

MGS Luncheon Meeting

Wednesday, October 21st

11:45 am – Billings Petroleum Club

Please join us for lunch (\$14) and the talk (no charge)

RSVP – montanageologicalsociety@gmail.com, or 406-259-8790

An email reminder will be sent 3 days prior to the talk



Mike Alloway

SM Energy

A serial cross-section analysis of the Lewiston Structure, Clarkston, WA and implications for the evolution of the Lewiston Basin

The Lewiston Structure is located in southeastern Washington and west-central Idaho and is a generally east-west-trending ($\sim 075^\circ$), asymmetric, noncylindrical anticline in the Columbia River Basalt Group that transfers displacement into the Limekiln fault system to the southeast and the Silcott fault system to the southwest. A serial cross-section analysis and three-dimensional (3-D) construction of this structure show how the fold varies along its trend and shed light on the deformational history of the Lewiston Basin. Construction of the fold's 3-D form shows that the fold's wavelength increases and amplitude decreases near its eastern and western boundaries. Balanced cross sections show $\sim 5\%$ shortening across the structure, which is consistent with the Yakima Fold Belt. An angular unconformity below the Grande Ronde Basalt N1 magnetostratigraphic unit, in addition to a variation of N1 unit thickness across the structure, suggests that the fold was forming before N1 time. Analysis of structural data using the Gauss method for heterogeneous fault-slip data indicates north-south ($\sim 350^\circ$) shortening prior to and after N1 emplacement. The presence of a reverse fault on the southern limb of the Lewiston Structure is controversial. This fault crops out to the east of the field area where Grande Ronde Basalt magnetostratigraphic unit R2 is thrust over Pliocene(?) gravels. However, better control on unit thicknesses and map contacts rules out an exposed reverse fault on the southern limb of the fold west of the Washington-Idaho border, suggesting the fault either dies out or becomes blind.

Biography

Mike grew up in the eastern San Francisco Bay Area and received a B.S. in Earth and Soil Sciences from Cal Poly San Luis Obispo. He spent a summer working for United States Forest Service as a 'Forest Geomorphologist' before attending graduate school at Washington State University in Pullman, WA where he received his M.S. in Geology. He successfully defended his thesis in December, 2010 and published in GSA Special Paper 497 in October, 2013. Mike worked as a Wellsite Geologist at Sunburst Consulting (Billings, MT) for three years before accepting his current position as an Operations Geologist at SM Energy in Billings, MT.