

The 1677 Empo-Boso-oki, Japan, tsunami earthquake as investigated by historical seismology and tsunami simulation

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We investigated the true nature of the 1677 Empo-Boso-oki earthquake which took place east-off the Kanto district, central Japan, causing big damage of tsunami to a wide area on the Pacific coast of the district. Concerning this earthquake Ishibashi (1986, 2003) revealed that the earthquake ground motion had been rather weak compared with the magnitude of tsunami and concluded that this event had been a tsunami earthquake, whereas Hatori (1975) considered it to have been a M 8-class great earthquake with very strong ground shaking that has taken place near the Izu-Bonin trench axis. Ishibashi (1986, 2003) inferred that a M6 to 6.5 earthquake had first occurred not far from the Pacific coast of the Boso Peninsula and the rupture had extended slowly toward the trench producing large tsunami. The realistic image of this earthquake, however, has been vague so far. Therefore, in the present study we carried out tsunami simulation for various source models including Hatori's (1975), Ishibashi's (1986, 2003), and their modifications. As a result, roughly north-south striking and westerly dipping reverse faulting east-off the Boso Peninsula, not very near to the Izu-Bonin trench, seems most probable as a source model of this event. Historical records on tsunamis at Iwanuma, in the south Tohoku district, and at Hachijo-jima Island, far south, are considered doubtful based on tsunami simulation. We thank Dr. Y. Tanioka for permittin us to use his computer program.