

STRUCTURAL GEOLOGY OF THE DEREN SEISMIC ZONE AND BİRGÈD FAULT, SOUTH-CENTRAL MONGOLIA

Logan Chinn¹, Emily Daubenmire¹, T. K. Kelty¹, Ariunbold Genden², Robert Sauermann¹, and
Batulzii Dash²

¹Geological Sciences, CSULB, 1250 Bellflower Blvd, Long Beach, CA 90840, lchinn@csulb.edu

²School of Geology, Mongolian University of Science and Technology, PO Box 46/520, Ulaanbaatar,
210646, Mongolia

The Deren Seismic Zone is located between 46° 10' and 46° 20' N, 106° and 108° E. Historic seismicity of this region shows a 250 km x 50 km zone of earthquakes near and extending beyond the Deren Fault. There are at least three faults within the Deren Seismic Zone, including the: Deren Fault, West Deren Fault, and Bİrgèd Fault. Based on this study, it appears that these three faults have different levels of activity. This study focused on the West Deren Fault and the Bİrgèd Fault. Satellite images and field mapping along these faults indicate several structural relationships. The Bİrgèd Fault has a strike of ~N36°E and a surface expression ~30 km in length. It is truncated to the northeast by the younger, E-W striking West Deren Fault and does not appear to continue north of this point. The West Deren Fault loses its surface expression at 106° 3' E, 3 km west of this intersection. However, the satellite images show the West Deren Fault may continue ~10 km. The lithologic units along the Bİrgèd Fault and West Deren Fault primarily consist of resistant medium- to coarse-grained metasandstone, as well as recessive moderately metamorphosed siltstone. There is a discordance of bedding across the Bİrgèd Fault, which bifurcates toward the southwest. These units are broadly folded into gently plunging antiforms and synforms trending N63°E and S63°W. The wavelengths of these folds range from 3-7 kilometers. Data suggests folding occurred before the formation of the Bİrgèd Fault, and before the large Mesozoic(?) granitic intrusion that is within Baga Gadzrĭn Chuluu Park. Joints with similar orientations occur in both the intrusive and metasedimentary rocks. These joints have a spacing of 1cm–1m and are oriented N60°E 70°SE, N10°E 30°NW, and E-W 70°S. Suggested future work on the Bİrgèd Fault includes determining its dip and lateral extent.