Large-scale folding in the Tavan Har basement block, Southeastern Mongolia and its relevance to intracontinental deformation

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The East Gobi Fault Zone in southeastern Mongolia is part of the Central Asian Orogenic Belt and has experienced a complex history of deformation subsequent to continental accretion during the Paleozoic. Several phases of deformation have been identified in the Tavan Har region including Late Triassic sinistral shear, Late Jurassic–Early Cretaceous rift basin development, mid Cretaceous basin inversion, and early Cenozoic sinistral strike-slip faulting. Structural data from Tavan Har was collected in North–South transects, approximately perpendicular to the dominant foliation. Throughout most of Tavan Har the S_1 foliation in amphibolite facies units associated with the Triassic shear zone is near vertical and strikes consistently E-NE. In the northern area of the Tavan Har region the S_1 foliations define large scale (~200 m wavelength), shallow-plunging, isoclinal folds that are observable in satellite imagery. The intent of this project is to use field observations and microstructural relationships to constrain the timing and development of the large-scale folding relative to the sinistral shear zone and other documented phases of deformation. Axial planar S_2 is not observable at outcrop scale within the folded unit observable in satellite imagery, but is observed in nearby outcrops in Tavan Har and is locally associated with crenulation cleavage development. Smaller scale folding was also observed in southern Tavan Har with an axial planar S_2 cleavage. Preliminary interpretations of the available data suggest the possibility that the folding post-dates the Late Triassic sinistral shear zone and may be associated with Jurassic thrusting documented elsewhere in southern Mongolia and China. The next stage of the project is to incorporate microstructural analyses of our samples to further test this interpretation. The results of this project have implications for unraveling the history of polyphase deformation in the EGFZ and for dynamics of large-scale intracontinental deformation.