

Tsunami damage in Tokyo Bay from the 1703 Genroku Kanto Earthquake

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The 1703 Genroku Kanto earthquake was a great inter-plate earthquake along the Sagami Trough on December 31st, 1703 and caused severe damage in southern Kanto region (Usami et al., 2013). For the tsunamis in Boso Peninsula, Hatori (1975, 1976) and Koyama (1982, 1983, 1987) investigated historical documents and stone monuments recording casualties, and Tsuji (2003) revealed the number of washed-away houses at each village.

For the tsunami in Tokyo Bay, Hatori (1976, 2006) estimated the tsunami heights as 2 m in his compilation of tsunami heights in the Kanto region. While this height has been often used for tsunami countermeasure in Tokyo Bay, the ground for this estimation is not clear.

On the other hand, the Cabinet Office (2013) concluded that no tsunami damage occurred in the eastern coast of Tokyo Bay, although some tsunami description is recorded in Edo, the capital in those days. It is necessary to conduct an investigation of tsunami damage along the coast of Tokyo Bay through historical documents.

The notice from Edo-Machi-Bugyo (Edo City Commissioners) to residences in Edo recorded that there were four major arrivals of tsunami along the Uchikawa River (Sumida River), and tsunami came up to the upper limit of the river. According to the “ Omurochuki ” , tsunami inundated up to the Eitai-bashi Bridge. There were seven ebbs and flows of tide. Tides were filled twelve times on the next day after the earthquake. “ Saihen-onkoroku ” recorded that the person(s) were thrown off their ship during their evacuation.

There is a document which recorded tsunami damage in Funabashi City, Chiba Prefecture. Petition from fishermen to public office, which was written 41 years after the 1703 Genroku earthquake, recorded that fishing boats and tools for fishermen such as fishing nets were washed away, and that fishermen requested the public assist for the poor catch of fish due to the lack of sea weeds.

“ Shiohama-Yuraigaki ” reported the origin of salt farm and its damage at Ichikawa City due to the subsidence accompanied by the 1703 earthquake. These historical records are materialized in 1756 and afterwards. The embankments were collapsed and the salt farm has been ruined. However, no tsunami damage is described. This document described storm surge damage on September 28, 1680. It says that 55 persons were killed in Kakemama-mura by the storm surge, 100 persons died and millets and household goods were completely washed away in Hanzaemon Ina ’ s territory. It seems that there was wide range and large-scale storm surge damage according to the historical record. Although the 1680 storm surge damage is recorded in detail, there is no record of the 1703 tsunami, indicating that the 1703 tsunami damage, if any, must be smaller than the storm surge of 1680.

We found the historical records which had not been used in previous tsunami studies, and revealed that the 1703 Genroku tsunami caused some damage in inner Tokyo Bay area. We would like to continuously collect historical-records and examine the tsunami damage and heights.

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