

## Damage and seismic intensity distributions of the 1946 Nankai earthquake by the reanalysis of questionnaire survey

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A questionnaire survey to investigate the strength of felt ground motion and earthquake induced damage of the 1946 Nankai earthquake was performed immediately after the earthquake for elementary schools in western Japan by the Earthquake Research Institute and the Department of Science of Tokyo Imperial University, but the results has not been published. We analyzed the questionnaire and summary sheets of the survey, and estimated the distributions of seismic intensity, various kinds of damage, and human behaviors. Total number of responses is 1,034 and we obtained 1,014 seismic intensities on modified Mercalli (MM) scale.

The questionnaire consists of 28 questions and descriptions for seismic intensities on the MM intensity scale. The maximum seismic intensity estimated from the damage of Japanese-style wooden houses reaches X-XI near the source-rupture area such as in Shikoku Island and Wakayama and Okayama Prefectures. The damage rate of wooden houses was more serious in the populated cities in the plains and basins than that in the mountainous regions. The expected seismic intensities from other damage (bridges, stone walls, underground pipes, etc.) also exceed X. The X or higher seismic intensities on MM-scale corresponds to VII on the Japan Meteorological Agency's intensity scale (JMA-scale), which was introduced only after the 1948 Fukui earthquake (M7.1). Therefore, the previously-estimated seismic intensity distribution of the 1946 earthquake on the JMA-scale may be underestimated. The questionnaire survey also shows that sand boils by liquefactions were generated in Mie Prefecture even though it is located relatively far from the 1946 source region.

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