

Reexamination of subevents of the 1968 Tokachi-oki and the 1994 Sanriku-Haruka-oki earthquakes

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I have reexamined the subevents of the 1968 Tokachi-oki and the 1994 Sanriku-Haruka-oki earthquakes. For the Tokachi-oki earthquake Nagamune (1969) has determined the epicenter of subevent assuming a focal depth of 0 km. This location deviates largely from the plate boundary where the mainshock occurred. The spatial distribution of travel time residuals for the subevent reveal that the area of least residual has an ellipsoidal shape elongated vertically. This indicates the lack of depth control from the travel time data. Thus I estimated the area of least residual on the plate boundary. The location is located about 20 km to the southeast from the location by Nagamune (1969).

The onset of phases from the subevent is characterize by a significant increase in displacement amplitude. Displacement seismograms for the Sanriku-Haruka-oki earthquake also exhibit noticeable increase in amplitude after the S wave. Nakayama and Takeo (1997) attributed this increase to the rupture in the western part of asperity. Synthetic seismograms by Nagai et al. (2001) reproduces the phases from the subevent of Tokachi-oki earthquake. Thus this phase reflects an essential rupture of asperity. On the other hand, the subevent of Tokachi-oki earthquake is identified on strong motion accelerograms as well, which means the subevent radiated significant high-frequency energy. At present I cannot distinguish the radiation of high frequency energy was either instantaneous to or delayed from the rupture of asperity.