Geophysical Research Abstracts,
Vol. 11, EGU2009-3247, 2009
EGU General Assembly 2009

Measuring the effectiveness of earthquake forecasting in insurance strategies

A. Mignan and R. Muir-Wood
Risk Management Solutions

Given the difficulty of judging whether the skill of a particular methodology of earthquake forecasts is offset by the inevitable false alarms and missed predictions, it is important to find a means to weigh the successes and failures according to a common currency. Rather than judge subjectively the relative costs and benefits of predictions, we develop a simple method to determine if the use of earthquake forecasts can increase the profitability of active financial risk management strategies employed in standard insurance procedures. Three types of risk management transactions are employed: (1) insurance underwriting, (2) reinsurance purchasing and (3) investment in CAT bonds. For each case premiums are collected based on modelled technical risk costs and losses are modelled for the portfolio in force at the time of the earthquake. A set of predetermined actions follow from the announcement of any change in earthquake hazard, so that, for each earthquake forecaster, the financial performance of an active risk management strategy can be compared with the equivalent passive strategy in which no notice is taken of earthquake forecasts. Overall performance can be tracked through time to determine which strategy gives the best long term financial performance. This will be determined by whether the skill in forecasting the location and timing of a significant earthquake (where loss is avoided) is outweighed by false predictions (when no premium is collected). This methodology is to be tested in California, where catastrophe modeling is reasonably mature and where a number of researchers issue earthquake forecasts.