SYNERGIE* updates and plan

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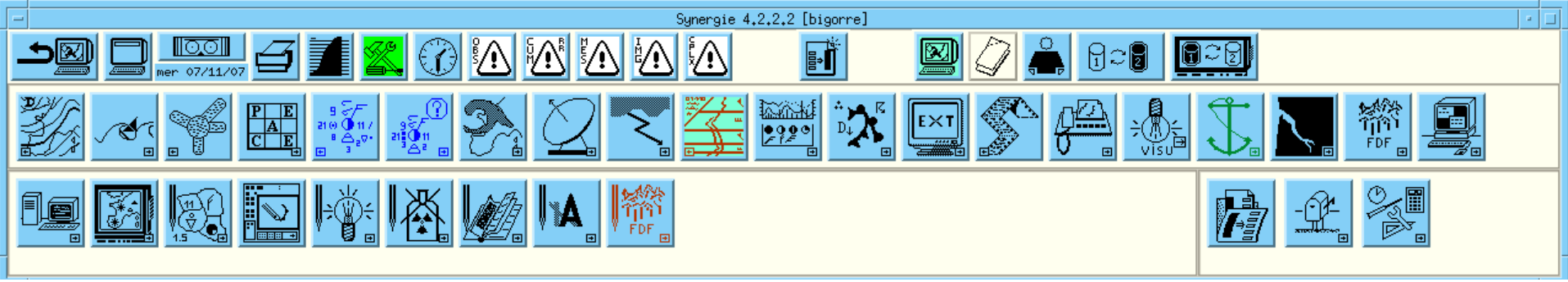
Météo-France

*Météo-France Operational forecasting tool

METEO FRANCE
Toujours un temps d'avance

Plan

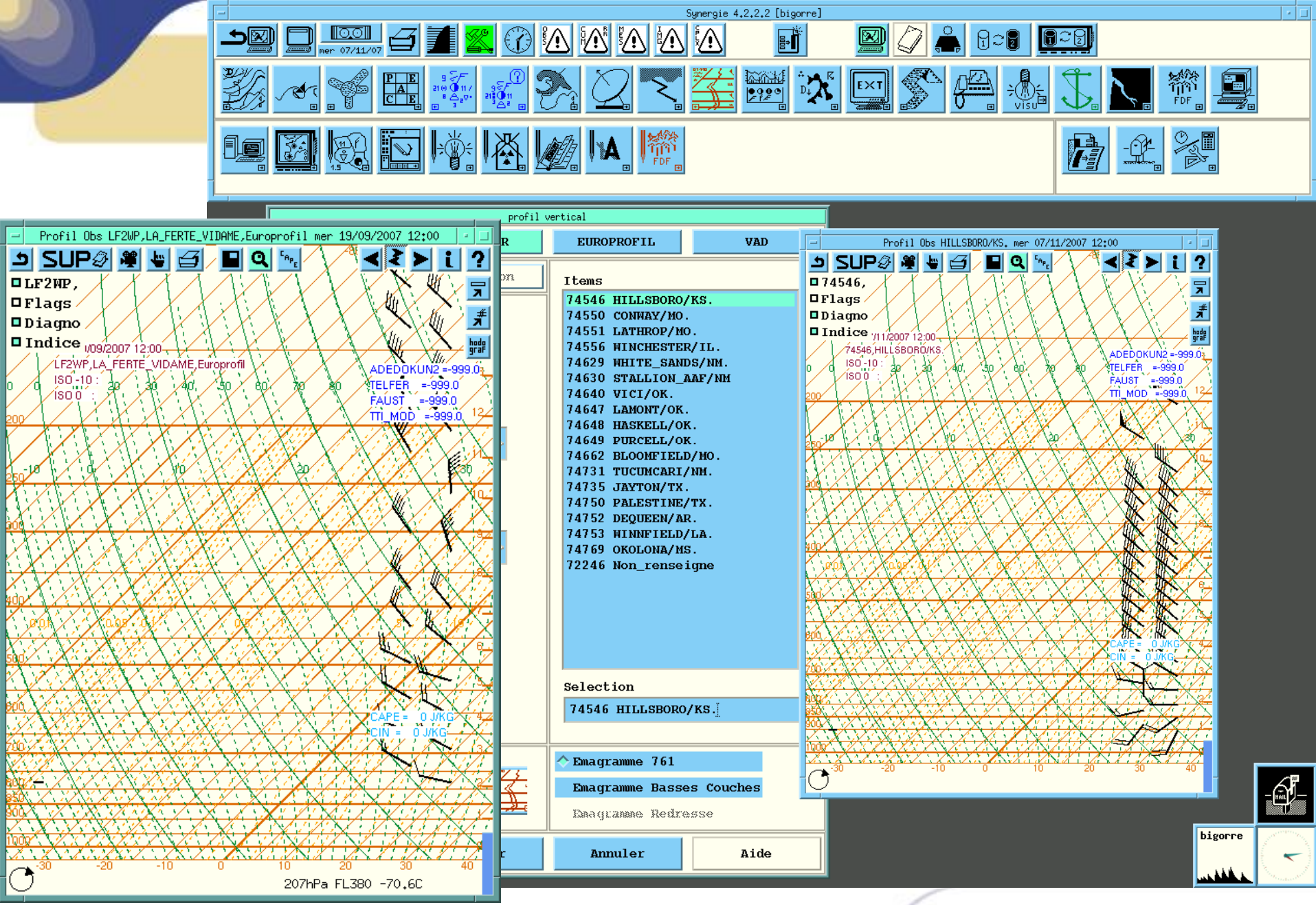
- Background
- New data ingested
- New functionalities
- Major new developments
- Conclusion



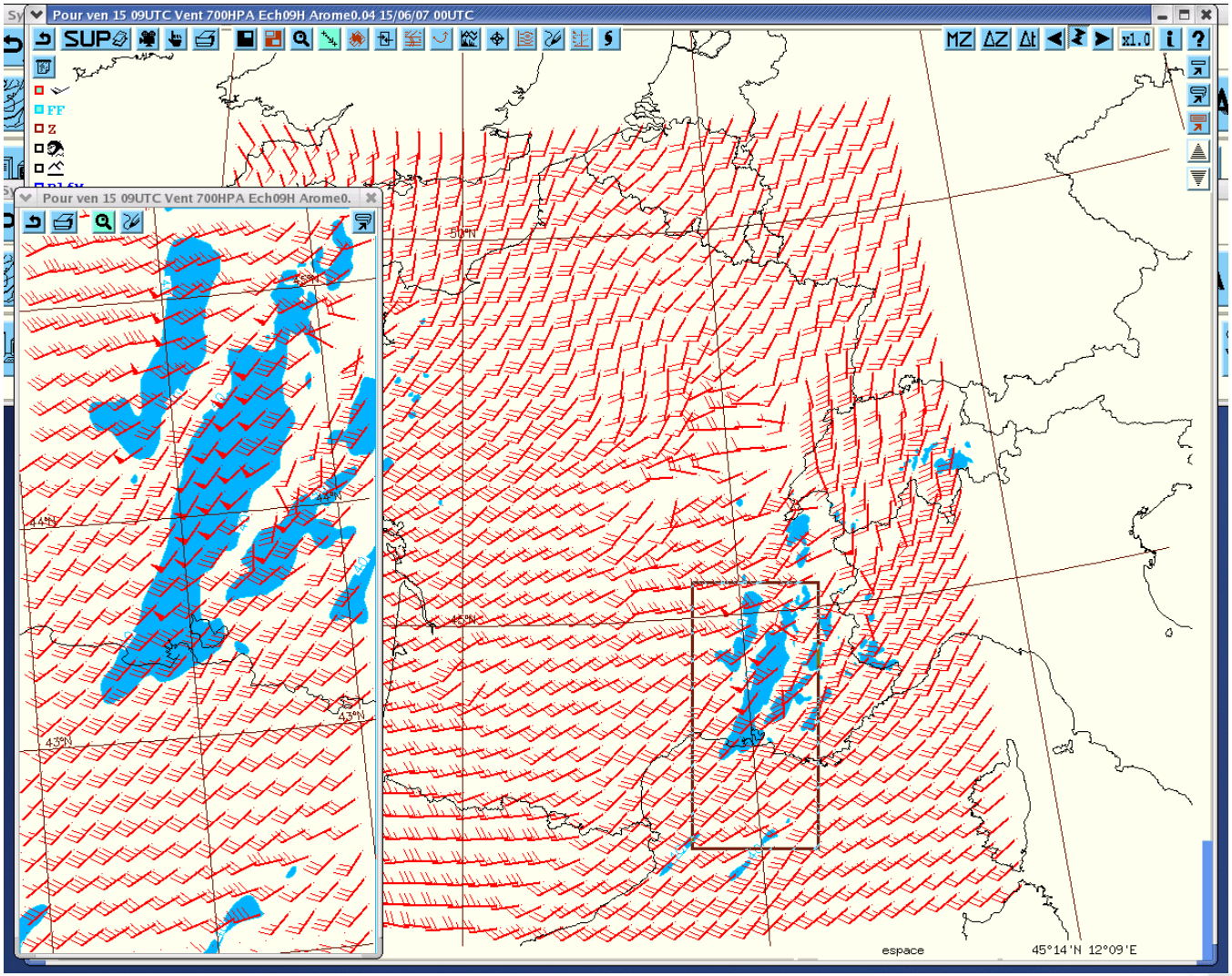
- Synergie has been the operational forecaster tool since 1993.
- The operational version or French forecasters is Synergie 4.2 :
  - Visualisation of all available data (model, observation, radar, lightning, satellite, objects – from WAFS, fronts, RDT, …)
  - Superposition and animation
  - Cross section on 3D data
  - Production of objects (fronts, ANASYG, SIGWX)
  - Production of maps and charts, and Symposium.
  - Modification of PV to re-run model (TSR)
  - Macro or short cuts.
  - Batch production
- Synergie 4.3 version is under development.

New data ingested in 2 years

- Profilers and dropsonde data
- Fine Mesh model AROME
- High resolution US SST 1/12°
- Envisat 10M wind forces and waves height
- Jason wind forces and waves height
- METOP, ERS AND QUISCKAT Ascat Combination
- METOP data : cloud classification
- Bollene AND Nimes 3D radars
- New hourly rain analysis (Antilope)
- Surge model and water level watch over ports
- Long distance UK lightning network
- Fog synthetic diagnostic (Caribou)


Synergie 4.2.2.2 [bigorre]
profil vertical
EUROPROFIL
VAD
Items
74546 HILLSBORO/KS.
74550 CONWAY/MO.
74551 LATHROP/MO.
74556 WINCHESTER/IL.
74629 WHITE_SANDS/NM.
74630 STALLION_AAF/NM
74640 VICI/OK.
74647 LAMONT/OK.
74648 HASKELL/OK.
74649 PURCELL/OK.
74662 BLOOMFIELD/MO.
74731 TUCUMCARI/NM.
74735 JAYTON/TX.
74750 PALESTINE/TX.
74752 DEQUEEN/AR.
74753 WINNFIELD/LA.
74769 OKOLONA/MS.
72246 Non_renseigne
Selection
74546 HILLSBORO/KS.
Emagramme 761
Emagramme Basses Couches
Emagramme Redresse
Annuler
Aide
Profil Obs LF2WP,LA_FERTE_VIDAME,Europrofil mer 19/09/2007 12:00
LF2WP,
Flags
Diagno
Indice
ADEDOKUN2 =-999.0
TELFER =-999.0
FAUST =-999.0
TTI_MOD =-999.0
CAPE = 0 J/KG
CIN = 0 J/KG
207hPa FL380 -70.6C
Profil Obs HILLSBORO/KS. mer 07/11/2007 12:00
74546,
Flags
Diagno
Indice
74546,HILLSBORO/KS.
ADEDOKUN2 =-999.0
TELFER =-999.0
FAUST =-999.0
TTI_MOD =-999.0
CAPE = 0 J/KG
CIN = 0 J/KG
bigorre

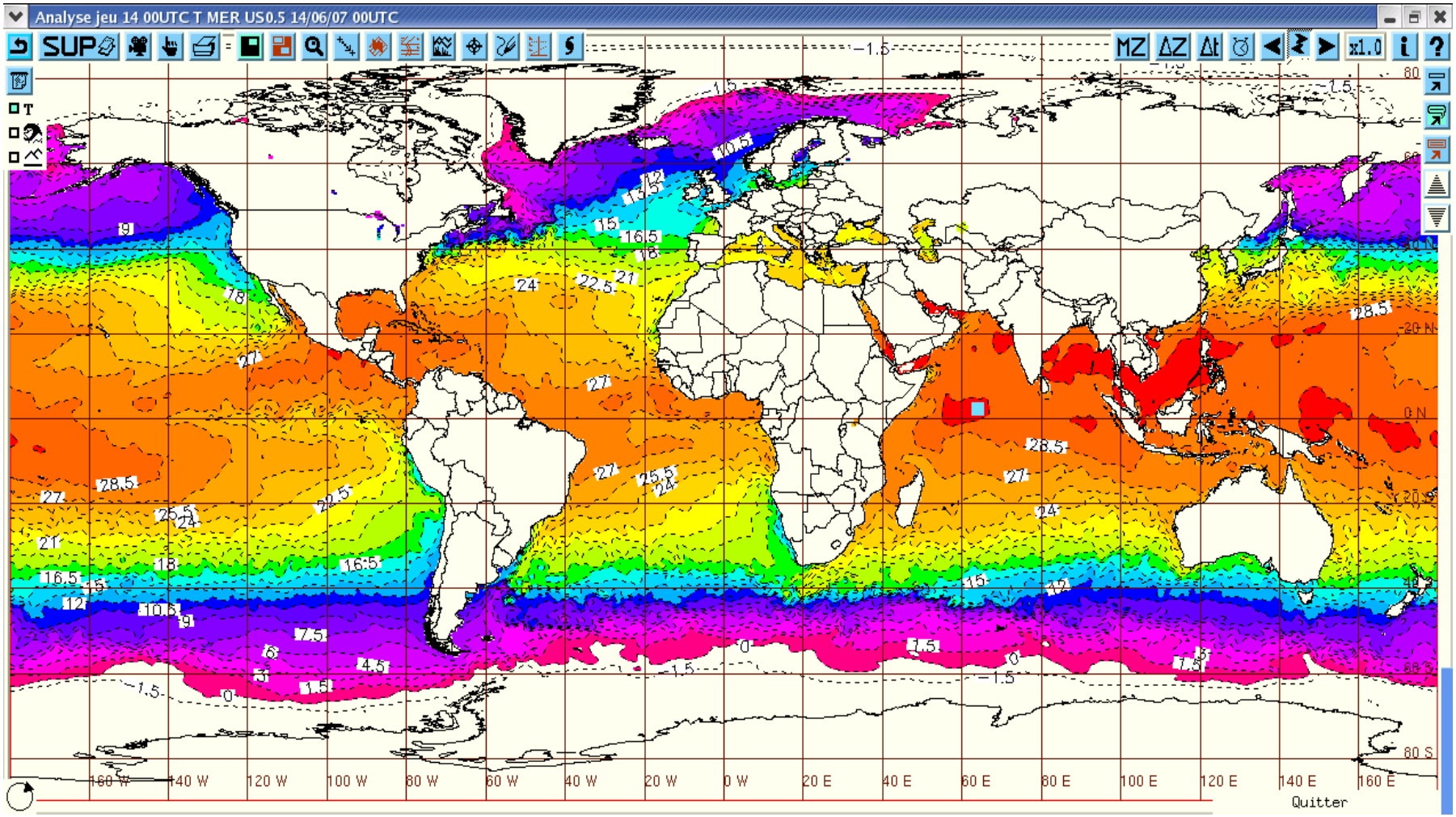
Fine Mesh model AROME



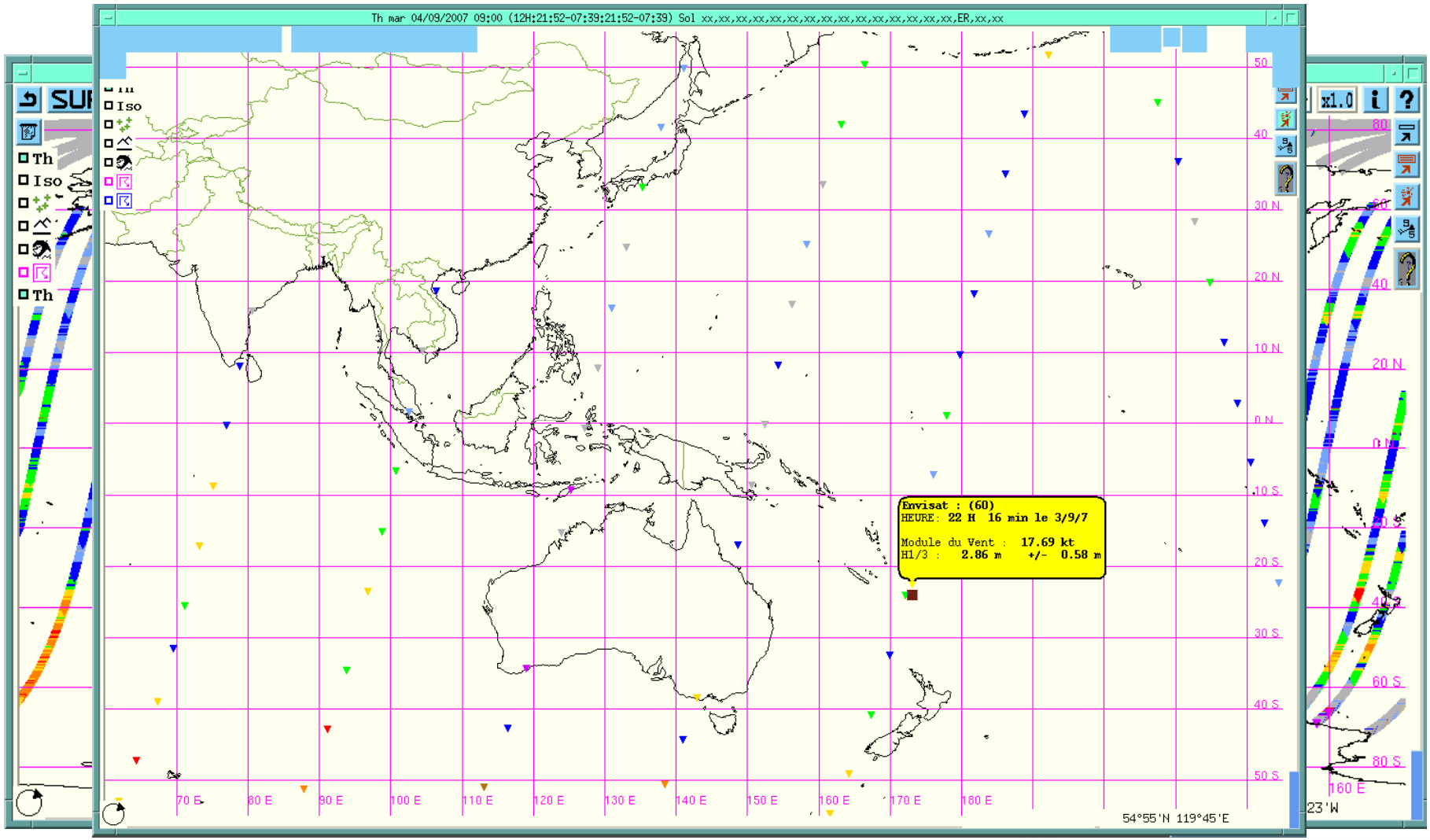
In operational mid- 2008

Mesh 2.5 km

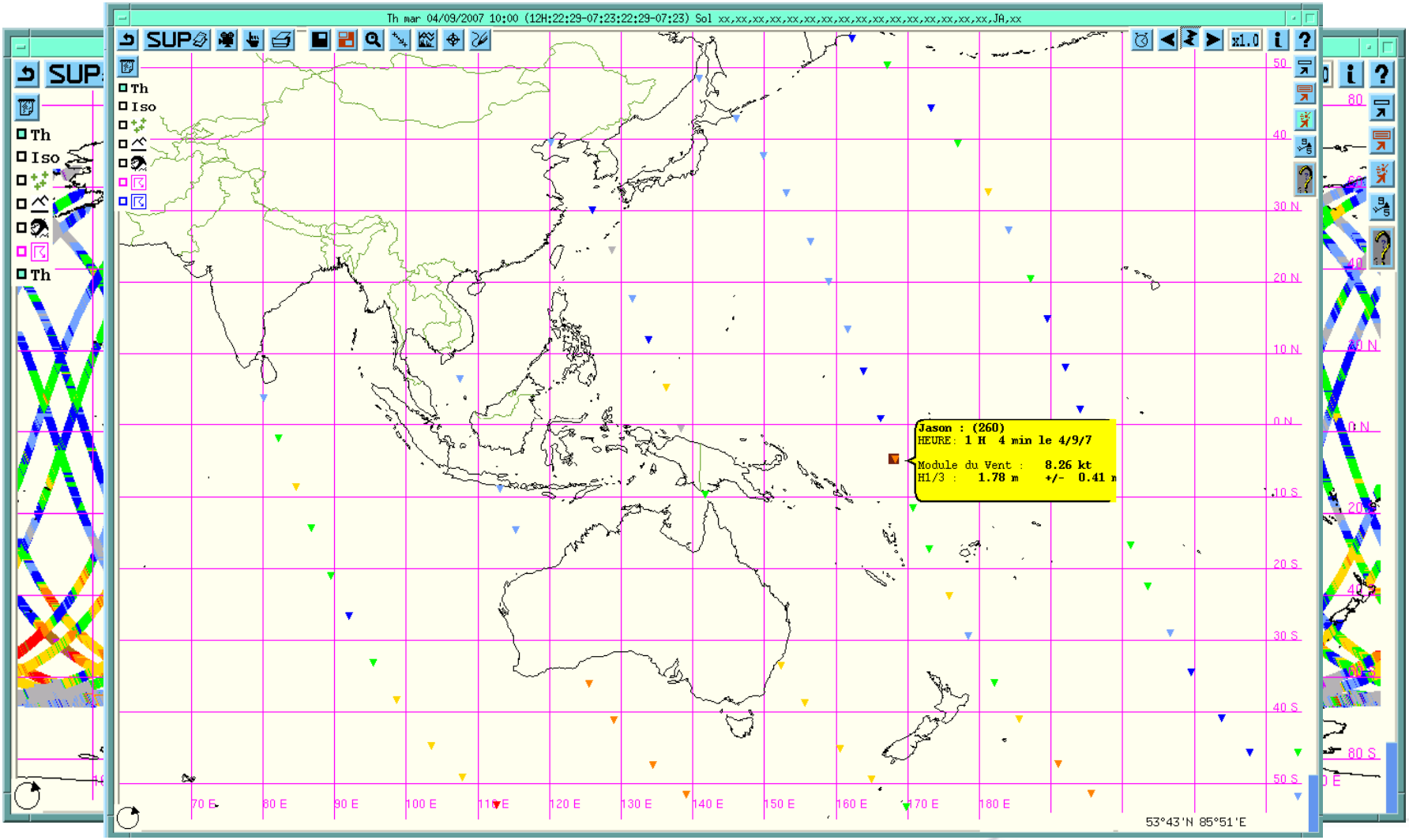
US SST 1/12°


Analyse jeu 14 00UTC T MER US0.5 14/06/07 00UTC
SUP
MZ
ΔZ
Δt
x1.0
160 W
140 W
120 W
100 W
80 W
60 W
40 W
20 W
0 W
20 E
40 E
60 E
80 E
100 E
120 E
140 E
160 E
80 S
Quitter

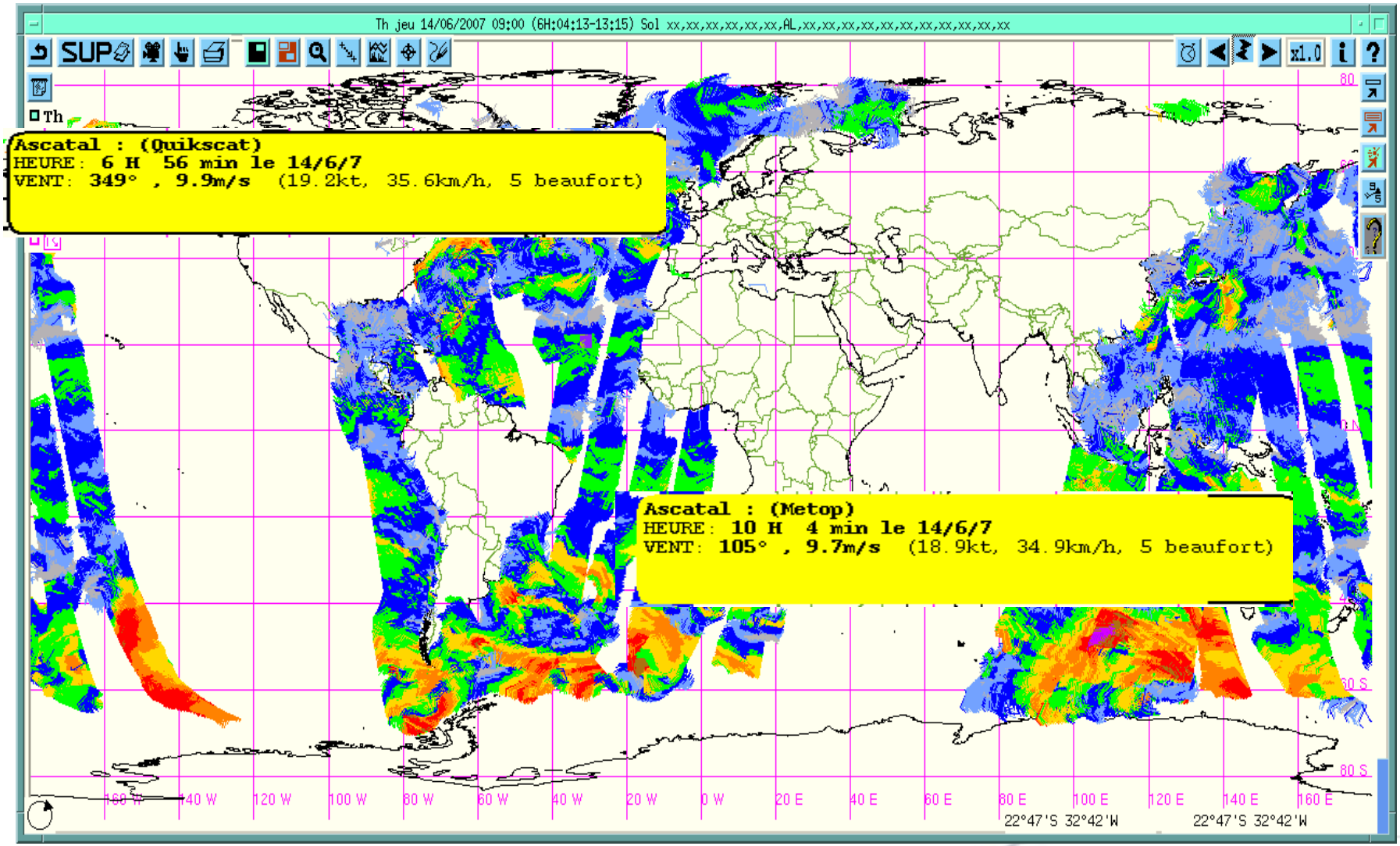
Envisat 10M wind forces and waves height



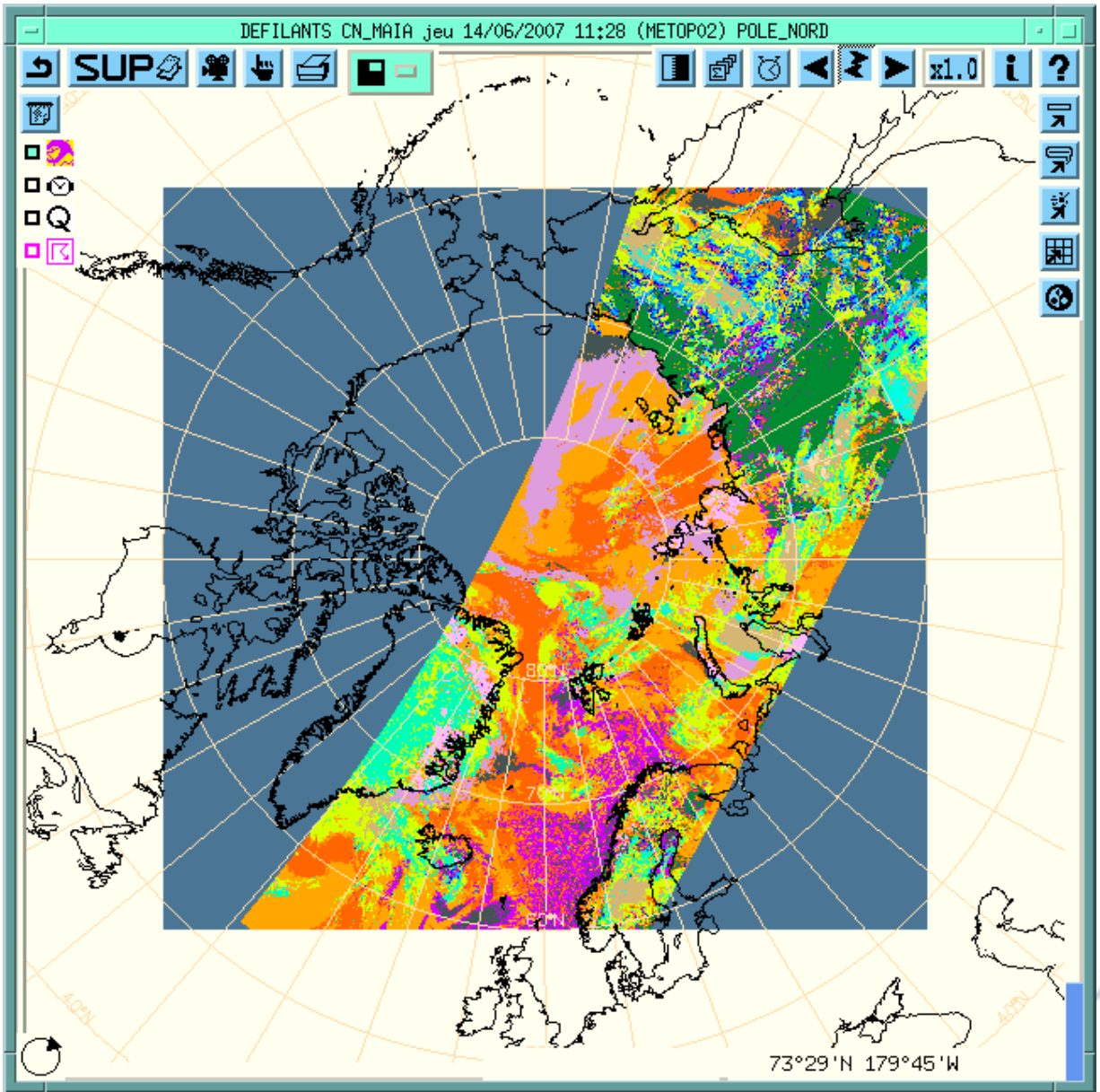
Jason wind forces and waves height



Metop, ERS, Quikscat: Ascat Combination



METOP data : cloud classification



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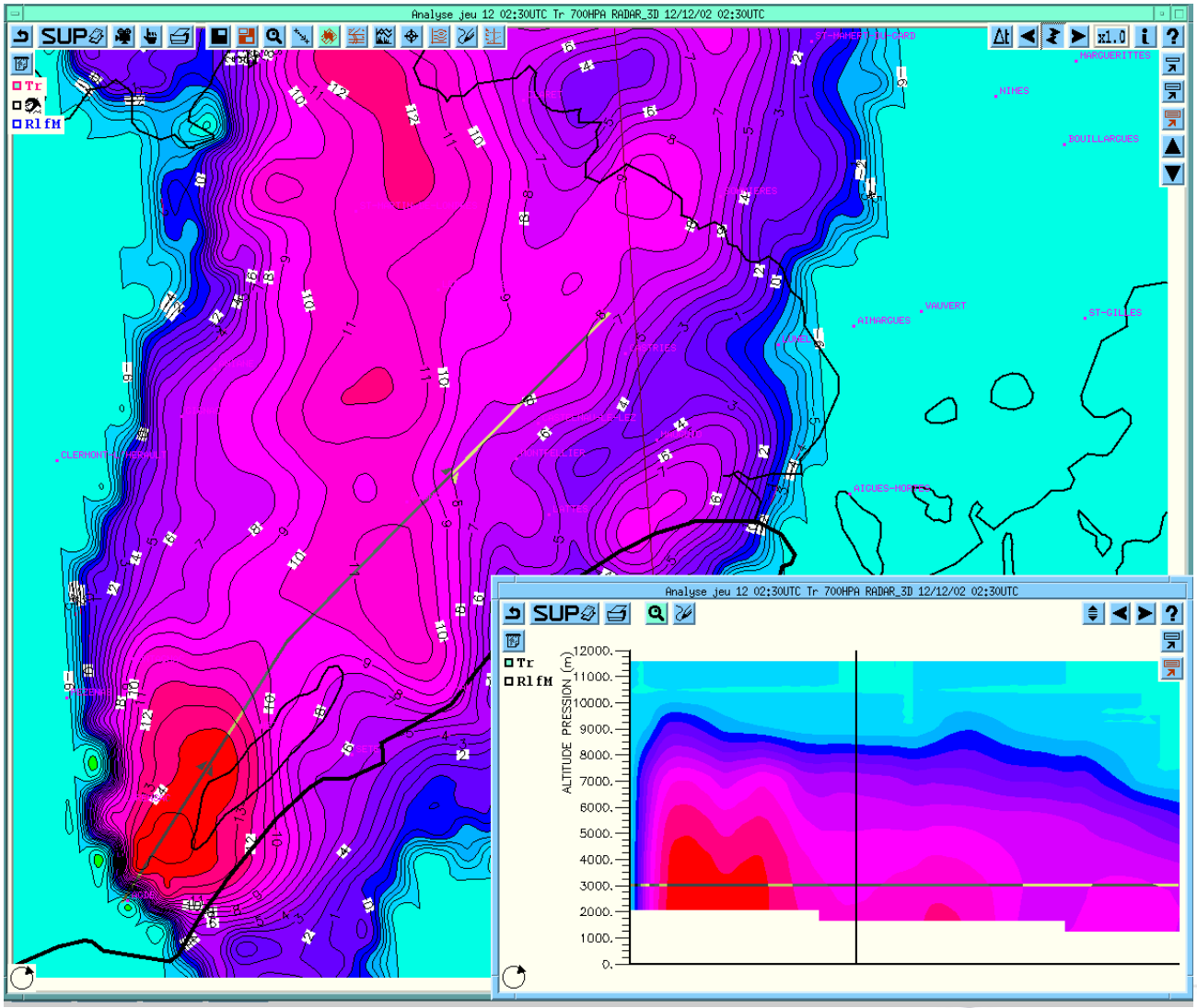
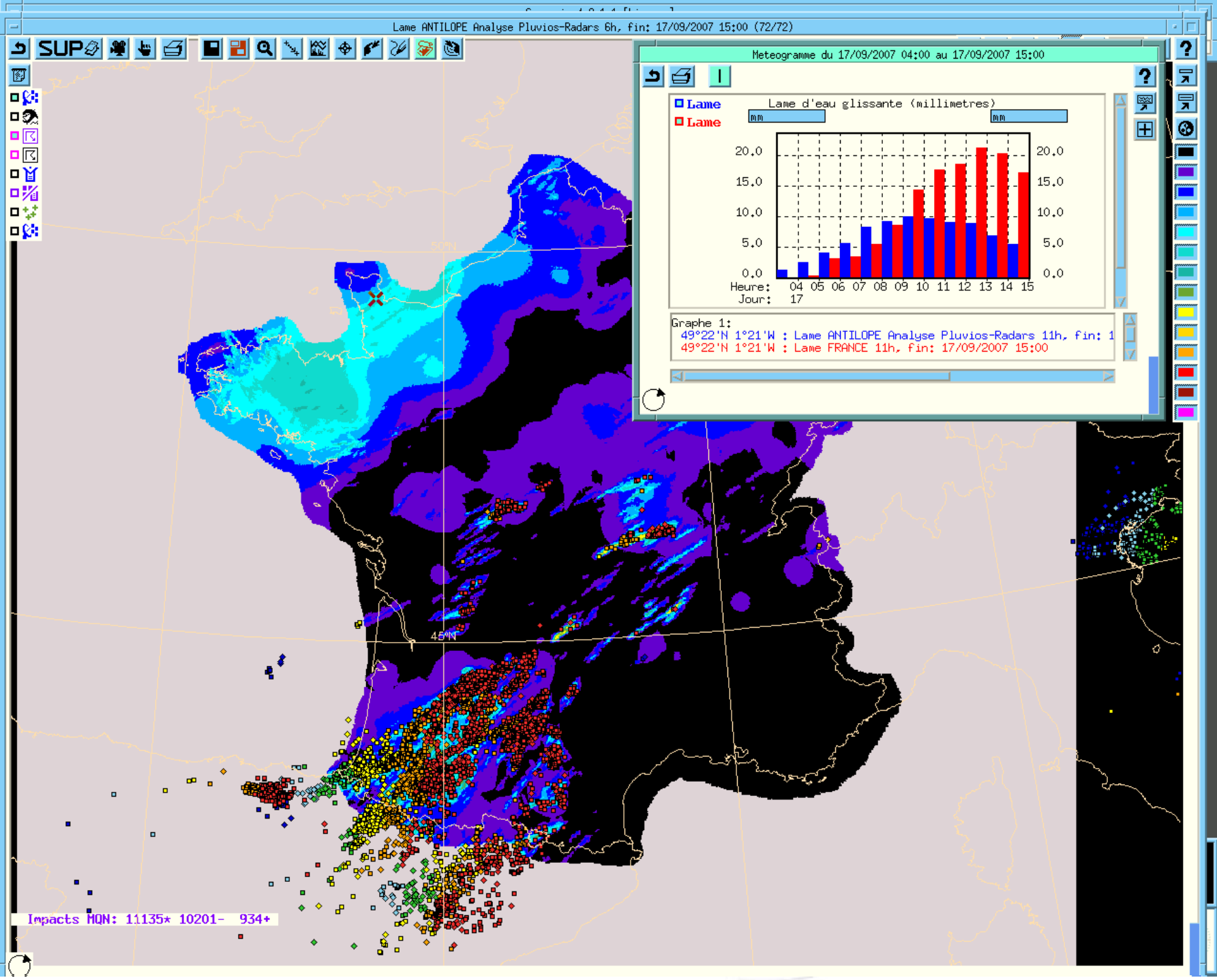
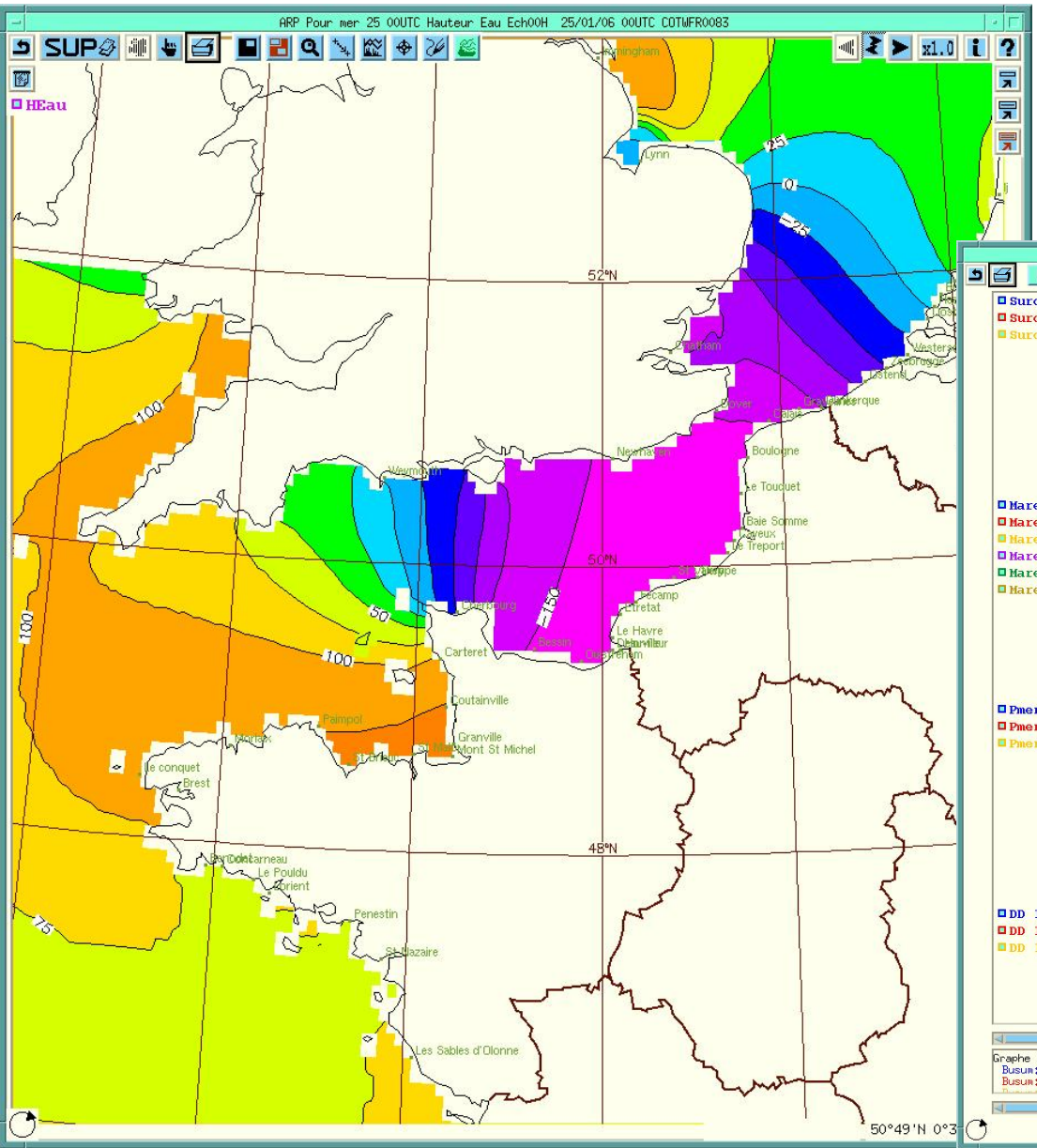
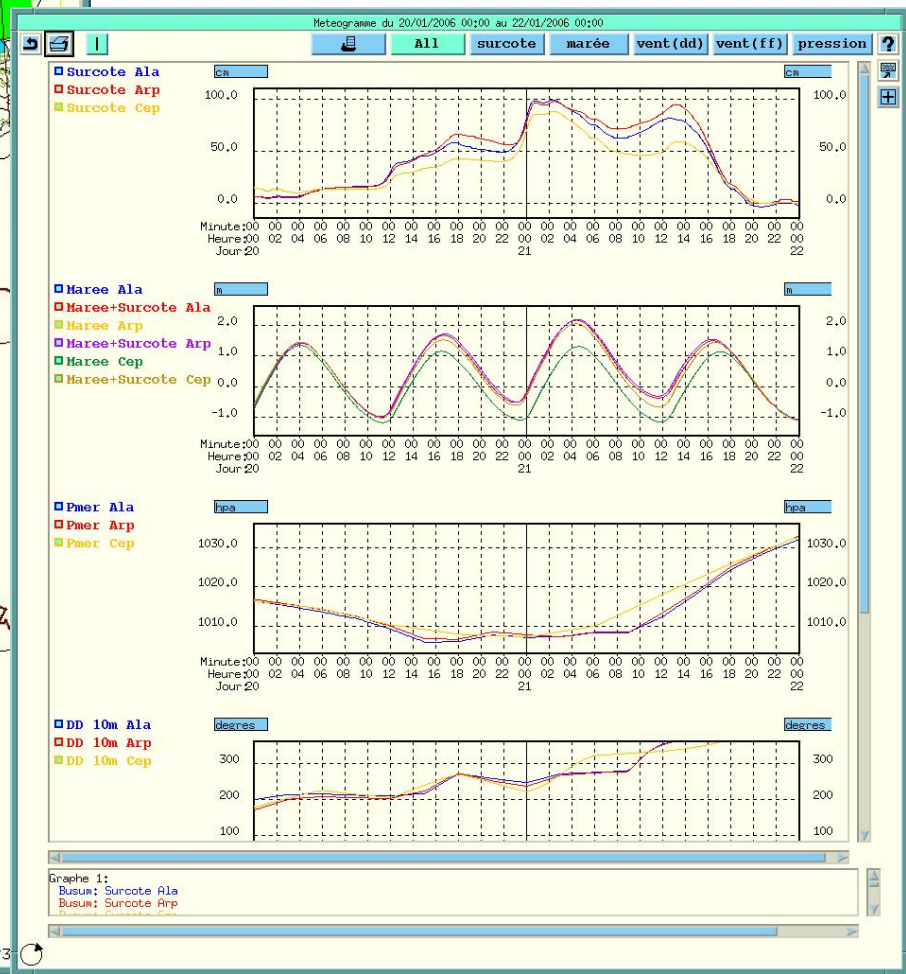
Bollene AND Nimes 3D radars



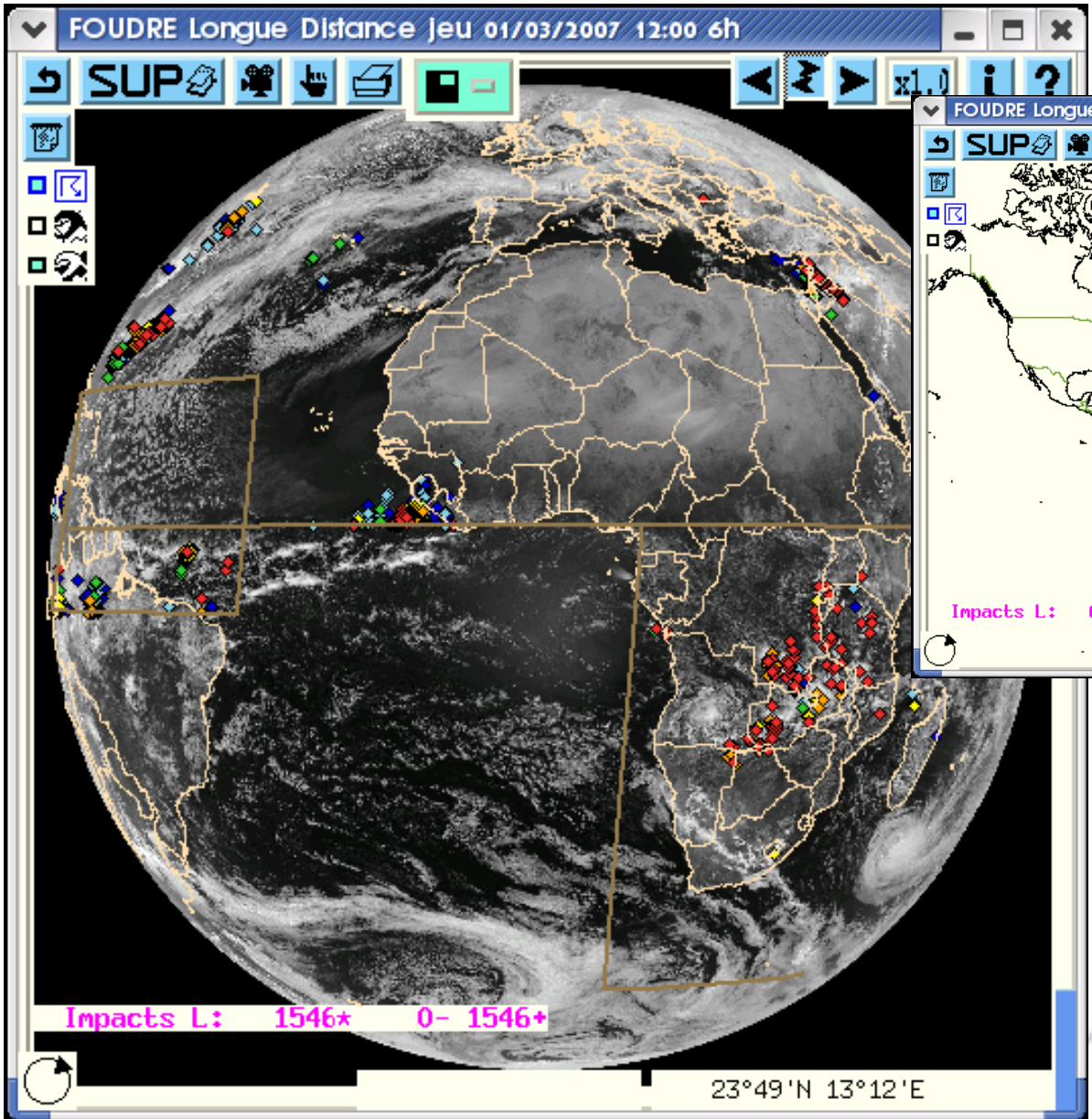

Lame ANTILOPE Analyse Pluvios-Radars 6h, fin: 17/09/2007 15:00 (72/72)
SUP
Meteogramme du 17/09/2007 04:00 au 17/09/2007 15:00
Lame
Lame
Lame d'eau glissante (millimetres)
mm
mm
20.0
15.0
10.0
5.0
0.0
Heure: 04 05 06 07 08 09 10 11 12 13 14 15
Jour: 17
Graphe 1:
49°22'N 1°21'W : Lame ANTILOPE Analyse Pluvios-Radars 11h, fin: 1
49°22'N 1°21'W : Lame FRANCE 11h, fin: 17/09/2007 15:00
45°N
Impacts MON: 11135* 10201- 934+

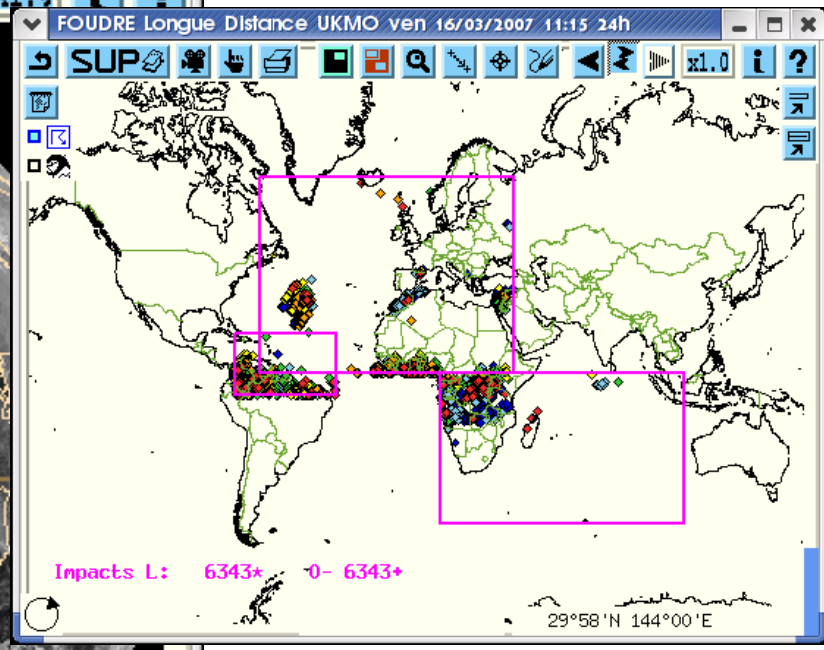
Surge model and water level watch over ports





Long distance Lightning UK network





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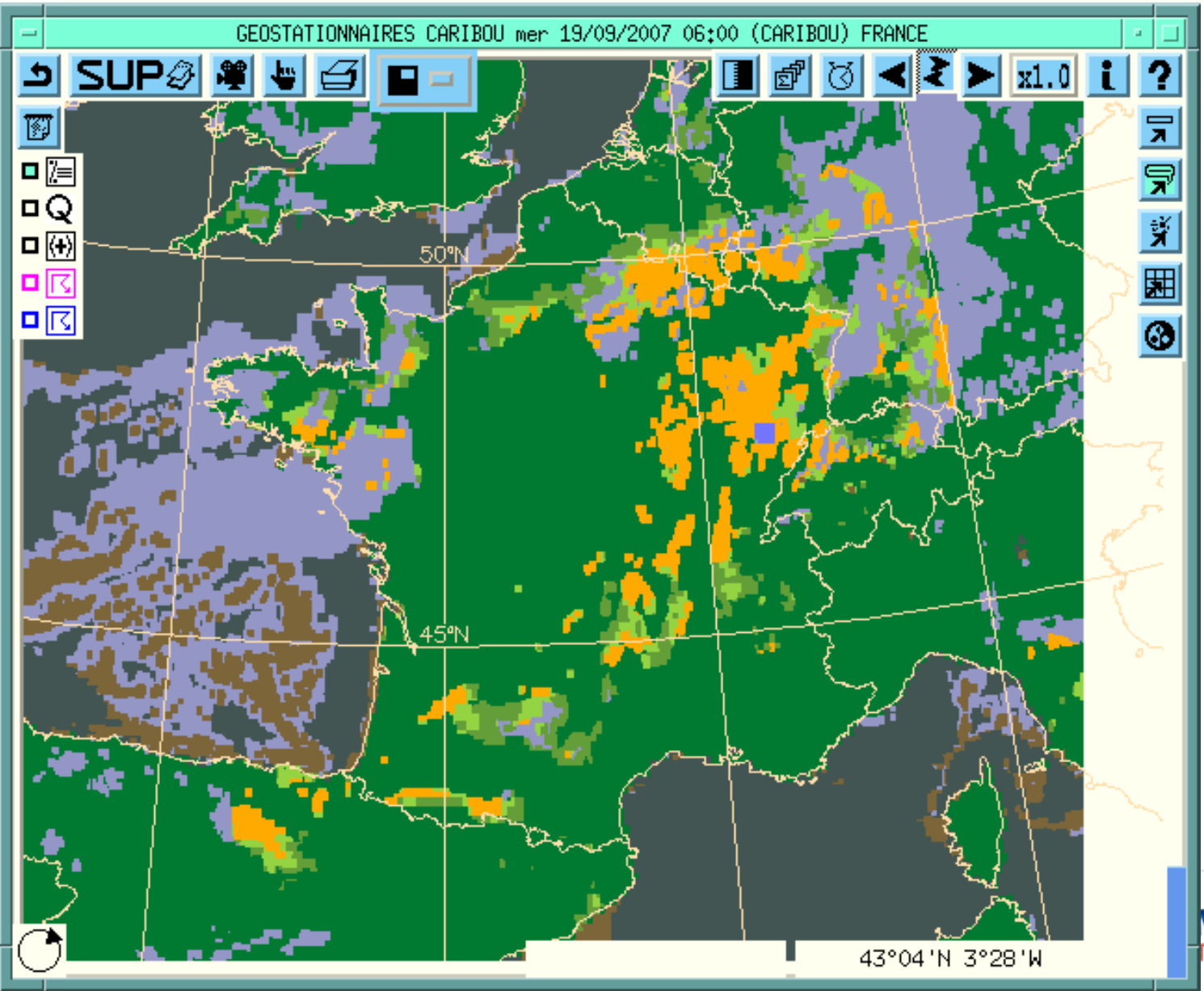
Fog synthetic diagnostic (Caribou)



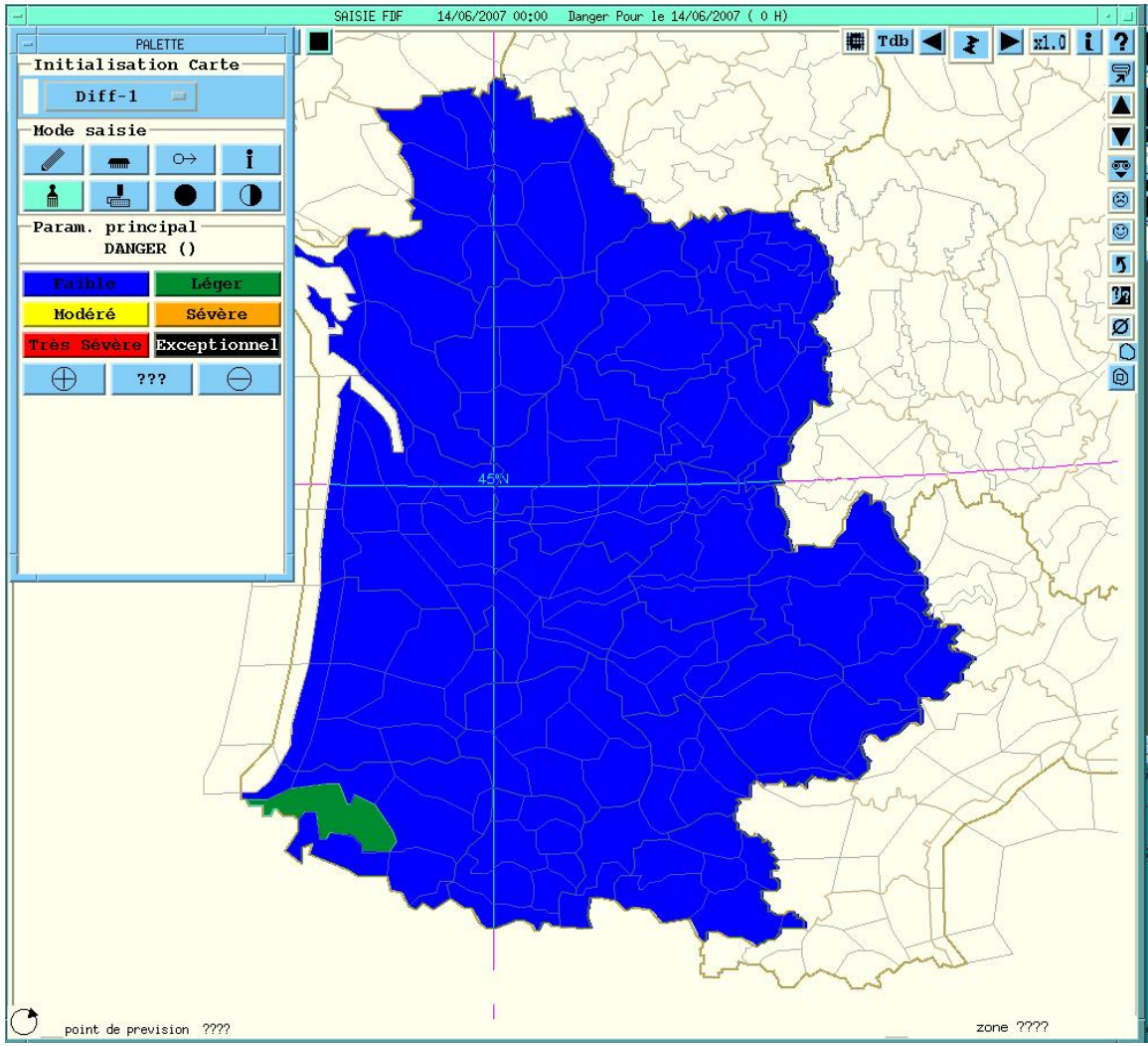
New functionalities

- New modules :
  - Surges
  - Forest Fire risk index
- Models visualisation :
  - Improvement of Wave models
  - Cross section export
  - Multi trajectories
- Satellite images : Improvement of animation
- Radar images :
  - visualisation of extrapolated images
  - New virap visualisation
  - Calculation of accumulated images improved
  - Color set
- Observations
  - Ships or Buoys Trajectories
  - Min-Max visualisation
- Animation capture

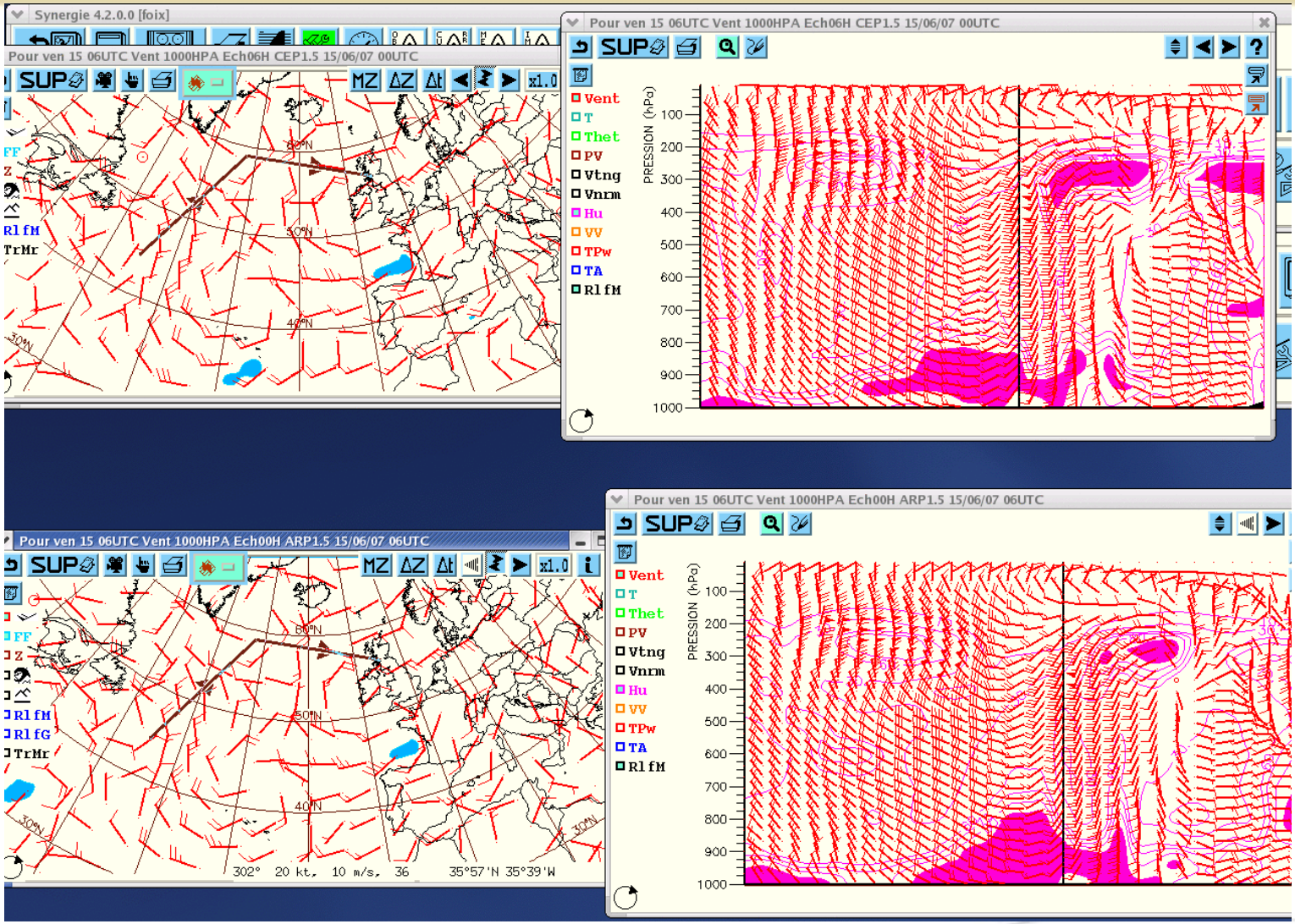
New module: Forest risk index

- Production module

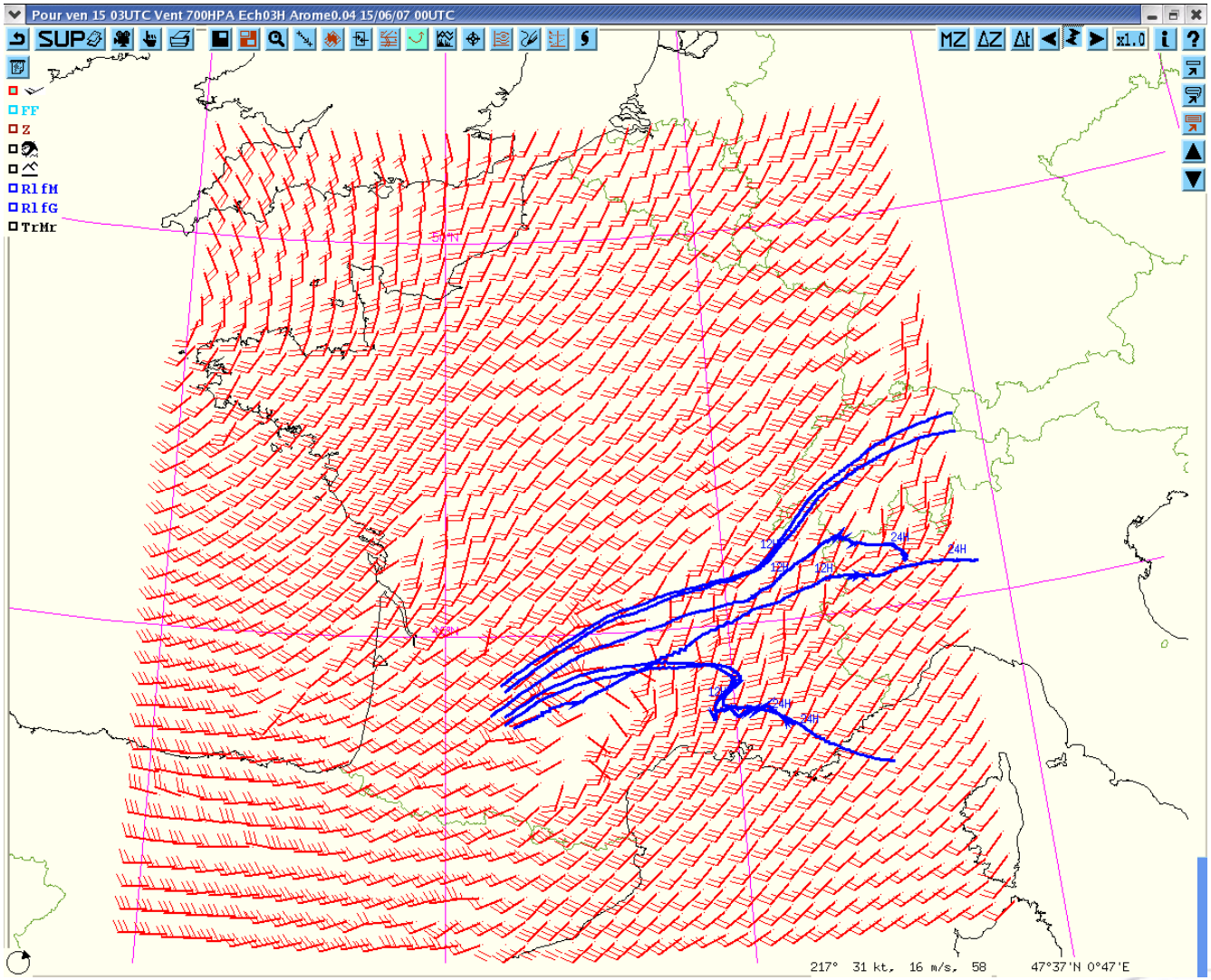
  But low risk during last spring ;-)



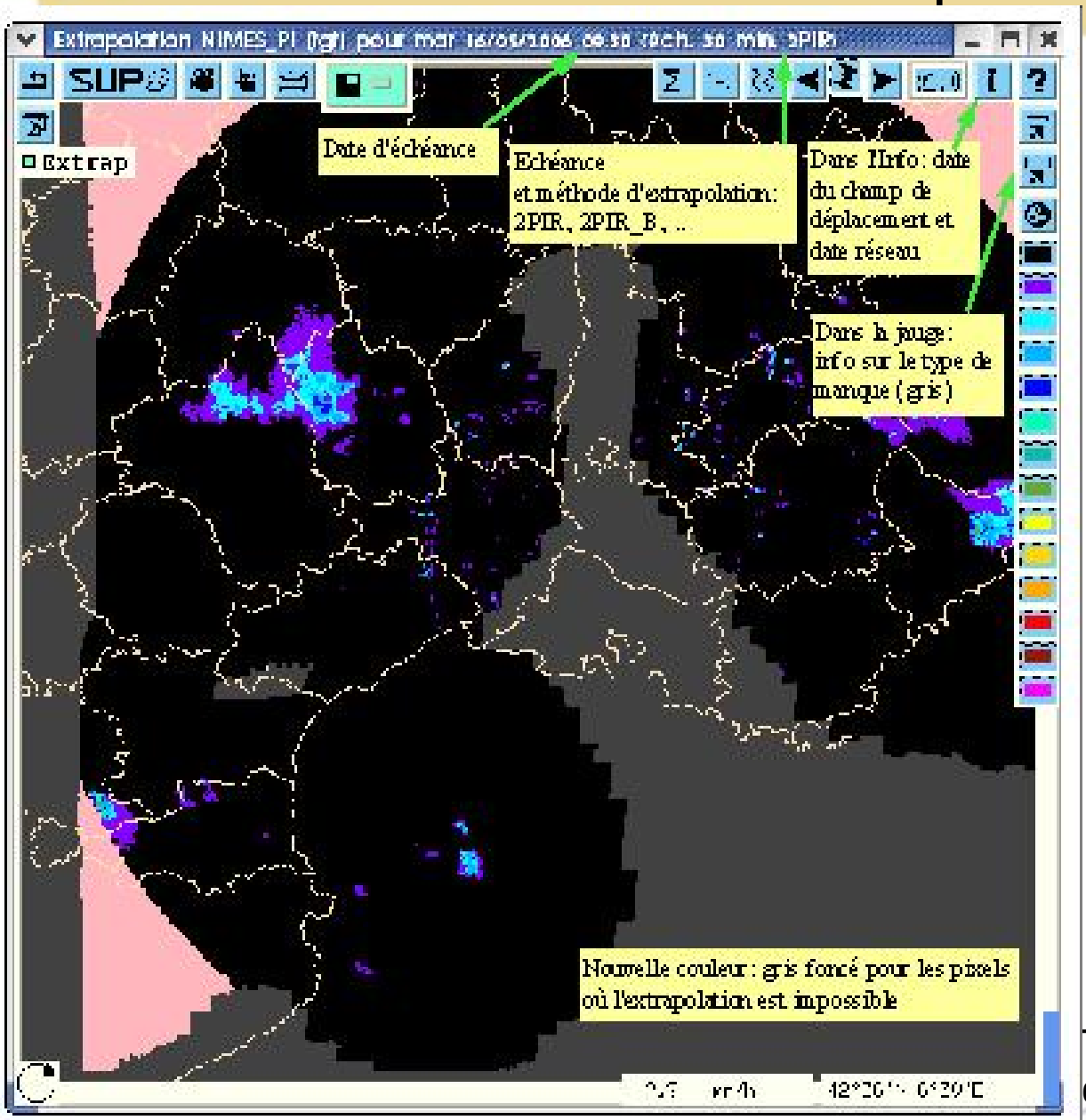
Model : Cross section export



Model : Multi trajectories



Radar: extrapolation



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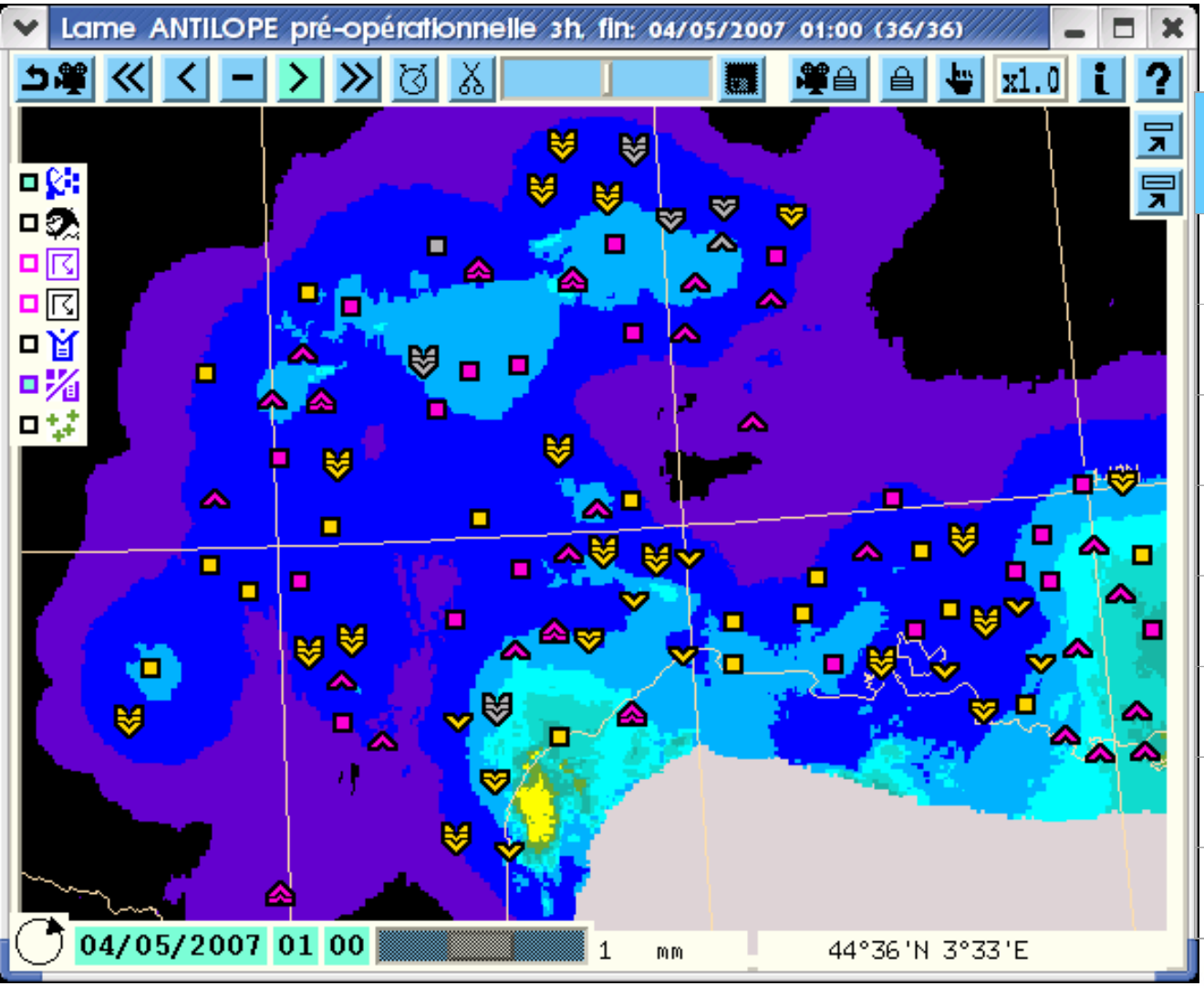
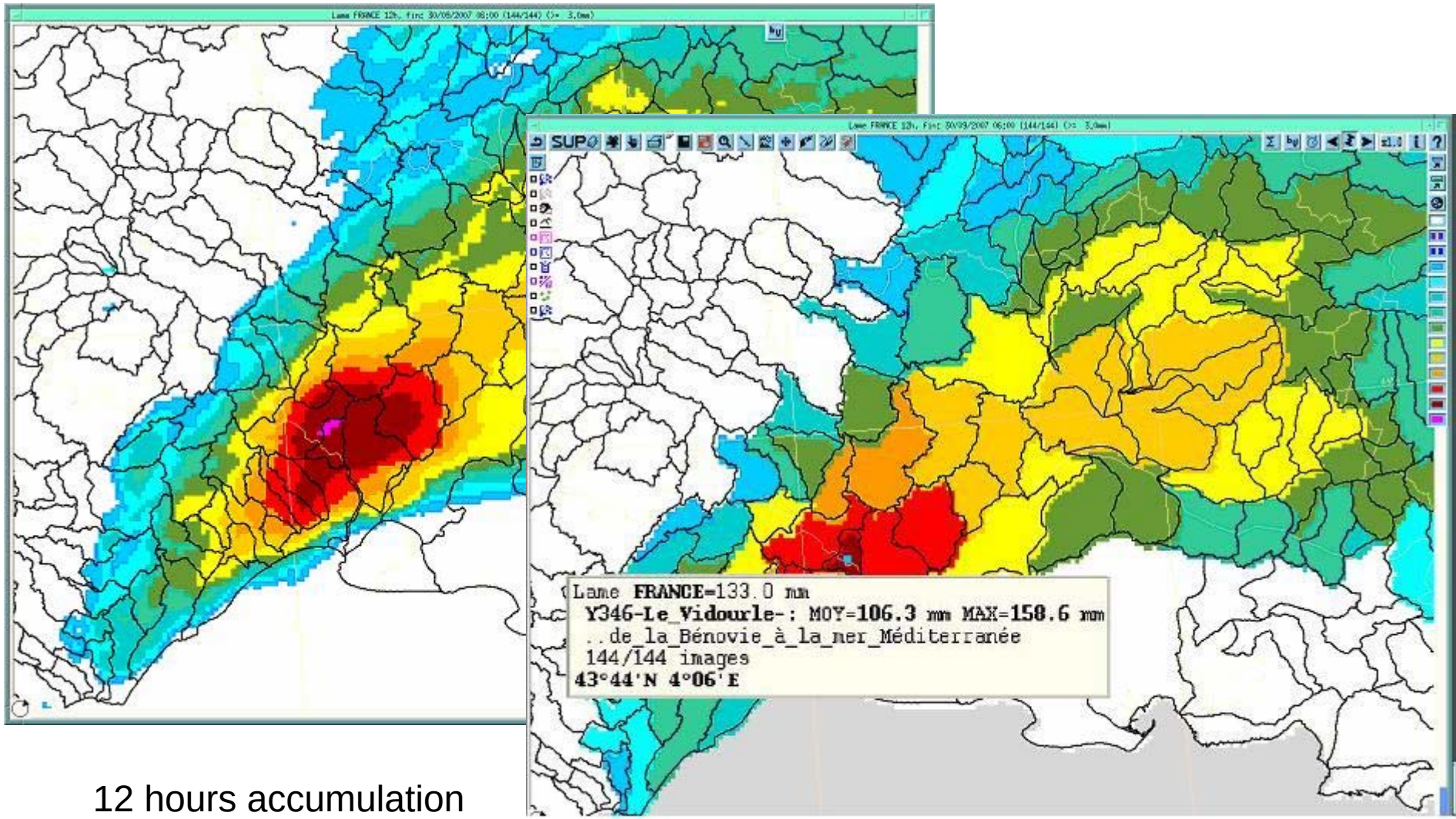
Radar: virap



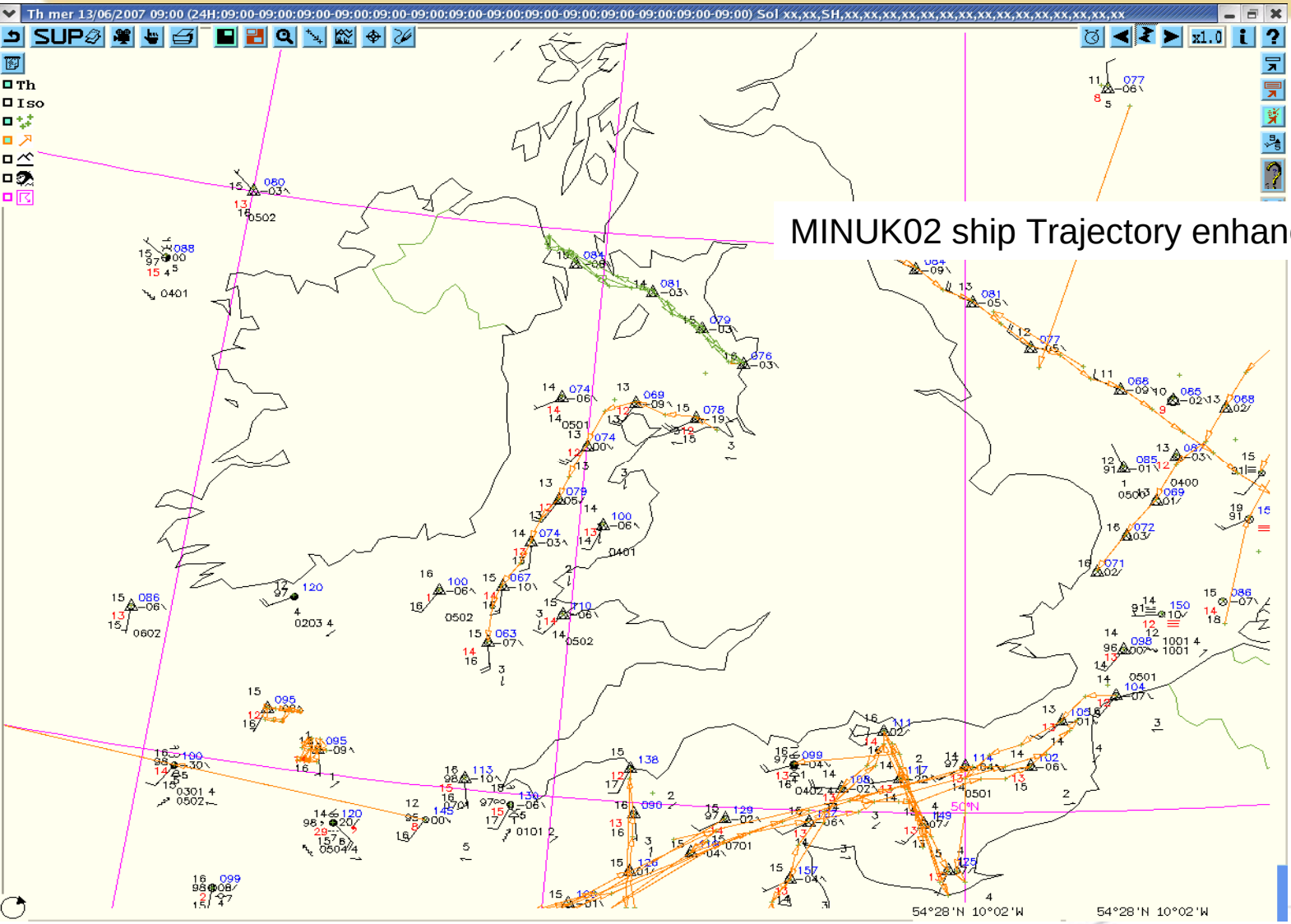
	Radar height/observation
	> 200%
	150%-200%
	120%-150%
	100%-120%
	80%-100%
	50%-80%
	25%-50%
	< 25%

Radar: rain on catchments areas

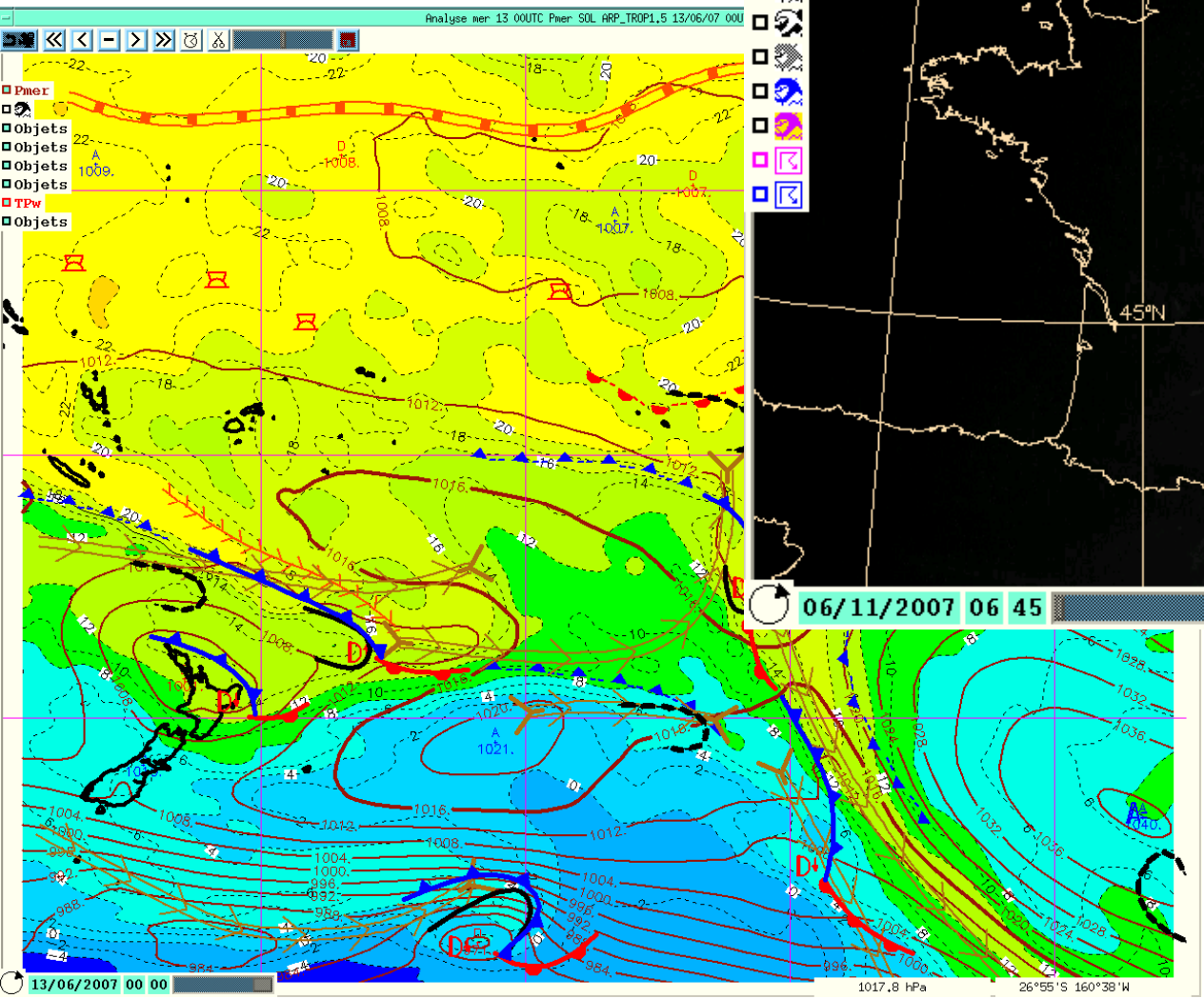


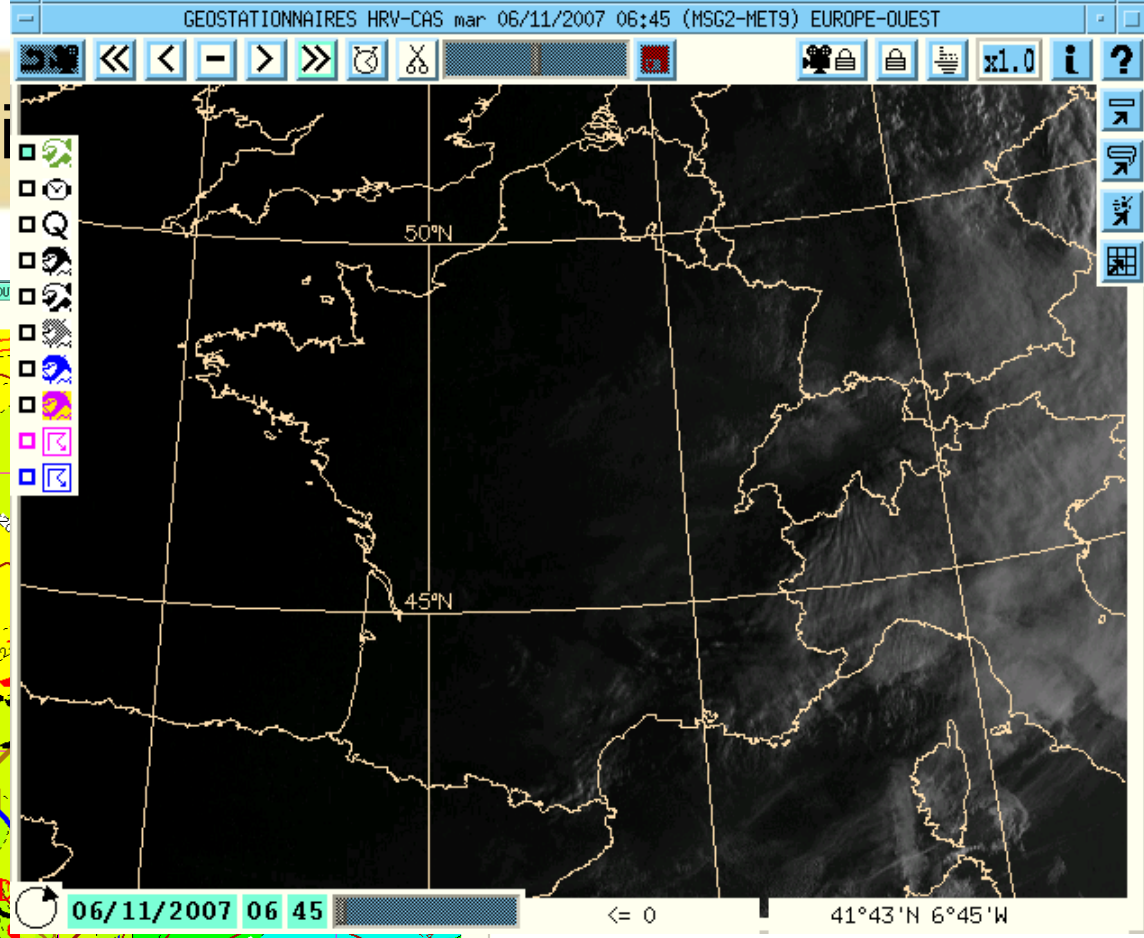
12 hours accumulation

Observation: Ship or boy trajectories



Ani


Analyse mer 13 00UTC Pmer SOL ARP_TROP1.5 13/06/07 00U
Pmer
Objets
Objets
Objets
Objets
TPw
Objets
13/06/2007 00 00
1017.8 hPa
26°55'S 160°38'W


GEOSTATIONNAIRES HRV-CAS mar 06/11/2007 06:45 (MSG2-MET9) EUROPE-OUEST
x1.0
50°N
45°N
06/11/2007 06 45
<= 0
41°43'N 6°45'W

Major new development for 4.3 and after

- Functionalities and Data aspects:
  - Oceanographic data : Calypso project with French Navy
  - Surge check along an estuary
  - Nowcasting Objects and other data animation
  - New Visualisation for 3D radar observations
  - Symposium 2

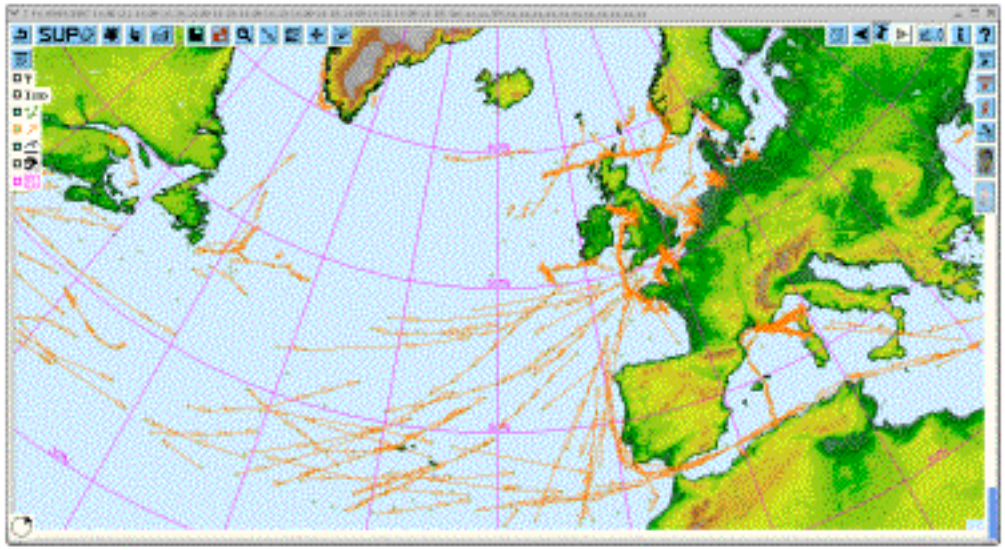
- Technical aspects:
  - Move Data Base from Oracle to PostgreSQL
  - Migration of Synergie on SOA (**Service Oriented Architecture**) step by step, by developing Web Services (WMS).
  - Test feasibility of integration Magics++

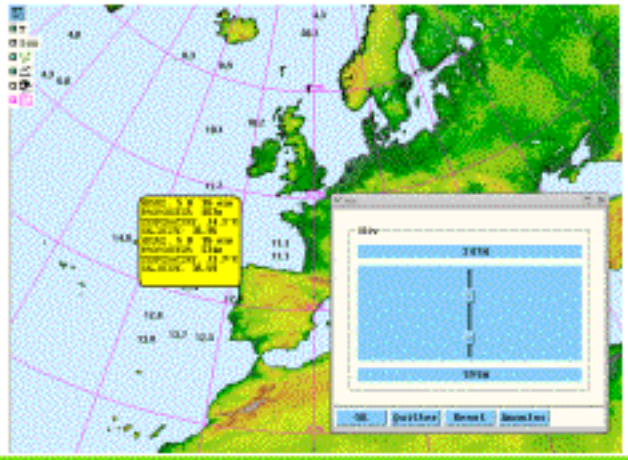
Examples of project relying on the last SYNERGIE V4.1

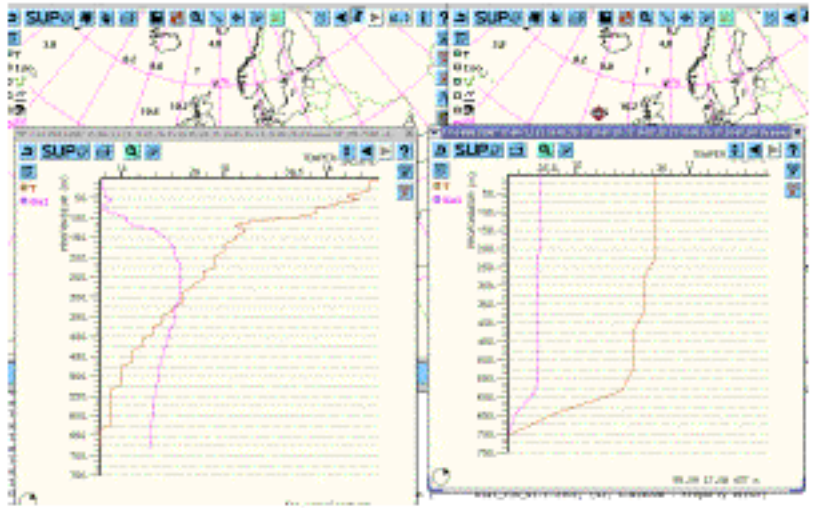
Calypso

Calypso

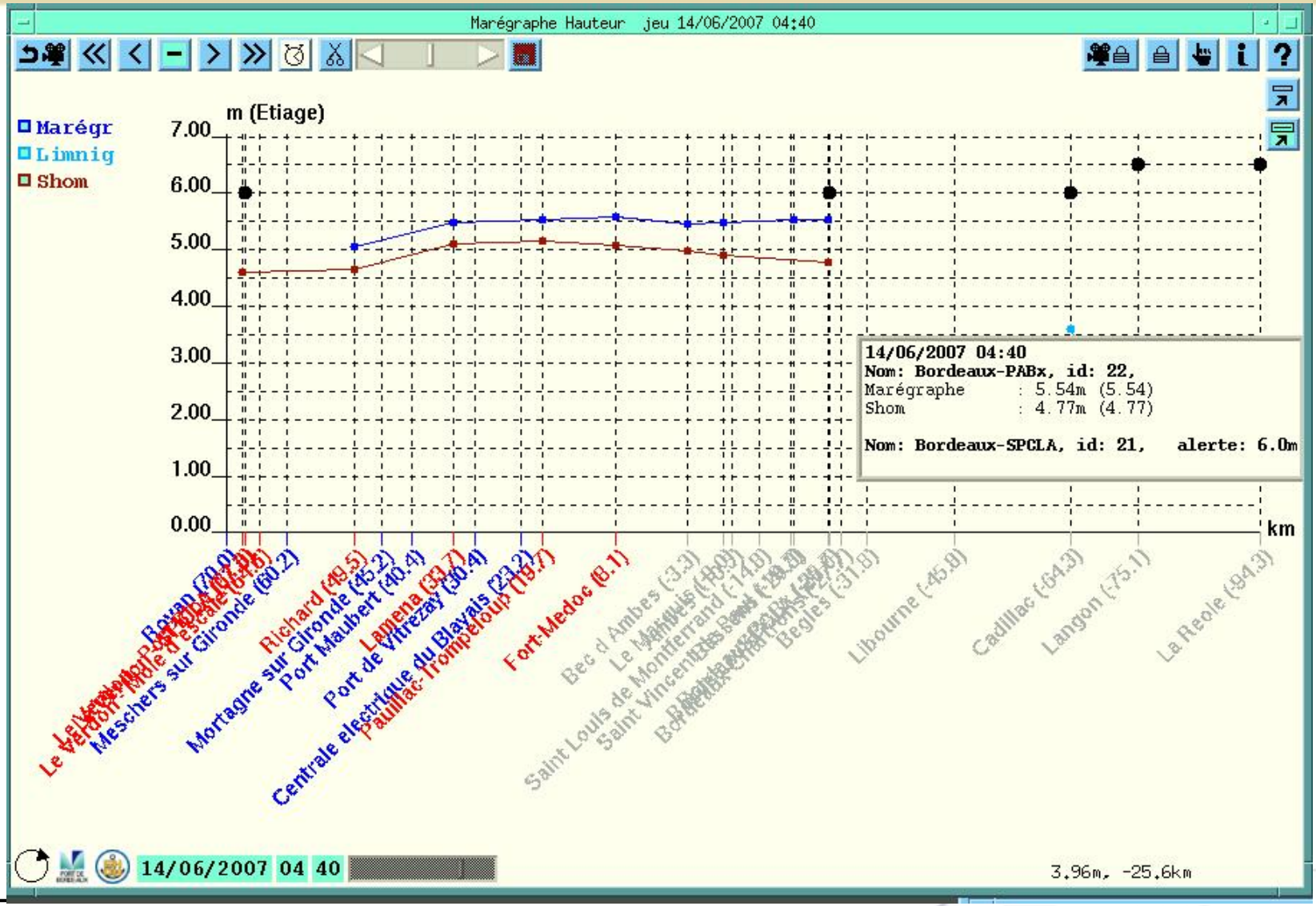
- **Extension of Synergie to oceanology**
- **Capacity of Synergie functions to be adapted to new scientific field**
- **Plotting parameters:**
  - Temperature
  - Salinity
  - Mixing layer
  - …

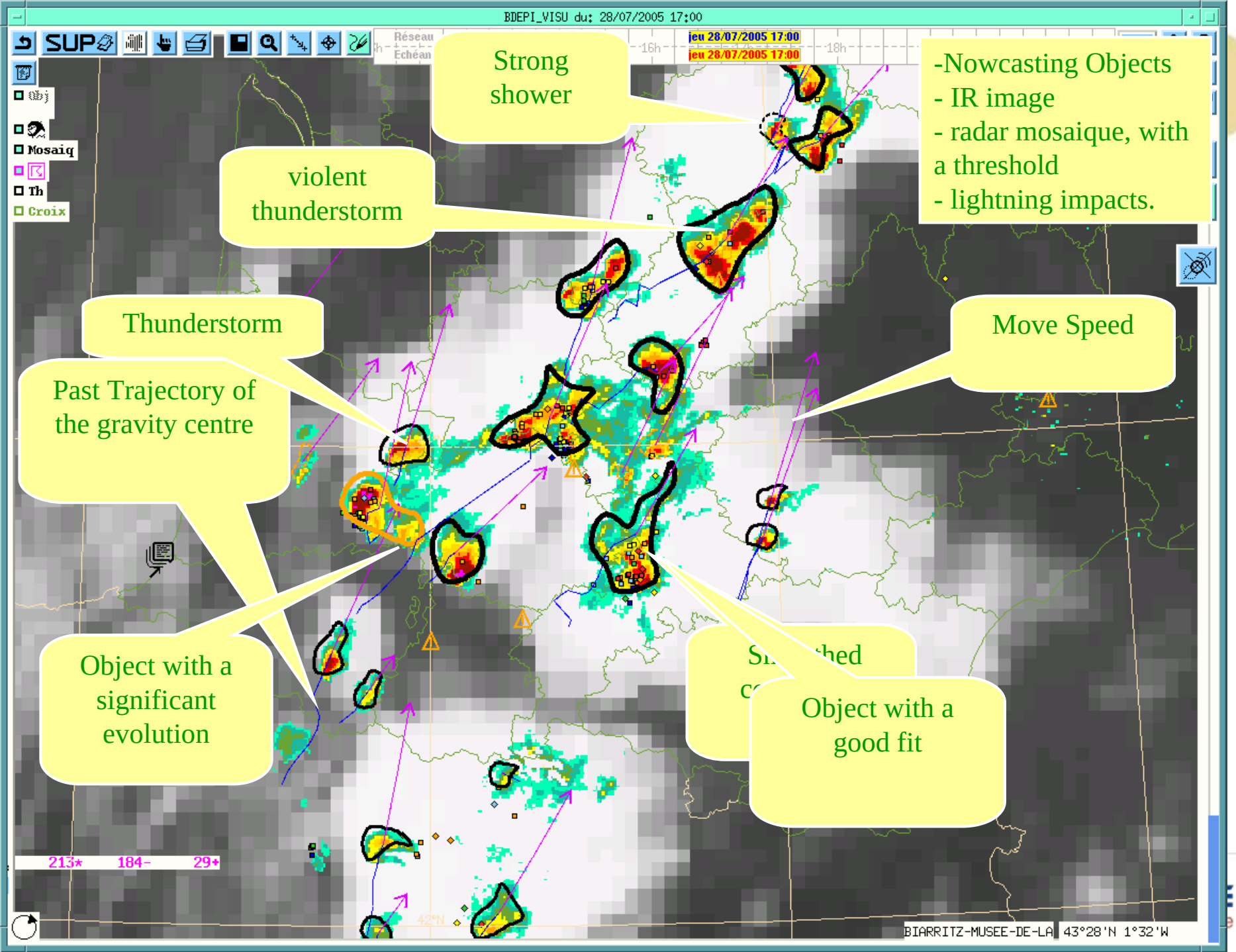


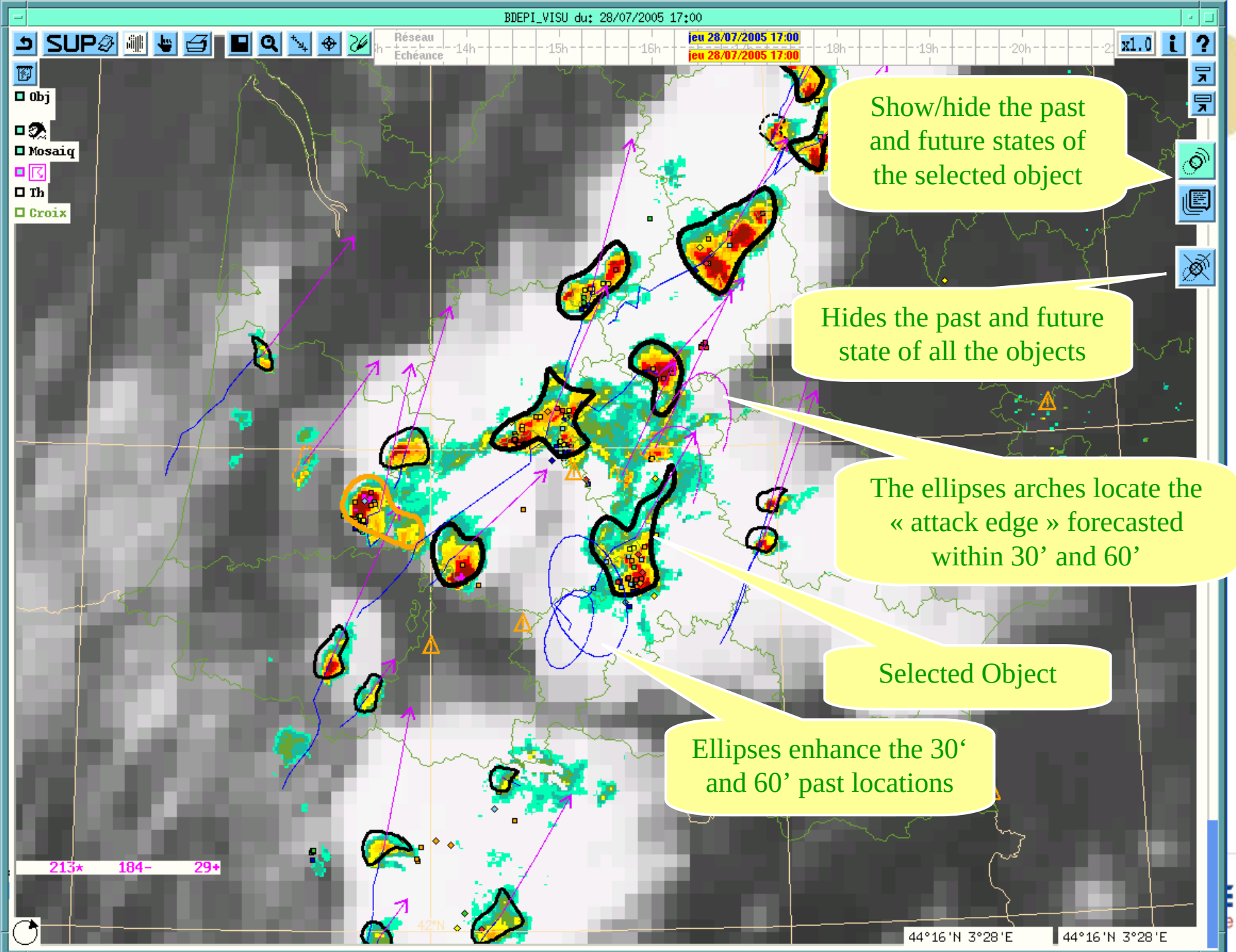




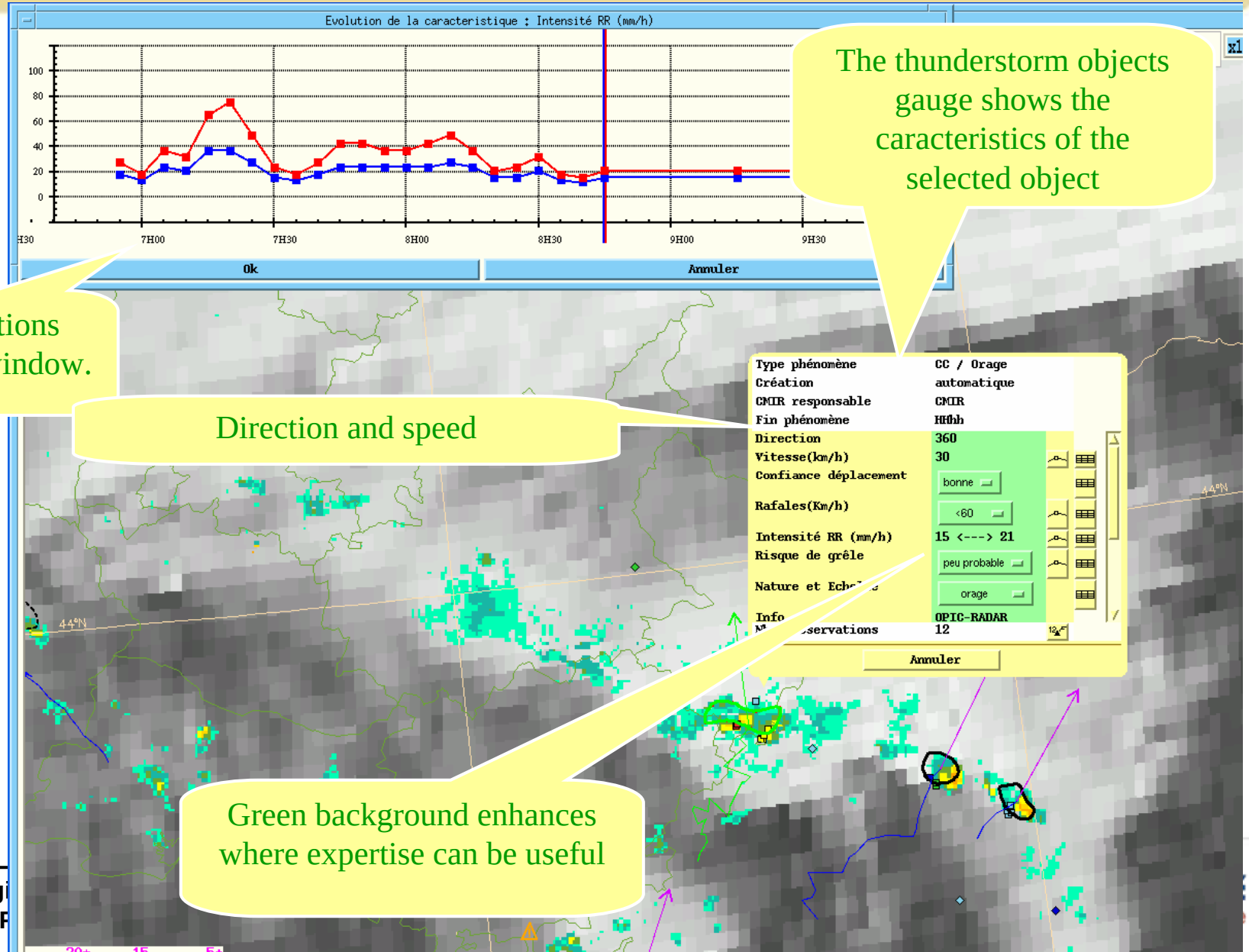
Surge check along an estuary




BDEPI_VISU du: 28/07/2005 17:00
SUP
Réseau
Echéan
jeu 28/07/2005 17:00
jeu 28/07/2005 17:00
16h
18h
Obj
Mosaiq
Th
Croix
Strong shower
violent thunderstorm
-Nowcasting Objects
- IR image
- radar mosaique, with a threshold
- lightning impacts.
Thunderstorm
Move Speed
Past Trajectory of the gravity centre
Object with a significant evolution
Object with a good fit
213*
184-
29+
42°N
BIARRITZ-MUSEE-DE-LA 43°28'N 1°32'W


BDEPI_VISU du: 28/07/2005 17:00
SUP
Réseau
Echéance
jeu 28/07/2005 17:00
jeu 28/07/2005 17:00
x1.0
Obj
Mosaiq
Th
Croix
Show/hide the past and future states of the selected object
Hides the past and future state of all the objects
The ellipses arches locate the « attack edge » forecasted within 30’ and 60’
Selected Object
Ellipses enhance the 30‘ and 60’ past locations
213*
184-
29+
44°16'N 3°28'E
44°16'N 3°28'E

Thunderstorm objects gauges and evolution curve



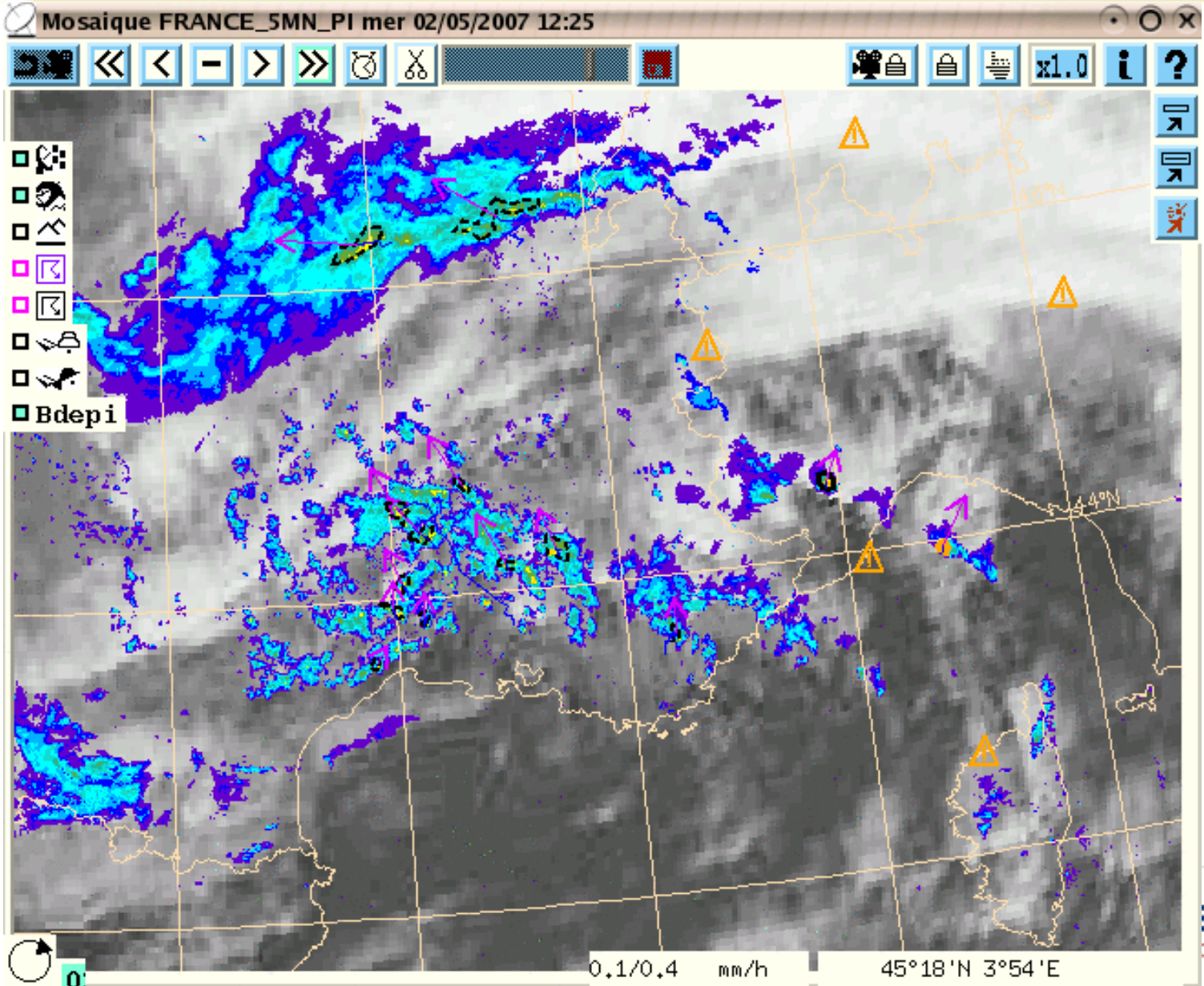
The thunderstorm objects gauge shows the caracteristics of the selected object

Precipitations evolution window.

Direction and speed

Green background enhances where expertise can be useful

Nowcasting objects and animation



Conclusion

- Synergies 4.2
  - Visualisation of New set of data
  - Introduction of new functionalities
  - New production modules

- Synergie 4.3 and after ….
  - More data from observation systems
  - New 3D radar module
  - Service oriented architecture and new GUI possibilities.

…. SYNERGIE 5.O

Thank you for your attention

Any Question ?

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Toujours un temps d'avance