

## Detection and mechanism determination of VLF earthquakes in the Guerrero subduction zone

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Very Low Frequency (VLF) earthquakes have been observed with tremors in a few subduction zones suggesting a common source for the two phenomena. However to investigate more precisely the relation between these phenomena, VLF signal should be looked for in other subduction zones where tectonic tremor occurs. The Guerrero subduction zone is such an area where tremors have been consistently detected. Following the method of Ide and Yabe [2014], by stacking signals in the VLF band between 0.02-0.05 Hz at the time of occurrence of tremors, we confirm that VLF earthquakes are also observed.

MASE experiment data from 2005 to 2007 are used to determine the location of tremors and VLF earthquakes. They are found in two places tremors are detected, the southern transient cluster and the northern, more persistent, cluster. Both are located near the flat part of the subduction interface. This seems to confirm that VLF earthquakes are produced by shear failure near this interface. The VLF signals are then inverted to estimate the moment tensor of these events. Due to the linear geometry of the MASE experiment the mechanism is not well constrained but one of the nodal plane is generally nearly horizontal in accordance with the distinctive geometry of the subduction and the slip direction is globally coherent with the convergence direction. Moreover, the plunge of the P and T axis are well constrained with values of about  $40^\circ$  adding a constraint on the principal stress directions.