

GEOETHICS: THE RESPONSIBILITY OF GEOSCIENTISTS IN MAKING SOCIETY MORE AWARE OF NATURAL HAZARDS

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WHAT IS GEOETHICS

Geoethics was born with the goal of promoting the valorization and protection of the geosphere. The international debate in the field of Geoethics focuses on some of the most important environmental emergencies, like pollution and problems of waste disposal, greenhouse effect and climate destabilization. Geoethics is concerned to encourage a critical analysis on the use of natural resources, to promote the correct information on natural hazards and the development of environmental friendly technologies. It is a discipline targeted primarily to provide references and guidelines of behavior in relation to concrete problems of human life and to seek appropriate solutions. Among its intents, there is also to promote the social role of Geosciences, to involve the community in the idea of a common and shared "geological" heritage, considered as a cultural, educational and scientific value.



GEOETHICS: PAST, PRESENT AND FUTURE EVENTS

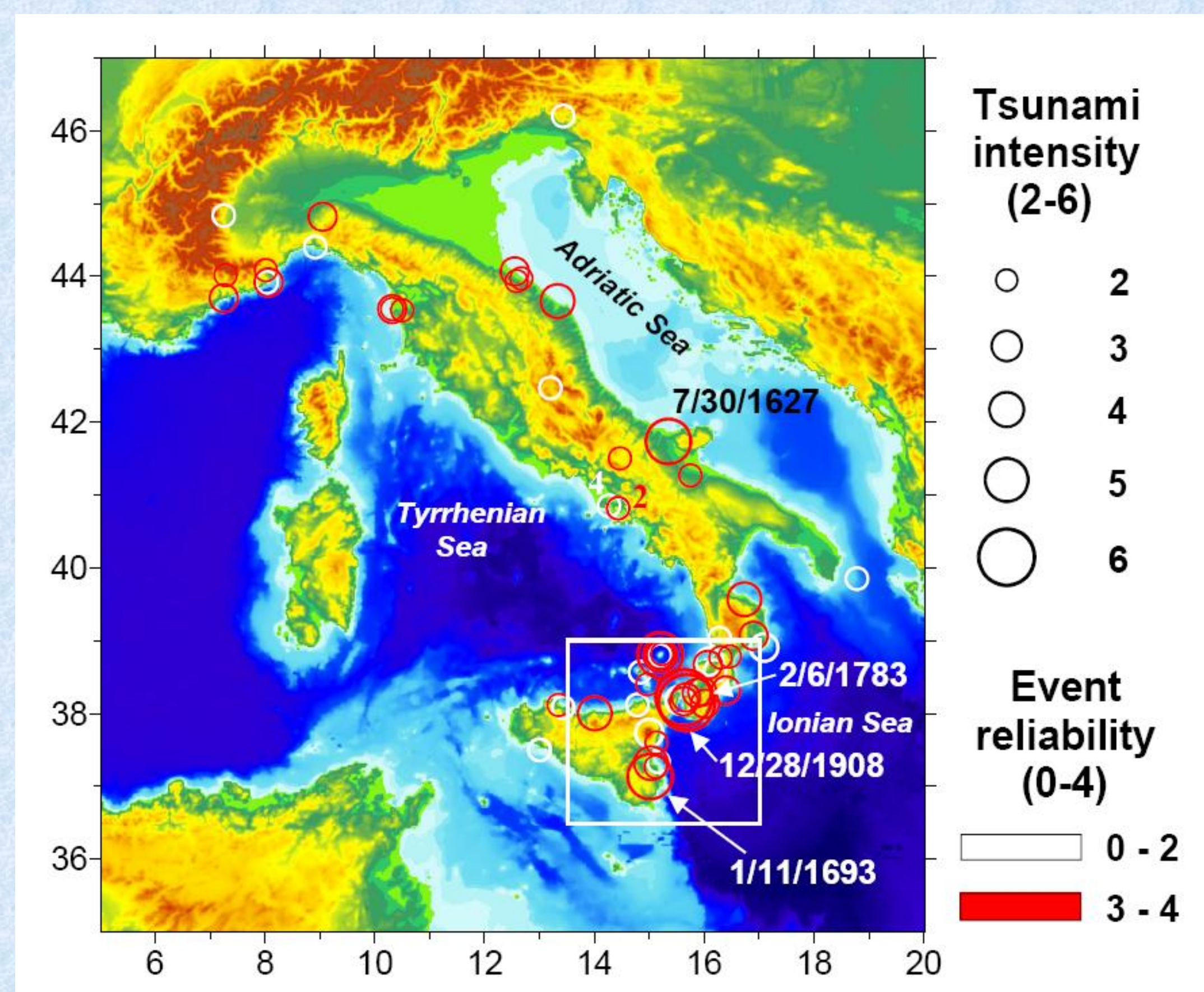
During the last years, a large number of sessions on Geoethics has been held within the most important Geosciences meetings, demonstrating a growing interest in these topics by the scientific community. The international debate has highlighted the great responsibilities of the Geoscientists, whatever may be the field where they work (public or institutional field, private sphere, world of research, teaching or scientific information) and the important social, cultural and economic repercussions of their choices on the society. This is especially true when problems related to natural hazards are considered.



GEOETHICS AND NATURAL HAZARDS

The damage due to geological hazards, with frequent loss of human lives, is not entirely avoidable, but can be greatly reduced through the correct land use that respects the natural processes, through prevention and mitigation efforts, through an effective and correct information to the population. Often not responsible behaviors by politicians, as well as the need for heavy investments and the lack of information make difficult the solution of problems and slow the path to a proper management of the environment, the only way to provide a significant mitigation of damages of the geological disasters.

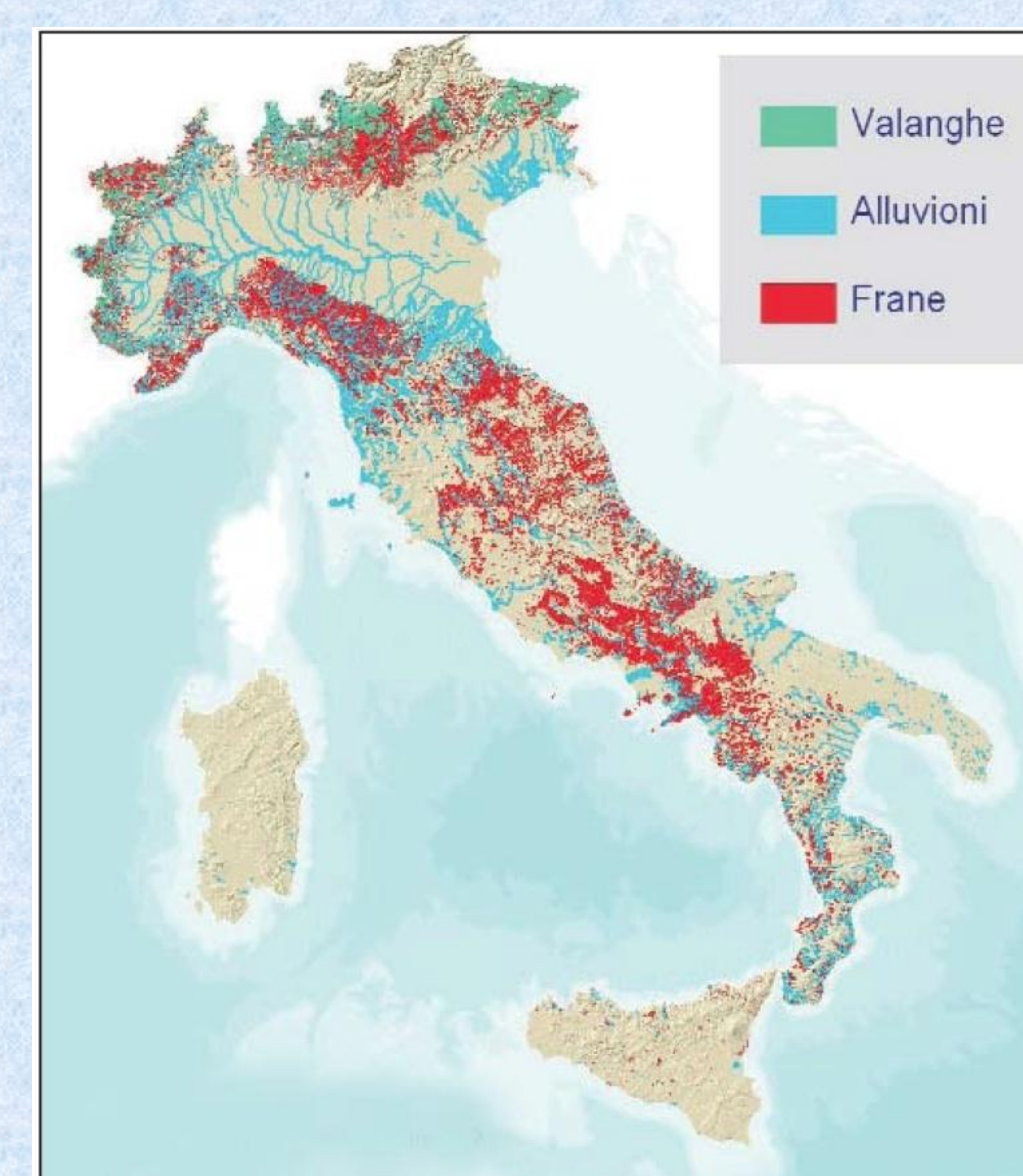
In many countries (including Italy) the importance of the Geoscientists' role is not yet sufficiently recognized, despite it is evident the necessity of a greater attention to geological problems by policy makers and public opinion, as well as a more adequate information about natural risks to the society. The commitment to ensure prevention and mitigation of geological hazards must be considered an ethical value and duty for those who possess the appropriate knowledge and skills.



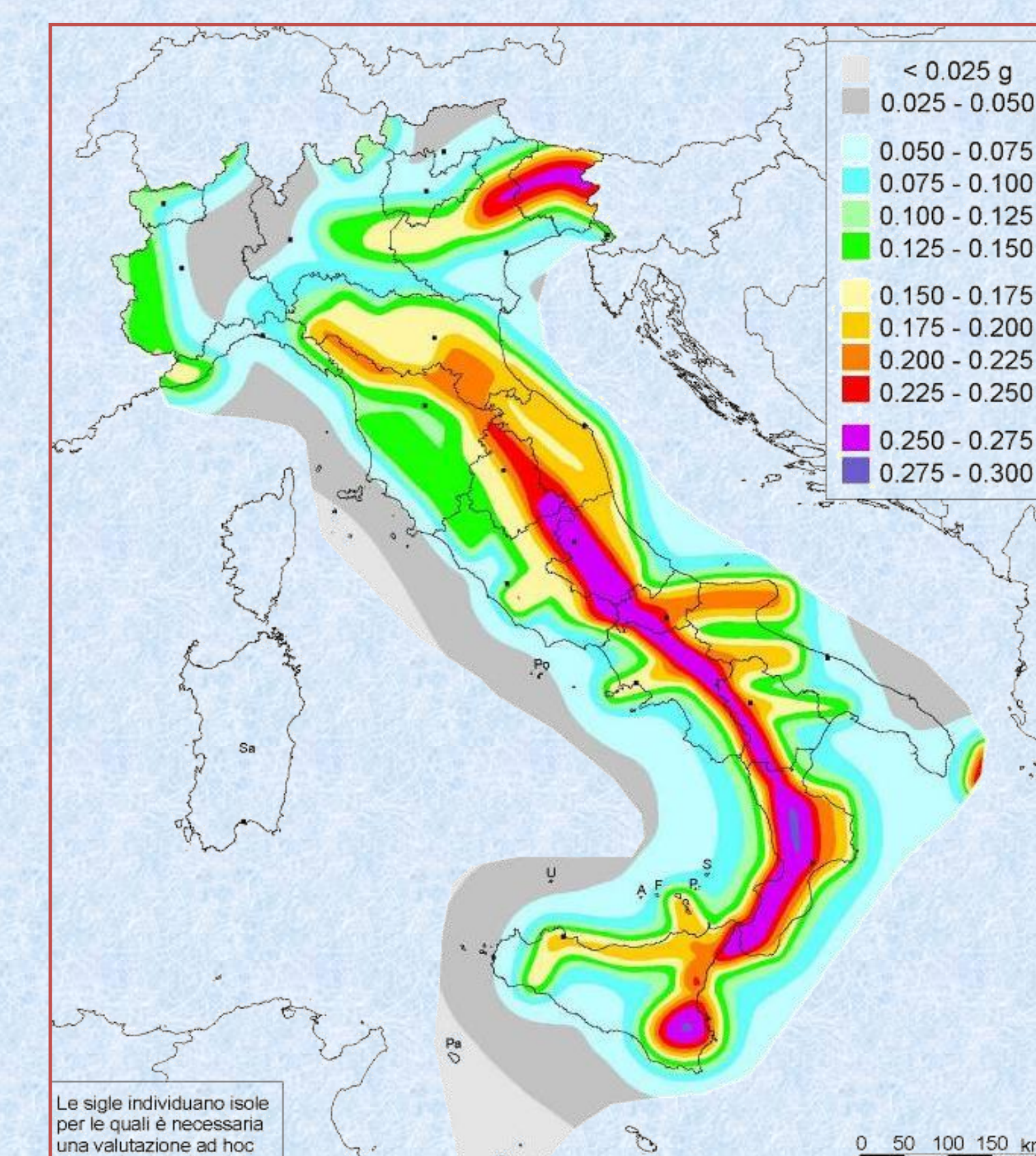
Geographical distribution of tsunamis occurred in Italy from 79 A.C. (Tinti, 2007)



Active volcanoes in Southern Italy (Istituto Nazionale di Geofisica e Vulcanologia - <http://www.ingv.it>)



Map of areas with high hydrogeological criticality - landslides in red, floods in blue, avalanches in green (Ministry for the Environment, Land and Sea - Italy - 2008)



Seismic Hazard Map of the Italian peninsula (INGV, 2004). <http://www.zonesismiche.mi.ingv.it>

SCIENTIFIC INFORMATION ABOUT NATURAL HAZARDS AND CATASTROPHES

In industrialized countries the scientific information is a central element in the cultural forming of the social community, but very often the media, to which it is delegated, are not adequately prepared on the issues to be addressed. Especially in occasion of catastrophes, the media should have the noble aim of giving people the information necessary for the management of emergency, of reassuring people on the timeliness of the relief and on the prospects of reconstruction, but often they follow only the sensationalism of the news. In many cases the news transferred to the population about the natural hazards are incorrect, many information exposed by the press as scientific certainties, are often without foundation.

This way of using scientific information produces in the population disorientation, mistrust, ignorance, dislike for the science, loss of opportunities to improve the quality of life and to defend the life from catastrophic events. Geoscientists are very interested in research, in teaching, in advice, but devote too little time to the divulgation of their knowledge. The scientific information has to become central in their activity, completing the sense of their role. If the Geoscientist will assume the responsibility of the scientific information, he/she will become a mainstay of the education system, he/she will properly inform the community about natural hazards, research problems and adoptable solutions, he/she will make the population more aware and erudite. Then the same citizens will demand from the politicians the due attention to those issues that directly affect them and the most suitable solutions. A society poorly informed is easily manipulated, cannot be independent in its judgments because doesn't know the contours of the problems, doesn't know how things really are. A more aware society will require a more aware media system.



GEOSCIENTISTS AND POLITICIANS

The world is changing very fast and the Earth Sciences are showing us this trend. Geoscientists are powerless if they are not supported by a political system and legal-administrative staff that allows them to operate. Their authoritativeness consists in reporting the facts. As environmental specialists, they have the duty to expose themselves. They have to express loudly and clearly our concerns for the environment and propose solutions for recovery. They must demonstrate their professionalism and propose ameliorative measures for a correct land management, taking the appropriate decisions without being conditioned by politics. Unfortunately politicians prefer to take urgent action when damages are occurred rather than preventing them or avoid them altogether.

RESPONSIBILITIES OF THE GEOSCIENTIST

Geoscientists have many responsibilities towards themselves and the community to which they belong: they are called to perform many tasks, that are difficult to face without an adequate and continuous financial support. But, despite all this difficulties, they should add the commitment of the scientific information to their many daily activities (teaching, management, research, scientific and financial reports, publications, bureaucracy, etc.). They should try the most effective ways of communicating to the people the information about geological hazards. Geosciences have a great educational power and are a group of disciplines most suitable for an ecological approach to the problems. It is evident their great educational value in the process of discovery of the world by children and in the training on university students. Geoscientists have a key role to play as experts in analyzing and managing land vulnerabilities: they must take responsibility to share and communicate their knowledge more effectively with all private and public stakeholders involved, paying attention to provide balanced information about risks and to address inevitable uncertainties in natural hazard mapping, assessment, warning and forecasting. Geoscientists also need to be more aware of their ethical responsibility, of their social duty to serve the society, to care about and protect territory. They can facilitate the desirable shift from a culture of emergency to a culture of prevention.

GEOSCIENTISTS ROLE IN GEOETHICS

The search for balance between short-term economic issues and wider social impacts from natural hazards is an increasingly urgent need. Geoethics must be central to society's responses to natural hazard threats. Geoscientists have appropriate knowledge to play a leading role within the Geoethics. Many topics are inside their sphere of competence and should be developed by them:

- Geoethics for protection of environment and ecosystems;
- Geoethics in risk management and mitigation of geohazards;
- Geoethics as applied to mining industry and to ground water use;
- creating awareness about Geoethics in the society;
- socio-economic aspects in observing Geoethics;
- legislations and governance for policy implementation;
- Geoethics education in geosciences curriculum at high school and universities;
- observing Geoethics in geo-research, academic institutions and professional associations;
- Geoethics in promotion of geo-parks, geo-medicine, geo-tourism and geo-art;

This is the practical side of Geoethics, Geoscientists and human progress.



A clamorous falsehood on one of the most important Italian newspapers: pictures of the 1999 Turkish earthquake, used to describe the damages due to the 2009 earthquake in L'Aquila (Abruzzo).



Hollywood Stars visit Earthquake damages in L'Aquila.

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