



## *Training workshop on Multi - Hazard Early Warning Systems Italy*



*S. JOSE, COSTA RICA  
March 22-25, 2010*

## Main Focus on

1. Why Early Warning System ? : Risks overview in Italy and Risk Matrix
2. The Italian Civil Protection System: Governance and institutional arrangements
  - Legal frameworks
  - National to local emergency planning
  - Management and implementation of EWS
3. Applications for :
  - Floods and landslides
  - Volcanic ashes
  - Forest fires
  - Sea surges and tsunamis
4. Financial consideration

## Main Focus on

### 5. Hazard risk information and databases

- Emergency planning :warning level and link to the emergency response

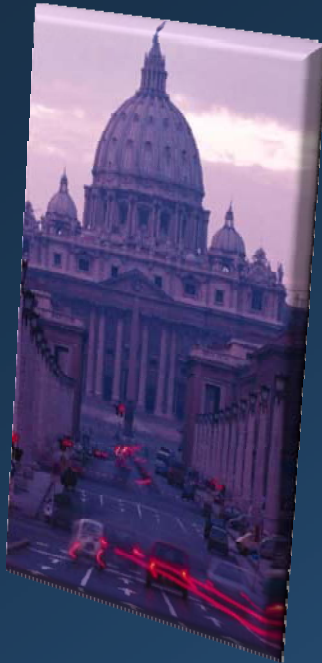
### 6. Challenges for institutional coordination

- Improve response at local level (municipalities)

### 7. Challenges for scientific and technical partner: products and services provided by the NMHS

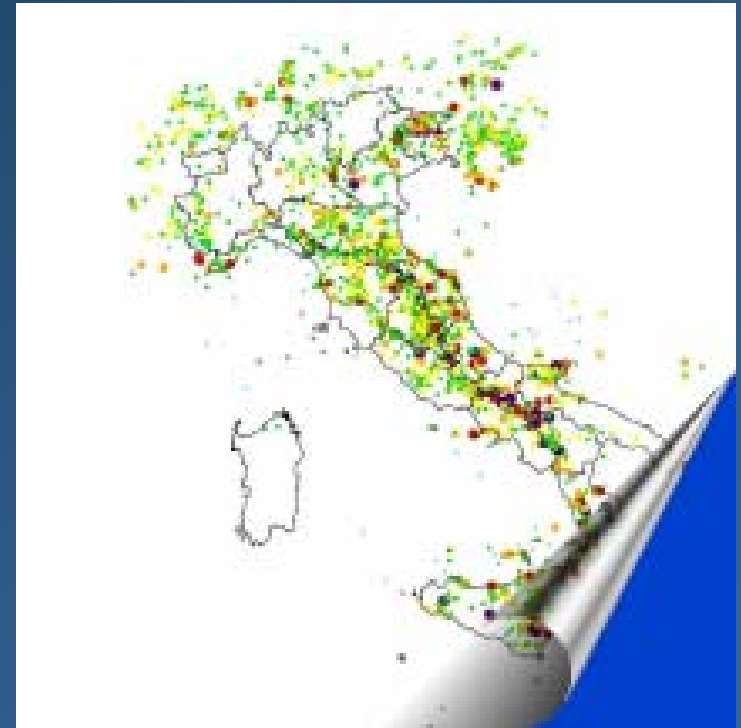
### 8. Public education programme

# The “BELPAESE”



## The seismic problem in Italy

- In the last millennium about 30.000 events occurred (220 characterised by high macroseismic intensity  $\geq$  VIII MCS scale)
- In the last 25 years earthquakes caused monetary losses for over 125 billions euro.
- In the last two centuries earthquakes caused about 150.000 victims; moreover, they damaged and/or destroyed a great part of our historical and artistic heritage, whose value is not valuable



# Italian major seismic events

**Casamicciola (Ischia island)**  
July, 28 1883 - IX grado MCS



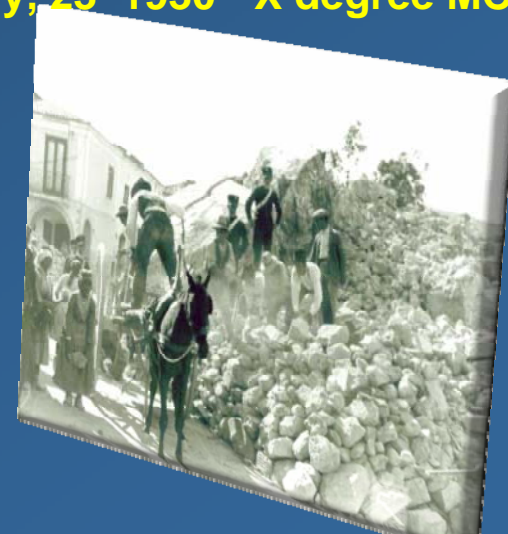
**Reggio Calabria e Messina**  
December, 28 1908 – XI-XII degree MCS



**Avezzano ( Central Italy)**  
January, 13 1915 - XI degree MCS



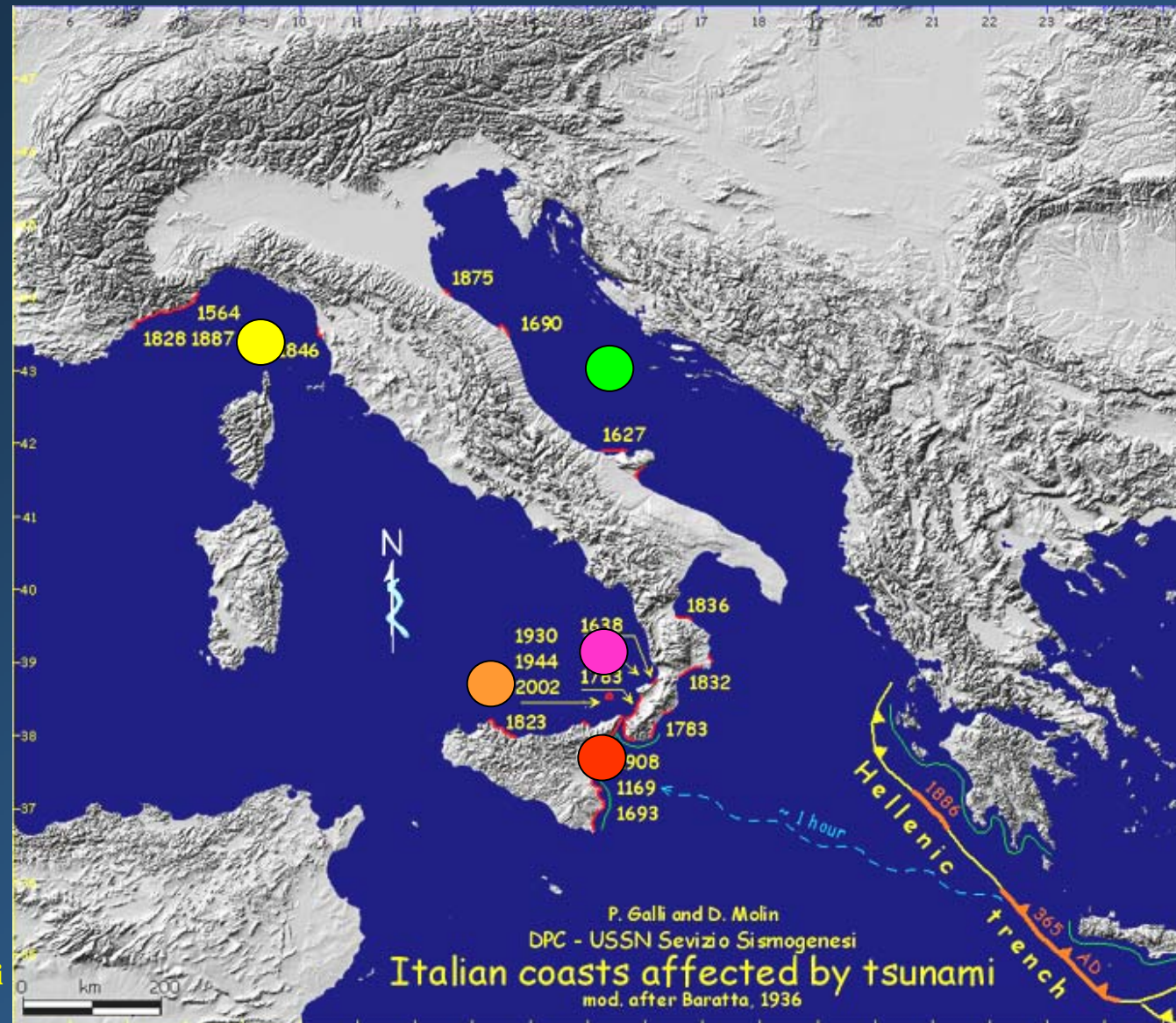
**Irpinia (Central Italy)**  
July, 23 1930 - X degree MCS



# Tsunami

AMBRASEYS  
scale '62

- II° Low
- III° Moderate
- VI° High
- V° very high
- VI° Catastrophic



**Tsunami  
source:**

**Close the italian coast: arrival time 10-12 min related earthquake with magnitudo => 7  
Catastrophic**

**From the Greece area: arrival time 30-60 min related earthquake with magnitudo => 8  
(rare) Moderate high**

# Stromboli

2002





# Volcanic risk in Italy

## Exposition data

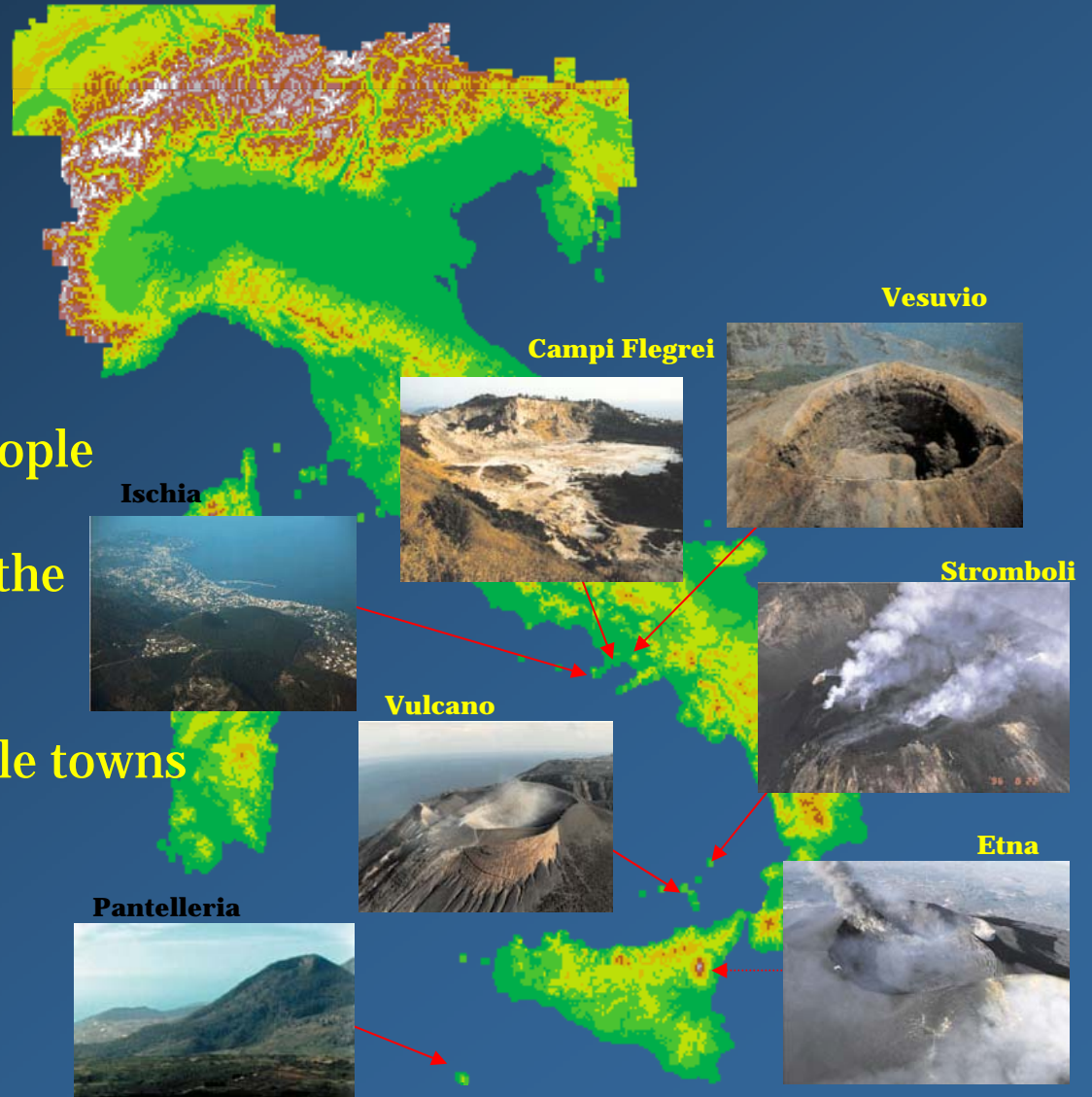
2 millions people live in hazard areas

**Vesuvio** 700.000 people

**Campi Flegrei** 250.000 people

**Vulcano** 15.000 people (in the summer)

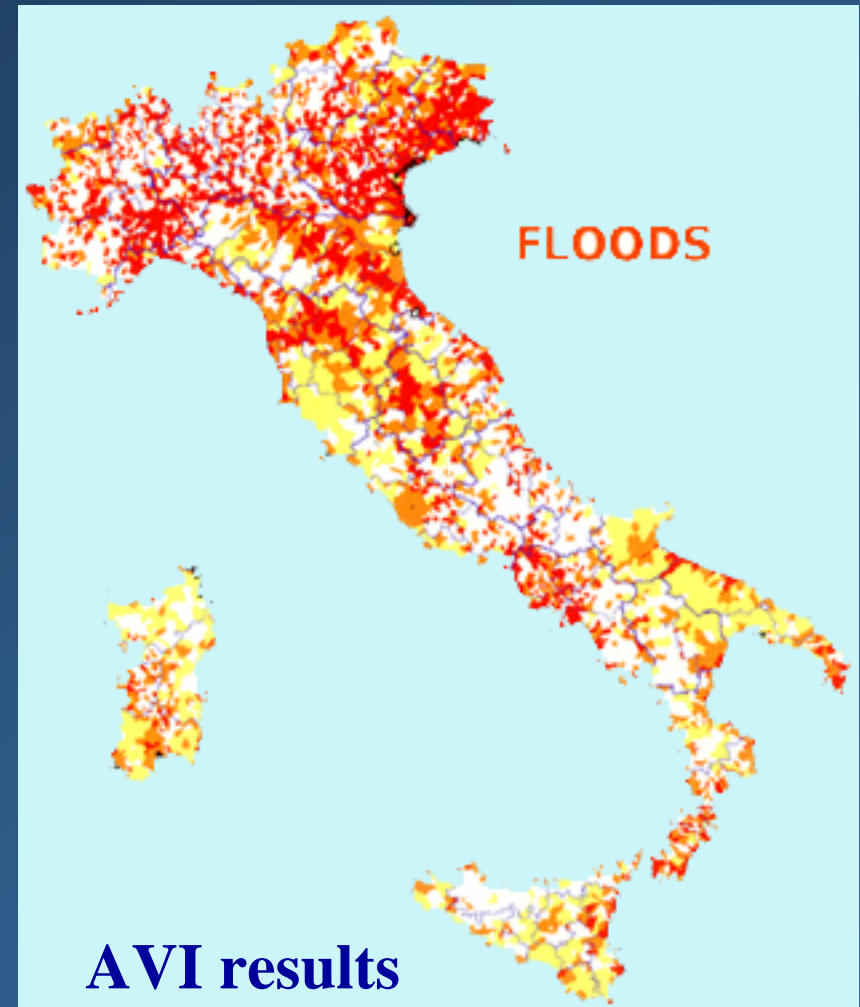
**Etna** large damage and whole towns in hazard area



## Flood risk in Italy

- The **AVI** project: an inventory of sites historically affected by floods for the period 1918-1994.
- **Very high vulnerable sites** (L. 267/98)
- **PAI** Hydrogeological Plan of Basin (L. 267/98)

**Plus of 7.500 events from 1800 to 2008**



Municipality zoning based on site density  
Darker colours indicate an increasing number per square kilometers of sites in each municipality

# Landslide risk in Italy

- The **AVI** project: an inventory of sites historically affected by floods for the period 1918-1994.
- **Very high vulnerable sites** (L. 267/98)
- **PAI Hydrogeological Plan of Basin** (L. 267/98)

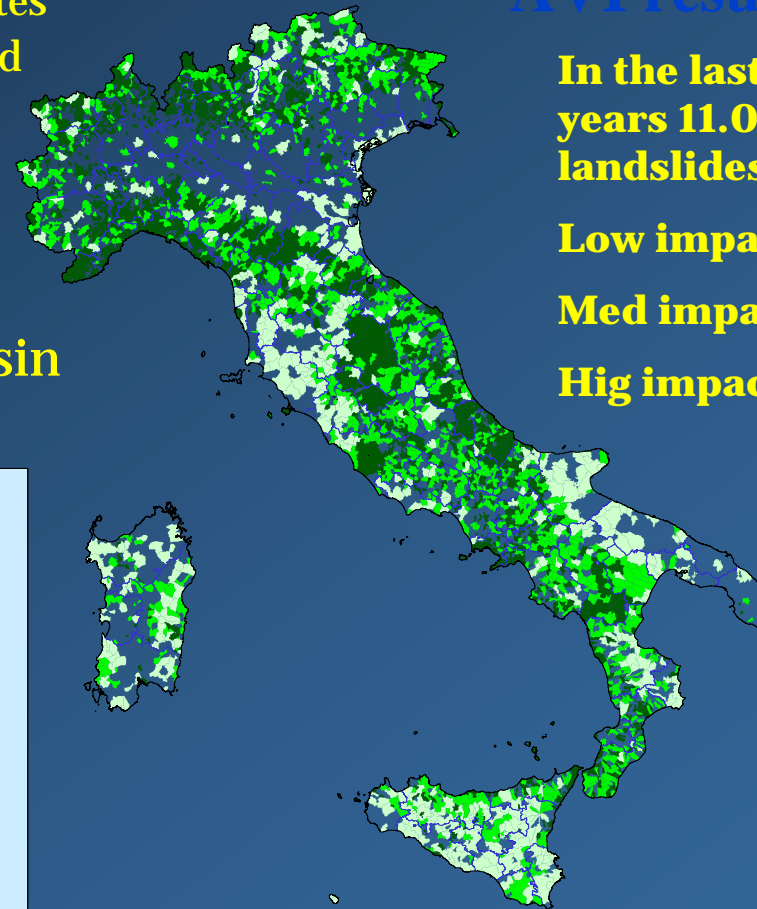
## AVI results

**In the last 80 years 11.000 landslides:**

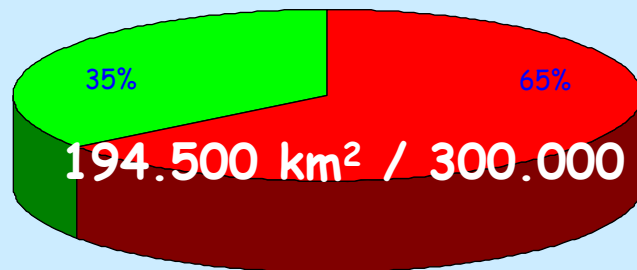
**Low impact 50%**

**Med impact 35%**

**Hig impact 15%**



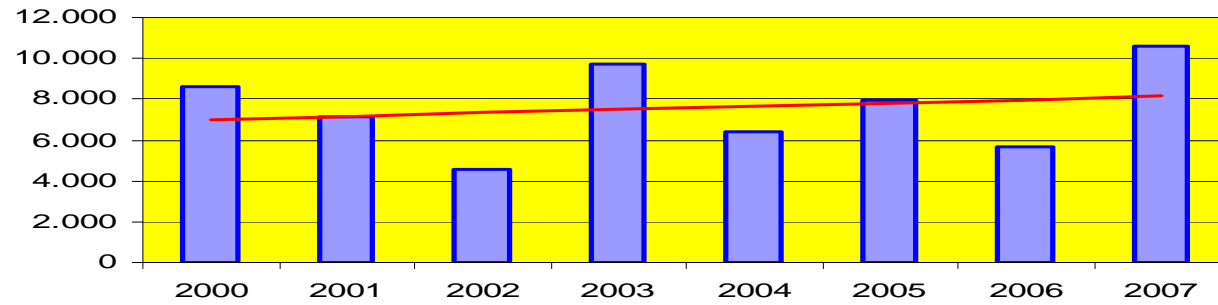
Municipality surface affected from idrogeological damage



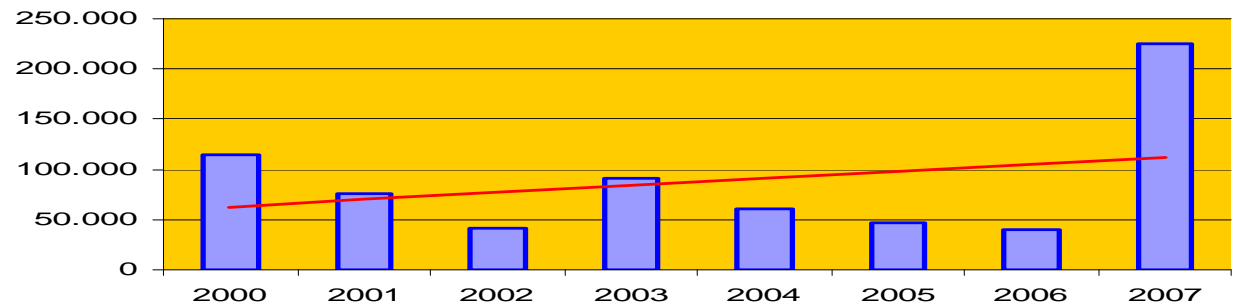
Municipality zoning based on site density  
Darker colours indicate an increasing number per square kilometres of sites in each municipality

# Forest Fires

### Numbers of fire for year



### Total Burned area (ha)



# European and Mediterranean countries percentage of events for different risks

British territories (Plymouth, Gibraltar)

French territories (French Overseas, French Polynesia, Overseas Collectivities, French Southern and Antarctic territories)

Spanish and Portuguese territories are included in Spain and Portugal pos.

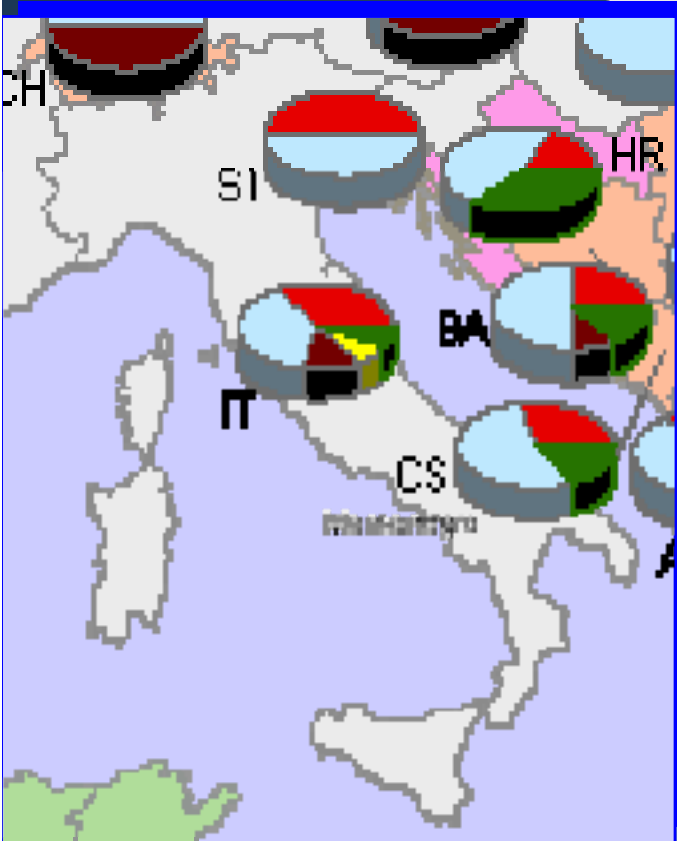
**LEGEND**

Number of events/plate<sup>1</sup>

- Earthquakes
- Floods
- Slides
- Warlike Crystals
- Wars/Terror
- Wild Fire

Countries

- European Union Countries
- Extra European Union Countries
- Future (EMU) European Union Countries
- Candidate European Union Countries
- Mediterranean Countries



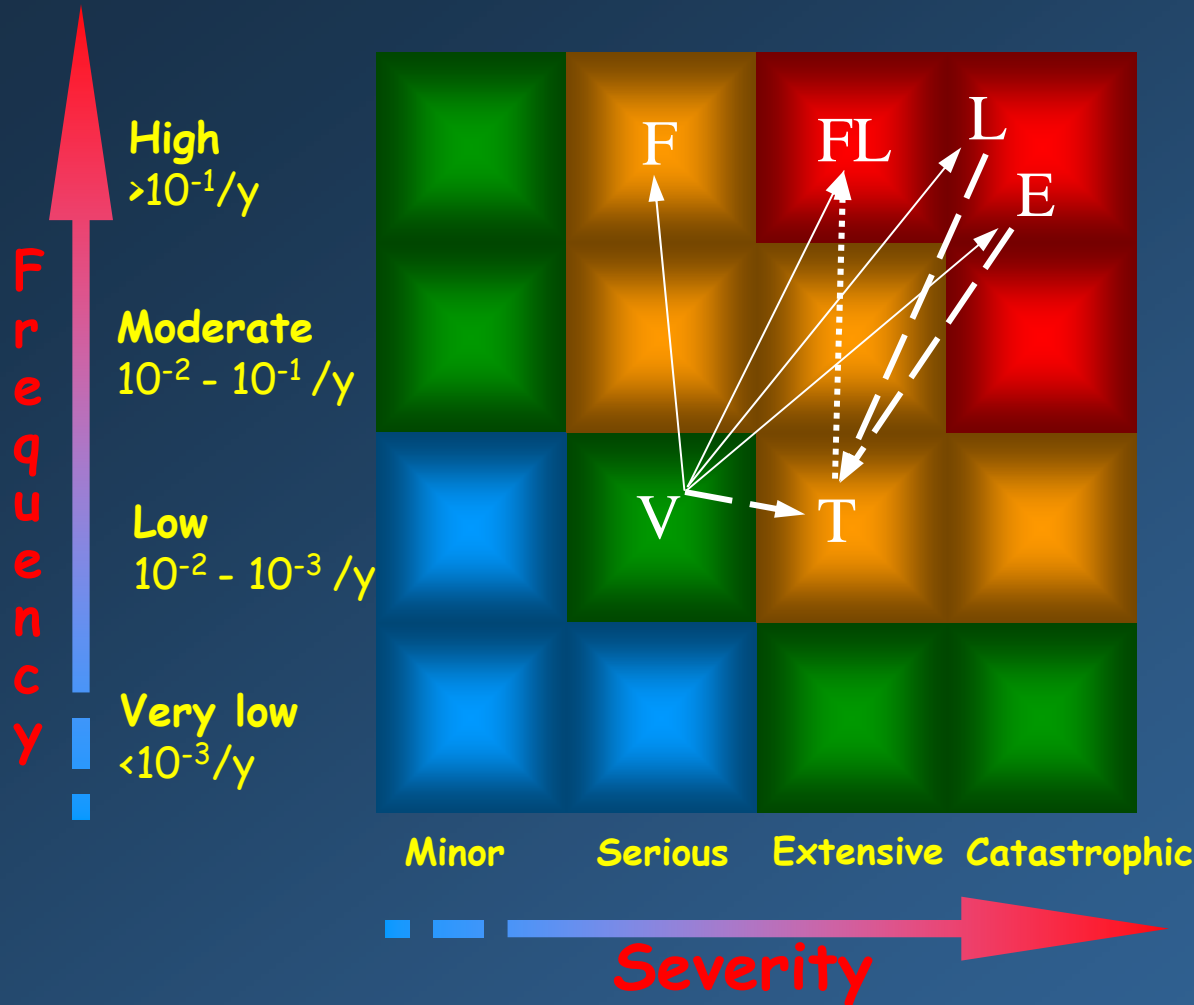
<sup>1</sup>Pie represents the percentage of single risk (number of events) in function of the total number of events for all risks. Only countries with representative data are shown

<sup>2</sup>For these countries see the database

Country code are from ISO 3166-1/2

Data from TEM-DAT the OFONGRED International Disaster Database  
[www-em-dat.net](http://www-em-dat.net) Université Catholique de Louvain-Bruceville-Beigium.  
 Update 08/03/2003

# Risk Matrix & interactions



- **High-risk condition** with highest priority for mitigation and contingency planning (immediate action)
- **Moderate to high risk condition** with risk addressed by mitigation and contingency planning (prompt action)
- **Risk condition sufficiently high** to give consideration for further mitigation and planning (planned action)
- **Low risk condition** with additional mitigation contingency planning (advisory in nature)

E = Earthquake      T = Tsunami  
 F = Forest fire      L = Landslides  
 V = Volcanic        FL = Flood

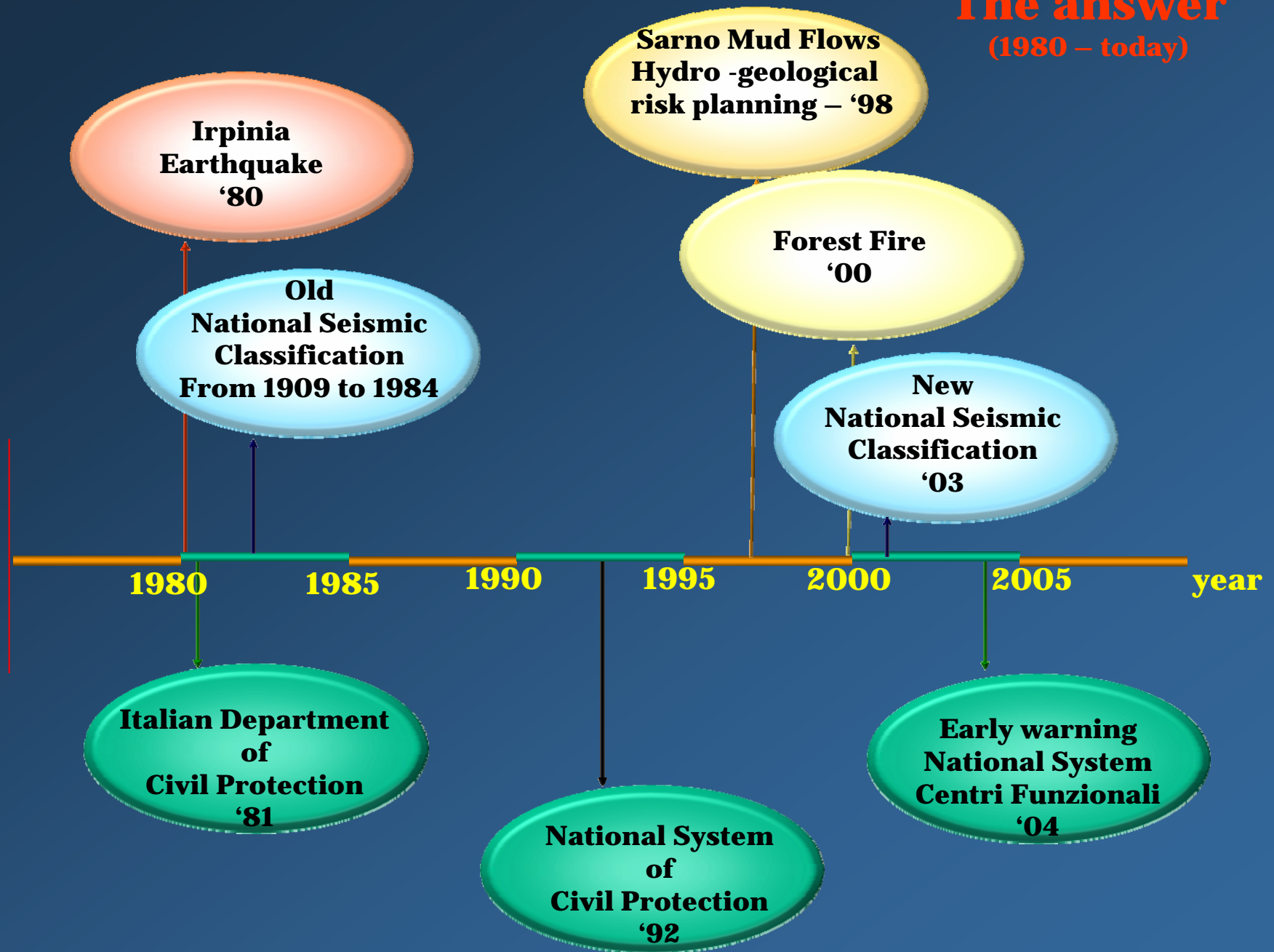
# Italian Risk Matrix

	<b>N° of Events</b>	<b>Year (Dbase)</b>	<b>Frequency Event/N° Y</b>	<b>Killed</b>	<b>Total Affected</b>	<b>Damage M €</b>
<b>Earthquake</b>	<b>29</b>	<b>100</b>	<b>0,28</b>	<b><math>1,5 \cdot 10^5</math></b>	<b><math>9,7 \cdot 10^5</math></b>	<b>44.000</b>
<b>Flood</b>	<b>29</b>	<b>85</b>	<b>0,34</b>	<b><math>7 \cdot 10^2</math></b>	<b><math>2,9 \cdot 10^5</math></b>	<b>32.000</b>
<b>Landslides</b>	<b>13</b>	<b>85</b>	<b>0,15</b>	<b><math>2,5 \cdot 10^3</math></b>	<b><math>20 \cdot 10^3</math></b>	<b>1.700</b>
<b>Volcano</b>	<b>5</b>	<b>101</b>	<b>0,05</b>	<b><math>7 \cdot 10^2</math></b>	<b><math>210 \cdot 10^2</math></b>	<b>0,31</b>
<b>Wild Fires</b>	<b>6</b>	<b>24</b>	<b>0,25</b>	<b>14</b>	<b>300</b>	<b>12.000</b>

ANY QUESTIONS ?



# The answer (1980 – today)



## *Mandate*

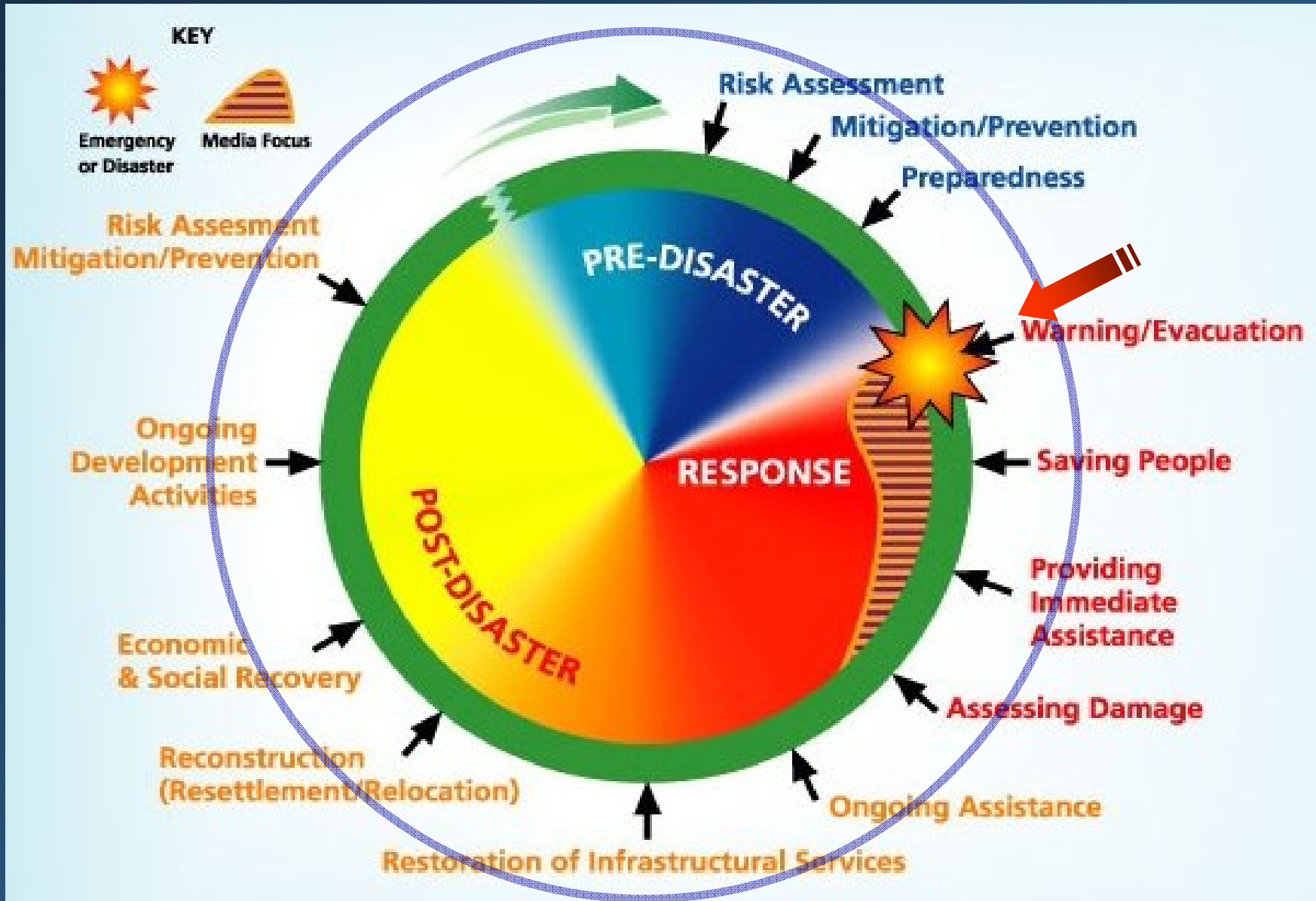
The National Civil Protection System aims at safeguarding human life and health, goods, national heritage, human settlements and the environment from all natural or man-made disasters.

It deals with:

- Forecasting
- Prevention
- Assistance
- Emergency overcoming



# Activities in charge to the Civil Protection





## The Italian National Service of Civil Protection

This Service was instituted by a specific law (n. 225) in 1992 and it involves many different Organizations:

- Public (Ministries, Regions, Provinces, Municipalities, Operational Bodies etc.)
- Scientific/Academic (Universities, Research Institutes, etc.)
- Private (mainly Volunteers...about 1,200,000)

The Civil Protection Department under the Presidency of the Council of Ministers is the headquarters of the Italian National Service of Civil Protection.



# ***National service of civil protection***

## **COMPLEX SYSTEM**

### **Operational Structures**

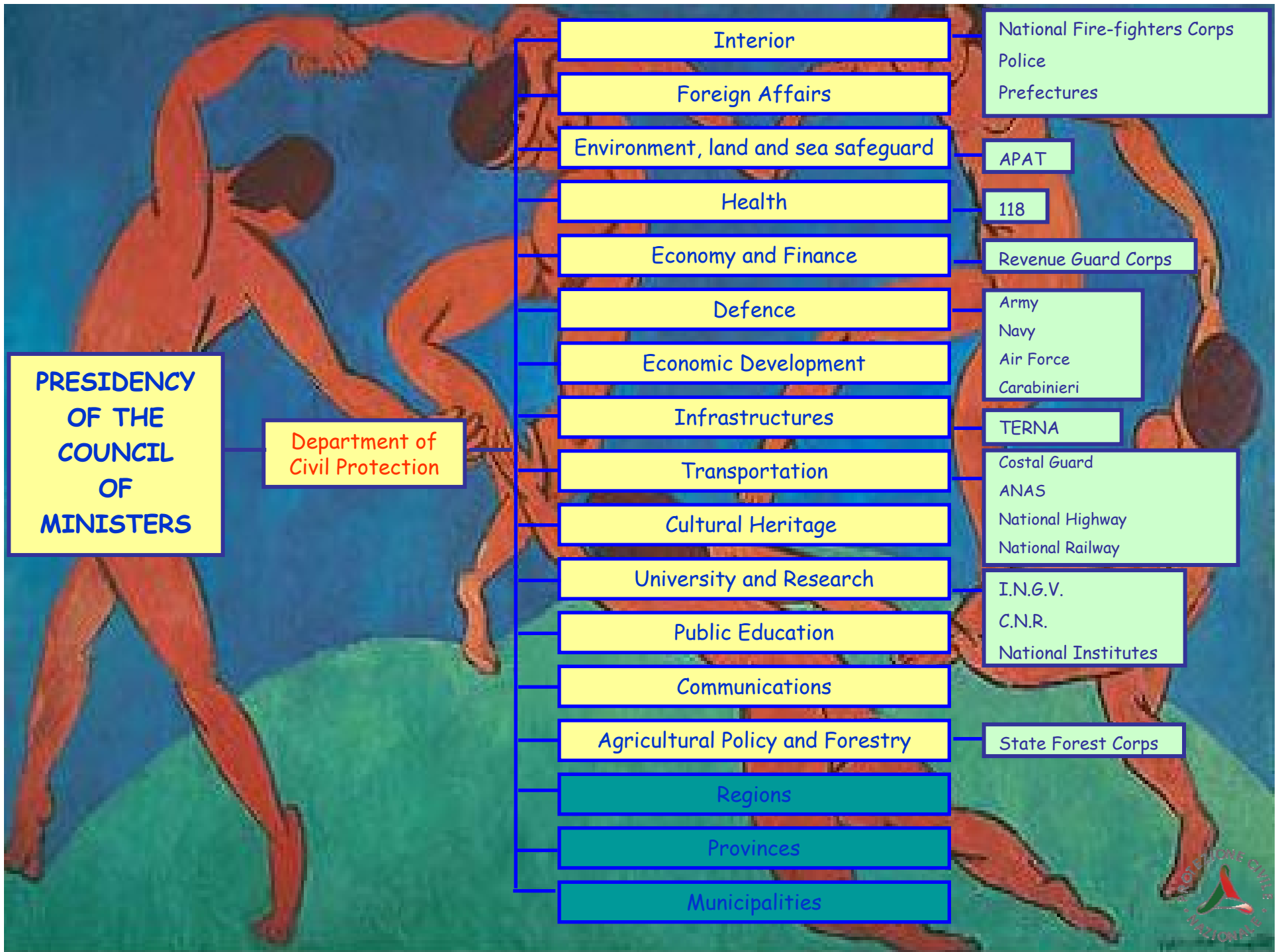
*(art. 11 L. 225 /92)*

- National Fire Brigade
- Armed Forces
- Police
- State Corps of Foresters
- National Groups of Scientific Research
- Italian Red Cross
- National health Service
- Volunteers Organisation
- Alpine Rescue Corp.

### **Components**

*(art. 6 L. 225 /92)*

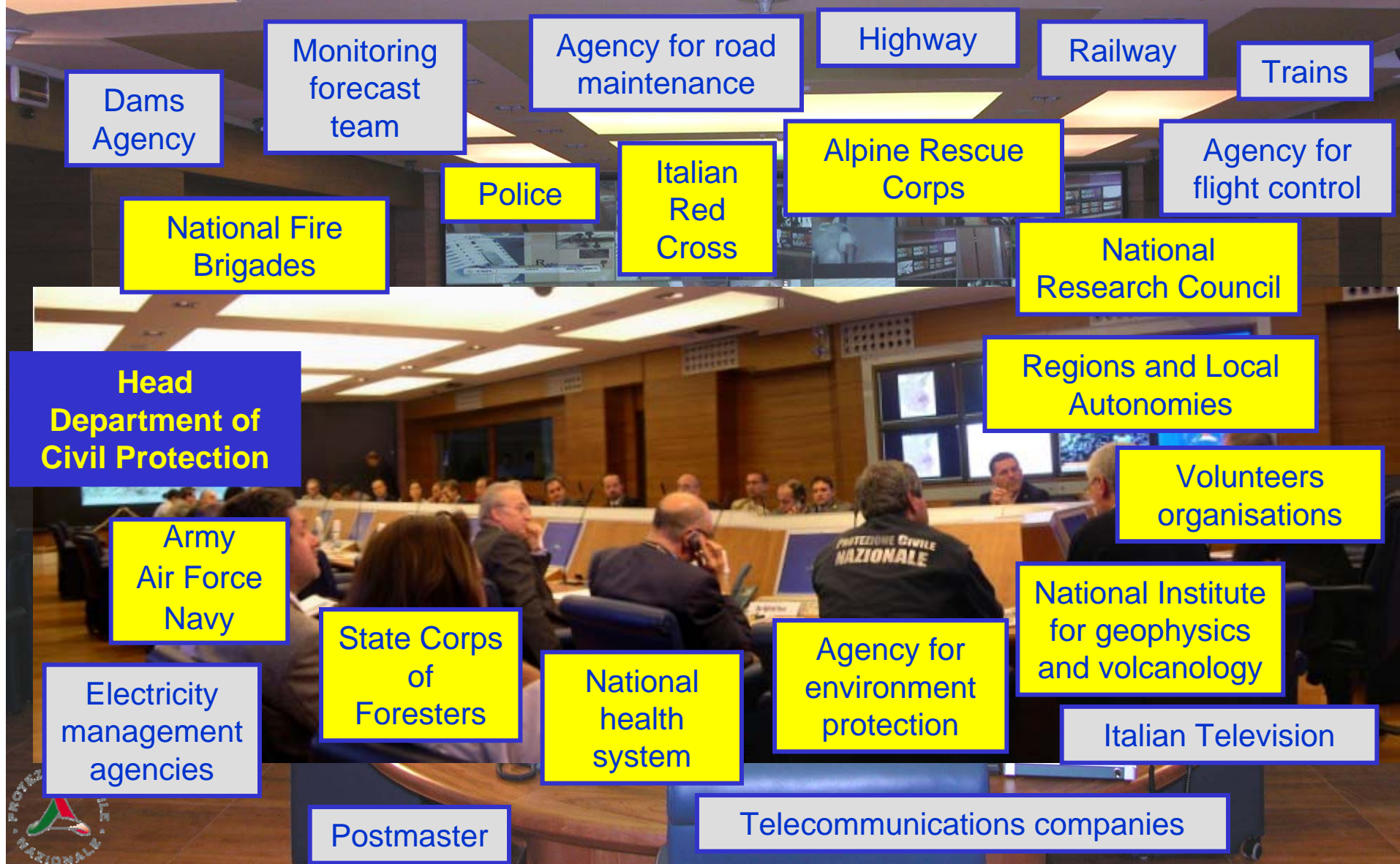
- Ministries
- Regions
- Provinces
- Prefectures
- Municipalities
- Public Services





# *The Operational Committee*

is set up within the Department of Civil Protection to ensure a unified direction and coordination of emergency management



# The Principle of Subsidiarity (Constitutional Law)

- When an emergency occurs, several administrative levels intervene; tasks and responsibilities are shared depending on the consistency of the disaster (from local to central institutions).
- In the most important and serious cases the law provides the direct engagement of the Prime Minister.....
- In these cases the Authority can manage the intervention using extraordinary, powerful, fast and flexible administrative tool: the Decree of the President of the Council of Ministers (Prime Minister).



## Law no. 225/1992

EVENT

which, because of its intensity and size, shall require extraordinary means and authorities



meeting of Council of Ministers



Declaration of the " State of Emergency" and assignment of the Head Commissioner

## Law no. 286/2002

EVENT

emergency state of major entity to be assessed on the basis of its life threatening potential risk



The President of the Council of Ministers **before declaring the state of emergency** decides the activation of the civil protection national system



The Head of the Civil Protection Department is in charge of **coordinating** all the interventions to face the emergency





According to the latest organizational procedures, in case of major disaster, or foreign intervention, National Department of Civil Protection involves Regional Authorities to give help [human resources, transports, equipments] to the affected areas

e.g. Regional mobile columns are managed by Regional Authorities under the overall coordination of National Department of Civil Protection.



## *Classification of Events and Competences* - Act 225/92, art. 2

Italian Civil Protection distinguishes events in :

**A** – Natural or anthropic events (local level);

**B** – Natural or anthropic events (provincial and regional level);

**C** – Natural calamities, disasters or other events (national level).

A and B events can be managed through ***ordinary interventions*** implemented by bodies and administrations.

C events must be managed making recourse to ***extraordinary means and powers***.



# OPERATIVE ORGANIZATION

**NATIONAL LEVEL**

Operative Committee

Scientific Committee

National operations room

DI.COMA.C. (on site)

**Declaration of emergency status**

**REGIONAL LEVEL**

Coordination staff

Operations room

**PROVINCIAL LEVEL**

C.C.S.

C.O.M

C.O.M

C.O.M

**MUNICIPAL LEVEL**

C.O.C

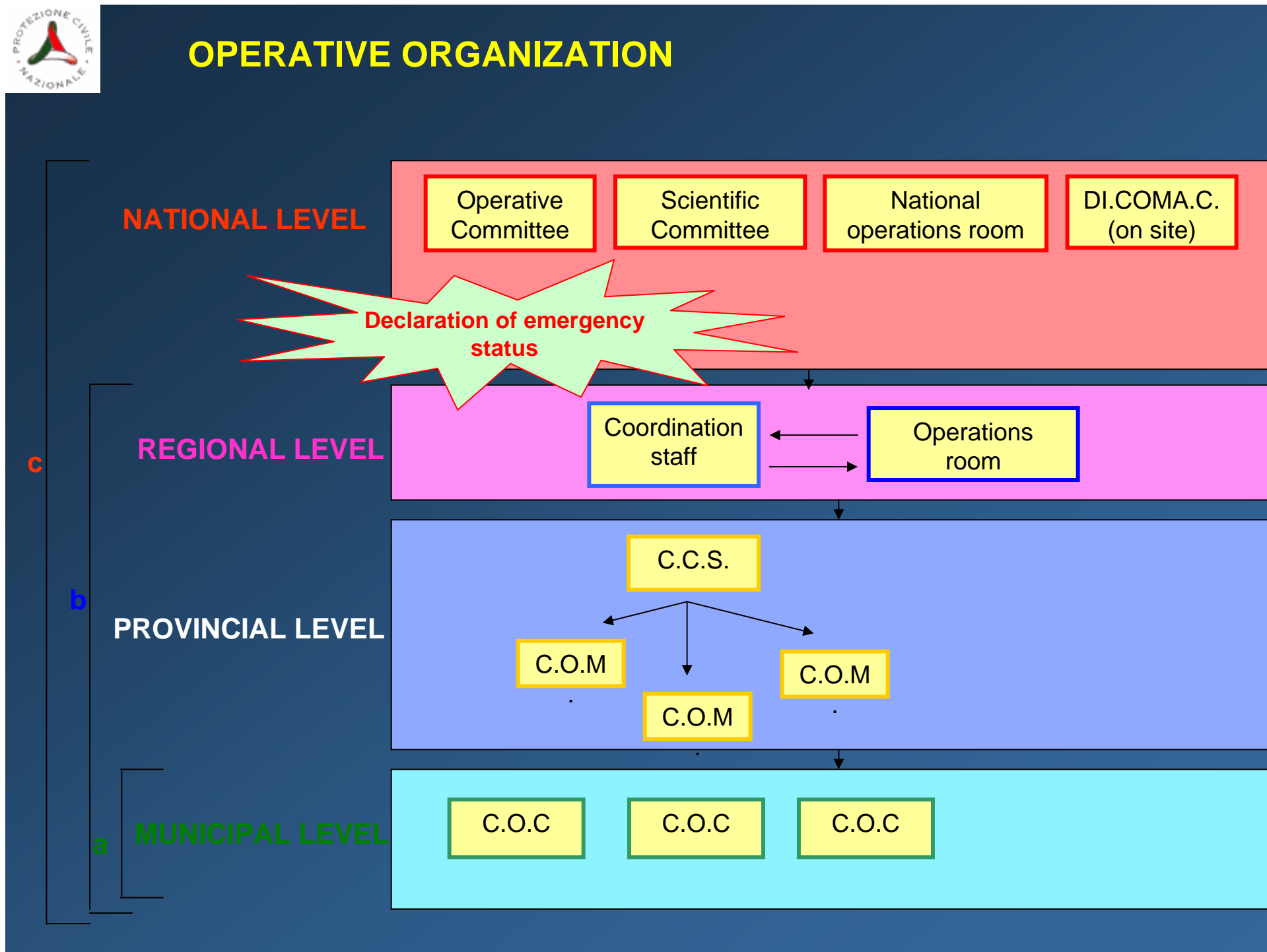
C.O.C

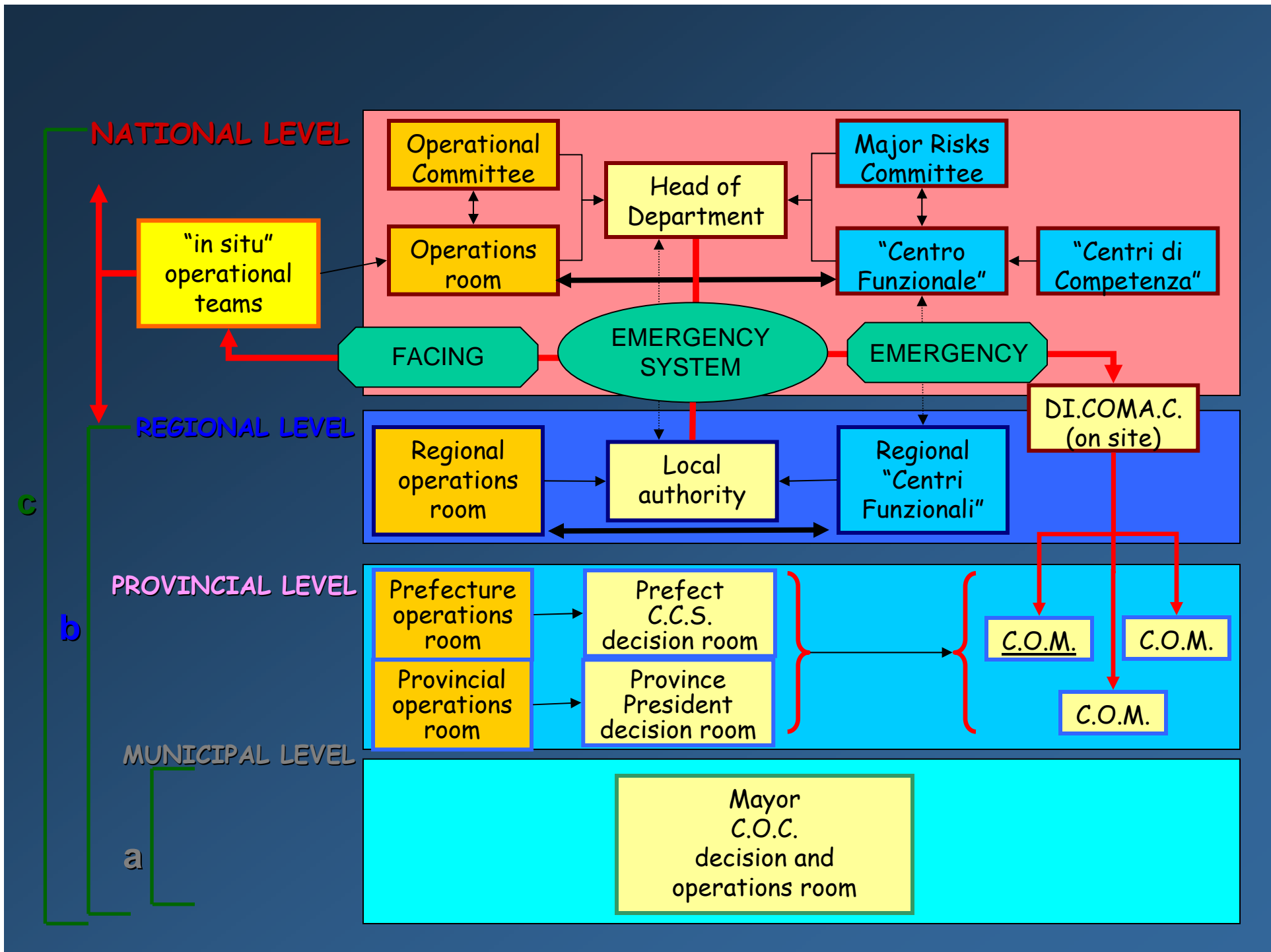
C.O.C

c

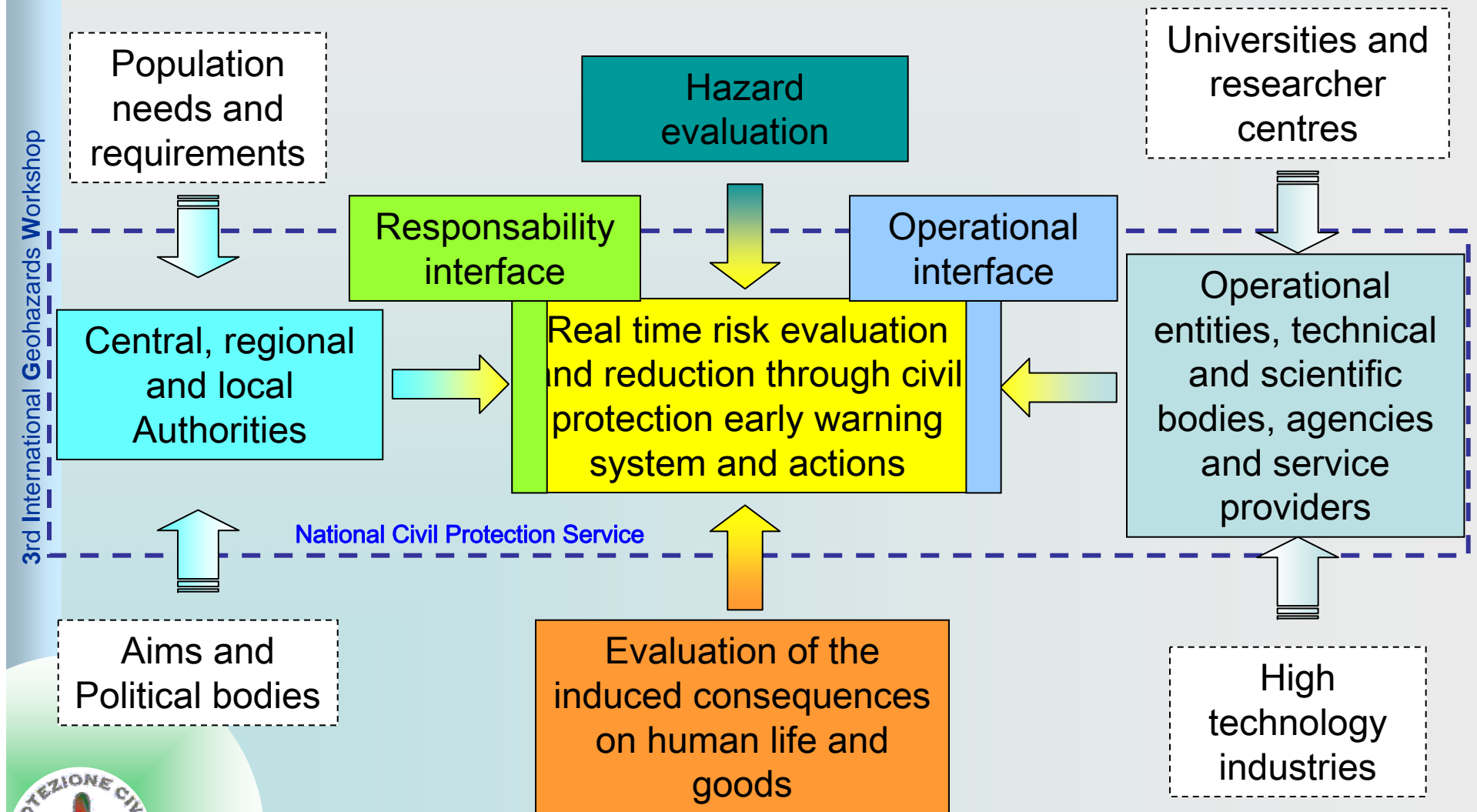
b

a





# ... to cope with risk assessment and management ...





**...the National Civil Protection Service is based on ... (L. n. 225/92)**

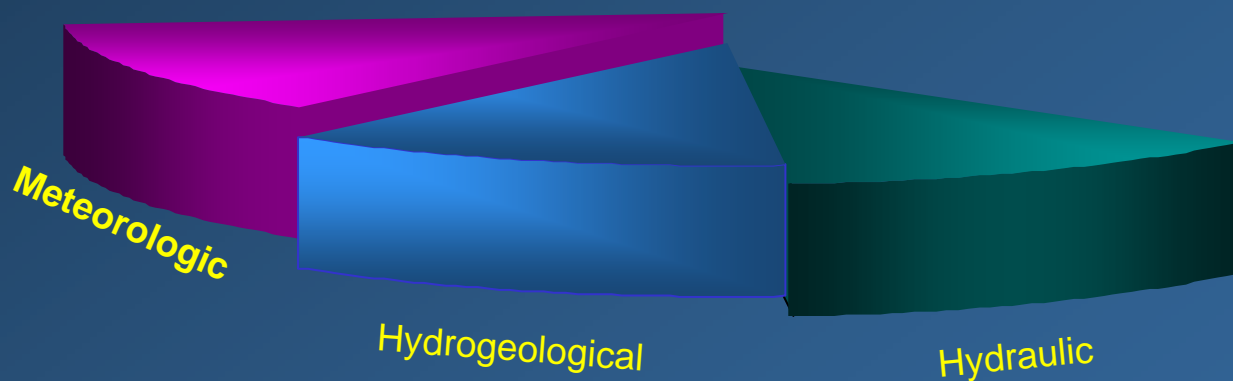
- **An organised and cooperative emergency management system to actuate the decided actions.**
- **A “command and control” chain led by a well defined Institutional System of Authorities sharing the responsibilities of decision and action at central, regional and local level.**
- **An “Early Warning System”, under the direct control of the Civil Protection Authorities.**



ANY QUESTIONS ?

**So, we start in the 2004 ...**

and the Directive (DPCM 27/2/04) identified the activation of the Functional Centres for the hydrogeological, meteorologic and hydraulic risks , but.... now



**Stura di Lanzo**

**October 2000**

# The problem:

**Hydrogeologic vulnerability and soil effects  
(high flows, flash floods, landslides)**



**Chisone - Pinerolo**

**October 2000**

**Soverato**

**September 2000**



**Sarno**

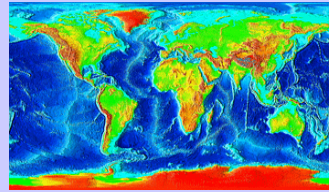
**May 1998**



... from risk assessment to risk reduction...

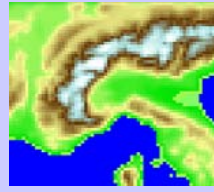


# The early warning system



GCM-ECMWF

25 Km / 72 - 6



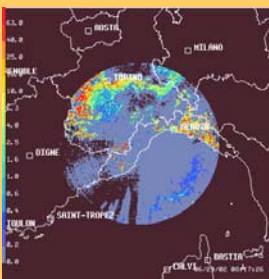
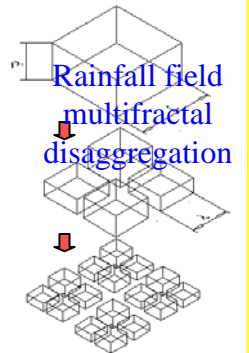
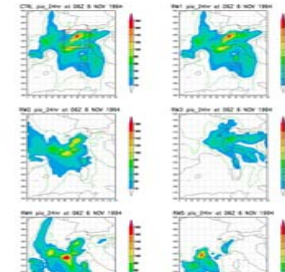
COSMO-I7

7-2.8 Km / 48 - 3

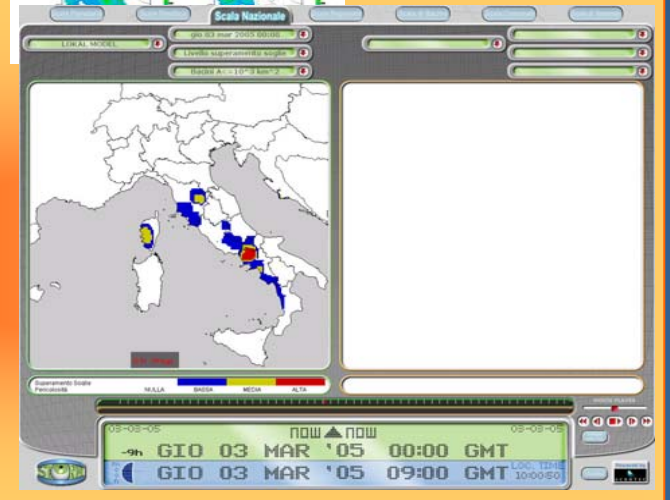
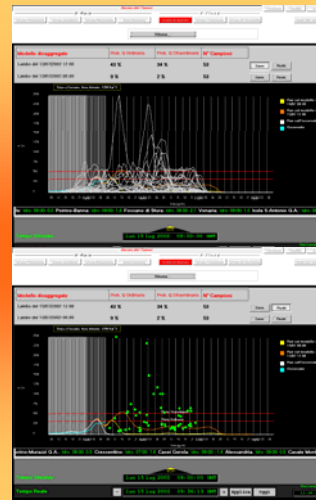
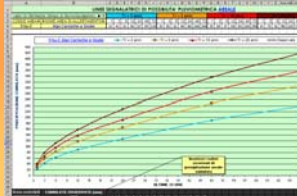
## Previsioni di Ensemble - EPS

Spazio delle fasi atmosferico semplificato

Dim 2



G.I.S.

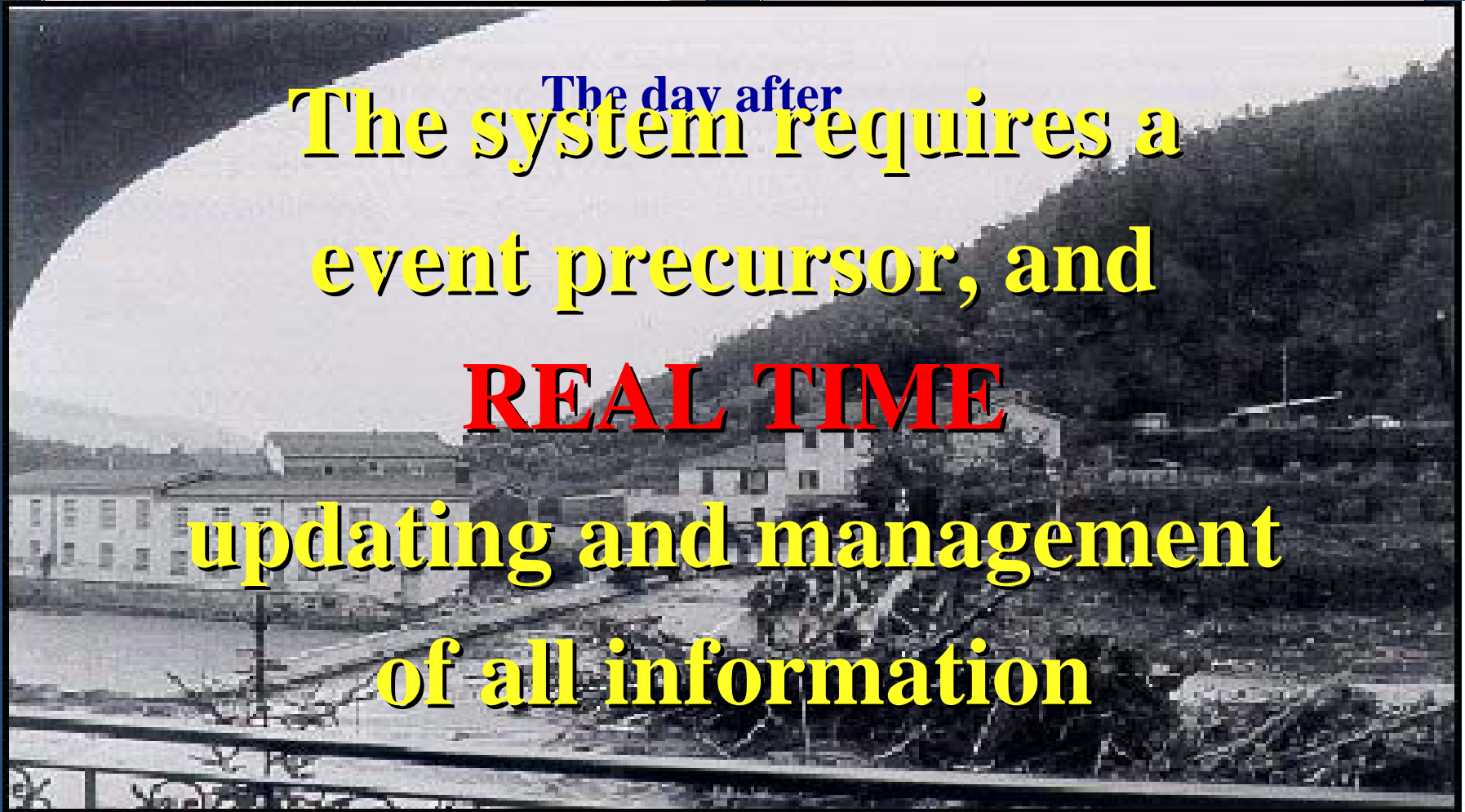


**Warning!!**

**Starting emergency procedures**

**Time**

**nowcasting**



**The day after**

**The system requires a  
event precursor, and**

**REAL TIME**

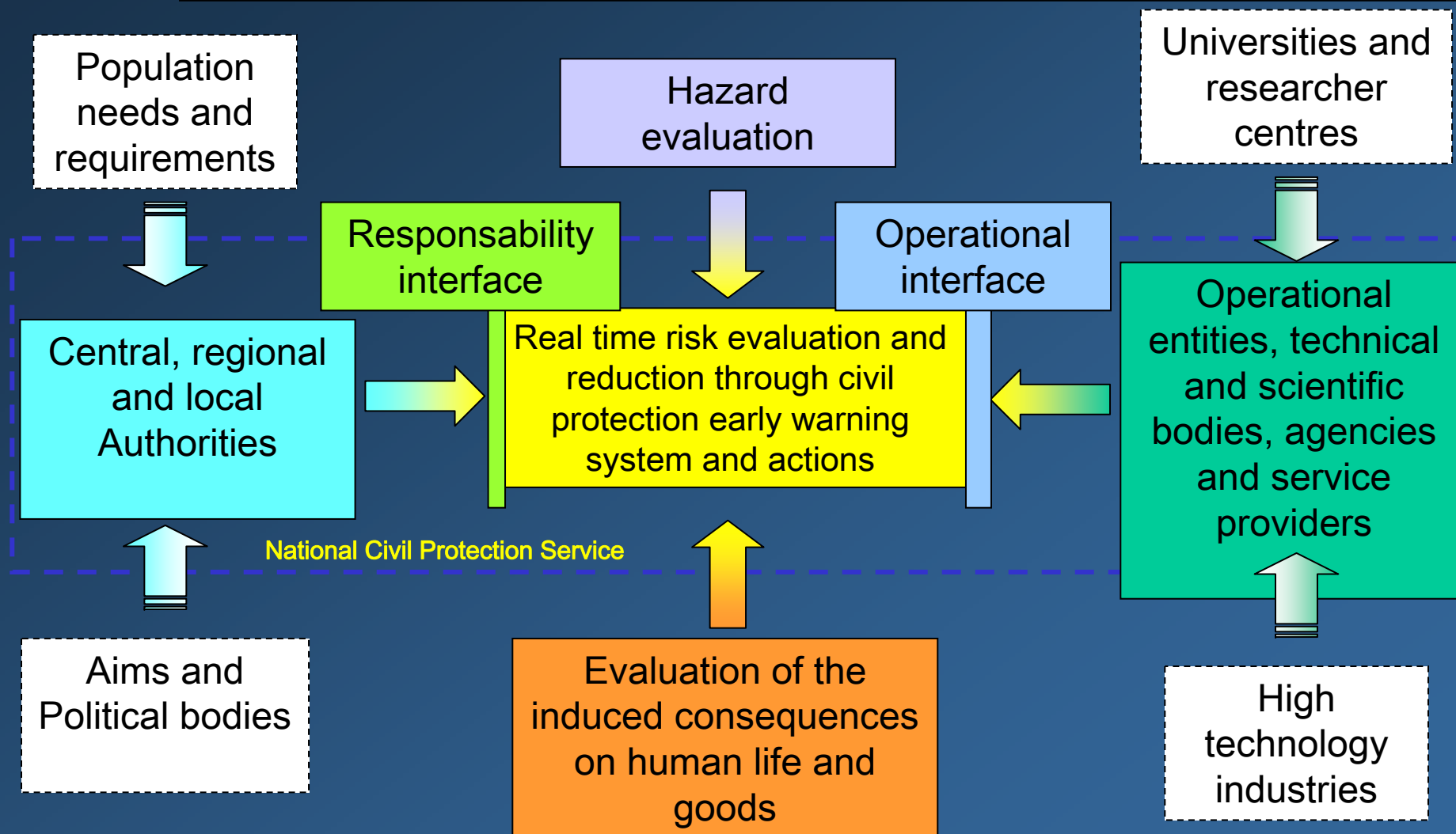
**updating and management  
of all information**

## Our Early Warning System ...

- A system able to share and exchange information in real time, through common standards and procedures, targeted the general assessment of the risk. This is done by the network of “**Centri Funzionali**”, centres which are charged of the collection and operational use of all available meteorological, hydrological and geological data and provide the technical and scientific support to the civil protection decision process.
- The “**Early Warning System**” that, according to the Law DPCM 27/02/2004, is under the direct control of the **Civil Protection Authorities** and, basing on the network of “Centri Funzionali”, is not only addressed to the evaluation of hazards, but mainly to forecast and survey the induced effects on human life and goods.



# ... to cope with risk assessment and management ...







# The National Civil Protection Service

## The national early warning system

(DPCM 27/02/2004) identified the activation of the **CFSE** for the hydrogeological, meteorologic and hydraulic risks

**...is able** to share and exchange information, through common standards and procedures and it is targeted the general real time forecast and assessment of the risk scenarios...

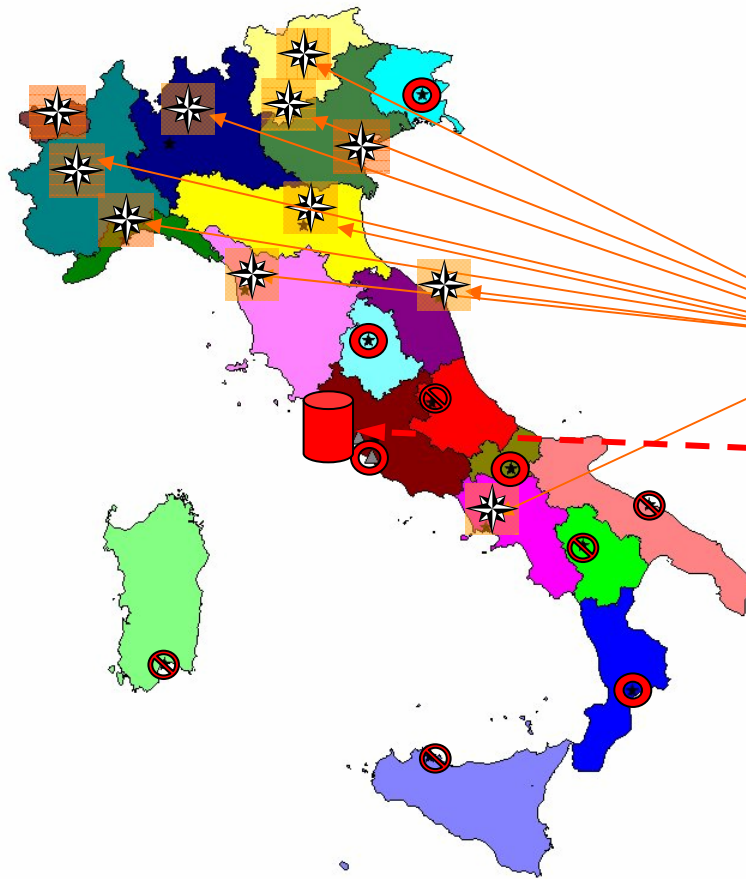
**is provided** by DCP and Regions by the “Centri Funzionali” National Network, along with the “Centri di Competenza” involved in hazard assessment and surveillance activities....

**“Centro Funzionale”** = Centre for Forecasting and Surveillance of Effects to support the civil protection Authority decisions (CFSE)

**“Centro di Competenza”** = Centre for Technological and Scientific services, development and transfer (CTS)

# The “Centri Funzionali” National Network

(update 01-08-2009)



**“CENTRI FUNZIONALI”**  
21 Regional + 1 National

 13 Regional already fully operative

 1 National fully operative (DPC)

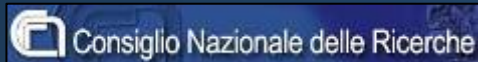
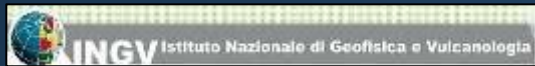
 1 Regional almost operative (2009)

 7 Regional not yet operative (2009)

... 41 “Centri di Competenza”



# The community scientific network on behalf of the DPC

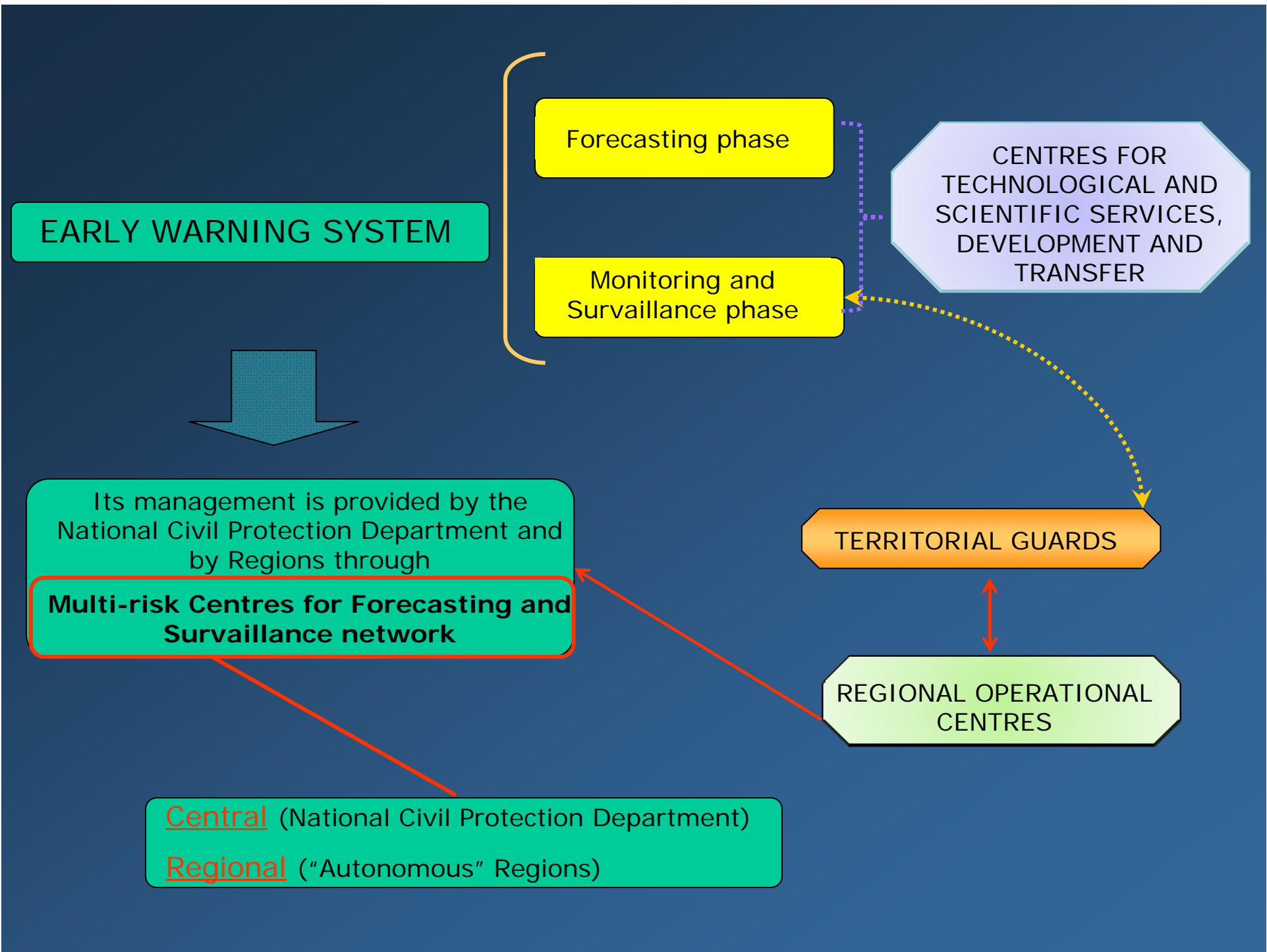


Centro universitario per la difesa idrogeologica dell'ambiente montano



Enti Regolatori dei Grandi Laghi





**EARLY WARNING SYSTEM**

Forecasting phase

Monitoring and Surveillance phase

CENTRES FOR TECHNOLOGICAL AND SCIENTIFIC SERVICES, DEVELOPMENT AND TRANSFER

TERRITORIAL GUARDS

REGIONAL OPERATIONAL CENTRES

Its management is provided by the National Civil Protection Department and by Regions through **Multi-risk Centres for Forecasting and Surveillance network**

Central (National Civil Protection Department)  
Regional ("Autonomous" Regions)

# The goal of the “Centro Funzionale” Network is to collect and integrate the information:



**Short term and real time monitoring & surveillance by in situ data and information systems.**

**2040 telemetric stations send data to the CFC, every ½ h : 1400 raingauges and 900 flowmeters.**

**Geospatial data and digital terrain model**

**Real Time modeling of hazard, risk and damage scenario**

**Weather forecast**

**Data from the local authorities and the local technical teams**



## CFSE procedures

The warning system is built with a set of organization-information procedures both national and local.

The system's efficiency is based on the internal and external coded procedures, regarding the relevant administrative offices.

Furthermore, operative standards are defined in order to get a quality certification UNI EN ISO 9001

An internal operative Manual has been made. It contains all procedures that the personnel must put in action depending on different hazard situations, in order to provide proper management of the center.

It defines the different roles that the Centre's personnel must play.

It contains all documentation for different emergency situation.

# Prevention, damages reduction and risk mitigation activities

REAL TIME

ACTIVITIES, EVEN EXCEPTIONAL AND TEMPORARY, AIMED TO ENSURE THE URGENT AND NOT DELAIABLE ACTIONS FOR THE SAFETY OF POPULATION, GOODS AND ENVIRONMENT, ARISING FROM DANGEROUS EVENTS ...

DCP coordinates the regional and local civil protection structures

**Crisis**

DEFERRED TIME

PLANNING OF MEASURES, EVEN STRUCTURAL, AND RUNNING OF ORDINARY ACTIVITIES AIMED TO ENSURE PERMANENT AND HOMOGENEOUS SAFETY CONDITIONS FOR POPULATION, GOODS AND ENVIRONMENT ...

DCP provides the guide lines and collaborates with Regional authorities and scientific research centres

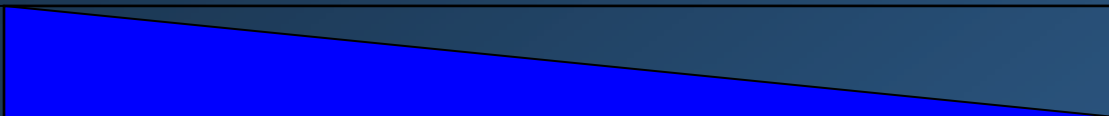
**Prevention**



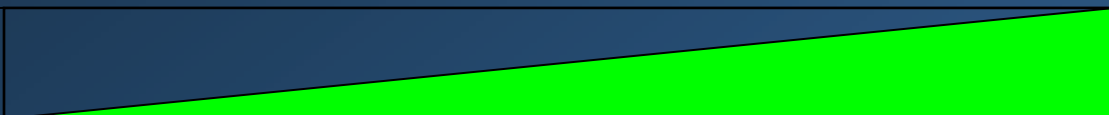
## Forecasting activity

Predictability: depending on the space-time scale of the event

Intensity



Time



Critical flow for catchments :



**Taranto province**

**September 2003**

**85 mm/9h**

**Max intensity 30 mm/h**

**No forecast**

**2 casualties**

**Udine province**

**August 2003**

**520 mm/10h**

**Max intensity 80mm/h**

**24 h in advance forecast**

**2 casualties**

**Piedmont region**

**October 2000**

**700 mm/4gg**

**3 days in advance  
forecast**

**5 casualties<**

Event  
precursors :

Meteorological  
(NWP/Satellites/Ra  
dar)

Rain gauges

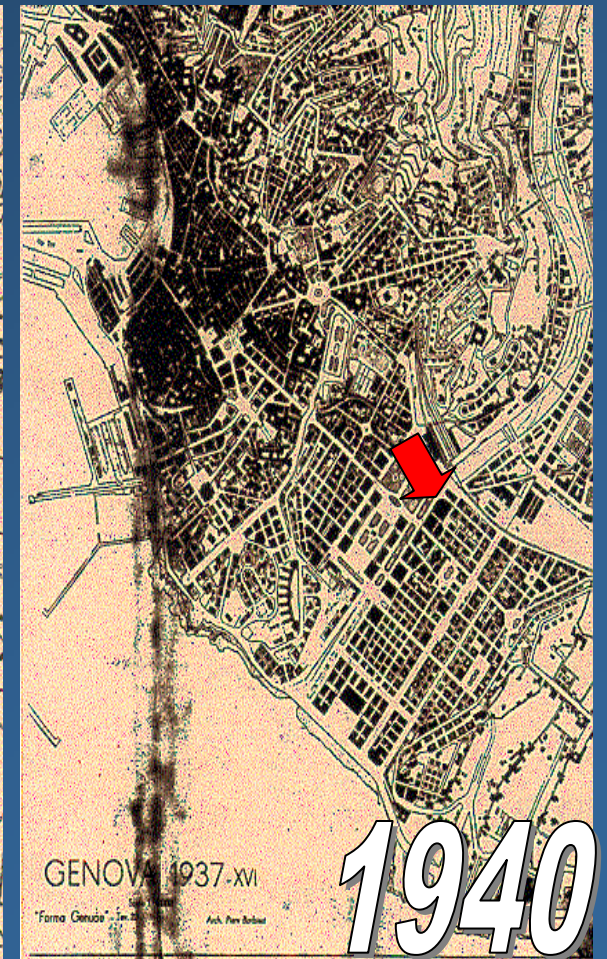
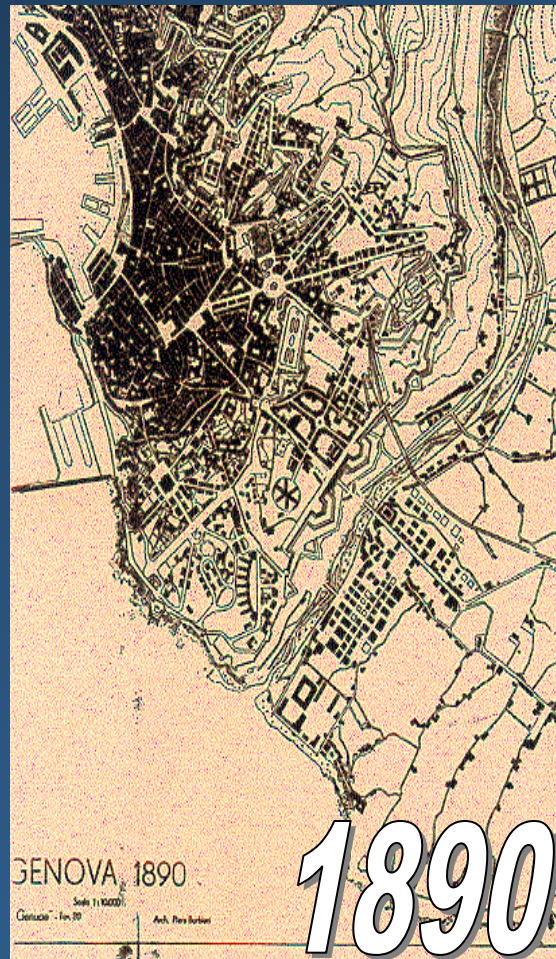
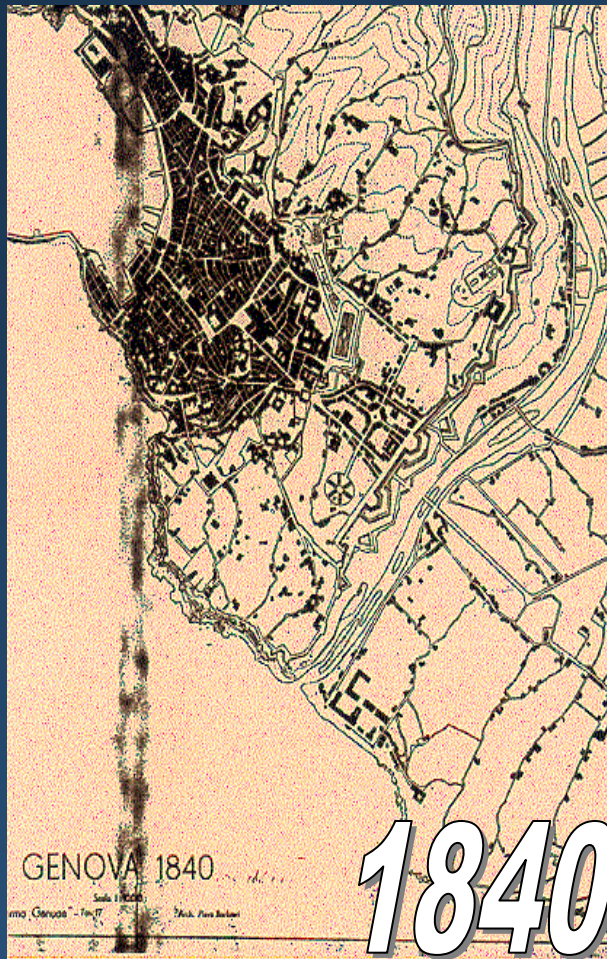
River gauges

Uncertainty





# The planning problem: Urban increase & development



# EARLY WARNING SYSTEM



Presidenza del Consiglio dei Ministri  
 Dipartimento della Protezione Civile  
 Ufficio Previsione, Valutazione, Prevenzione e  
 Mitigazione dei Rischi Naturali  
 Servizio Rischio Incendi Boschivi

## Suscettività all'innescò di incendi boschivi

08/07/2008

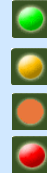
Tendenza per il 09/07/2008



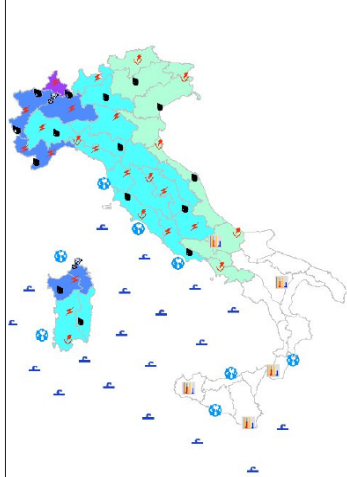
— Limiti provinciali  
 — Limiti regionali  
 Pericolosità prevista  
 Bassa  
 Media  
 Alta



Alert level



## Fenomeni meteorologici significativi previsti per il giorno 29/05/2008



**LEGENDA**  
 Area meteo - climatiche  
**Quantitativi giornalieri di precipitazioni previsti**  
 Assenti o deboli (non rilevanti)  
 Deboli (solo se rilevanti)  
 Moderati  
 Elevati  
 Molto elevati  
**Caratteristiche delle precipitazioni previste**  
 Piogge sparse o intermittenti  
 Piogge diffuse e continue  
 Nevicate deboli e moderate  
 Nevicate abbondanti e a carattere di rovescio  
 Rovesci o temporali deboli e moderati  
 Rovesci o temporali localmente forti  
 Rovesci o temporali forti a carattere sparso e diffuso  
**Altri fenomeni meteorologici di rilievo**  
 Venti  
 Forti  
 Burrasca  
 Tempesta  
 Probabili raffiche  
**Chiuso**  
 Diffusa formazione notturna di ghiaccio al suolo in pianura  
 Diffusa formazione persistente al suolo in pianura  
**Nebbia**  
 Foschie dense o nebbie in banchi  
 Nebbie diffuse notturne in dipendenza dal mattino  
 Nebbie diffuse e persistenti nelle ore diurne  
**Mari**  
 Molto mosso  
 Agitato e molto agitato  
 GROSSO o molto grosso  
**Moto ondoso**  
 In aumento  
 In diminuzione  
**Temperature**  
 In sensibile aumento  
 In marcato aumento  
 In sensibile calo  
 In marcato calo

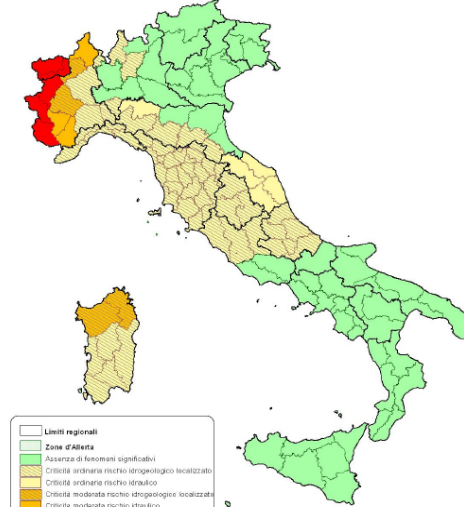
Sistema Informativo Centrale

autodesk

Dipartimento della Protezione Civile  
 Centro Funzionale Centrale

## Bollettino di criticità nazionale per Rischio Idrogeologico e Idraulico

Aggiornamento Effetti al suolo previsti per il giorno 29 Maggio 2008



— Limiti regionali  
 Zone d'Attenzione  
 Assenza di fenomeni significativi  
 Criticità ordinaria rischio idrogeologico localizzato  
 Criticità ordinaria rischio idraulico  
 Criticità moderata rischio idrogeologico localizzato  
 Criticità moderata rischio idraulico  
 Criticità elevata rischio idrogeologico localizzato  
 Criticità elevata rischio idraulico

**ROMA**  
 Sistema di allarme per la prevenzione degli effetti delle ondate di calore sulla salute

	Previsibili		
	19/07/2007	20/07/2007	21/07/2007
	<b>Livello 3</b>	<b>Livello 3</b>	<b>Livello 3</b>
Temperatura ore 8:00	22,8	30,9	21,7
Temperatura ore 14:00	35,6	35,5	35,3
Temperatura max percepita	36,8	36,9	37,2

**Legenda**

- Livello 3** Condizioni meteorologiche non a rischio per la salute della popolazione.
- Livello 2** Condizioni meteorologiche che non presentano un rischio per la salute della popolazione ma possono provocare il mal di testa e il mal di collo.
- Livello 1** Temperature elevate e condizioni meteorologiche che possono avere effetti negativi sulla salute della popolazione a rischio\*.
- Livello 0** Condizioni di allarme (condizioni meteorologiche a rischio che potrebbero portare a più giorni consecutivi di "P" e possono abbassare i livelli di prevenzione e rischi alla popolazione a rischio\*).

\* Nel sito questo sito il documento "Temperatura e Salute in base ai pericoli associati".

## Civil protection procedures: time requirements

- **12 h to run emergency civil protection procedures**
- **12 h required by technical structure to produce the scenario**



**precursors should be observed 24 h in advance**

# DCP

## Ufficio Previsioni Valutazione Prevenzione dei Rischi

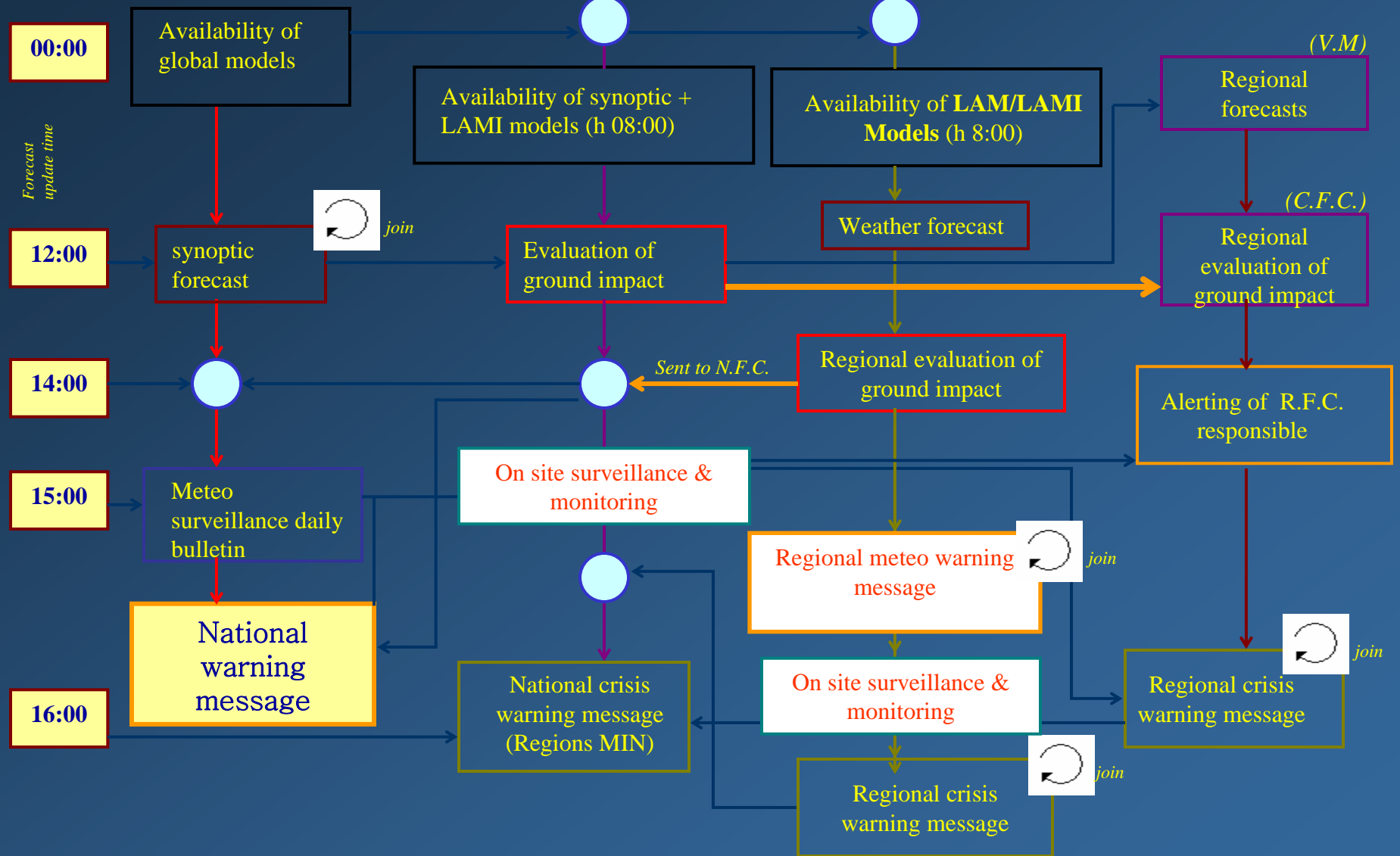
## Regions

### Weather surveillance

### N.F.C.

### R.F.C. Operative

### R.F.C. Not Operative





**PRESIDENZA DEL CONSIGLIO DEI MINISTRI  
DIPARTIMENTO DELLA PROTEZIONE CIVILE**

Qualifica		di		Categorie di Segreteria		Spazio Riservato al Centro		Trasmissioni		Note/Espressioni	
Ordine	Uscite	Sett.	Riservato	Segreteria	Mark	Mark	Segreteria	Trasmissione	Trasmissione	Trasmissione	Trasmissione
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.

**DA: DIPARTIMENTO PROTEZIONE CIVILE - Via Ulpiano, 11 00193 ROMA-**

**A RESPONSABILI PROTEZIONE CIVILE E CENTRI FUNZIONALI E SERV. METEO REGIONI:**  
SARDEGNA, CAMPANIA, BASILICATA, CALABRIA, E SICILIA.

**LORO SEDI**

**ALLE PREFETTURE-UFFICI TERRITORIALI DI GOVERNO DI:**  
SARDEGNA, BASILICATA, CALABRIA E SICILIA.

**LORO SEDI**

**PER CONOSCENZA ALLE PREFETTURE-UFFICI TERRITORIALI DI GOVERNO DI:**  
CAMPANIA.

**LORO SEDI**

**MIN. INTERNO**  
DIPARTIMENTO V.F., SOCC. PUB. DIF. CIV. FAX 06/4814695 RM

**MIN. AMBIENTE E TERRITORIO**  
APAT- Agenzia per la Protezione Ambientale Servizi Tecnici FAX 06/50072929

**MIN. POL. AGR. AL. E FORESTALI**  
CORPO FORESTALE DELLO STATO/ SALA OPERATIVA FAX 06/47823910 RM  
FAX 06/47885280 RM

**MIN. INFRASTRUTTURE** FAX 06/441251056  
**MIN. TRASPORTI** FAX 06/5922737

**UFF. GEN. PER LA METEOROLOGIA** FAX 06/24401359  
**CNICA/SALA OP.** FAX 06/91292457  
**COORDINAMENTO ROMA** TEL. 06/91292664 - FAX 06/46919003  
06/46912043  
**COM. BRIG. GR. FOPI** FAX 06/4505058  
**APAT - S.D.** FAX 06/4466392 RM  
**ENEL - (PROCVI)** FAX 06/8845844 - FAX 06/83052795 RM  
**TERNA SPA** FAX 06/83138154 TEL. 06/83138282  
**ENAV DIR. GEN.** FAX 06/59084793 RM  
**ENAV FIDUCIARIO** FAX 06/8166017  
**ENAV DIR. LINATE** FAX 06/65650268  
FAX 02/70143226

PAG. 1./1

N° 07011 PROT.DPC/PRE/ 11687 DATATO 25 FEBBRAIO 2007

OGGETTO: **AVVISO DI CONDIZIONI METEOROLOGICHE AVVERSE.**

RIFE./: DIRETTIVA PRESIDENTE DEL CONSIGLIO DEI MINISTRI 27-2-2004.  
"INDIRIZZI OPERATIVI PER LA GESTIONE ORGANIZZATIVA E FUNZIONALE DEL SISTEMA DI ALLERTAMENTO NAZIONALE E REGIONALE PER IL RISCHIO IDROGEOLOGICO E IDRAULICO AL FINE DI PROTEZIONE CIVILE".

- UNA SACCATURA DI ORIGINE ATLANTICA SI APPROFONDISCE SUL MEDITERRANEO CENTRO-OCCIDENTALE, APPORTANDO CONDIZIONI DI MALTEMPO SULLA PENISOLA ITALIANA, IN MODO PIU' MARCATO SULLE REGIONI MERIDIONALI TIRRENICHE, NEL CONTEMPO IL MINIMO BARICO CHE VIENE SCAVATO NEI BASSI STRATI, ASSOCIATO ALLA SUDETTA SACCATURA, DETERMINERA' IL FORTE INCREMENTO DEI VENTI SULLE NOSTRE DUE ISOLE MAGGIORI.
- PER QUANTO ESPOSTO AL PRECEDENTE PUNTO 1 E NEL BOLLETTINO DI VIGILANZA NAZIONALE DI OGGI, DOMENICA 25 FEBBRAIO 2007, PRESO ATTO CHE LA REGIONE CAMPANIA HA EMESSO UN PROPRIO AVVISO DI CONDIZIONI METEOROLOGICHE AVVERSE, PER PRECIPITAZIONI INTENSE E CHE IL CNMCA HA EMESSO UN PROPRIO AVVISO DI CONDIZIONI METEOROLOGICHE AVVERSE PER VENTI FORTI SULLE DUE ISOLE MAGGIORI; SULLA BASE DEI MODELLI E DELLE INFORMAZIONI DISPONIBILI, ALLE ORE 14.30 DI OGGI, DOMENICA 25 FEBBRAIO 2007, SI EMETTE IL SEGUENTE:

**AVVISO DI CONDIZIONI METEOROLOGICHE AVVERSE:**

"DALLE PRIME ORE DELLA GIORNATA DI DOMANI LUNEDI 26 FEBBRAIO 2007, E PER LE SUCCESSIVE 24-36 ORE, SI PREVEDONO:

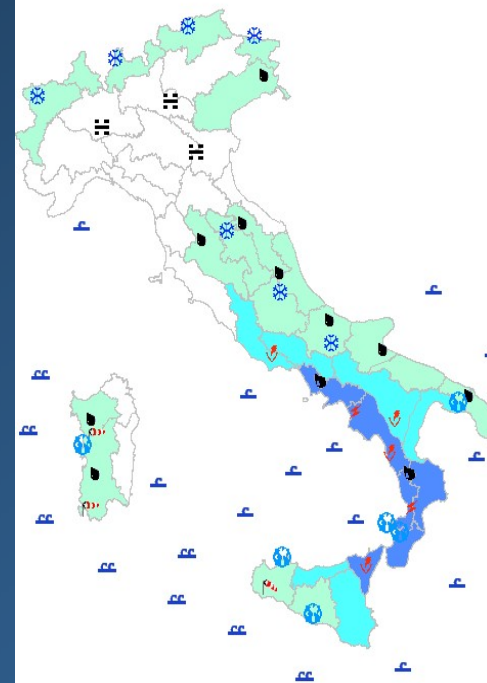
- PRECIPITAZIONI DIFFUSE, ANCHE A CARATTERE DI ROVESCIO O TEMPORALE FORTE, CON QUANTITATIVI LOCALMENTE ELEVATI SU CAMPANIA, BASILICATA, CALABRIA, SPECIE SUI VERSANTI TIRRENICI E SICILIA NORD-ORIENTALE. I FENOMENI POTRANNO ESSERE ACCOMPAGNATI DA FREQUENTE ATTIVITA' ELETTRICA E DA FORTI RAFFICHE DI VENTO;
- VENTI DI BURRASCIA NORD-OCCIDENTALI SU SARDEGNA E SICILIA, CON POSSIBILI RINFORZI FINO A TEMPESTA SUI SETTORI OCCIDENTALI DELLA SARDEGNA; MAREGGIATE LUNGO LE COSTE ESPOSTE."

- PER LE REGIONI INTERESSATE SI CONFERMANO LE RACCOMANDAZIONI CONTENUTE NELLA DIRETTIVA A RIFERIMENTO.
- QUESTO DIPARTIMENTO SEGUIRA' L' EVOLVERSI DELLA SITUAZIONE. SI PREGA, QUINDI, DI PORRE ATTENZIONE AI SUCCESSIVI BOLLETTINI DI VIGILANZA EMESSI SUL SITO INTERNET <http://www.protezionecivile.it/rischi>
- I DIRETTI DESTINATARI DEL PRESENTE MESSAGGIO VORRANNO CONFERMARE URGENTEMENTE LA RICEZIONE, AT MEZZO FAX NUMERO 06/68202360.

ROMA, 25 FEBBRAIO 2007

D'ORDINE  
IL CAPO DIPARTIMENTO  
GUIDO BERTOLASO  
I.Col. Luciano Di Forti

**VISTO:** Autorizza trasmissione Msg  
Direttore dell'Ufficio Rischi Naturali  
Prof. Bernardo De Bernardinis



Sistema Informatico Centrale



**Weather  
warning message**



## Dissemination

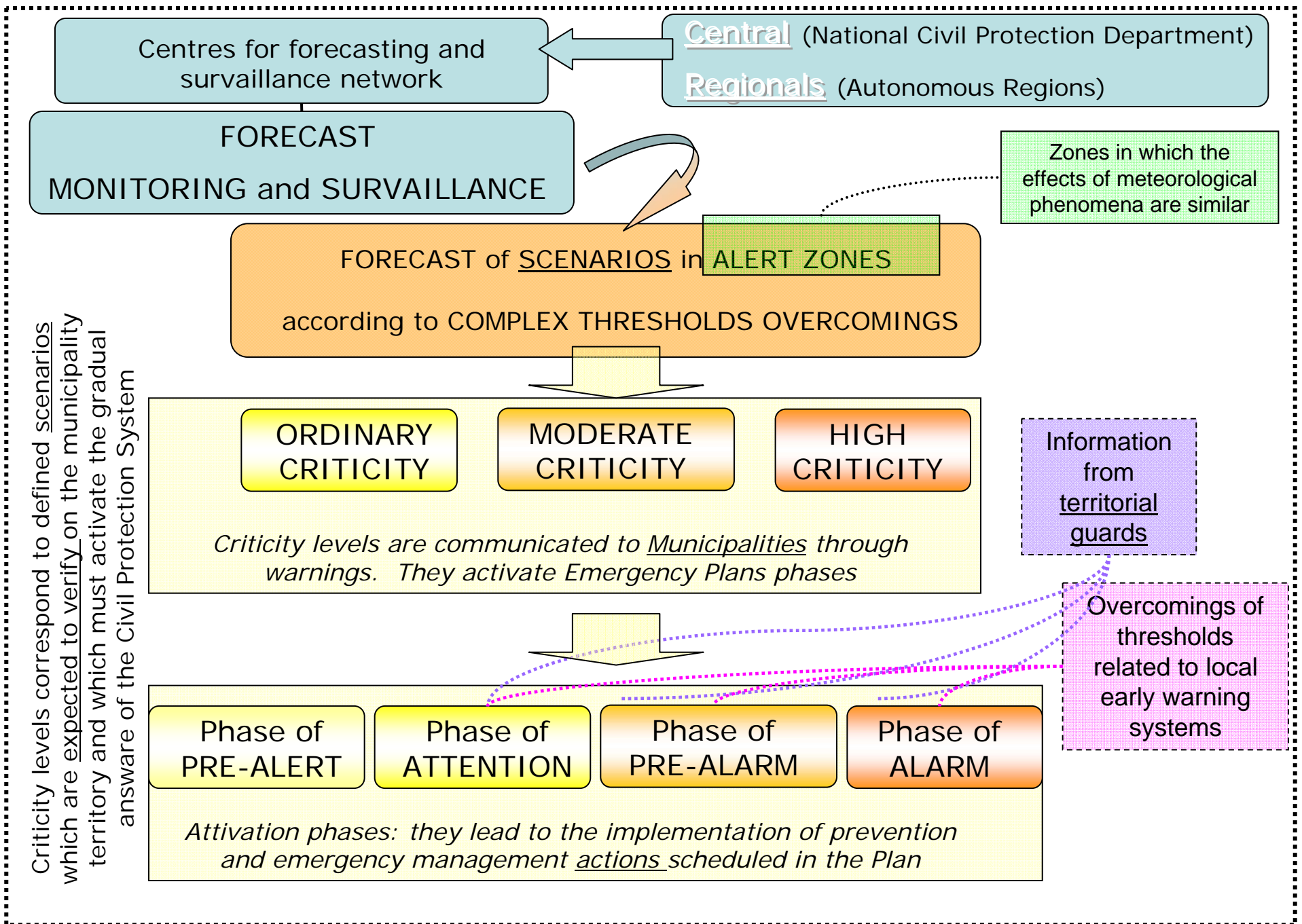
### **Weather warning message:**

- **Civil protection public web site;**
- **Televideo;**
- **Isoradio;**
- **Civil protection operational network**

### **Civil Protection warning message:**

- **Civil protection operational network**

# NATIONAL EARLY WARNING SYSTEM– HYDRAULIC AND HYDROGEOLOGICAL RISK







# FALSE WARNING MESSAGES:

## Connected problems

✓ Credibility toward citizens and personnel involved in emergency management

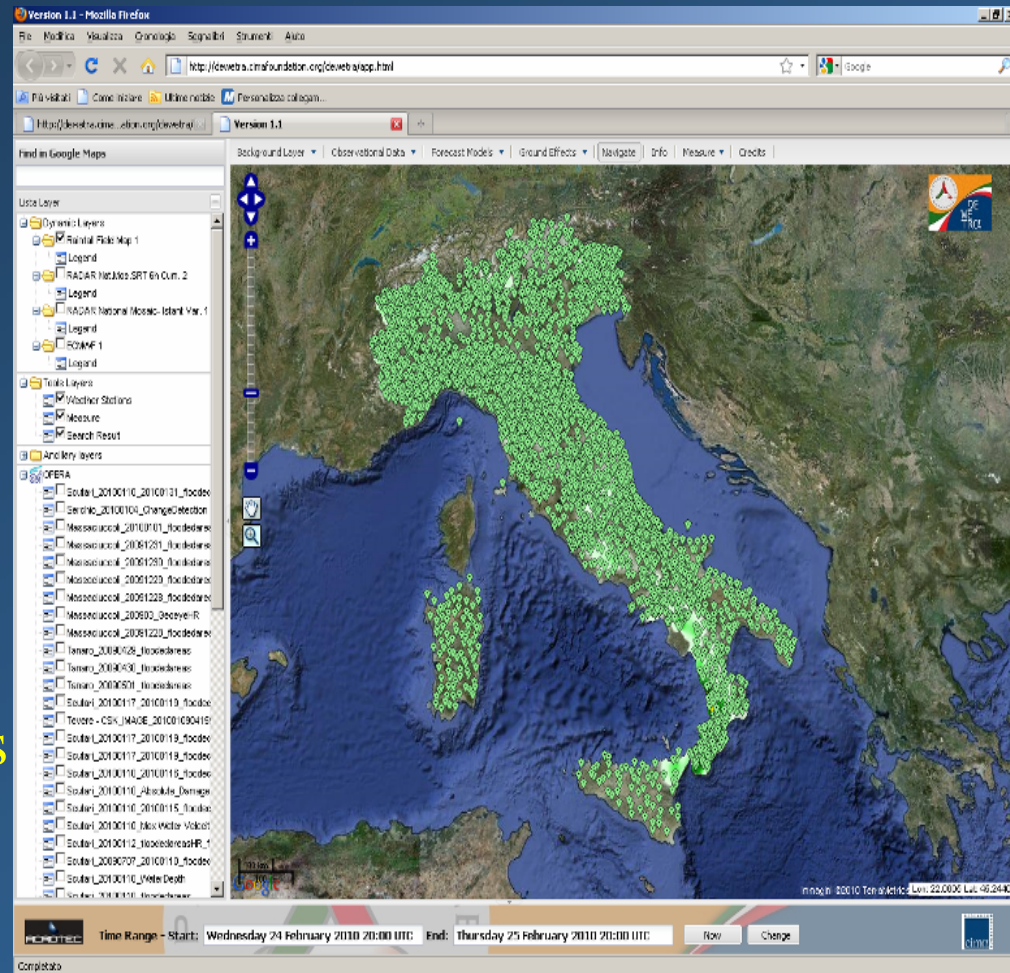
✓ **MONEY (NOT UNLIMITED)**

# Development: Monitoring network available on the WEB

Including

- Rivergauges
- Raingauges
- Webcam
- Meteostation


Information on statistics, previous events, damages occurred, warning areas, flood exposition, ... are also available







# National Radar Network

 OPERATIVE DPC RADARS  
4 plants

 INCOMING RADARS  
DPC  
6 plants

 REGIONAL RADARS  
10 plants

 AIR FORCE RADARS  
4 plants

 ENAV (National  
Administration for  
Civilian Flifghts)  
RADARS  
2 plants



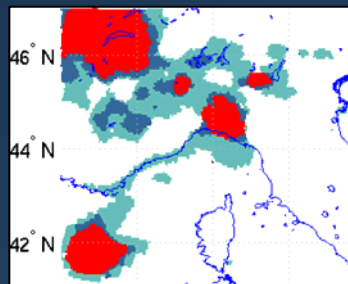
## Use of EO satellite data for Hazard&Risk forecast, assessment and surveillance

There have been research and operational demonstrations that illustrate the potential usefulness of EO satellite data for a broader range of hazards, and DPC is started to use EO data for its activities, even if “... *the operational application of these data is still quite limited.*” (\*)

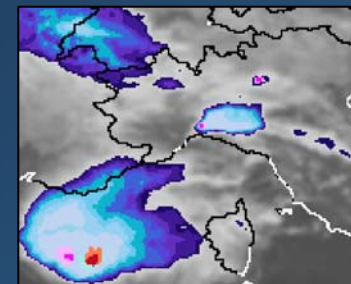
DPC target is to foster improved utilization of existing and planned Earth Observation (EO) satellite data integrated with in situ data to support users in every phase of risk management cycle (Pre-disaster, Emergency response, Post Disaster).

# IMPROVING SATELLITE ESTIMATION

## Rain Rate

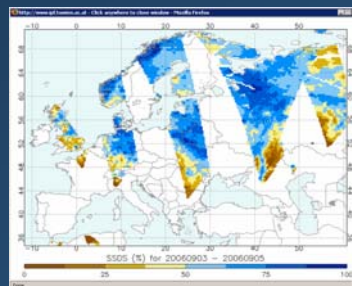


Zoom in North of the Estimated Rain Rate Classes from AMSU on MSG grid 2006-8 -16 starting at 01:52 ending at 02:05



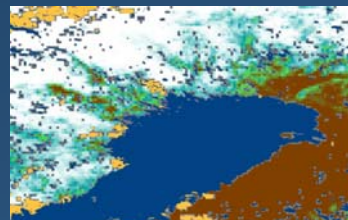
Zoom in North of Italy of Convective Detection Cloud by SEVIRI data 2006-8 -16 at 02:00.

## Soil Moisture



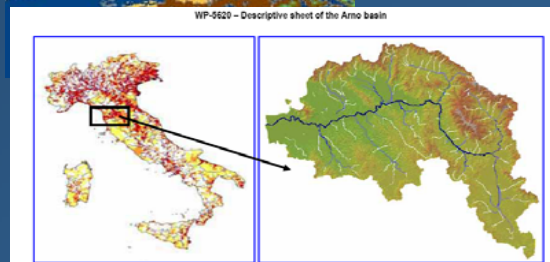
ASCAT:25 Km Res - Typical large-scale soil moisture product

## Snow parameters



fraction of Snow Covered Area, derived by Terra/MODIS level 1B data, around Bay of Bothnia

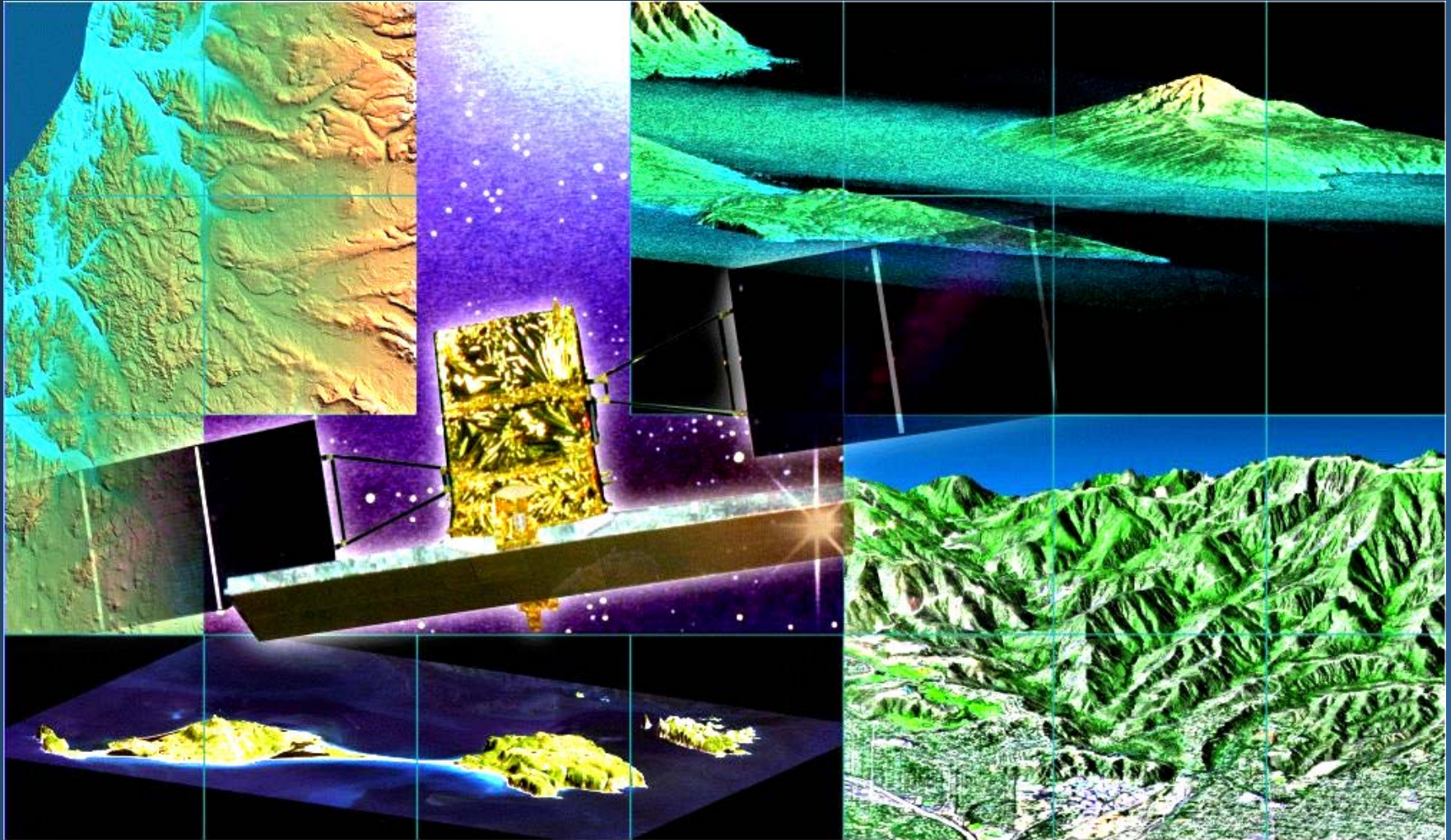
## Hydrological validation



Impact on hydrological forecast

**HSAF Project 1.2 M€5years**

# The CosmoSkyMed system





# Projects for Services

DPC is involved in the  
COSMO-SkyMed  
Background Mission  
team

32 gg  
Interferometry  
ERS/Radarsat

Visible  
Modis / Seviri  
6h / 15 min

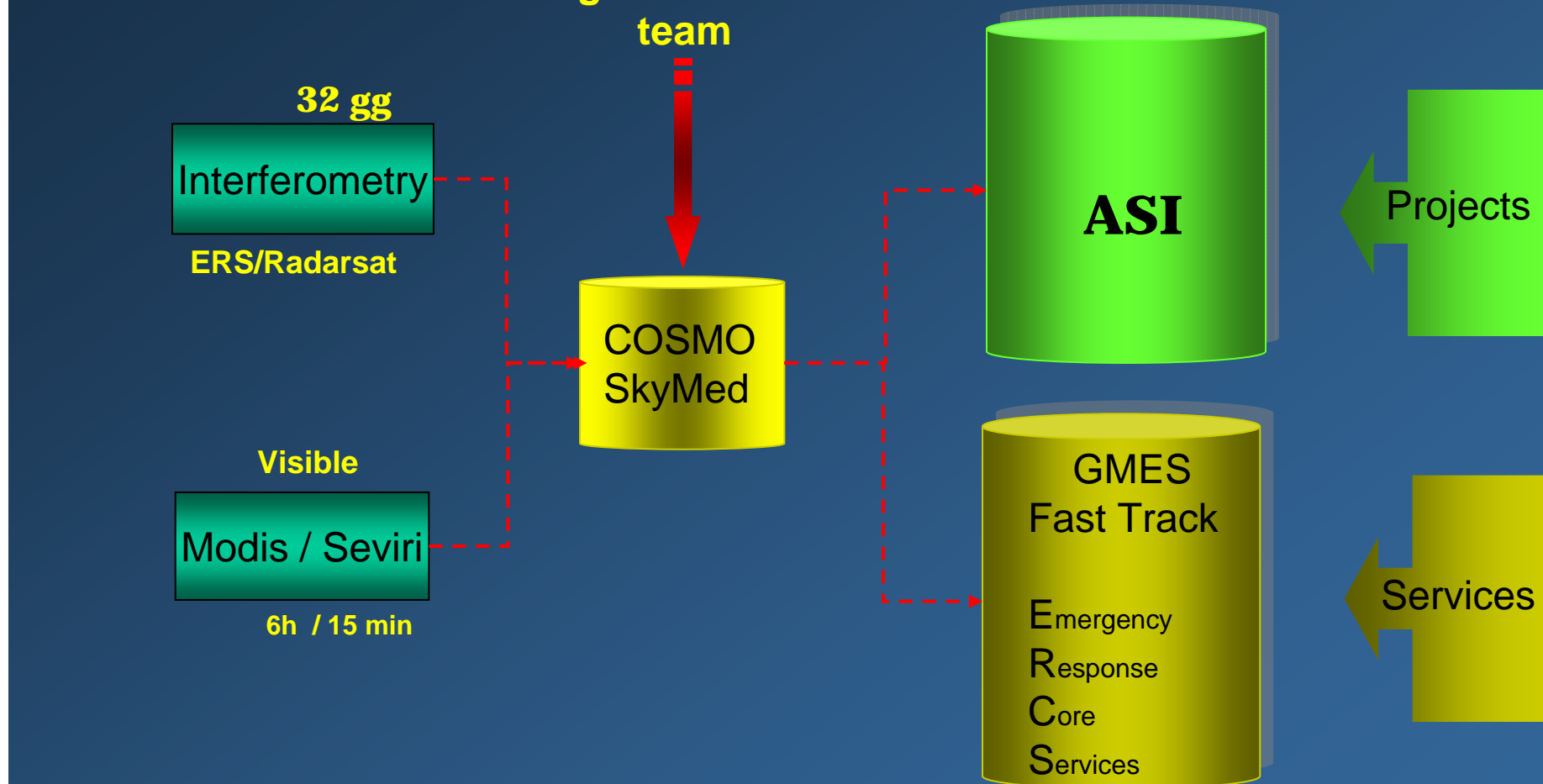
COSMO  
SkyMed

ASI

GMES  
Fast Track  
Emergency  
Response  
Core  
Services

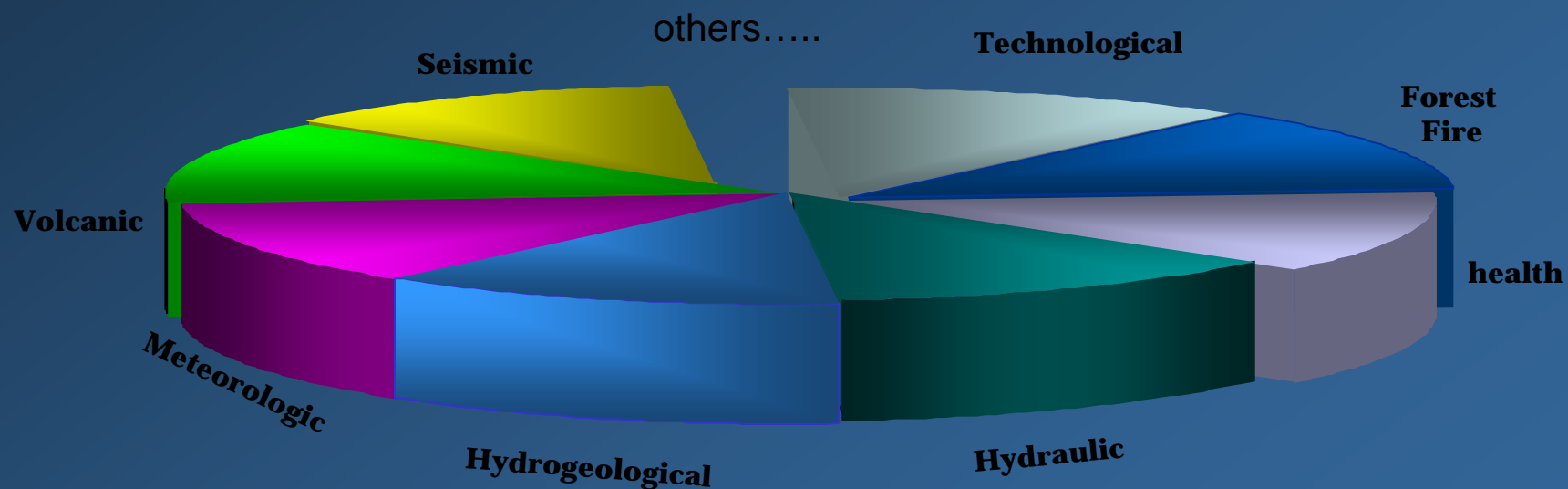
Projects

Services





.. other sectors are added and, actually, we have a true multirisk center to support the activities of monitoring, forecast and emergency.



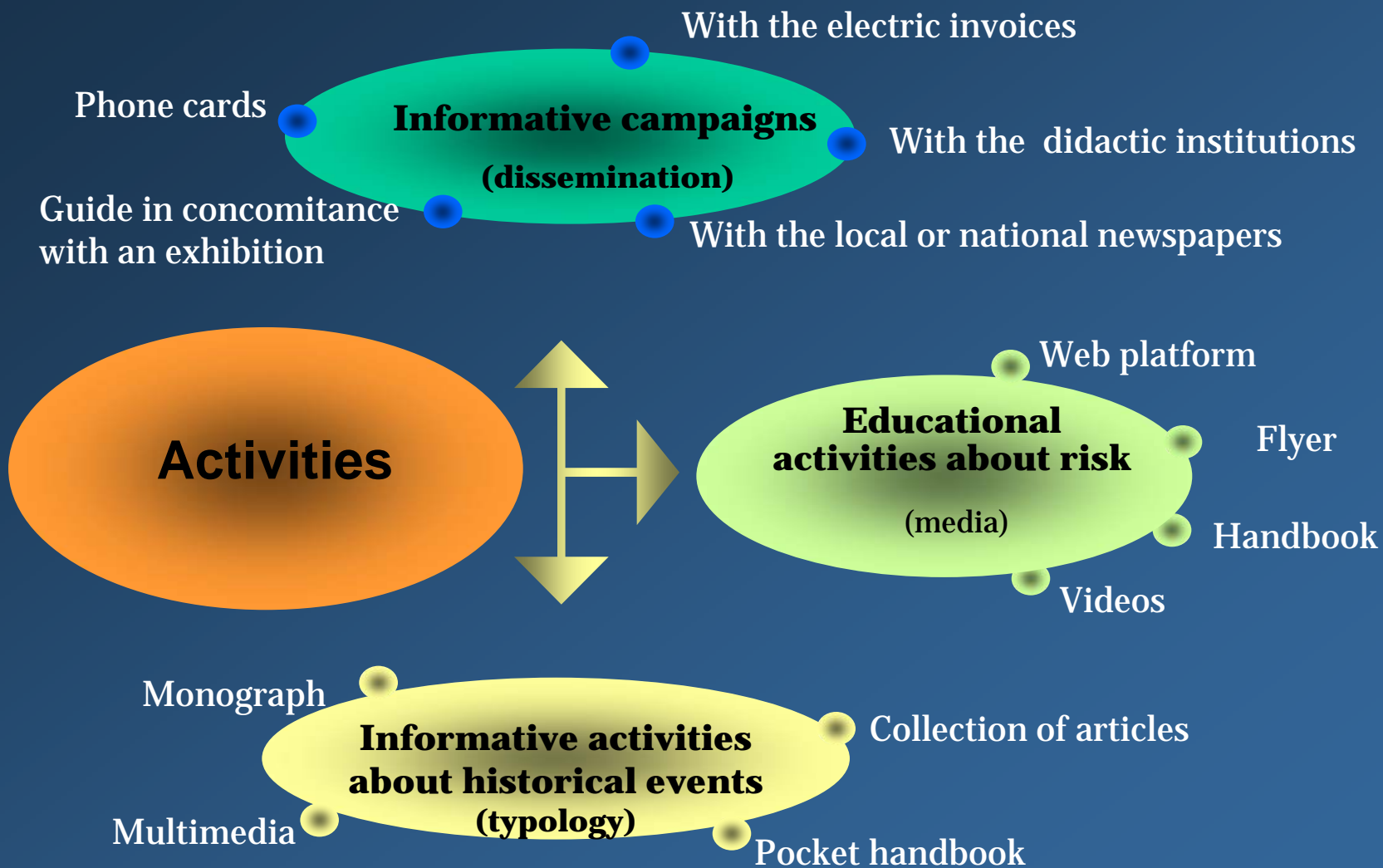




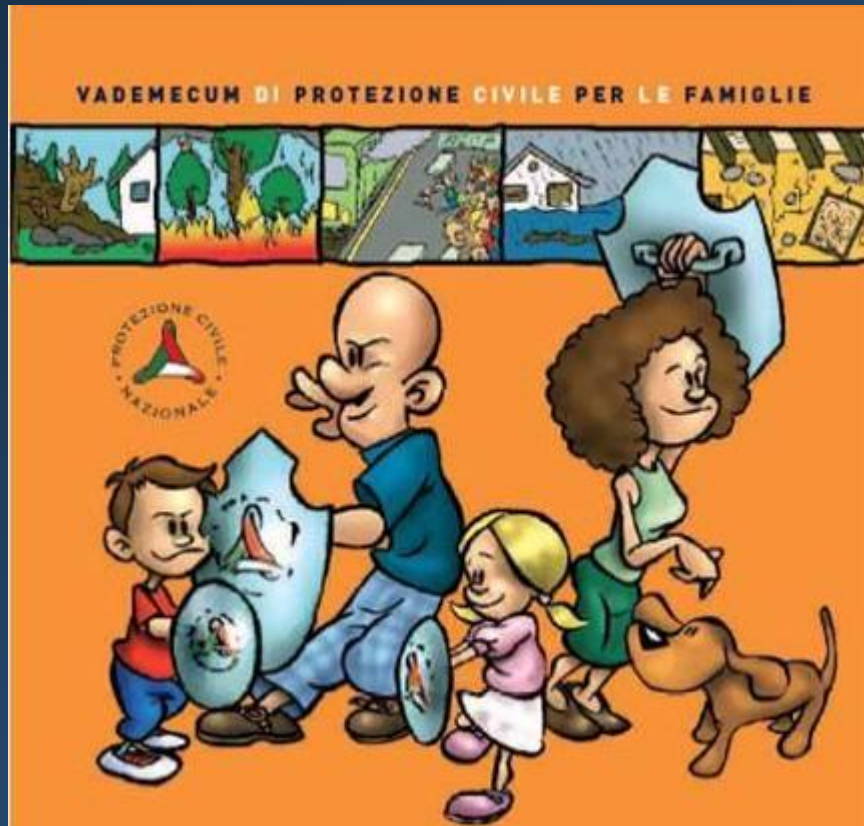
Early warning systems .....

..... educational and Informative activities

during a warning or a catastrophe,  
citizens behaviour  
is too much important to be forgotten!!!!



## Informative campaigns



**2006**

**“Vademecum di Protezione Civile”**

**“Civil Protection in our family”**

**Promoter bodies:**

**DPC**

**Formative activities:**

The Civil Protection Department realized a vademecum about our Country's main risks: earthquakes, volcanoes, management of new types of emergency like terrorist attacks, heat waves and epidemics. About 5.000.000 copies of this vademecum were distributed together with the main **national newspapers.**



# WELCOME TO STROMBOLI



One of the most beautiful and fascinating islands in the Mediterranean sea

The Island of Stromboli is special and unique and its ecosystem is an enchanting mix of beautiful coasts, volcanic sand beaches, wonderful sea and typical vegetation.

## But Stromboli is... also an active volcano

In order to let you enjoy in safety the island and its fantastic beauties, we remind you that - due to the recent intense activity of the volcano - in accordance with ordinance n. 121/02 of December the 30th 2002, excursions to the top of the volcano are strictly forbidden. Do not enter in the area bounded by the blue line on the map. There is no restriction regarding the beaches and the residential areas.

In the very exceptional event of tidal wave, an alarm siren will warn of the danger. Please leave the seaboard as soon as you can and go inland. The inhabitants of Stromboli will indicate you the safety areas.

To make your journey more pleasant and interesting, contact the official guides. They know the beauties of the island and the dangers of the volcano, and will advise you, give all the information you need and escort you in your safe exploration of this extraordinary world.

Enjoy your stay in STROMBOLI!!

**Info:**

City of Lipari - District of Stromboli - ph.: 090 9865-730  
Volcanological Guides Office of Stromboli - ph.: 090 9865-768  
[Infostromboli@protezionecivile.it](mailto:Infostromboli@protezionecivile.it)



*Folder for tourists*



*“The Italian Early Warning Systems”*



**Thanks for**

***your attention***



*Training workshop on Multi - Hazard Early Warning Systems*