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Caltech Division of Geological and Planetary Sciences



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Robert W. Clayton

Professor of Geophysics; Divisional Academic Officer for Geological and Planetary Sciences

B.A.Sc., University of Toronto, 1973; M.Sc., University of British Columbia, 1976; Ph.D., Stanford University, 1981. Assistant Professor of Exploration Geophysics, Caltech, 1981-85; Associate Professor, 1985-89; Professor of Geophysics, 1989-. Executive Officer for Geophysics, 1987-94; Acting Director, Seismological Laboratory, 1989; 2008-09; Deputy Director, 1989-90; Academic Officer, 2008-.

Geophysics

Crustal Seismology

The research interests of Robert W. Clayton are in determining variations in Earth properties from seismic waves. This research is being pursued on many scales, from the fine scale of crustal and exploration seismology to the large scale of regional seismology.

Large-scale seismic experiment provide some of the highest resolution image

of crustal structure. In Southern California, there have been three major largescale surveys which have produced important results: the trans-Sierra transect, and the LARSE I and II surveys across the San Gabriel Mts, north of Los Angeles.

Array Seismology

Another intriguing aspect of the array is the possibility of providing early warning of strong ground shaking. Events detected in one part of the network can potentially be used to provide warning in other parts.

Numerical Wave Simulation

Wave propagation in 3D has become fairly routine. The current limitation is in determining a velocity model with sufficient resolution to match the accuracy of the calculations. We have participated in the development of the SCEC 3D velocity model which contains the basins and other features in the greater Los Angeles area.

We have also developed a technique for computing reciprocal Green's functions which allows us to simulate the effect of multiple sources with one numerical calculation. This allows us to economically try different scenarios on a given fault.

SELECTED PUBLICATIONS

Please see Robert Clayton's publications page:

http://www.gps.caltech.edu/~clay/RWC_Pub_List.html

