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New research for earthquake, tsunami and mitigation -Observation, simulation research and disaster measure in Japan-

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Research groups of Seismic linkage around the Nankai trough seismogenic zone

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Abstract

Japan is known as one of the highest seismicity country in the world. Megathrust earthquakes over M8 and large tsunamis around the Nankai trough southwestern Japan have occurred with the interval of 100-200 years, so these damages are very severe problems in Japan. Therefore, the understanding of the seismic linkage around the Nankai trough seismogenic zone is the very urgent problem which confront us. The past earthquakes occurred in 1944/1946, 1854, 1707, 1605, 1498, and 1361 etc. with strong motions and large tsunamis. In each earthquakes, recurrence patterns and scales are quite difference. For these disaster mitigations against the next megathrust earthquakes and tsunamis, integration of observational researches, simulation researches and disaster measures are quite important and significant in Japan.

As observational researches, we are carrying out structural surveys, seismicity observations to understand crustal activities. In simulation researches, we are studying historical tsunami events, crustal deformations, and developing simulation method/models. Finally, we have to estimate precise seismic hazards and tsunami hazards and make practical proposals of disaster measures. Furthermore, to improve not only early warning system but also understanding of seismic linkage, the real time monitoring system of seismogenic zone using multi kinds of sensors is quite useful to improve simulation models, early warning systems for earthquakes and tsunamis.

Therefore, the megathrust earthquake research projects such as observational researches, simulation researches, disaster mitigation researches and real time monitoring system developments are starting as MEXT projects.

The details of projects are as follows,

- 1) Observational researches: Seismic surveys using MSC/OBS and seismicity observation
- 2) Simulation researches: Studies of historical tsunami events by core sample analyses, crustal deformations by precise analyses, developments of simulation methods and recurrence cycle simulation models with data assimilations.
- 3) Disaster mitigation researches: Simulation of precise hazards and making proposals of disaster measures under discussions with people of local governments, lifeline companies and researchers etc.
- 4) Real time monitoring researches: Real time monitoring systems (DONET/DONET2) are developing and deploying around the Nankai trough seismogenic zones.
- 5) New simulation research project for more precise and complex simulations for earthquakes, tsunamis and disaster measures using the peta flops computer

We will talk about these projects including updates.

Keywords: Nankai trough, Subduction zone earthquake, Seismic linkage, Disaster mitigation