

Tsunami, land subsidence, and groundwater level-change in the southwesternmost of Shikoku caused by the Ansei Nankai EQ

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The 1854 Ansei Nankai Earthquake caused widespread damage from Kii peninsula to Kyushu region with Japanese seismic intensities of V to VI. A large amount of descriptions related to this earthquake are found in the archives "New Collection of Historical Documents on Earthquakes in Japan" compiled by ERI (1987). The no. 5 of supplements to vol. 5 has collected documents related to the Ansei Tokai Earthquake (Nov. 4th), Ansei Nankai Earthquake (Nov. 5th), and the largest aftershock in the Bungo channel (Nov. 7th), whose total number of pages amounts to 2,528. This collection books have quoted from many historical documents published by local governments, and reprinted from original historical texts related to the earthquakes. However, when the published books were used, no reprint of original texts was made.

Purpose of this study is to reprint original photocopy of a private record reprinted in some historical documents adopted in the "New Collection of Historical Documents on Earthquakes in Japan, vol. 5, supplementary no. 5". Furthermore, we compare our reprinted text with published ones, and investigate natural phenomena (seismic ground motion, tsunami, and crustal movement) and damage by the Ansei Nankai earthquake in detail. In addition, we apply a standard geophysical method to natural phenomena revealed by organizing information which historical documents have. In practice, we re-read and analyzed for the description about original photocopy, it is obscure, of record related to the Ansei Nankai Earthquake handed down to Warabioka family who is a village headman at Masaki area of Ainan-town in the southernmost of Ehime Prefecture in Southwestern Japan. In addition, we compared it with seven historical documents of Uwajima-Date family who had governed this area at that time in order to evaluate the accuracy and amount of information of private historical documents which the village headman wrote. As a result of comparison, there is no contradiction about descriptions of tsunami damage. However, there is no description about inland natural phenomena and damage such as ground water dried up and rock fall in the historical documents of Uwajima-Date family even though it was written in the record of Warabioka family. According to the survey about not only seismic motions, tsunami, and land uplift and subsidence in coast areas in Shikoku island related to the Hoei, Ansei, and Showa Nankai earthquakes conducted up to now, but also groundwater change, land-slide, and liquefaction in inland areas, the investigation will be expanded from linear along the coast to an area including inland. It suggests the possibility to make the information of seismic faults improved qualitatively.

Keywords: Ansei Nankai Earthquake, Shikoku, Ainan-town in Ehime Prefecture, Crustal deformation, Landscape evolution, Fault model