Thank you very much for providing valuable important comments. We are thankful for the time and efforts you expended. Our responses to the RC1 comments are as follows:

1. *It would be much better that the authors add a figure showing the comparison between the two chronologies.*

Reply: We add the graph as Fig. S1 below according to the suggestion. The current Fig. S1 will be re-titled as Fig. S2. In light of these changes, Lines 118-122 are reviesed as follows.

Lines 118-122:

Nakatsuka et al. (2020) conducted a study on the long-term variation of the climatological component of tree-ring $\delta^{18}O$ in Central Japan. Their resultant chronology was compared with the climatological component of annual-averaged tree-ring $\delta^{18}O$ of the sample tree of this study calculated by folloing the method of Nakatsuka et al. (2020) (Fig. S1). These two chronologies showed similar long-term variations for almost the entire measurement period of this study. A significant positive correlation was also observed, r = 0.52 (n = 395, $p < 0.01$).

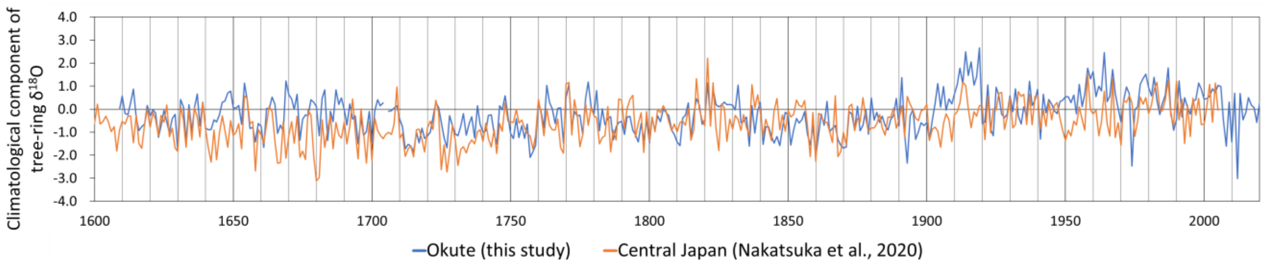

Fig. S1 Time-series graph of the climatological component of annual-averaged tree-ring $\delta^{18}O$ of the sample tree of this study (blue line) and the central Japan master chronology (Nakatsuka et al., 2020, orange line)

2. *<u>Lines 149–150: the authors wrote: the 4th to 6th segments in drought and 1st and 5th segments in long rain were significant (p<0.05), and so was the 4th segment in long rain (p<0.10). It is hard to understand.</u>*

<u>Reply:</u> We tested the significance of the difference between $\delta^{18}O$ average for drought/long-rain years and for the all years 1701–1900 for each segment. The results showed that significant differences were expressed in the 4th, 5th, and 6th segments for drought years. Significant differences were expressed in segments 1st 4th, and 5th for long-rain years.

Following the comment, Lines 148-150 are revised as follows.

<u>Lines 148-150:</u>

The $\delta^{18}O$ values were generally higher in drought years and lower in long-rain and flood years than the average of all years for 1701–1900 (Fig. S2), especially, the $\delta^{18}O$ average in drought years were significantly different from $\delta^{18}O$ average during 1701–1900 for 4th to 6th segments ($p < 0.05$). $\delta^{18}O$ average in long-rain years were significantly different from $\delta^{18}O$ average during 1701–1900 for 1st and 5th segments ($p < 0.05$), and the 4th segment ($p < 0.10$).

3. *<u>Lines 204-205: It is not very clear how the mean precipitation for drought and long-rain years extracted by the intra-ring $\delta^{18}O$ data in 1701–1900 are reconstructed.</u>*

<u>Reply:</u> We used the reconstructed precipitation during the Baiu duration by Mizukoshi (1993). According to this reconstructed precipitation, we calculated the mean precipitation for the drought and long-rain years extracted by intra-ring $\delta^{18}O$ in this study for 1701–1900.

Based on the above, Lines 204-205 are revised as follows.

<u>Lines 204-205:</u>

Similarly, the mean of precipitation reconstructed by Mizukoshi(1993) for drought and long-rain years extracted by the intra-ring $\delta^{18}O$ data (drought years extracted in 3.4.1 (38 years), long-rain years extracted in 3.4.2 (33 years)) in 1701–1900.

4. *<u>From Figure 4a, it is clear that during 1700-1900 AD the annual ring is divided into 6 segments for each year. So, I would suggest the authors clarify the variation of number of segments clearer in the text and figure captions.</u>*

<u>Reply:</u> According to the suggestion, we add the explanation of the variation of number of segments to lines 88-90.

<u>Lines 88-90:</u>

We divided…several years. Each ring was devided into 12 segments for 50 years of 1609–1683 period, and into 2 segments for 52 years of 1925–2013 period. We measured annually for 7 years 1969–1975 because the ring widths were too narrow (Fig. 4a).…

5. *Lines 220-224: it should be moved to Section 3.4?*

Reply: Following the comments, we move lines 210-223 to the end of Section 3.4 as '3.4.4 Application to the 17th and 20th centuries'. The text is also revised as follows.

3.4.4 Application to the 17th and 20th centuries

Based on the results in 3.4.1 and 3.4.2, we attempt to extract drought and long-rain years using intra-ring $\delta^{18}O$ data for 1609–1700 and 1901–1949 periods, when there are few disaster records in the Town/City history documents.

For the period 1609–1700, 12-divided intra-ring $\delta^{18}O$ data were converted to 6-divided data by averaging two consecutive segments. 38 drought years and 1 long-rain year were extracted during 1609–1700 when the values of thresholds described in Sections 3.4.1 and 3.4.2 were applied. This imbalance in the number of droughts and long rains is explained by the long-term decreasing trend in tree-ring $\delta^{18}O$. That is, the mean $\delta^{18}O$ value for 1609–1700 is higher than the mean for 1701–1900 by approximately 0.8‰ (Fig. 1b). It is unlikely that this decreasing trend is an "age effect" (or "juvenile effect") in tree-ring $\delta^{18}O$ since the age of the sample tree of this study was already older than 250 years in 1609. Although this decreasing trend in $\delta^{18}O$ seems to reflect actual long-term variation in the hydroclimatic conditions, excessive imbalance in the number of droughts and long rains was not seen in the documentary records (Table 1). This suggests that the criteria for recording drought/long rain in historical documents were based on relative deviation from the normal state of the hydroclimatic conditions at that time. Therefore, we set the values of thresholds for extracting drought and long-rain years in 1609–1700 based on the $\delta^{18}O$ deviation from the mean for 1609–1700 for each segment. 19 drought years and 9 long-rain years were extracted by using these threshold values.

Similarly, we set the values of thresholds for extracting drought and long-rain years in 1901–1949 based on the $\delta^{18}O$ deviation from the mean for 1901–1949 for each segment. 1950–2020 was omitted since 6-divided intra-ring $\delta^{18}O$ data were available for only 15 years in this period (Fig. 1a). Consequently, 8 drought years and 6 long-rain years were extracted using these threshold values.

3.5 Drought and Long-rain chronologies

We applied the criteria set as described in the Section 3.4 to all the years for which 6-divided intra-ring $\delta^{18}O$ data are available in 1609–1949 and obtained the drought and long-rain chronologies. In Fig. 7, drought and long-rain years extracted from tree-ring $\delta^{18}O$ are indicated (short bars) together with those recorded in ≥ 4 titles of Town/City history (long bars).

6. *Figure 6: How is the deviation calculated?*

Reply: Deviation is the difference between the average $\delta^{18}O$ for drought/long-rain years and the average $\delta^{18}O$ for all years 1701-1900. We revise lines 159-160 and the caption of Fig. 6 as follows.

Lines 159-160:

Fig. 6 shows the intra-ring $\delta^{18}O$ variations for documentary-based drought and long-rain years in 1701–1900 together with $\delta^{18}O$ deviation of the average for drought/long-rain years from the average for all years 1701–1900.

Fig. 6 caption:

Fig. 6 Mean value of $\delta^{18}O$ in each segment for the documentary-based drought years (orange dots, 9 years in total), long-rain years (blue dots, 9 years), and the all years 1701–1900 (black dots, 200 years) together with their deviation from the 1701–1900 average (yellow bars and blue bars for drought and long-rain years, respectively). Yellow bars (blue bars) are deviation of the average $\delta^{18}O$ for drought (long-rain) years from the average $\delta^{18}O$ for all years 1701–1900.

7. *The authors wrote: The mean value and standard deviation of $\delta^{18}O$ for each segment for each of the years of long rain, drought, flood, and famine are shown in Fig. S1. However, I did not find any content with regard to standard deviation.*

Reply: It is our editing mistake. We delete "and standard deviation". Also, we renumber Fig. S1 to Fig. S2 (according to addition of Fig. S1 in comment #1).

Fig. S2 caption:

Fig. S2 Intra-ring $\delta^{18}O$ variation by disaster types. The mean of $\delta^{18}O$ …