



Disasters, Scientists and Society: The Quest for Wisdom (Sergey Soloviev Medal Lecture)

Emile A. Okal

Northwestern University, Geol. Sci., United States

The horror which accompanied the significant natural disasters of the past decade (major earthquakes, tsunamis, hurricanes...), many of which exposing inadequate preparation and/or response, has revived our quest for improved mitigation, or in simple words, enhanced wisdom, to confront natural hazards, both in scientific and societal terms.

The Sumatra and Tohoku megathrust earthquakes have led to the abandonment of the once-popular concept of a "maximum" earthquake predictable on the basis of simple tectonic parameters and the latter has dealt a serious blow to seismic scaling laws which had been the cornerstone of probabilistic hazard estimations. Similarly, large hurricanes such as Katrina and Sandy have featured a significant diversity poorly captured by the single concept of "category". On the other hand, substantial theoretical progress has been made with the development of real-time tsunami warning algorithms based on the seismic W phase.

An examination of mitigation aspects and operational procedures during the recent disasters exposes very significant shortcomings in the relationship between Scientists and decision-makers. We will review fields as diverse as the proper evaluation of historical databases, the correct real-time assessment of major earthquakes, the adequate timing of an all-clear, and the role, rights and duties of hazard scientists in their interaction with Society.

As the ultimate goal of mitigation, warning and evacuation from many disasters remains the saving of human lives, many recent stories having emphasized the value of education, which casts a substantial ray of hope and enlightenment in the never-ending pursuit of wisdom in the face of future disasters, a noble endeavor to which Sergei Leonidovich Solov'ev had dedicated his life.