

Basement Depth in Los Angeles Basin and the Northern Basins

Valeria Villa¹, Robert W. Clayton¹, Fan-Chi Lin², Konstantinos Gkogkas², Heather Ford³

¹California Institute of Technology, Pasadena, CA ²University of Utah, Salt Lake City, UT

³University of California, Riverside, Riverside CA.

Los Angeles sits atop a sedimentary basin (LAB) that amplifies ground shaking. North of the LAB are other basins that act as a waveguide to focus energy from an earthquake on the southern San Andreas Fault into the LAB. In this study, we integrated seismic and gravity measurements to determine the basement depth of these basins. Modeling the San Gabriel basin revealed a parallelogram-shaped basin with a maximum depth of 4.5 km at the center. The Chino basin displayed a broader shape with deeper depths to the west. The San Bernardino basin shape is defined by the San Jacinto Fault Zone and is up to 2 km deep. Our current efforts are on improving the velocities and structure of the LAB using receiver functions and other converted phases.

