

Research in coupled mega-thrust earthquakes around the Nankai trough

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1. Introduction

In the Nankai trough, mega thrust earthquakes are occurring with an interval of 100-200 years. Therefore, many researches are focusing on the Nankai trough to elucidate the recurrence system of mega thrust earthquakes. For example, the structural research using refractions and reflections seismic has succeeded to image the key structures to understand recurrences of mega-thrust earthquakes around the Nankai trough. Moreover, results of mega thrust earthquake recurrence cycle simulation show that the first ruptures are occurring around the Tonankai earthquake rupture zone in each recurrence cycle, and the clear segment boundary between the Tonankai and Nankai earthquake rupture zones off the Kii peninsula by analyses using tsunami data. In the fact, initial ruptures of mega thrust earthquakes 1854 and 1944/1946 were starting from the Tonankai seismogenic zone ahead of the Nankai seismogenic zone with intervals of 32 hours and 2years in each event. Now, we are focusing on the recurrence pattern of the next mega thrust earthquake. The central disaster prevention committee evaluates the economical damage of next earthquake such as the national budget.

Therefore, the research in the recurrence cycle of Nankai trough mega thrust earthquakes is one of the highest priority.

2. Research plan

In previous simulation researches, the result of recurrence cycle simulation indicates the difference patterns and intervals of mega-thrust earthquake recurrences in each cycle.

These results are consisted with recent historical earthquakes in 1854, 1944/46 around the Nankai trough. However, we have to improve the recurrence cycle simulation model with more high reliabilities. Especially, the estimation of recurrence cycle between the Tonankai and Nankai earthquake is very important for disaster preventions. Furthermore, the estimation of huge in coupled mega thrust earthquake around the Nankai trough such as Sumatra earthquake 2004. To improve simulation model, we will propose research plan as follows,

- 1) Develop and contract the real time monitoring system around Kii peninsula.
- 2) Apply scientific results of Nankai seismogenic zone drilling to recurrence cycle simulation
- 3) Construct the detailed crustal medium around the Nankai trough using controlled sources and seismic tomography
- 4) Improve the large scale recurrence cycle simulation model based on theoretical and experimental analyses.
- 5) Evaluate the precise strong motions and tsunamis for the disaster prevention.
- 6) Develop the reliable risk management system for next mega thrust earthquake.

We will present the detailed scientific proposal for next mega thrust earthquake around the Nankai trough.

