

**Western States Seismic Policy Council**  
**2013 Lifetime Achievement Award in Earthquake Risk Reduction**  
**Charles “Chuck” Real**



Chuck Real's distinguished and pioneering service in the field of seismic and tsunami hazard reduction has resulted in significant improvements to protecting the public from future events. Over the past 40 years, Mr. Real has built an impressive career and reputation with the California Geological Survey (CGS) as a dedicated leader and respected scientist. Mr. Real's passion for improving the public's understanding of and preparedness for natural hazards have made him a sought-after collaborator on a number of national and international projects.

Mr. Real established and manages the State of California's Seismic Hazard Zonation Program, a landmark and internationally renowned earthquake hazard mitigation program for local land-use planning. Mr. Real led the original

feasibility study that identified seismic hazard information needs of homeowners, local government and the insurance industry, which resulted in the California Legislature passing the Seismic Hazard Mapping Act of 1990 and establishing the Seismic Hazard Zonation Program. Since its inception, the Seismic Hazard Zonation Program has completed over 118 maps covering nearly 200 incorporated cities in nine counties within California identifying "zones of required investigation" for liquefaction and seismically induced landslides hazards. Under Mr. Real's development and leadership, this Program received the WSSPC *Award of Excellence in Innovation* in 1998. Since 2005, Mr. Real has also supervised the management of the Alquist-Priolo Earthquake Fault Zoning Program. Established in 1972 and the source of many of the principles used to establish the Seismic Hazard Mapping Act, the Alquist-Priolo Earthquake Fault Zoning Program identifies Holocene-active faults in order to prevent construction for human occupation across their traces. In combination, these earthquake-hazard zone maps are used throughout California by local land-use planning agencies to mitigate earthquake ground failure hazards and make their communities more resilient to seismic hazards overall.

As an applied research scientist, Mr. Real has demonstrated his prowess to develop and maintain a number of important earthquake hazard analysis projects. He has conducted a number of post-earthquake field investigations where he has utilized his experience as an applied geophysicist to note where improvements in earthquake hazard analysis and mitigation can be implemented. Mr. Real managed the Turkey Flat Project, a long-term international project to determine the effects of surface geology on earthquake shaking. Mr. Real has worked with academic and other governmental scientists on applying new and innovative methods for determining liquefaction and seismically induced landslide susceptibility. He was a Principal Investigator of a NEHRP-funded project that developed the procedure for preparing earthquake-induced landslide zones in the early 1990's, and more recently was a Principal Investigator in a NEHRP-funded project aimed at improving the liquefaction zoning methodology by moving to a deformation-based criteria. Mr. Real has authored and co-authored numerous peer-reviewed scientific journal articles covering natural hazards policy, topographic amplification, liquefaction and landslide hazard zoning, remote sensing for hazard mapping, and geotechnical site response, as well as having prepared a long list of California Geological Survey special reports and publications.

Over the past several years, Mr. Real has extended his expertise and leadership into tsunami hazard reduction. Under Mr. Real's leadership, CGS has expanded its role in tsunami hazard analysis for emergency response, maritime, and land-use planning purposes. In partnership with the California Emergency Management Agency, the state tsunami program is helping to lead the way nationally with new and innovative tsunami hazard mitigation efforts. Within Mr. Real's program, California is looking to be the first state to develop regulatory tsunami hazard maps for land-use planning, through the Seismic Hazard Mapping Act. To help in the application of these new maps, Mr. Real established the California Tsunami Policy Work Group to develop an action plan to implement these first-of-a-kind probabilistic tsunami hazard mapping products, as well as establish a long-term vision for tsunami resiliency planning.