Delivering earthquake warning to California

Dr. Richard Allen

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A few seconds before the next big earthquake you could get a warning. Enough time to duck under a sturdy table or move to a safe zone. Enough time to prevent serious injuries from falling book shelves, broken windows, ceiling tiles and lights. This is how Prof. Richard Allen envisions the future of real-time earthquake information. His plan is to use the networks of seismometers distributed across the state to rapidly detect the beginnings of the earthquake, predict the ground shaking, and issue a warning to those in harms way. Warning systems exist in Japan and Mexico, but California's cities lie much closer to the hazardous faults than in those countries. For that reason California's system will need to make use of the first pulses of energy to reach the surface, the P-waves. These do not carry much energy, but they do carry information which can be translated into a prediction of the much larger S-waves that follow and do most of the damage. A prototype system is currently being tested across the state, and it has successfully delivered warnings in several earthquakes. Prof. Allen will talk about this system, how it is possible to predict the shaking, and some of the challenges that we face before a public system can be made available.

Biography: Dr. Richard Allen is the Director of the Berkeley Seismological Laboratory and an Associate Professor in the Dept. of Earth and Planetary Science at UC Berkeley. He received a BA in Earth Science from Cambridge University in 1994, his PhD in seismology from Princeton University in 2001, and was a Postdoctoral Fellow at Caltech, before taking up his first faculty position at the University of Wisconsin in 2002. He moved to UC Berkeley in 2005 where his research group focuses on 3D imaging of the Earth's internal structure to understand upwelling and downwelling of plumes and plates, and surface deformation responsible for earthquakes. His group has also developed a methodology to deliver warnings prior to earthquake shaking and is currently testing the system in California.