Science should warn people of looming disaster

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Contemporary Science is responsible for not coping with challenging changes of Exposures and their Vulnerability inflicted by growing population, its concentration, etc., which result in a steady increase of Losses from Natural Hazards. Scientists owe to Society for lack of special knowledge, education, and communication. In fact, it appears that a few seismic hazard assessment programs and/or methodologies were tested appropriately against real observations before being endorsed for estimation of earthquake related risks. The fatal evidence and aftermath of the past decades prove that many of the existing internationally accepted methodologies are grossly misleading and are evidently unacceptable for any kind of responsible risk evaluation and knowledgeable disaster prevention.

In contrast, the confirmed reliability of pattern recognition aimed at earthquake prone areas and times of increased probability, along with realistic earthquake scaling and scenario modeling, allow us to conclude that Contemporary Science can do a better job in disclosing Natural Hazards, assessing Risks, and delivering this state-of-the-art knowledge of looming disaster in advance catastrophic events. In a lieu of seismic observations long enough for a reliable probabilistic assessment or a comprehensive physical theory of earthquake recurrence, pattern recognition applied to available geophysical and/or geological data sets remains a broad avenue to follow in seismic hazard forecast/prediction. Moreover, better understanding seismic process in terms of non-linear dynamics of a hierarchical system of blocks-and-faults and deterministic chaos, progress to new approaches in assessing time-dependent seismic hazard based on multiscale analysis of seismic activity and reproducible intermediate-term earthquake prediction technique. The algorithms, which make use of multidisciplinary data available and account for fractal nature of earthquake distributions in space and time, have confirmed their reliability by durable statistical testing in the on-going regular real-time application lasted for more than 20 years.

Geoscientists must initiate shifting the minds of community from pessimistic disbelieve in forecast/prediction products to optimistic challenging views on Hazard Predictability in space and time, so that not to repeat missed opportunities for disaster preparedness like it happen in advance the 2009 L'Aquila, M6.3 earthquake in Italy and the 2011, M9.0 mega-thrust off the Pacific coast of Tōhoku region in Japan.