

SSS026-03

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Investigation of the methods for prospective evaluation on earthquake activity (2nd)

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Subcommittee for the Methods for Prospective Evaluation on Earthquake Activity was established under the Earthquake Research Committee (ERC) in August 2009 to contribute the upgrade of evaluation on the current seismic activity by ERC by extracting characteristic features of the past seismic activity for prospective analysis, and is developing an evaluation method for temporal seismicity variation.

ERC established the methods to evaluate the probability of aftershocks occurrence in August 1998 and JMA announces after a large earthquake that it expects aftershock activity based on the method. But the present procedure has some problems on (1) forecast accuracy, (2) public understanding of probability of aftershocks occurrence, and (3) availability of aftershock information soon after the main shock.

We investigate relationships among the mainshock magnitude, aftershock activity, the magnitude of the largest aftershock, presence of secondary aftershock, etc, for the past earthquakes and develop a prospective evaluation method for aftershock activity. Since the largest aftershock often takes place within 24 hours after the mainshock, it is fatally important to announce early the prospect of aftershock activity. Firstly, the aftershock activity and the magnitude of the largest aftershock can be predicted from the moment magnitude of the mainshock. However, in some cases the number of aftershocks associated with mainshocks with almost the same magnitude differs by about six times. So, it is considered to renew the information on the basis of the number of aftershocks within three hours after the mainshock. Renewal of information may be necessary when an aftershock with many secondary aftershocks occurs.

As the first case of prospective evaluation, we examined characteristic features of the past seismic swarm activities occurred off eastern Izu Peninsula that have many seismic and geodetic data and developed an evaluation method for the swarm activity. We introduced it at JpGU Meeting 2010 and published it as a report, "The prediction method for seismic activity off eastern Izu Peninsula," in September 2010.

Keywords: ERC, Subcommittee for the methods for prospective evaluation, Prospective evaluation on earthquake activity, Prospective method of aftershock activity, Seismic activity off eastern Izu Peninsula