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Probabilistic seismic hazard assessment in Ecuador: towards subduction interface source models combining seismic and geodetic data

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The aim of the present study is to understand how geodetic measurements can help to constrain earthquake recurrence models, for the assessment of probabilistic seismic hazard. The Ecuadorian subduction zone is characterized by a high level of seismicity owing to the rapid convergence of the Nazca plate toward South America. The annual moment deficit rate has been estimated along the plate interface from the inversion of GPS velocities (Nocquet et al. 2014). Here, we consider the segmentation proposed in Yepes et al. (2016). At first, earthquake recurrence models are built from an earthquake catalog homogenized in MW, considering both the full catalog and a declustered version. Next we establish moment-balanced recurrence models, considering the moment rate estimated by geodetic measurements. We explore different ways to combine the geodetic and seismological datasets, leading to alternative earthquake recurrence models. At last, we perform preliminary PSHA calculations to understand the impact of different models on hazard estimates for sites on the coast.