



Interactive  
Comment

## ***Interactive comment on “Tsunami hazard assessment in the southern Colombian Pacific Basin and a proposal to regenerate a previous barrier island as protection” by L. J. Otero et al.***

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We thank the thorough revision and for the valuable suggestions. We proceed to answer your comments:

1. The parallel segments of fault zones have been mentioned extensively by Mendoza and Dewey (1984) and Collot et al. (2002). Although the thrust mechanisms are quite similar (Table 1), it is clear that each of these faults do not experience exactly the same thrust mechanism. However, since the main goal of the paper is to analyze the effectiveness of the Guano Island as mitigation element, we considered convenient

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keep the same thrust mechanism for each tsunami source as a common element of comparison. Otherwise, results and conclusions might be inaccurately. For creating the modeling scenarios (generation and propagation) we used thrust mechanisms reported by several authors, as is mentioned in the paper. In addition, we considered that using different geographical tsunami sources lead to a better assessment of the Guano Island as mitigation element against tsunami effect. In the modeling scenarios we included the historic event of 1979 as benchmark.

2. The main goal of this study is to perform a functionally assessment of the Guano Island as mitigation element against tsunami effects. Consequently, based on previous studies we defined seven possible modeling cases as the worse scenarios. Although it is clear that these scenarios are very unlikely, the purpose was to use a plausible number of alternatives to get a clear idea of how the Guano Island (three alternatives) would protect Tumaco against tsunamis generated at different locations, dissipating the energy of the incoming waves, and then becoming a viable element to mitigate the adverse effects of tsunamis.

3. We will check the suggested empirical scaling laws in order to carry out a comparative analysis.

4. Regarding the suggestion to consider an event of a greater magnitude in the area of study ( $M_w=9$ ), we will evaluate the feasibility considering the seismic-tectonic characteristics. However, the rupture length constitutes a constraint for a marine earthquake of great magnitude, as it can extend just up to  $\sim 500$  km.

5. All the minor revisions will be corrected in the final manuscript.

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