Estimation of broadband ground motion at ocean-bottom strong-motion stations for the 2003 Tokachi-Oki earthquake

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The 2003 Tokachi-Oki earthquake (M_JMA=8.0) occurred on September 26, 2003.

In this study, we reproduce broadband ground motion using strong-motion records (accelerograms) at three ocean-bottom stations that the Japan Marine Science and Technology Center (JAMSTEC) laid those on the sea floor off Kushiro. This strong motion observation system, which is enclosed within a cylindrical pressure housing, can record up to DC.

Since it is suspended that strong-motion observation systems themselves had moved during the main shock, the integration of the original data diverges. So we apply the following processing to the data: We assume that motion of a strong-motion seismometer can be represented with rotation around the cylinder axis and tilt of the cylinder. We then estimate them from the original data and after the compensation for this movement, the data are integrated into velocity record. And we apply a similar method to that of Boore (2001) for the baseline correction of the velocity records, and obtain the ground motion.

The value of maximum horizontal velocity at OBS1 is estimated to be approximately 160cm/s. In this presentation, we will show particle velocity, and displacement at all three stations.

In this study we used the strong-motion data, which is opened through the JAMSTEC homepage.