

First detection of shallow tremors at the Guerrero Gap, Mexico.

○ Raymundo PLATA-MARTINEZ, Satoshi IDE, Naoto MIZUNO, Akiko TOH, Masanao SHINOHARA, Tomoaki YAMADA, Allen L HUSKER, Jorge Arturo REAL, Victor M CRUZ-ATIENZA, Yusuke YAMASHITA, Yoshihiro ITO.

At the Mexican subduction zone, in the plate boundary of the continental North American plate and oceanic Cocos plate, is located the Guerrero gap (GG). This seismic gap has not had any significant earthquake ($M > 7$) since 1911. However, slow earthquakes, such as slow slip events, tectonic tremors and low frequency earthquakes, have been occurring periodically in the down dip sections of the GG, at approximately 200 km away from the trench and at around 40 km depth. Even when these seismic events are frequent in the region, until now there is no evidence of slow earthquake activity at the shallow portion of the GG close the trench. To better understand the seismic cycle governing the GG and its connection with slow earthquakes, in November 2017, an array of Ocean Bottom Seismometers (OBS) was deployed at the coast of Guerrero and gathered one-year data. A modified envelope correlation method was used in search of

shallow tectonic tremors near the trench. Cluster bursts of tremors were identified close to the trench without any long scale migration. Tremor burst show a recurrence periods of approximately two or three months. Seismic signals of these tremors, with duration between 10-100 sec, show no clear arrivals both of P and S wave; they are efficient at a frequency band between 2 and 8 Hz and are deficient at frequencies above 10 Hz, attenuating rapidly. More analysis is being done to understanding the nature of these tectonic tremors and their connection with seismicity. By comparing other seismic and geodetic data, such as ocean bottom pressure gauges, GPS/acoustic measurements and high-resolution bathymetry, we are now try to explain tremors and their influence in the seismic hazard associated to the shallow portion of the GG.