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Unlocking the secrets of slow slip at the Hikurangi subduction margin

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The northern Hikurangi subduction margin, New Zealand is the site of the shallowest well-documented slow slip events (SSEs) on Earth. Due to the close proximity of the SSE source area to the seafloor at the offshore Hikurangi margin (<5-15 km), it has become an important international target for a variety of geophysical studies to understand the offshore physical mechanisms that lead to slow slip. The centerpiece of these efforts is a series of IODP proposals to undertake riserless (Joides Resolution) and riser (Chikyu) drilling, and CORK observatory installation on a transect spanning the shallow Hikurangi SSEs. We understand that if scheduling of riserless drilling (and observatory installation) occurs, it is likely for 2017. We will discuss the plans and scientific objectives for both riser and riserless drilling, and borehole observatories. We will discuss other ongoing experiments at the northern Hikurangi margin, including an upcoming heatflow survey, and recent seafloor geodetic (Absolute Pressure Gauges) and OBS deployments to undertake near-source investigations of SSE deformation and related seismicity of the shallow (<10 km depth) subduction thrust (the HOBITSS project). We will also present preliminary analysis of slip distribution and seismicity (using onshore data) from a large SSE that occurred in October 2014 directly beneath the HOBITSS network.

キーワード: subduction, slow slip events, GPS, scientific drilling, seafloor geodesy, New Zealand
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