



Météo-France contribution to the French DRR system : Vigilance

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WMO workshop, 2009, Pula, Croatia



Institutional collaboration



1. Genesis of the « Vigilance » system

■ 1999

- 2 major storms in Dec. : 92 p. killed, huge damage in Forests and infrastructure (15 bn €)
- good forecast but poor efficiency in warning process, poor understanding from the public
- Prime Minister decides to update the Warning procedure and inform the **general public and Authorities simultaneously** on the basis of simple and updated colour information (from proposals from Météo-France and the Civil Protection Authorities)



Collecting users expectations



- The “Conseil Supérieur de la Météorologie” (CSM - **High Council for Meteorology**) is a consultative body involving Météo-France and its partners together with public (21 ministries) and private users :
 - evaluates services provided by Météo-France to its users;
 - formulates recommendations;
 - proposes solutions to implement and fund the recommendations;
 - monitors development of activities.

Commissions of CSM:

- Agriculture
- Air transportation
- Civil Security**
- Education & training
- Environment and energy
- Health-biometeorology**
- Hydrology**
- Land transport and civil engineering
- Light aviation
- Marine
- Tourist-information

⇒ CSM IS A KIND OF NATIONAL PLATFORM DEDICATED TO METEOROLOGY

Legal framework

(1)

ORSEC 04' : Organization of Civil Defence response

- 1 - Establishment of a Civil Defence network**
- 2 - Identification and prior assessment of risks**
- 3 - A general organizational structure for managing all types of events**
(including specific arrangements for unusual events)
- 4 - Preparedness, exercise and training phases**
- 5 - Continuous improvement** *(feedback and lessons learnt)*

Inter ministerial Circular defining the Vigilance system itself

- 2001, setting up of the system**
- 2003 : update including Heat/cold waves**
- 2007 : update including flood with intense precipitations**

Legal framework (2)

- Existing legislation on natural risks was updated also in 2003
 - To develop risk awareness, memory and ownership at all levels of preventive actions
 - To establish or adjust the frameworks for intervention to tackle the root causes of risks and reduce vulnerability
- In addition to already existing laws,
 - Plans for the Prevention of Predictable Natural Risks involving the Ministry of Ecology, Energy and Sustainable Development
 - etc...

- the Orientation Council for Major Natural Hazard Management is now the national platform within ISDR scheme

Civil Defence organization

Européen



M.I.C.¹
Centre
d'information
et de suivi

Assistance

National



Le ministre de l'intérieur
anticipe et renforce
avec les moyens
nationaux.

C.O.G.I.C.¹
Centre
Opérationnel
de Gestion
des Crises
Internationales

Anticipation

Zonal

→ ORSEC de zone



Le préfet de zone
coordonne les moyens zonaux.

C.O.Z.¹
Centre
Opérationnel
de Zone

Coordination

Départemental

→ ORSEC départemental



Sur sinistre important ou en cas
de catastrophe, le préfet
est Directeur des Opérations
de secours (D.O.S.).

C.O.D.²
Centre Opérationnel
Départemental

P.C.O.²
Poste de
Commandement
Opérationnel

Management

Communal

→ Plan Communal de Sauvegarde



Le maire est responsable
de la sauvegarde de
la population.
Sur sinistre limité,
il est Directeur
des Opérations
de secours (D.O.S.).

P.C.C.
Poste de
Commandement
Communal

¹opérationnel 24h/24h, ²activé en cas de besoin

Two levels of actual management

Commune <=> Town



Mayor

Safeguard plan

Preparedness

Public information

Reduction in population
vulnerability

Département <=> County



Prefect

Disaster contingency plan

Preparedness

Disaster management

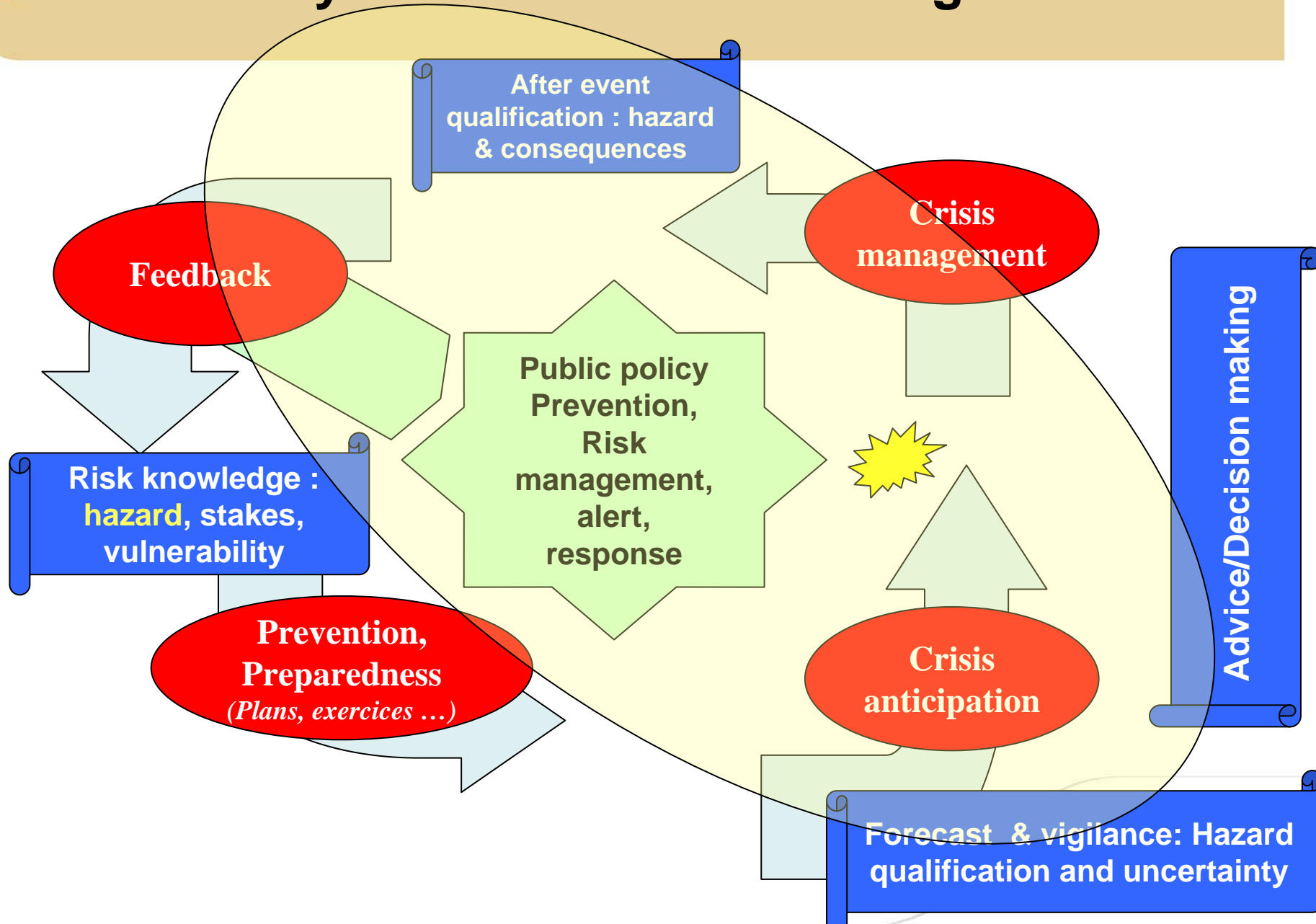
- *Alerts*
- *Response*
- *Mobilization of public or private means*

« Vigilance » system aims at :



- crisis anticipation by delivering **regular and descriptive informations** about meteorological phenomena.
- Providing **decision-making aids** to adapt the Civil Defence response and the mobilization of means.
- **Informing the population directly** as a responsible actor of his own safety.

a key element for Risk Management



Feedback

After event qualification : hazard & consequences

Crisis management

Advice/Decision making

Risk knowledge : hazard, stakes, vulnerability

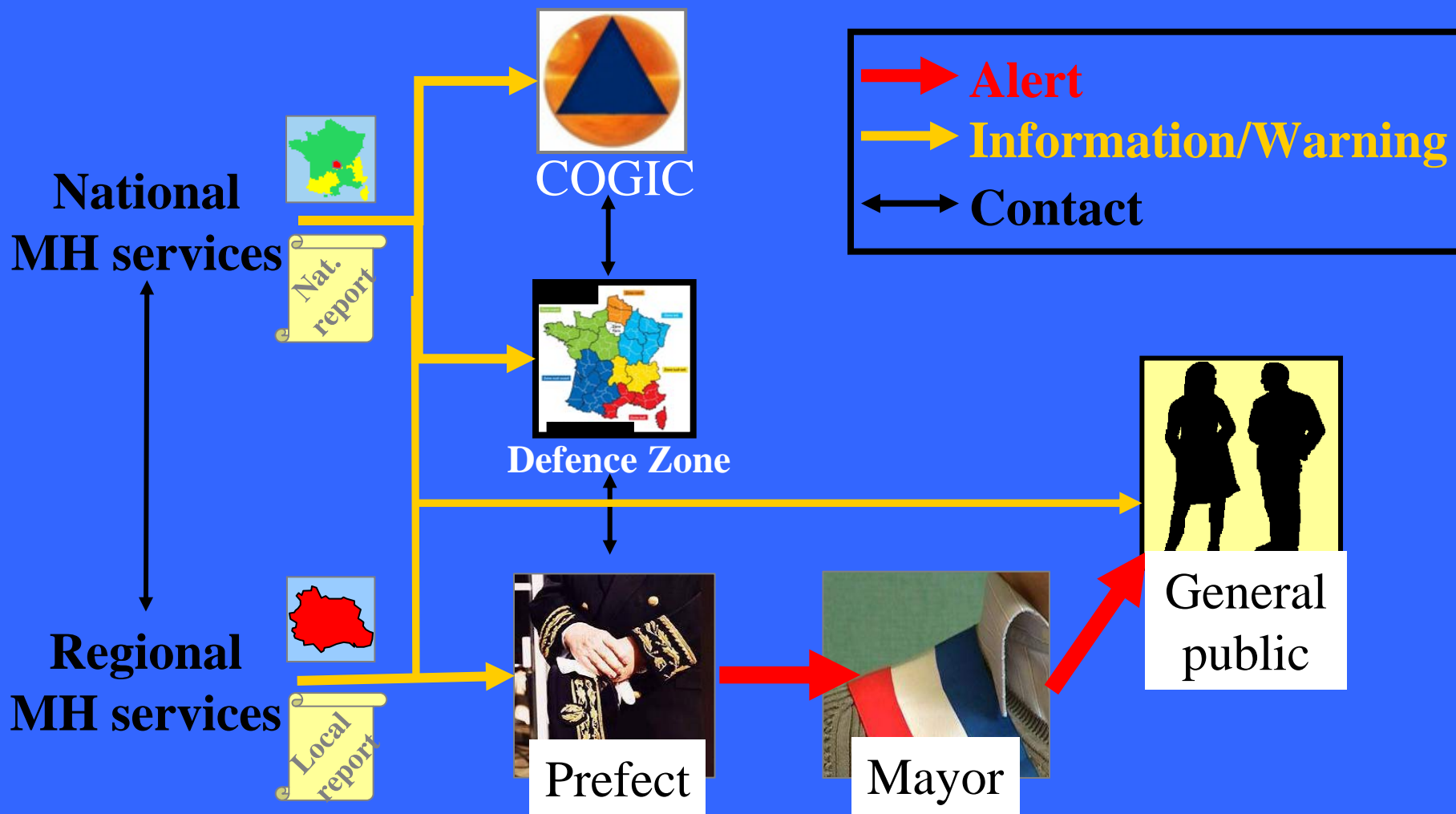
Public policy Prevention, Risk management, alert, response

Prevention, Preparedness
(Plans, exercices ...)

Crisis anticipation

Forecast & vigilance: Hazard qualification and uncertainty

Alert master plan

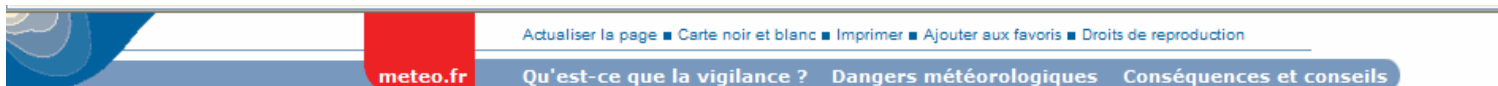




Collaboration for technical design



key Vigilance operational features



Vigilance météorologique

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

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



 La vigilance pluie-inondation est élaborée avec la Direction de l'Eau du Ministère de l'Ecologie, du Développement et de l'Aménagement durables



Vigilance "crues"

Bison Futé
Vigilance en Europe

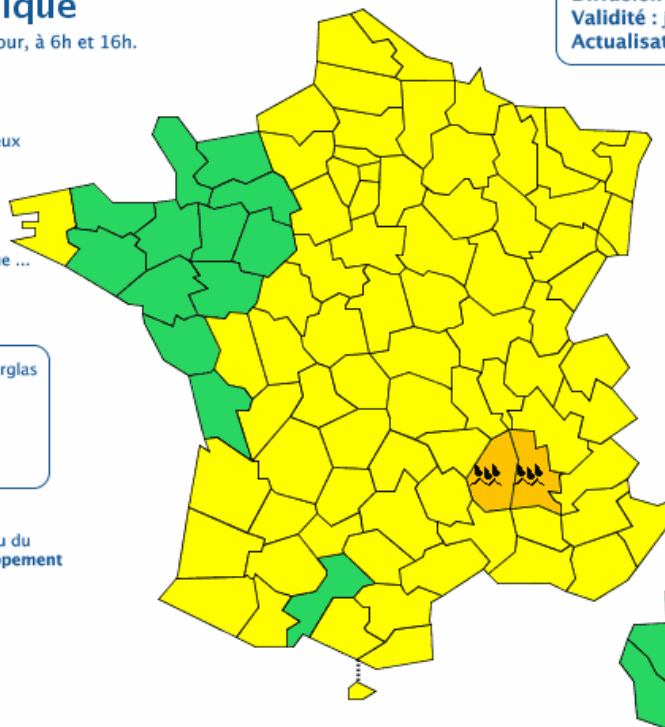
Actualiser la page ■ Carte noir et blanc ■ Imprimer ■ Ajouter aux favoris ■ Droits de reproduction

Qu'est-ce que la vigilance ? Dangers météorologiques Conséquences et conseils

Diffusion : le jeudi 11 septembre 2008 à 10h30

Validité : jusqu'au vendredi 12 septembre 2008 à 06h00

Actualisation : du jeudi 11 septembre 2008 à 06h00



Consultez le [bulletin national](#)

Pluies et orages se produiront à nouveau jeudi après-midi et la nuit prochaine. Ils sont à surveiller particulièrement sur la Drôme et l'Ardèche, où les sols sont déjà saturés.

Cliquez sur la carte pour lire les **bulletins régionaux**

Conseils des pouvoirs publics :

Orages/Orange – Soyez prudents, en particulier dans vos déplacements et vos activités de loisir. – Evitez d'utiliser le téléphone et les appareils électriques. – A l'approche d'un orage, mettez en sécurité vos biens et abritez-vous hors des zones boisées.

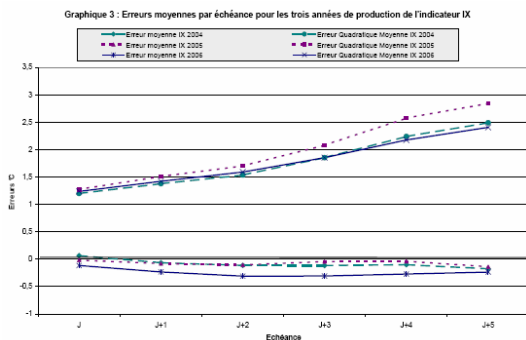
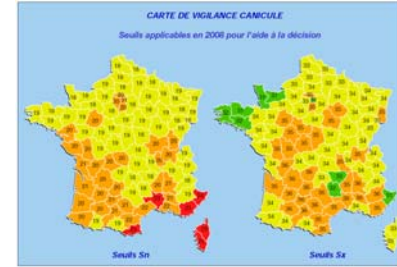
 **METEO FRANCE**
Toujours un temps d'avance

Copyright Météo-France

 **METEO FRANCE**
Toujours un temps d'avance

Utilization of Risk information


- Meteorologists alone do not know enough about vulnerability and risk assesment
- Statistics may help to start with **hazard** assesment
- Knowledge and information have to be shared:
 - "historical" case studies
- Lessons learned together are essential





1 – 2 - Setting up of the « Vigilance » Procedure in France

Meaning of the colours



 Particularly dangerous and intense meteorological phenomena have been forecast. Be extremely careful. Keep frequently informed about meteorological conditions, and follow guidance given by protection authorities

 Potentially dangerous and unusual meteorological phenomena have been forecast. Be very careful. Keep informed about meteorological conditions.

 Potentially dangerous, but not unusual phenomena have been forecast. Take care if practising activities exposed to meteorological risks, and be informed about meteorological conditions

 No particular awareness required

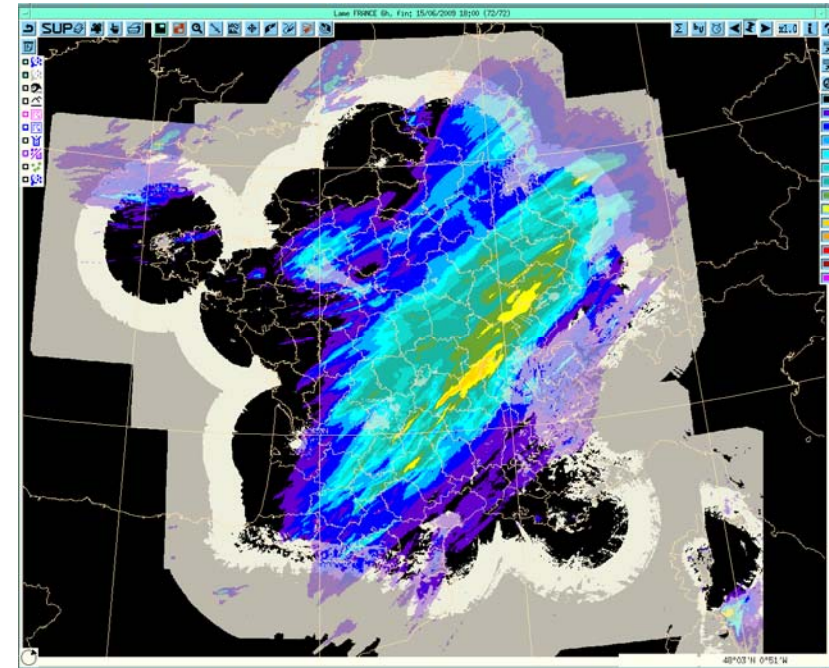
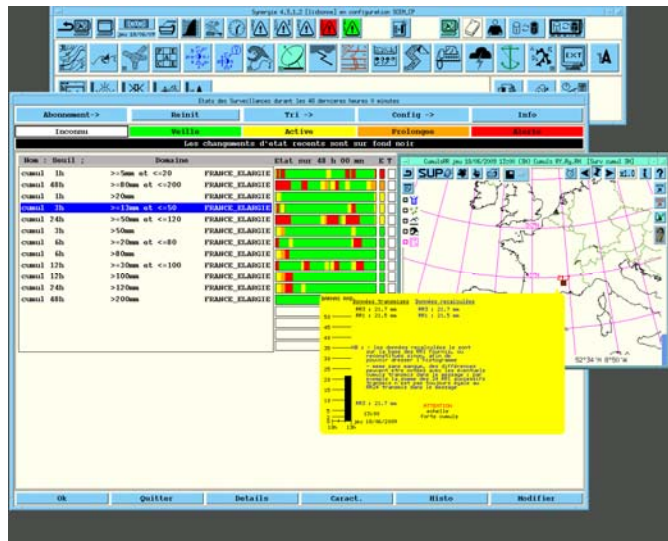
Criteria for color decision making

Weather phenomenon	Criteria for yellow	Criteria for orange	Criteria for red
Strong winds (gusts, storms)	Widespread gusts in plain > 60 to 80 or 80 to 100 km/h depending on regions	Widespread gusts > 100 to 130 km/h inland,	Widespread gusts > 130 km/h inland
Heavy rainfalls	Depends on the regional climatology (30 à 60 m/24h)	Depends on the regional climatology (60 à 100mm/24h, South East : >80mm in less 6 hours or [120,300 mm] in 24h	Depends on the regional climatology
Thunderstorms	Whatever Thunderstorm	Widespread organized thunderstorms	No standard criteria
Avalanche	15/12 – 30/04 risk 3 or 4 on the European scale	15/12 – 30/04 risk 5 on the European scale	15/12 – 30/04 risk 5 (+) on the European scale

Some criteria are thresholds, but it is not a automated process, expertise is mandatory !

Realistic Operational Objectives

- Objectives you are able to reach :
 - Lead time
 - Spacial resolution
 - Generally, Forecasters capacity
- Not meaning improvement is impossible !!



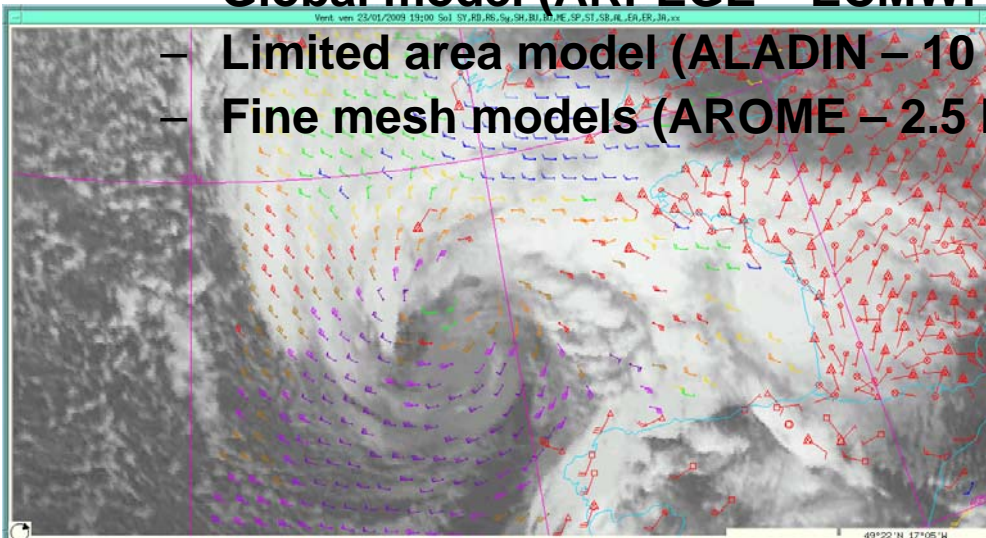
Integrated rainfall from radar

Automated watch

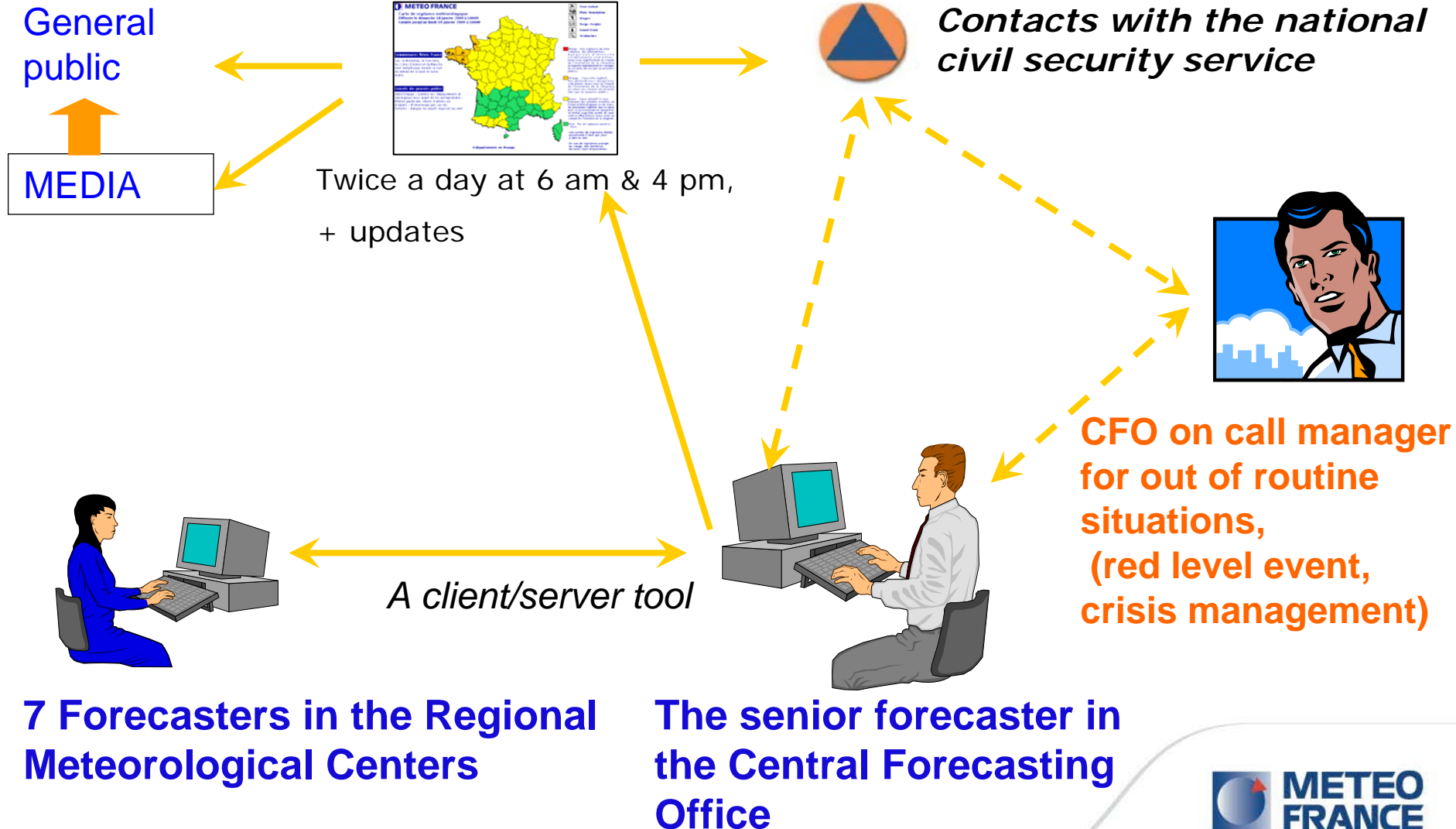
Hazard monitoring and forecasting

Making a good forecast for the next few hours requires to know what happened in the recent past time

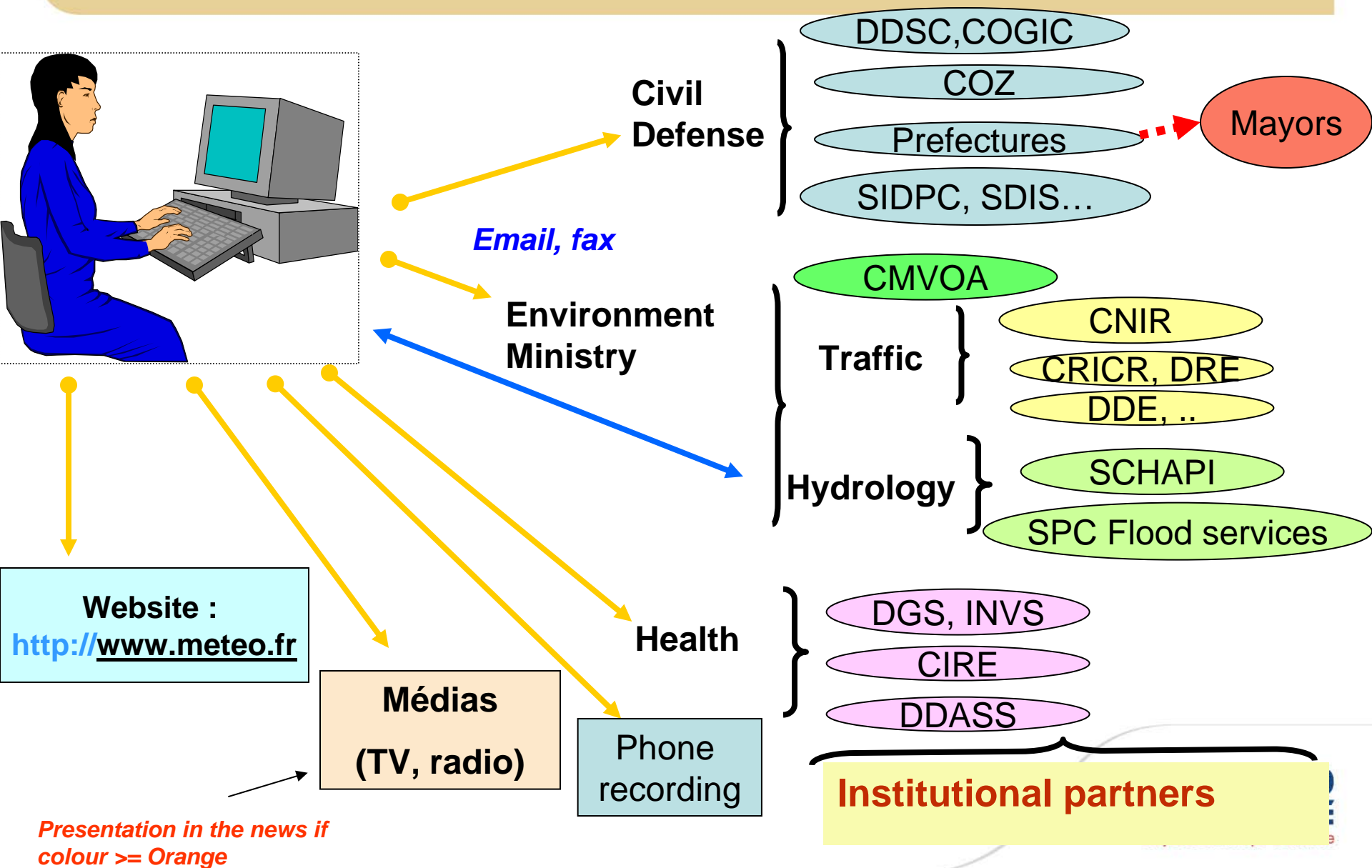
- The forecasters monitor in real time the observed data ...
 - Synoptical and automated stations (550 stations in France)
 - Upper air soundings
 - Radar network images, including accumulation
 - Satellite images
- ... and model outputs
 - Global model (ARPEGE – ECMWF/IFS): medium/short range
 - Limited area model (ALADIN – 10 km): short range
 - Fine mesh models (AROME – 2.5 km): very short range



Our multi-expert process



I – 6 - Distribution of the map and reports





Operationnal collaboration



Information exchanges with Civil Security



*Event notification by phone,
Access to Civil Security
event reporting system
(ORSEC website)*

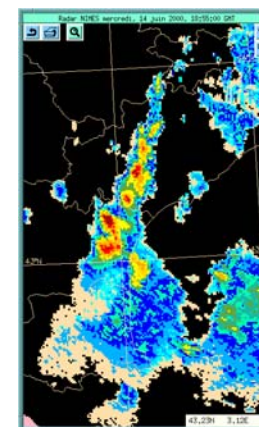


Meteo-France

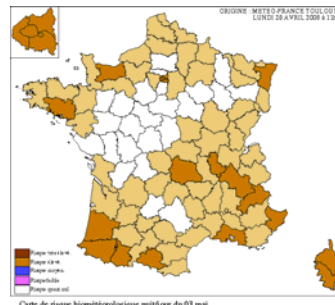
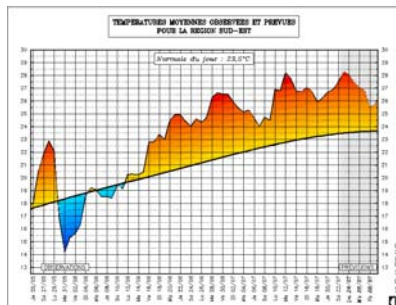
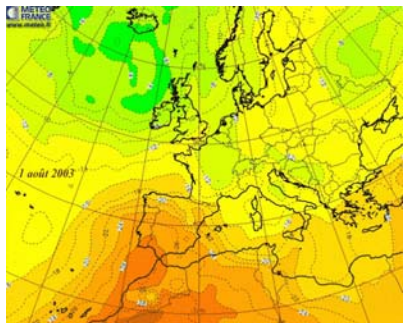
Civil Security



**Daily briefings,
Regular bulletins,
Special bulletins, (i.e. for yellow
level events)
Dedicated websites and
workstations**



Heat wave specific cooperation



Specific data, indexes and expertise



Conference calls if needed



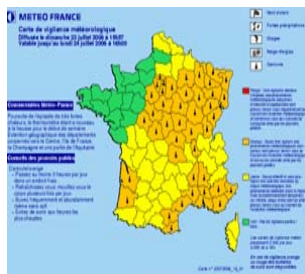
Health reports, worsening factors



Meteo-France



INVS



Local authorities (Préfets)

Warning status and proposals for action

ACTION

Integrated « rainfall – flood » parameter

- **2007 : Change of the parameter « Heavy rainfalls » in « Rainfall-Flood »**

Flooding can be due to :

- Either severe or excess precipitation (1)
- Or over-flowing water in rivers, even if there are no precipitation any more (2)

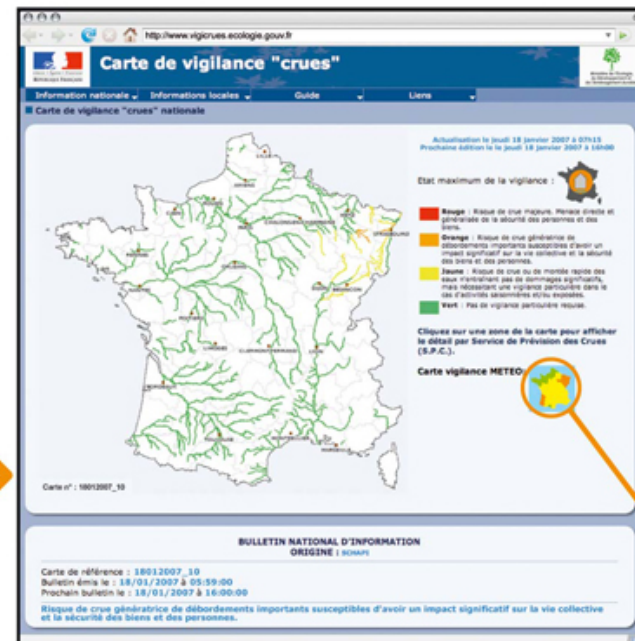
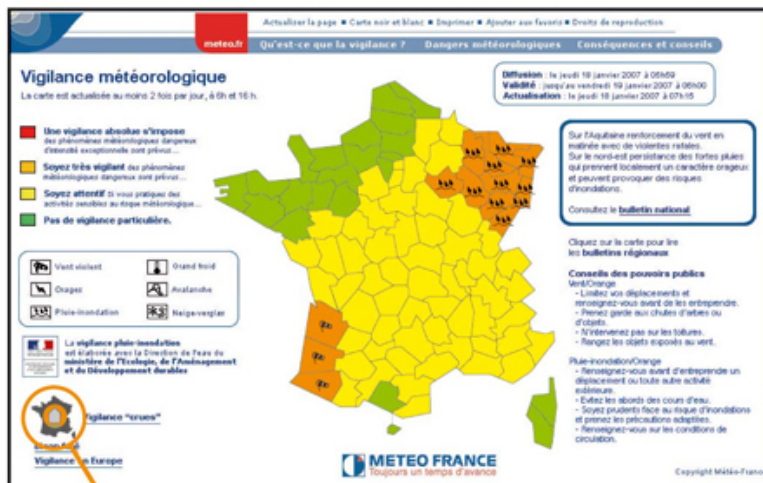
➔ Information about (1) is provided by Météo-France

➔ Information about (2) is provided by SCHAPI, the National Flood Forecast Centre, under the authority of the Ministry of Environment, Water Office for the main rivers.




III – 3 - A cooperate expertise between meteorologists and hydrologists

www.meteo.fr



www.vigicrues.ecologie.gouv.fr

A pictogram  on the meteo chart : **rainfall or flood**, the "rain" part coming from Meteo-France, the "flood" part coming from national hydrological service

Assessment

- A continuous assessment and a continuous improvement trend
 - **Quarterly meetings** with the main partners of the Ministries of Interior, Ecology, Transportation and Health
 - Assess operational capability at local / regional / institutional level
 - Assess effectiveness of coordination and management of warnings from end to end
 - **An annual assessment document** : Feedback about procedure and presentation of statistical data about quality of warnings and related damages



Orange or Red vigilance cases

Three **red vigilance level** events since October, 2001 for heavy rain :

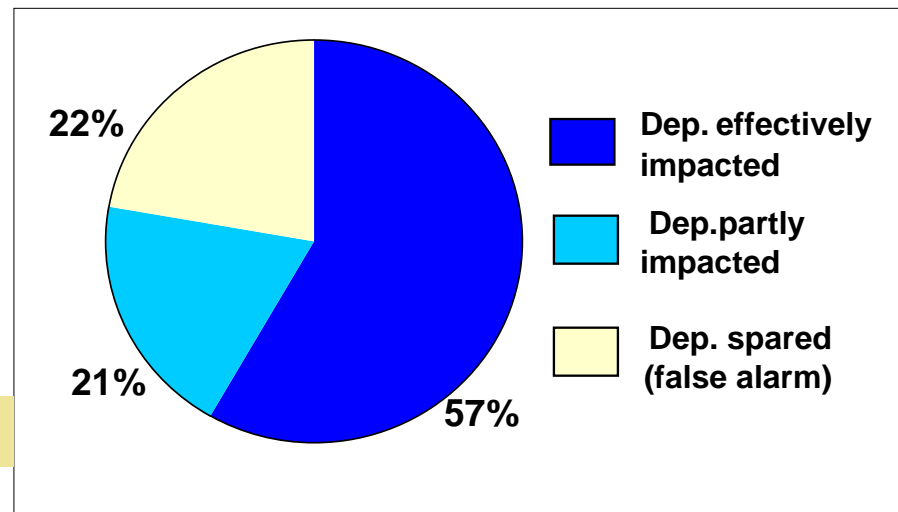
- September, 9th, 2002, in Gard
- December, 3rd, 2003, in Hérault
- September, 6th and 7th, 2005, in Gard and Hérault

A single windstorm **red level** event on January, 24th, 2009,
9 counties in southwestern France

Nearly 300 cases assessed since 2002 :

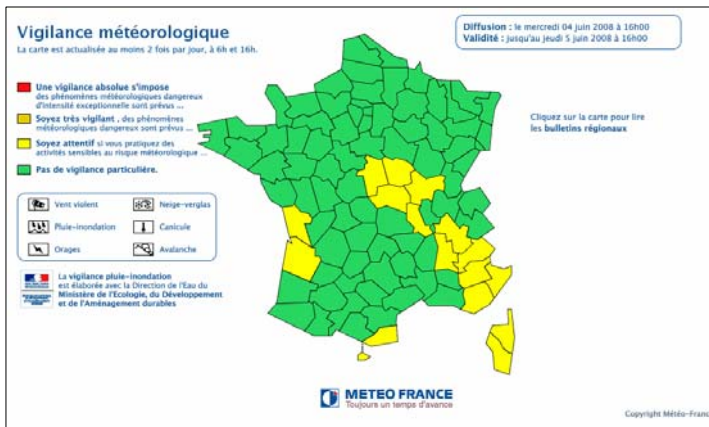
- 0% to 2% annual non detection
- 22% of false alarm at county scale,

Anticipation \geq 3h at county scale ~ 81 %



yellow color on the vigilance chart

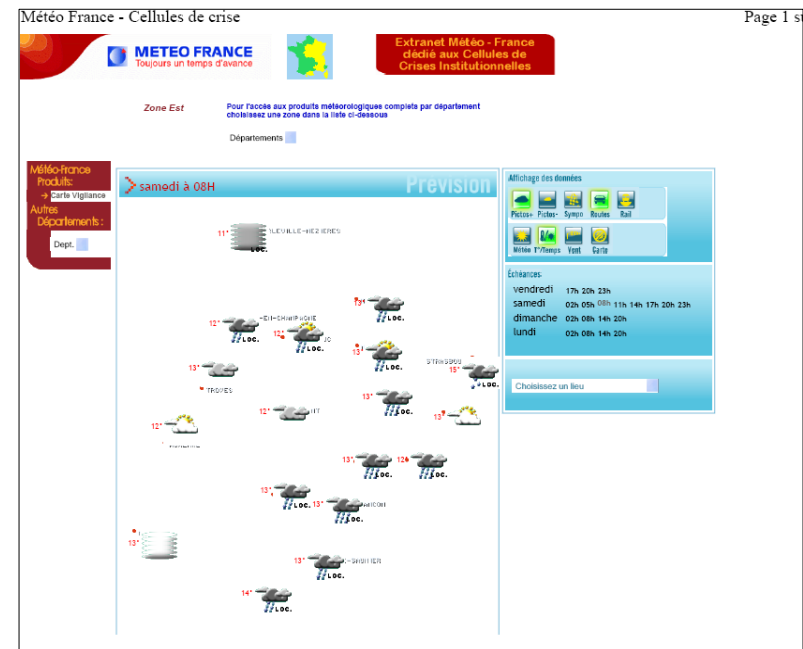
to improve anticipation



- COGIC knows why there is yellow due to its close contact with CFO



- In case of yellow with higher risk (ex. *scattered but potentially violent thunderstorms*), Meteo-France has to take contacts with the regional Civil Security service and the 'Prefectures' (State representative at the local French "département"), decided in 2007



Conclusion

- Lessons learned :
 - The chart is now very well known by the general public (>85%)
 - Main access to information is achieved **through the TV (> 95%)**
 - Technical coordination is critical within NMS
 - Higher pressure on the authorities responsible for safety and for Météo-France, bringing communication issues
 - **A strong driver to improve our technical infrastructure, methods and skills**

- Next probable step :
 - Inclusion of coastal risk in the Vigilance system is expected, ...with new partnerships to be settled in that respect.



**« Vigilance » is a living procedure,
thanks to the cooperation quality of all partner institutions**

