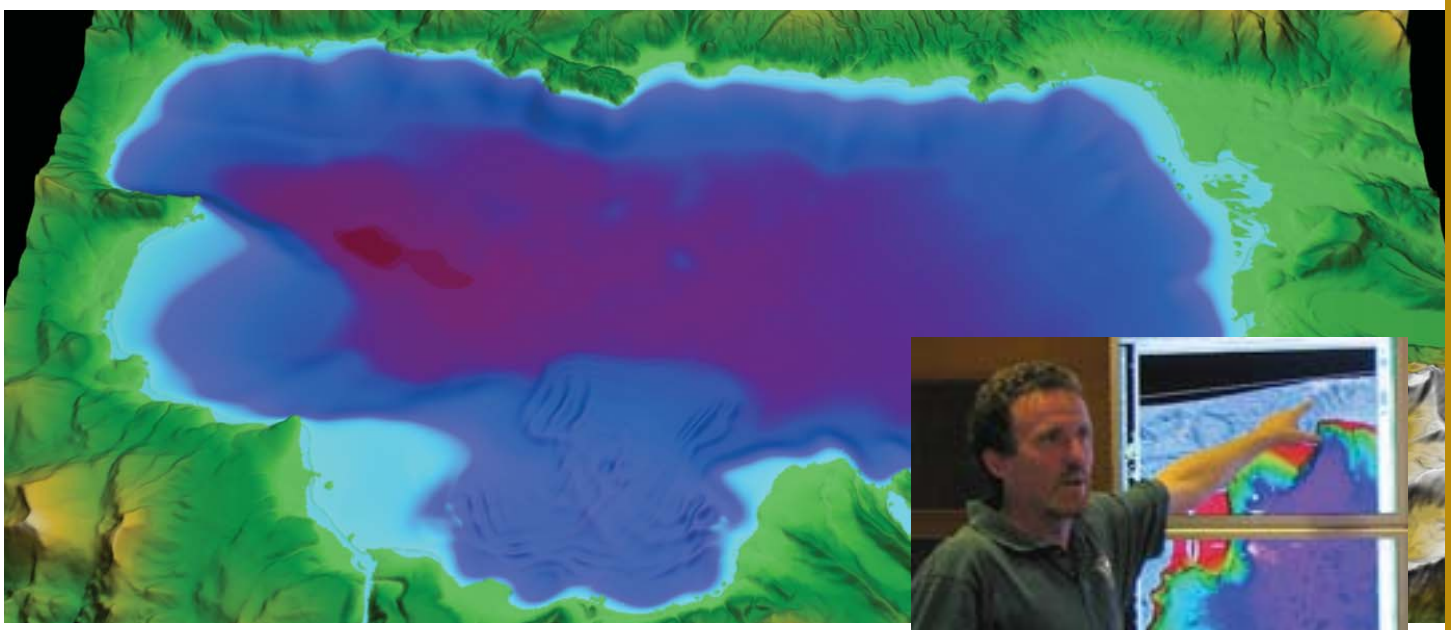
EARTHQUAKE AND TSUNAMI HAZARD OF THE TAHOE BASIN

PRESENTATION BY DR. GRAHAM KENT, NEVADA SEISMOLOGY LAB



Date: Tuesday, February 23, 2010
Time: 5:30 – 7:30 p.m.
Lecture begins promptly at 6:00 p.m.
Cost: $5 donation requested. No-Host Bar.
Location: Assembly Rooms 139 & 141,
Tahoe Center for Environmental Sciences
291 Country Club Drive, Incline Village, Nevada
(on the campus of Sierra Nevada College)

Dr. Graham M. Kent has recently been appointed Director of the Nevada Seismological Laboratory and Professor in the Department of Geological Sciences and Engineering at the University of Nevada, Reno. Previous to July 2009, Graham was a Research Geophysicist at Scripps Institution of Oceanography and had been Director of the Visualization Center at Scripps from 2001-2009. Dr. Kent is a native of Lake Tahoe, California, where he graduated from South Tahoe High School in 1980.

In light of the most recent earthquake catastrophes, including the Great Sumatran earthquake and tsunami (1994) and most recently the Haiti earthquake (2010), concerned citizens are asking: Can it happen here? The unfortunate answer for the Lake Tahoe basin is an unqualified yes! The basin is susceptible to large, magnitude 7 earthquakes every few thousand years, with an associated tsunami risk for those fault lines that lie beneath the lake. A decadal review of geophysical and geological work at the basin will be presented in an unconventional way to help stimulate a responsible conversation of the real risks of living near the Jewel of the Sierra. Three major fault zones have been mapped in detail, West Tahoe-Dollar Point, Stateline-North Tahoe and Incline Village Faults, each capable of large ruptures with a maximum magnitude of ~ 7.3. These ruptures will be associated with a tsunami/seiche wave that can reach heights up to 10 meters, which will cause extensive damage along the shoreline. Landslides are also an important component to geologic risk in the basin; a large landslide that formed McKinney Bay some 50,000 years ago may have produced wave heights in excess of 100 meters! Although rare, landslides are probably not an uncommon occurrence during large earthquake ruptures. The tell-tale signs of smaller slides are seen spanning the lake floor in recently collected sediment cores. Join Dr. Kent in a high tech, CSI-styled investigation of basin hazard using sonar and laser technologies, paleoseismic trenching, coring and other interesting techniques.

Geophysical approaches are not exclusive to earthquake hazards. Seismic networks that bring data back to the laboratory can also support time-compressed video and metrological data that have been so critical in monitoring and fighting wildfire in Southern California. Invasive species habitat can be mapped in detail with side-scan and bathymetric technologies. Tahoe's future response to climate change is likely locked in sediments beneath Fallen Leaf Lake from the medieval dry period. MTBE contamination of aquifers in the basin was likely exacerbated by the lack of geophysical imaging at depth. And the list goes on … Tahoe's future relies on embracing a high-tech, basic science approach working together with local, state and federal officials—and most importantly with concerned citizens of the basin.