

On the distribution of deep earthquakes in the Japanese islands and neighborhoods

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The Research Group of Deep Structure of Island Arcs has studied the spatial distribution of earthquakes in the Japanese islands and neighborhoods, based on the data of the Annual Report of Seismicity published by the Meteorological Agency of Japan published in 2005.

The distribution of earthquakes from 1923 to 2004 is shown on the topographic map in which contours are drawn every 400m in land and submarine area. Earthquakes are divided into every 100km in depth, and are shown by symbols corresponding to each depth interval in the figure(Figure 1). The earthquakes in the figure are greater than 5 in magnitude for those shallower than 100km, and greater than 4 in magnitude for those deeper than 100km.

The hypocenters are dense in some areas and sparse in other areas. The area along the islands and their outside areas to the trenches are rather dense in seismicity but the inner side is rather sparse except the southwest part of Yamato basin, the northeast part of Japan basin, both sides of north Hokkaido and southwest and central parts of Okhotsk basin. Yamato ridge is very calm in seismicity. Deep seismicity is confined to Japan Sea in general and no seismicity in Asiatic continent, except the area to the north of Vladivostok. Deep seismicity is not found in west Honshu and Shikoku.

The iso-depth contours of deep earthquakes are drawn every 100km, and they dip away from the trenches toward Asiatic continent northwestward and toward Philippine Sea westward in general, as pointed out by Wadati(1935), but they are much more sinuous in shape. The distribution will be discussed by Akamatsu and the Research Group of Deep Structure of Island Arcs.