Analysis of radiated seismic energy distributing in aftershock sequences at the Guerrero, Mexico subduction zone.

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Radiated seismic energy is valuable parameter in seismic source studies, as it can be a good criterion to evaluate earthquakes size but also very useful to analyze the dynamics of the rupture process. Significant large thrust earthquakes have occurred over the last decades at the Mexican, subduction zone, however just a few researches have been done to understand the distribution of seismic energy release in the area. For this purpose, we calculated source spectra to estimate radiated seismic energy of three large earthquakes and their aftershocks (*M* larger than 4.0) in the Guerrero segment of the Mexican subductions zone; the 2012 Ometepec-Pinotepa Nacional (*Mw* 7.5), the 2014 Papanoa (*Mw* 7.2) and the 2018 Pinotepa Nacional (*Mw* 7.2) earthquakes. We found a mean value of the log of radiated seismic energy scaled with the seismic moment (Mo/Es) of -5.05 ±0.25, as well as, regional estimations tend to be higher than the teleseismic estimations by a factor of 1.3 to 6.3. A small dependence of scaled seismic energy with distance from the trench was seen, however distribution of seimsic energy seems to be spatially heterogeneous along the trench. We found four different regions with characteristic behaviors in energy release. One of the regions reveals recurrent low energies with possible slow rupturing close to the trench. Opposingly, high energy seismicity was present, adjacent to the Guerrero gap, which has not had a large earthquake in over 115 years. This suggests that radiated seismic energy can be highly influenced by complexities at the plate interphase, variations on the shear strength and/or coupling at the interface where seismic slip interacts over previous rupture patches.

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