

To Whom It May Concern:

Thank you very much for your generous donation to help support my graduate research, and I cannot tell you how much I appreciate this contribution.

The money provided will help to support my fieldwork in northern China and South Korea this spring, along with laboratory expenses. This project will investigate late Cambrian trilobite extinctions and associated geochemical perturbations to better understand underlying causes for the rapid faunal turnovers during this time. At the base of a global extinction event in the late Cambrian, a major shift in carbon and sulfur isotopic concentrations has been observed that is likely related to widespread anoxia in the oceans. This proposes the question, what caused the anoxia?

With current concerns of global climate change, it is important to understand the mechanisms driving the widespread chemical perturbations seen in the rock record. The vast exposure and completeness of the late Cambrian north China carbonate platform provides the unique opportunity for high-resolution studies of this event over a large spatial area. The study of multiple isotopic systems coupled with detailed analysis of facies changes and faunal turnovers should shed light on the relationship between local environmental fluctuations and variation in marine chemistry and help tease apart the main contributors to these observed phenomena (e.g., climatic, tectonic, etc.). An intricate piece to this puzzle is the understanding of what organisms went extinct and what survived. Trilobites serve as ideal test animals for this study because they have an excellent fossil record and were very diverse in the late Cambrian. The morphological variation observed between trilobite species is largely related to the environments they inhabited and their strategies to life. We can make inferences on what environmental conditions were like during these events based on the life habits of the species that survived.

Thank you again for you contribution,

Ryan McKenzie