Variations in ocean bottom pressure associated with the retreat of the Oyashio current off the southeastern coast of Hokkaido, Japan

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To investigate the impact of Oyashio current variation on bottom pressure (BP) at observation stations PG1 (41.7040N, 144.4375E) and PG2 (42.2365N, 144.8454E), which are located in the onshore region of the Kuril Trench off Kushiro-Tokachi, altimetric sea surface height (SSH) and ocean bottom pressure (OBP) gauge data were evaluated. Two and a half years after El Nino, during 2007–2008 and 2012–2013, the Oyashio retreated toward the northeast due to warm-core rings, which were inferred from SSH elevations at both stations. Due to the barotropic nature of the Oyashio, BP at PG1 near the offshore edge of the continental shelf is enhanced corresponding to the SSH elevations. Meanwhile, at PG2, BP remained relatively unchanged in spite of the high SSH variability because the main pycnocline adjusted rapidly to the SSH elevations. BP changes at PG1 caused by the northeastward retreat of the Oyashio cannot be neglected to detect BP change by crustal deformations.

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