



# Board 0135: New Insights into Early Cretaceous Extension in Northern Mongolia



Tuesday, 13 December 2022



10:00 - 13:30



Poster Hall, Hall A (South, Level 3, McCormick Place)

## Abstract

The late Mesozoic Era was a time of widespread crustal extension in eastern Asia resulting in both rift basin and metamorphic core complex formation. Two of the more recently documented examples of this extensional phase are the Ereendavaa and Buteel metamorphic core complexes (EMCC, BMCC). Both are located in northern Mongolia proximal to the Mongol Okhotsk Suture Zone (MOSZ). The MOSZ is a profound, yet enigmatic structure that formed due to closure of the Mongol-Okhotsk Ocean, a basin that separated the Siberian and North China cratons and intervening terranes of the Central Asian Orogenic Belt. Based on published work by others, the core complexes record NW-SE extension, cooling and deformation from c. 135 to 120 Ma. We present new data as part of a collaborative research project that aims to constrain the evolution of the MOSZ more broadly and its relationship to intracontinental deformation after suturing. Our methods include analysis of satellite imagery and digital elevation models with synthesis of field, (micro)structural, and geochronologic data with published maps and studies. Based on our findings, the EMCC likely extends several 10's of km to the NE. Satellite imagery and DEMs suggest large-scale corrugations along the N-flank consistent with NW-SE extension. To the SW of the EMCC, Early Cretaceous rift basins are associated with strong NE-SW oriented lineaments. We examined the BMCC along its SW mapped extent, an area for which no data were presented in prior publications; we confirmed the presence of a top-to-the-SE detachment fault. The EMCC and BMCC, like the Yagan-Onch Hayrhan MCC in southern Mongolia, have footwall rocks previously mapped as Precambrian that are, in large part, metamorphosed Paleozoic and Mesozoic igneous and sedimentary rocks. All three MCCs exhibit evidence for structural complexity, such as NE-SW trending lineations orthogonal to the NW-SE extension direction. As in S Mongolia, we hypothesize that the NE-SW lineations in the EMCC and BMCC formed during an earlier phase of shortening. The expression of the Early Cretaceous extension (rift basin vs. MCC) appears to be controlled by the inherited structure.



---

## First Author

---

 [Jarret Pidgeon](#)  
University of Vermont

---

## Authors

---

 [Gavin Pirrie](#)  
University of Vermont

 [Laura Elaine Webb](#)  
University of Vermont

 [Justin Tully](#)  
University of Utah

 [Susana Henriquez](#)  
University of Arizona  
University of Utah

 [Gombodorj Batsukh](#)  
Mongolian Academy of Sciences

---

---

## View Related

---