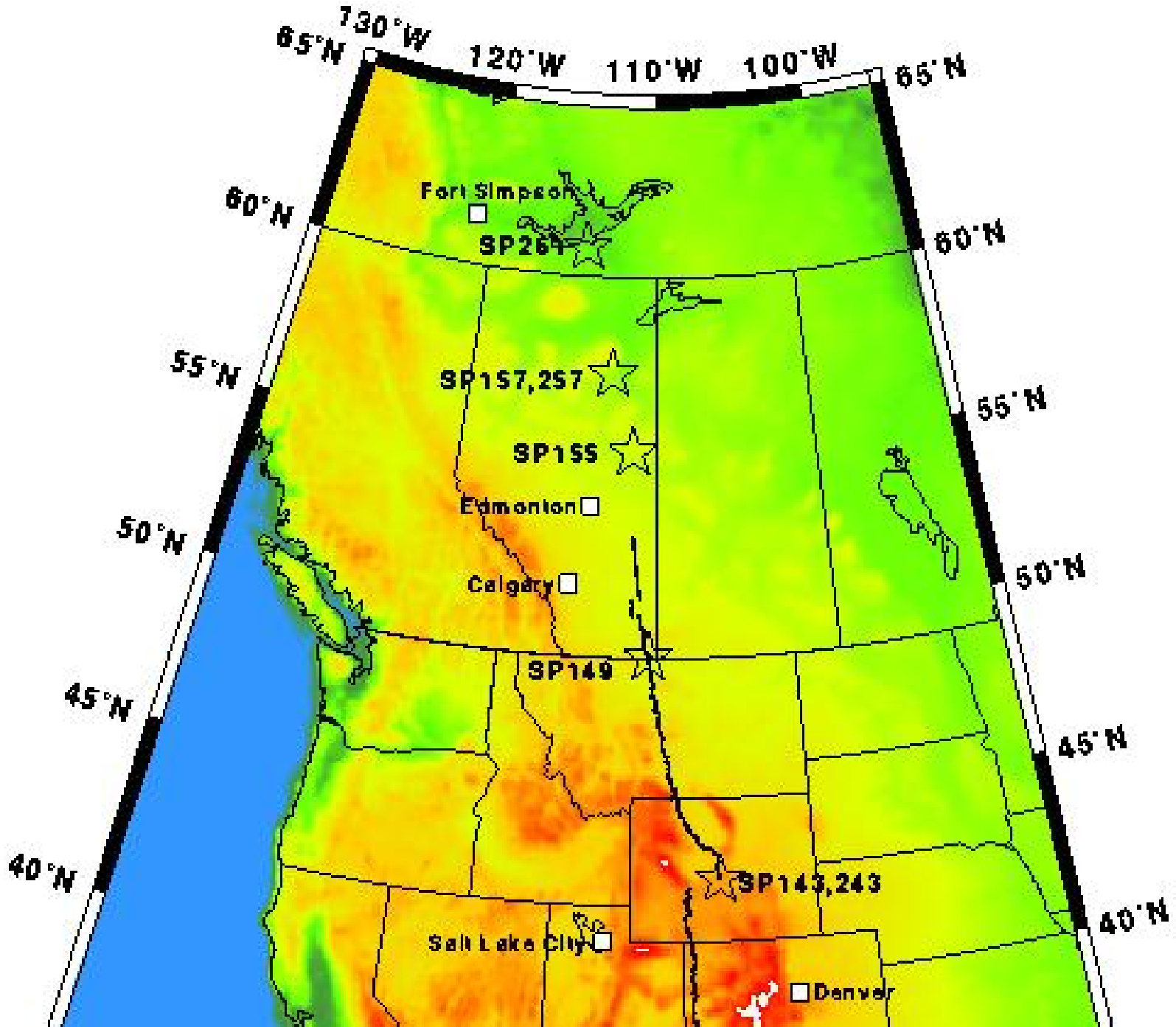
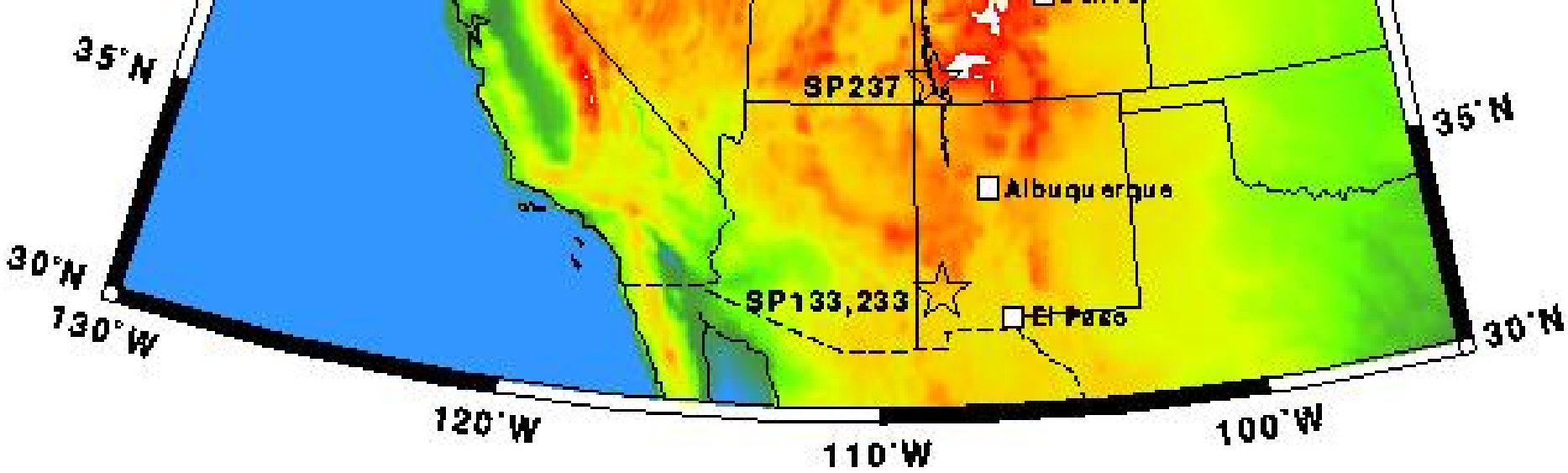
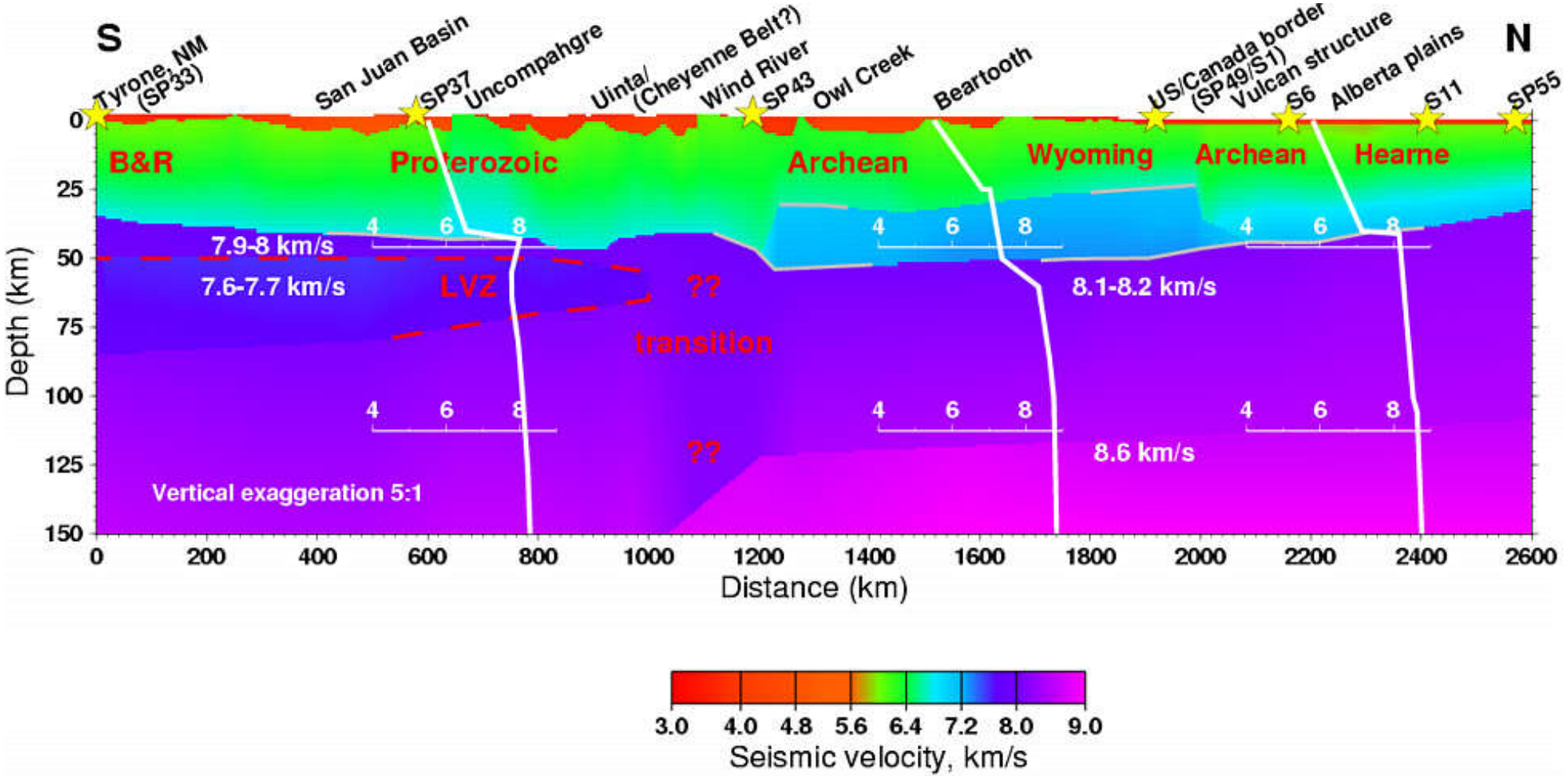
# DeepProbe

***New Mexico, USA, to the Northwest Territory, Canada***






The Deep Probe seismic experiment is a joint US-Canadian project to investigate and contrast the structures of the Colorado Plateau and the Archean Medicine Hat block in Canada. 10 shots at 8 different sites (stars on the map) were recorded in August 1995 using 2 deployments of 750 seismometers (wiggly black line) along a profile that extends from the US-Mexico border to the Great Slave Lake in Canada. A pilot deployment of 70 instruments in an earthquake recording array around Grand Junction in Colorado was also carried out. The project includes collaborators from UT El Paso, University of Oregon, Purdue, and British Columbia. The Rice contribution is funded by the National Science Foundation Continental Dynamics project.




*Velocity cross-section along the profile, with 1-d velocity depth functions determined from reflectivity modeling of amplitudes, and 2-d structure determined from traveltime analysis. Available as postscript, compressed and uncompressed.*

Initial analysis of the active source project has produced a continent-scale cross-section of seismic velocity from the surface to about 150km depth. Gross changes in crustal structure correlate with the boundaries between the blocks of Archean and Proterozoic age crust which make up much of western North America. In addition changes in upper mantle structure appear to match a suture between Archean and Proterozoic age terranes. Additional full wavefield finite-difference modelling is under way to investigate the amplitude variations in the upper mantle arrivals.

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## Deep Probe publications

*C.M. Snelson, T.J. Henstock, G.R. Keller, K.C. Miller, and A. Levander, Crustal and uppermost mantle structure along the Deep Probe seismic profile, Rocky Mountain Geology, 33, 181-198, 1998.*

*Deep Probe working group, Probing the Archean and Proterozoic lithosphere of western North America, GSA Today, July, 1998.*

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