Dense Questionnaire Survey in Sakaiminato City due to the Tottoriken Seibu Earthquake(3) -Distribution of Intensity and Damages-

Maki Koyama[1], Yutaka Ohta[2], Ryohei Nishida[3]

[1] TRIES, [2] Tono Res Inst Earthq Sci, [3] Civil Engi, Tottori Univ

http://www.tries.jp/

1. INTRODUCTION

This paper reports a study on spatial distribution of seismic intensity and damage to dwellings, based on dense questionnaire survey in Sakaiminato city for the Oct. 6, 2000 Tottoriken-Seibu earthquake (Mj=7.3).

Sakaiminato city locates nearly 30km far from epicenter, however in this area severe intensities as 6(+) at Higashi-honmachi and as 6(-) at Agarimichi-cho on the JMA (Japan Meteorological Agency) Seismic Intensity Scale were recorded by the seismic intensity meter. And, these are as high as intensities in the epicnetral area. We distributed questionnaire sheets to all the households in Sakaiminato city and received 2796 answers (about 20%). The questionnaire sheets consist of 2 parts. The first part asks family members, type of structure, damage of dwelling, human casualties and so on. In the second part the ready-made questionnaire to determine seismic intensity non-instrumentally was attached (OHTA et al. 1998).

2. SOME OF INVESTIGATION RESULTS

The obtained questionnaire intensities in the area distributed in a range from 3 to 7, contouring at 5(+). Seismic intensities at Higashi-honmachi and Agarimichi-cho were 6(-) and 5(+), respectively. They are lower by about 0.5 than those determined instrumentally. According to SAKAI et al. (2000), who attempted the seismic intensity determination through structural damage inspection, damage features in the area seem lighter than that expected at the seismic intensity, as of 6(+), observed instrumentally. This is in good concordance with our study. Another significant evidence we found is that the high intensity zone was seen only in a belt area in a width of 500m near to the Sakai-Suido strait.

The weakest dwellings in Japan are made of wood, and in Sakaiminato city the percentage of wooden houses was 88%, considerably higher than the average for the whole Japan. Nevertheless, damage to dwellings in Sakaiminato city was relatively less serious. Our investigation on the relation of seismic intensity to step-wise damage pattern features of wooden houses (OKADA and TAKAI 1999) suggests that the dwellings in Sakaiminato sity were stronger. Human casualties were not serious as well. One another reason is that the earthquake occurred during daytime.

3. CONCLUSION

The following results were obtained:

1) The observed intensities cover a range from 3 to 7 on the JMA scale in spite of small area of 4km x 7km approximately.

2) Obtained seismic intensities in our questionnaire survey were slightly but significantly lower than those by JMA's instrumental ones.

3) Questionnaire seismic intensity and damage to dwellings was in good concordance in Sakaiminato city.

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