

Japan Geoscience Union Meeting 2011

(May 22-27 2011 at Makuhari, Chiba, Japan)

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SSS031-P12

Room:Convention Hall

Time:May 23 14:00-16:30

Earthquake forecast testing experiment: Kanto as a testing region

Kazuyoshi Nanjo^{1*}, Hiroshi Tsuruoka¹, Sayoko Yokoi¹, Naoshi Hirata¹

¹ERI, Univ Tokyo

We present a summary of the earthquake forecast testing experiment in Japan and demonstrate the first results obtained by using Kanto, one of the testing regions of the experiment. The experiment has been formally initiated within the Japanese Testing Center of the Collaboratory for the Study of Earthquake Predictability (CSEP) in Nov. 2009. This activity aims to quantitatively forecast time, place, and magnitude of future earthquakes in and around Japan based on seismicity data. To launch this experiment, the Earthquake Research Institute (ERI) has installed and set up the Testing Center for rigorous evaluation of earthquake forecast models and testing in cooperation with SCEC and ETH. The Center completely follows the design proposed by the CSEP. The researchers submitted their earthquake forecast models to the Testing Center before the start of the experiment and the Center evaluates the models' performance by the official suits of CSEP tests (N-, L-, M-, S-, and R-tests) after the end of a forecast period. The Japan Meteorological Agency (JMA) unified catalog was decided to use for observation of the tests. The JMA catalog is routinely modified during a certain time period and we decided, as a rule, to use fixed authorized data for evaluation. We have to wait until the modification is completed. Currently, a time delay for real-time is six-months. 91 earthquake forecast models were registered into 12 categories consisting of 4 testing classes (1-day, 3-months, 1-year, and 3-years) and 3 testing regions that cover Japan, the Japan's mainland and Kanto. For the "Kanto" region, the respective testing classes include 4, 7, 8, and 8 models. The main feature of tests using the Kanto region is to focus on seismicity under the complex tectonic condition: the triple junction of the three plates. In the presentation, we show the results obtained from the "Kanto" region applied to all testing classes. We discuss future direction of research to look for good collaboration with the Special Project of the Earthquake Disaster Mitigation in the Tokyo Metropolitan Area.

Keywords: Earthquake, Global collaboration, Prediction and forecasting, Seismicity and tectonics, Japan, Statistical seismology