

SSS013-05

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Quiescence Prior to 1861 Bunkyu Miyagi Earthquake in Felt earthquakes recorded in a Historical Diary at Soma

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Usami collected a lot of historical materials related to earthquakes in Edo era. Among them, Yoshida-ya diary recorded felt earthquakes daily from the summer of 1856 to the end of 1864 in Soma, Fukushima prefecture, Japan. In the middle of this term, there occurred the 1861 Bunkyu Miyagi earthquake, which has become controversial again whether it is a off-shore event or a shallow earthquake near the mouth of the old Kitakami river. We applied the point-process analysis to this data. Conventionally, we ignore the non-uniform time system of old Japan. For more precise analysis, we should take into account the difference of time length of day and night in Edo Era. For the record of daily numbers of event with no time information, we dispersed each event evenly.

In 1856 and 1857, there were major earthquakes off Sanriku area, and felt earthquakes in Soma, which is located in the southern Tohoku district, were more than those after 1858. From 1858 to the beginning of 1861, the diary recorded about twenty events per year. However, the recorded earthquakes decreased significantly for a half year prior to the Bunkyu Miyagi earthquake, which occurred on Oct. 21, 1861. After this event, the diary showed the aftershocks plus the ordinary events like those in 1858 and 1859. If the occurrence time data is available, we can extract much information even from the historical materials.

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Keywords: point process analysis, 1861 Bunkyu Miyagi earthquake, quiescence, historical earthquake, felt earthquake, historical diary