

Postseismic crustal deformation due to the 2003 Tokachi-oki earthquake observed by ocean-bottom pressure gauges

Toshitaka Baba[1]; Kenji Hirata[2]

[1] IFREE, JAMSTEC; [2] JAMSTEC

Two ocean-bottom pressure gauges (OBPGs) of Japan Marine Science and Technology Center are monitoring ocean-bottom pressure fluctuations off Tokachi, Hokkaido. The OBPGs are close to the epicenter of the 2003 Tokachi-oki earthquake, and could observe vertical displacements of the seafloor just above the rupture area. In this study, we show ocean-bottom pressure changes during several months after the main shock and discuss afterslip behavior of the event.

The OBPGs are pressure sensors utilizing quartz oscillators. Pressure resolution is approximately 0.3 mmH₂O, when the sampling rate is set at 10 sec. However, the pressure transducer is also very sensitive to temperature, hence the temperature correction is critical. Even after removing theoretical tide components from the original data, we can find that pressure residual strongly correlates with temperature change which is measured within the pressure housing of the gauge. So we estimate the thermal response functions for the OBPGs. Then, we obtain thermal-response-corrected pressure residual several months after the event to investigate the after slip behavior at very near-field.

Post seismic vertical uplift at both of the OBPGs is accumulated by approximately 10 - 15 cm during a month following the next day of the main shock. Significant changes are not recognized from a few months after the main shock. However, we have to notice that the estimated response functions are needed to be severely examined its accuracy. We would like to discuss the source model of the after slip on the fault plane.