

New study cites lower rate of quakes along some subduction zones

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Most earthquakes occur along fault lines, which form boundaries between two tectonic plates. As the relative speed of the plates around a fault increases, is there a corresponding increase in the number of earthquakes produced along the fault? According to this study published in the December issue of *BSSA*, the answer depends upon the type of tectonic boundary. On certain types of boundary, the efficiency of earthquake production actually depends on the fault slip rate.

Seismic hazard assessments consider many factors, including relative plate velocity. It is important to understand whether there is a linear relationship between relative plate velocity along a fault and the production of earthquakes in order to estimate risk to populations and manmade structures from [seismic](#) activity.

Peter Bird, et al., examined whether relative plate velocity is proportional to the number of earthquakes produced along a fault and found that [earthquake](#) productivity stays consistent along continental transform faults and continental normal faults, but decreases with increasing spreading rate along ocean spreading ridges.

This study identified a lower efficiency of earthquake production along slower moving subduction zones. The exact reason for a slower rate is not fully understood and is a matter of conjecture, including factors such as water pressure and viscosity of sediments.

The authors suggest that further study is required. "This data should not

be misinterpreted to mean that these areas are safe," Bird said.

More information: "Linear and Nonlinear Relations between Relative Plate Velocity and Seismicity" Authors: P. Bird, Y.Y. Kagan, D.D. Jackson, F. P. Schoenberg, and M.J. Werner. *BSSA*

Source: Seismological Society of America

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