

McGill University & MUST Student Chapters Joint Field Trip: Ore deposits of central and southern Mongolia

In May 2018, a group of seven graduate students from the McGill University SEG student chapter, accompanied by Dr. Sarantuya Oyungerel, two graduate students, and a research associate from the Mongolian University of Science and Technology (MUST), visited five mines and several advanced-stage exploration projects in three provinces of Mongolia. Happily and safely housed within two Russian 4x4 vans, our group travelled for ten days across the Gobi Desert and the grasslands of the Selenge and Orkhon regions, receiving warm welcomes from the local host geologists and experiencing the great hospitality of rural Mongolia along the way.

Our trip started in Ulaanbaatar where we visited the School of Geology and Mining Engineering at MUST and participated in a one-day research seminar with MUST graduate students and faculty. From Ulaanbaatar we headed 800 km south to view field outcrops around the giant Oyu Tolgoi copper-gold porphyry mine with Garamjav Dondog, the geologist who discovered the deposit in the 1990s. Staying in the southern Gobi Desert, we continued on to see Xanadu Mine's advanced-stage exploration of the Kharmagtai porphyry deposit before visiting the large open pit Tavan Tolgoi coking and thermal coal mine and the REE-bearing, magnetite-apatite rich Mushgai Khudag carbonatite complex. We finished the southern Gobi leg of our trip by examining tourmaline-bearing high-grade ore zones at the Olon Ovoot orogenic gold mine and spending a night in a traditional Mongoilan yurt camp at the famous Flaming Cliffs paleontological site where the world's first dinosaur eggs were discovered in the 1920s.

The second leg of our trip focused on copper and gold deposits north of Ulaanbaatar. We visited the Boroo placer gold mine and learned about all stages of the placer mining process from extraction to onsite ore processing. Next we continued on to the massive granodiorite-hosted Erdenet copper porphyry deposit, host to the fourth largest copper mine in the world. Here, geologists from the Erdenet Mining Corporation allowed us to examine drill core from key ore and hydrothermal alteration zones as well as view a blast in the open pit during shift change.

We extend our sincere thanks to Prof. Jargalan Sereenen and Dr. Sarantuya Oyungerel (MUST) and the many mine geologists and managers who all worked hard to help organize our trip and generously shared their technical expertise and time with us; this trip would simply not have been possible without their

help. We express our deep gratitude to the SEG, McGill Earth & Planetary Sciences, the Prospectors and Developers Association of Canada, DIVEX, and the Mineral Deposits Division of the Geological Association of Canada for their generous financial support of our trip.

Jethro Sanz-Robinson & Duncan McLeish



McGill-MUST SEG group with mine geologists at the Erdenet copper porphyry mine



McGill-MUST SEG group at the Flaming Cliffs paleontological site