

An improvement of JMA's earthquake catalog

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Based on the policy of the Headquarters for Earthquake Research Promotion, Japan Meteorological Agency(JMA) collects the data of the high-sensitive seismographs nationwide, performs the processing of hypocenter determination centrally, and publishes the result as the earthquake catalog.

In the current earthquake catalog, we list earthquakes that are limited by a certain criteria as a result of scrutiny. After the 2011 off the Pacific coast of Tohoku Earthquake, although aftershocks have decreased, seismic activity is located in the active situation in comparison with the previous. So we are processing them to raise the lower limit of the magnitude of earthquakes to be processed. Therefore, there is an earthquake smaller than the processing limit that is not listed in the earthquake catalog even if detected by automatic processing.

Against the background of this thing, under the Earthquake Research Committee, an examination for improvement for the way of earthquake catalog was performed in 2013 fiscal year, and summarized reports that shows three directions, 1) to maintain the earthquake detection capability, 2) to list all of the earthquakes detected to the earthquake catalog, 3) to perform the quality management with a stage to accuracy.

Based on this report, JMA is planning to improve and change the hypocenter determination process, utilizing automatic hypocenter etc. In the next catalog, we will promote efficiency of the work procedure as follows.

We utilize the automatic hypocenters in case of the earthquakes smaller than the limit of the magnitude based on the area and the depth of the hypocenter, and we list the earthquakes almost uniformly scrutinized by hands as before in case of the earthquakes larger than this limit. And if the automatic hypocenter is not determined, we list the earthquakes by hands with the simple method using the data of the max about 10 seismic stations.

The lower limit of the scrutinized earthquakes is about M2 in case of shallow and inland earthquakes. This lower limit increases with distances from the coast of the lands, and the max lower limit is about M4.

And newly we introduce registration flags indicating the difference in processing method and the accuracy of the hypocenter.

Here, we will give the concrete examples of materials JMA made with the new earthquake catalog, such as the seismicity map.

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