

The second term activity of the Earthquake Prediction Research Committee of the Seismological Society of Japan

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The Earthquake Prediction Research Committee was established based on the concept that the Seismological Society of Japan (SSJ) has to deal with the issues on earthquake prediction as a social aspect as well as scientific one. The mission of the committee is to summarize the state of the art and to make a recommendation on the future direction of the earthquake prediction researches.

In the first term of the committee was chaired by Katsuhiko Ishibashi, professor of Kobe University. The issued on the short-term prediction and its social relationship was discussed in the special session of the Japan Earth and Planetary Science (JEPS) Joint meetings and SSJ fall meetings. The papers presented in the meetings are summarized in journals such as 'Gekkan Chikyu' and the Bulletin of Seismological Society of Japan (Zisin).

Following the activity, the second term of the committee started chaired by Ichiro Kawasaki, Professor of Kyoto University. During the term several seminars are held to study the state of the art and the problem of the present researches on earthquake prediction. The committee decided to encourage the discussion in the annual meetings of SSJ and JEPS though hosting special sessions as follows.

In the 2004 Fall Meeting of SSJ in Fukuoka, the committee hosted the session entitled 'Theories and Observations of earthquake precursors: Looking at the 2003 Tokachi-oki earthquake.' In this session theoretical and experimental reviews are presented to stimulate the discussion on the detectability and reliability of immediate precursors of earthquakes. In the session pessimism on the detectability prevailed because no precursors detected for the 2003 Tokachi-oki earthquake even though it is the first M8-class earthquake that occurred along subducting plate boundary since modern observation system was established.

To overcome the pessimism, the committee hosted the session entitled 'Earthquake Forecast in the Next Generation' in the 2005 Joint Meeting of JEPS. The session aimed to discuss on the importance of comprehensive understandings of earthquake process through predictive simulation that can calculate the island-size crustal deformation and interplate seismic and aseismic slip. They also discussed what kinds of researches should be encouraged in the viewpoint of various geosciences such as geochemistry, geoelectromagnetism and geodesy.

In the 2005 Fall Meeting of SSJ in Sapporo, the committee hosted the session entitled 'What is happening along the southeastern coast of Hokkaido'. The progressive slow slip until the next earthquake along the plate boundary after the 2003 Tokachi-oki earthquake was the first one that can be monitored by GPS and the similar earthquakes. The session tried to discuss the importance of the monitoring during inter-seismic period.

Through these special sessions the committee has come to the following conclusions 1) Earthquake prediction should be achieved by making best use of simulation. For updating the predictive simulation, we have to use rapidly-changing observables that are available recently with new instrumentation such as crustal movement observation. 2) We need to clarify the mechanisms of precursors in order for predictive simulation to making full use of precursor information. 3) The development of new technology for monitoring the change in the crustal state should be encouraged. 4) We have to recognize that only the method that are suitable for public announcement and anti-disaster measures is allowed for practical use.