

USGS NSF GRIP Opportunity

 USGS Center:	Crustal Geophysics and Geochemistry Science Center
 Project Title:	Crustal architecture of the US mid-continent and structural controls on mineralization
 Project Hypothesis or Objectives:	<p>The Mid-continent Rift System (MRS) and surrounding Precambrian rocks are known to host highly significant mineral resources. However, more than 90% of the MRS is covered by Phanerozoic sedimentary rocks and sediments. As a result, much of the region's geology and mineral potential is poorly understood, making geophysical methods a critical component of mineral resource assessments. Geophysical models based upon EarthScope data at the scale of the entire MRS reveal several areas of minerals interest. The objective of this opportunity is to synthesize and interpret high-resolution ground and/or airborne geophysical data in several target regions and to interpret these data together with geological, geochemical, and borehole data to understand the structural framework. Regions of current study include Upper Michigan and Northern Wisconsin (sulfur-bearing metasedimentary rocks and a range of deposit types), Northeast Iowa (intrusive complex and MRS clastic rocks), and eastern Kansas (unproven, but potentially extensive MRS clastic rocks).</p>
 Duration:	9-12 months
 Internship Location:	Lakewood, CO
 Area of Discipline:	Geophysics, Geology, Structural Geology, Economic Geology, Earth Science, Remote Sensing
 Expected Outcome:	<p>This research opportunity will inform mineral resource assessments of the US mid-continent region. The result of this effort will be 2D and 3D physical property models and ultimately integrated structural models over regions with significant mineral potential. The intern will gain experience in processing and interpretation of ground and airborne geophysical data using cutting-edge approaches as well as gaining exposure to data visualization and integration packages. The intern will interact with a broad range of USGS scientists including experts in economic geology and airborne geophysics.</p>

● **Special skills/training Required:** Applicant must have a degree in earth sciences or a related field and have completed undergraduate level coursework in geology and geophysics. Experience in data integration (e.g. ArcGIS) and processing (e.g. MATLAB, Oasis Montaj), as well as a background in economic geology, is desirable, but not required. Applicant should have basic programming experience and an ability to learn software packages independently.

● **Duties/Responsibilities:** May include acquisition of ground-based geophysical data, processing of ground and airborne geophysical data (magnetic, gravity, electromagnetic, borehole), and synthesis and integration of such data sets toward development of preliminary structural models. Provide support to USGS scientists on the interpretation of the data processing and modeling results.

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