

## Biographical Sketch for: Robert S. Crosson



BORN: October 19, 1938, at Fairbanks, Alaska, USA; Male. E-mail: <crosson@u.washington.edu>

### EDUCATION:

B.Sc. in Geology, University of Washington (1961); M.S. in Geophysics, University of Utah (1963).  
Ph.D. in Geophysics, Stanford University (1966)

### POSITIONS HELD:

Assistant Professor, University of Washington (1966-72).  
Associate Professor, University of Washington (1972-78).  
Professor, University of Washington (1978-present).

### SCIENTIFIC CONTRIBUTIONS:

- (0) Development of techniques and applications in regional network seismology and lithosphere structure using data from regional networks, with particular application to the Pacific Northwest Regional Network. Developed joint inversion for velocity structure and earthquake hypocenters in the context of regional network data.
- (1) With students, developed methods for analyzing anisotropy of bulk rock from petrofabric observations, methods for cross-correlation analysis for relative travel time delays, methods for regional earthquake and teleseismic tomography, and methods for efficient access and analysis of regional earthquake data in digital form.
- (2) With students, produced definitive studies of the earthquake locations and focal mechanisms for the Cascadia forearc; developed a tectonic model for the south flank of the Island of Hawaii. Studies have provided basic constraints on the tectonics and state of stress in the Cascadia forearc region, including defining an arch structure in subducted Juan de Fuca slab, defining a root structure for the Cascade Range of Washington, and most recently produced a high resolution tomographic image of the forearc region in western Washington through large-scale joint inversion of a combination of active source and earthquake data.

### SELECTED PUBLICATIONS:

- Crosson, R.S., and J.W. Lin (1971). Voigt and Reuss prediction of anisotropic elasticity of dunite, *J. Geophys. Res.*, *76*, 570-578.
- Crosson, R.S. (1972). Small earthquakes, structure, and tectonics of the Puget Sound region, *Bull. Seis. Soc. Am.*, *62*, 1133-1171.
- Crosson, R.S. (1976). Crustal structure modeling of earthquake data; 1, Simultaneous least squares estimation of hypocenter and velocity parameters, *J. Geophys. Res.*, *81*, 3036-3046.
- Crosson, R.S. (1976). Crustal structure modeling of earthquake data; 2, Velocity structure of the Puget Sound region, Washington, *J. Geophys. Res.*, *81*, 3047-3054.
- Crosson, R.S., and E.T. Endo (1982). Focal mechanisms and locations of earthquakes in the vicinity of the 1975 Kalapana earthquake aftershock zone 1970-1979; implications for tectonics of the south flank of Kilauea Volcano, Island of Hawaii, *Tectonics*, *1*, 495-542.
- Crosson, R.S., and D.A. Bame (1985). A spherical source model for low frequency volcanic earthquakes, *JGR, Journal of Geophysical Research. B.* *90*, 10,237-10,247.
- VanDecar, J.C., and R.S. Crosson (1990). Determination of teleseismic relative phase arrival times using multi-channel cross-correlation and least squares, *Bull. Seis. Soc. Am.*, *80*, 150-159.
- Lees, J.M., and R.S. Crosson (1990). Tomographic imaging of local earthquake delay times for three-dimensional velocity variation in western Washington, *J. Geophys. Res.*, *95*, 4763-4776.
- Symons, N.P., and R.S. Crosson (1997). Seismic velocity structure of the Puget Sound region from 3-D non-linear tomography, *Geoph. Res. Lett.*, *24*, 2,593-2,596.
- Van Wagoner, T., R.S. Crosson, N.P. Symons, G.F. Medema, K.C. Creager, and T. Brocher (2002). Crustal structure and relocated earthquakes in the Puget Lowland, Washington from high resolution seismic tomography, *J. Geophys. Res.*, (in press).