

Recent ShakeMap Improvements to Further Support Post-Earthquake Damage Assessment

Eric M. Thompson

Geologic Hazards Science Center, U.S. Geological Survey

emthompson@usgs.gov

The U.S. Geological Survey develops and maintains ShakeMap software and delivers ShakeMap as an information and response product for domestic and international earthquakes. ShakeMap provides valuable information to a wide range of users, and an important group of users are engineers concerned with assessing structural damage. Accurate estimates of the ground motion intensity metrics for the points of engineering concern are thus essential. To support this use case, we have expanded ShakeMap to support a broader range of response spectral periods. This functionality is enabled by the development of new ground motion processing software called “gmprocess.” Further, we are developing a new online interface to ShakeMap called the “ShakeMap Sampling Tool” that allows users to select points of interest on the map, plot and download the full response spectra, and compare to design values. We anticipate that this tool will be useful for engineers tasked with following the Disproportionate Damage Earthquake trigger specified in the IEBC (2018, Section 405.2.2) and in developing ATC-145 guidelines (Guidelines for Post-Earthquake Assessment, Repair, and Retrofit of Buildings). We also now support “composite ShakeMaps,” which provide the maximum shaking across a sequence of earthquakes. We are also working towards supporting more ground motion metric types, such as the cumulative absolute velocity.