

Investigation on a hypothesis of the two events for the 1662 Kanbun earthquake from seismic intensity data

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A hypothesis that the 1662 Kanbun earthquake was composed of the two events with one or two hours lag have been proposed based on the analysis of descriptions on the historical records about the regional variation of the quake times (Nishiyama et al., 2005). It was also found from the survey of the active faults that Hiruga fault, which was a reverse, eastward uplift fault, and Northern Hanaore fault, which was right lateral strike slip fault, were corresponding to the source of this event. In the present study, the inversion method developed by Kanda et al. (2003,2004) was used to evaluate short-period seismic wave radiation sources in some cases of different assumed earthquake fault planes from the seismic intensity data for the 1662 Kanbun earthquake.

The case of Hiruga and N. Hanaore faults minimized the estimated error of the seismic intensity, which was consistent of the results from the survey of the active faults. Next we calculated seismic intensities using the inversion models for the Hiruga fault and N. Hanaore fault, respectively. Figure shows the distribution of the differences of seismic intensities between N. Hanaore and Hiruga faults. In Wakasa area, where the seismic intensities from Hiruga fault was almost similar to those from N. Hanaore fault, most historical records described that the quake time was Tatsu-no-koku (from a.m.7 to a.m.9) or Mi-no-koku from a.m.9 to a.m.11). On the other hand, in the focal region of N. Hanaore fault in Ohmi area, where the sever damages were suffered and seismic intensities from N. Hanaore fault is much larger than those from Hiruga fault, every description indicated the quake time of Uma-no-koku (from a.m.11 to p.m.1). In the other regions, the descriptions of the quake times of Mi-no-koku and Uma-no-koku were mixed, while every descriptions indicated the quake time of Uma-no-koku in far field from earthquake sources such as Edo (present Tokyo).

These phenomena were well explained by the fact that the first event occurred on Hiruga fault at the time from a.m.7 to a.m.11 and the second event occurred on N. Hanaore fault in the time from a.m.11 to p.m.1 and that the magnitude of the second event is larger than the first event, which was consistent with the fault lengths of the two faults.

