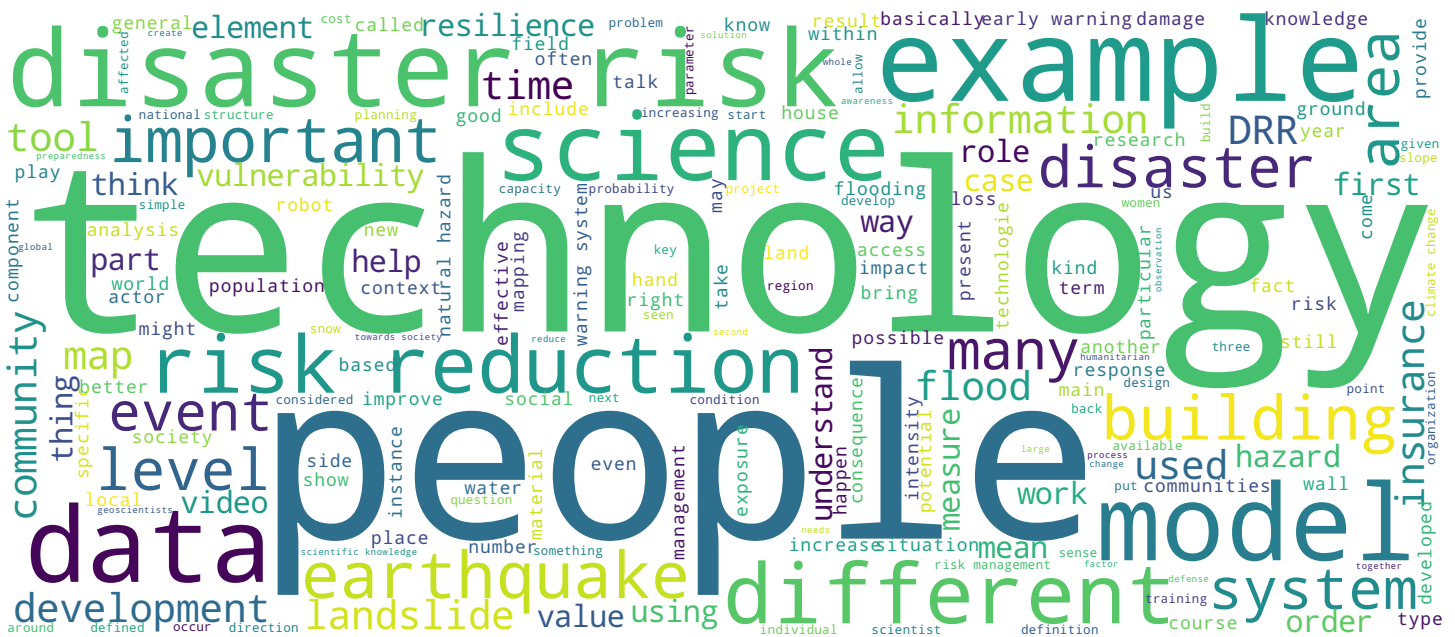




Geoethics

A Resilient Future: Science and Technology for Disaster Risk Reduction

Interview with Silvia Peppoloni, Researcher at Italian Institute of Geophysics and Volcanology and Secretary General of the International Association for Promoting Geoethics



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Hi. We interviewed Silvia Peppoloni, Research geologist at the Italian Institute of Geophysics and Volcanology, and furthermore, she is Secretary-General of the International Association for Promoting Geoethics. In addition to defining geoethics, she will talk about the role and responsibility of the risk specialist towards society. Furthermore, she will talk about the role citizens can play in science and technology for disaster risk reduction. Geoethics consists of research and reflection on the values which underpin appropriate behaviors and practices wherever human activities interact with the geosphere. It deals with the ethical, social and cultural implications of using earth sciences for societal benefit. On the one hand, it represents an opportunity for geoscientists to reconsider their activities in an ethical perspective. On the other hand, it is a tool for increasing the awareness of our society as a whole on problems regarding georesearch, geoenvironment, and geohazards. Among the fundamental issues of geoethics, there are problems related to the management and mitigation of georisks, and to the information provided to the public.

Notes

Summary



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In the field of the disaster risk reduction, geoethics fosters the proper and correct dissemination of the results of scientific studies, develops and promotes geoeducational tools for the population, aims to improve the relationships between the scientific community and the other components of the society during all the different phases that characterize the disaster cycle. The values of reference are many: ability, individual and joint responsibility, collaborative attitude, reliability, transparency, solidarity, non-discrimination, impartiality, and so on. These are values able to allow scientists to develop a good science. And making good science is the prerequisite in the strategy for an effective disaster risk reduction. But it is not sufficient. In order to increase the resilience of the community scientists have to work so that other values such as prevention, safety, sustainability, education, take root into society. The culture of emergency must be replaced with a culture of prevention. And this should happen not only in view of cost-savings, not only in economic terms. Prevention must be intended mainly as a social and cultural attitude that gives its fruits in a short-, medium- and long-term perspective.

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Not investing in prevention means to transfer irresponsibly the social and economic costs of disaster on the shoulders of future generations. In this perspective, geoethics for disaster risk reduction may be the foundation on which to establish a new and profitable relationship between science and society by recalling geoscientists to their duties of increasing their scientific preparedness, and following ethical principles in their activities. The responsibility of the risk experts towards society are many. The defense against natural risks involves many actors, not only geoscientists but also the decision-makers, local authorities, government agencies, mass media, citizens. All these actors form a defense system that have to act with a common goal and in the same direction. Each of them with a specific role and responsibility in relation to an impending risk. A proper georisk management requires that each role is well-defined and governed by shared operational protocols, especially during the emergency phase, so that overlapping and misunderstanding don't jeopardize population safety and economic activities.

- Notes

Summary





Taking into consideration geoethical aspects related to georisks, can be helpful to make geoscientists more aware of their responsibilities towards society and to clarify the role they can play in the interaction with other actors, aiming at more effective actions for georisks mitigation. Unfortunately, often we as geoscientists do not pay sufficient attention to the science communication and we don't succeed in making the population able to understand the scientific and technical language. It is also important that models we use for studying risk scenarios, are well-grounded on observational data, including clear indications of their uncertainties. And before releasing, these models should be discussed within the scientific community. This can bring also to strengthen the social credibility of scientists. Roles and fields of action of all these actors should be based on clear protocols and procedures to be followed in risk management in order to improve the relationships among them. Experts can support society in the defense against georisks by developing educational strategies, by disseminating scientific knowledge, by transferring appropriate and timely information on risk scenarios and consequences of unpreparedness.

- Notes

Summary





Disasters always scare the population. The fear cannot be eliminated, but the proper dissemination of scientific knowledge and the adequate preparedness can help to better face the fear of the disaster, and to better react for minimizing damages. Geoscientists possess the proper knowledge for bringing science closer to society. It's their task to make society aware that science cannot be the solution to all our problems, but it can give us helpful tools to defend our lives although it is accompanied by a certain level of uncertainty. In fact, the value of science exists also in the awareness of its limits. For sure, experts should make the results of their studies public, open-access and user-friendly, with explanatory information targeted to the population, with a clear distinction between observations and working hypotheses. Experts should transfer advanced knowledge and technology to different disaster risk reduction actors, such as industry and authorities. They should participate in educational campaigns for the population, paying attention to simplify concepts without making them banal.

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They should increase the synergy with government agency and local administrations through the development of operational protocols, and the definition of an encoded stream of information from the scientific community to the authorities. Experts should assure their ongoing professional training. They should collaborate in the training of the skills of technicians and professionals. They should conduct their studies, verifying source of information, adherence of results to observations, and related uncertainties and errors. They should accept a fair debate with hypotheses and theories that disagree, without being overconfident in their own results. And, finally, they have to develop a multidisciplinary approach to the problems. Citizens have the legitimate right to demand actions in defense of their safety and to be properly informed about risks. In fact, in general, they are poorly prepared in science, especially regarding the concept of probability, for example. But in general they are considered as passive actors in a risk scenario. While they can play a key role, certainly they have to be put in the condition to contribute constructively to their own safety.

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The activities relative to the new concept of citizen science are developed with this goal: to improve the resilience of a community. Starting from the idea that the knowledge is not a one-way road, there is a new attention to the contribution that citizens can also give to scientists, providing them with precious insights that would otherwise have been overlooked. Often scientific projects involve volunteers for observations, measurements, computation, and so on. Just as an example, regarding the seismic events, some tools have been carried out for involving citizens and using them as a primary source of information. There are online macro-seismic questionnaires for citizens available in different languages, through which it is possible to collect information on an occurred earthquake. And this is helpful for the scientists to better develop actions for the risk management, and even to obtain valuable testimonies on the earthquakes in themselves, especially for those events that are, by nature, transitory. When they occur, usually no scientist is on the spot, ready to record them, but local people are there and so can have the ability to help in this direction.

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These examples clearly illustrate the ethical aspects mentioned before, such as the collaborative attitude, and the joint responsibility. Moreover, they bring the discussion on elements such as transparency, ownership, reliability, and management of data. If society is not sufficiently involved in the scientific knowledge, we could have two main negative consequences. The first is the cultural and social marginalization of scientists with the loss of a sense of the role they can play in protecting society from natural hazards. And the second one is the tendency of people to lose confidence in science. Without a society scientifically prepared, it is not possible, in my opinion, to develop risk reduction tools really effective and widespread, and as a consequence, to obtain an improvement of the resilience of a human community. These improvements can be surely fostered by including geoethics in the strategies for disaster risk reduction.

Notes

Summary



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