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## A seismic wide angle profile across the Lesser Antilles Arc south of Guadeloupe

### Abstract:

We present the results of a 280km long regional wide-angle seismic profile conducted in the Lesser Antilles. The profile crosses an active island arc, the Tiburon Ridge and one of the largest accretionary complexes in the world. Crustal thickness beneath the island arc is ~25km and 8km beneath the Accretionary Prism suggesting oceanic crust below. We present a statistical separation strategy to explore velocity-depth Model space derived from the inversion of seismic refraction data. The profile crossing the Island arc can be characterized by three tectonic entities, namely the accretionary complex, active and inactive island arc. By perturbing the model space ( $v, z$ ) as well as the transition zones in between it is possible to sample the model space and compare the results of inversion of this monte carlo ensemble. We invert more than 20000 first arrival travel times in over 50 starting Models to enhance the statistical resolution of the final average model. The deeper portions of this transect could be confined by forward modelling of the wide angle data. The island arc shows intracrustal as well as Moho reflections where the upper crust is approximately 13km thick and the lower crust 8km. The island arc backstop shows considerable topography and is approximately 10-20km in width. The Accretionary wedge extends more than 100km from the deformation front to the backstop and shows strong attenuation of signal penetration.