

Looking for the southernmost border of the North-Andean Sliver

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Since July 2017 a temporary network of 7 seismic stations were deployed around the Gulf of Guayaquil to complement the 10 seismic stations and 8 accelerographic permanent stations of the RENSIG and RENAC networks from IG-EPN (Alvarado et al., 2018). The goal is to precisely describe and analyze the regional seismicity associated to the NAS (North-Andean Sliver) tectonic boundary activity. We aim to image these structures based on more precise seismic locations geographically and at depth. We here report preliminary locations of the first 154 events that occurred during the July – November 2017 period with a mean RMS of 0.37. The epicentral locations of the <40 km-crustal events display a NE-SW trend that matches with the average direction of the Pallatanga and Puná fault systems. The activity clusters in 3 regions: the Cumandá and Naranjal areas and south of Puná Island. More frequent seismic activity is occurring north of the proposed NAS boundary suggesting more complex crustal deformation patterns. However, the western Gulf of Guayaquil basin to the west of Puná Island also shows significant shallow seismicity probably associated to distributed secondary structures within the basin. Further analysis will allow higher precision in the locations of the seismic sources and to characterize the deformation with focal mechanisms and coupling depth along the southern NAS boundary and its potential connection to the megathrust (both westwards and at depth).

Alvarado, A., Ruiz, M., Mothes, P., Yepes, H., Segovia, M., Vaca, M., ... & Aguilar, J. (2018). Seismic, volcanic, and geodetic networks in Ecuador: Building capacity for monitoring and research. *Seismological Research Letters*, 89(2A), 432-439.