



## FLASH FLOODS AND PLUVIAL FLOODING



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Istituto Superiore per la Protezione  
e la Ricerca Ambientale



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DELLA SARDEGNA



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

## Working Group F Thematic Workshop

# Introducing the workshop and questionnaire feedback

Giuseppina Monacelli and Martina Bussetini  
*ISPRA – Institute for Environmental Protection and  
Research, Rome, Italy*

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



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## Questionnaire on FF and PF

- To outline and to address the most critical aspects in characterizing and managing specifically FF and PF
- outcomes to be used to better approach FF and PF risk assessment compliantly with FD



## Working Group F Thematic Workshop

# FLASH FLOODS AND PLUVIAL FLOODING



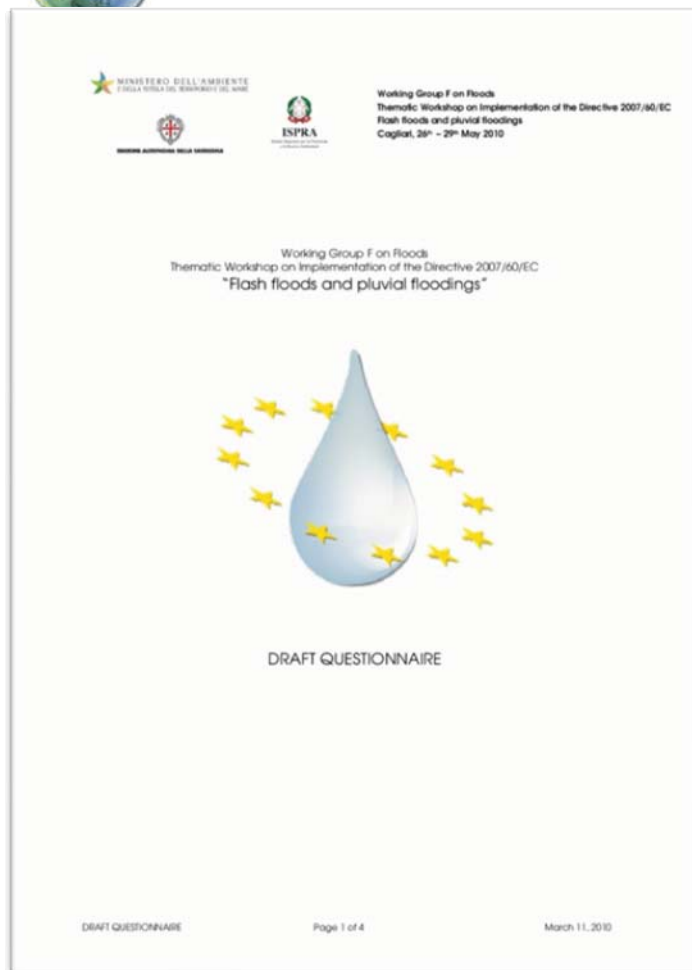
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## Distribution

All members of Working Group F on Floods

## Questions

All questions refer only to flash floods and pluvial floodings

## Definitions

- Flash Flood: a flood that rises and falls quite rapidly with little or no advance warning, usually the result of intense rainfall over a relatively small area (*Glossary of the American Meteorological Society, 2000 edition*);
- Pluvial Flooding is flooding of land directly from rainfall water falling on, or flowing over, the land.

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



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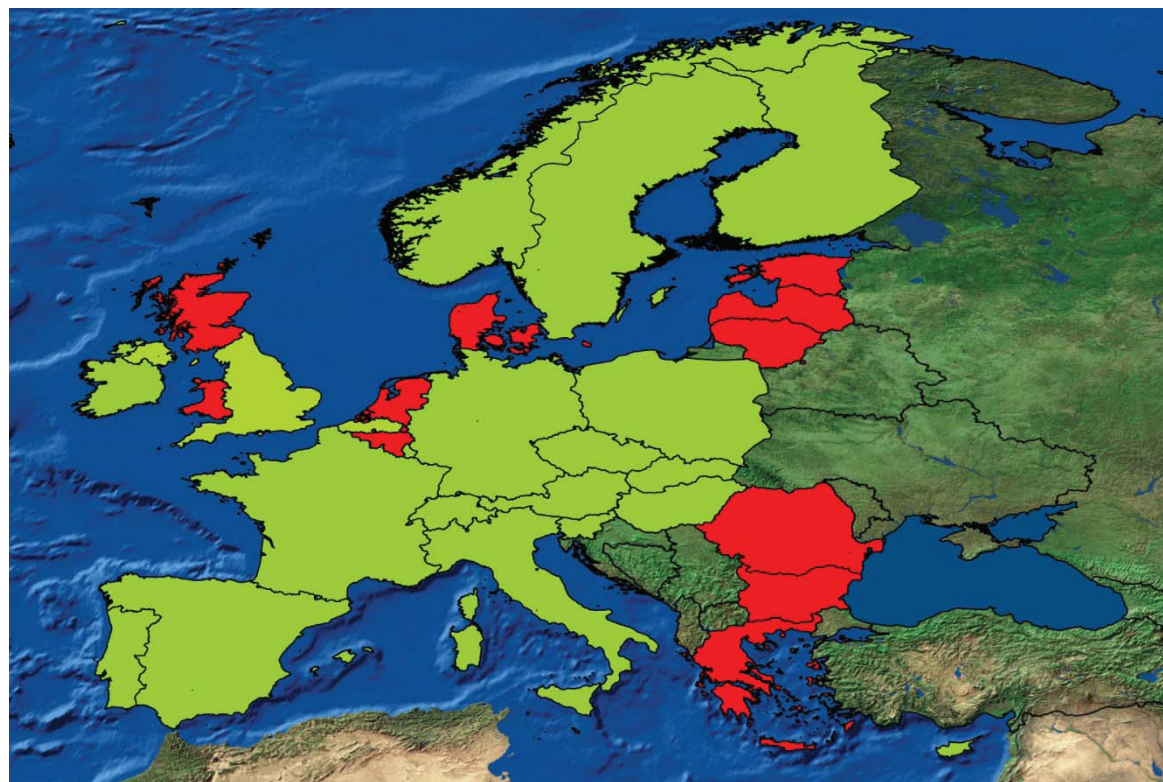
## Definitions

- **FLASH FLOOD:** a flood that rises and falls quite rapidly with little or no advance warning, usually the result of intense rainfall over a relatively small area (*Glossary of the American Meteorological Society, 2000 edition*);  
⇒ Key aspect of the definition is the **time scale**: sudden hydrological response to the causative event
- **PLUVIAL FLOODING:** is flooding of land directly from rainfall water falling on, or flowing over, the land.  
⇒ Key aspect of the definition is the **detaining capacity** of the body which originates the flood.

Definitions to characterize phenomena from a **physical** point of view, not to distinguish different kind of **ground effects**.



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2/3 MS answered to the Questionnaire

| COUNTRY            | YES/NO | COUNTRY          | YES/NO |
|--------------------|--------|------------------|--------|
| AUSTRIA            | 🟢      | LITHUANIA        | 🔴      |
| BULGARIA           | 🔴      | LUXEMBOURG       | 🟢      |
| CYPRUS             | 🟢      | MALTA            | 🟡      |
| CZECH REPUBLIC     | 🟢      | NETHERLANDS      | 🔴      |
| DENMARK            | 🔴      | NORTHERN IRELAND | 🟢      |
| ENGLAND            | 🟢      | NORWAY           | 🟢      |
| ESTONIA            | 🔴      | POLAND           | 🟢      |
| FINLAND            | 🟢      | PORTUGAL         | 🟢      |
| FLANDERS (BELGIUM) | 🟢      | ROMANIA          | 🔴      |
| FRANCE             | 🟢      | SCOTLAND         | 🔴      |
| GERMANY            | 🟢      | SLOVAKIA         | 🟢      |
| GREECE             | 🔴      | SLOVENIA         | 🟢      |
| HUNGARY            | 🟢      | SPAIN            | 🟢      |
| IRELAND            | 🟢      | SWEDEN           | 🟢      |
| ITALY              | 🟢      | SWITZERLAND      | 🟢      |
| LATVIA             | 🔴      | WALES            | 🔴      |



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## Questionnaire topics

- CHARACTERIZATION
- ANALYSIS
- INSTITUTIONAL SCALE OF THE PROBLEM
- AVAILABLE INFORMATION ON FLOOD EVENTS
- PROTECTION MEASURES

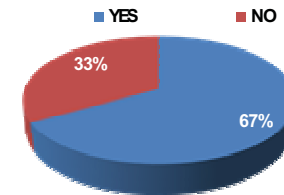


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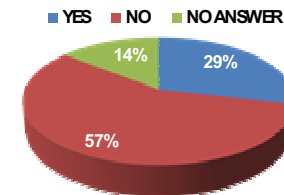


# 1) CHARACTERIZATION

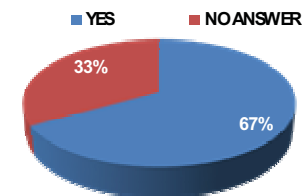
1.1) *Can you easily classify flash floods and pluvial flooding events occurring in your country as defined above (Y/N)?*



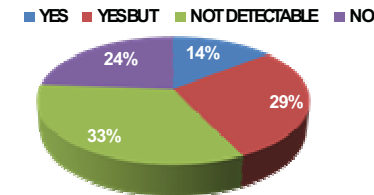
1.2) *Are there any flood events, circumscribed in time and space, that do not properly fit with the above definitions? If so, please describe why and, with examples, identify these events.*



1.3) *Historical events included in the proposed typologies*



1.4) *Have you detected an increase in flood events occurrence frequency?*





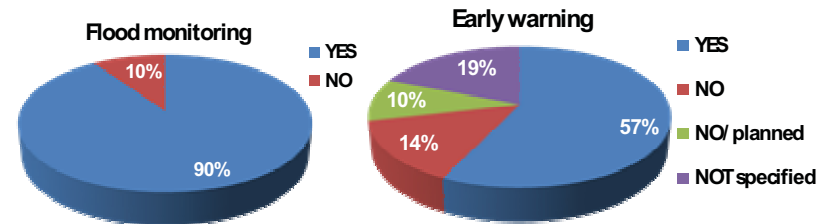
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## 2) ANALYSIS



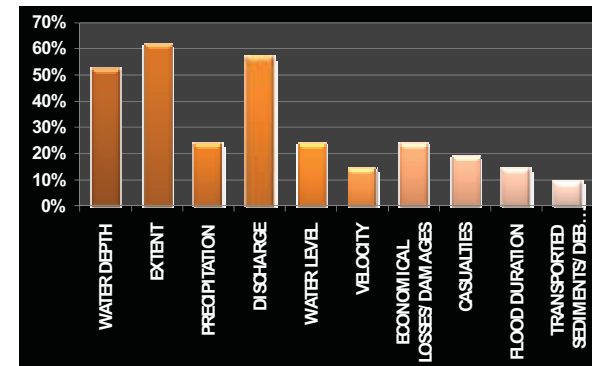
2.1) Which flood monitoring and early-warning system are in place in your country?



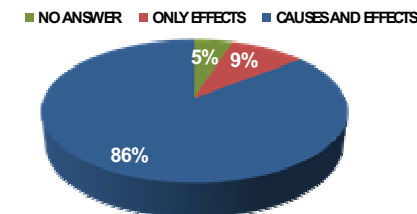
2.2) What kind of statistical analysis is performed to assess hazard?  
**Which return period do you consider?**

**50% return period > 100 years**

2.3) Which parameters are used to assess magnitude of flood events (e.g., water depth, discharge, extent, ...)?



2.4) When assessing the significance of flash and pluvial floods, do you refer to **causes or to effects (or to their combination)** of flood event? (For example, rainfall intensity, extent and damage, etc.)







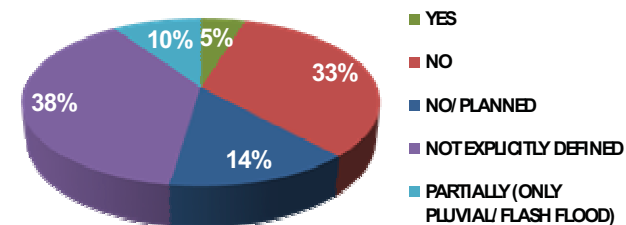
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## FLASH FLOODS AND PLUVIAL FLOODING

### 3) INSTITUTIONAL SCALE OF THE PROBLEM AND MANAGEMENT

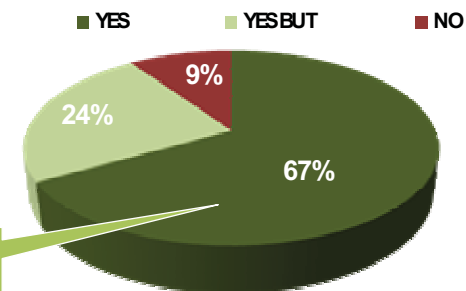


3.1) Are flash flood and/or pluvial flooding defined in national legislation or guidance? If so, please provide details.

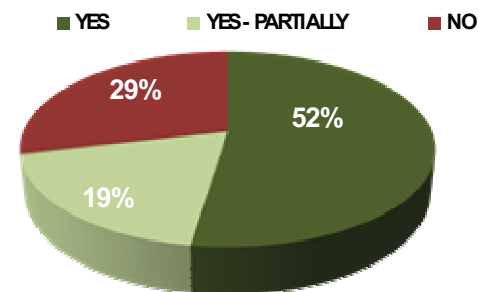


3.2) Are these types of flood recognized as a potential flooding problem?

FLASH FLOOD DEEMED MORE SIGNIFICANT



3.4) Is there an active participation of local authorities to manage and assess risks from this type of floods? If so, how does it happen?





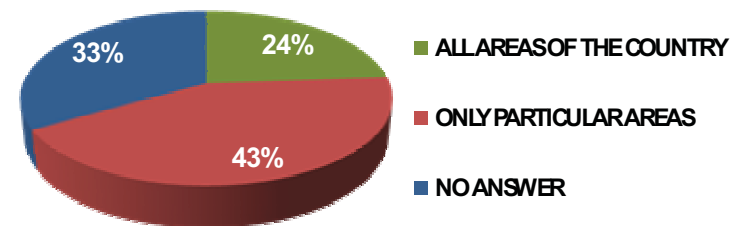
## FLASH FLOODS AND PLUVIAL FLOODING

### 3) SCALE OF THE PROBLEM AND INSTITUTIONAL MANAGEMENT

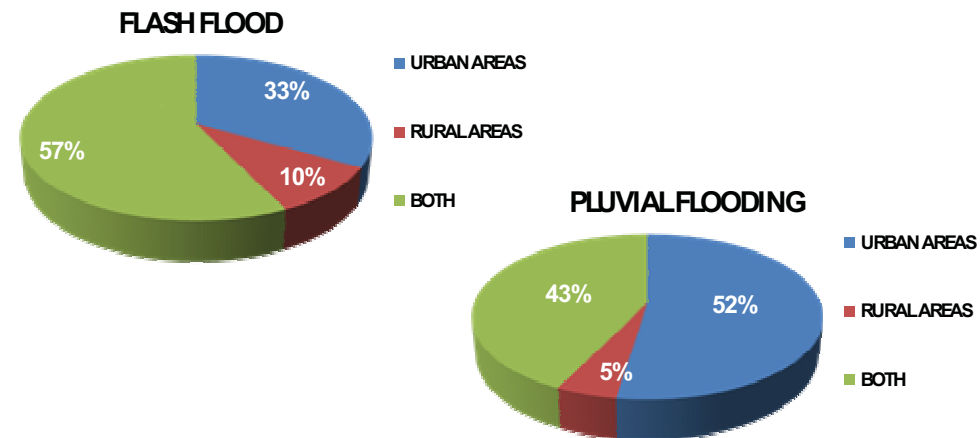
3.5) Are any institutional changes in this respect anticipated by the transposition of the Floods Directive (2007/60/EC)?

100% NO

3.6) Are there particular areas that are considered to be particularly vulnerable to this type of flooding or is it considered to be a risk in all areas of the country?



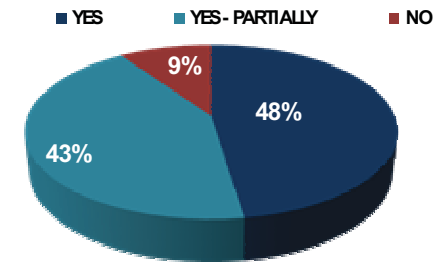
3.7) Are flash flood and/or pluvial flooding more of a problem in urban areas or rural areas or both?



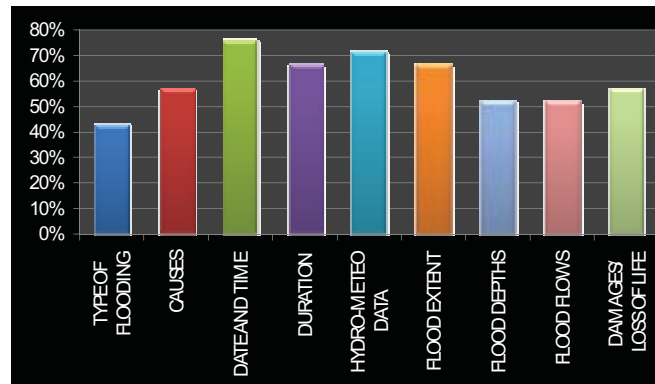


## 4) AVAILABLE INFORMATION ON FLOOD EVENTS

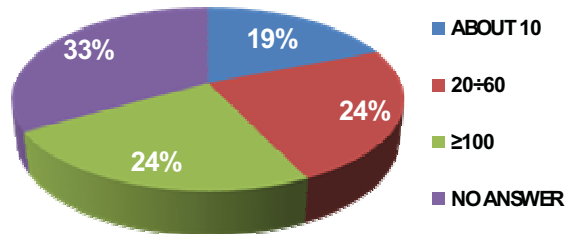
4.1) Are records of flash floods and/or pluvial floodings gathered?



4.3) What is the content of records?



4.4) What is the period covered by available records?



4.5) In what formats are data available?

**Mainly NO database/GIS, only digital or paper format**



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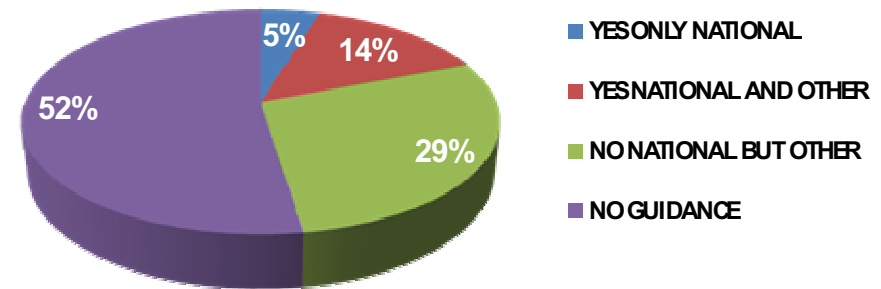
## FLASH FLOODS AND PLUVIAL FLOODING

### 5) MEASURES



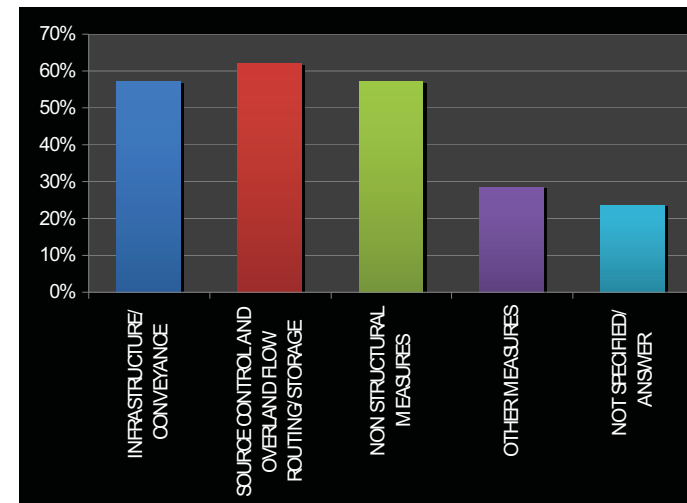
5.1) Is national guidance available which is relevant to managing the risk of these kinds of floods?

5.2) Is other guidance used?



5.3) Are measures already applied to deal with flash flood and/or pluvial flooding? If so, please provide information on the types of measures applied under the broad categories of:

- Infrastructure/conveyance;
- Source control and overland flow routing/storage;
- Non structural measures;
- Other measures.





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## OUTCOMES

- 1 characterization of FF+PF phenomena: need for a glossary/common language of risk (building on existing experiences)
- 2 **NO FF/PF RISK MANAGEMENT WITHOUT INFORMATION:**
  - need to increase knowledge of FF (no standard info.) and pluvial floodings (efficiency of drainage networks?)
  - need to standardize and structure information on FF/PF in dynamic and easily available db
  - Locally rare events – this calls for European scale approach (interpretation at the large scale) to develop an effective risk management guidance



Working Group F Thematic Workshop

FLASH FLOODS AND PLUVIAL FLOODING

## Introducing the Workshop

- Workshop: 4 main themes
- Each theme:
- Plenary session: oral presentations
- Thematic - sub-sessions (choose your session!)
- Plenary again: harvesting and discussion
- Shared (hopefully!) theme outcome for final workshop report



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## Working Group F Thematic Workshop

# FLASH FLOODS AND PLUVIAL FLOODING



## WORKSHOP AGENDA



Working Group F • Thematic Workshop

**Wednesday, 26 May 2010**

- 9:30 - 10:30 Registration**  
**Opening and keynotes**
- 10:30 - 10:40 Welcome by Working Group F  
 Maria Brättemark (EU Commission, DG Environment)
- 10:40 - 10:50 Official opening of the conference  
 Giorgio Pineschi (Ministry for the Environment and the Protection of Land and Sea, IT)
- 10:50 - 11:00 Welcome by Region Sardinia  
 Maurizio Cittadini (Sardinia Region, IT)
- 11:00 - 11:15 Esperienze dalla 183/89  
 Giorgio Cesari (Tiber River Basin Authority, IT)
- 11:15 - 11:30 Dalla 152/06 alla Direttiva Alluvioni  
 Gaia Checucci (Arno River Basin Authority, IT)
- 11:30 - 11:45 Ruolo della Protezione Civile  
 Veronica Casartelli (Department of Civil Protection, IT)
- 11:45 - 12:00 Why Sardinia?  
 Marco Mancini (Politecnico di Milano, IT)
- 12:00 - 12:30 Introducing the workshop and questionnaire feedback  
 Giuseppina Monacelli and Martina Bussettini (ISPRA, IT)
- 12:30 - 14:00 Lunch**
- Plenary session: Setting the scene**
- 14:00 - 14:20 Characterisation of flash floods in Europe  
 Marco Borga (University of Padua, IT)
- 14:20 - 14:40 Pluvial flooding in Europe  
 Ronnie Falconer (Jacobs, UK & EWA, DE)
- Theme 1 - Events characterization, analysis and approaches to hazard assessment**  
*Chairman: Marco Borga (University of Padua, IT)*
- 14:40 - 14:55 Development of the pluvial flood map for Northern Ireland  
 David Porter (Rivers Agency, UK)
- 14:55 - 15:10 Plan against pluvial floods in the Brussels Region  
 Françoise Onclinx (Bruxelles Environnement, BE)
- 15:10 - 15:25 Determining flood hazard patterns through a combined stochastic-deterministic approach  
 Bruno Mazzorana (Autonomous Province of Bolzano, IT)

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- 15:25 - 15:40 Example of flash floods in Spain: Palancia river  
 Celia Garcia Montañés (CEDEX, ES)
- 15:40 - 15:55 Poster presentation
- 15:55 - 16:15 coffee break**
- 16:15 - 17:15 *Parallel groups discussion*  
 Space-time scales and data requirements  
 Language of risk  
 Hazard analysis and assessment
- 17:15 - 17:45 Harvesting and discussion
- 21:00 Social dinner for WG F members and their delegates**

**Thursday, 27 May 2010**

**Theme 2 - High intensity storms and flood: monitoring, nowcasting and forecasting**

*Chairman: Aronne Armanini (University of Trento, IT)*

- 9:15 - 9:30 IMPRINTS project: An overview  
 Caroline Wittwer (SCHAPI, FR)
- 9:30 - 9:45 Radar-driven high-resolution hydro-meteorological forecasts of the 26 September 2007 Venice flash flood  
 Tommaso Settin (ARPA Veneto, IT)
- 9:45 - 10:00 Flash flood early warning using ensemble weather forecasts  
 Ad de Roo (EU Commission, JRC)
- 10:00 - 10:15 The radar rainfall estimates in a flood forecasting system for the Po river in Italy  
 Silvano Pecora (ARPA Emilia Romagna, IT)
- 10:15 - 10:30 Storm rainfall detection and forecasting - the Czech experience  
 Jan Danhelka (Czech Hydrometeorological Institute, CZ)
- 10:30 - 10:45 Accuracy of rain intensity measurements and its influence on the statistics of extreme events  
 Luca G. Lanza (University of Genoa, IT)
- 10:45 - 11:05 coffee break**
- 11:05 - 12:05 *Parallel groups discussion*  
 Monitoring: requirements and techniques  
 Precipitation: Nowcasting and forecasting  
 Flood: forecasting and warning
- 12:05 - 12:35 Harvesting and discussion
- 12:35 - 14:05 Lunch**

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



## Working Group F Thematic Workshop

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## WORKSHOP AGENDA



Working Group F • Thematic Workshop

### Theme 3 - Structural and non structural measures: planning and prioritization

*Chairman: Paul Samuels (HR Wallingford, UK)*

- 14:05 - 14:15 Introduction to theme 3  
*Aronne Armanini* (University of Trento, IT)
- 14:15 - 14:30 Flash flood guidance based on rainfall thresholds: An example of a probabilistic decision approach for early warning systems for flash floods  
*Mario L. V. Martina* (University of Bologna, IT)
- 14:30 - 14:45 Flood warning procedure in France: Current status and evolution to improve flash flood forecasting  
*Caroline Wittwer* (SHAPI, FR)
- 14:45 - 15:00 Debris flows monitoring and warning systems: A new study site in the Alps  
*Francesco Comiti* (Free University of Bolzano, IT)
- 15:00 - 15:15 Flash flood early warning systems and legislation aspects in the Czech Republic  
*Jan Danhelka* (Czech Hydrometeorological Institute, CZ)
- 15:15 - 15:30 Local water planning - integrated approach towards flood risks reduction  
*Martin Kováč* (Association of Towns and Communities of Slovakia, SK)
- 15:30 - 15:45 Poster presentation
- 15:45 - 16:05 coffee break**
- 16:05 - 17:05 *Parallel groups discussion*  
Structural and non-structural measures for flash flood and pluvial floodings risk management  
Preparedness  
Prioritization
- 17:05 - 17:35 Harvesting and discussion

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Friday, 28 May 2010

### Theme 4 - Socio-economic aspects

*Chairman: Bruna De Marchi (Institute of International Sociology Gorizia, IT)*

- 9:30 - 9:40 Introduction to theme 4  
*Bruna De Marchi* (Institute of International Sociology Gorizia, IT)
- 9:40 - 9:55 CRUE ERA-Net: International research flash flood results  
*CRUE Network Ambassador: Wouter Vanneville* (Flemish Government Department of Mobility and Public Works, BE)
- 9:55 - 10:10 Flash flood and pluvial flooding from the point of view of the German and European insurance industry  
*Bettina Falkenhagen* (German Insurance Association, DE & CEA Insurance of Europe, BE)
- 10:10 - 10:25 Flood maps information content for insurance and re-insurance industries  
*Angela Celeste Taramasso* (University of Genova, IT)
- 10:25 - 10:40 Exploring the potential for pluvial flood warnings with professional responders and the public in England and Wales  
*Dennis J. Parker* (Flood Hazard Research Centre Middlesex University, UK)
- 10:40 11:00 coffee break**
- 11:00 12:00 *Parallel groups discussion*  
Risk perception: Who is liable for it?  
Communicating risk and creating awareness (public information and risk awareness: training/education of public and stakeholders)  
Resilience to events
- 12:00 12:30 Harvesting and discussion
- 12:30 13:00 Workshop Conclusions
- 13:00 14:30 Lunch**

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# ENJOY YOUR LUNCH!

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