# Collaboratory for the Study of Earthquake Predictability - Global and Regional Results

*Thomas Beutin[1], Danijel Schorlemmer[1], Naoshi Hirata[2], Hiroshi Tsuruoka[2], Matt Gerstenberger[3], Anne Elizabeth Strader[1]

1.GFZ German Research Centre for Geosciences, 14473 Potsdam, Germany, 2.Earthquake Research Institute, University of Tokyo, Tokyo 113-0032, Japan, 3.GNS Science, 1 Fairway Drive, Avalon 5010, Lower Hutt 5040, New Zealand

The Collaboratory for the Study of Earthquake Predictability (CSEP) aims to improve our understanding about the physics and predictability of earthquakes through rigorous and prospective testing of earthquake forecast models. CSEP operates four testing centers in California, New Zealand, Japan, and Europe running prospective, automated evaluations of more than 430 models. These testing centers are the technical infrastructure of CSEP and implement all procedures and protocols for rigorous testing and evaluation of earthquake prediction experiments. These experiments run in various testing regions and comprise forecast periods of 30 minutes to many years.
The CSEP software system as the basis for all CSEP testing centers is now being used for earthquake early warning systems and geodetic transient detectors. The Testing and Evaluation group of the Global Earthquake Model (GEM) project at GFZ Potsdam is expanding this system to test intensity prediction equations and ground-motion prediction equations.
We present results and the key lessons learned from all major CSEP and GEM experiments, and we give an overview of recent and ongoing developments, as well as new experiments.

Keywords: Earthquake forecasting, Seismic hazard, Statistical seismology, Earthquake statistics, Forecast testing, Software

 