Key Points for Probabilistic Hazard Assessment of Tsunami due to Large Earthquakes along the Nankai Trough

Translated in July, 2023
Secretariat of the Headquarters for Earthquake Research Promotion

1. Tsunami assessment for subduction-zone earthquakes

- The tsunami assessment is conducted for the first time based on the long-term evaluations of seismic activities compiled by the Earthquake Research Committee.
- The probabilities of coastal tsunami heights of 3m, 5m, and 10m or more due to a great earthquake occurring along the Nankai Trough within the next 30 years, are assessed.

2. Flow of this assessment

- This assessment targets tsunamis associated with M8–M9-class interplate earthquakes that occur repeatedly every 100–200 years, assessed in the long-term evaluation of seismic activity along the Nankai Trough published in May 2013. The evaluation excludes "the largest-possible earthquake".
- 176 combination patterns consisting of various source areas are assumed. Tsunami heights of 348,345 cases setting variety of large slip zones* are calculated according to "Tsunami prediction method for earthquakes with characterized source faults (Tsunami Recipe)" (published in January 2017) .

  * large slip zone: an area with large slip compared to the background in a source area.
- According to the determined likelihood (weighting) of each case, superimposition of the tsunami calculation result of each case gives the tsunami probability of exceedance at each coastal point. Probabilities of exceedance in 30 years for each municipality are shown in tables and maps.
- This assessment is a probabilistic tsunami hazard assessment that considers a variety of earthquakes. Further research and study on how to utilize it in tsunami disaster prevention measures will be necessary.

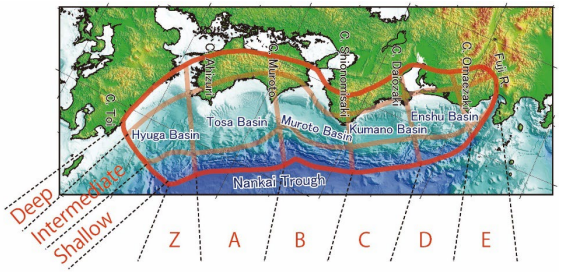

Fig. 1. Map of evaluation target areas and segments in the Nankai Trough

Depth	Source areas					
	Z	A	B	C	D	E
Shallow						
Intermediate		■	■	■	■	
Deep						
Shallow						
Intermediate		■	■	■	■	■
Deep						
Shallow						
Intermediate		■	■	■	■	
Deep						
Shallow						
Intermediate		■	■	■	■	■
Deep						

Fig. 2. Examples of source area combination patterns

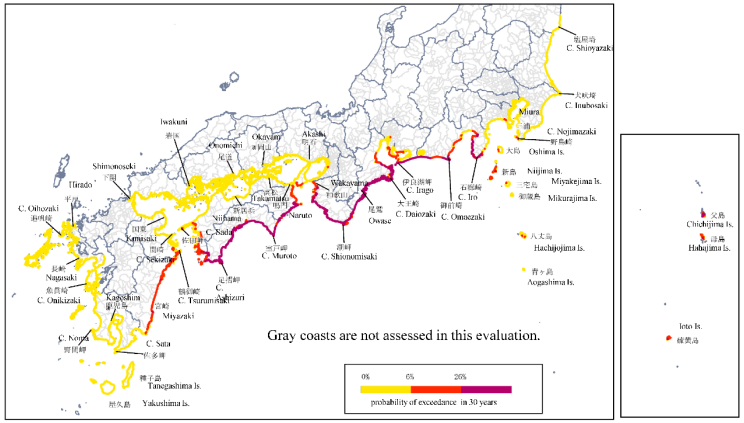

Fig. 3. The probability of tsunami height along the coast being 3 m or higher due to a great earthquake occurring along the Nankai Trough within the next 30 years