

## **CATASTROPHIC RISK FROM NATURAL PERILS: SCIENTIFIC, ENGINEERING, AND FINANCIAL ISSUES (Session GC44A)**

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- Recent catastrophic events (the 2004 South Asia tsunami, Hurricane Katrina in 2005, the 2005 Pakistan Earthquake, and Hurricane Stan in 2005) have confirmed the importance of catastrophic risk in our daily lives. In addition to very substantial loss of life these events caused massive economic damage which is still being evaluated in the affected countries.
- Scientific investigations of natural catastrophes have been undertaken for several decades but it is only recently that the interface between science and engineering and financial issues have been explored providing a gateway to enhanced risk assessment and ultimately risk management. This session was designed to explore this interface and brings together a multidisciplinary group of participants from around the world to examine catastrophic risk from natural perils (which include hurricanes, tsunamis, floods, earthquakes, landslides, and volcanic eruptions).
- Three papers at the session are of particular interest
- The first one is by CD Klose (Columbia University) who examines the notion of “geomechanical pollution” in which the in-situ stress field is altered by large-scale geoengineering activities to the extent that significant damaging earthquakes are triggered. In the Newcastle (Australia) case, some fatalities and \$ 3.5 B of damage was caused by an earthquake triggered by coal mining activities.
- The second one is by MR Jordan and CA Clayson (Florida State University) who examine the use and utility of the well known Saffir-Simpson scale for categorizing damage and surge risks for hurricanes. They apply newly developed indexes for evaluating hurricane intensity, damage potential and surge potential to a twenty year data base of Atlantic USA – landfalling hurricanes.
- The third one is by CT Fuller et al. (Oak Ridge National Laboratories) who attempt to quantify the impacts of anticipated precipitation extremes on human activity in South America. Using a combination of high-resolution population data sets they develop indexes of potential disaster impact at national and sub-national scales. These methodologies may be used to develop threat profiles for extreme events.
- Thus three themes are seen to emerge from the session 1) the human triggering of catastrophic processes that may cause massive financial losses as well as fatalities; 2) the need for damage sensitive magnitude scales for prediction and emergency planning, and 3) the application of global scale geospatial data to evaluate impacts of extreme events on human population.
- It is our observation that a multi-hazard approach to the assessment of catastrophic risk will enhance local and global risk management strategies.