

New interpretation on spatial extent of large subduction earthquakes in the southernmost Kuril Trench

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A series of recent tsunami studies suggest that in the southernmost Kuril Trench, source regions probably vary their along-trench extent even among the earthquakes occurring within the same segment. In particular, the tsunami source of the 1952 Tokachi-oki earthquake (M8.1) differs from but partially overlaps with that of the 2003 Tokach-oki earthquake (M8.0). Furthermore, along-trench extent among the earthquakes seems to differ between deep and shallow portions of the subduction interface. Two seismic gaps are recognized in two periods. The first one probably has existed in the deep subduction interface between the sources of the 1952 and 1973 earthquakes. The second, larger one is from shallow to deep portions of the interface between the 1973 and 2003 earthquakes including the first one. Variability in spatial extent of large subduction earthquakes in both of along-trench direction and trench-normal direction makes it difficult to forecast the future earthquakes in the southernmost Kuril Trench.