



Basin Analysis and Sequence Stratigraphy Technical Division

The Geology & History of Exploration at Mammoth Cave

Speaker: Astrid Arts

Location: *Virtual*

Date: Thursday, January 20, 2022 | 12:00pm – 1:00pm (MST)

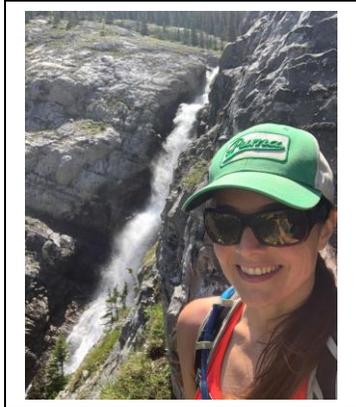
ABSTRACT

Mammoth Cave is a geological wonder. It is the world's longest cave system with over 660 km of known passage. Located on the Chester Upland in West Central Kentucky, the Mammoth Cave System started forming 6-10 million years ago. Chemically aggressive waters developed passageways along the bedding planes of the Mississippian aged St. Louis, Ste. Genevieve and Girkin Formations. The in-soluble sandstones of the Big Clifty Formation cap these limestones and have played an integral role in protecting and stabilizing the labyrinth cave network. Mammoth Cave is not highly decorated but as a dry cave it does have spectacular gypsum speleothems along some of its passages.

Human exploration in Mammoth Cave started 2000 - 5000 years ago by Native Americans, who sought out mirabilite and the purgative experience it offered. By the late 1700's, the cave was mined heavily for salt peter. The nitrates in salt peter are the primary ingredient in gunpowder and Mammoth Cave supported many battles up until the War of 1812, when Canada memorably burned down the White House. Mammoth was turned into a show cave shortly after. Rich visitors who were travelling the Dixie Highway between Nashville and Louisville, were drawn to make the arduous 9-mile side trip to tour the cave with famed Slave Guide Stephen Bishop. Tours included a boat ride on the River Styx and writing your name on the wall to mark the occasion. The air of the cave was thought to cure Tuberculosis and a hospital was opened in 1839. Unfortunately, it likely infected more visitors than it cured. Kentucky was a slave owning state but was neutral during the US Civil war from 1861-1865. The end of the Civil War ended slavery, but black guides remained sought out by visitors. Much of the early exploration of Mammoth Cave is credited to Stephen Bishop and slave guides who followed after him. Mammoth Cave was showcased at the 1893 World's Fair in Chicago, the same Fair in which Tesla and Edison showcased "electricity." By the late 1800's - early 1900's exploration for new caves and new entrances into Mammoth was growing. The Kentucky Cave Wars peaked in 1925 when Floyd Collins was trapped in Sand Cave. This nationwide radio news story captivated Americans for 17 days and brought notoriety and many more tourists to Mammoth. In 1926, the Mammoth Cave National Park Association was formed. It took 15 long years to buy the known caves and land in the area. In 1941, Mammoth Cave became the 26th National Park in the United States.



BIOGRAPHY



Astrid Arts is a Staff Geologist at Cenovus Energy with a focus on the Paleozoic. Prior to joining Cenovus, she worked for ConocoPhillips (including predecessor companies Crestar, Gulf and Conoco) and Barrick Energy looking at carbonate and clastic reservoirs throughout Alberta.

Astrid is an active member of the Canadian Society of Petroleum Geologists (CSPG). She holds a Bachelors of Science (Honours) in Geology and a Masters of Science in Earth and Atmospheric Science (Carbonate Sedimentology) from the University of Alberta. Astrid is happiest when hiking and has a knack for finding geology exhibits while on vacation much to the chagrin of her 2 children.



Figure 1 – Gypsum Tiger Lily

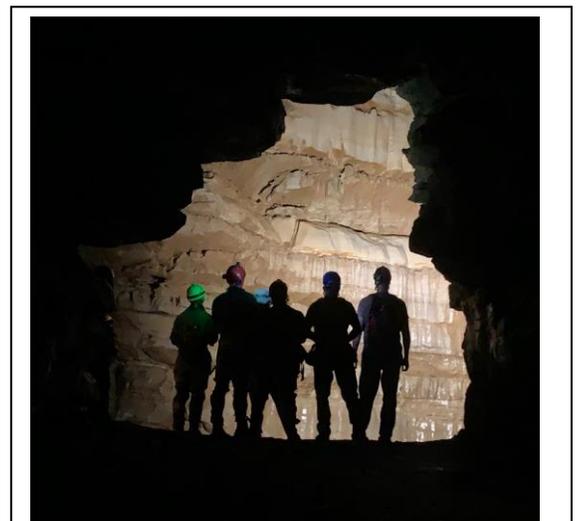


Figure 2 - Edna's Dome