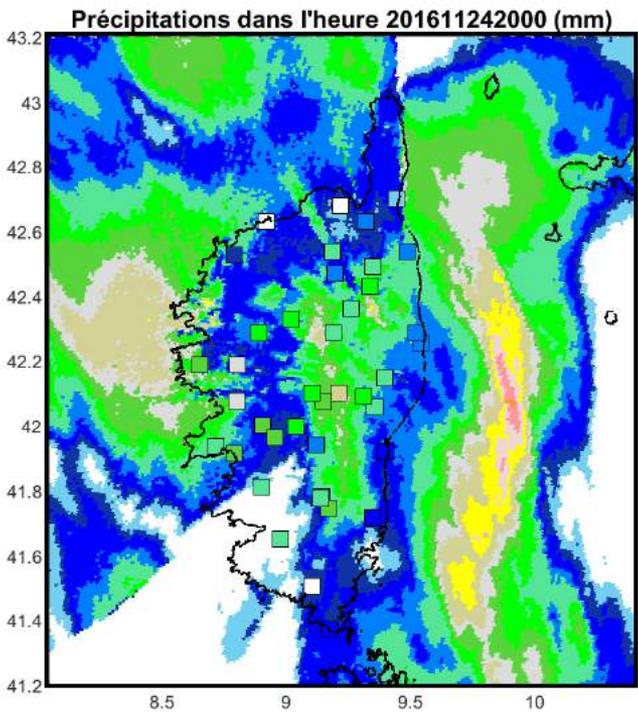


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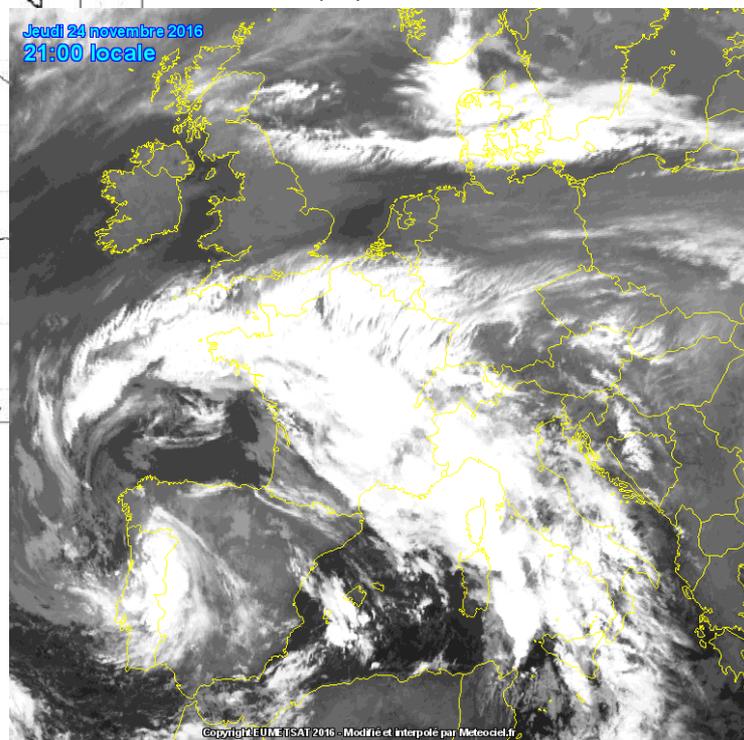
- 18h-21h : ligne de grain

20h UTC

Radar et Pluviomètres
MétéoFrance



Météosat 10 (IR)



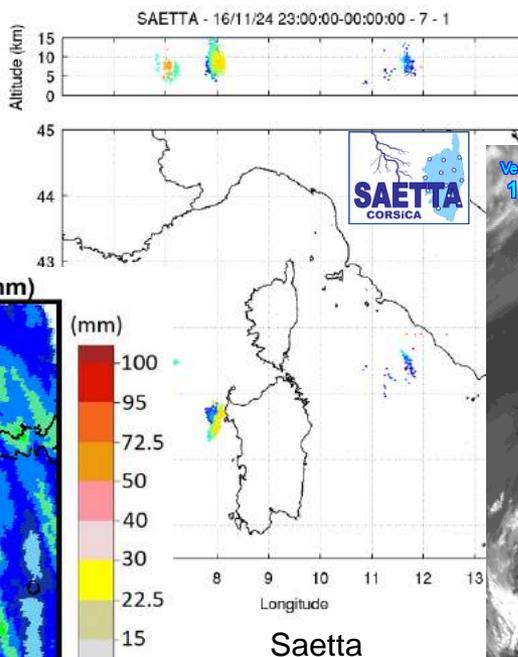
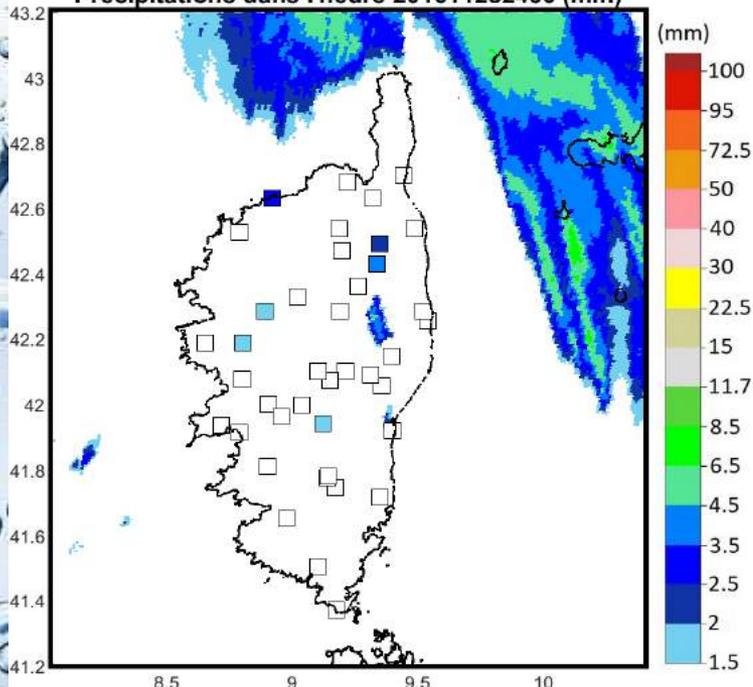
Bilan de la journée

- 22h-24h : arrière du front froid

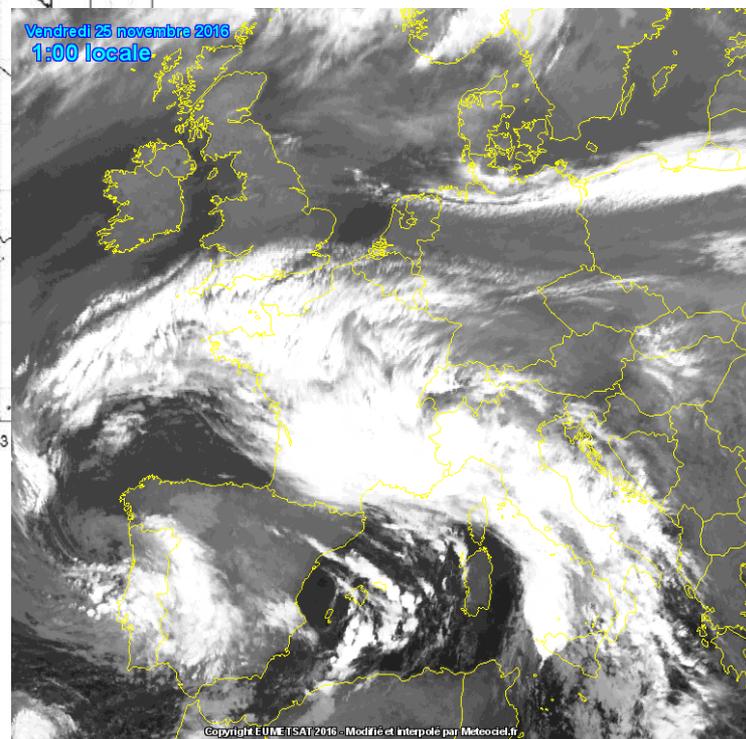
24h UTC

Radar et Pluviomètres
MétéoFrance

Précipitations dans l'heure 201611252400 (mm)



Météosat 10 (IR)

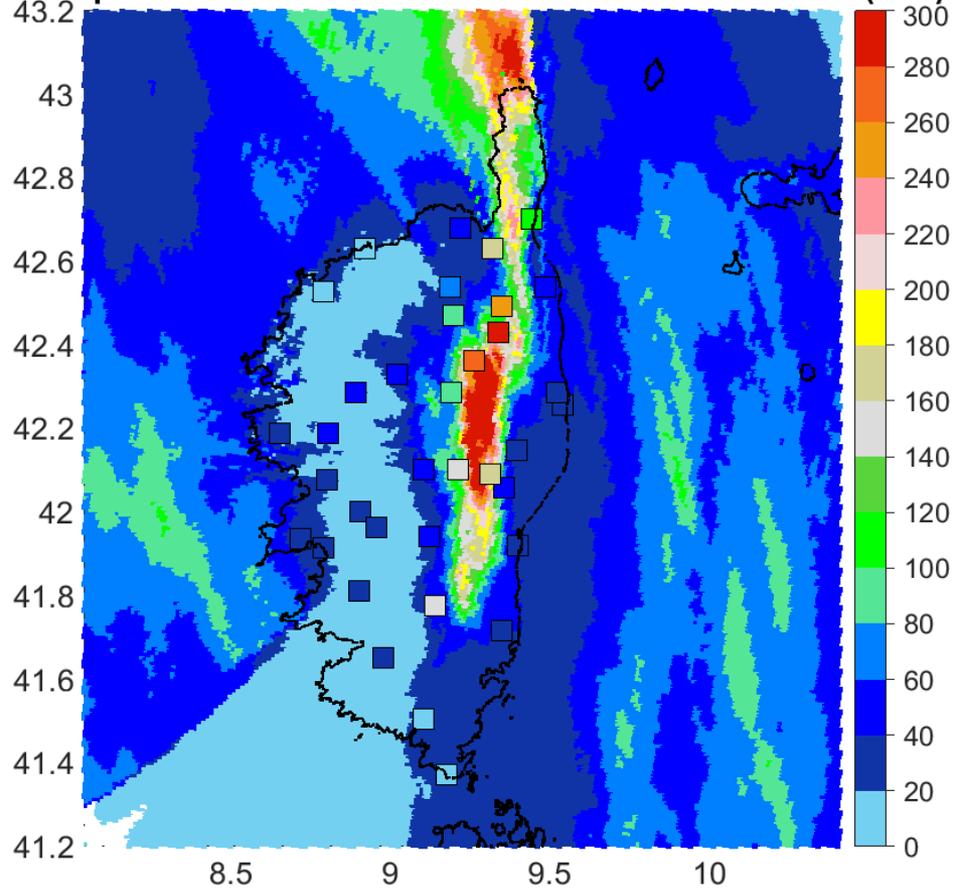


Situation météorologique observée

Cumul sur 24h

Radar et Pluviomètres
MétéoFrance

Précipitations cumulees sur 24h le 24 novembre 2016 (mm)



Simulations

Outils et données utilisés

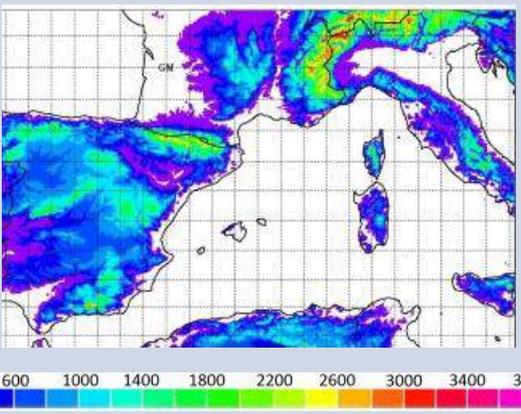
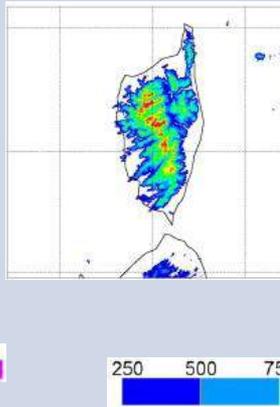
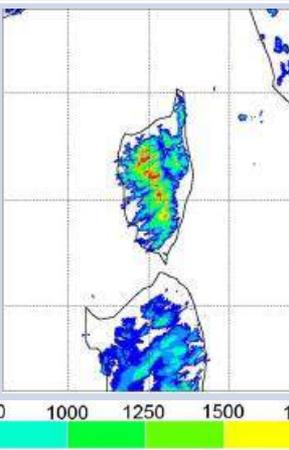
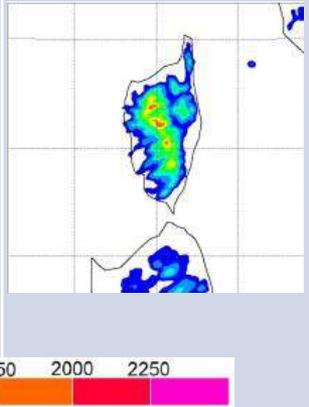
- Meso-NH
- Ada de l'IDRIS
- Initialisée avec les analyses ECMWF



Ada

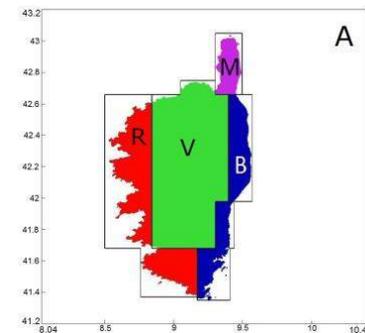


Simulations

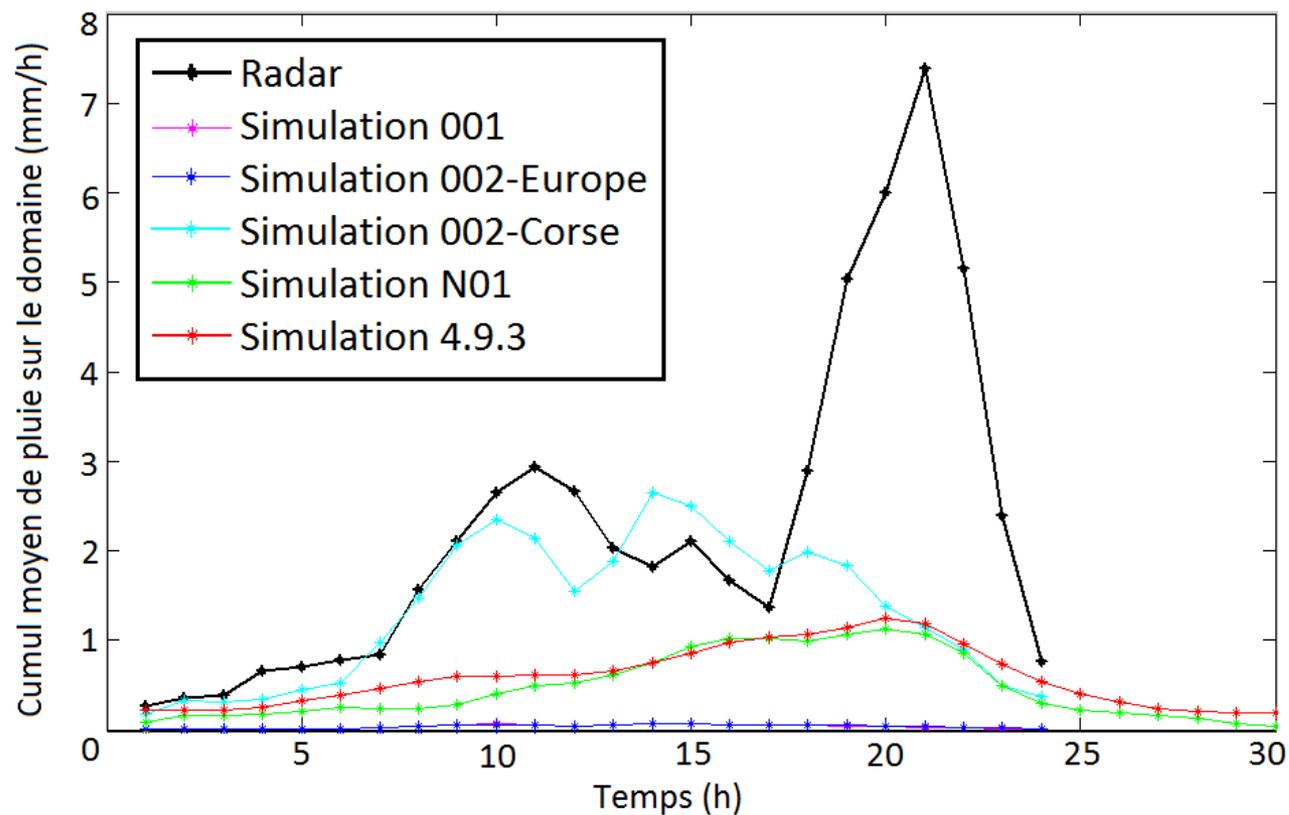
Simulation	001	Imbrication 002-Europe et 002-Corse		N01	4.9.3
Version Meso-NH	MNH v5.1.2	MNH v5.1.2	MNH v5.1.2	MNH v5.1.2	 MNH v4.9.3
Domaine	35.6°N, 7.22°O à 46.8°N, 15.22°E	35.6°N, 7.22°O à 46.8°N, 15.22°E	41.0°N, 7.42°E à 43.2°N, 10.41°E	40.2°N, 7.19°E à 43.8°N, 10.81°E	40.6°N, 7.20°E à 43.3°N, 10.80°E
Orographie (m)					
Résolution spatiale horizontale	2.5 km	2.5 km	500 m	500m	2.5 km

Résultats et Analyse

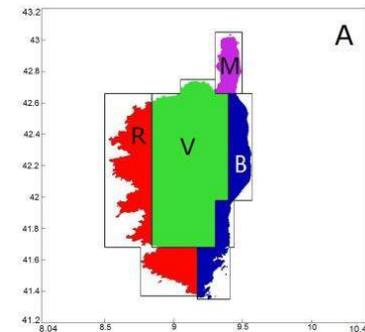
Résultats et Analyses



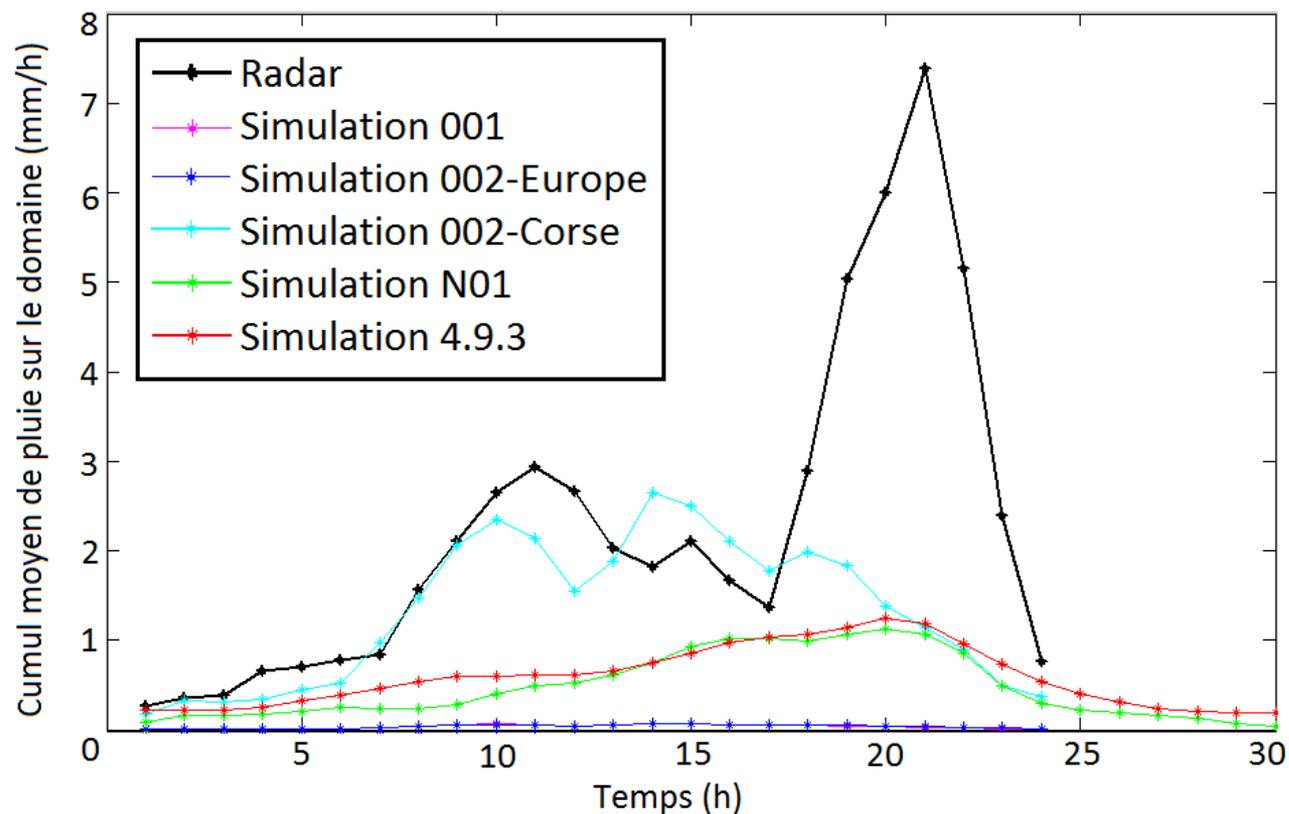
Cumul surfacique sur une heure des précipitations sur le domaine A



Résultats et Analyses

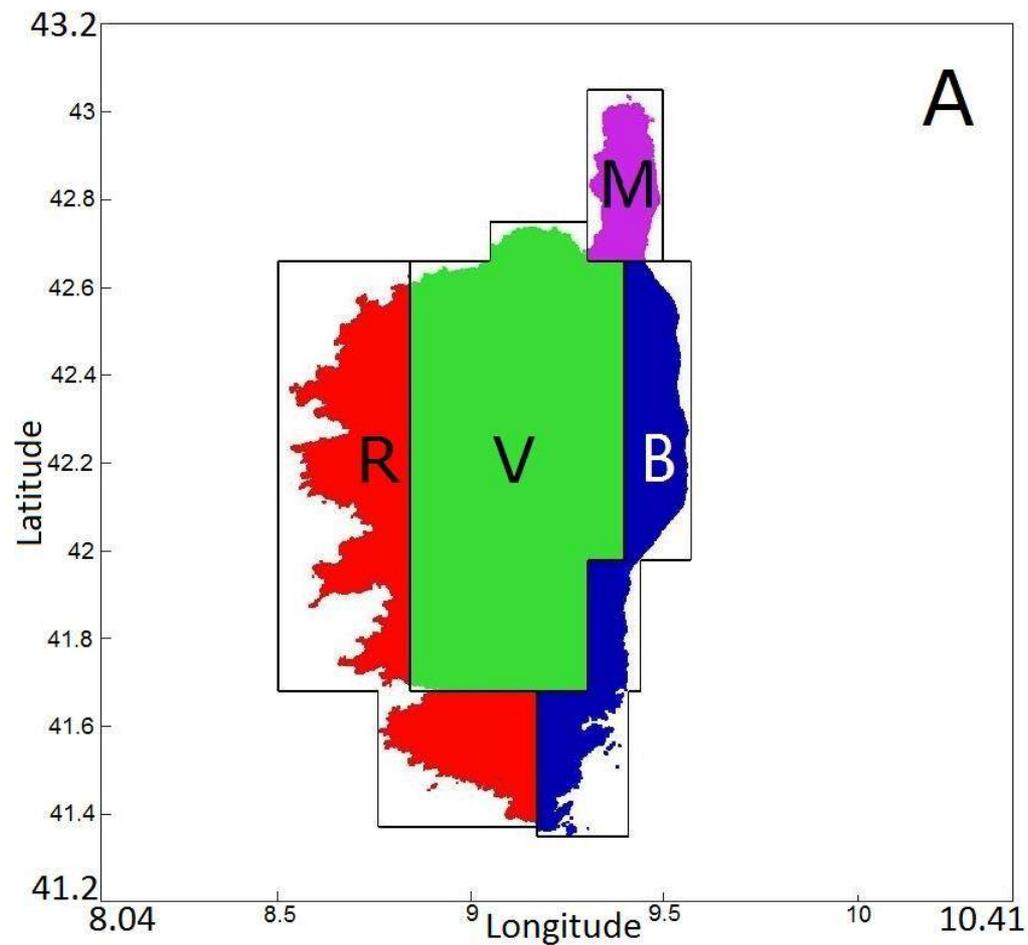


Cumul surfacique sur une heure des précipitations sur le domaine A



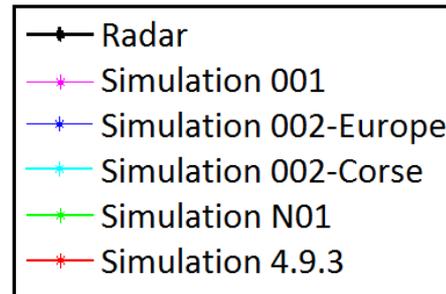
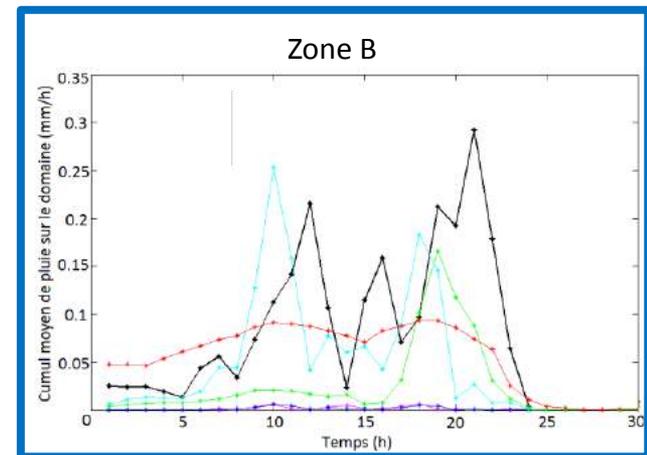
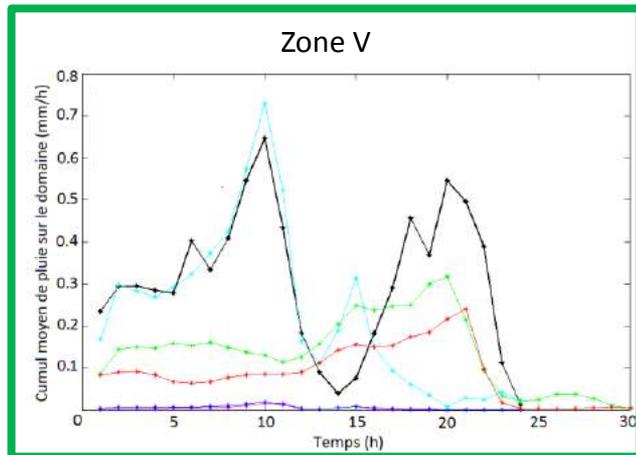
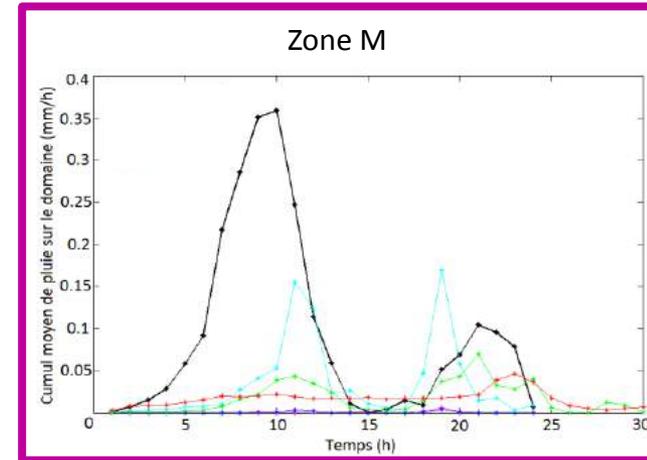
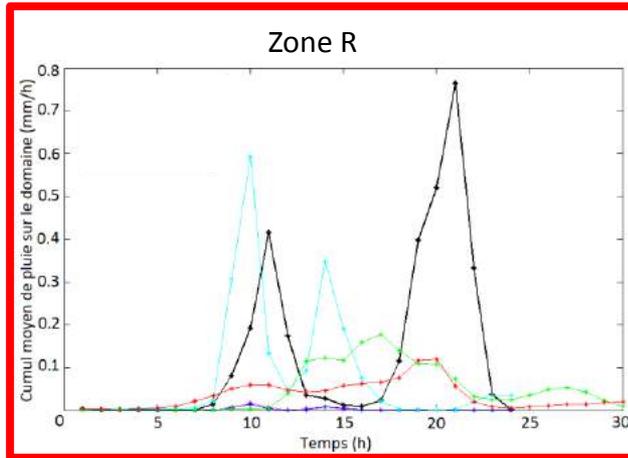
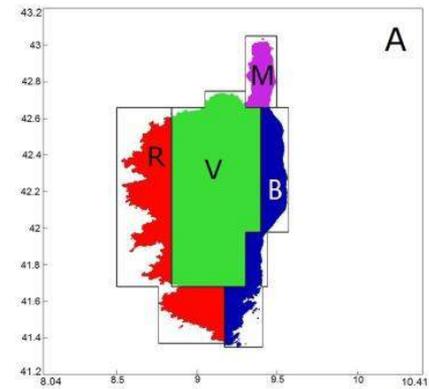
➔ 002-Corse

Résultats et Analyses



Résultats et Analyses

Precipitations surfaciques sur 1 heure



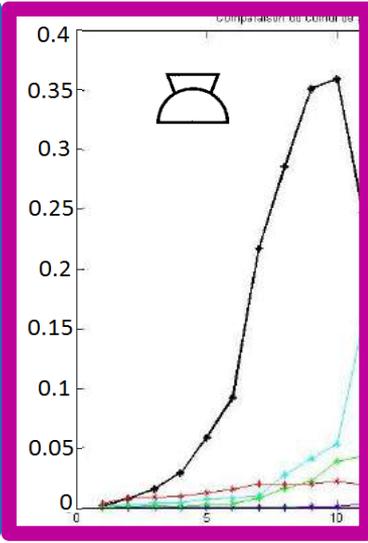
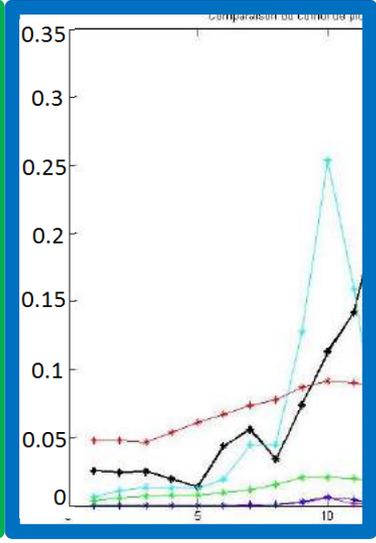
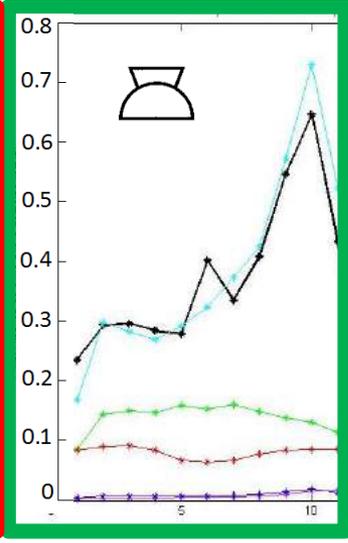
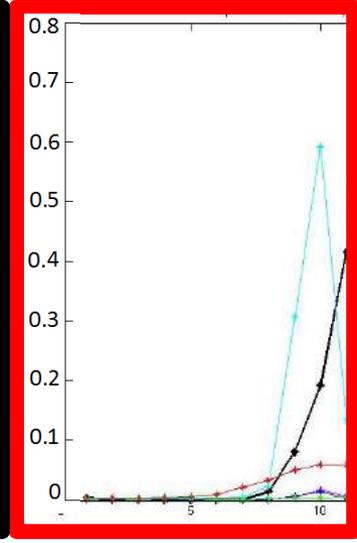
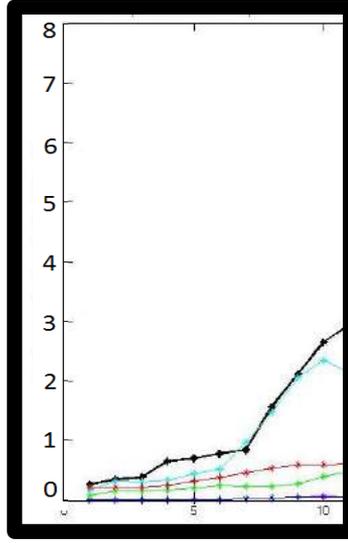
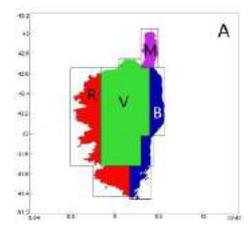


Détails des épisodes pluvieux

0-10h



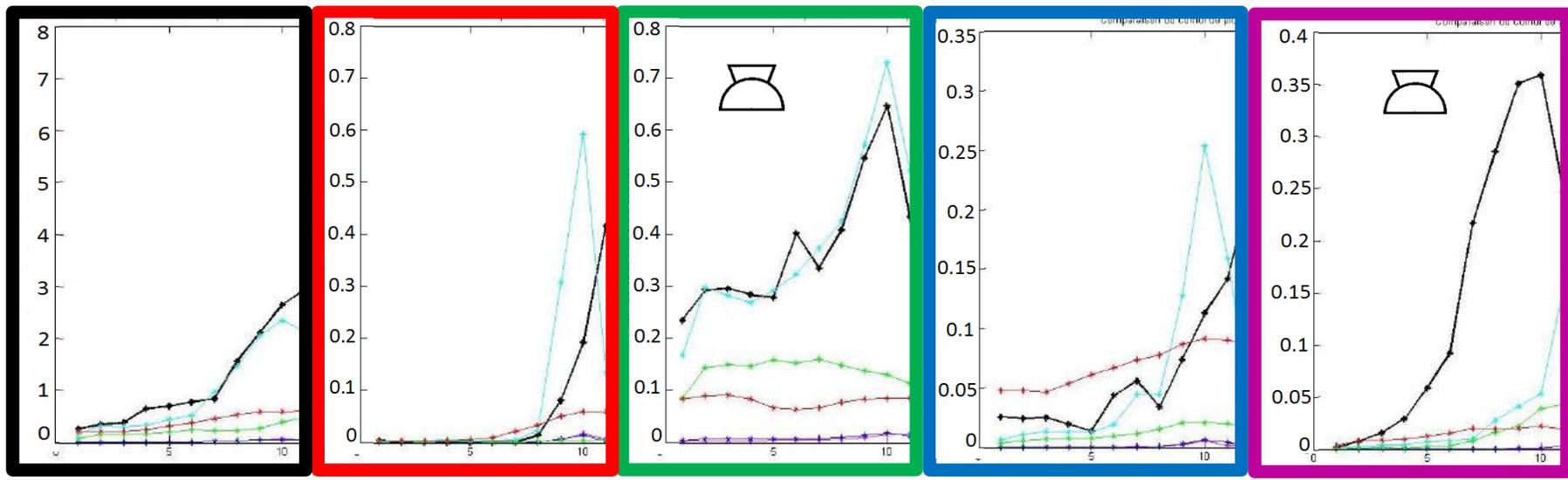
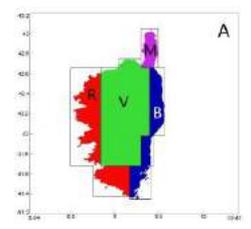
- Radar
- ◆— Simulation 001
- ◆— Simulation 002-Europe
- ◆— Simulation 002-Corse
- ◆— Simulation N01
- ◆— Simulation 4.9.3



0-10h



- Radar
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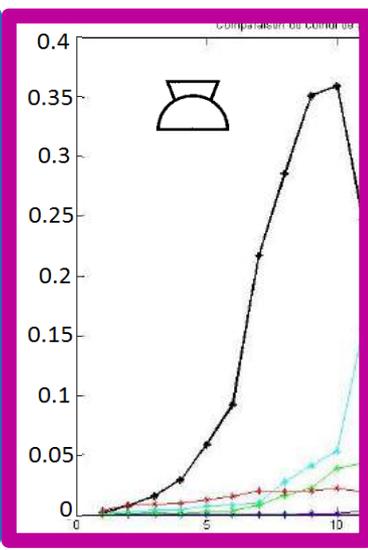
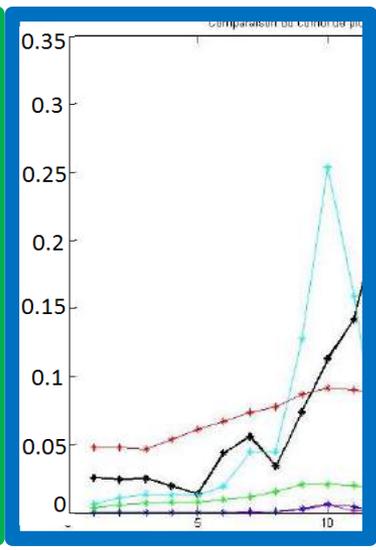
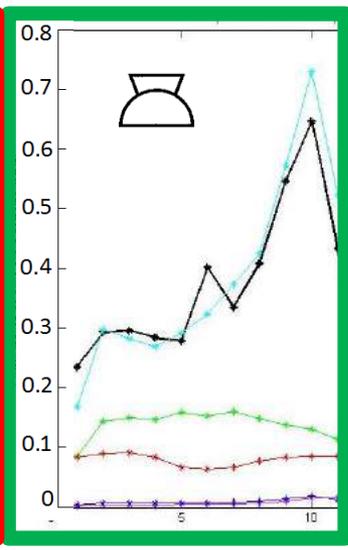
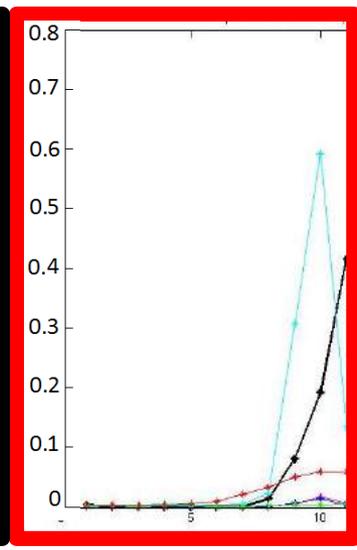
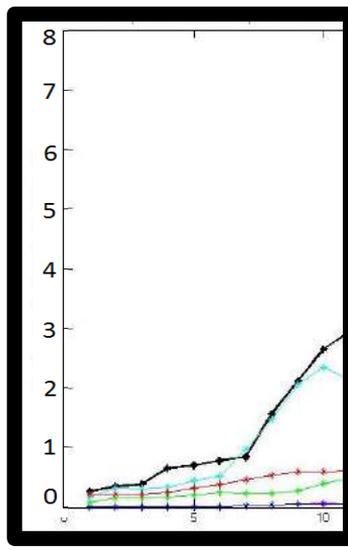
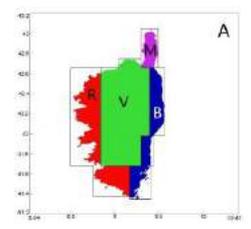


→ Aucune pluie

0-10h



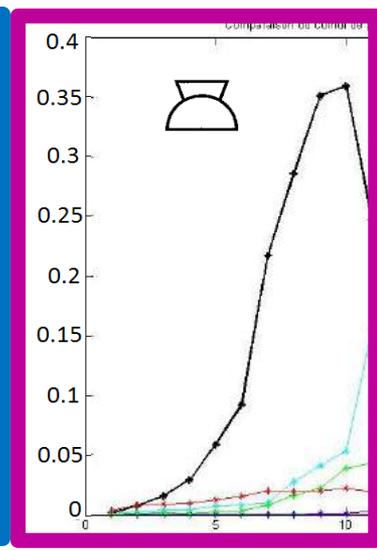
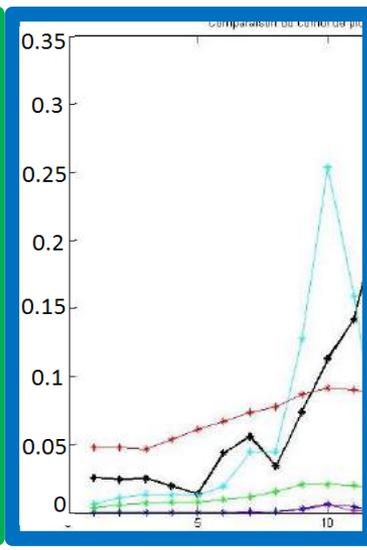
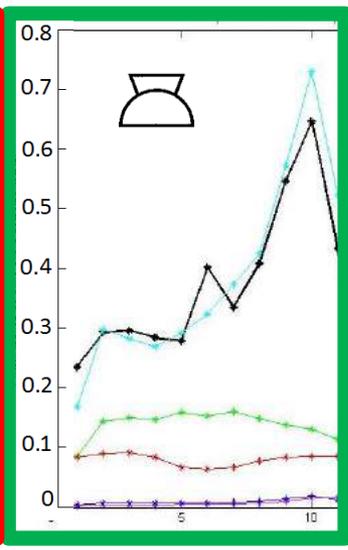
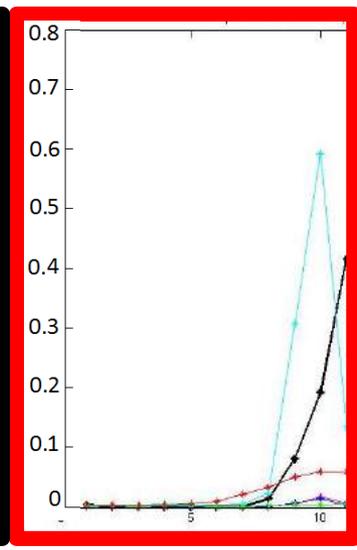
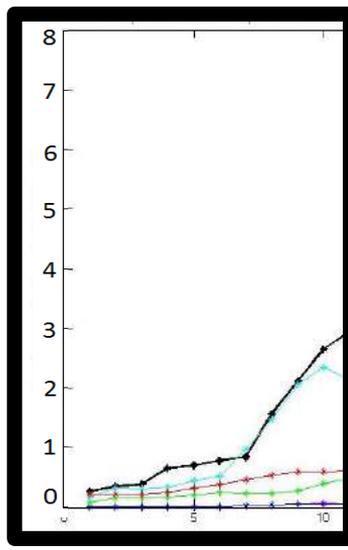
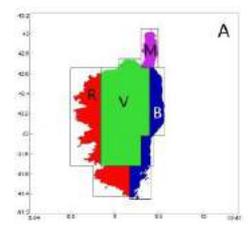
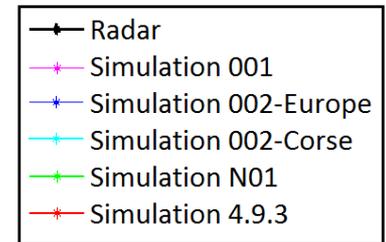
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→ Aucune pluie

→ 002-Corse

0-10h

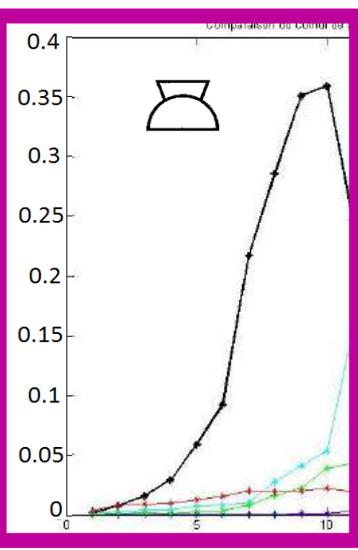
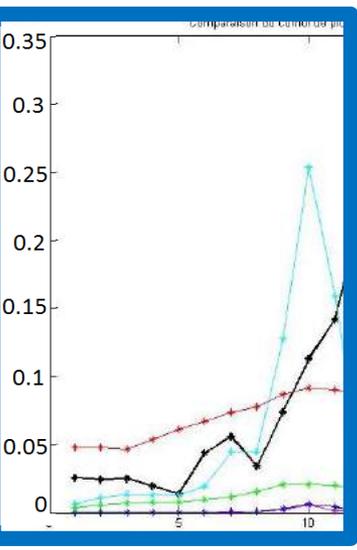
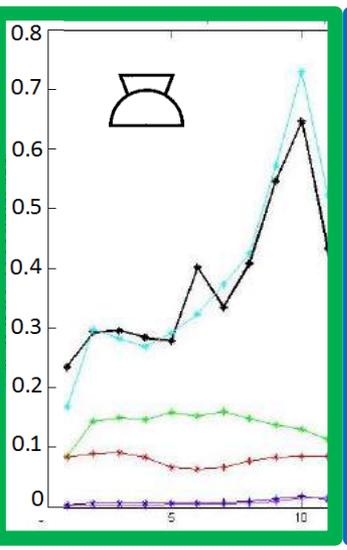
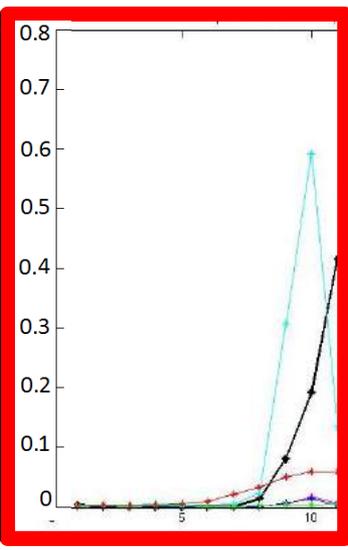
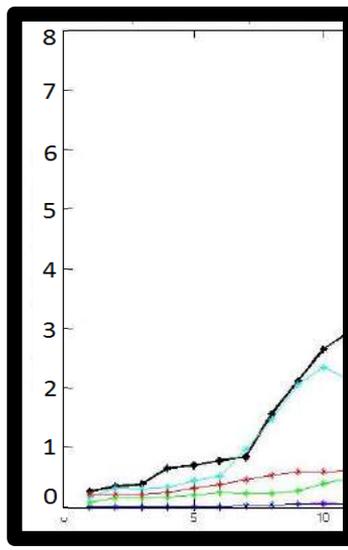
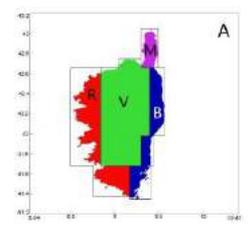



-  Aucune pluie
-  002-Corse
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0-10h

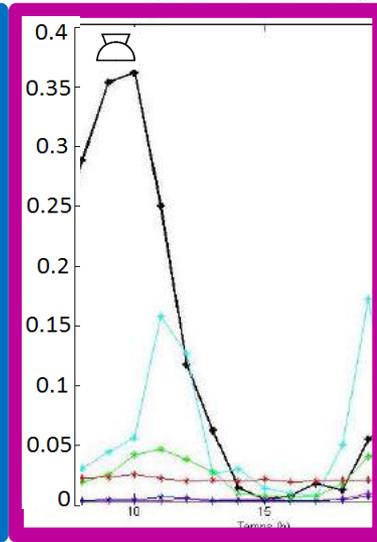
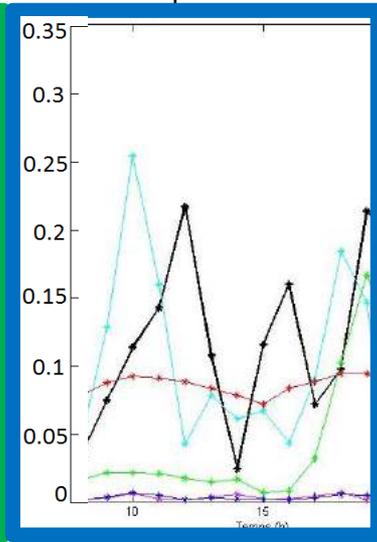
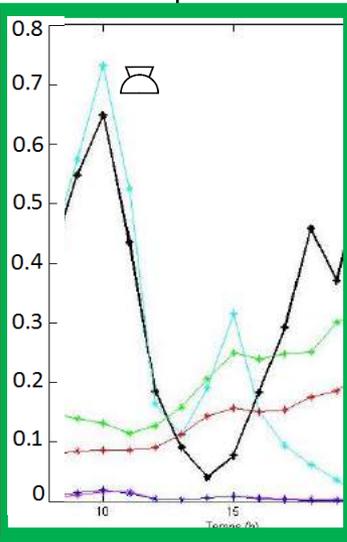
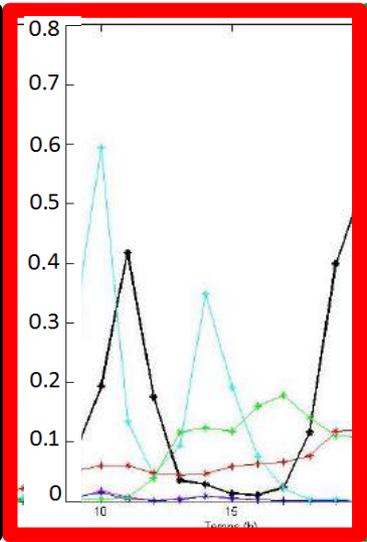
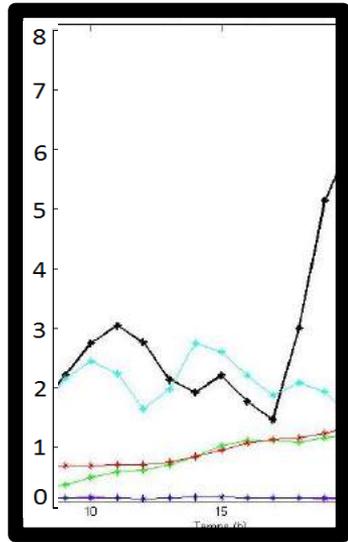
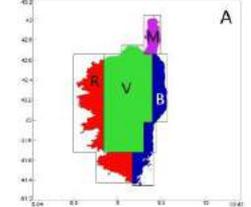


- Radar
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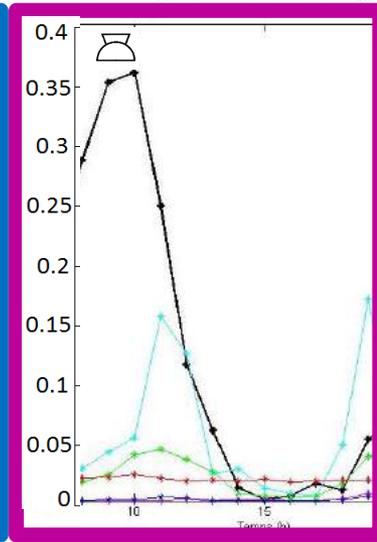
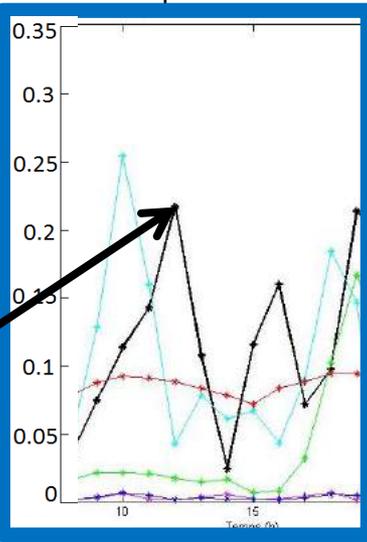
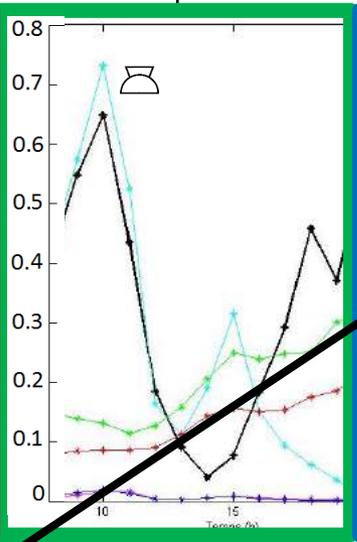
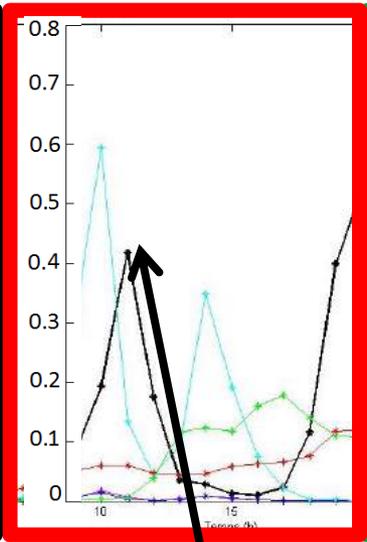
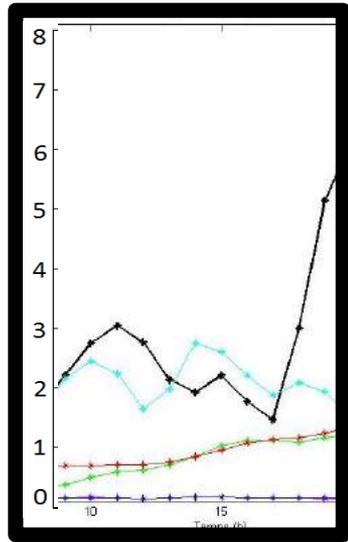
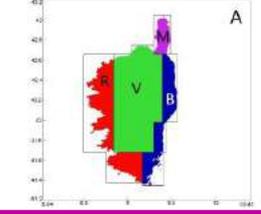


- ➔ Aucune pluie
- ➔ 002-Corse
- ➔ 002-Corse
- ➔ 002-Corse

- Radar
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- ◆— Simulation N01
- ◆— Simulation 4.9.3

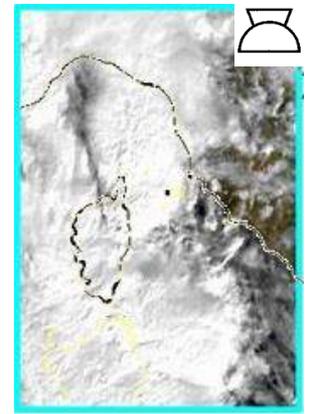


- Radar
- ◆— Simulation 001
- ◆— Simulation 002-Europe
- ◆— Simulation 002-Corse
- ◆— Simulation N01
- ◆— Simulation 4.9.3



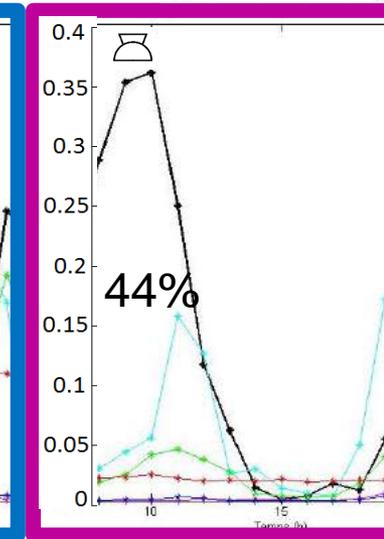
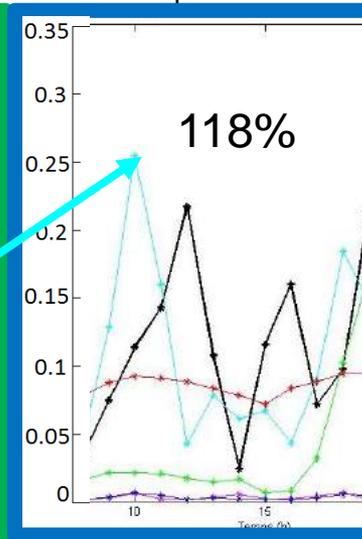
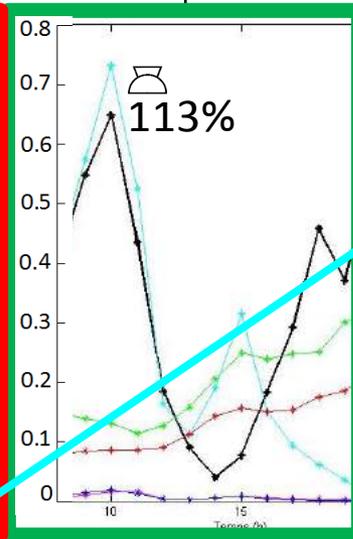
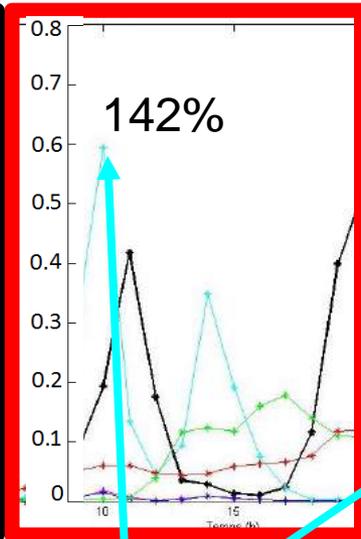
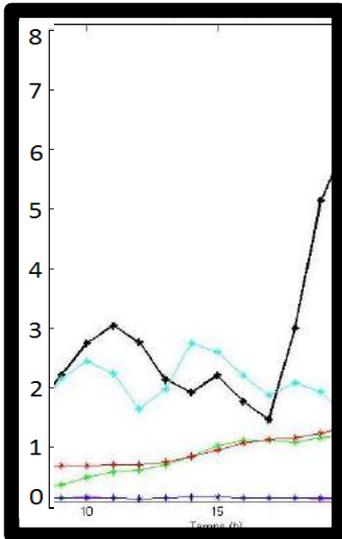
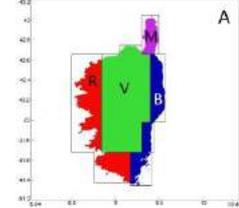
Radar

Passage du front



9h UTC

- Radar
- Simulation 001
- Simulation 002-Europe
- Simulation 002-Corse
- Simulation N01
- Simulation 4.9.3

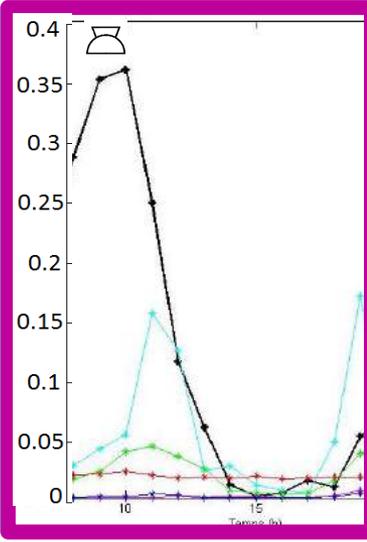
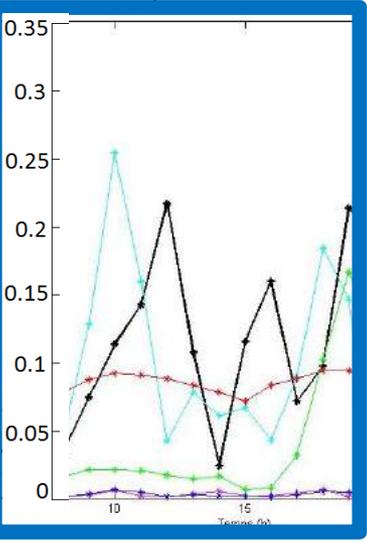
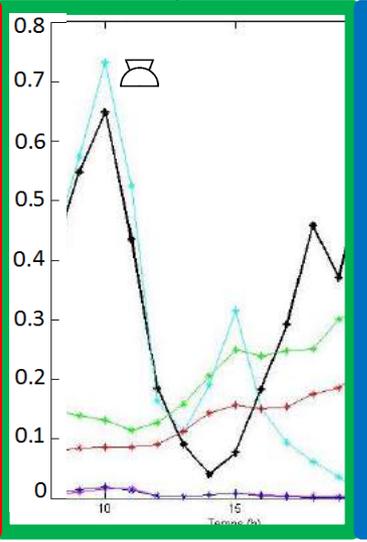
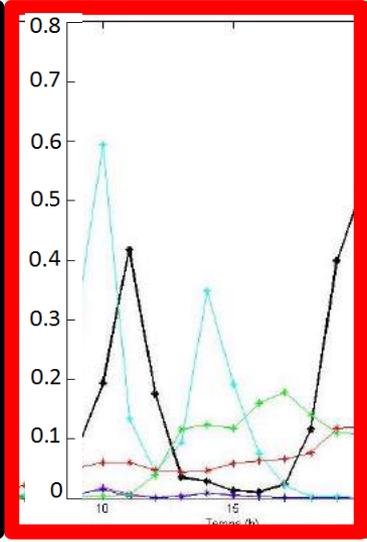
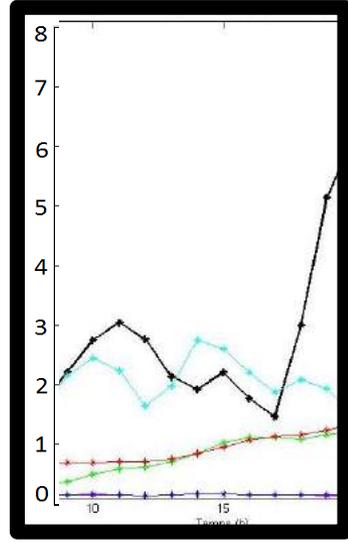
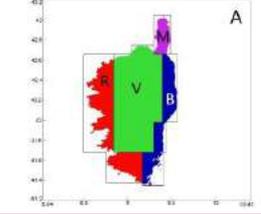


002-Corse

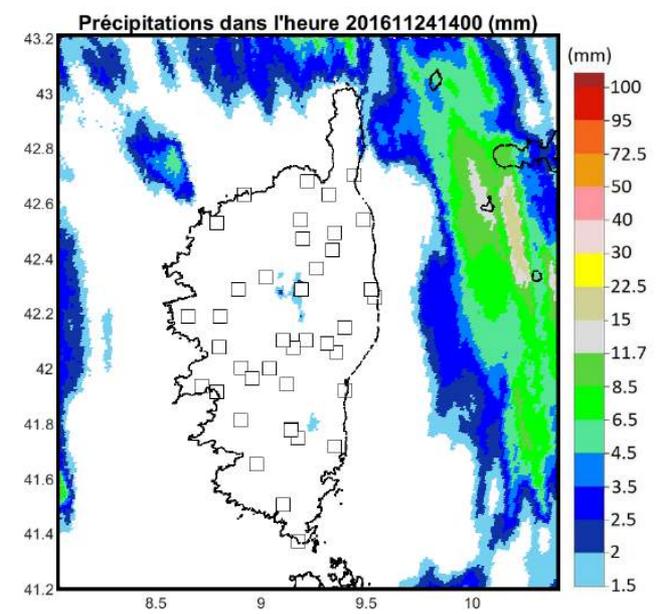
Passage du front

- 002-Corse
- 002-Corse
- 002-Corse
- 002-Corse

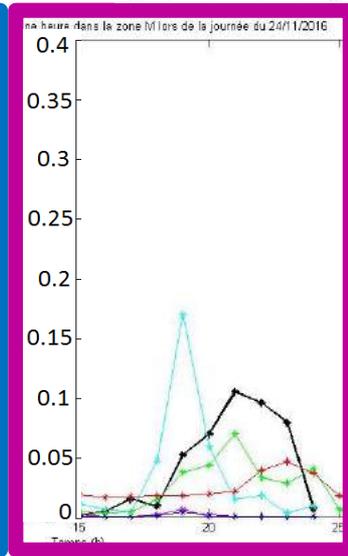
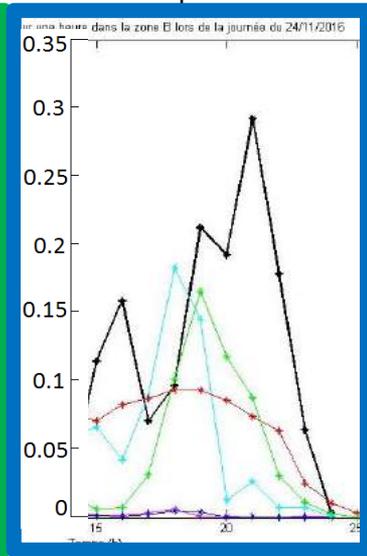
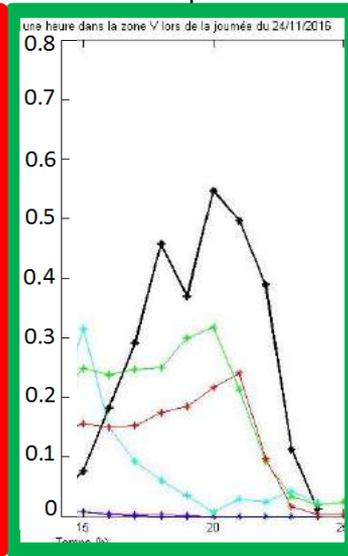
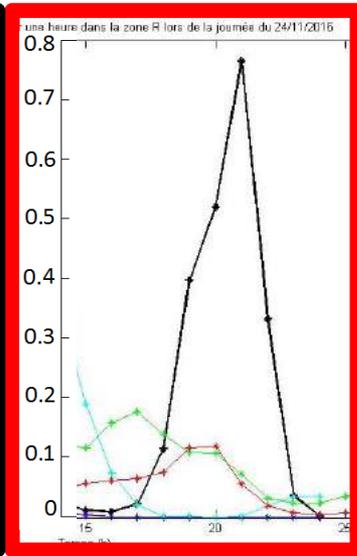
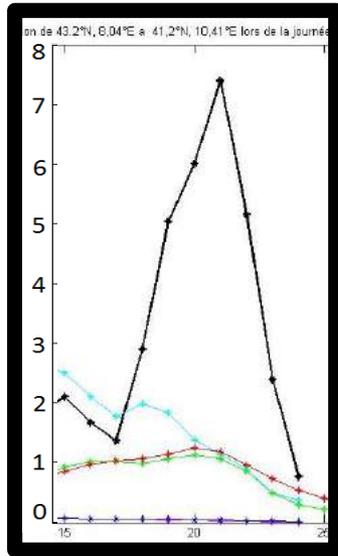
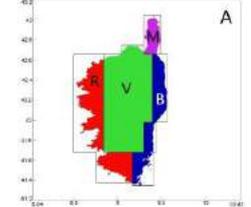
- Radar
- ◆— Simulation 001
- ◆— Simulation 002-Europe
- ◆— Simulation 002-Corse
- ◆— Simulation N01
- ◆— Simulation 4.9.3



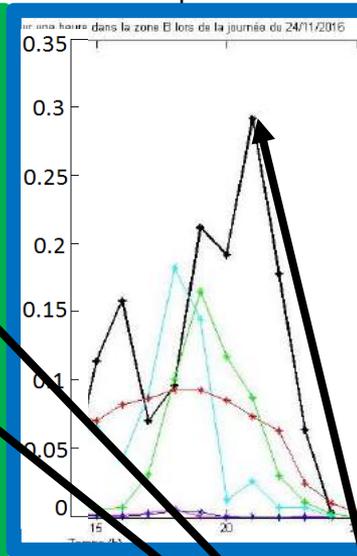
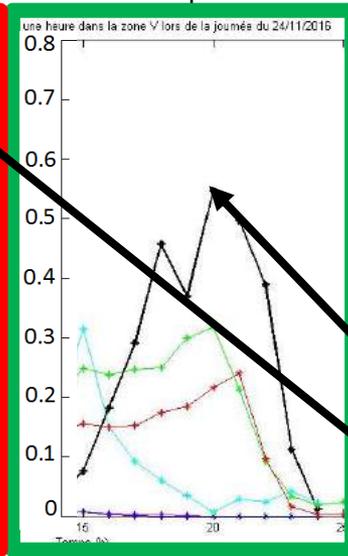
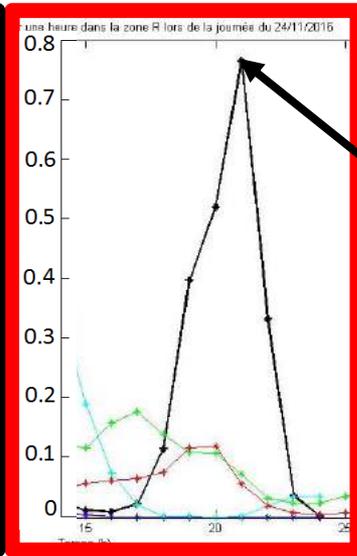
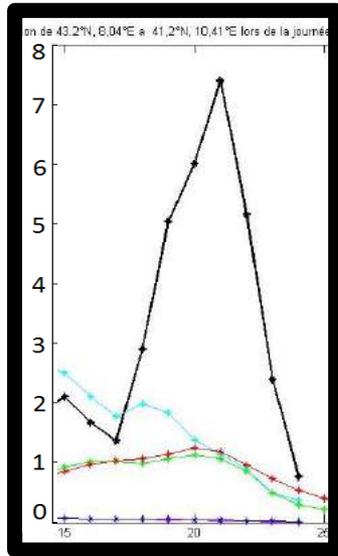
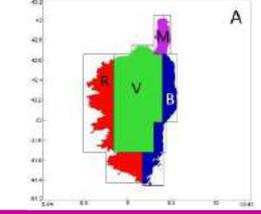
14h UTC



- Radar
- Simulation 001
- Simulation 002-Europe
- Simulation 002-Corse
- Simulation N01
- Simulation 4.9.3

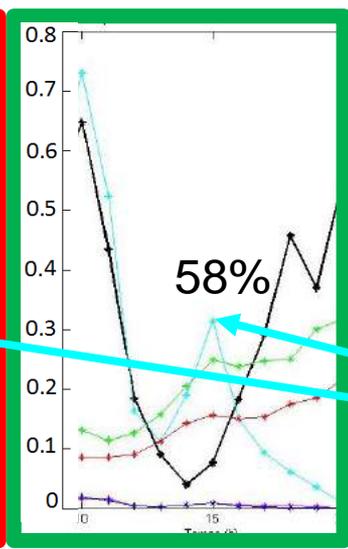
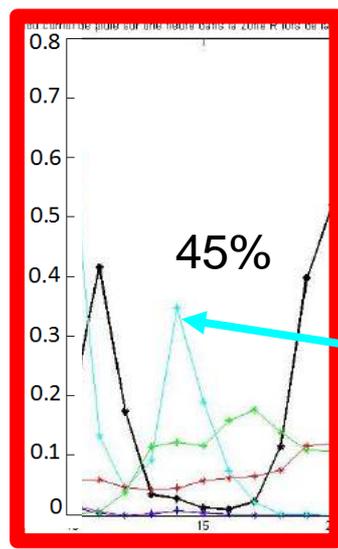
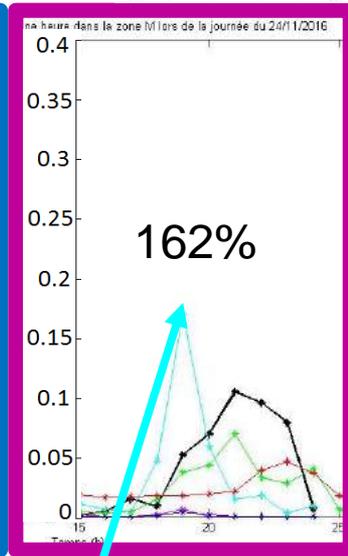
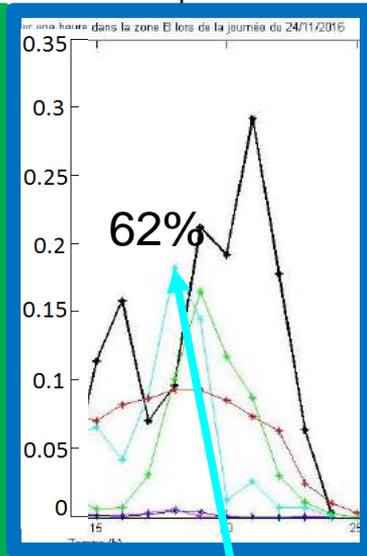
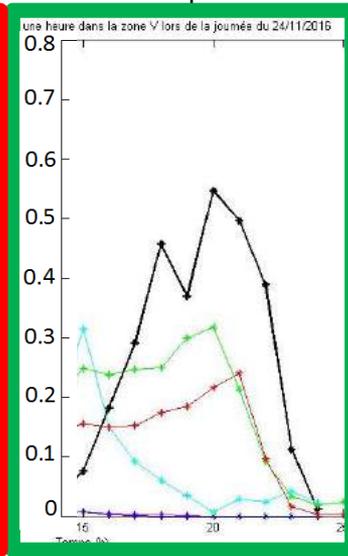
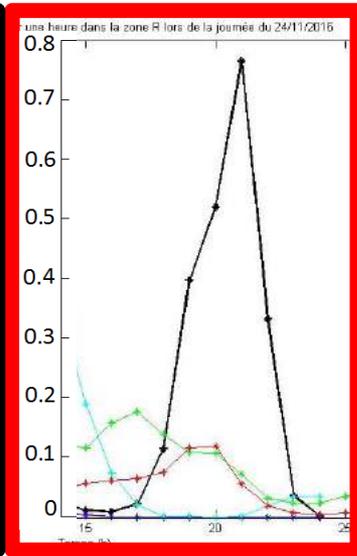
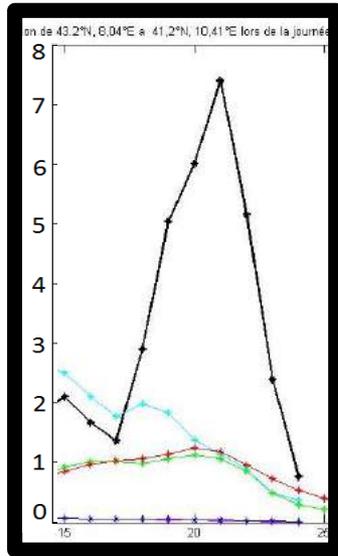
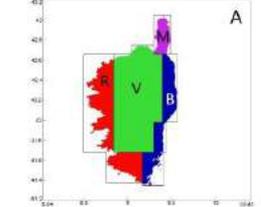


- Radar
- Simulation 001
- Simulation 002-Europe
- Simulation 002-Corse
- Simulation N01
- Simulation 4.9.3



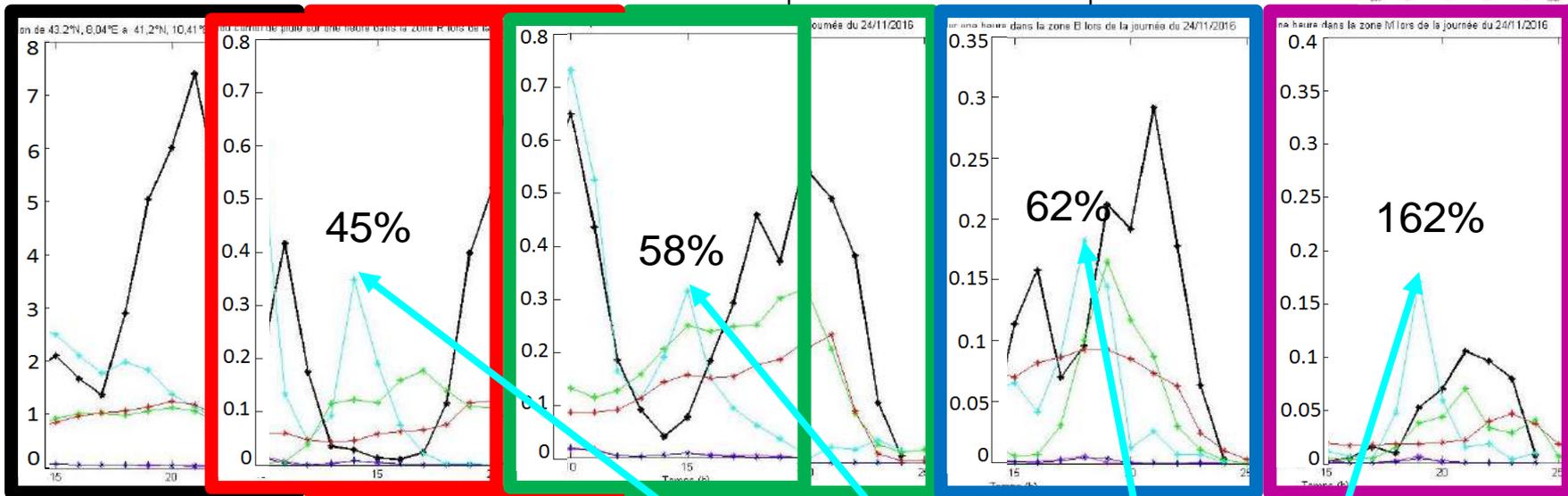
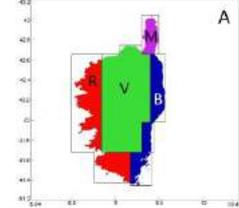
Ligne de Grain

- Radar
- Simulation 001
- Simulation 002-Europe
- Simulation 002-Corse
- Simulation N01
- Simulation 4.9.3



Ligne de Grain

- Radar
- Simulation 001
- Simulation 002-Europe
- Simulation 002-Corse
- Simulation N01
- Simulation 4.9.3



- 002-Corse
- 002-Corse
- 002-Corse
- 002-Corse

Ligne de Grain



Conclusion

Conclusion

Comment bien simuler cet événement?

Conclusion

Comment bien simuler cet événement?

→ 002-Corse (domaine imbriqué)

Conclusion

Comment bien simuler cet événement?

→ **002-Corse (domaine imbriqué)**

Autres simulations réalisables

Analyses

Dates d'initialisation

Résolutions ...

Conclusion

Comment bien simuler cet événement?

➔ **002-Corse (domaine imbriqué)**

Autres simulations réalisables

Analyses

Dates d'initialisation

Résolutions ...

Etude préliminaire

Conclusion

Comment bien simuler cet événement?

→ **002-Corse (domaine imbriqué)**

Autres simulations réalisables

Analyses

Dates d'initialisation

Résolutions ...

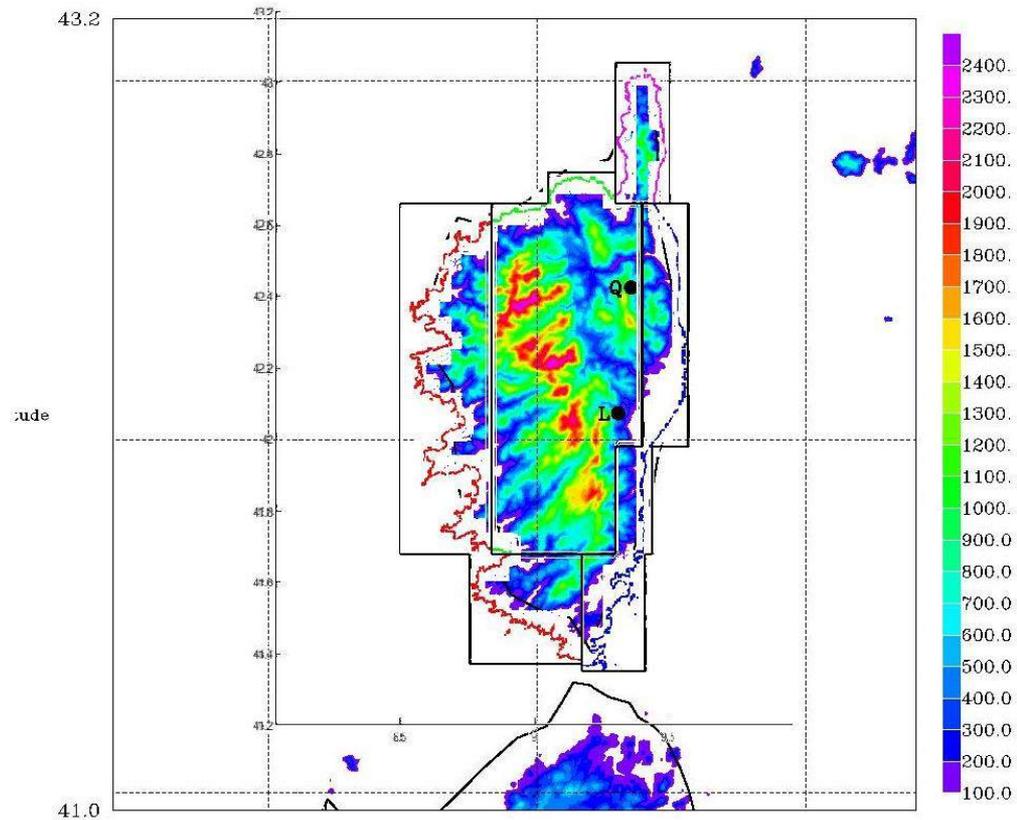
Etude préliminaire

Bilans Personnels

Merci de votre attention !

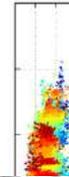
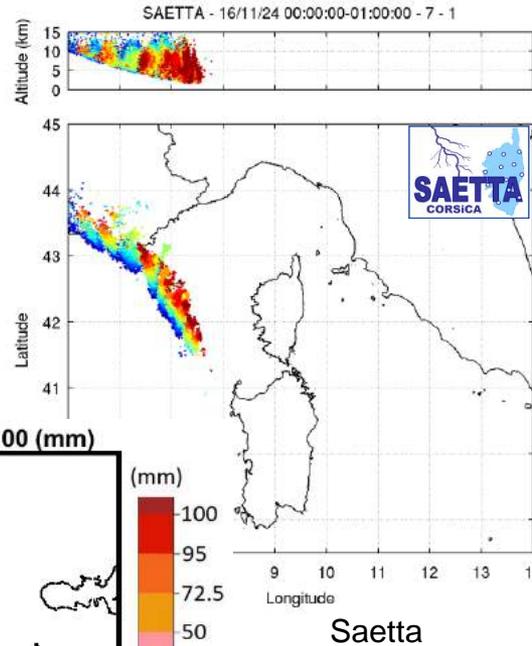
Annexes

Ceci est une œuvre d'art !!



Situation météorologique observée

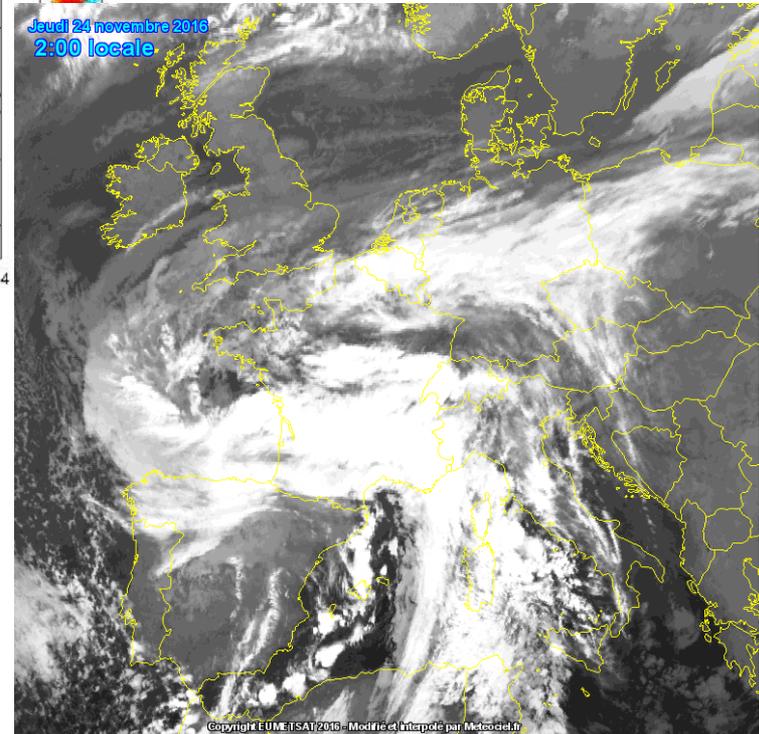
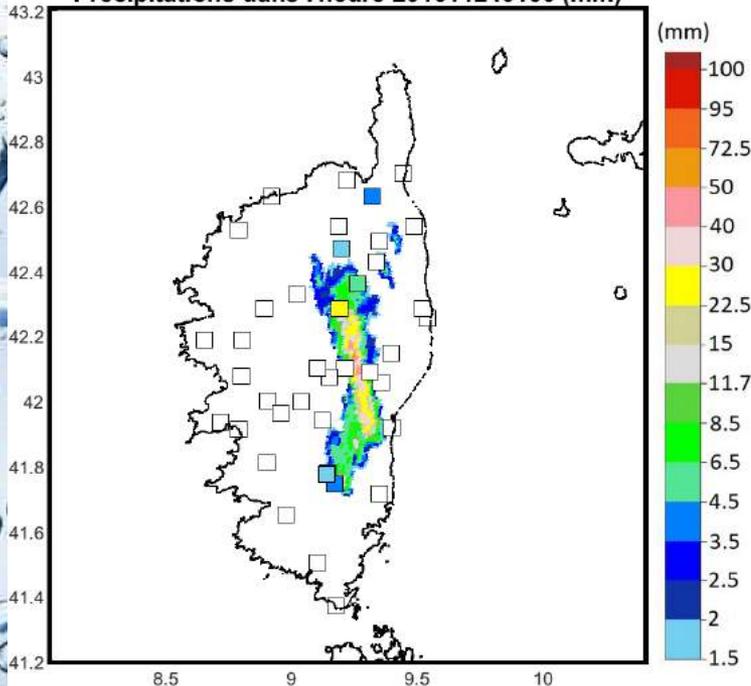
1h UTC



Météosat 10 (IR)

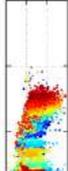
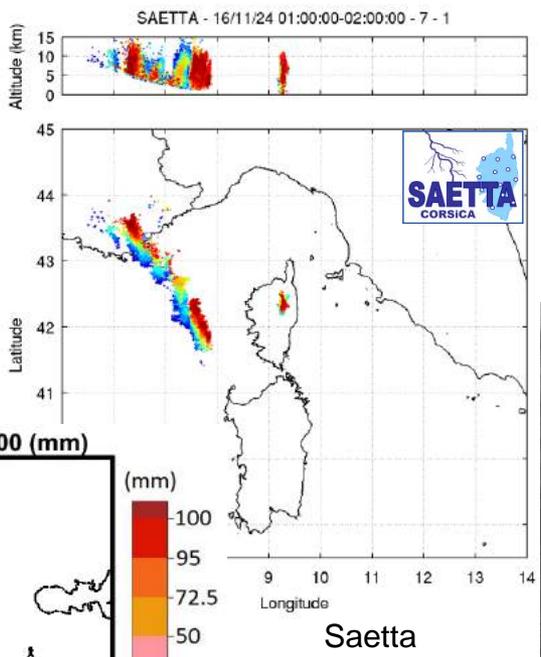
Radar et Pluviomètres
MétéoFrance

Précipitations dans l'heure 201611240100 (mm)



Situation météorologique observée

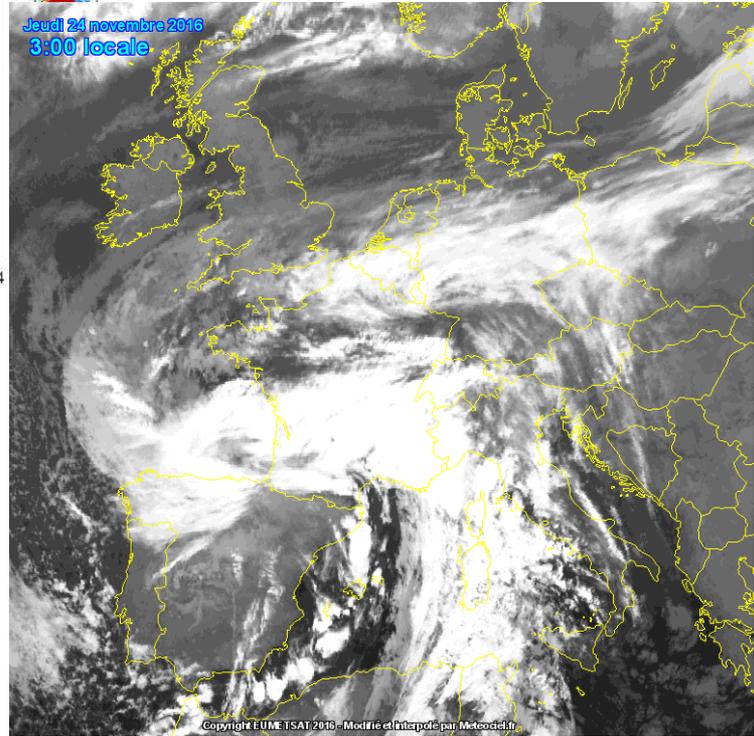
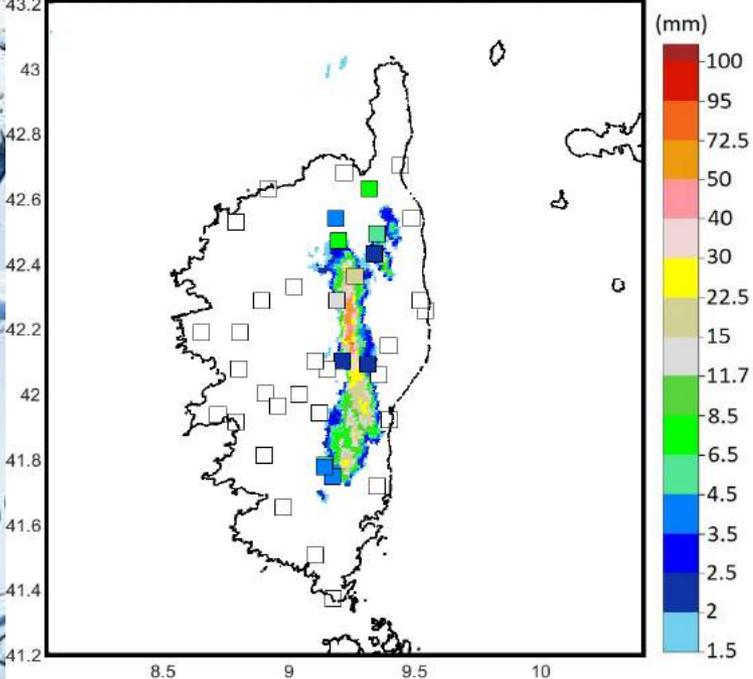
2h UTC



Météosat 10 (IR)

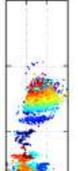
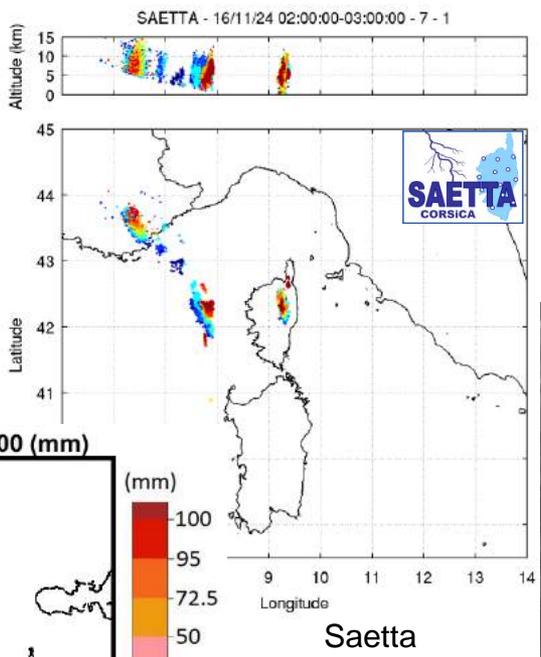
Radar et Pluviomètres
MétéoFrance

Précipitations dans l'heure 201611240200 (mm)



Situation météorologique observée

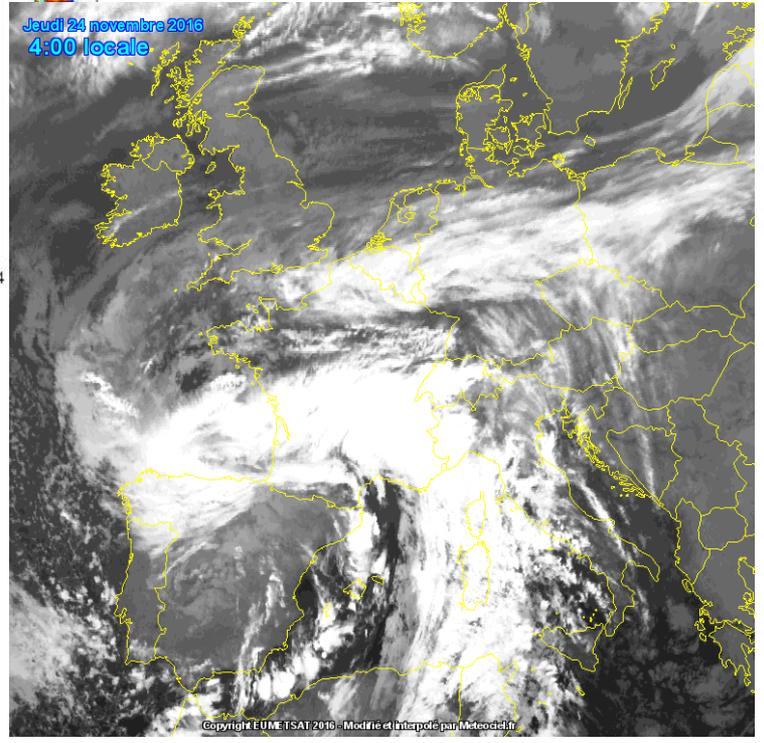
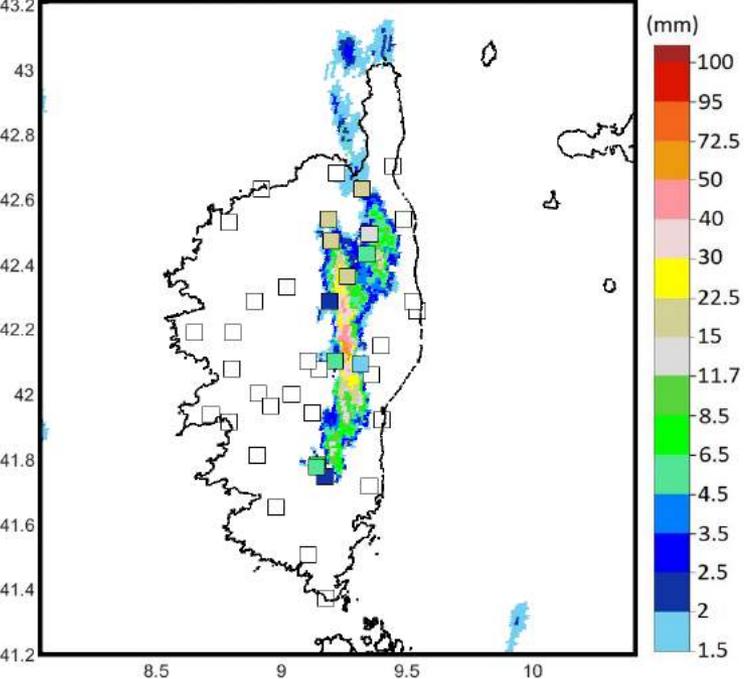
3h UTC



Météosat 10 (IR)

Radar et Pluviomètres
MétéoFrance

Précipitations dans l'heure 201611240300 (mm)

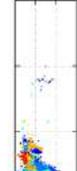
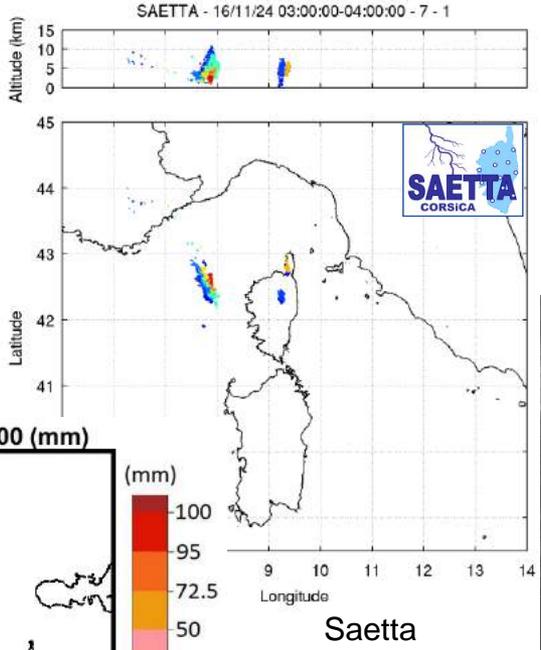
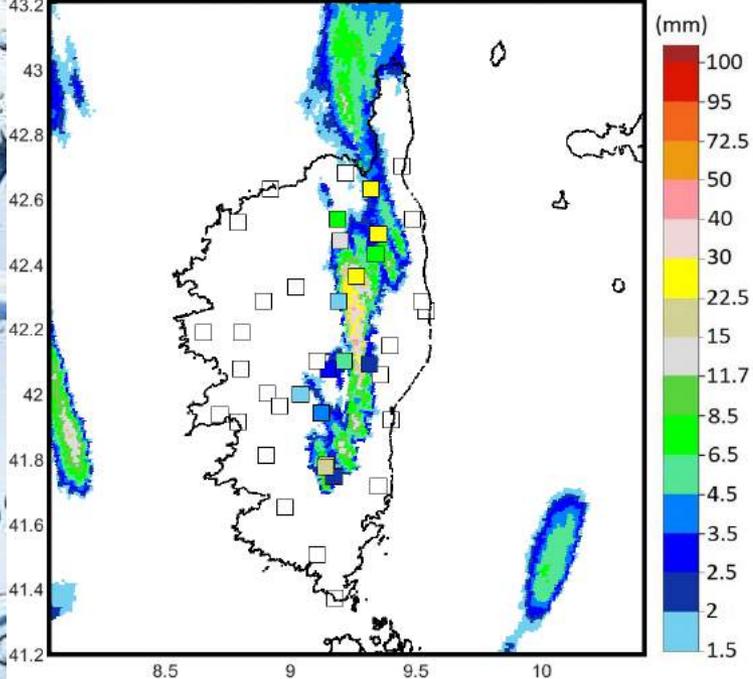


Situation météorologique observée

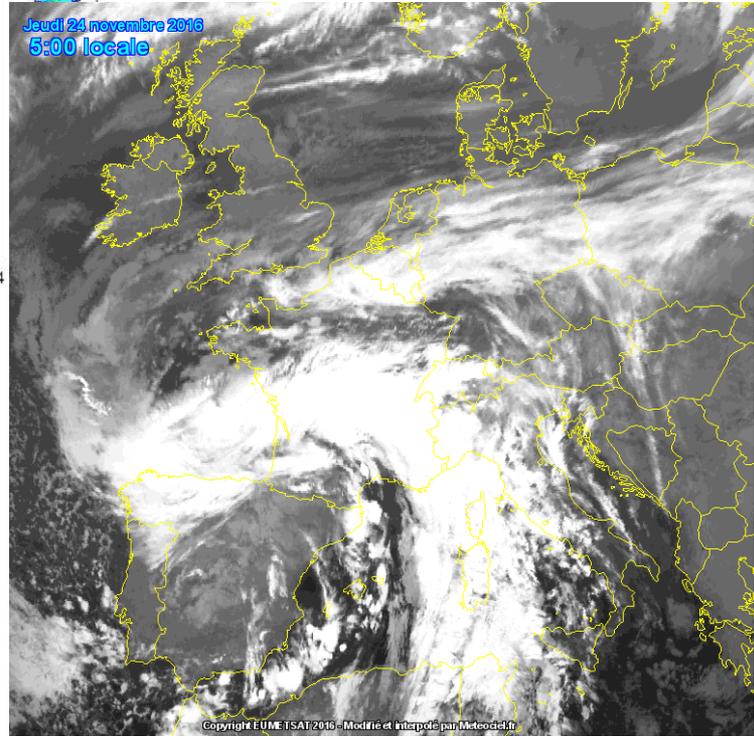
4h UTC

Radar et Pluviomètres
MétéoFrance

Précipitations dans l'heure 201611240400 (mm)



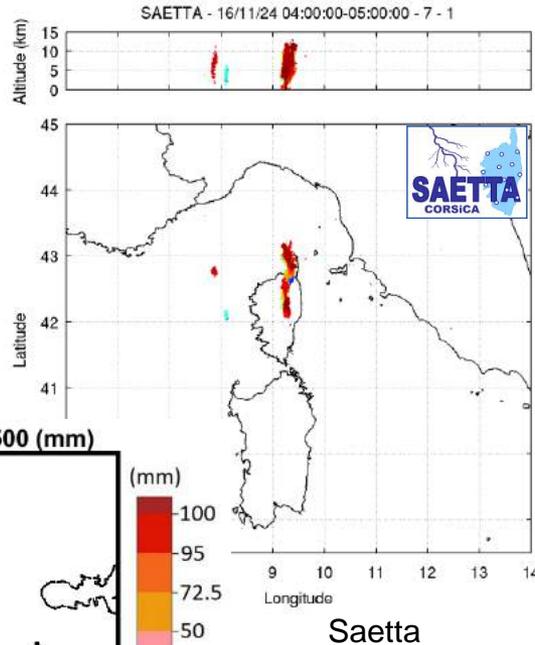
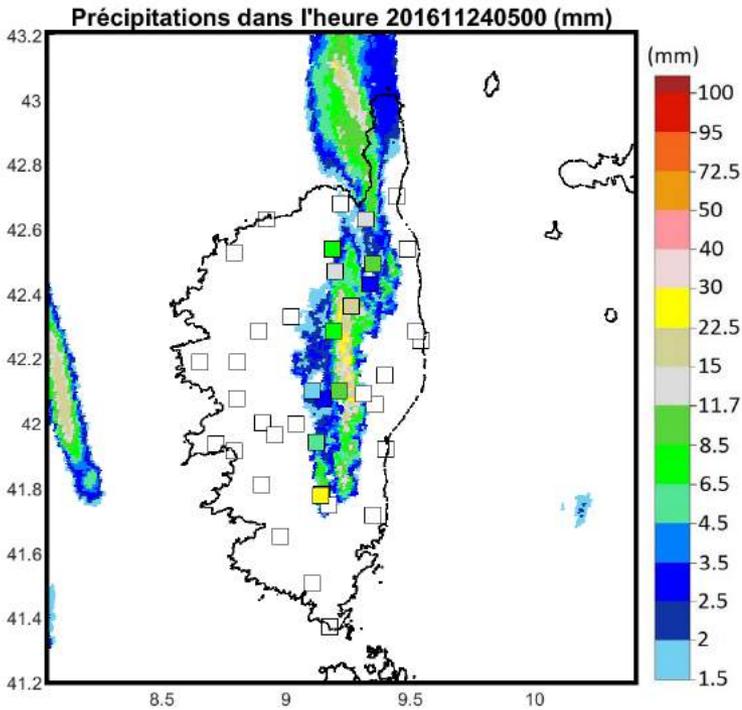
Météosat 10 (IR)



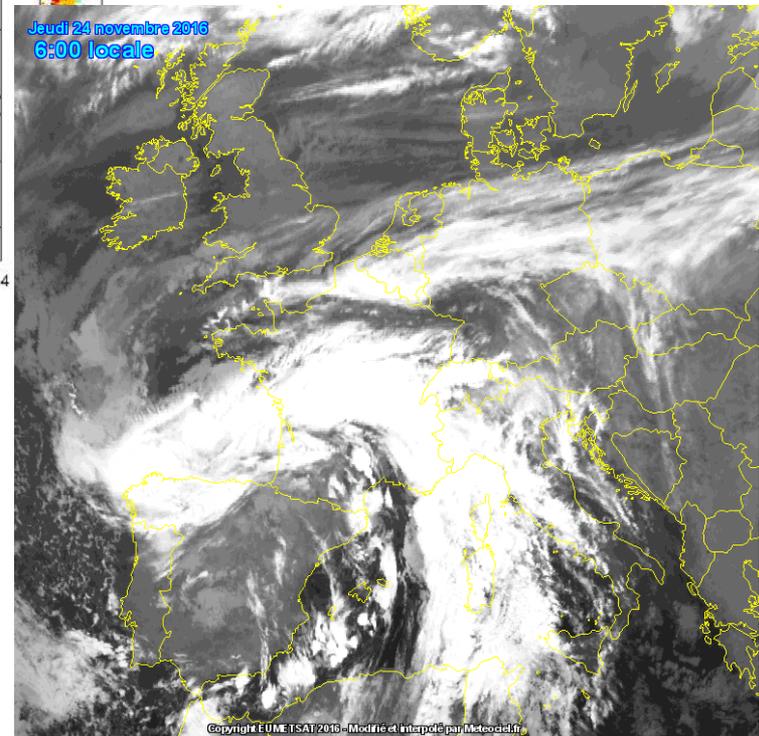
Situation météorologique observée

5h UTC

Radar et Pluviomètres
MétéoFrance



Météosat 10 (IR)

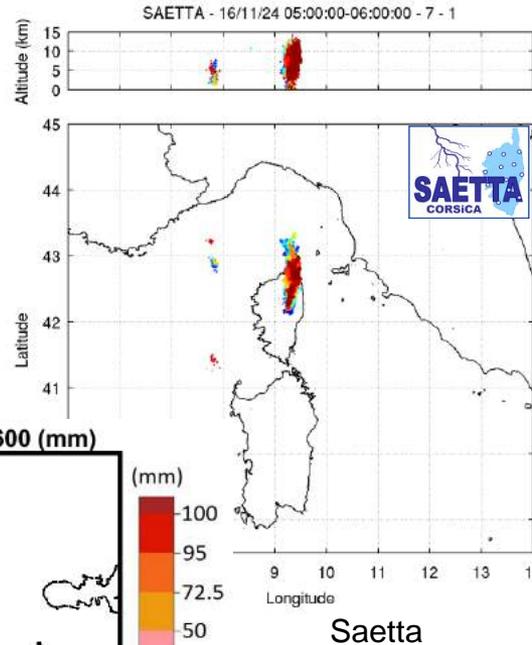
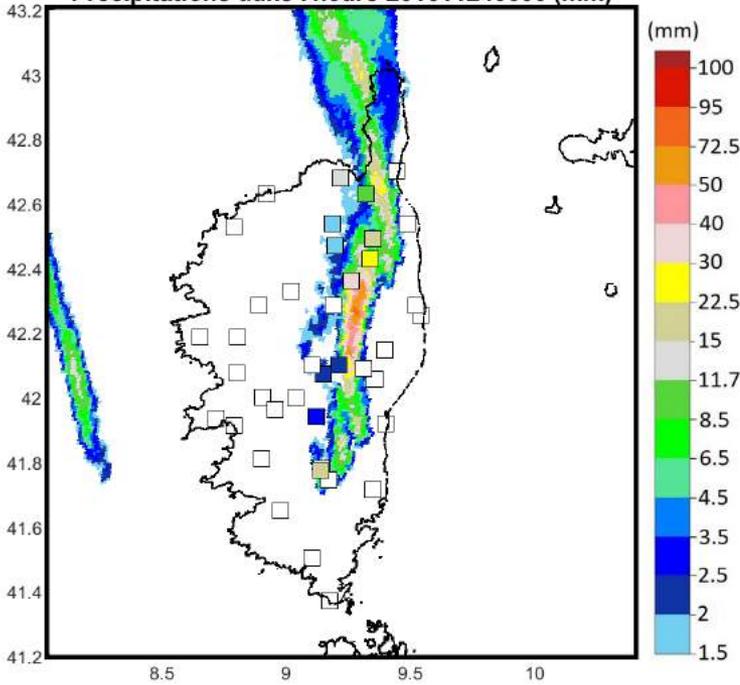


Situation météorologique observée

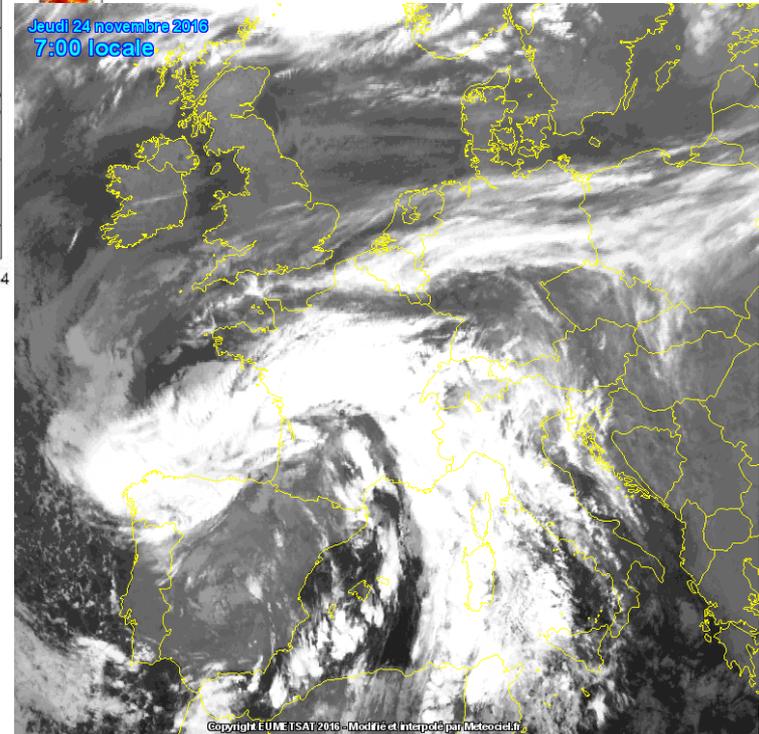
6h UTC

Radar et Pluviomètres
MétéoFrance

Précipitations dans l'heure 201611240600 (mm)

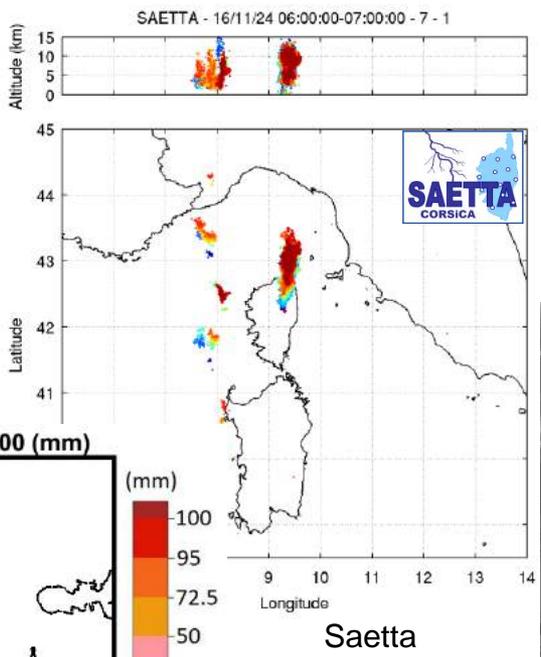


Météosat 10 (IR)

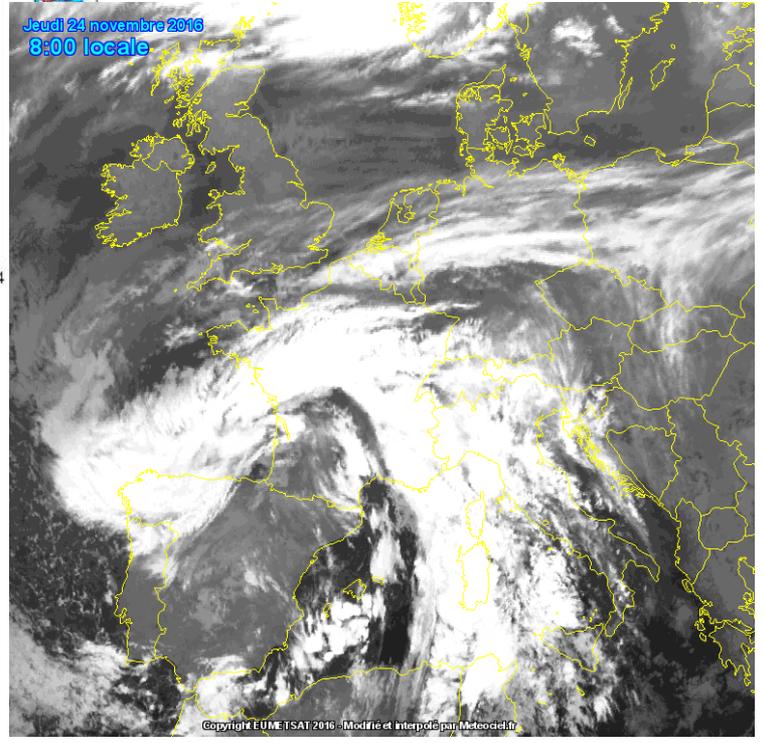
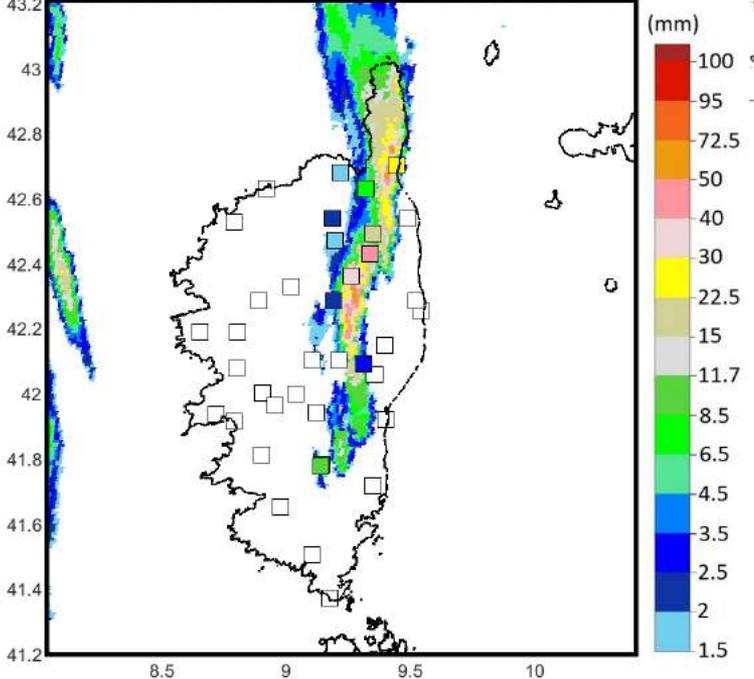


Situation météorologique observée

7h UTC

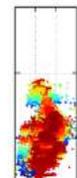
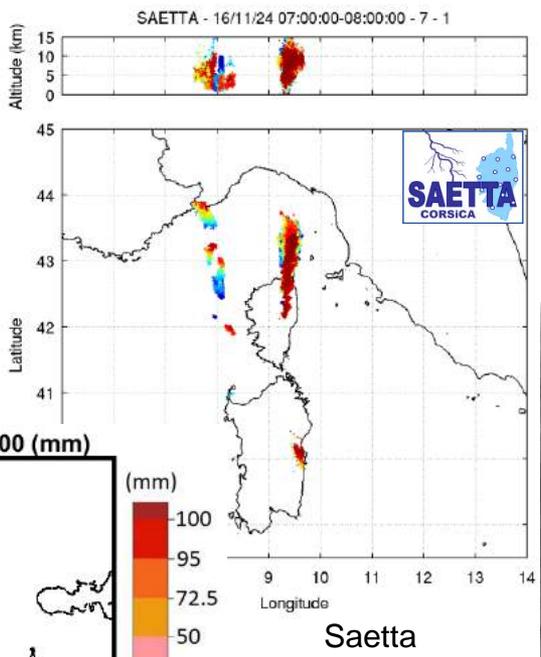


Radar et Pluviomètres
MétéoFrance
Précipitations dans l'heure 201611240700 (mm)



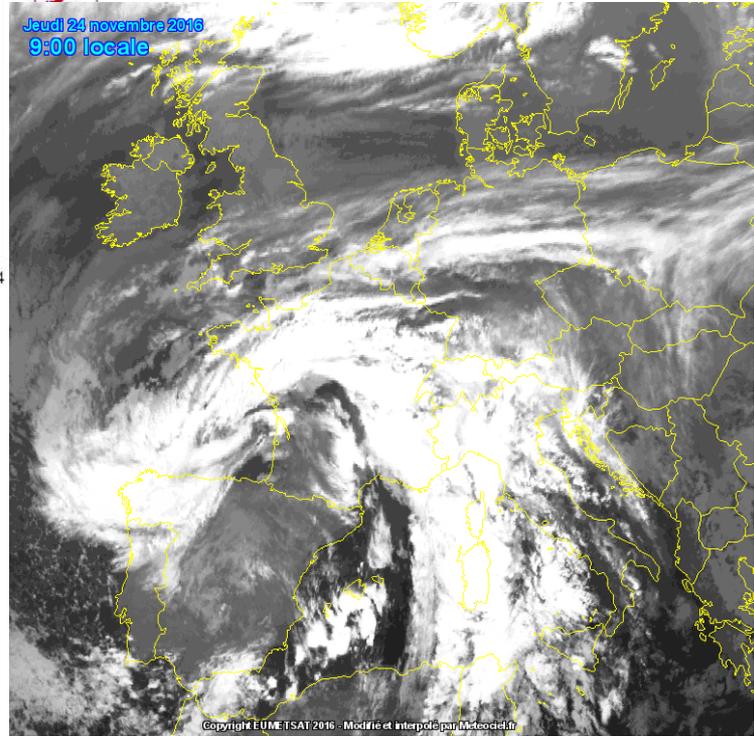
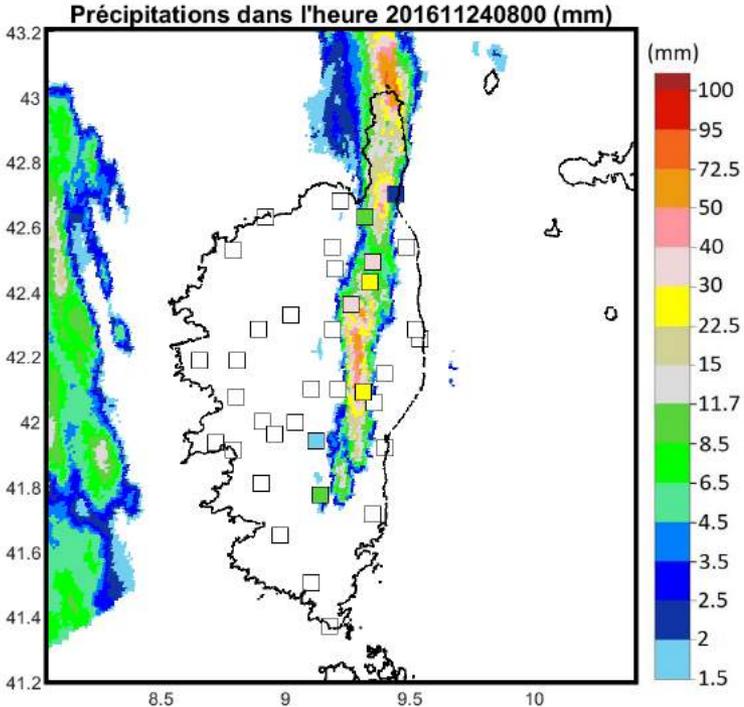
Situation météorologique observée

8h UTC



Météosat 10 (IR)

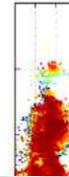
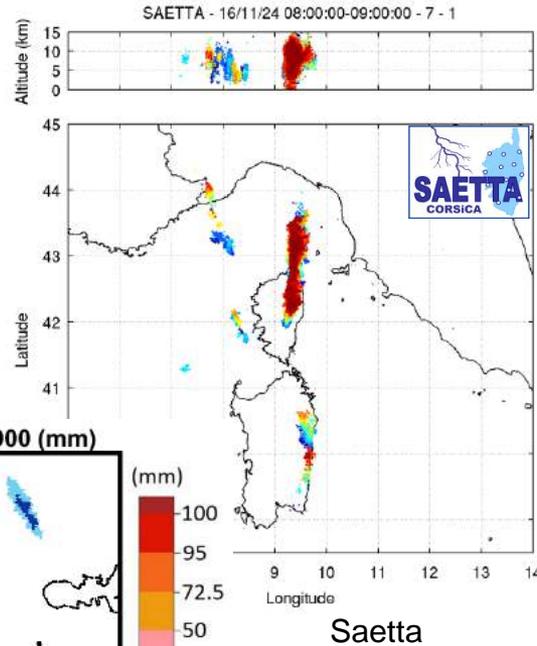
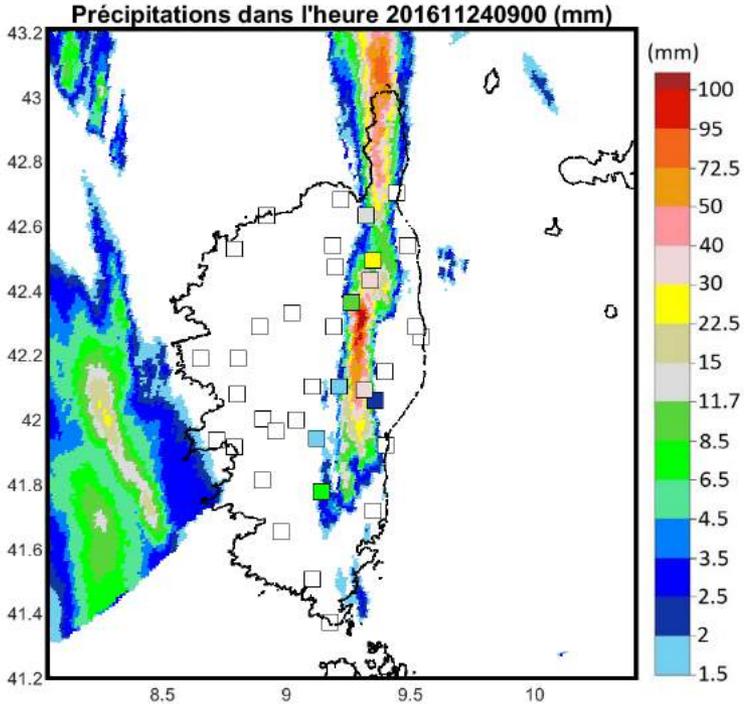
Radar et Pluviomètres
MétéoFrance



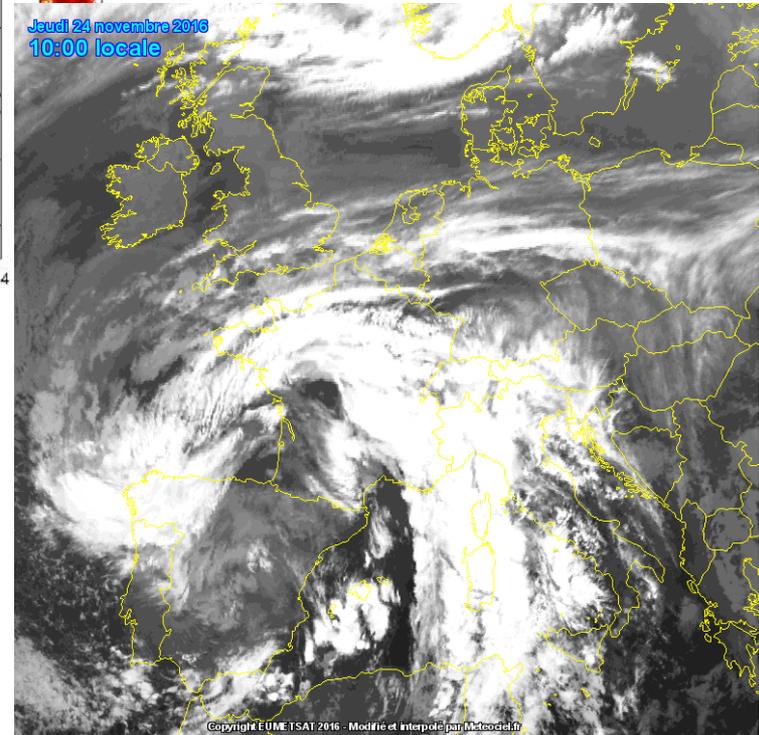
Situation météorologique observée

9h UTC

Radar et Pluviomètres
MétéoFrance



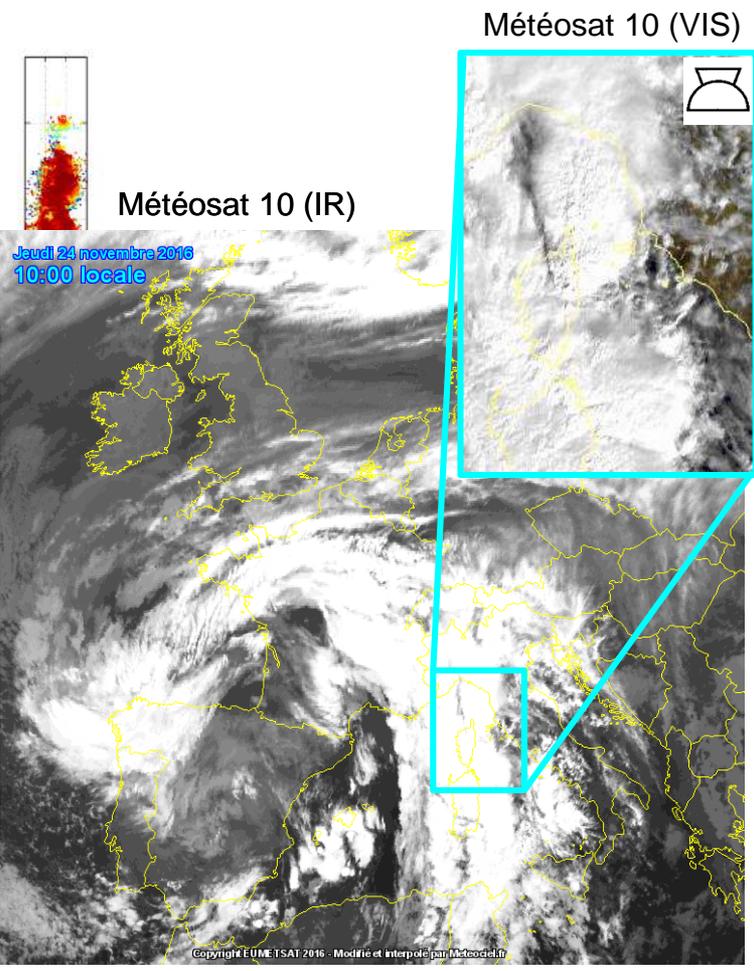
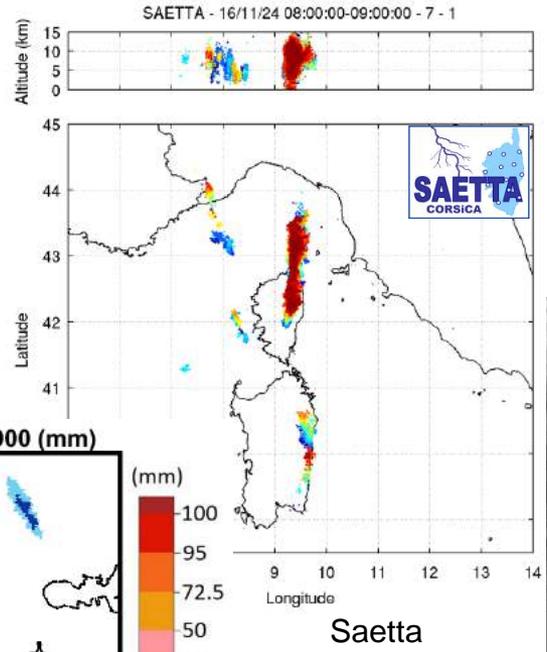
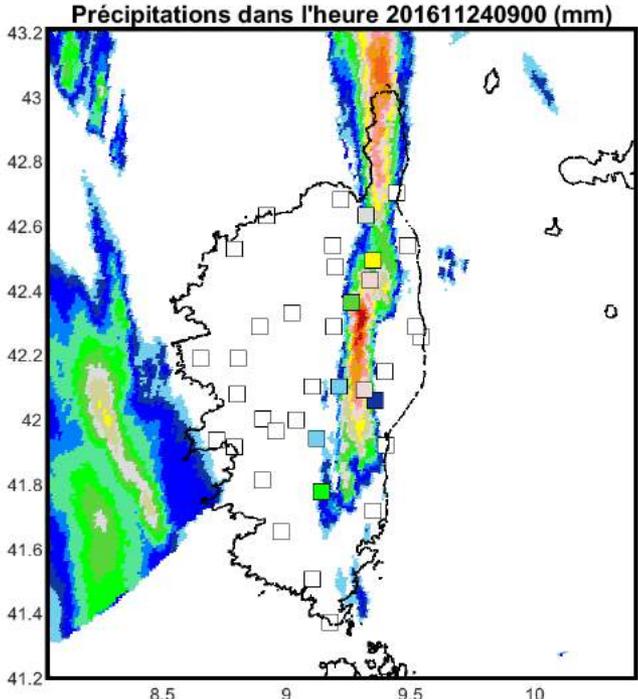
Météosat 10 (IR)



Situation météorologique observée

9h UTC

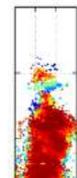
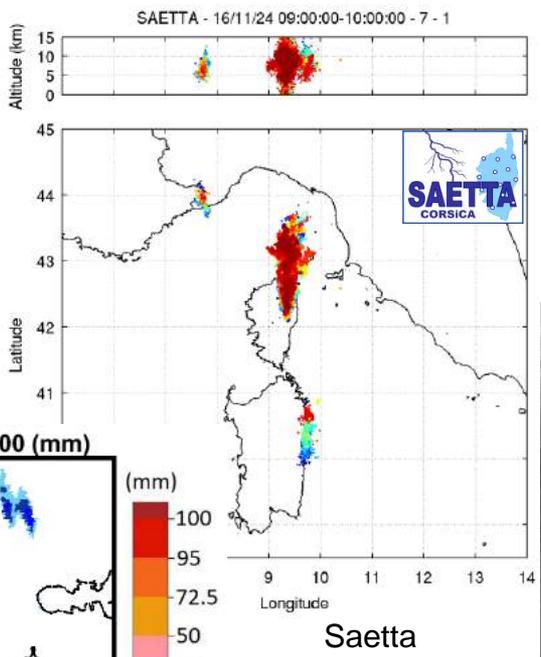
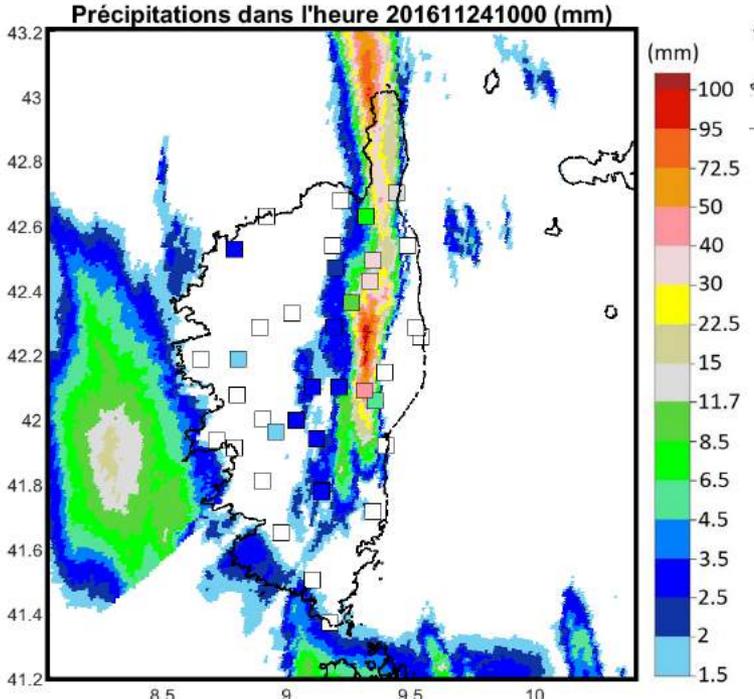
Radar et Pluviomètres
MétéoFrance



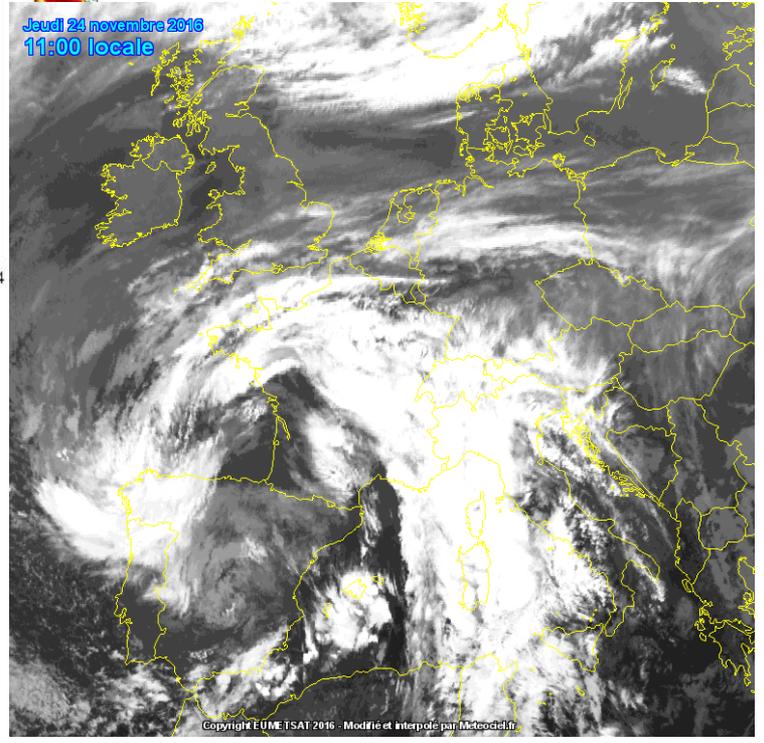
Situation météorologique observée

10h UTC

Radar et Pluviomètres
MétéoFrance



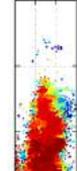
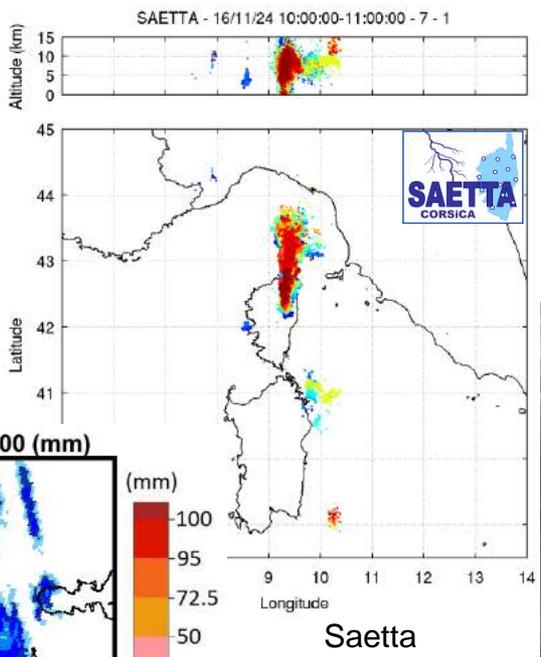
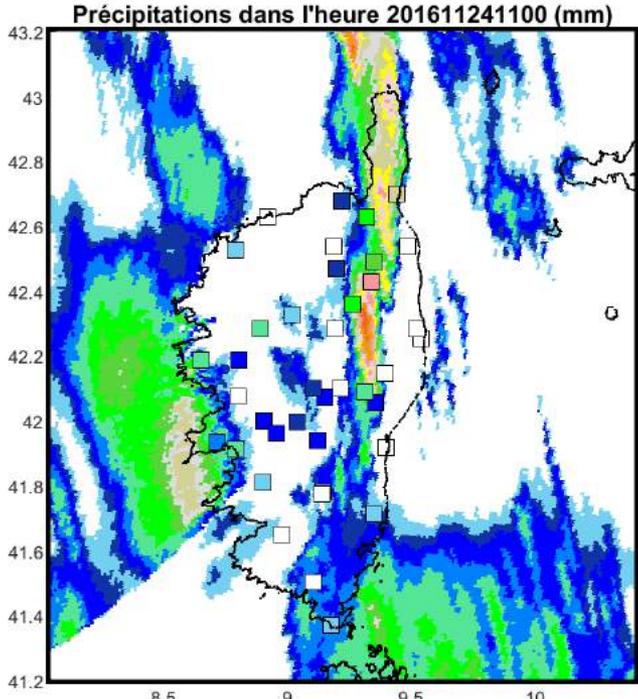
Météosat 10 (IR)



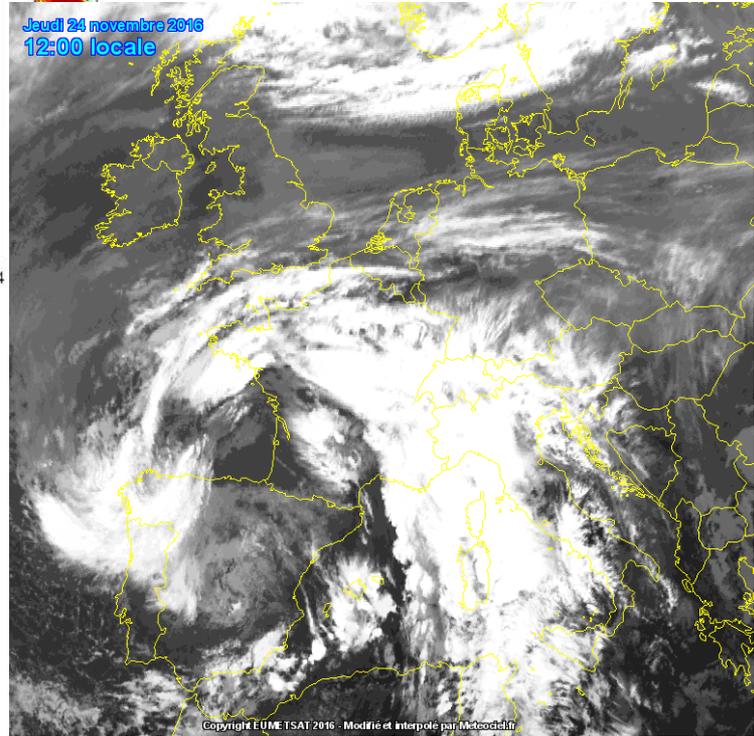
Situation météorologique observée

11h UTC

Radar et Pluviomètres
MétéoFrance

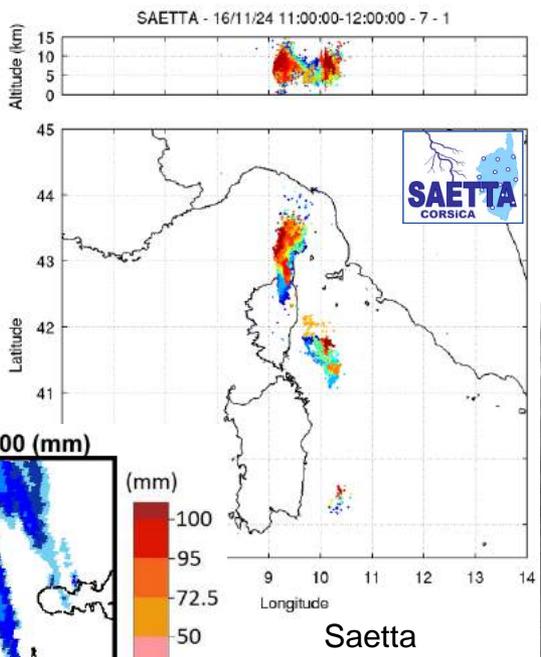


Météosat 10 (IR)

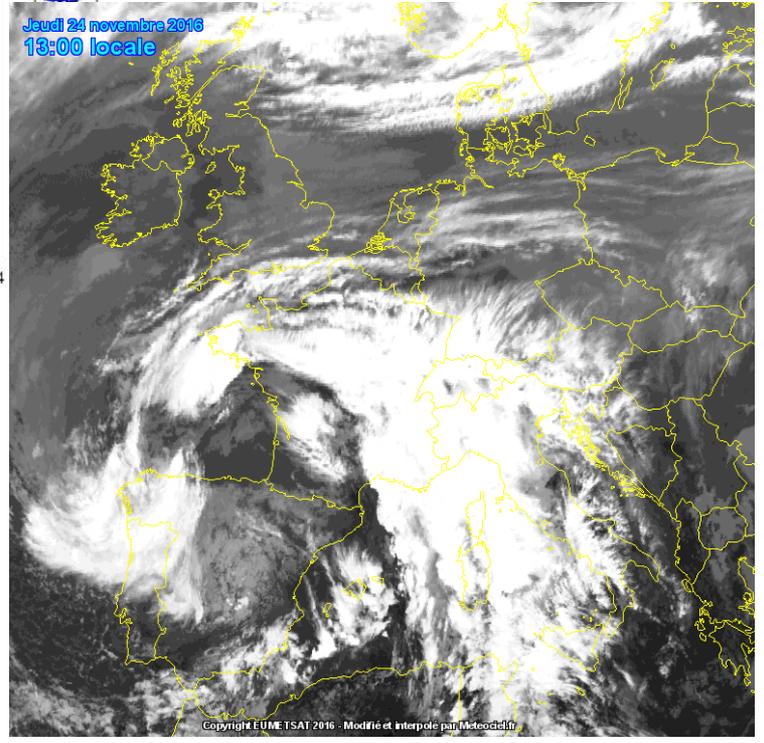
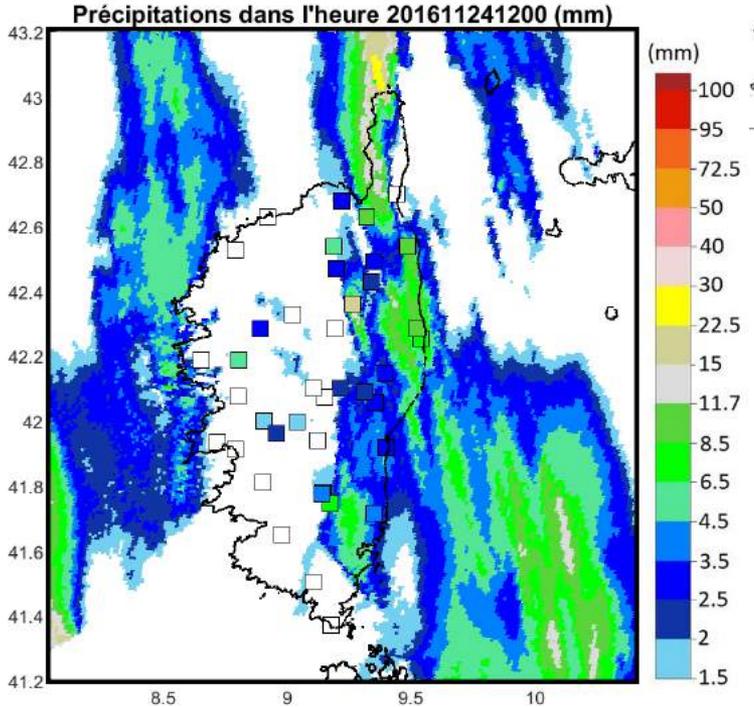


Situation météorologique observée

12h UTC



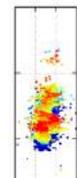
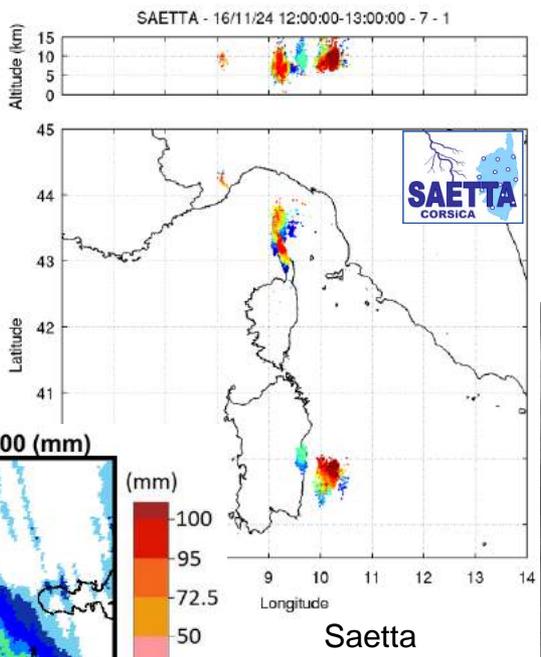
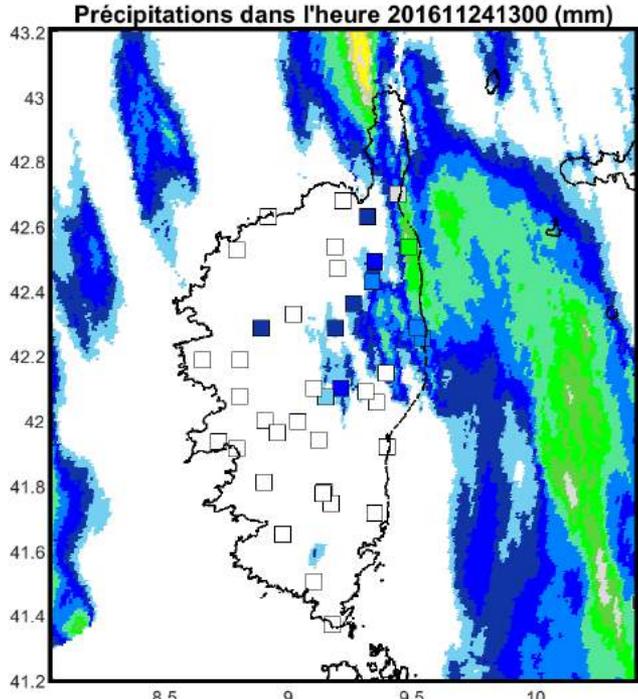
Radar et Pluviomètres
MétéoFrance



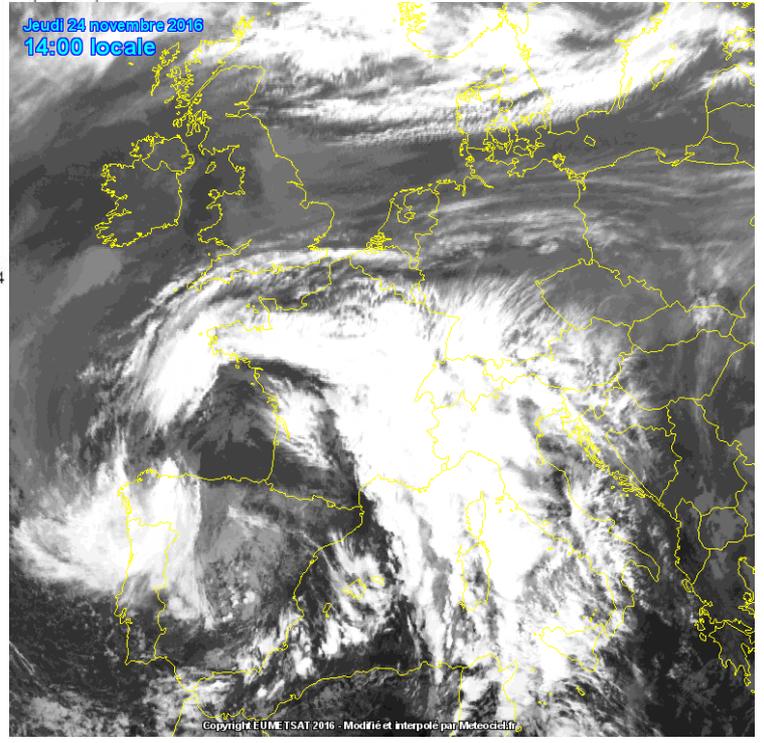
Situation météorologique observée

13h UTC

Radar et Pluviomètres
MétéoFrance

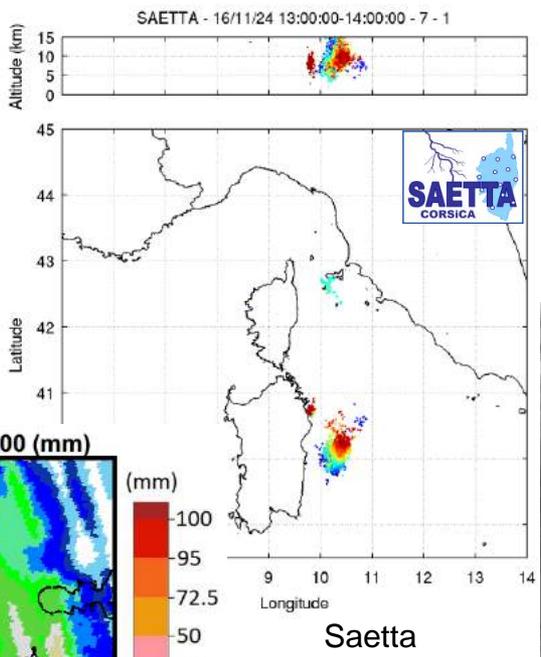


Météosat 10 (IR)

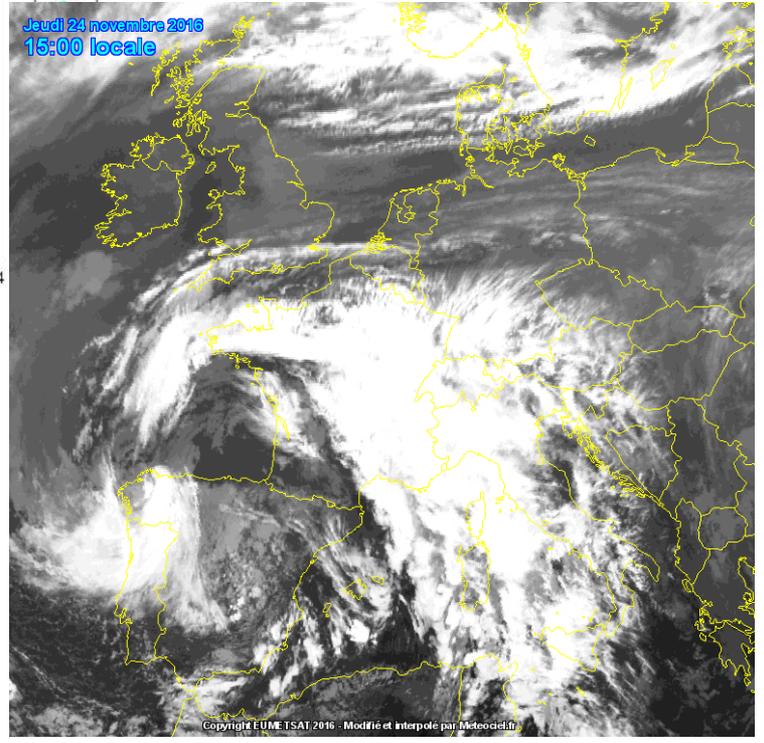
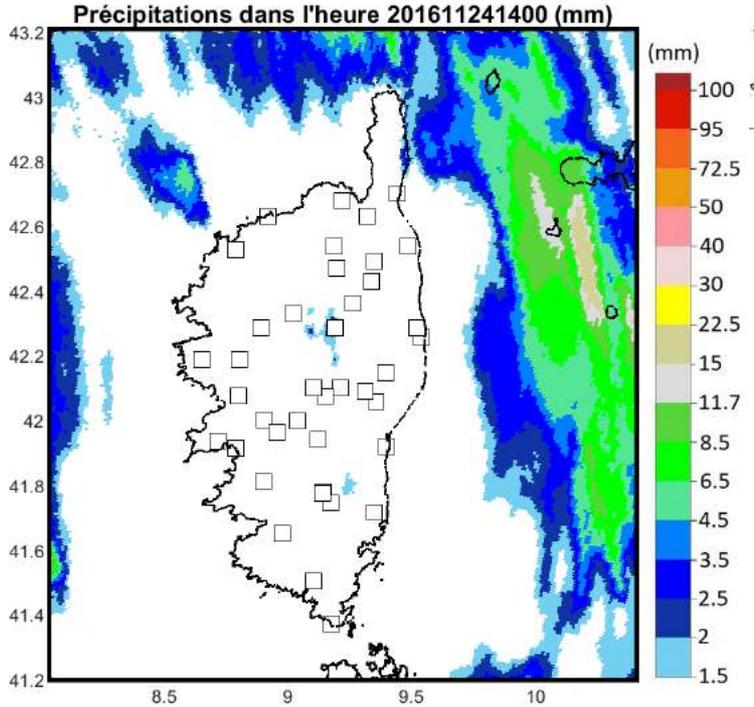


Situation météorologique observée

14h UTC



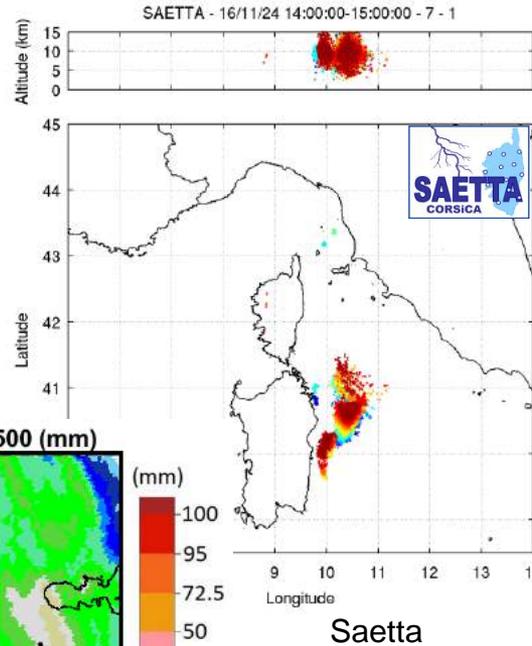
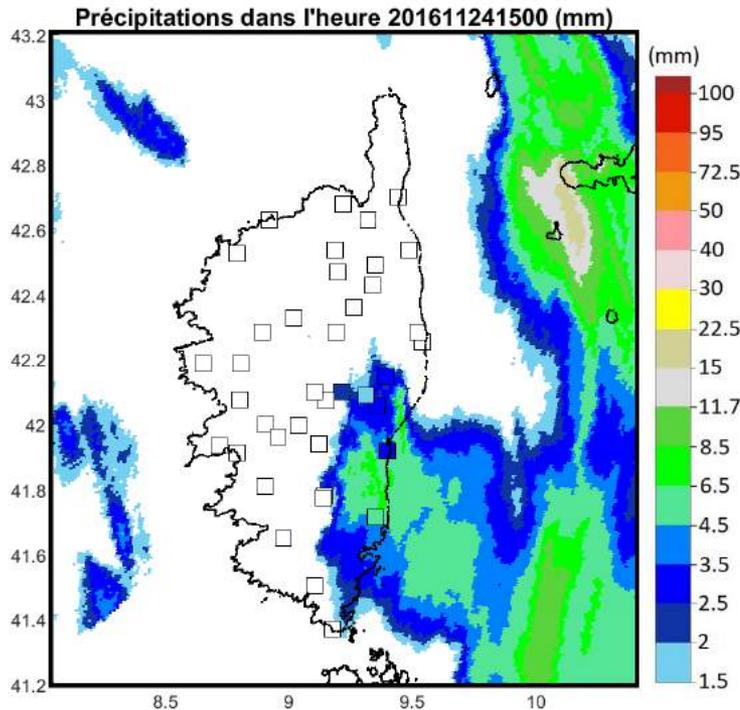
Radar et Pluviomètres
MétéoFrance



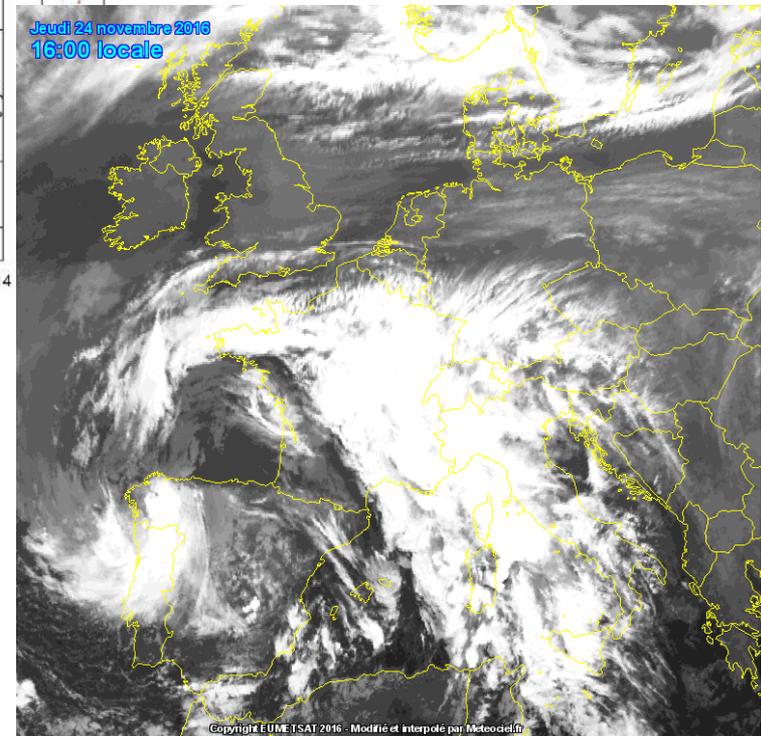
Situation météorologique observée

15h UTC

Radar et Pluviomètres
MétéoFrance

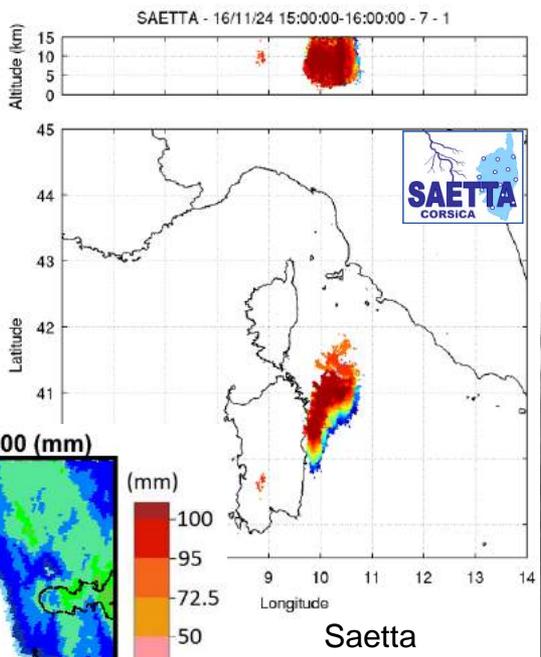


Météosat 10 (IR)

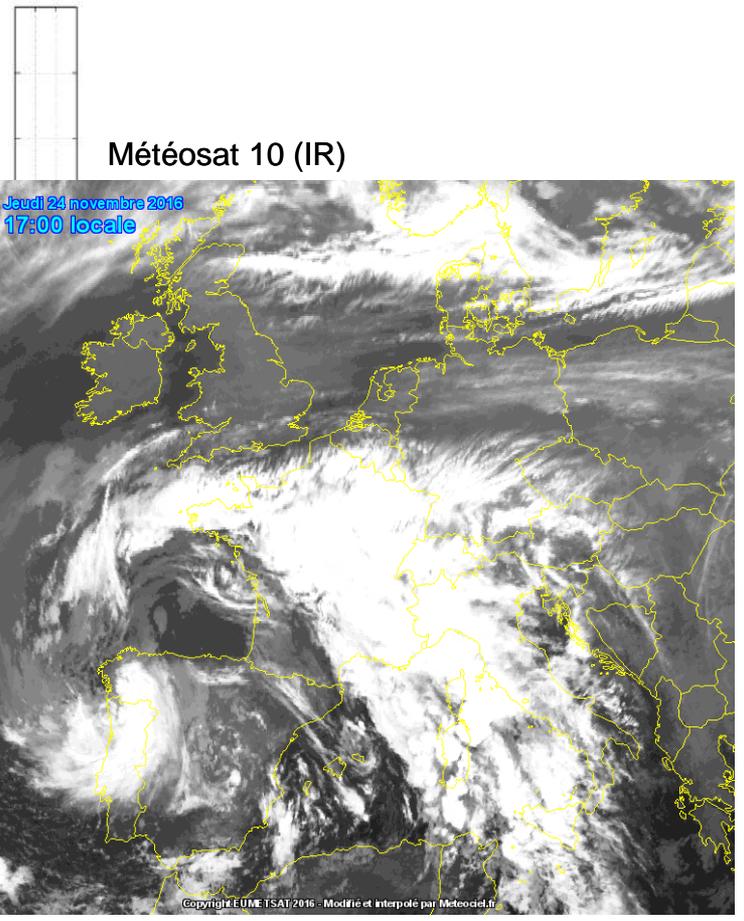
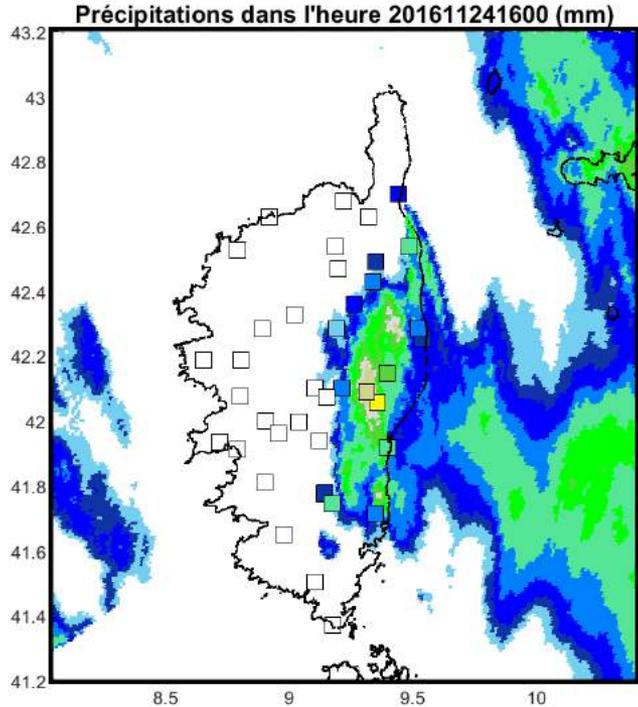


Situation météorologique observée

16h UTC

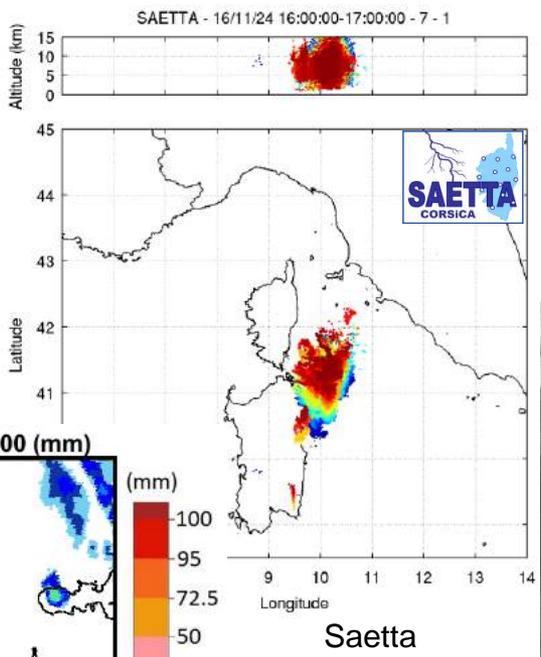


Radar et Pluviomètres
MétéoFrance

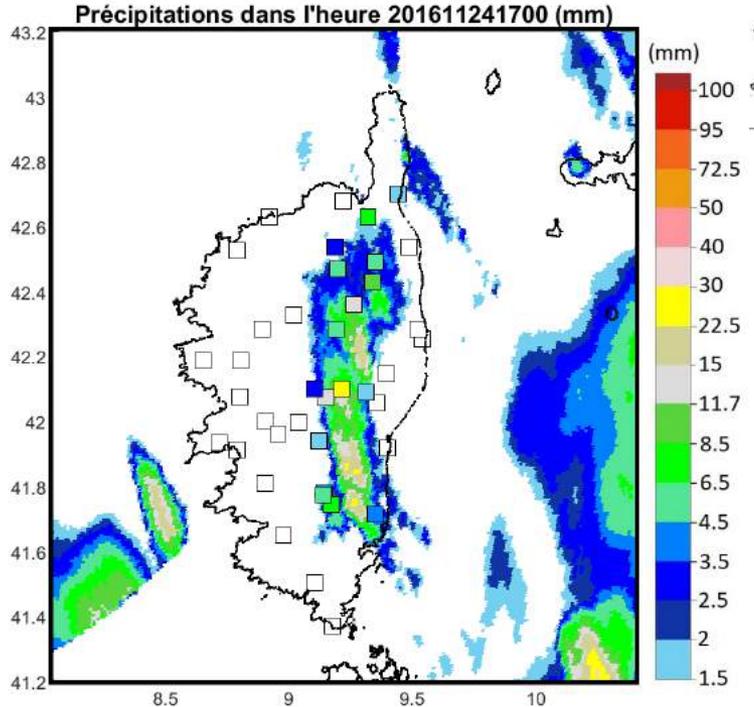


Situation météorologique observée

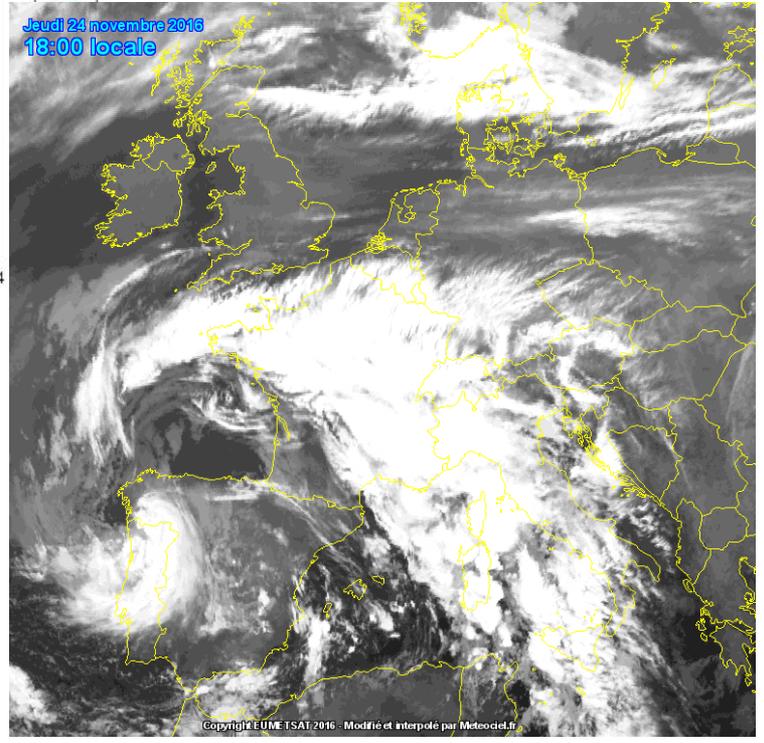
17h UTC



Radar et Pluviomètres
MétéoFrance

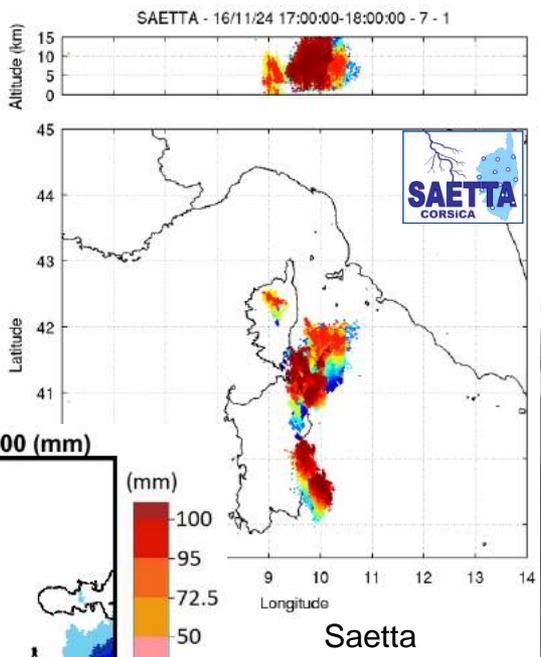


Météosat 10 (IR)

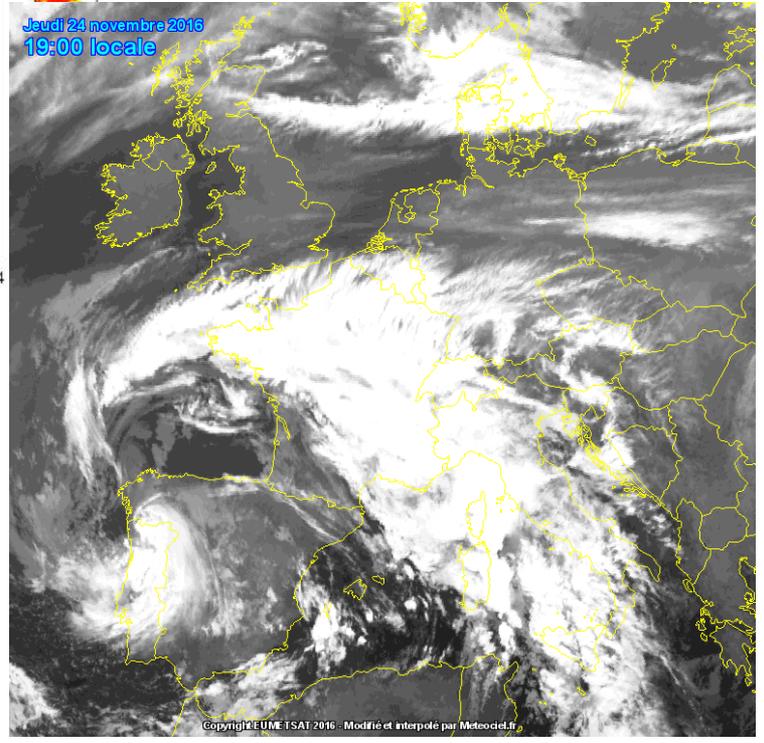
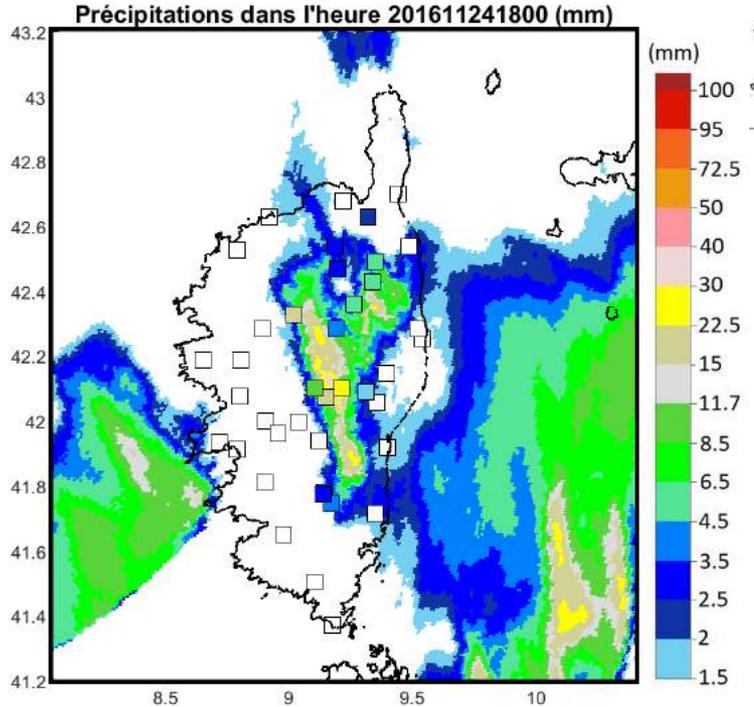


Situation météorologique observée

18h UTC



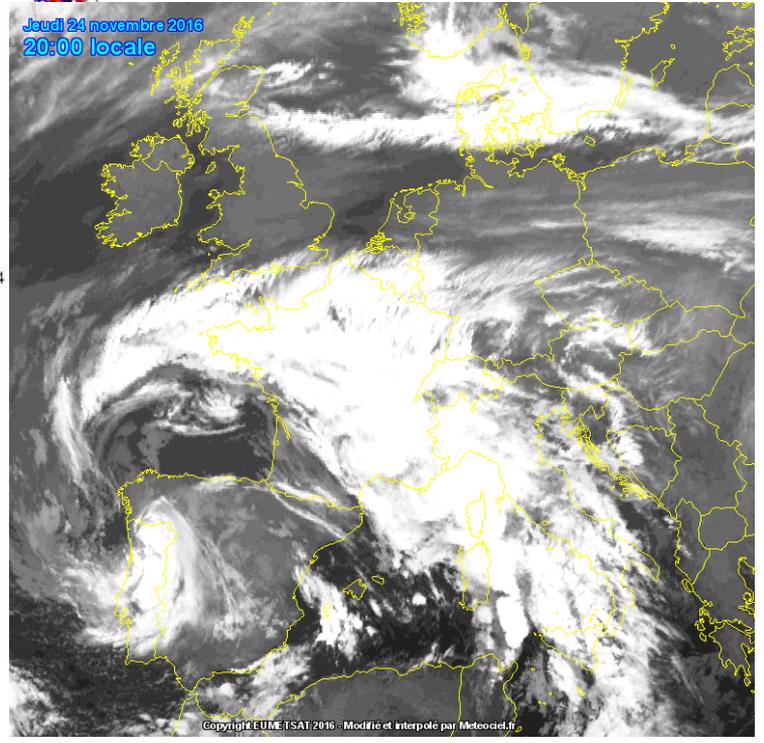
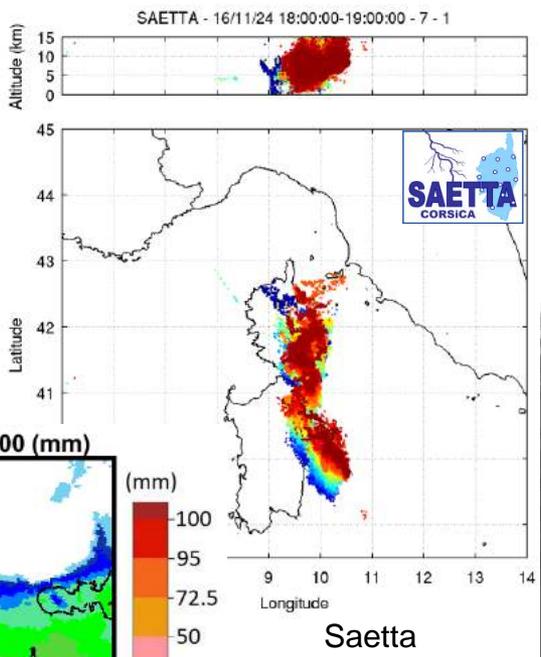
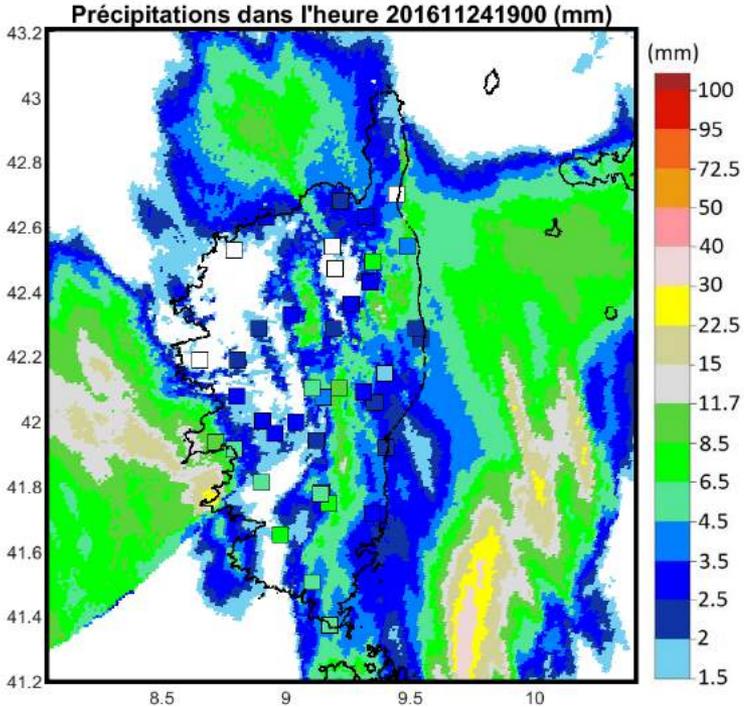
Radar et Pluviomètres
MétéoFrance



Situation météorologique observée

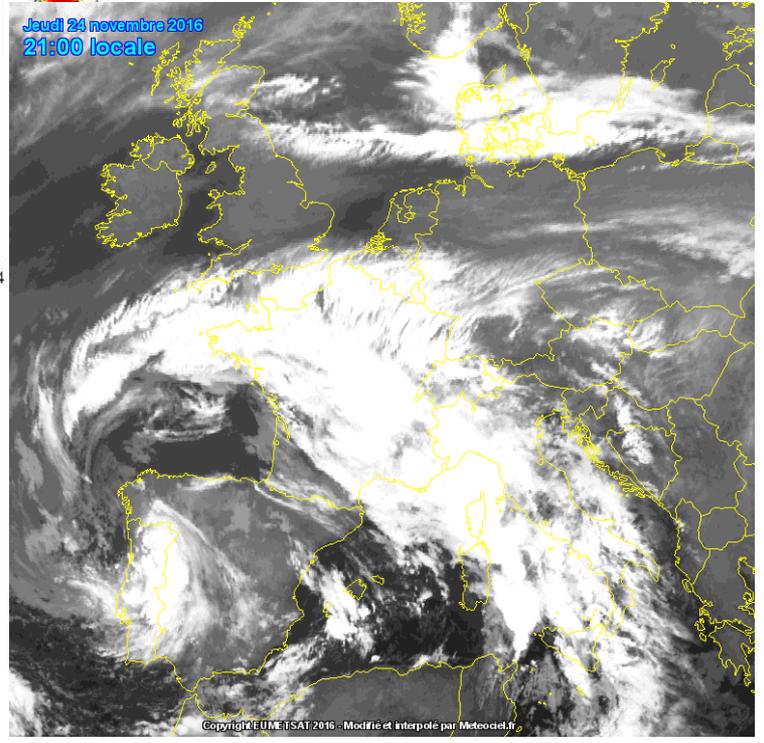
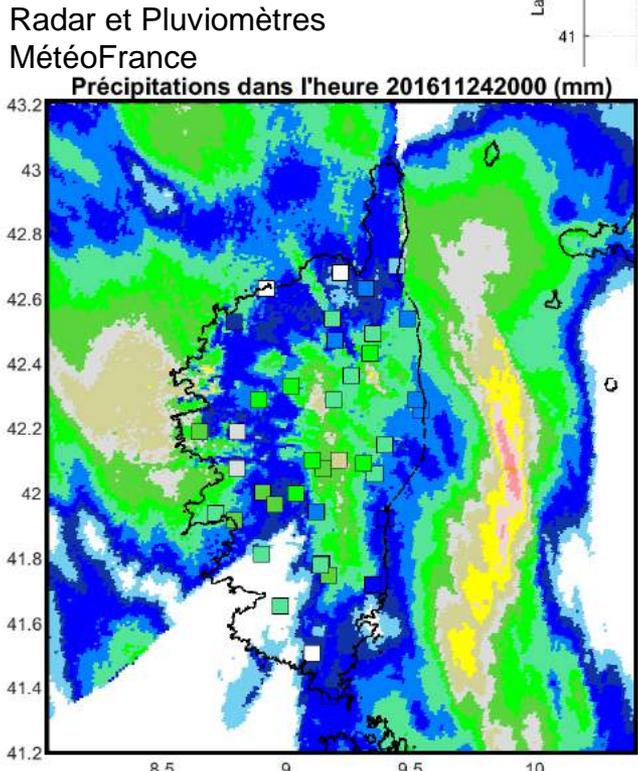
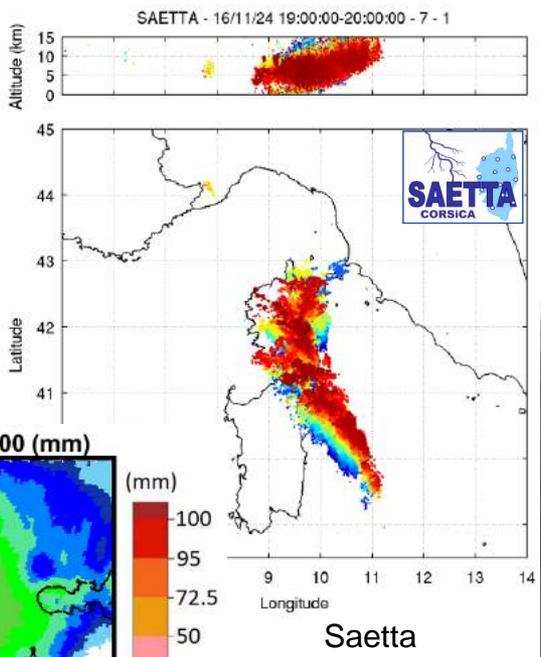
19h UTC

Radar et Pluviomètres
 MétéoFrance



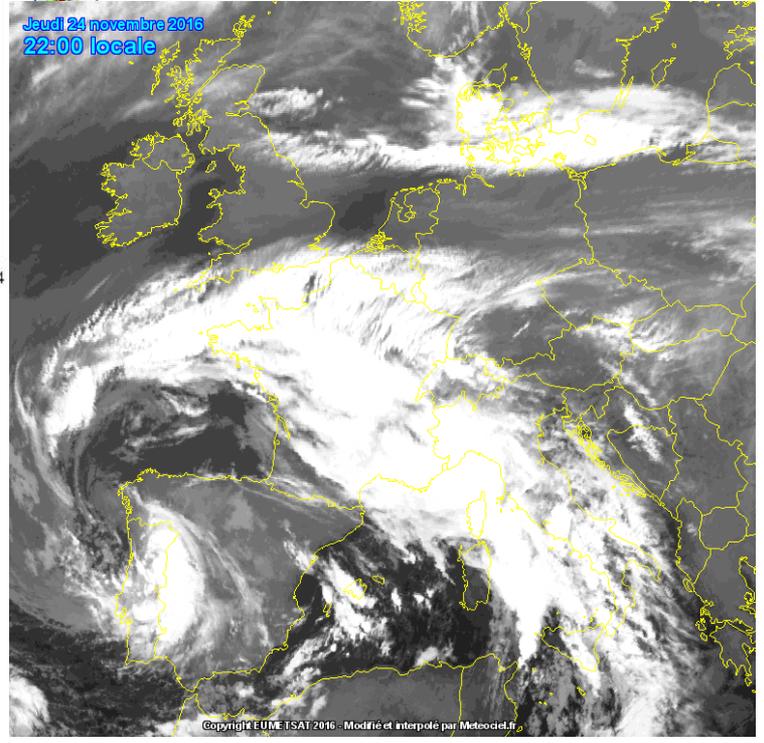
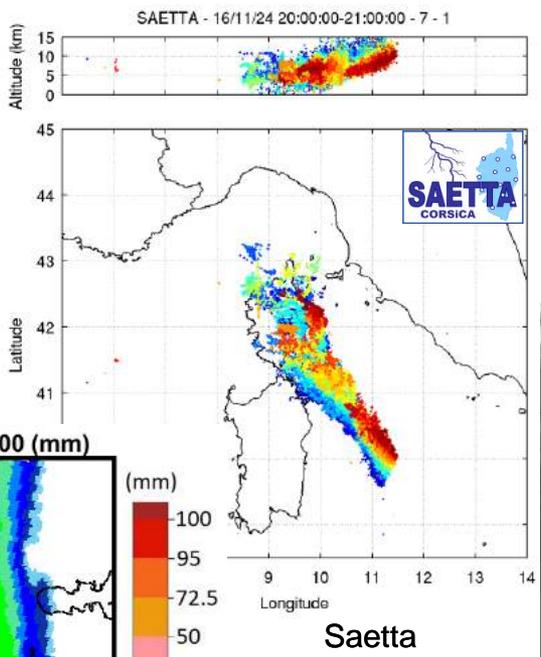
Situation météorologique observée

20h UTC

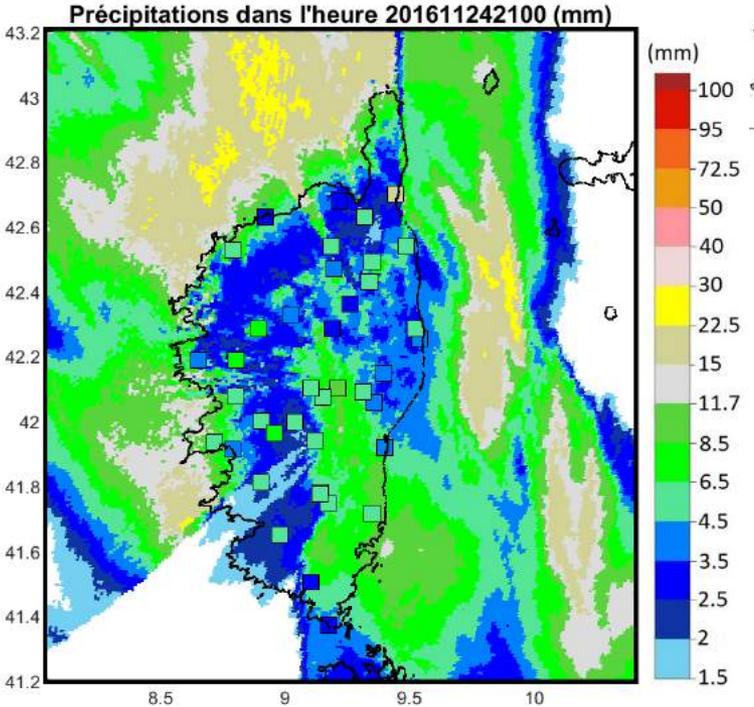


Situation météorologique observée

21h UTC

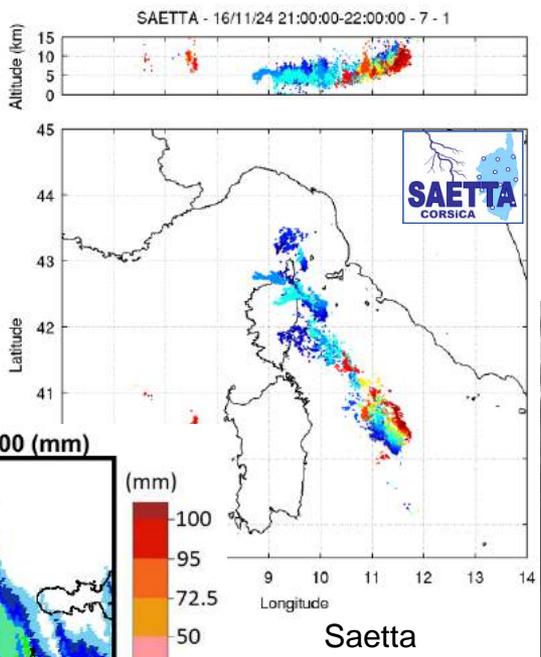


Radar et Pluviomètres
MétéoFrance

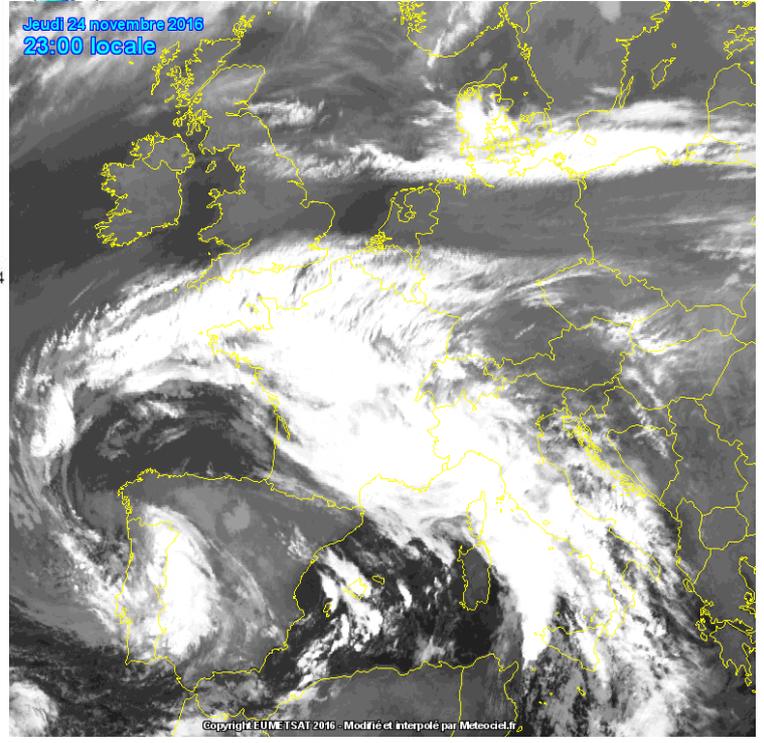
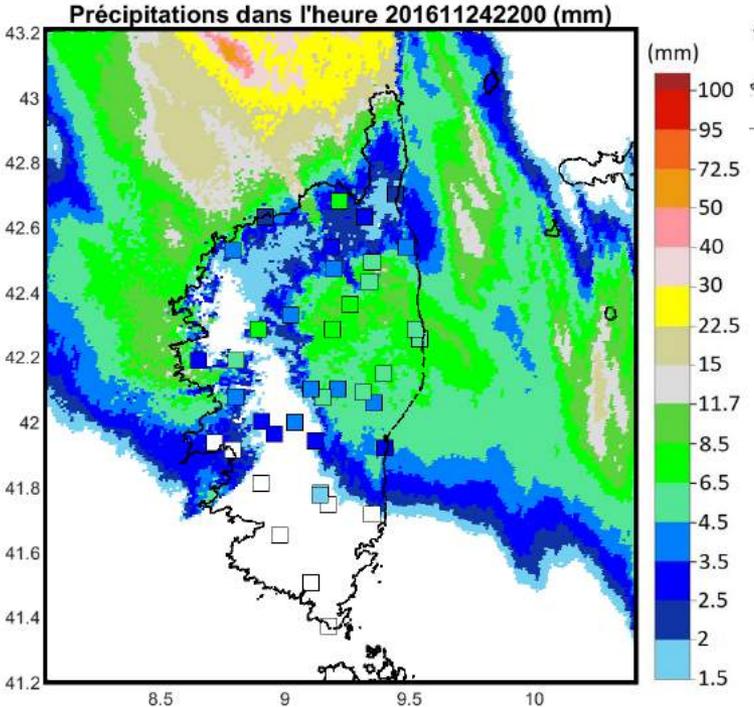


Situation météorologique observée

22h UTC

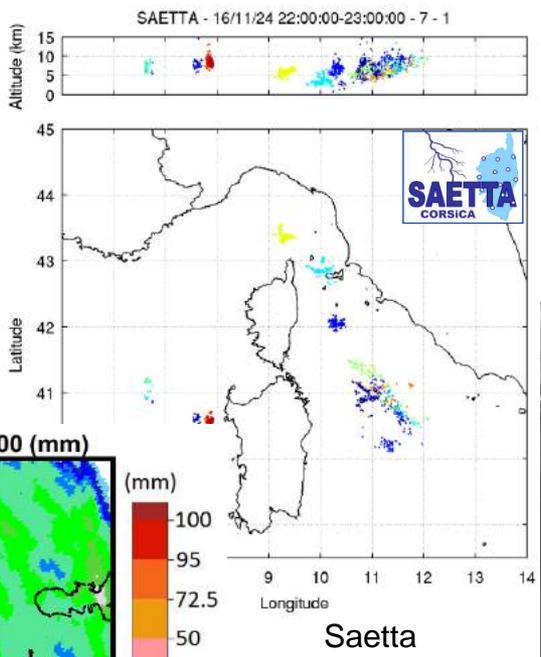


Radar et Pluviomètres
MétéoFrance

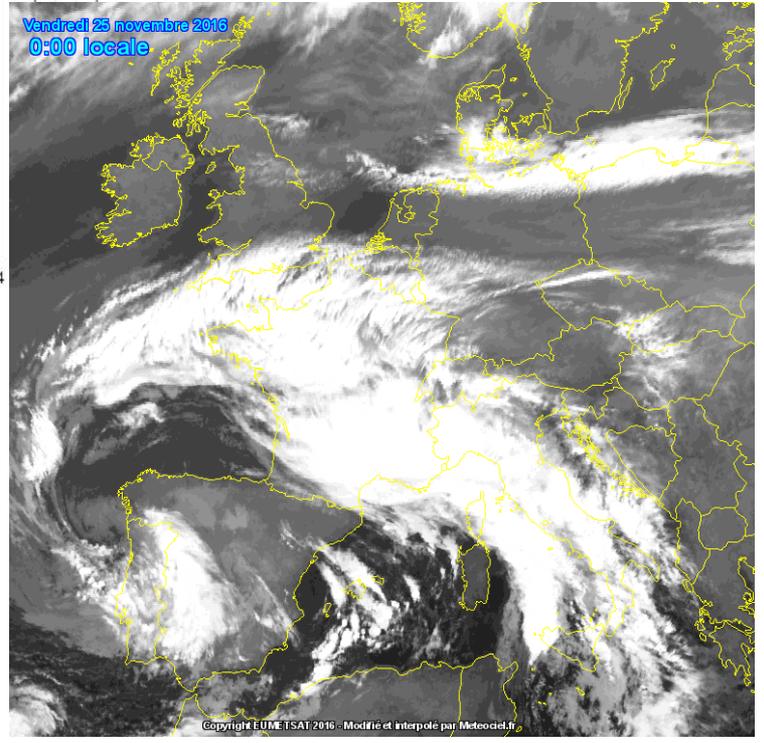
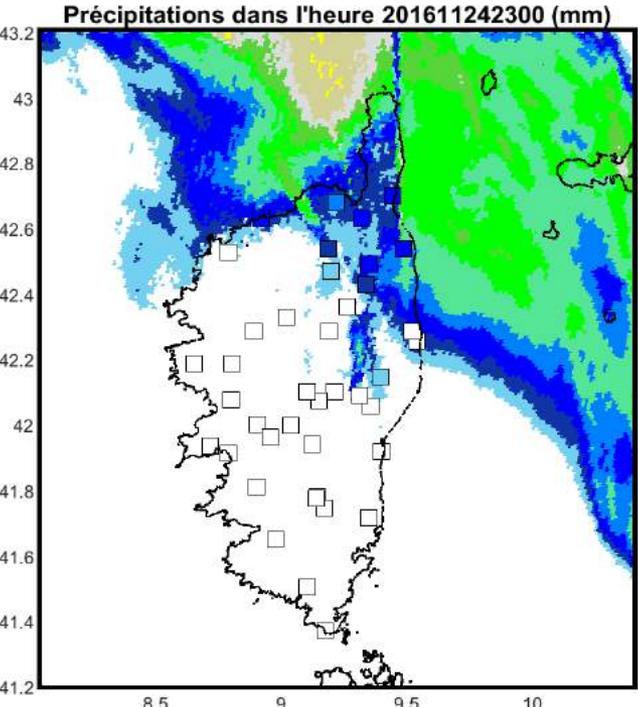


Situation météorologique observée

23h UTC

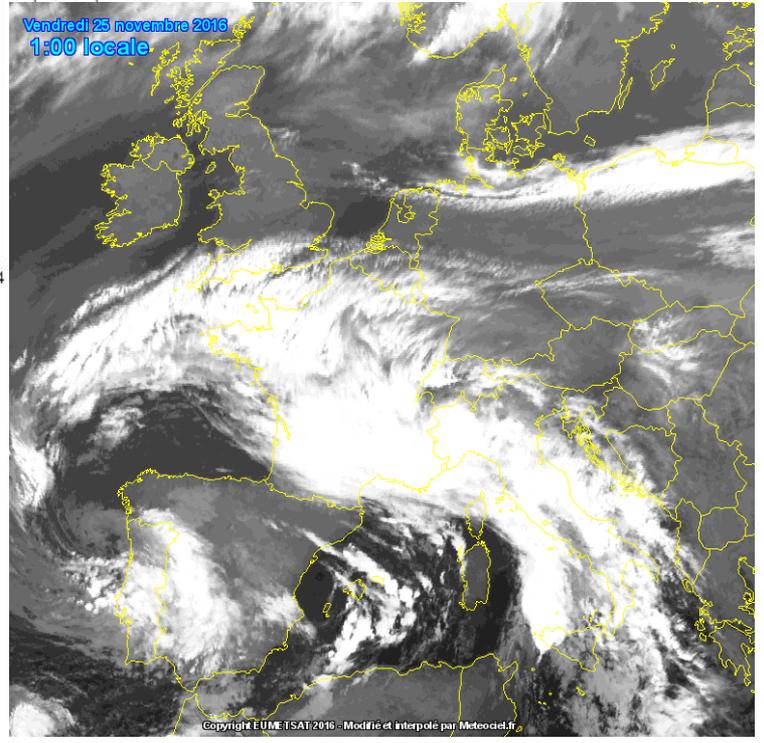
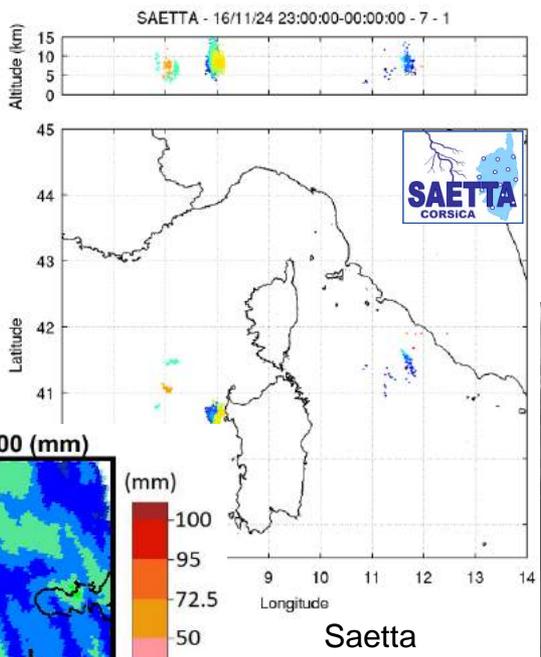


Radar et Pluviomètres
MétéoFrance

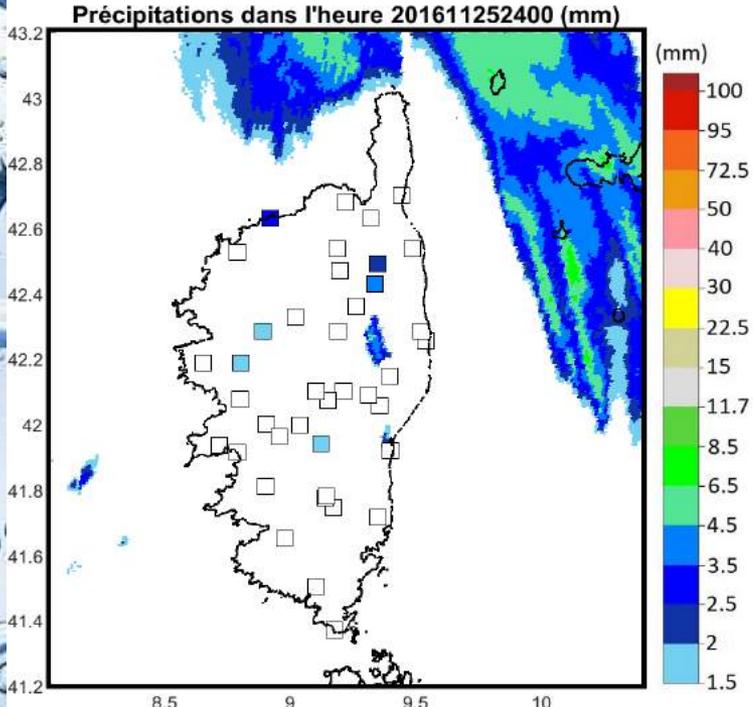


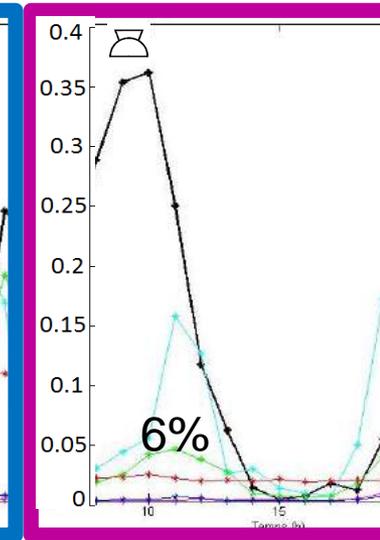
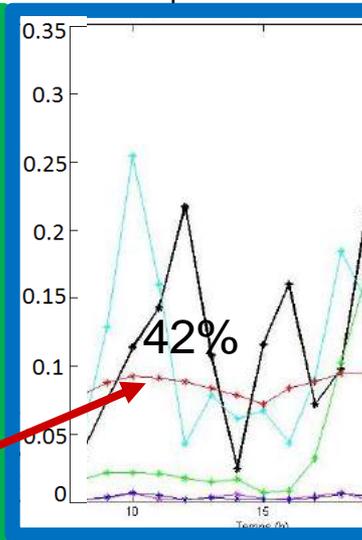
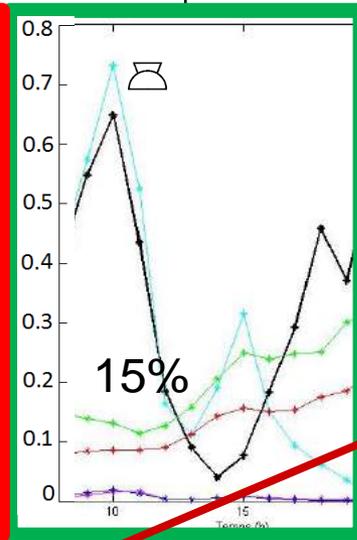
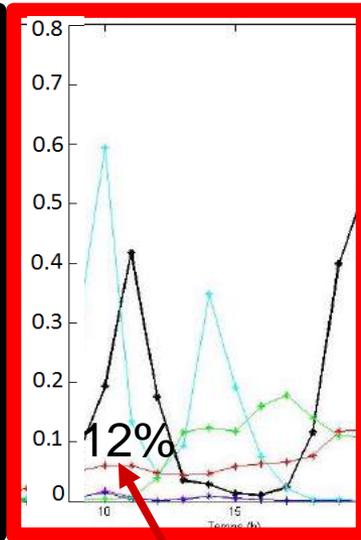
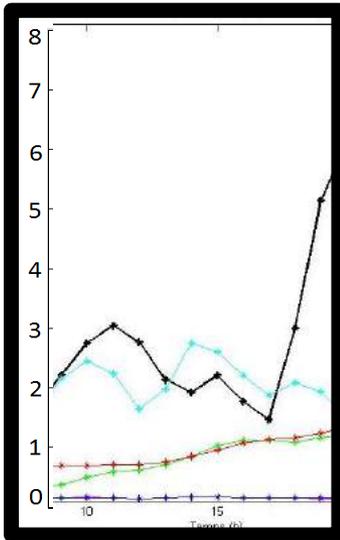
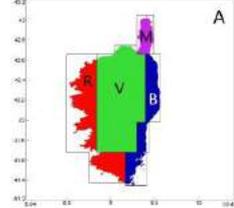
Situation météorologique observée

24h UTC



Radar et Pluviomètres
MétéoFrance





4.9.3

Passage du front

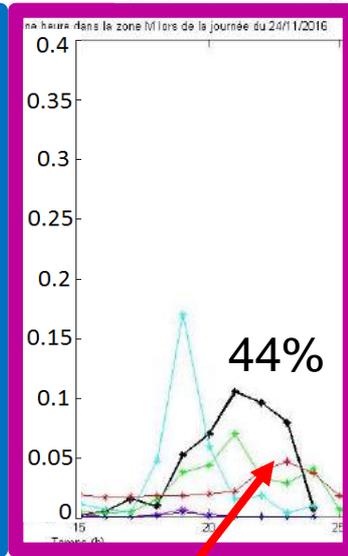
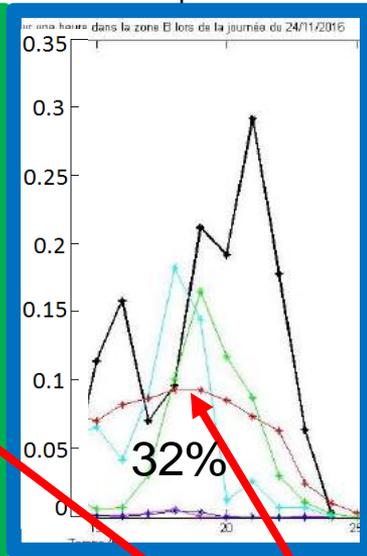
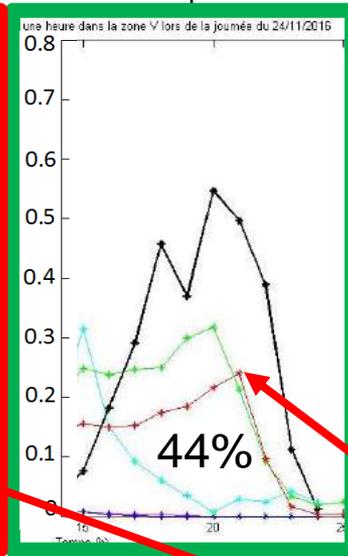
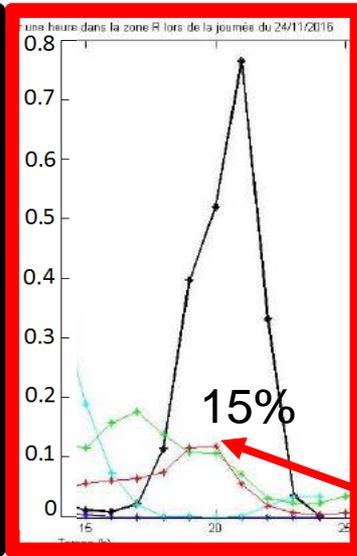
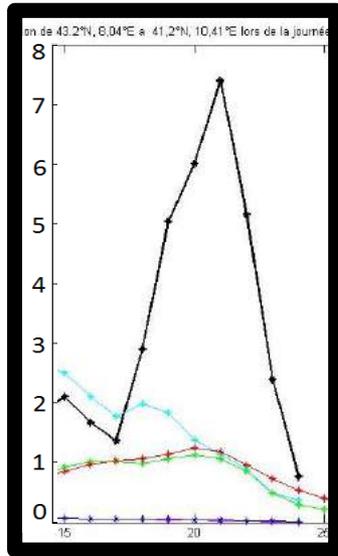
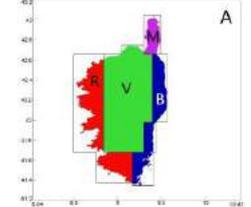
➔ ☒ 4.9.3

➔ ☒ 4.9.3

➔ ☒ 4.9.3

➔ ☒ 4.9.3

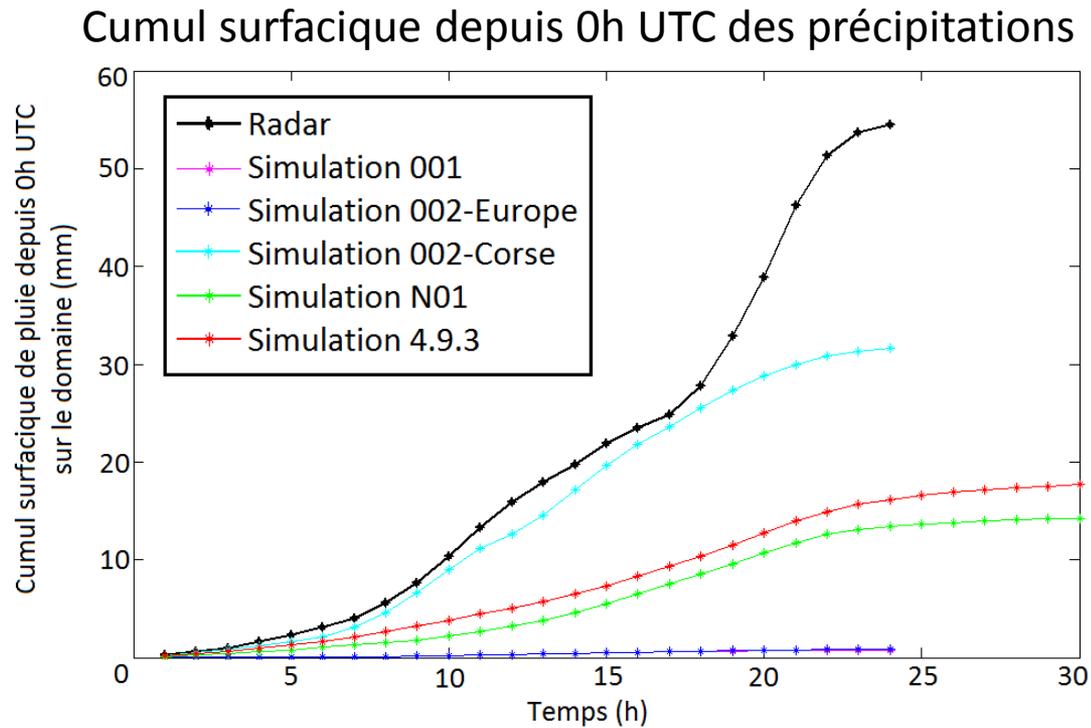
- Radar
- Simulation 001
- Simulation 002-Europe
- Simulation 002-Corse
- Simulation N01
- Simulation 4.9.3

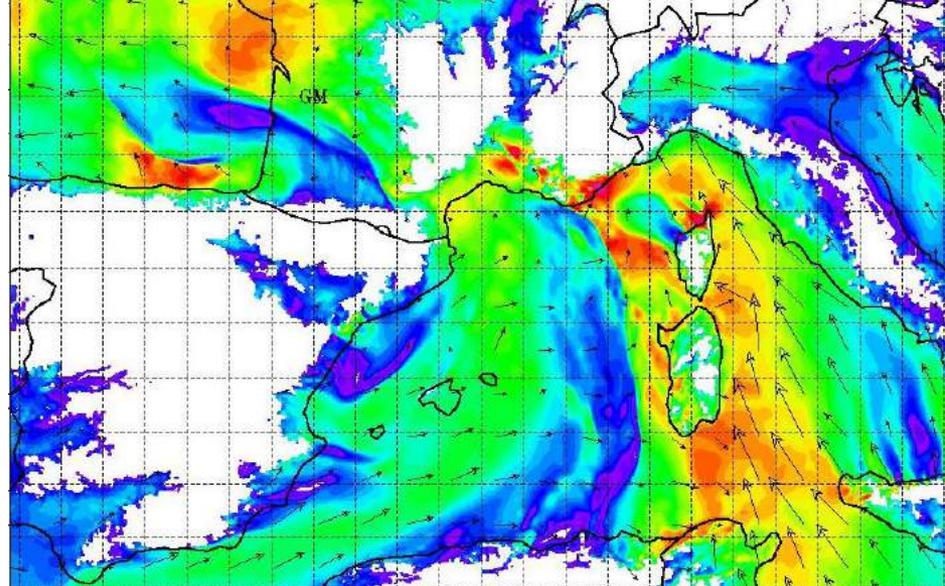
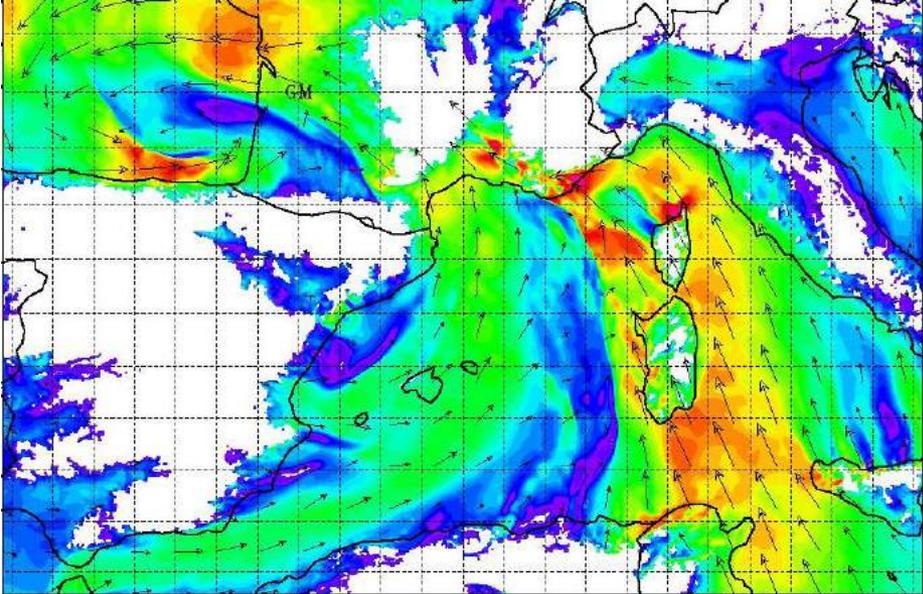


- 4.9.3
- 4.9.3
- 4.9.3
- 4.9.3

Ligne de Grain

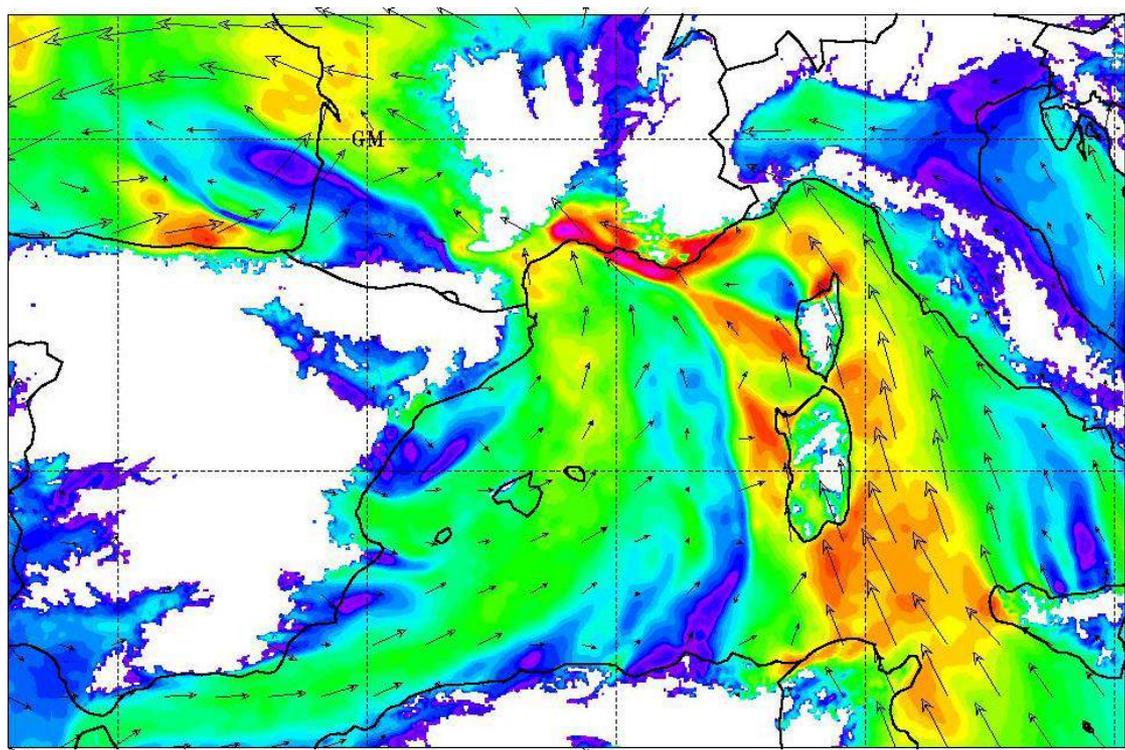
Résultats et Analyses





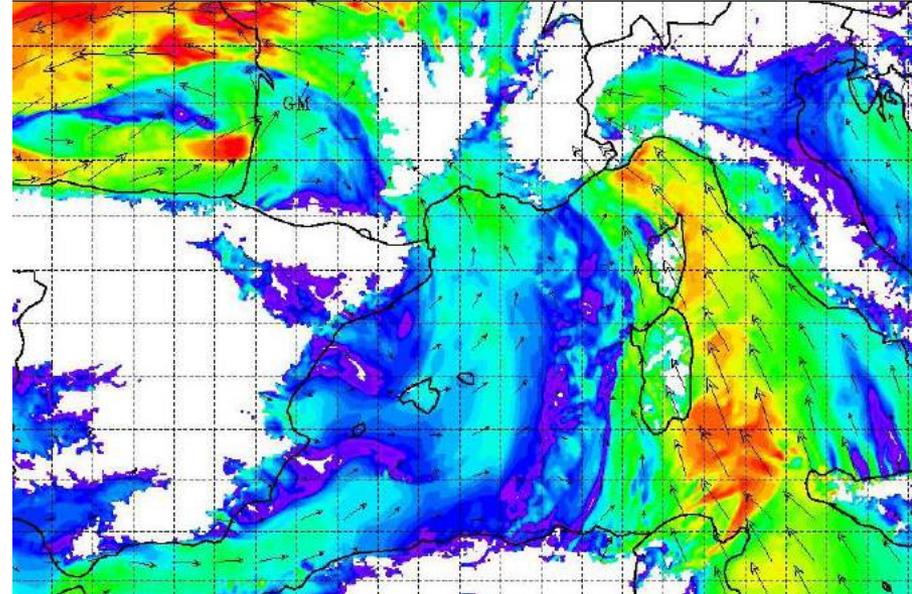
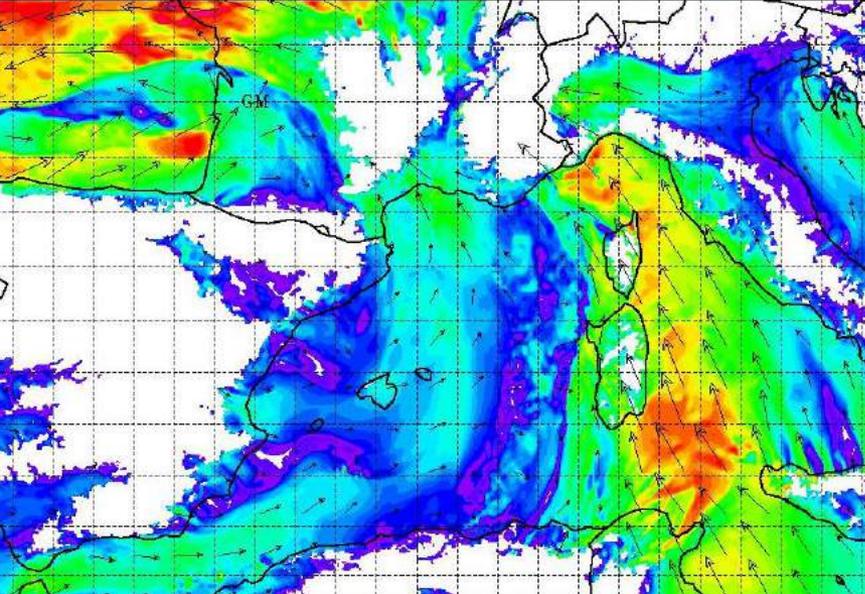
Simulation 001
(2,5 km
Europe)

0h -1h
UTC



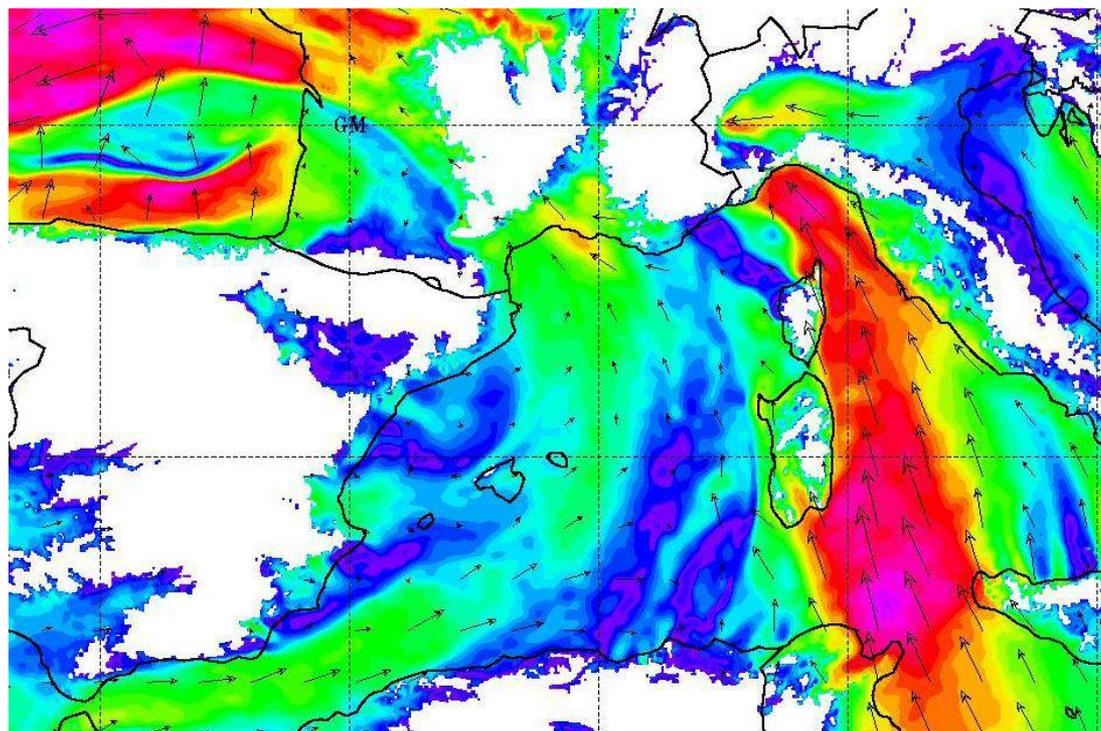
Simulation 002
(2,5 km
Europe+ 500m
Corse)

Analyses
ECMWF



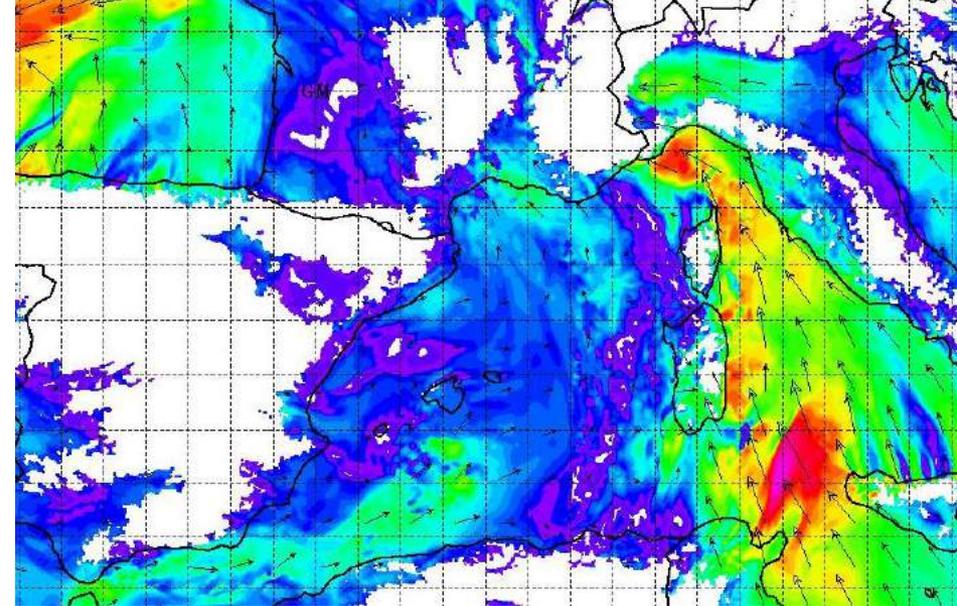
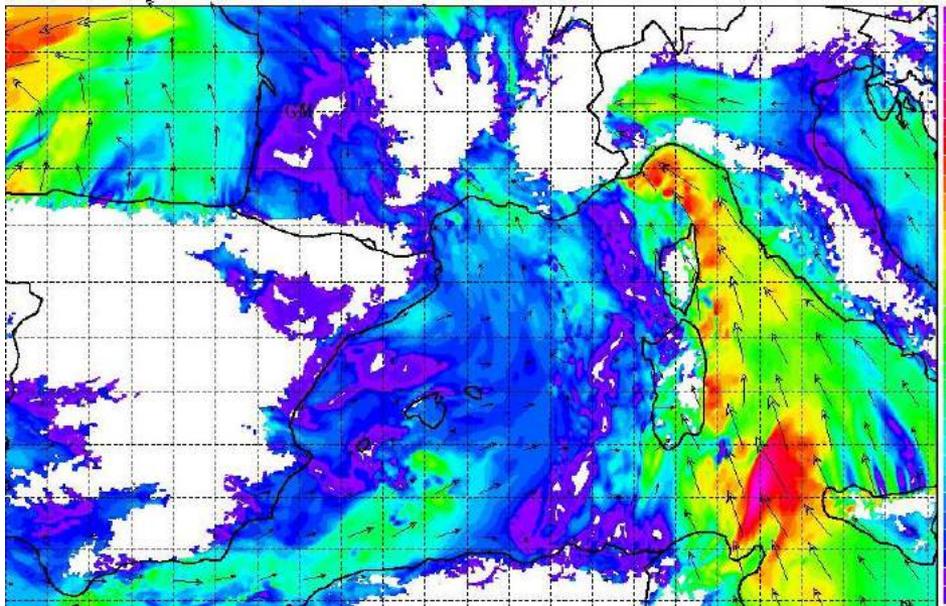
Simulation 001
(2,5 km
Europe)

6h
UTC



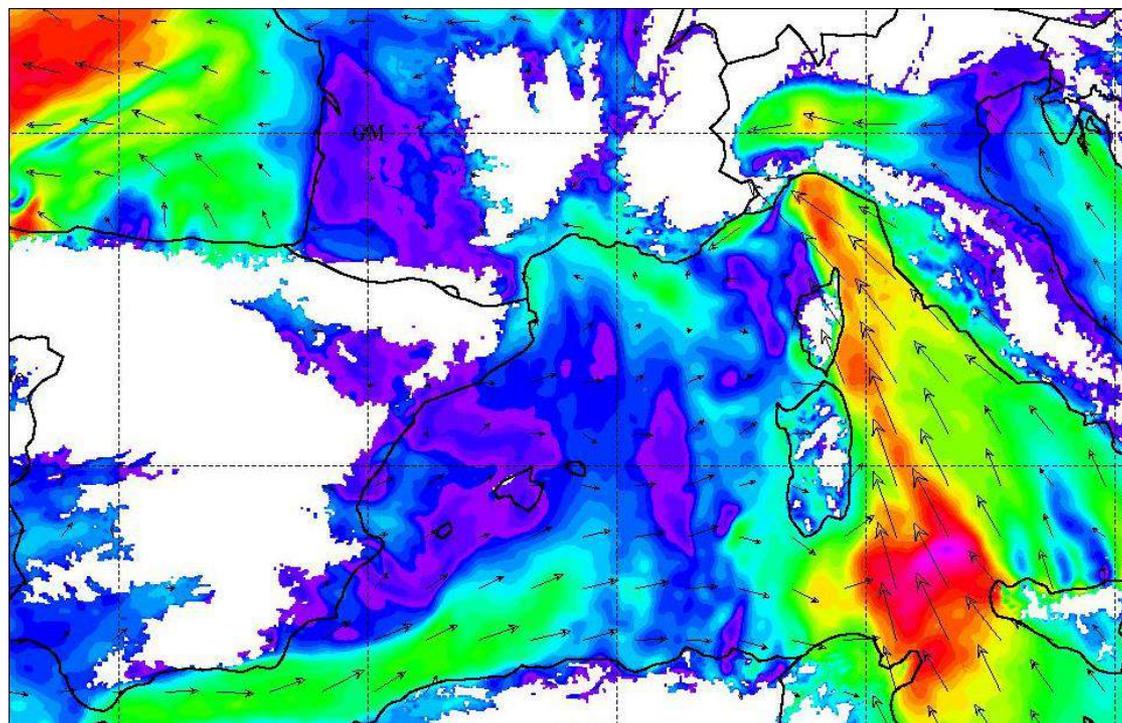
Simulation 002
(2,5 km
Europe+ 500m
Corse)

Analyses
ECMWF



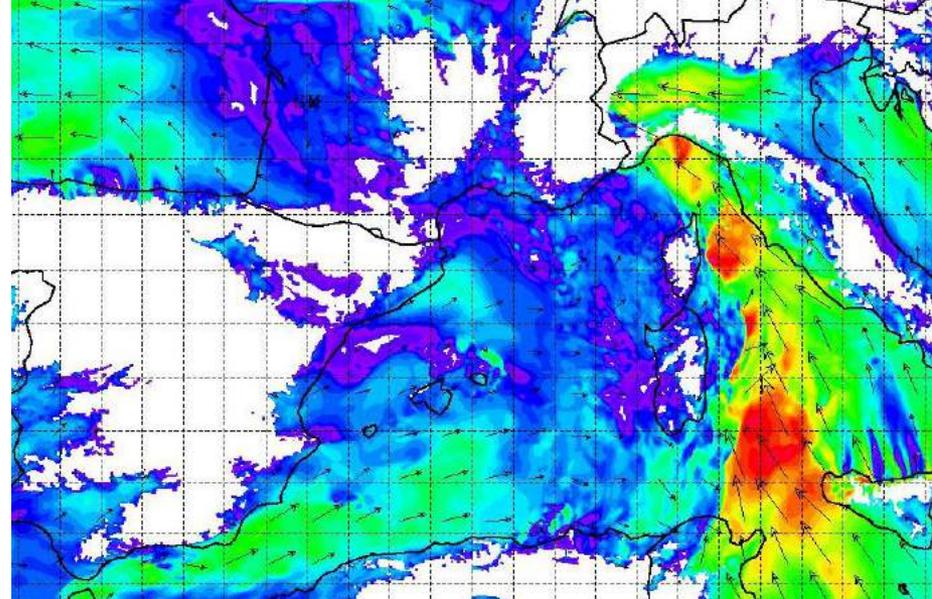
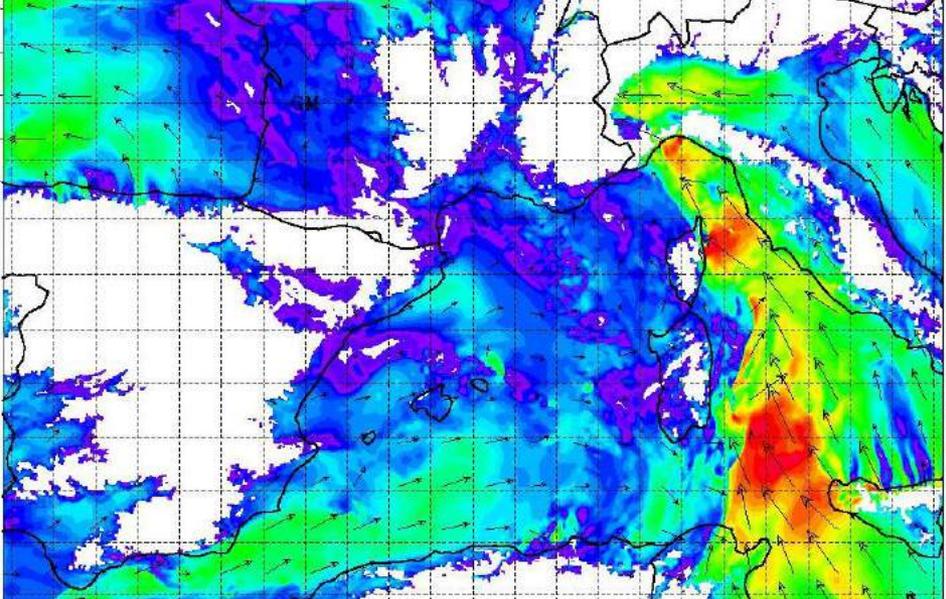
Simulation 001
(2,5 km
Europe)

12h
UTC



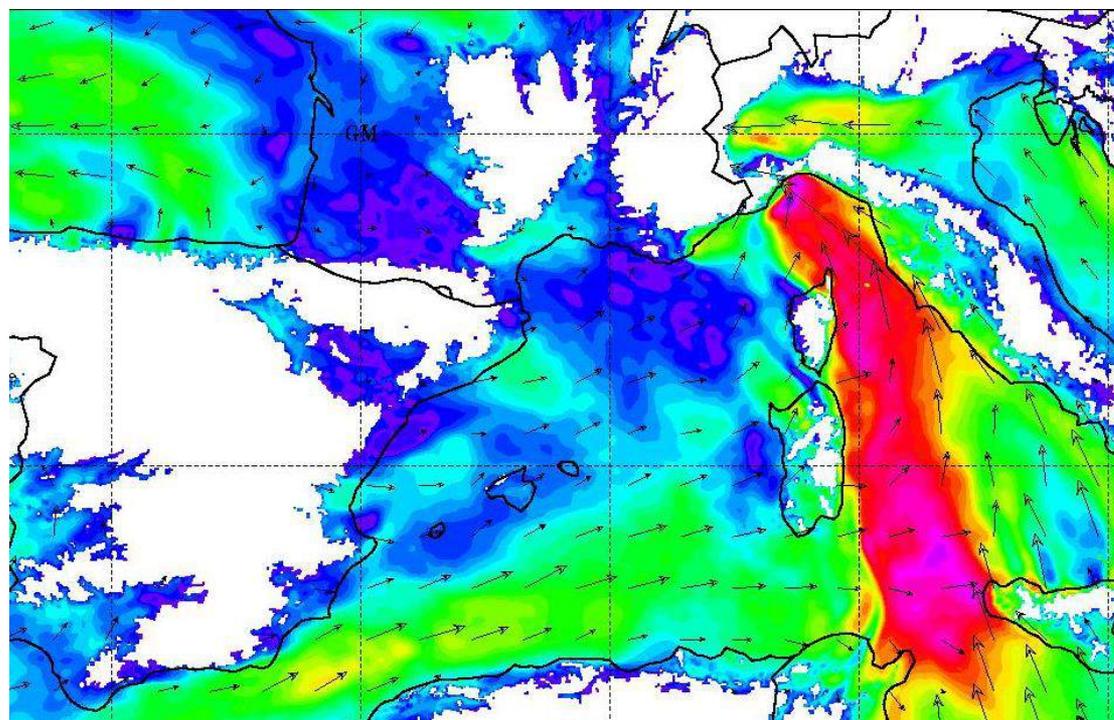
Simulation 002
(2,5 km
Europe+ 500m
Corse)

Analyses
ECMWF



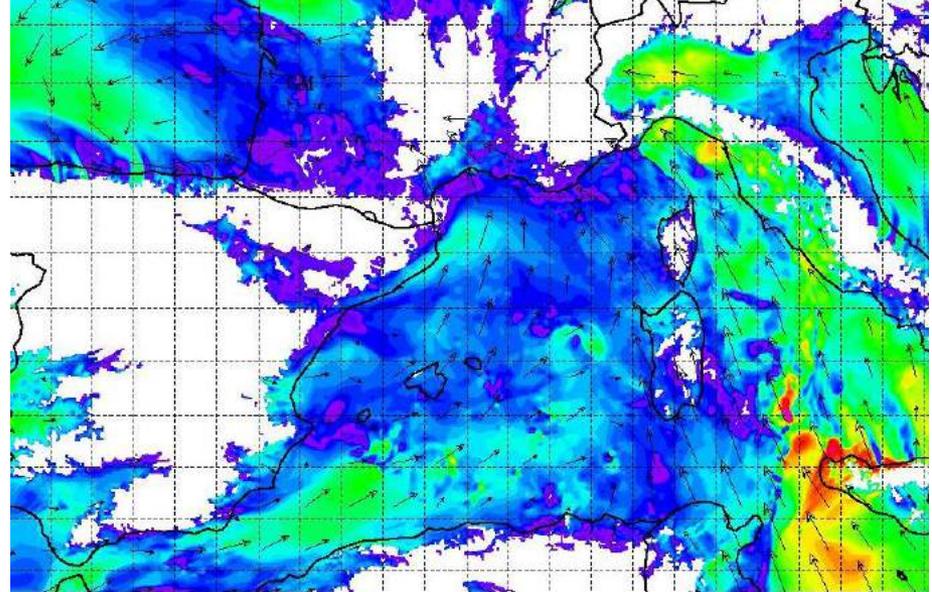
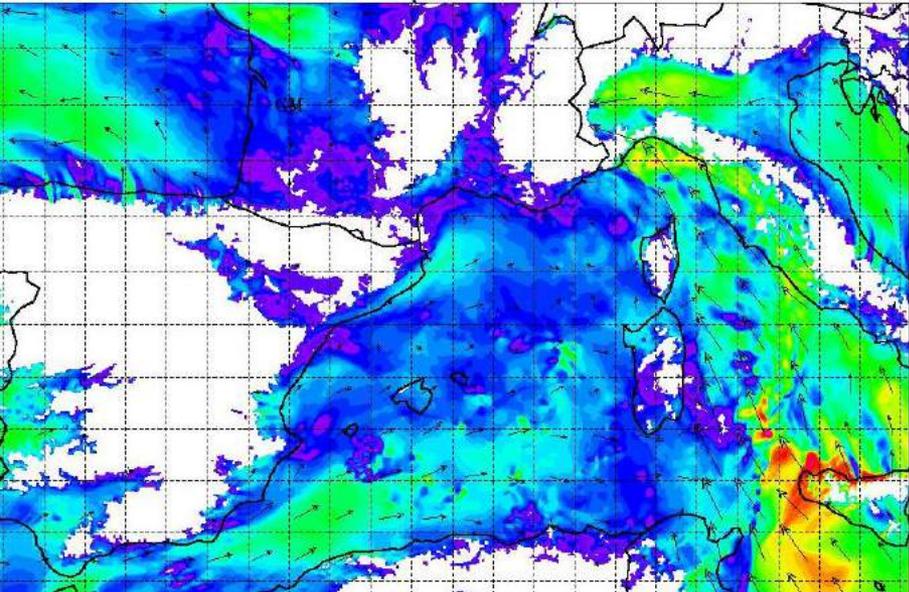
Simulation 001
(2,5 km
Europe)

18h
UTC



Simulation 002
(2,5 km
Europe+ 500m
Corse)

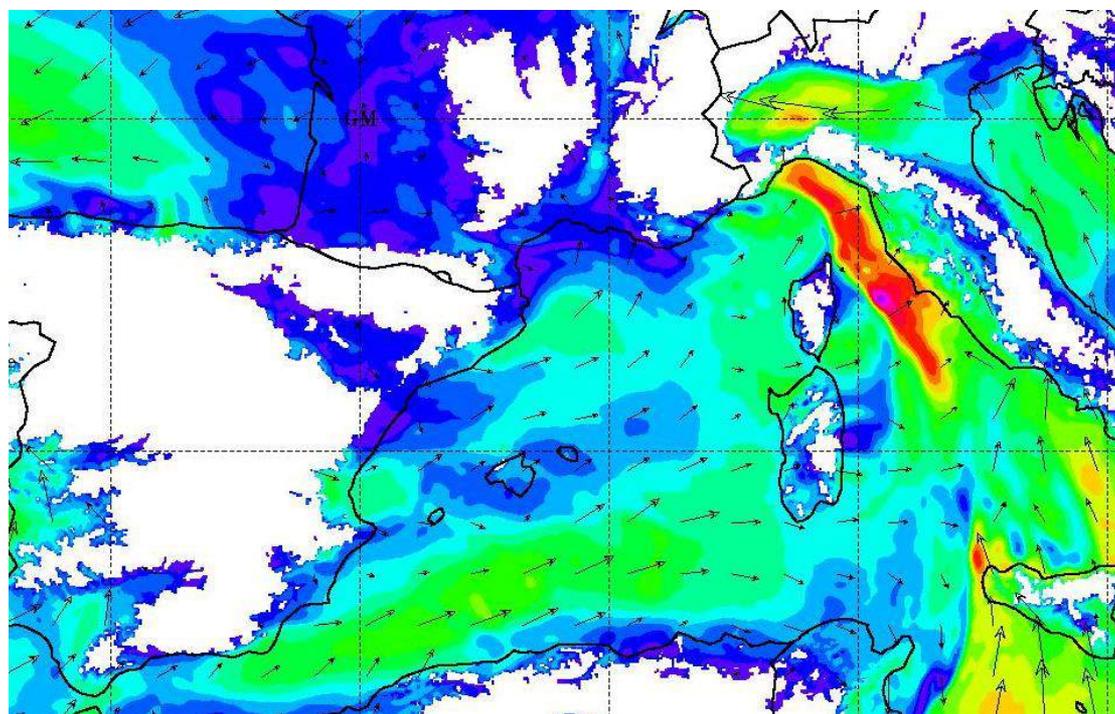
Analyses
ECMWF



Simulation 001
(2,5 km
Europe)

Simulation 002
(2,5 km
Europe+ 500m
Corse)

24h
UTC



Analyses
ECMWF