ID: Type: **Poster**

Seismic Travel Times in Central and Northern Costa Rica for Accurate Earthquake Location

Reducing the prediction error of seismic-phase travel times leads directly to improvement in earthquake location accuracy. One-dimensional (1D) velocity models are most commonly used to calculate seismic phase travel times because computer codes are readily available and the computations are inexpensive. Travel time predictions based on 1D models are accurate to within 1 to 2 seconds at teleseimic distance, but complex crust and upper mantle structure can triple prediction errors at regional distance. Increased travel time prediction error at regional distance is particularly prevalent in regions like Central America, where subduction tectonics results in large lateral variations in seismic velocity and crustal thickness. The Regional Seismic Travel Time (RSTT) method (Myers et al., 2010) was specifically developed to improve travel time prediction accuracy by accounting for 3D seismic velocity structure. In this study, we update the RSTT 3D velocity model in northern and central Costa Rica using published studies of velocity structure (DeShon et al., 2006 and Arroyo et al., 2009). Travel times for the updated model are compared to observed travel times for well-constrained earthquakes. We relocate the earthquakes using only regional data to measure the improvement in location that can be achieved with the updated model.

Primary author: AGUIAR MOYA, Ana Cristina (Lawrence Livermore National Laboratory)

Presenter: AGUIAR MOYA, Ana Cristina (Lawrence Livermore National Laboratory)

Track Classification: 1. The Earth as a complex system