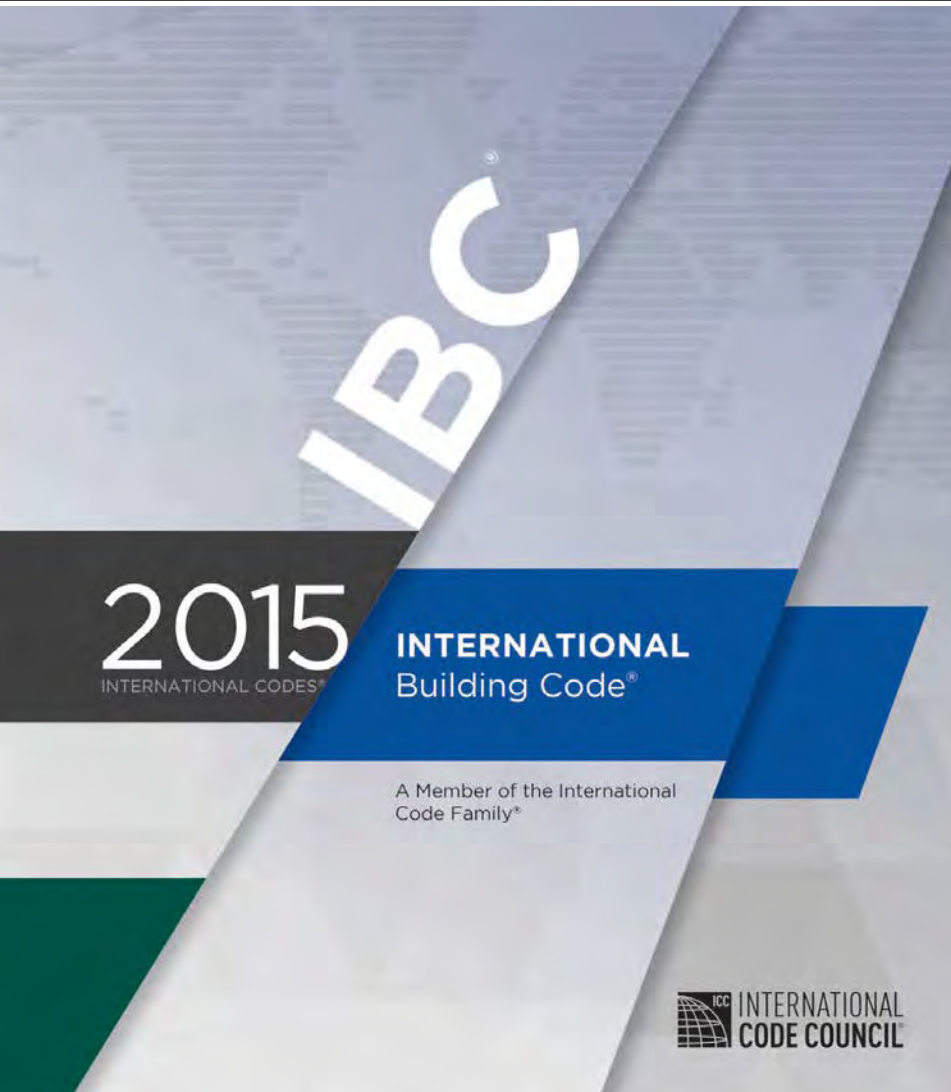


Use cases relevant to basin-effect modeling

USGS 2018 NSHM Update Workshop

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Thursday, March 8th, 2018

1. User Specifies V_{S30} (or Site Class)



1613.3.2 Site class definitions. Based on the site soil properties, the site shall be classified as Site Class A, B, C, D, E or F in accordance with Chapter 20 of ASCE 7.

Where the soil properties are not known in sufficient detail to determine the site class, Site Class D shall be used unless the building official or geotechnical data determines Site Class E or F soils are present at the site.

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1. User Specifies V_{S30} (or Site Class)

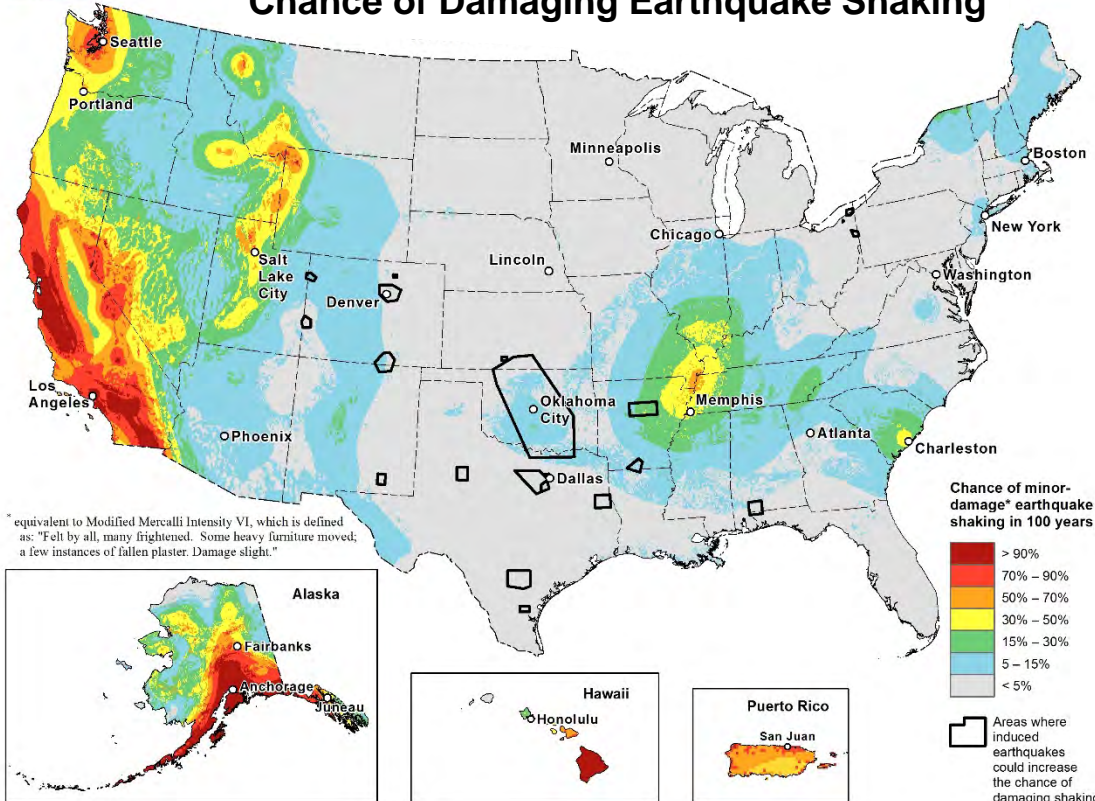
The screenshot shows the 'Unified Hazard Tool' web interface. At the top, there is a button labeled 'Choose location using a map'. Below it, the 'Site Class' dropdown menu is open, showing a list of options: '259 m/s (Site class D)', 'Please select...', '180 m/s (D/E boundary)', '259 m/s (Site class D)', '360 m/s (C/D boundary)', '537 m/s (Site class C)', '760 m/s (B/C boundary)', '1150 m/s (Site class B)', and '2000 m/s (Site class A)'. The '259 m/s (Site class D)' option is highlighted in blue. To the right of the dropdown, a red-bordered box contains the text 'Example from Unified Hazard Tool'. Below the dropdown, there are two graphs. The left graph shows 'Exceedence' on a logarithmic scale (1e-3 to 1e-1) versus 'Spectral Period (s)'. The right graph shows 'Acceleration (g)' on a linear scale (1.6 to 2.6) versus 'Spectral Period (s)'. The right graph is titled 'Uniform Hazard Response Spectrum' and shows a peak at a spectral period of approximately 0.2 seconds.

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2. User Requests V_{S30} (or Site Class)



Chance of Damaging Earthquake Shaking



What does this map show?

This map shows how often scientists expect damaging earthquake shaking around the U.S. On this map, a “damaging earthquake shaking” is that of Modified Mercalli Intensity (MMI) level VI or higher. See [Modified Mercalli Intensity](#) for more information about different MMI levels of earthquake ground shaking and what kind of damage can happen at each level.) [Click/tap map to view larger version.](#)

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2. User Requests V_{S30} (or Site Class)

The image shows a browser window displaying a PDF document. The browser's address bar shows the URL: https://www.fema.gov/media-library-data/1497362829336-7831a863fd9c5490379b28409d541efe/FEMAP-366_2017.pdf. The document content includes the Hazus logo, the title 'Estimated Annualized Earthquake Losses for the United States', and the subtitle 'FEMA P-366 / April 2017'. At the bottom of the document are the logos for FEMA (U.S. Department of Homeland Security), nehrp (National Earthquake Hazard Reduction Program), and USGS (U.S. Geological Survey, science for a changing world).

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2. User Requests V_{S30} (or Site Class)

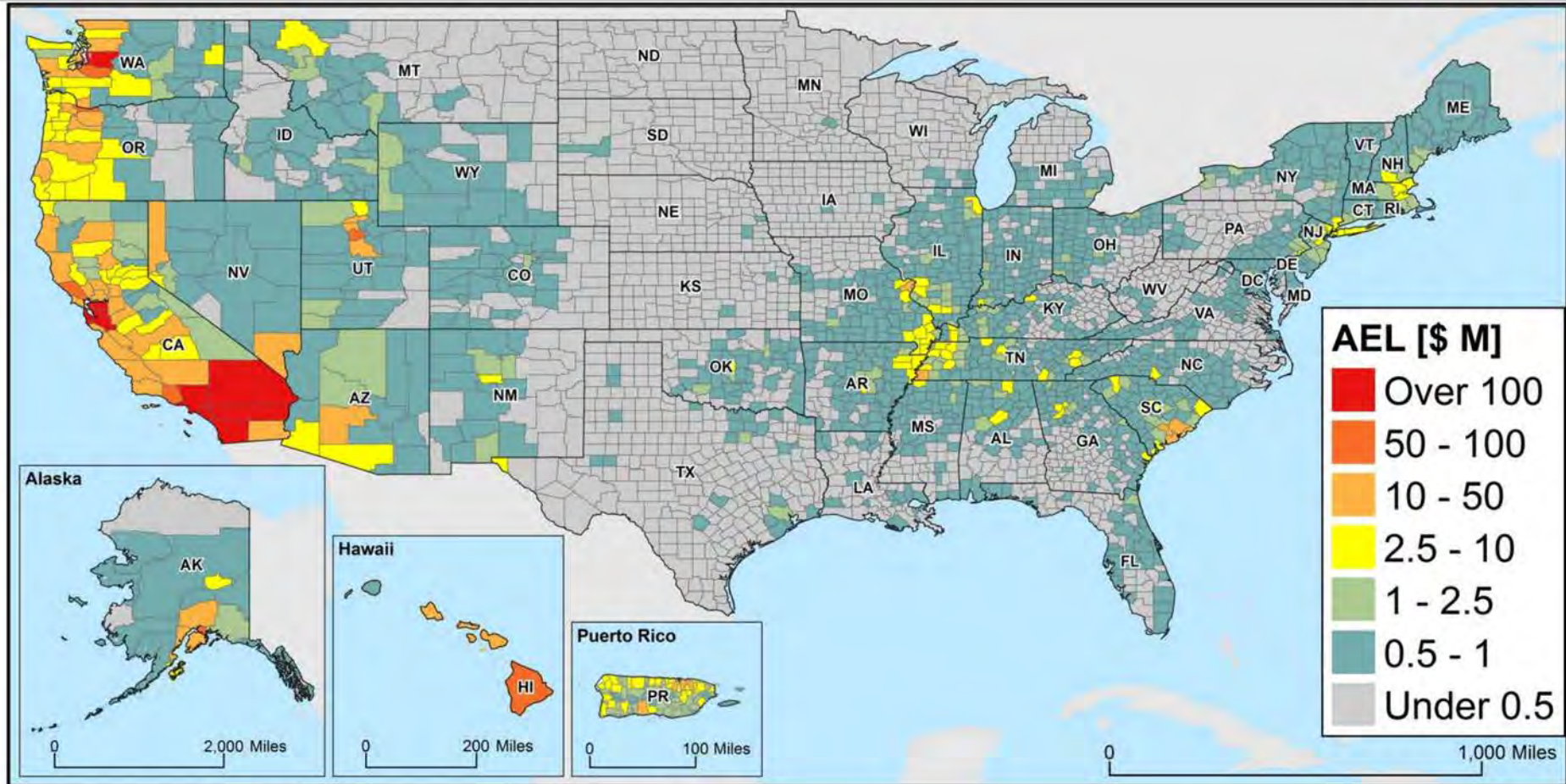


Figure 3-3. Annualized Earthquake Losses by County

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Summary of Use Cases

For building codes and users of the USGS Unified Hazard Tool, ...

1. User specifies V_{S30} (or Site Class)

For public/media hazard maps and Hazus loss estimation, ...

2. User requests V_{S30} (or Site Class)

Both with USGS-specified $Z_{1.0}$ and $Z_{2.5}$