

Random occurrence or predictable disaster? New models in earthquake probability assessment

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The large earthquakes in Turkey in August 1999 again brought home the sudden, devastating force of this most feared of natural catastrophes, and the acute lack of any reliable methods to assess the short-term probability of an earthquake. Recently, however, a major breakthrough has been achieved in earthquake modelling with the integration of time dependence and stress transfer from past events. Taking the North Anatolian fault in Turkey as an example, Swiss Re's flyer "Random occurrence or predictable disaster?" aims to make the latest advances in seismological research known to a wider, non-specialised audience and to examine its implications for the insurance industry.

The results of a recent research project conducted by the United States Geological Survey (USGS) in co-operation with Swiss Re clearly indicates that the probability for a major earthquake hitting Istanbul in the near future is far greater than previously anticipated. These findings are supported by the delayed return cycles of important earthquake faults in the vicinity of this densely populated area and by last years disastrous event in Izmit, which transferred additional stress to these faults. The findings prompted the research team to raise the probability value for strong ground shaking in Istanbul substantially against the long-term average statistics.

On a global scale, the many metropolitan areas which are exposed to earthquake risk stand to benefit considerably from these developments in earthquake forecasting. In fact, all parties to the insurance process are likely to profit substantially from the new seismological findings and methods. Swiss Re is convinced that the insurance industry must integrate them as they facilitate both a more accurate assessment of insured earthquake risks and, ultimately, a fair global spread of risks, without which earthquake insurance would not be possible.

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