

Successively occurring large earthquakes in the world -In Kuril Trench

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We investigated about successive occurrence of a large earthquake based on data of ISC GEM (V5) (Hashimoto and Yokota, 2019 etc.). It was investigated in reviewing way by whether an earthquake of the same scale was occurring successively after occurrence of a large earthquake about an earthquake along the Kuril trench where a possibility of the earthquake occurring has been worried about at the off Nemuro. The source regions of large earthquakes along Kuril trench are shown in Fig.1. Shape of the source regions are traced out those of past researches of Fedotov, S. A. et al. (1982) for the 1952 Kamchatka earthquake and 1915 earthquake, Fujii, Y. and Satake, K. (2008) for the 2006 and 2007 Kuril earthquakes, Ioki, K. and Tanioka, Y. (2006, 2011) for the 1963 and 1969 Kuril earthquakes, Namegaya, Y. and Tsuji, Y. (2004) for the 1973 Nemuro-Hanto-Oki earthquake, Tanioka, Y. et al. (2007) for the 1894 Nemuro-oki earthquake, Hirata, K. et al. (2009) for 1952 Tokachi-oki earthquake, Yamanaka, Y. and Kikuchi, M. (2003) for the 2003 Tokachi-oki earthquake. An M7.7 earthquake occurred at off the Shikotan on June 4, 1893, and then an M7.9 earthquake occurred on March 22, 1894 at off the Nemuro where is neighbor to the region of the 1893 earthquake. An M8.10 earthquake occurred outside the trench axis off the Etrof island on September 7, 1918, and an M7.83 earthquake occurred in the same region on same year November 8. An M8.30 earthquake occurred off the Simushir island on November 15, 2006, and then an M8.11 earthquake occurred outside the trench axis on January 13, 2007. Such a case would be the one by which a large earthquake occurred successively as an earthquake along the Kuril trench. The earthquake on November 8, 1918 was determined to be inside the trench by ISCGEM (v4) data. The two earthquakes are doublet earthquake which moved from the outer-rise to the interplate as inverse moving case of 2006 and 2007 earthquakes. However, after the revision, the November 8 earthquake may be the aftershock of the September 7 earthquake. This requires further study on the location of the epicenter. In the seismic activity along the Kuril Trench, it is likely that a large interplate-earthquake in the adjacent area occurred within about three years in 1893 and 1984. It is known that about 10% of the world's earthquakes are accompanied by large earthquakes, and that similar earthquakes will occur within about one week, so it should be noted.

Fig.2 shows the total number of earthquakes since 1904, using ISCGEMv5 data. During the decade of the 1980s, few large-scale earthquakes with a magnitude of M7.75 or more occurred. It doesn't look that way for earthquakes above M6.00.

Keywords: Successive large earthquake, Kuril Trench

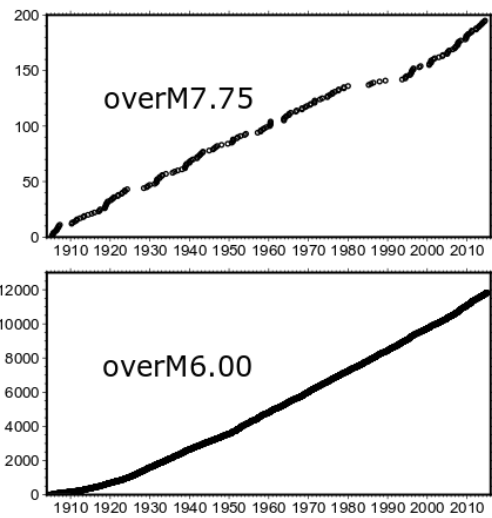
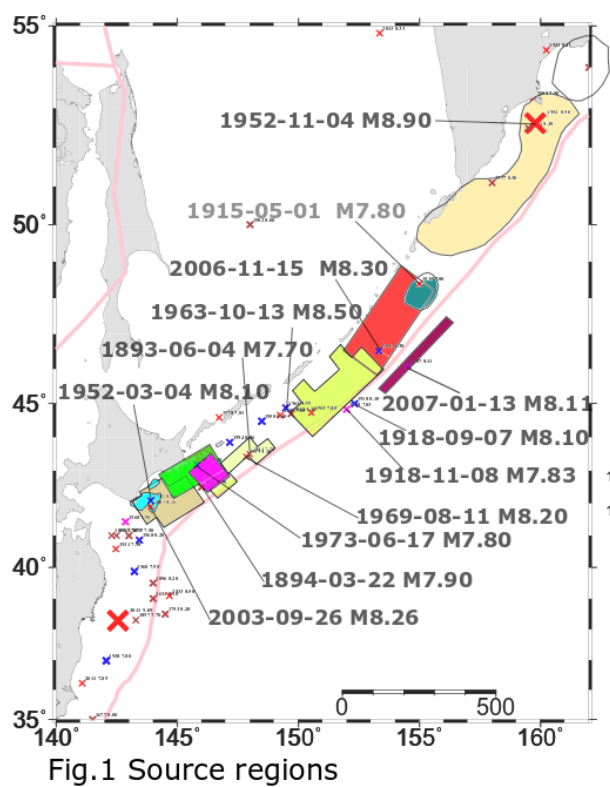


Fig.2 Cumulative numbers of earthquakes in the world