Paper:

Newly Proposed Disaster Mitigation and Recovery for the Next Nankai Trough Megathrust Earthquakes

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To integrate research results of this project and apply to practical disaster mitigation measures, we arrange and construct working groups in Nagoya city, Osaka city and Kochi city. In these cities, severe damages of next megathrust earthquakes around the Nankai trough are estimated, therefore, we will discuss with administrative organs, public corporations of life lines and researchers etc. in each working group. In discussions of working group, we introduce advanced researches to understand the present and future expected researches of the Nankai trough in each other. Furthermore, we will extract characteristic issues and estimated damages of strong motions, long period motions and tsunamis based on the future scenarios of next meagthrust earthquakes in each working group. And fruits of working group discussions will contribute to constructions of new disaster mitigation measures in administrative organs, public corporations of life lines etc.

Keywords: disaster mitigation, working group, megathrust earthquake, Nankai trough

1. Introduction

The seismic linkage of the Tokai, Tonankai, and Nankai earthquakes means that if three megathrust earthquakes occur simultaneously, economic damage will be equivalent to Japan's annual national budget (evaluated by the central disaster prevention committee). This seismic linkage is critical from the view of rescue and recovery, and its anticipated recurrence pattern and magnitude will be proposed in this project's observational and simulation research. Based on this research, we will be able to make more reliable estimates of strong motion and tsunamis. We will propose a new framework for disaster mitigation and recovery for anticipated earthquakes. To do so we have started this study group on local disaster mitigation (**Fig. 1**).

Fig. 1. Study group overview.

2. Study Group on Local Disaster Mitigation

This group consists of administrative organizations, public corporations, universities and institutes. etc. The group's objectives are as follows:

1) Understanding problems of disaster mitigation
2) Deepening mutual understanding of disaster mitigations from different viewpoints
3) Exchanging common information about the latest research on the next Nankai trough megathrust earthquakes with tsunamis
4) Implementing outreach and education on the above subjects
5) Propose new strategies and measures for disaster mitigation, restoration, and revival

We are starting study groups in Kochi, Nagoya, and Osaka because of the serious damage estimated for these cities. Kochi is expected to endure tsunamis and flooding due to subsidence. Nagoya and Osaka face damage

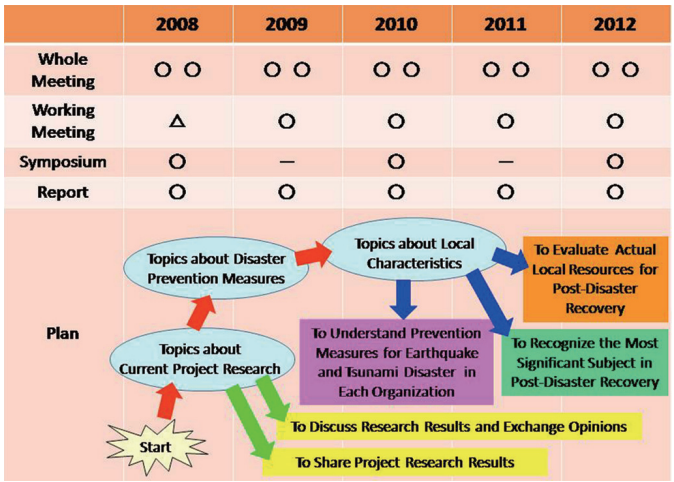

Fig. 2. Road map.

from strong earth movement including long-period seismic waves and tsunamis. In the study group working on local disaster mitigation, we will discuss details and actual problems and make new proposals on disaster mitigation for megathrust earthquakes and tsunamis (**Fig. 2**).

This proposal will be used for Nankai trough disaster measures for the central disaster prevention committee.

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Selected Publications:
- S. Kodaira, N. Takahashi, A. Nakanishi, S. Miura, and Y. Kaneda, "Subducted seamout imaged in the rupture zone of the 1946 Nankaido Earthquake," Science, Vol.289, pp. 104-106, 2000.
- T. Tetsuro, K. Shuichi, R. C. Phil, and K. Yoshiyuki, "Splay Fault Branching Along the Nankai Subduction Zone," Science, Vol.297, pp. 1157-1160, 2002.
- S. Kodaira, T. Iidaka, A. Kato, J. -O. Park, T. Iwasaki, Y. Kaneda, "High pore fluid pressure may cause silent slip in the Nankai Trough," Science, Vol.304, pp. 1295-1298, 2004.

Academic Societies & Scientific Organizations:
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Selected Publications:
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- T. Nakamura, Y. Ishihara, Y. Yamanaka, and Y. Kaneda, "Source process for complex fault system of the 2007 Chuetsu-oki, Niigata, Japan, earthquake," Earth Planets Space, Vol.61, pp. 273-278, 2009.

Academic Societies & Scientific Organizations:
- Seismological Society of Japan (SSJ)
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