SCG65-04   Room:A04   Time:May 26 09:55-10:10

Problems of long-term earthquake forecast in Japan: Do we learn from the Kobe earthquake properly?

SAGIYA, Takeshi[1]*

[1]Nagoya University

When the 1995 Kobe earthquake occurred, existence of seismic potential was not recognized by the local people at all and almost no countermeasures had been taken against strong shaking. After this experience, the Japanese government started to produce a seismic hazard map based on long-term earthquake forecasts as well as strong ground motion prediction. According to the latest release of the Japanese national seismic hazard map, the southern coast of the mainland and the Shikoku island are characterized by the highest probability ($>$26% in next 30 years) for seismic intensity 6-.

However, this hazard map is based on various assumptions that may heavily bias the evaluation. 30-year probability of earthquakes along the Nankai Trough is estimated as 70% based on the time-predictable model. The Nankai Trough is the only place the time-predictable model was applied. The probability becomes as low as 20-30% if we do not apply this model. As a result, seismic potential along the Nankai Trough may be over-emphasized. Therefore it is not appropriate to use the current seismic hazard map for comparing seismic potentials of different areas. This point is critical if we use seismic hazard map for allocating limited budget for earthquake hazard mitigation, or determining premium for earthquake insurance for each locality. Moreover, by putting too much emphasis on the Nankai Trough, people tend to disregard seismic hazard in other areas. Origin of difficulties in mitigating earthquake disaster is its low probability. Artificially raising earthquake probability may conceal such difficulty and can be misleading. This situation is similar to one before 1995, when the government conducted earthquake prediction program focused on the Tokai earthquake. Considering that preparation for big disaster with very low frequency is the main challenge of disaster mitigation, current long-term forecast contains serious problems. It is more important to let people understand that seismic hazard is pervasive throughout Japan, and current science is insufficient to provide reliable forecasts, which are important lessons from the Kobe earthquake.

Keywords: long-term earthquake forecast, seismic hazard map, Nancy Trough earthquakes, time-predictable model, Kobe earthquake