Data Repository Material: Centennial-scale East Asian summer monsoon intensity based on $\delta^{18}$O values in ostracode shells and its relationship to land-ocean air temperature gradients over the last 1700 years

Additional figures: Figures DR1, DR2, DR3, DR4, DR5 and DR6
Additional tables: Tables DR1, DR2, DR3 and DR4
Discussions on a long-term trend in $\delta^{18}$O_{ostracode} values
References

**Figure DR1.** Plot of surface water $\delta^{18}$O values and salinity from Lake Nakaumi, Lake Shinji, a river connecting to Lake Shinji and the Sea of Japan. The red circles represent data from Lake Nakaumi.
Figure DR2. Plot of summer monthly precipitation (mm) in the city of Matsue and bottom-water salinity in Lake Nakaumi. The precipitation data were obtained from the Japan Meteorological Agency website (http://www.data.jma.go.jp/bdb/stats/etrn/view/monthly_s3.php?prec_no=68&block_no=47741&year=&month=&day=&elm=monthly&view=a13). Salinity was measured monthly in the central portion of Lake Nakaumi between April and August 2006–2011. The salinity measurement accuracy is 0.01.
Figure DR3. *Bicornucythere bisanensis* population dynamics in Lake Nakaumi. A-1 indicates juveniles that reached adulthood after molting. All *B. bisanensis* carapaces with soft parts were collected from dredged bottom-surface sediments sampled monthly from the eastern portion of Nakaumi (35°29′47″ N, 133°12′00″ E) between March 2005 and January 2006. The numbers to the right of the month indicate the collected ostracode individuals. Adult specimens were not observed in March, and the variations in the adult specimen population throughout the year suggest that individuals grow into adulthood between April and August. This interval is consistent with the *B. bisanensis* population dynamics in Aburatsubo Cove, Japan (Abe, 1983).
Figure DR4. Age model updated with seven additional $^{14}$C data and a columnar section of the X core collected from the central portion of Lake Nakaumi. The regional reservoir age around the study area was calculated to be -27 years (close to 0) based on the mean of eight regional marine reservoir ages (between 345 and -128 years) in the Sea of Japan (Yoneda et al., 2000; Kuzmin et al., 2001; Kong and Lee, 2005). Thus, the 400-year average marine reservoir age was subtracted from each $^{14}$C age.
Figure DR5. Plots of $\delta^{18}$O$_{\text{ostracod}}$ values vs. bottom-water salinity (A) and bottom-water temperature (B) in Lake Nakaumi for May 2004 and June 2005.
Figure DR6. Plots of 50-yr moving averages for ostracode shell δ^{18}O values from Lake Nakaumi vs. stalagmite δ^{18}O values from Wanxiang Cave between 1100 and 1700 AD (A), 300 and 1100 AD and since 1700 AD (B).
Table DR1. Ostracode *Bicornucythere bisanensis* occurrences from March 2005 to January 2006 in Lake Nakaumi.

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Table DR2. AMS $^{14}$C data from the X core. The two samples marked with an asterisk at the end of the sample number are from Yamada et al. (2015).

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<th>$^8$C (‰)</th>
<th>Conventional radiocarbon age (y BP)</th>
<th>Calibrated age (2σ)</th>
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* after Yamada et al. (2015)
Table DR3. Ostracode *Bicornucythere bisanensis* shell δ¹³C and δ¹⁸O values from the X core. The term “av” to the right of the sample number indicates that the δ¹³C and δ¹⁸O values were averaged among several measurements. The salinity was calculated based on the equation that describes the relationship between bottom-water salinity and *B. bisanensis* δ¹⁸O values in Figure DR5.

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Table DR4. *Bicornucythere bisanensis* shell $\delta^{13}$C and $\delta^{18}$O values from the bottom-surface sediments in Lake Nakaumi. Both the bottom-water salinity and temperature at the time of sample collection are also listed.

<table>
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<th>No. of individuals</th>
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**Discussions on a long-term trend in $\delta^{18}$O<sub>ostracode</sub> values**

Overall, a long-term decrease in $\delta^{18}$O<sub>ostracode</sub> values (from 0 to -1.5‰, equivalent to a salinity decrease from ca. 30 to 27) was observed for 300–1200 A.D. (Fig. 2). Subsequently, the $\delta^{18}$O<sub>ostracode</sub> values stabilized (with a corresponding salinity of 27–28) between 1200 and 1900 A.D. A period with an environmental shift from an inner bay to brackish lake was previously identified for the ostracode assemblage (Yamada et al., 2015), and the Lake Nakaumi shift coincides with the interval where salinity stabilized at 1200 A.D. This consistency suggests that the long-term $\delta^{18}$O<sub>ostracode</sub>
decreases occurred because of the salinity decreases associated with regional factors, such as sand bar expansion at the Lake Nakaumi entrance.

References

Abe, K., 1983, Population structure of *Keijella bisanensis* (Okubo) Ostracoda, Crustacea) – an inquiry into how far the population structure will be preserved in the fossil record: Journal of the Faculty of Science, the University of Tokyo, Section II, v. 20, p. 443–488.


Yamada, K., Masuma, T., and Seto, K., 2015, Paleoenvironmental changes in Lake Nakaumi during the last 1,700 years on the basis of ostracode assemblages: The Quaternary Research, v. 54, p. 53–68. (In Japanese with English Abstract)