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Constraints on scenarios of great earthquakes along the Nankai trough based on historical records of tsunami heights
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For a verification of many possible scenarios of great earthquakes along the Nankai trough, we examine the effects of the expansions of source areas on resultant tsunami heights at the Pacific coasts and Seto Inland Sea (Hyodo et al., 2014). For a maximum class scenario (M ? 9), predicted tsunami heights exceed real damage records of 1707 Hoei tsunami at the Tosa bay and Pacific coastlines near the Kii channel owing to large slips on the up-dip extension of fault segments off Shikoku Island. Such discrepancy indicates that large slips nearby the trough axis was not remarkable even in the 1707 Hoei earthquake which is considered to be one of the largest historical Nankai Trough earthquakes. While, since the proposed M9-class scenario also includes large slips with several meters at the down-dip side up to about 35km depth, coseismic crustal subsidence reaches to the further landward than usual Nankai Trough earthquakes. Hence, the maximum subsidence at the Seto Inland Sea region becomes one or two meters. Such crustal subsidence makes Inland Sea tsunamis effectively higher, and then, simulated tsunami heights corrected by crustal subsidence is consistent well with some of real damage records in the Seto Inland Sea region. However, the tsunami height cannot be explained at some places where the tsunami height reaches to three meters. We consider such higher tsunami could be explained if we include dispersion effect in the tsunami simulation. The calculation of dispersive tsunami wave for longer time period of more than several hours is challenging. We are trying it and will discuss the results in the presentation.