Future challenges of flood management in European urban and rural areas

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Outline

Grands lacs de Seine

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Key messages for the future

1. Grands lacs de Seine

Grands lacs de Seine (GLS) is a **public institution** gathering local authorities Paris and three surrounding departments (Hauts-de-Seine, Seine-Saint-Denis and Val-de-Marne).

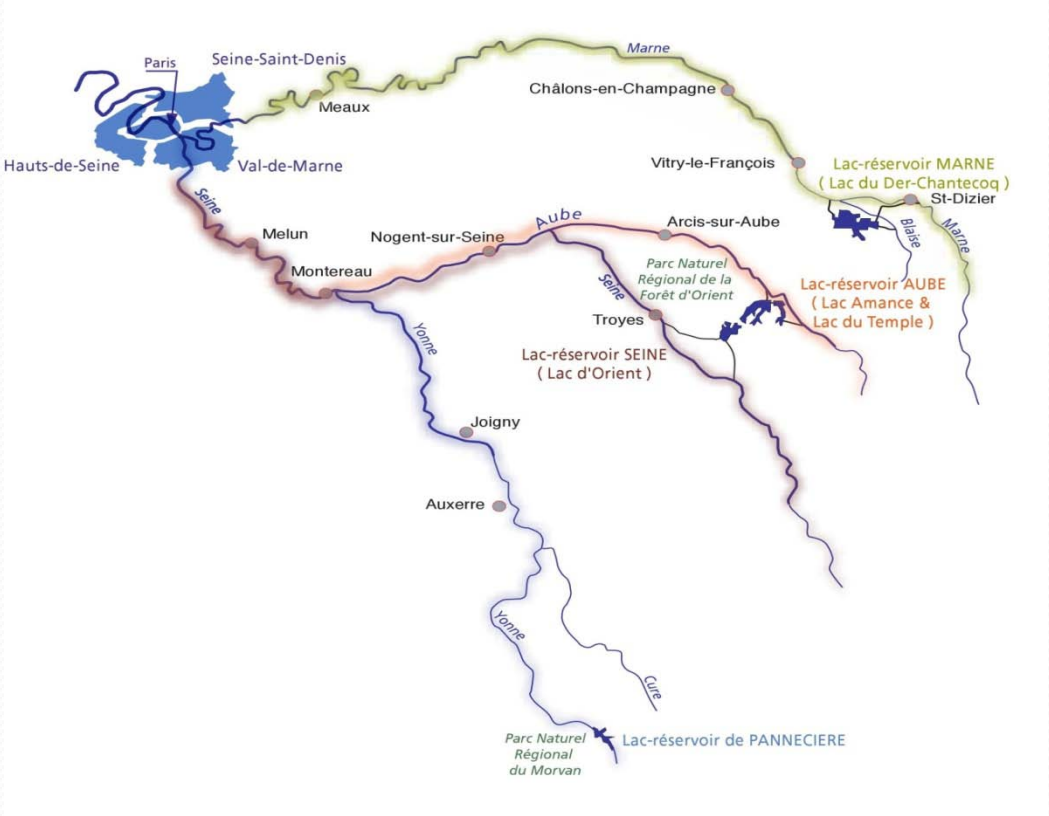
Its main objectives are :

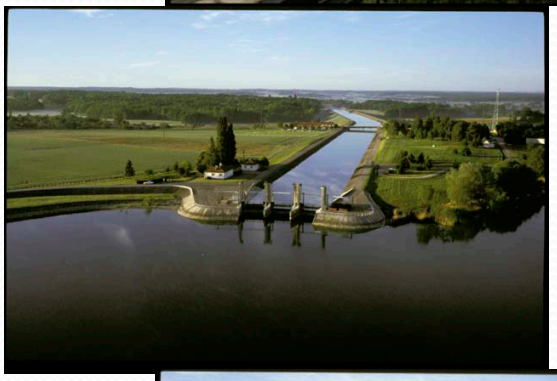
- to **reduce flood risk** in winter and spring
- to sustain low flows in summer and autumn

for the Seine river and its main tributaries (Aube, Marne and Yonne).

GLS is **operating four important reservoirs** with a total storage capacity of 830 millions m3 and developing new storage equipments. Climate change impact is a main issue and GLS is partner of the ERA-Net IWRM project CLIMAWARE.

As a main actor in flood management of the Seine river basin, Grands lacs de Seine is also acting to increase the flood resiliency of the territory and to restore ecosystems and rivers morphology.





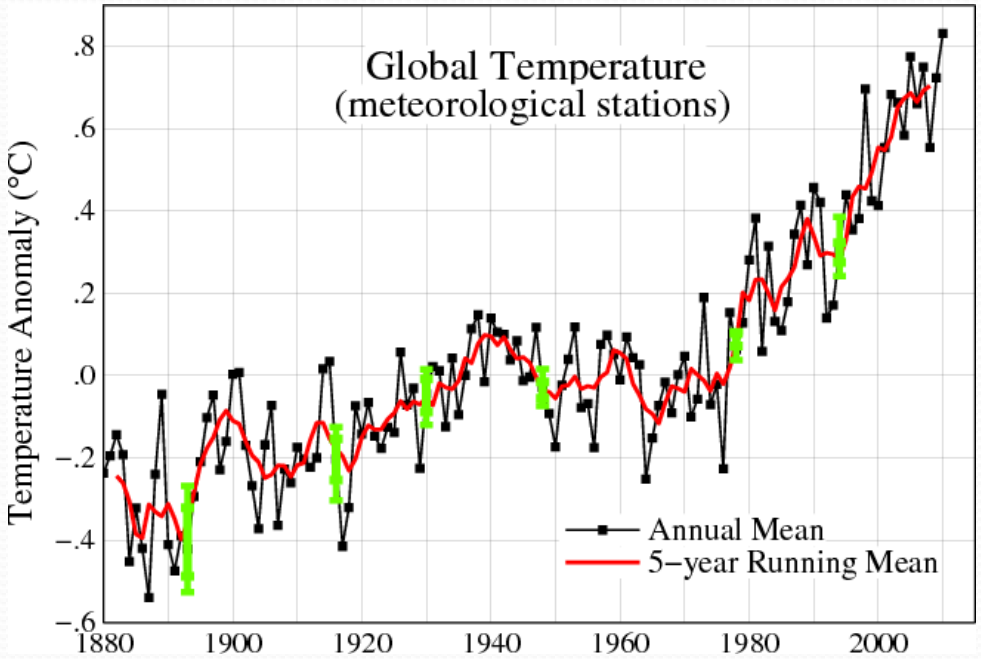
LES GRANDS LACS DE SEINE

www.grandslacsdeseine.fr

2. Climate change and extreme events 1/3

Climate change is an established fact on a global level, and especially the rapid increase of the global average temperature at the surface of the planet

2010 was probably the warmest year since 130 years (NASA source)



Many extreme events occured in Europe in 2010: Madeira, Draguignan in France, Danube, Oder, Vistula…

2. Climate change and extreme events 3/3

Europe Environment Agency report: **mapping the impacts of natural hazards and technological accidents** gives many information and data about flood disasters in Europe during the 1998-2009 period and stresses that overall losses have increased over the last few decades.

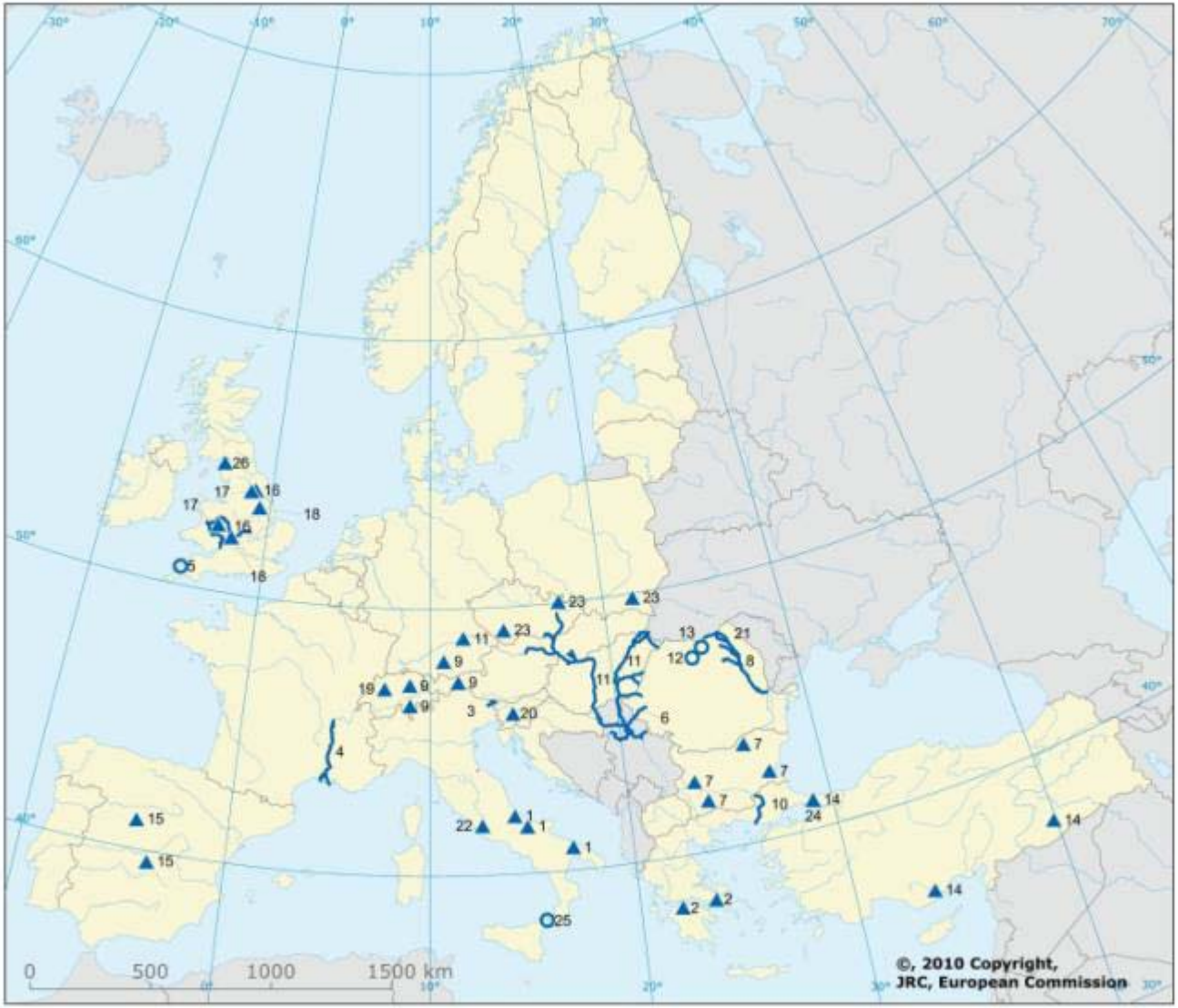
Since 1998 floods in Europe have caused about 500 deaths and the displacement of about 500.000 people.

The most destructive events in terms of economic losses where:

- Flood in the Elbe basin in 2002 (losses of over 20 EUR billion)
- Floods in Italy, France and the Swiss Alps (12 EUR billion) in 2000
- A series of events in the UK during summer 2007 (4 EUR billion) as of 2009

26 major flood disasters were recorded between 2003 and 2009; the most affected coutries were Romania (6), UK (5) and Italy (4).

Figure 7.1 Significant flood disasters in Europe 2003–2009



Note: Numbers on the map link each event with records in Table 7.1. Triangles represent large regional events and circles local events (large regional events are those usually affecting several river basins. The flooded area may extend over regions of more than one country. Widespread flooding occurs in this type of event).

Source: JRC — updated from Barredo, 2007.

3. What challenges for river basins in the future? 1/2

- Global warming is projected to intensify the hydrological cycle and to lead to an increase in the frequency and intensity of floods in large parts of Europe (especially flash and urban floods).

- But It is still very difficult to evaluate and to predict the consequences of climate change, at a regional or local level, on hydrology and water flows and on socio-economic drivers. The flood forecasting becomes a major challenge in that uncertain context.

- The continuous increase in the last years of flood damages comes more from the increase in population and wealth in the affected areas than from the intensity of the floods.

3. What challenges for river basins in the future?

- In recent years flood risk public policies are gradually shifting from defence against flooding to integrated flood risk management and river basin management.

- **The main challenge for European flood prevention policies is to slow down the continuous increase in flooding losses** and furthermore to begin to stabilize or decrease them.

4. European flood prevention policies 1/3

Many national or international flood prevention policies are already existing in Europe:

- **Making space for water** programme in UK (2005)
- **Working together with water** in NL (after 1995 and 1999 floods)
- **Action plan on floods** as a part of **Rhine 2020** (after 1993 and 1995 floods)
- **Flood action programme** in the **Danube river** basin (a new adaptation strategy to CC to be developped by the end of 2012)

4. European flood prevention policies 2/3

Many European projects (Research or Interreg projects)

Cost Action C22

A European research Platform on urban flood management

Book :

Urban flood management

SIC Adapt (Strategic Initiative Cluster : adaptation to the impacts of climate change) gathering 8 NWE Interreg project (ALFA, AMICE, FRC…)

4. European flood prevention policies 3/3

The EC directive on the assessment and management of flood risks adopted in November 2007 after a period of major floods in Europe is a good example of concerted action at EU level.

The directive is aiming to reduce and **manage the risks** that floods pose to human health, the environment, cultural heritage and economic activity

This directive coordinated with the WFD introduces **a new way of thinking from flood control or protection to flood management**; the flood directive must be implemented in 3 stages:

- Preliminary flood risk assessment (in 2011)
- Flood hazard and risk maps for flood prone zones (in 2013)
- Flood risk management plans (in 2015)

These steps shall be reviewed every 6 years.

Flood directive is explicitly dealing with climate change; flood maps must identify flooded areas with extreme events (a 1/100 year event being considered as a medium one).

Flood risk management plans must adress all phases (including far-sighted land-use planning, building in an adapted way, early warning systems, stakeholders awareness and involvement).

5. What challenges for flood management in urban areas ?

To progressively adapt cities to flood risk in order to get more resilient cities

FLOOD PROOF CITIES

6. What challenges for flood management in rural areas?

- Public policies should maintain and develop **room for the river actions**, also fruitful for ecosystem preservation and restoration

- Floodplains and wetlands are important components to be maintained and managed in appropriate way (e.g Interreg Freude am Fluss project along Loire and Rhine river)

- The cost and benefits or providing flood prevention downstream should be shared among stakeholders; **in return for the extra flood prevention of the urban area, the rural agricultural areas should be helped**, if necessary. **An important issue for the future is how agriculture shall be a partner of flood management**

7. Key messages for the future

- We should **act immediately** to develop «no regrets » adaptation strategies and measures, **involving all the stakeholders**

- **Flood management must be fully integrated in water management and river basin management**, including land use planning, in **a holistic way**.

- To get **flood resilient cities** must be a priority for the future.

- Rural areas public policies should maintain and develop « **room for the river** » actions.

- **Exchanging and sharing researches, experiences and good practices between policy makers, water and risk managers, researchers and stakeholders must be a priority at the European, national regional and local levels.**

All together to face a world of uncertainty!

Thank you for your attention!

Flood defences in Ocsalanos Hu
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