

Flood risk management, drought risk reduction and adaptation to climate change in France

Anne-Marie LEVRAUT

**Head of Department of Natural and Hydraulic Risks
General Directory for Risk Prevention**

Flood risk in France

- 17 millions of people exposed to fluvial flood risk (close to 900 000 people in the region of Paris); approximately 40% employments exposed (exposition to pluvial flood included)
- 6,1 millions of people settled on coastal zone
- 60% of the disaster compensations distributed since 1982 (Cat Nat scheme): 7,3 billions €, without extreme phenomena

→ A significant risk for us

→ Data issued from preliminary flood assessment : stakes included inside extreme hazards areas



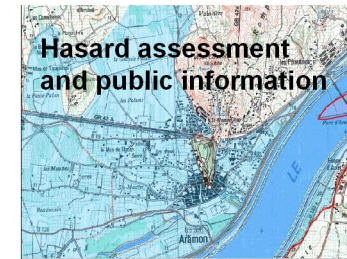
Saint-Laurent (Pyrénées orientales, novembre 1999)



Paris 1910

Flood risk management in France

- Knowledge of phenomena, assessment of flood hazard and risk
 - Public information on flood risk, education
 - Land use planning
 - Flood forecasting, vigilance map and flood alert organization
 - Reduction of vulnerability, development of resilience
 - River protection measures (dynamical slowing down systems, dams, embankments, ...)
 - Preparedness and management of crisis
 - Feedback
- ➔ Management at river basin scale
- ➔ Different actors are involved (local authorities, citizens, experts and professionals) : the responsibilities are shared.



Implementation of the flood directive

- the same competent authorities as these declared to pursue frame water directive
- a preliminary flood risk assessment undertaken, including a national synthesis
- areas with potential significant flood risks identified (150)
- flood hazard maps and flood risks maps under progress
- a national strategy for management of flood risks under progress, in order to frame the targets of flood risks management plans

Implementation of the flood directive

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– an opportunity to improve French national policy :

Taking into account every kind of flood (from rivers, from ephemeral water courses, from the sea...) and different scenarios, including extreme events and impacts of CC

Setting up objectives, targets and priorities

Adopting management plans coordinated at the level of the river basin district, establishing targets to reduce consequences of floods and including measures for achieving the targets

Taking into account economic approach (costs and benefits) and sustainable development



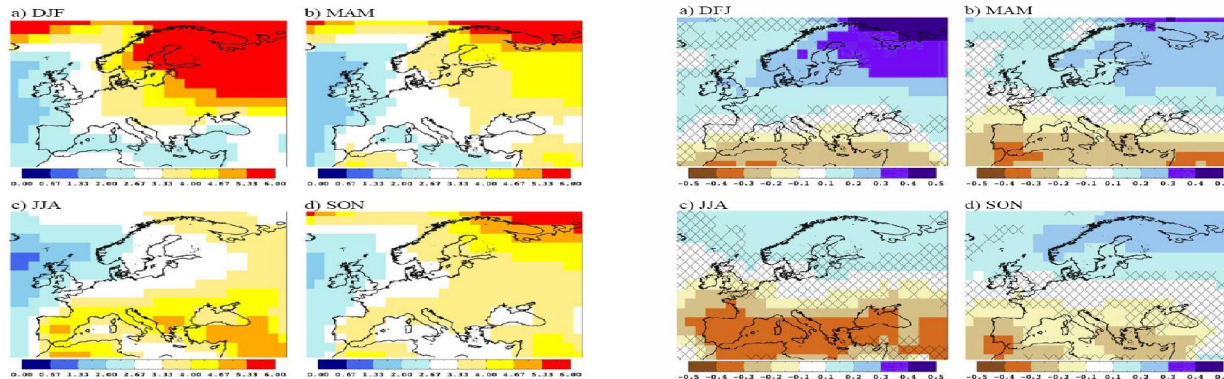
The 1st national climate change adaptation

Following a proposal from the Senate, the **National climate change** has been created in 2004 and has a mission on adaptation. The national adaptation plan (NAP) was adopted in 2009, a national **economic assessment**

To cope with uncertainty, this plan covers a 5 year period and gives **priority to low regret and knowledge improvement measures**. The plan mainstreams adaptation into existing public policies to trigger an immediate implementation and to be more efficient. Every action is carried out by a specific ministerial department. Ministry of ecology coordinates the NAP but several other ministries are responsible for many actions. It is thus a genuine cross sectoral policy.

Adaptation depends on national and then local context. Indeed, this first NAP will be **complemented with local adaptation actions** (required by law by the end of 2012)

Flood risk and climate change adaptation



Temperatures (°C) : changements saisonniers entre 2080/2099 et 1961/1990 (échelle de 0 à 6°C)

Precipitations : changements relatifs saisonniers entre 2080/2099 et 1961/1990 (échelle -0,5 à 0,5)

Difficulties to choose CC scenarios for river floods (uncertainties), easier for coastal floods (more robust signal)

- River flood risk management policy to be continued and reinforced ; runoff and extreme events to be studied in more details
- What is really new : the step backward of the low French coasts within the next 100 years

→ 5 actions : develop knowledge ; extend observation and make data available ; standardise the weather monitoring (extension to « tidal wave and flooding ») ; mainstream the impact of climate change on natural hazards in urban development management ; reduce vulnerability and improve resilience

Water resources and climate change adaptation

Latest studies announce an increase in drought frequency and intensity in the next decades and lower river discharge in summer

5 actions :

- Improve understanding of the impacts of climate change on water resources and the impacts of various potential adaptation scenarios
- Provide effective tools for monitoring structural imbalance phenomena, resource scarcity and drought within the context of climate change
- Develop water saving and ensure more efficient water use ; reduce water abstraction by 20%, excluding winter water stocks, by 2020
- Support the development of activities and land use which are compatible with locally available water resources
- Reinforce the integration of climate change issues into water planning and management, in particular in the next water agency intervention programmes (2013–2018) and programmes for development and water management (2016–2021)

Perspectives – Conclusion

- Perspectives :

National and coherent global management, involvement of all actors, mitigation and resilience increase, ...

- Conclusion :

Flood directive and adaptation to climate change are 2 more reasons to restructure and reinforce our French flood risk prevention policy and to develop the collaboration with European partners.