Late Cenozoic Structure and Evolution of the Great Basin – Sierra Nevada Transition
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Volume Focus:

The transition between the Sierra Nevada and the Great Basin has received substantial attention over the last decade, due in part to the recognition that nearly 25% of the relative motion between the Pacific and North American plates is localized along this tectonic boundary. The boundary evolved during the Late Cenozoic as relative plate motion was broadly distributed from the California borderland into the Mojave Desert and Basin and Range Province. Displacement is concentrated in a relatively narrow belt of deformation that stretches from southern California northwesterly to southern Oregon. From the Mojave Desert, the displacement is carried north, east of the southern Sierra Nevada, in a narrow zone of deformation constituting the Eastern California Shear Zone, then from the latitude of the central Sierra Nevada broadens to include the Walker Lane and Central Nevada Seismic Belt in the northwestern Great Basin. The Sierra Nevada behaves as a coherent tectonic block with a northwest-directed motion of 10-14 mm/yr and forms the western boundary of the zone of distributed deformation in the Great Basin. Along the northwestern margin of the Great Basin the dimensions of the tectonic boundary become less clear at the transition from extensional faults to contractional structures of the Pacific Northwest.

Community interest in this transition zone is great and GSA technical sessions focusing on the tectonic evolution of the Sierra Nevada – Basin and Range transition have been very well attended at National and Sectional meetings. As an outgrowth of the 2004 Cordilleran-Rocky Mountain Meeting in Boise, Idaho, we are proposing a GSA Special Paper to capture the presentations made at that meeting. In addition, we solicited contributions from the community at large to improve coverage both geographically and topically. Listed below are 15 titles proposed by tentative contributors to the volume. If this volume is accepted, we will continue our solicitation for contributions by expanding our contacts through the GSA Structure-Tectonics mailing list. We anticipate that final volume will contain between 15 and 25 manuscripts.

We envision the following time line for completion of the volume. Submission of manuscripts for review by the end of August, 2005. Review of manuscripts and return to authors by December, 2005. Final revised manuscripts to the editors by March, 2006 and submission to GSA Book Editor by late April, 2006.

Tentative Titles:
Le, K., Lee, J., Lewis, O., and Finkel, R., Late Pleistocene to Holocene extension along the Sierra Nevada frontal fault zone, California.
Jayko, A.S., Plio-Pleistocene deformation of Late Neogene peneplane in the southern Walker Lane, Inyo County, California.
Petronis, M.S., Geissman, J.W., and Oldow, J.S., Paleomagnetic evaluation of strain accommodation in the central Walker Lane.
Ferranti, L., and Oldow, J.S., Active displacement transfer through a curved fault array, central Walker Lane, western Great Basin.
Oldow, J.S., GPS velocity field and active deformation in the central Walker Lane, western Great Basin.
Elias, E., Oldow, J.S., and McClelland, W.C., Late Cenozoic synorogenic basin development in the upper-plate of the Silver Peak extensional step-over system, western Great Basin.
Satterfield, J.I., and Oldow, J.S., Kinematics and geometry of an active displacement transfer system linking the Walker Lane and central Nevada seismic belt.
Singleton, E.S., Whipple, K., and Oldow, J.S., Intermediate and short term deformation rates in the Alvord extensional province, southeastern Oregon.
Jones, T.E., and Oldow, J.S., Northwestern termination of the Great Basin: Transition from active basin and range extension to contraction and block rotation, Blue Mountains, northeastern Oregon, southeast Washington, and western Idaho.
August, M., Ferranti, L., and Oldow, J.S., Holocene deformation rates on the Wassuk Range fault system, central Walker Lane.
Whitehead, C., and Miller, E.L., Miocene strain accommodation along the northwestern margin of the Basin and Range.
Cashman, P., and Trexler, J., Post-3 Ma deformation along the Sierra Nevada – Basin and Range transition zone, Verdi Basin, northwestern Nevada.
Faulds, J., Henry, C., Cashman, P., and Hinz, N., Cenozoic evolution of the northern Walker Lane, northwestern Nevada and northeastern California.