

## Study of Coulomb stress changes in seismic sequence of Puerto Gaitán (Meta), Colombia

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Coulomb stress studies have shown that large earthquakes can inhibit or promote faulting in their vicinity. Coulomb stress maps are produced by computing the tensorial stress perturbation due to an earthquake rupture and resolving this tensor onto planes of a particular orientation (often in 'optimally oriented' planes). An anomalous seismic activity was registered in 2013 close to the town of Puerto Gaitán, Colombia, near a wastewater injection area. We analyse in this paper the change in Coulomb stress for the area of Puerto Gaitán, showing that the distribution of aftershocks is consistent with the distribution of Coulomb stress calculated, considering the 'strike-slip' faulting obtained using focal mechanisms. A time-space correlation was performed for low ( $M_w < 3.5$ ) and high ( $M_w \geq 3.5$ ) magnitude events, to determine the presence of aftershocks. Earthquakes occurring in a spatial radius of 10 km from any main earthquake ( $M_w \geq 3.5$ ) were classified in three groups, under the criteria of them having occurred 5, 10 or 15 days after the main earthquakes. We found that most of the aftershocks were located in areas where changes in the Coulomb stress are positive, i.e. where fault slip is enhanced, whereas only a few proportion of aftershocks were located in areas of negative Coulomb stress. Finally, it was observed that most of the aftershock events occurred within 5 days after the main earthquake.