



# FLASH FLOODS AND PLUVIAL FLOODING



## Working Group F Thematic Workshop

*From 152/06 national law to “flood directive”*

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Arno River Basin Authority, IT

26<sup>th</sup>-28<sup>th</sup> May 2010, Cagliari, Italy



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**Italy and the management of floods**



*Firenze, 1966*



*Polesine, 1951*



*Firenze, 1966*



*26-28 May 2010, Cagliari, Italy*

**Many heavy floods have hit Italian territory**



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Savona, 1992



Genova, 1970



Albenga, 1994



Piemonte, 1994



Versilia, 1996



Valtellina, 1987

26<sup>th</sup>-28<sup>th</sup> May 2010



Sarno, 1998



Sarno, 1998



Serchio River, 2010



Val d'Aosta 2000

26<sup>th</sup>-28<sup>th</sup>



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# Firenze, 1966



**1844**



**1966**

**For example since 1177 the Arno river has flooded Florence 56 times.  
8 occurrences are defined extreme:**

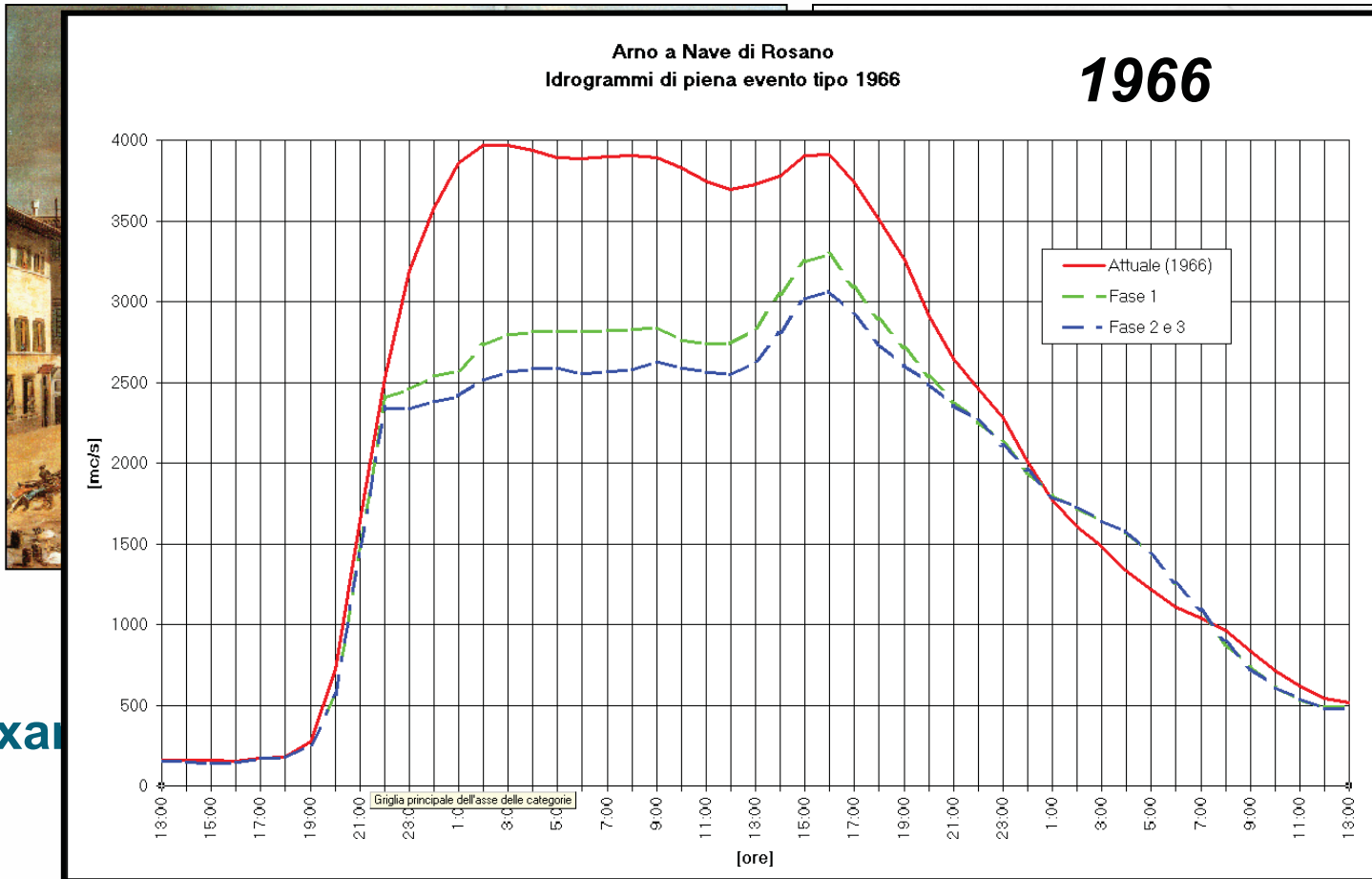
**1333 – 1547 – 1557 – 1589 – 1740 – 1758 – 1844 - 1966**



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# Firenze, 1966



For exam

times.



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## The Italian route in the management of floods

Major disasters (1951, 1966...)

1989 Wireframe law on soil protection

1990 Institution of RBAs

1998 Disaster of "Sarno"

1998 "Sarno" Law

**2007 Flood Directive**

2007 Completion of PAI mosaic

**2000 Water Directive**

1999 Preliminary mapping

1998 Start of PAI planning



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- 1. Only one subject**
- 2. Planning as the main issue**
- 3. Basin scale**
- 4. A “River basin authority”**
- 5. Two time scales**

**Flood and landslide risk  
and water resources  
define an unique thematic and  
management environment**

**Before the “*Flood directive*”: the Italian model in  
5 headings**





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1. Only one subject
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Every action has to be considered within a **holistic** planning activity. Planning process is **open** to institutions and stakeholders. The plan is finally approved by the Prime minister and has the force of a **State law**.

**Before the “*Flood directive*”: the Italian model in 5 headings**



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1. Only one subject
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Watershed is the planning scale, regardless to administrative boundaries

**Before the “*Flood directive*”: the Italian model in 5 headings**



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A specific “Authority” with both regional and state components governs planning and budgeting

**Before the “*Flood directive*”: the Italian model in 5 headings**



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1. Only one subject
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Basin planning is a typical “deferred time” scale action. “Real time” action is governed by Civil Protection System.

**Before the “*Flood directive*”: the Italian model in 5 headings**



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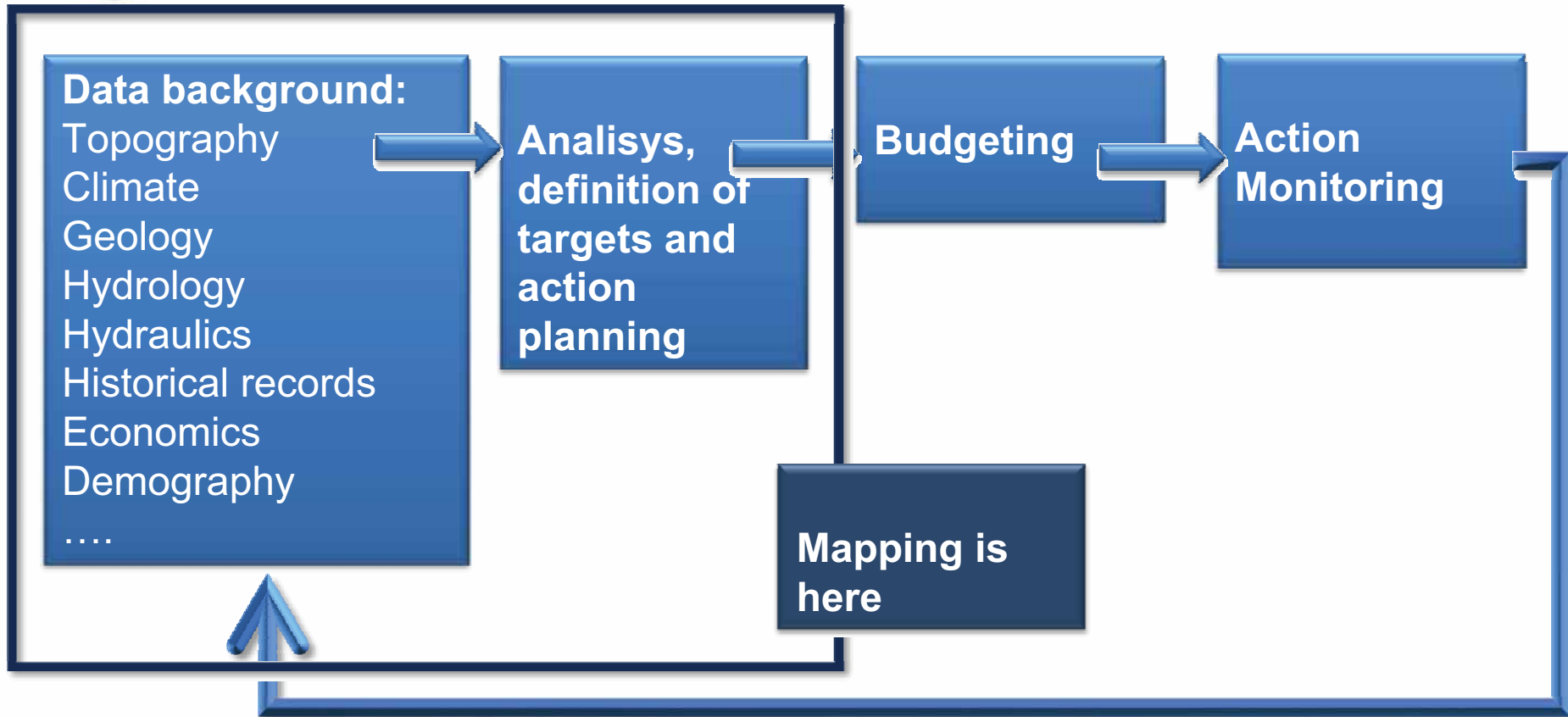


## The *RBAs* (since 1989)

26<sup>th</sup>-28<sup>th</sup> May 2010, Cagliari, Italy



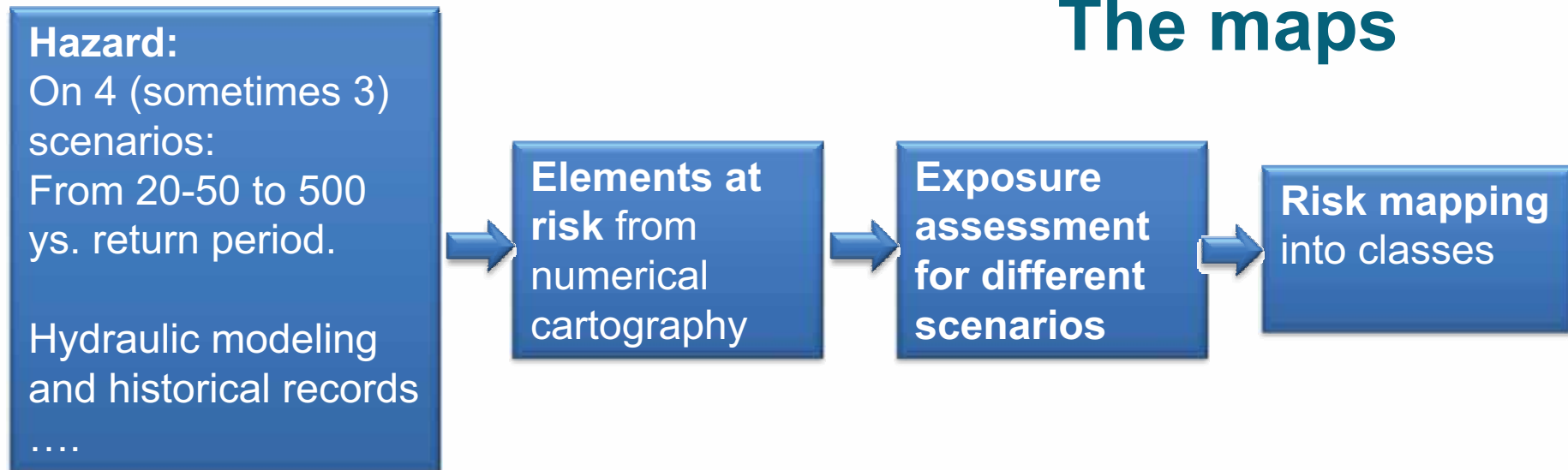
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## The *PAI* Plan



## The maps

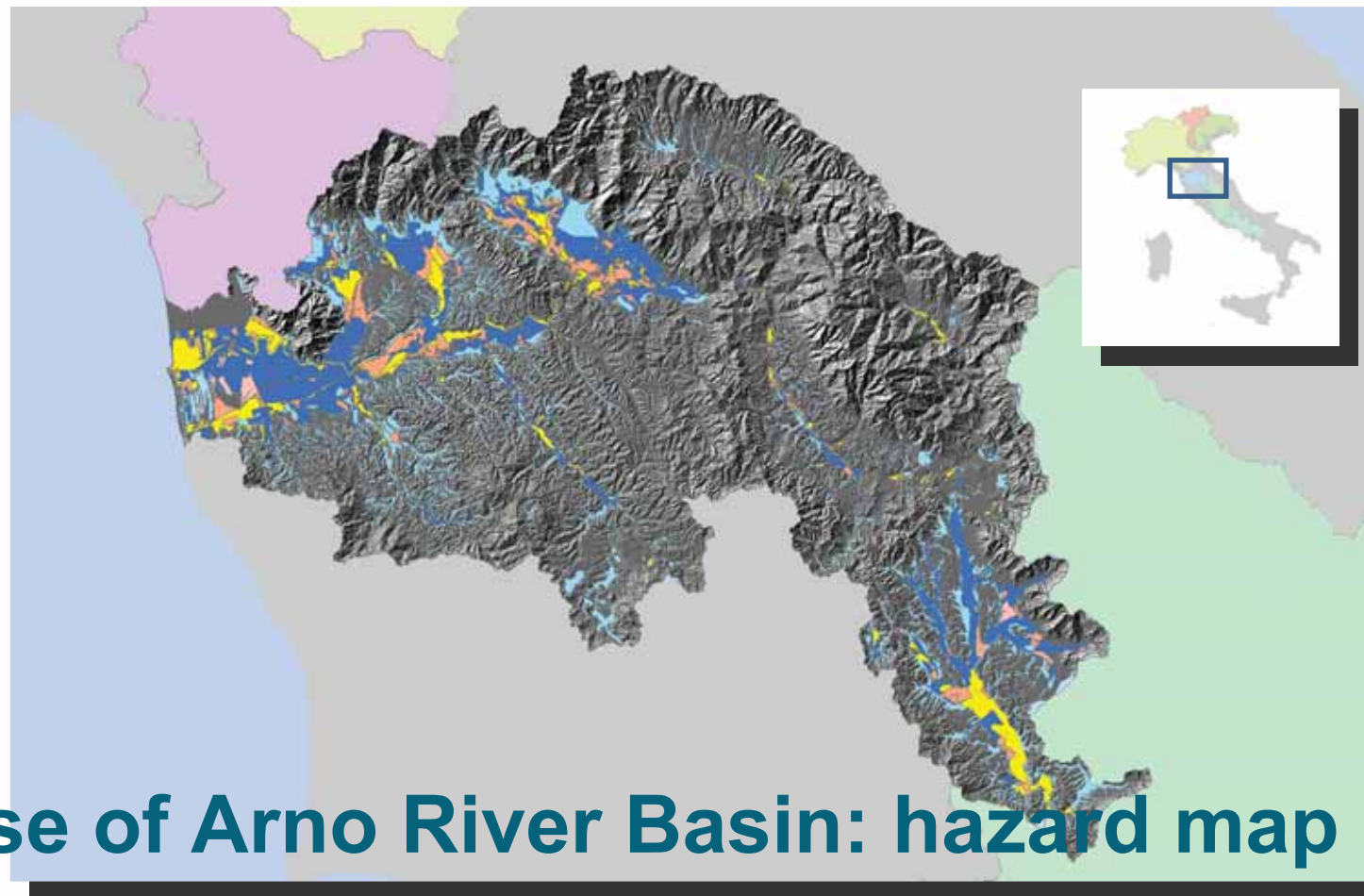


Scale from 1:25.000 to 1:10.000

**All floodplains are mapped but the level and accuracy of information vary**



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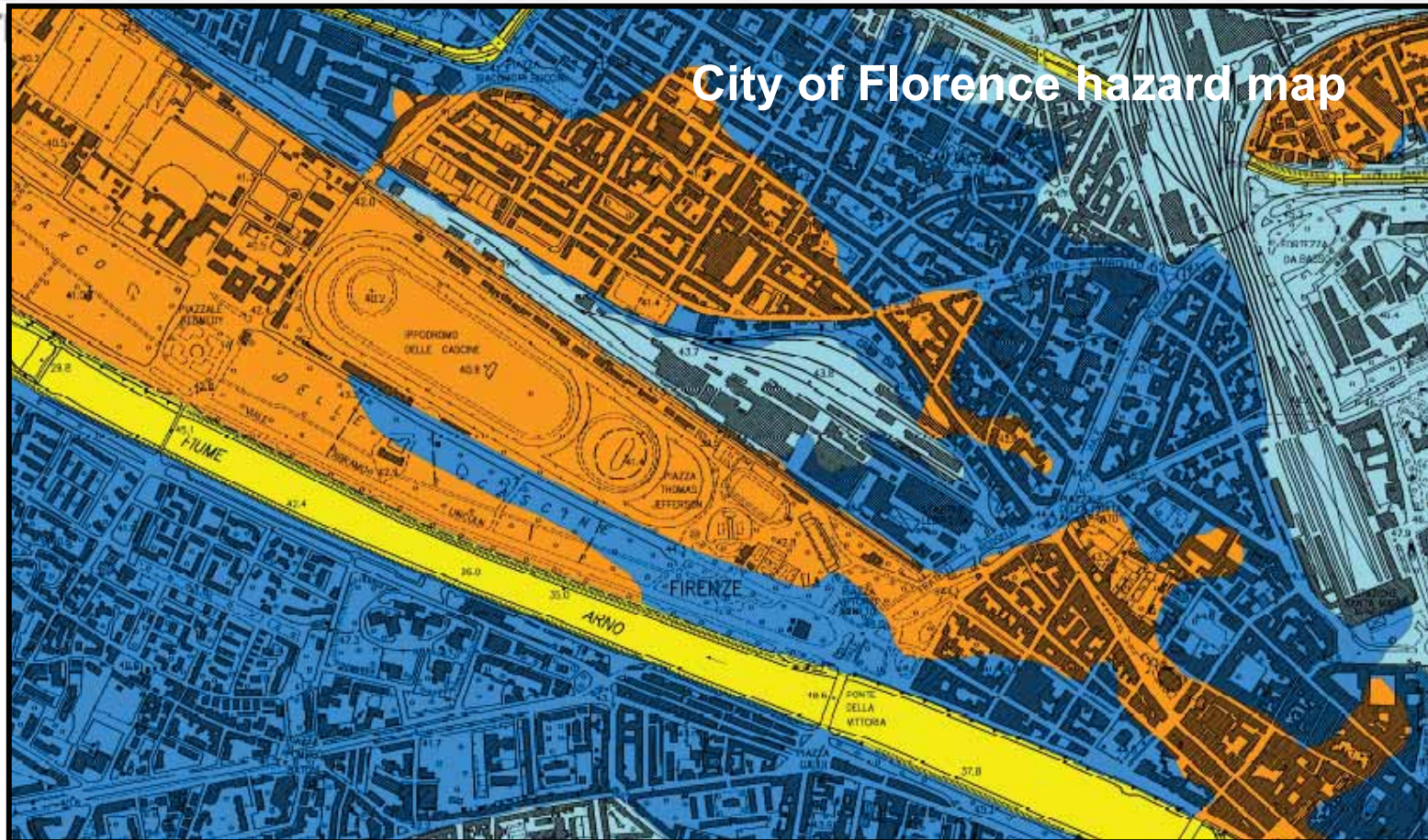
# The case of Arno River Basin: hazard map

26<sup>th</sup>-28<sup>th</sup> May 2010, Cagliari, Italy





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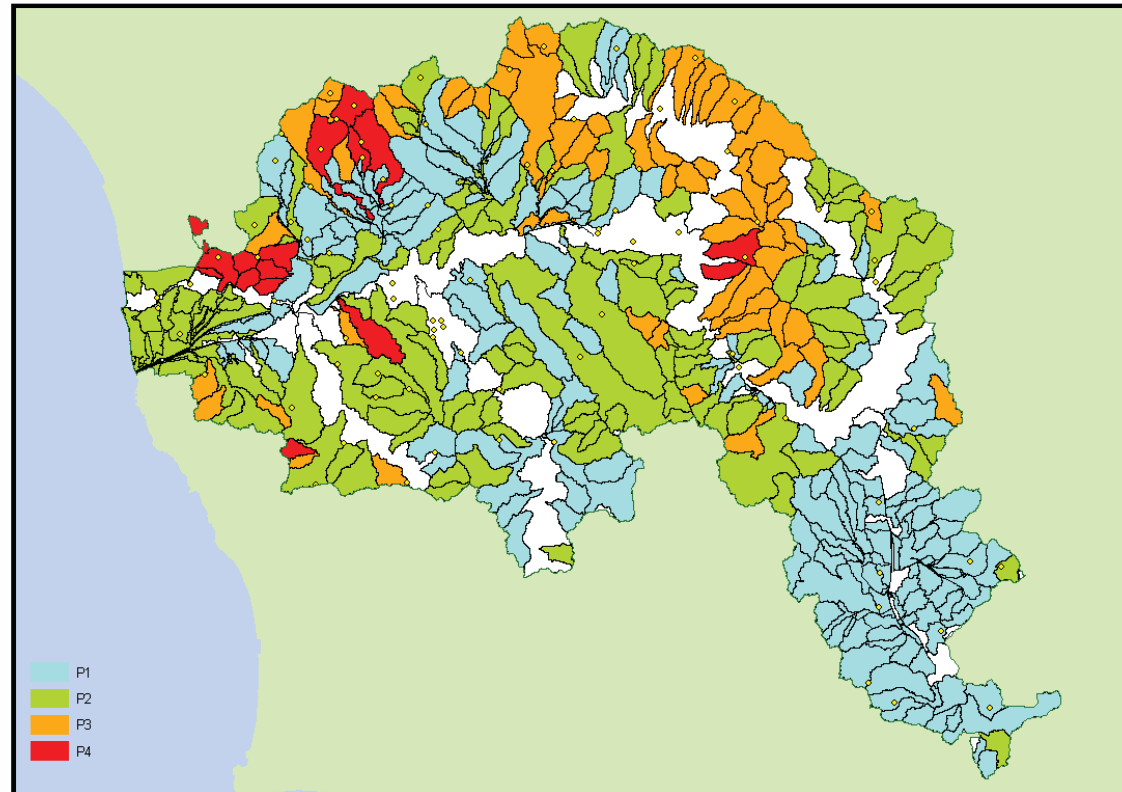
City of Florence hazard map

## The case of Arno River Basin: hazard map

26<sup>th</sup>-28<sup>th</sup> May 2010, Cagliari, Italy



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# The flash flood hazard in the Arno river basin: a proposal

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REGIONE AUTONOMA  
DELLA SARDEGNA



MINISTERO DELL'AMBIENTE  
E DELLA TUTELA DEL TERRITORIO E DEL MARE

The *Water directive* was implemented with the D.Lgs. 152/2006

The National River Basin Authorities in earlier 2009 were responsible for coordinating and carrying out plans. The water management plans of eight districts were approved in February 2010.

The district plans are built according to catchments and subunits and the information is coordinated with the hazard and risk maps of PAI



## **The *Water directive* and the *Flood directive***

26<sup>th</sup>-28<sup>th</sup> May 2010, Cagliari, Italy



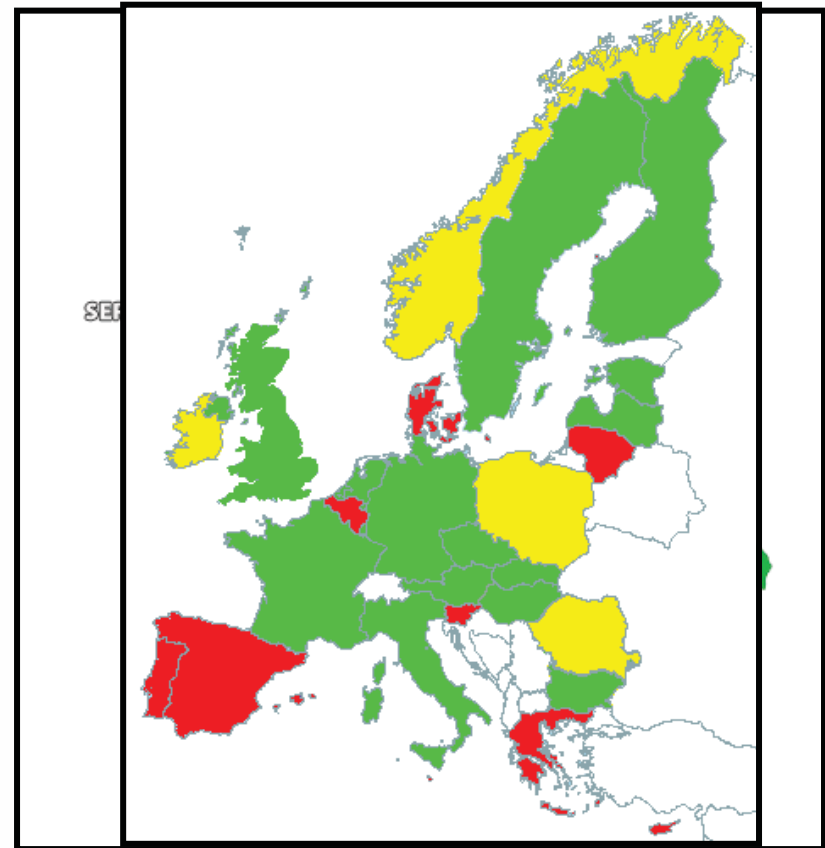
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## **The *Water directive* and the *Flood directive***

26<sup>th</sup>-28<sup>th</sup> May 2010, Cagliari, Italy



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The *flood directive* was implemented with the D.Lgs. 49/2010, in February. At the moment the competent Authorities are defining.

*Actually we believe that maps of hazard and risk of PAI meet the requirements of the Directive as “preliminary flood risk assessment product” to be concluded in 2011*



## The *Water directive* and the *Flood directive*



## Conclusion 1

- **Natural risks forced by climate in Italy are managed at the basin scale.**
- **The tool is the Basin Plan continuously upgraded by RBAs.**
- **Preliminary H/R maps were produced in the nineties.**
- **A state law in 1998 started a national mapping programme and is now completed.**
- **Available flood hazard maps cover all flood prone areas in Italy generally according to three/four scenarios.**
- **For each scenario at least flood extent is shown on the map.**





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## Conclusion 2

- **These maps meet the requirements of the Directive as “preliminary flood risk assessment product” to be concluded in 2011.**
- **The review and the upgrade of maps, after a nationwide coordination work, also meets the “Flood mapping product” requirements deadlined for 2013.**
- **We have an important background of knowledge and experience in flood management and we can give significant contributes in this area: however, this requires strong government action in no uncertain terms to define “who does what”.**

