

Temporal variation of the number of felt earthquakes recorded in the Omihachiman Ichida Family Diary: before and after the 1854 Iga-Ueno and 1854 Tokai-Nankai earthquakes (1842–1868)

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The Ichida Family Diary contains the records from 1804 to 1906, and the earthquake records from 1804 to 1872 are transcribed and have been used by several authors to study earthquakes and seismic activity during the period of nineteenth century. The Diary for 1804 to 1872 had been written by four heads (9th to 12th) of the Ichida Family, a merchant based in Omihachiman, Shiga Prefecture and having their branch office in Takasaki, Gunma Prefecture.

Hattori et al. (2020) have noticed the presence of the Takasaki office and also frequent business trips of the heads between Omihachiman and Takasaki and long stay of the heads in Takasaki. They have examined the earthquake records for 1804 to 1841 in the Ichida Family Diary and shown that the observation points of earthquakes in the Diary are divided into Omihachiman, Takasaki, and points on the trips between the two office towns, depending on the location of the writer of the Diary (the 9th and the 10th head).

Figure 1 shows the number of felt earthquakes and the locations where the writer felt the earthquakes for each year of 1804 to 1841 in the Ichida Family Diary. All the earthquakes recorded in the Ichida Family Diary were considered to be felt in Omihachiman and used in earthquake studies. However, a significant number of earthquakes felt in Takasaki are found in the Diary.

In the present paper, we study the earthquake records for 1842 to 1868 in the Ichida Family Diary. This period is fairly different in the situation of the Diary from the preceding period of 1804 to 1841. The 10th head retired and transferred the business of the Ichida Family including the Takasaki office to the 11th head, but the 10th head continued writing the diary after the retirement. Two kinds of diaries written by the 10th and 11th heads exist for 1847 to 1862 and we obtain homogeneous records of felt earthquakes in Omihachiman. Thus the earthquake records of Omihachiman during 1842 to 1868 may be considered much better in quality than those for 1804 to 1841.

Figure 2 shows the yearly number of the earthquakes felt in Omihachiman for 1842 to 1868. The number of the earthquakes may have a peak in 1848 and decrease to once or twice a year right before the occurrence of the 1854 Iga-Ueno earthquake or the 1854 Tokai-Nankai earthquakes. Spatial characteristics of this seismic activity will also be discussed.

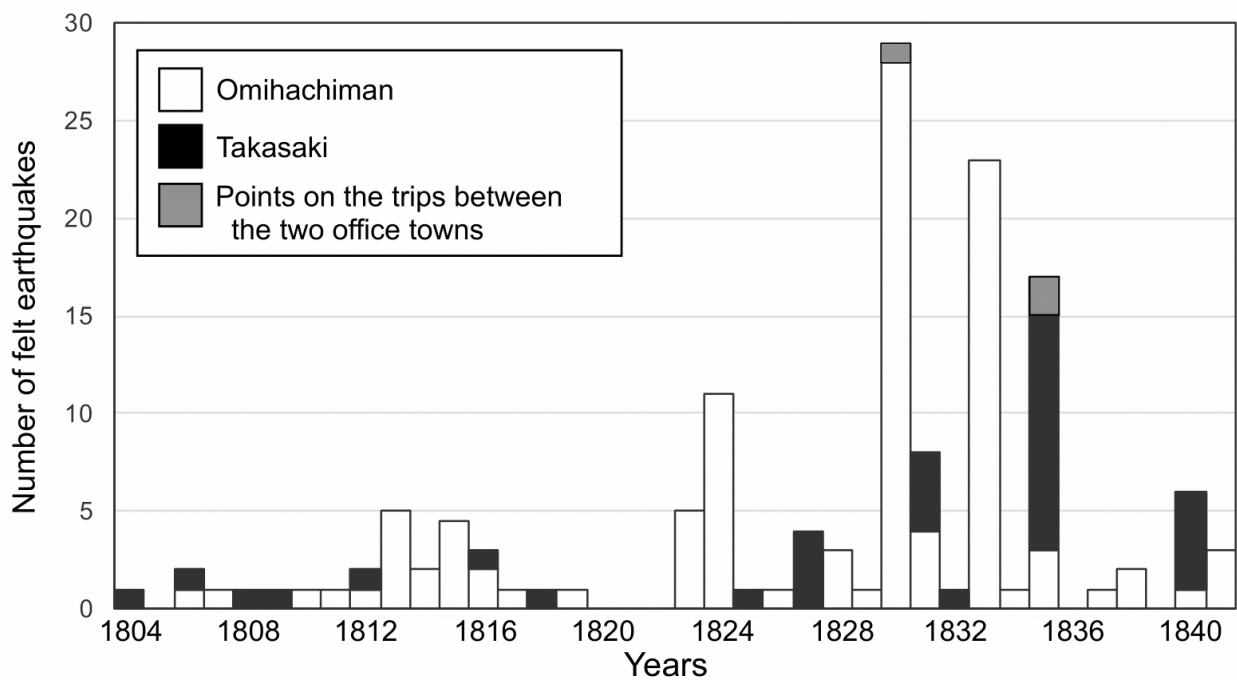


Fig.1 Number of felt earthquakes in the Ichida Family Diary (1804~1841). When the Diary records frequent earthquakes without the number of times, we consider it as three times.

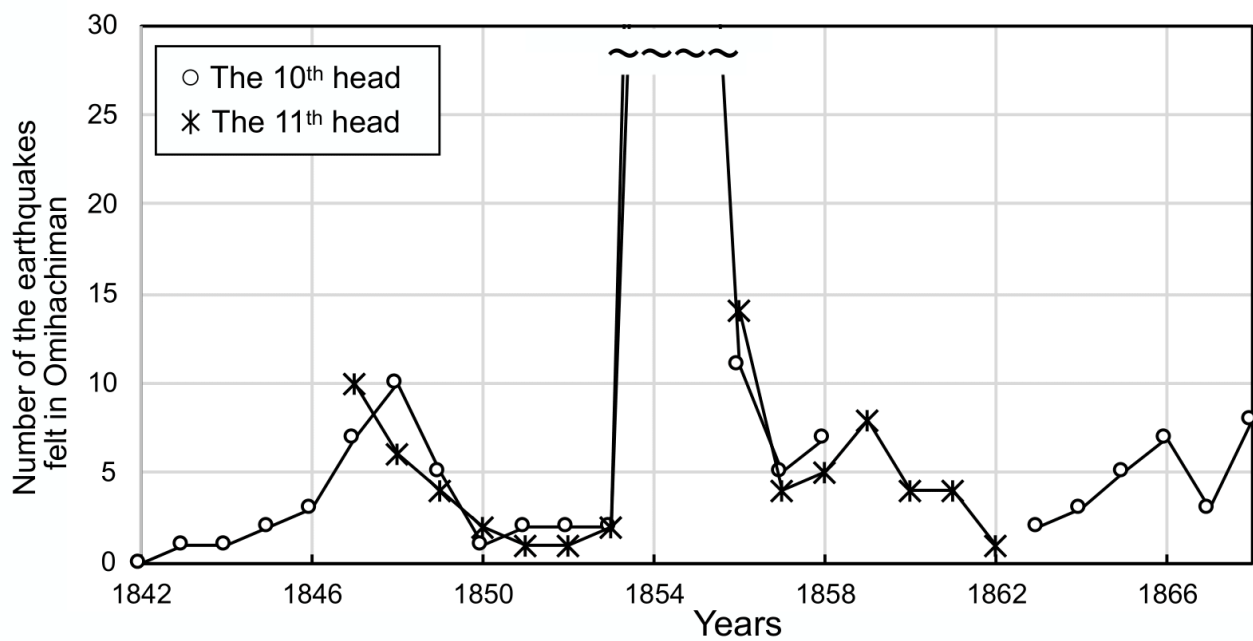


Fig. 2 Number of the earthquakes felt in Omihachiman in the Ichida Family Diary (1842~1868). When the Diary records frequent earthquakes without the number of times, we consider it as three times.