Characteristics of strong ground motions from the 2003 Tokachi-oki earthquake and its largest aftershock

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A large earthquake (Mj=8.0) occurred on September 26, 2003 (JST) at the southernmost part of the Kurile-Hokkaido arc. This earthquake, named the 2003 Tokachi-oki earthquake, is the plate boundary earthquake

and has nearly the same source region as the 1952 Tokachi-oki earthquake (Mj=8.2). First we investigate spatial distributions of peak ground accelerations (PGAs) from the main shock and its largest aftershock (Mj=7.1) ; large PGA values are observed in the northern and eastern sides of the main shock epicenter, while those are observed in the western side of the largest aftershock epicenter. This is confirmed by comparing S-wave spectral ratios of the main shock to the largest aftershock; the S-wave spectral ratios at high frequencies are larger than about 10 at the eastern stations, while those are about 1 at the western stations. These features suggest different rupture direction between the main shock and the largest aftershock. Finally we estimate the source process of the largest aftershock by using the empirical Green's function method.