



Beyond the Motagua and Polochic faults: Another active transform fault along the North America-Caribbean plate boundary in Guatemala

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Traditionally, the Motagua and Polochic faults have been regarded as the North America-Caribbean plate boundary in Guatemala. The Jocotán fault is sometimes also considered as part of the plate boundary.

Using teleseismic as well as regional seismic data, we found another active fault, next to the Motagua-Polochic system. This fault is shown in at least two geological maps, but without name. We call it the Selegua fault. It is a structure concave to the north with a length of about 100 km, just north of the Polochic fault. Seismic activity along this fault is well documented, with magnitudes up to 5.5. Reported focal mechanisms indicate left-lateral strike-slip faulting. Given the distribution of intensity IX sites, it is possible that the Guatemala earthquake of 1816 ($M=7.5$) took place along the Selegua fault.

The Selegua fault probably continues into southeastern Mexico, along the concordia fault, a 200 km feature and the probable site of a major crustal earthquake in 1902.