Geophysical Research Abstracts
Vol. 14, EGU2012-12264-1, 2012
EGU General Assembly 2012

Using an extended historical record to assess the temporal behavior of high magnitude earthquakes

E. Bellone (1) and R. Muir-Wood (2)
(1) Risk Management Solutions (enrica.bellone@rms.com), (2) Risk Management Solutions (robert.muir-wood@rms.com)

Oscillations in the number of worldwide high magnitude earthquakes since 1900 have trigger the question of whether the underlying activity rate can be considered constant. Between 1950 and 1965 there were seven earthquakes of magnitude 8.6 or higher in the space of 15 years followed by a period of 39 years in which there were no earthquakes at or above this size. Including the Mw9.2 2004 Indian Ocean earthquake there have now been four earthquakes at or above this threshold (in seven years) including the 2010 Mw8.8 Maule earthquake in Chile and the Mw9 Tohoku earthquake in Japan. Previous studies, using the earthquake catalogue from 1900 onwards, came to different conclusions on whether these data support a change in the underlying worldwide rate of large magnitude earthquakes. To assist in addressing this issue, we have set out to explore an extended catalogue of extreme magnitude earthquakes spanning at least 300 years. The presentation will report the results of statistical analyses to determine the strength of evidence for temporal clustering of extreme global earthquakes.
If we are currently in a period of elevated activity for the largest magnitude earthquakes, what are the implications for assessing subduction zone earthquake risk – as along the Cascadia coastline of Oregon, Washington State and Vancouver Island, or along the coasts of northern Chile and Peru?