

Source Fault Estimate of the 1586 Tensho Earthquake Based on Liquefaction

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The Chubu region and the Kinki region in central Japan were widely and seriously damaged by the 1586 Tensho earthquake. The detail of this event is not well understood because highly trusted descriptions in historical documents for Tensho era are few. Previous researches have provided wide variety of arguments about location of source fault and magnitude of this event, which yield several differing interpretations. In this study, we focus on liquefaction of ground which has been not intensively investigated ever. The 6 areas under consideration involve some sites of liquefaction observed at ruins or recorded in highly trusted historical documents. We estimate source fault of this event by calculating possibility of liquefaction to seismic motion in case of occurrence with assumption of source faults. Assumption of source faults are Yoro-Kuwana-Yokkaichi faults ($M_j8.0$), southern part of Atera fault group ($M_j7.8$) and Shokawa fault group ($M_j7.9$). Predicted seismic intensity is calculated using Estimation Tools for Earthquake Ground Motion by attenuation curve of J-SHIS. The possibility of liquefaction is evaluated by PL-value which is calculated using predicted seismic intensity and borehole data (including N-value and soil data). Borehole data from 352 boring sites in Geo-Station of NIED, PWRI and Shiga Prefecture are used. As a result, PL-value is large in all these areas in case of occurrence a single earthquake of $M_j7.9$ in the Shokawa fault group. It means that the event likely cause liquefaction and can explain liquefaction in all these areas. We suggest that most possible source fault of the Tensho earthquake is the Shokawa fault group.

Keywords: 1586 Tensho earthquake, Liquefaction, N-value, Soil data, PL-value, Source fault