

S02.08 - Coordination of Civil Protection and Scientific community best practices to support the management of volcanic crises and the long-term risk mitigation plans

Review of multiple hazards in volcanic islands to enable the management of long-term risks: the cases of Ischia and Vulcano, Italy

Jacopo Selva¹, Chiara Cardaci², Antonio Ricciardi², Valerio Acocella³, Marina Bisson⁴, Costanza Bonadonna⁵, Stefano Branca⁶, Antonio Costa¹, Stefano Caliro⁷, Gianfilippo De Astis⁸, Prospero De Martino⁷, Marta Della Seta⁹, Sandro de Vita⁷, Cinzia Federico¹⁰, Salvatore Gambino⁶, Guido Giordano³, Salvatore Martino⁹, Antonio Paonita¹⁰, Marco Pistolesi¹¹, Tullio Ricci⁸, Roberto Sulpizio¹², Alessandro Tibaldi¹³

¹*Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Bologna, Italy*

²*Dipartimento della Protezione Civile, Rome, Italy*

³*Università di Roma Tre, Dipartimento Scienze, Rome, Italy*

⁴*Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Pisa, Italy*

⁵*Université de Geneve, Geneve, Switzerland*

⁶*Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Etneo, Italy*

⁷*Istituto Nazionale di Geofisica e Vulcanologia, Osservatorio Vesuviano, Italy*

⁸*Istituto Nazionale di Geofisica e Vulcanologia, Sezione Roma 1, Italy*

⁹*Università La Sapienza, Dipartimento di Scienze della Terra, Rome, Italy*

¹⁰*Istituto Nazionale di Geofisica e Vulcanologia, Sezione di Palermo, Italy*

¹¹*Università di Pisa, Italy*

¹²*Università di Bari, Italy*

¹³*Università di Milano Bicocca, Italy*

The management of long-term volcanic risks represents a challenge that requires a close cooperation between science and decision-making. This is particularly crucial in volcanic islands, which are characterized by multiple hazards concentrated in a relatively small environment, often associated with a large seasonality of exposure due to tourism. The scientific challenges are mainly the quantification and the characterization of the interactions among the multiple hazardous phenomena that may occur during the different “states of the volcano” (quiescence, unrest, eruption) and the definition of robust methods to forecast the transition between these states. For these topics, the emerging scientific knowledge is often rather limited and uncertain and, also in case it was well constrained, difficult to communicate to decision makers due to its intrinsic complexity. On the other side, the challenge for decision making is to assimilate this uncertain knowledge and translate it into actions.

Here, we discuss the experience gained in two working groups (WGs) in charge of reviewing the state of knowledge about volcanic hazards for the Italian volcanic islands of Ischia and Vulcano to build the scientific ground for subsequent decision making. These WGs, formed within the agreement between INGV and the Italian Civil Protection Department, involved about 20 researchers from INGV and Universities, as well as representatives of the Italian Civil Protection, to facilitate the reciprocal understanding and to address the work toward useful results for decision making. The WGs reviewed all the potential volcanic hazards for Ischia and Vulcano based on literature, results of previous projects, as well as ad hoc audits of other experts on specific topics, and organized a workshop to present the results and receive feedbacks from the extended scientific community.