

Seismicity of Kanto District for 400 years since 1615

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Kanto District shows the most active seismicity in Japan due to the subductions of PAC and PHS plates underneath, in addition to the collision of the Izu Peninsula in the western end of Sagami trough. There are 127 events of recorded destructive earthquakes in the area since 1615. Among them, 111 events are intermediate depth earthquakes related to the two oceanic plates, including inter-plate around M8 earthquakes: 1703 Genroku, 1923 Kanto, and 1923 off Katsuura, and intra-plate around M7 earthquakes: 1782 Tenmei Odawara, 1855 Ansei Edo, and 1924 Tanzawa. Only 20 earthquakes are shallow.

There are only 15 events of shallow depth. 6 of them are caused by the liquid motion due to some volcanic activities. 4 of them occurred after the 2011 off Tohoku earthquake in the northeastern part of Kanto. Among remaining 5, 1633 Kanei Odawara and 1853 Kaei Odawara occurred in some shallow part of spray faults around the collision area of the Izu Peninsula. 1683 Tenwa Shimotsuke, and 1931 Western Saitama are rare shallow events in the crust. The rupture zone of 1887 M6.2 shallow Hadano earthquake extended in the east-west direction.

1856 Ansei Musashi remains depth undetermined. If the intensity distributions of various depth events are carefully compared, we realize the difficulty of the depth determination of historical events in Kanto district with limited materials.

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