



***Volcanic risk management in Italy:  
a perspective from a decision-maker.***



**VUELCO workshop – *Interfacing science and decision-making*  
Colima (Mexico), 18<sup>th</sup> November 2012**

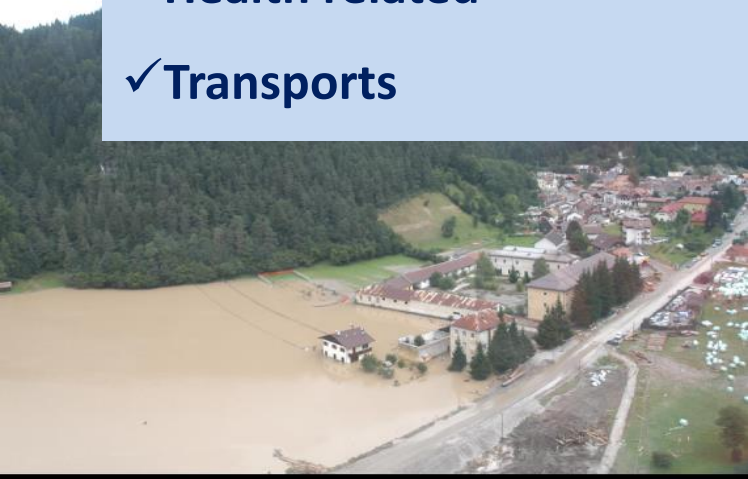


**PROTEZIONE CIVILE**  
Presidenza del Consiglio dei Ministri  
Dipartimento della Protezione Civile

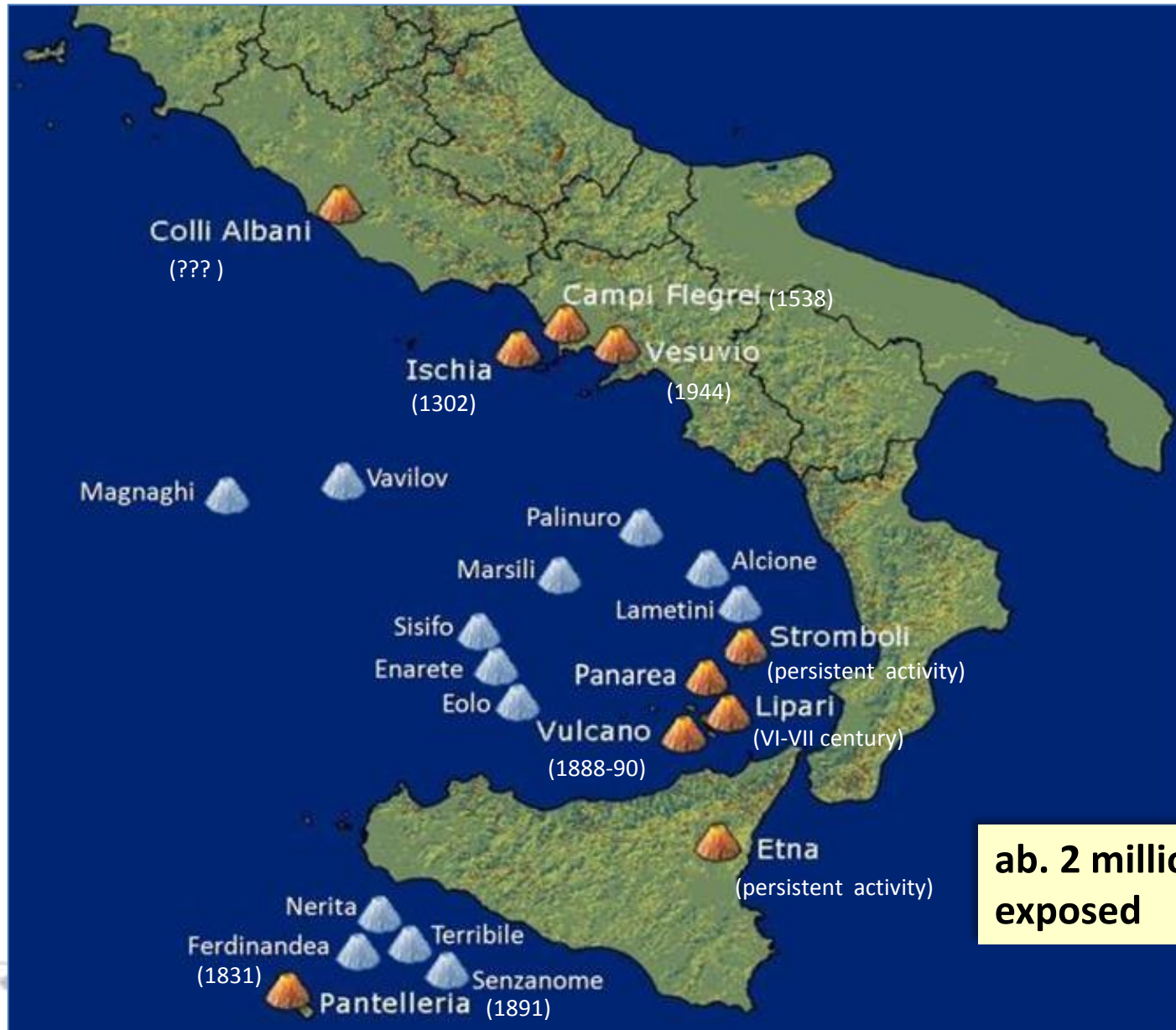
**Stefano Ciolli – Italian Department of Civil Protection**

## ITALY.... the megastore of risks!

- ✓ Seismic
- ✓ Volcanic
- ✓ Hydrogeological (floods, landslides, droughts, avalanches)
- ✓ Forest fire
- ✓ Industrial, chemical, nuclear
- ✓ Enviromental
- ✓ Health related
- ✓ Transports



## THE ITALIAN VOLCANOES



**ab. 2 millions people  
exposed**



# Civil Protection activities: the so called “emergency cycle”

**FORECASTING**



**PREVENTION**



**EMERGENCY  
MANAGEMENT**



**RESTORATION**



# The National Civil Protection System (law 225/1992)



**PRESIDENCY OF THE  
COUNCIL  
OF MINISTERS**

**Department of  
Civil Protection**



**Interior**

**National Fire-fighters Corps**  
**Police**  
**Prefectures**

**Foreign Affairs**

**Environment**

**ISPRA**

**Health**

**118**

**Economy and Finance**

**Revenue Guard Corps**

**Defence**

**Army**  
**Navy**  
**Air Force**  
**Carabinieri**

**Productive Activities**

**G.R.T.N.**

**Transportation and Infrastructures**

**Costal Guard**  
**ANAS**  
**National Highway**  
**National Railway**

**Cultural Heritage**

**Education, University and Research**

**National technical and  
scientific bodies,  
agencies and service  
providers**

**Communications**

**Agricultural Policy and Forestry**

**State Forest Corps**

**Regions**

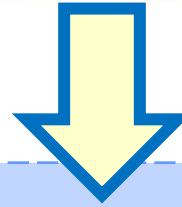
**Provinces**

**Municipalities**

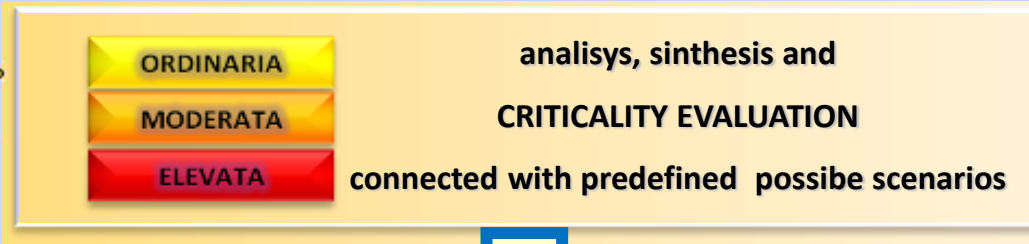
# The support to decision-making chain

DATA AND INFORMATION COLLECTIONS



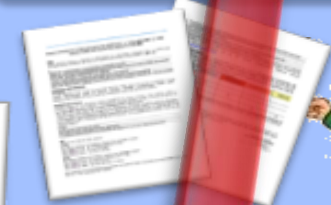
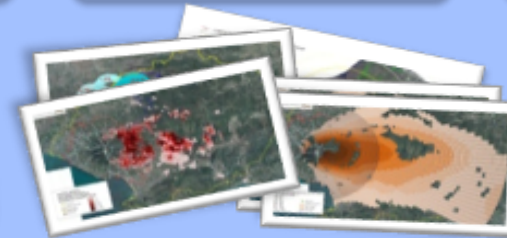
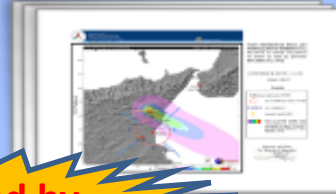
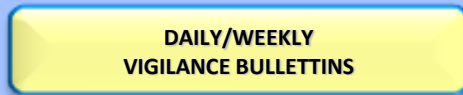


EVALUATION



Official Statement

PRODUCTS

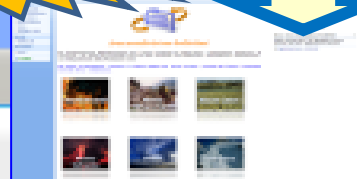


Regulated by procedures

DIFFUSION / DECISION

DIFFUSION THROUGH A RESERVED WEB -SITE

DPC  
 Regional Civil Protection and Administrations  
 Local authorities  
 Aviation authorities (ENAV, ENAC, AM)  
 Scientific Community  
 Guides



DECISION -MAKING

ORDINARY

Aviation authorities  
 Mayors

EXTRAORDINARY

Head of DPC  
 Prefectures

Not real  
 procedures but  
 only general  
 rules

PEOPLE





## AN EXAMPLE FROM EMILIA-ROMAGNA EARTHQUAKE:

### CGR releases an official written statement reporting that:

*Considering the seismic sequence ongoing, there is a significant increase of the probability of occurrence of a new strong earthquake in the province of Ferrara (135.000 inhab.)*

#### Civil Protection questions:

- What does “significant” mean?
- Increase of probability how much?
- What the probability was before the sequence and what is now?

**CGR answer:**  
**Not quantifiable..**

**Note:** CP can't modify it to make it more understandable, or may be accused of hiding the truth!

#### What we did:

- Held a meeting with the Prime minister and regional authority;
- Started a campaign of vulnerability surveys, along with damage surveys already ongoing;
- Informed mass-media and population, together with Region and mayors;
- Released rules of behaviour

#### Lesson learnt:

Probably the communication given by different authorities together in agreement and associated with the development of civil protection activities, is more favourably received by population that feels himself more protected and don't cause panic or lack of trust.

(Must say that, when nothing happens ,everything appears to have worked well!)



## ...AND ONE FROM STROMBOLI:

**h 16:** warning bulletin received from a C.C. stating:

The previous evening (h20) a sudden increase, followed by a deep decrease, of a specific parameter was registered. No following data are available. No other anomalies have been registered.

*“This sequence could be interpreted as magma transfer toward upper levels. In the past, in some cases, this behaviour was followed by a major explosion.”*

### Following phone conversation:

**FC:** How many times, in the past, before a major explosion you registered this behaviour and how many times this behaviour has been followed by an explosion?

**CC:** We don't have sufficient data to build a statistical basis, but sometimes we noticed this behaviour before major explosions.

**FC:** How long after the anomaly registration, the major explosion took place in the past?

**CC:** Generally we can say within 48 hours, but in some cases it happened after some more days, while in other cases nothing happened.

**FC:** So, could we say that a week is an adequate time for considering the alarm reset?

**CC:** Probably yes, but we can't write it.

**FC:** So, we wish that, when you consider it suitable, you'll release an alarm-reset bulletin...

**CC:** No. For what we can see, the anomaly has already returned, so we don't expect noticing anything new, therefore we can't send a new bulletin, unless a new anomaly occurs.

## HOW WOULD YOU MANAGE SUCH AN INFORMATION?



### Considerations:

- 160 persons, at the moment, were climbing the volcano;
- Only 2 measurements were available and no other anomalies had been registered;
- If you release an alarm every time a single parameter change, forcing people to come down from the volcano, you jeopardize the economy of the islands and may incur into unwarranted alarm complaint and possible economic loss recovering request;
- If you don't take into account the warning and something happens (always possible on Stromboli), you have avoided an official warning!



### What we did:

- Released an advice of “moderate criticality”;
- Informed via radio the guides to pay special attention;  
**...but this means just shift the responsibility onto the guides!**



## The winning team



- Share data with others (Sc+CP);
- Be interested also in other disciplines, to have a better general understanding;
- Provide not only data, but interpretation, overall synthesis and scenarios;
- Give timely information, even if rough;
- Try to fix thresholds for parameters;
- Always provide quantitative probabilities of occurrence (compared to familiar events);
- Know Civil Protection language and system, understand and accept roles;
- Improve communication skills (related to their role).

- Understand science language and limits;
- Provide logistic and financial support;
- Protect scientists from unnecessary pressure (media, politic,...);
- Respect the roles;
- Share knowledge, responsibilities and decisions with local authorities, taking into account the communities' needs;
- Give people all the possible means to understand and decide themselves;
- Develop education and information campaign in "peace-time";
- Entrust experts not only in science, but also in social behaviour and in communication.



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