



FLASH FLOODS AND PLUVIAL FLOODING



ISPRA

Istituto Superiore per la Protezione
e la Ricerca Ambientale



**REGIONE AUTONOMA
DELLA SARDEGNA**



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

Working Group F Thematic Workshop

From 152/06 national law to “flood directive”

Marcello Brugioni
Arno River Basin Authority, IT

26th-28th May 2010, Cagliari, Italy



Working Group F Thematic Workshop

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Ita



Serchio River, 2010

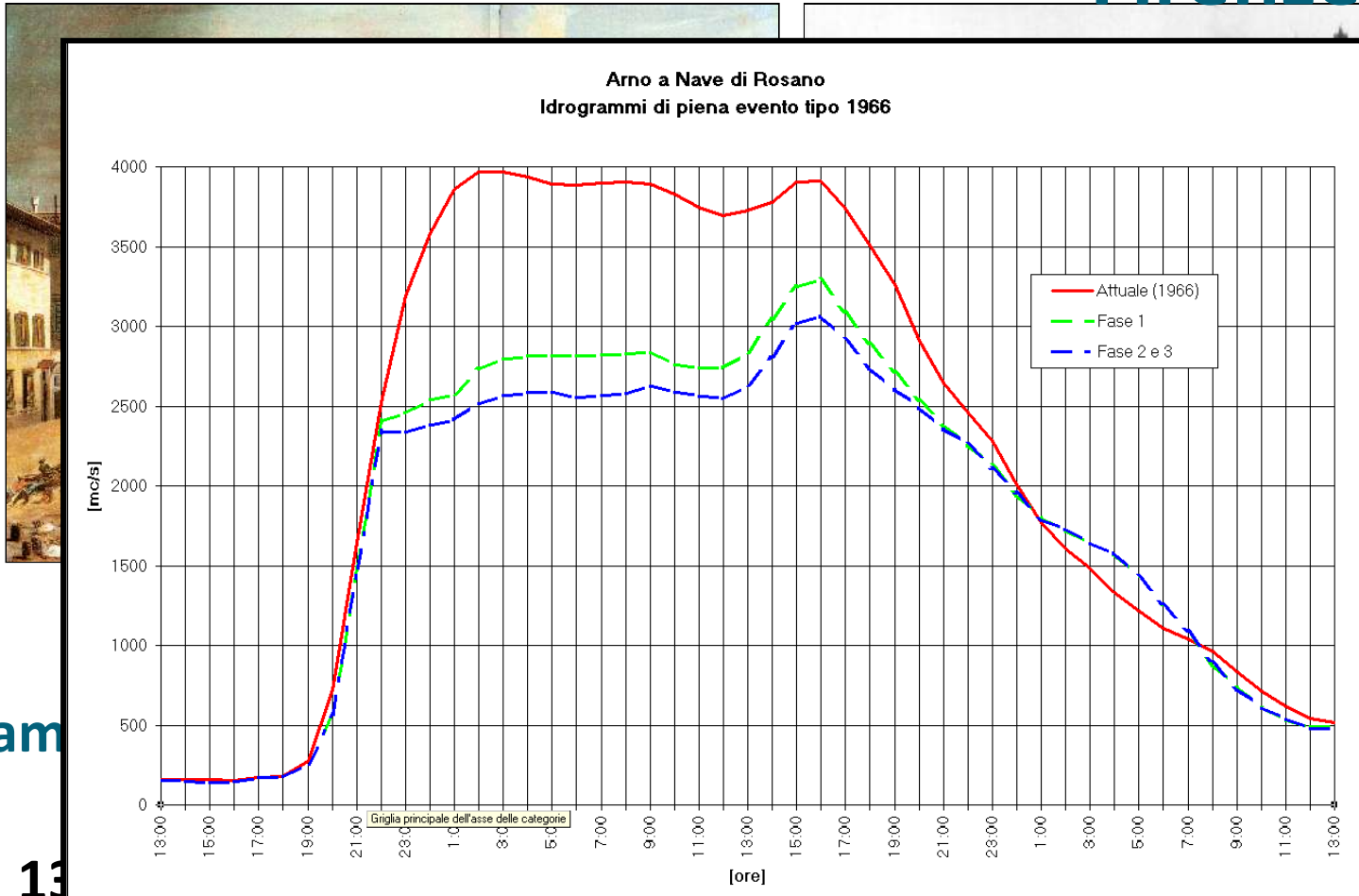
1970

Many heavy floods have hit Italian territories

26th-28th May 2010, Cagliari, Italy



Firenze, 1966



For exam

6 times.

13

6



The Italian route in the management of floods

Major disasters (1951, 1966...)

1989 Wireframe law on soil protection

2007 Flood Directive

1990 Institution of *RBA*s

2007 Completion of *PAI* mosaic

2000 Water Directive

1998 Disaster of "Sarno"

1999 Preliminary mapping

1998 "Sarno" Law

1998 Start of *PAI* planning



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

Every action has to be considered within a **holistic** planning activity. Planning process is **open** to institutions and stakeholders. The plan is finally approved

A specific “Authority” with both

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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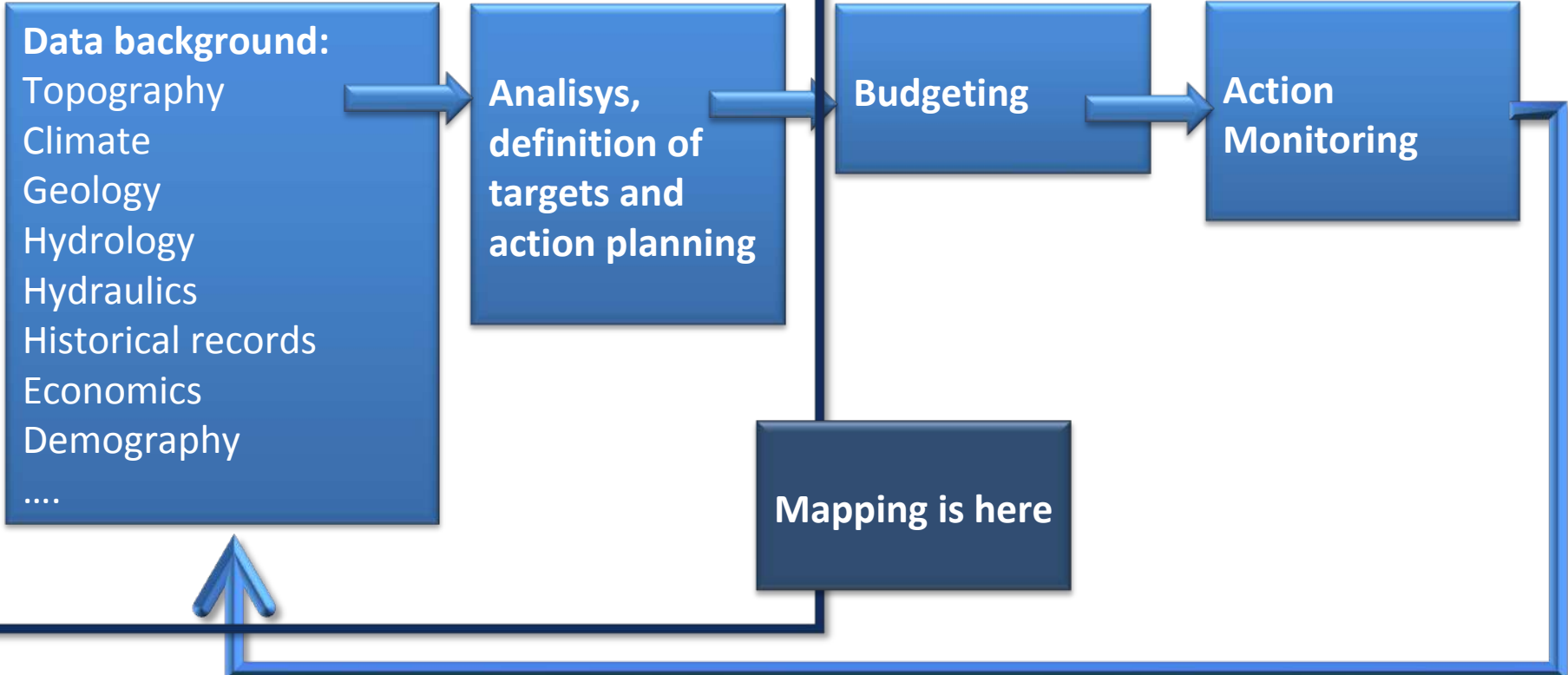


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The *RBAs* (since 1989)

26th-28th May 2010, Cagliari, Italy



The PAI Plan



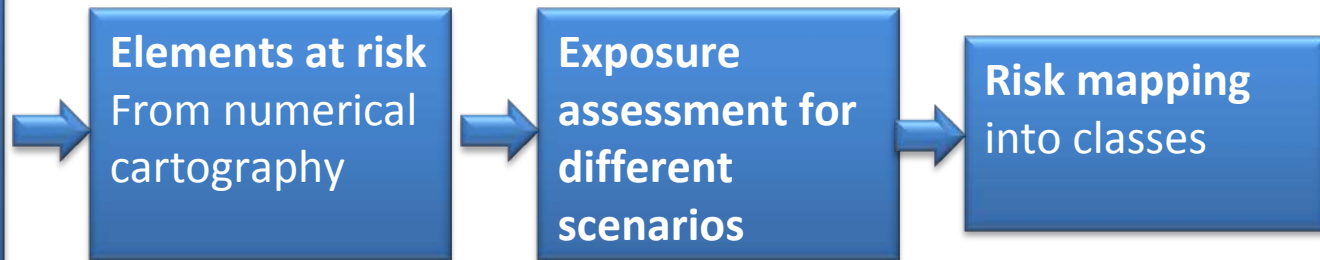
The maps

Hazard:

On 4 (sometimes 3)
scenarios:
From 20-50 to 500 ys.
return period.

Hydraulic modeling
and historical records

....

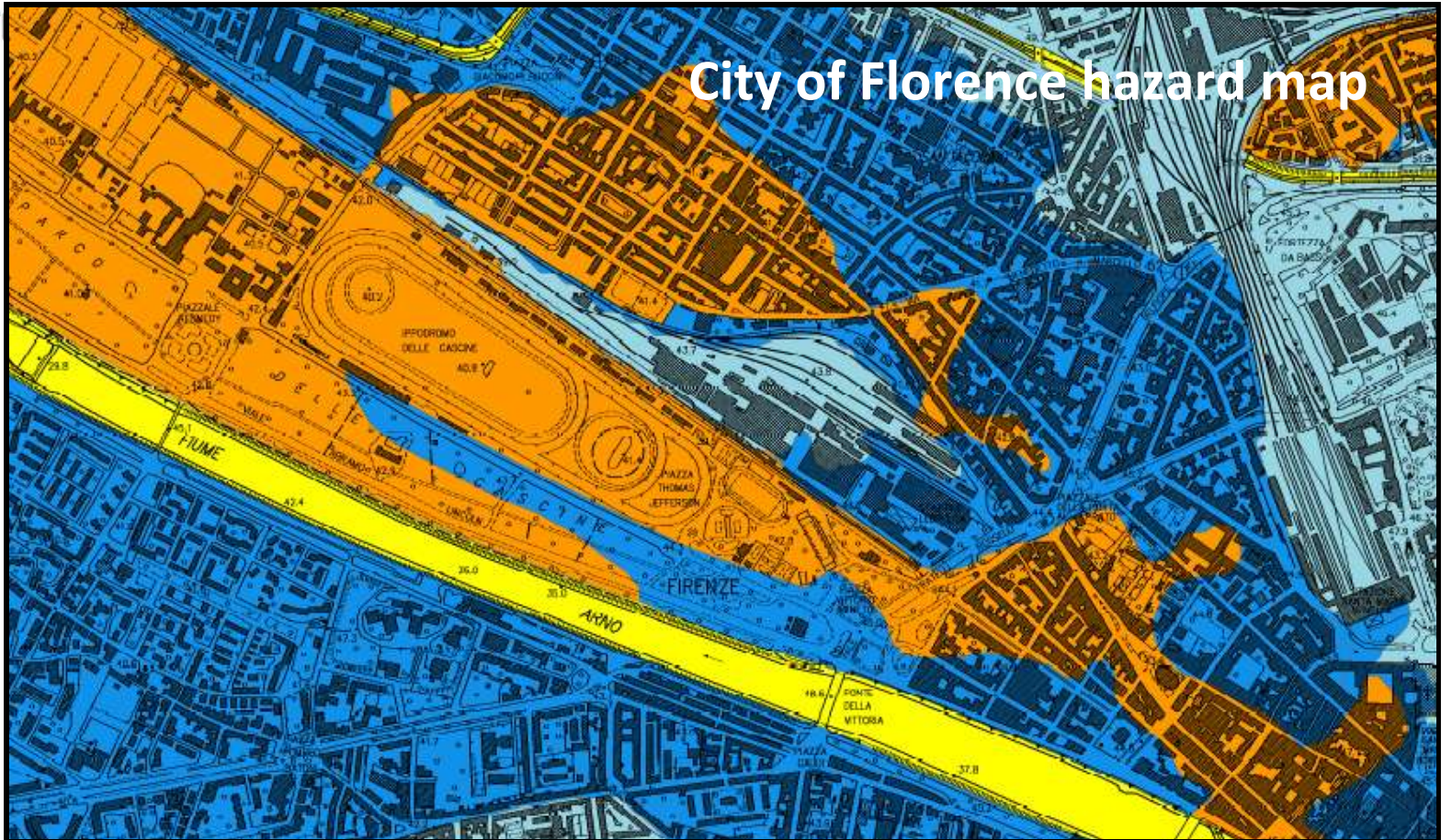


Scale from 1:25.000 to 1:10.000

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



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City of Florence hazard map

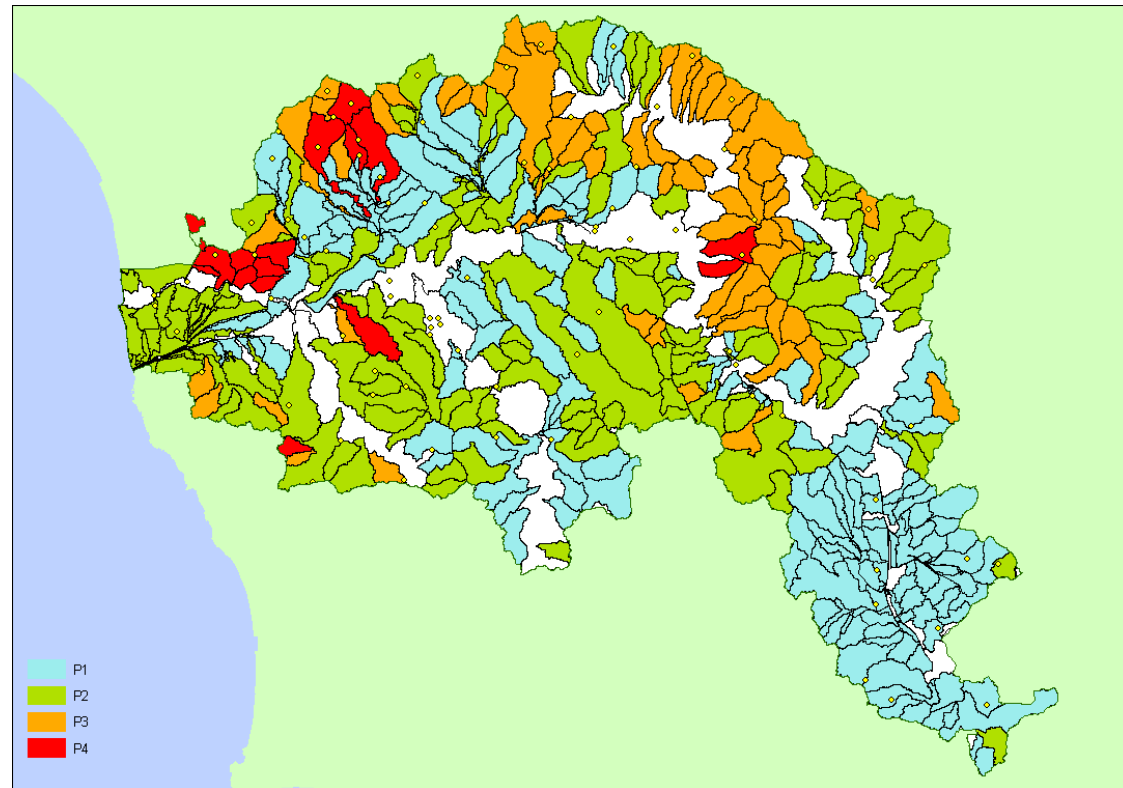
The case of Arno River Basin: hazard map

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

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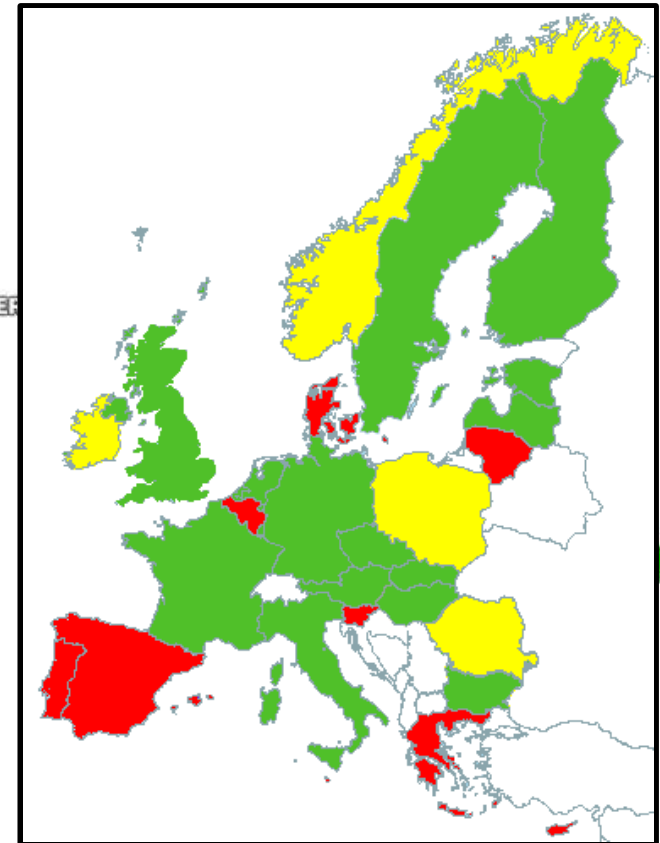
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The *Water directive* was implemented with the D.Lgs. 152/2006

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*

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The *flood directive* was implemented with the D.Lgs. 23/2010, in February. In these days are defined the competent Authorities.

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*

26th-28th May 2010, Cagliari, Italy



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





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”

