CSEP Japan results and future developments

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An earthquake predictability experiment based on the Collaboratory for the Study of Earthquake Predictability (CSEP) had started in Japan in November 2009 and ten years have passed. In Japan, three test regions and four testing classes were set up, and more than 160 models are evaluated at the Japan test center operated by Earthquake Research Institute.

Tohoku-oki earthquake occurred immediately after the start of the experiment, and the results of the model’ s forecast were not good, but after that there was a recovery trend. However, it was also found that the model performance improved by model modification considering the influence of the Tohoku-oki earthquake. We also found that the forecast of the number of earthquakes is relatively difficult in many models.

Evaluation of the forecast result is carried out by N-test, M-Test, S-Test, L-test which are the CSEP standard tests, but for comparison between models, log likelihood and information gain (or probability gain) is direct and effective.

Ten years have passed since the experiment was started, testing center hardware replacement are required and some models are required modification about dimension of array according to increase of learning data. In addition, test classes in the current experiment forecasting magnitude 4 or 5 are set, it is necessary to set test classes to forecast larger magnitude such as 6 or 7.

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