

Tremor analysis along the Mexican subduction zone

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In Mexico, slow earthquakes are known to occur in three areas (Guerrero, Oaxaca and Jalisco-Colima-Michoacan) of the subduction. Here we locate tremors with the same process for all parts of the subduction. It allows us to observe the spatio-temporal variations of slow earthquakes along strike. We also detect VLF events as was already done in Guerrero (Maury et al, 2016) for the whole subduction zone. This analysis is carried out for different time periods between 2005 and 2015, depending on the deployment of temporary network along the Mexican coast. In addition, permanent broadband stations of the Servicio Sismológico Nacional (Mexico) are used. The tremors detected in Oaxaca area are located farther west than previously known probably because of the more eastern location of available stations. Our results also show the spatial distribution of moment tensor along the Mexican subduction zone. The VLF sources are located at or close to the plate interface in Oaxaca and Jalisco as is observed in Guerrero. These events have magnitudes of about 3 and very low-angle to low-angle thrust mechanisms in agreement with the varying geometry of the subduction interface. The slip directions of VLF earthquakes are also consistent with the plates convergence vectors. This analysis highlight variations along strike, with tremors distribution going from a wide area with similar energy rate in Oaxaca and Guerrero to thin sparse clusters with high energy rates in the North-West area. Finally, we are comparing these variations in slow earthquakes distribution to structural variations in the Mexican subduction.

Keywords: Variations in tremor distribution along strike, Moment tensor consistent with plate motion for slow earthquakes