

Mammoth Cave Field Camp

July 12–18, 2015



Caves that you will visit:

- Mammoth Cave– the Historic Tour and several areas restricted to general public
- Great Onyx Cave– a biological monitoring research cave
- Lost River Cave– Karst and urban environments
- Crumps Cave– WKU research cave

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Field Camp Description

It is often said that the best geologists are the ones who spend time studying geology in the field and the same can be said for Earth science teachers. Field camps are designed to take teachers into the field for 3–5 days at an affordable cost which allows them to study geology first hand and learn new ways to incorporate field experiences into their lessons. During each field camp, teachers will have opportunities to collect mineral, rock and fossil samples to take back to their classrooms.

Join GSA as we explore the world's longest cave, Mammoth Cave and the surrounding area. During this field camp, you will have the opportunity to visit four different caves: each with its own unique characteristics.

We begin this trip by examining the regional geology and the stratigraphy of the Highland Escarpment. We will collect samples of sedimentary rocks and learn how the re-

gional geology helped form conditions that allowed Mammoth Cave to form. After initiating a groundwater dye test, day one ends with us counting bats and learning more about these important creatures.

Day two begins by visiting



Measuring stalagmites to calculate their ages.

Crumps Cave, a research cave owned by Western Kentucky University (WKU). We then examine the sinkhole plain before exploring Mammoth Cave. If you have visited Mammoth Cave before, this

trip will allow you to see it like you have never seen it before!

Day three begins with a tour of Great Onyx Cave; a biological monitoring cave located in MCNP. We will examine cave features and map the interior of Great Onyx Cave.

The next day, we measure stalagmites and estimate their ages before heading to the surface. We then map the surface features and connect them to the karst features that we mapped the previous day in Great Onyx Cave. We end day four by returning to Mammoth Cave to calculate water discharge for a research.

On day five we collect and analyze data from the groundwater dye trace at a WKU lab. We will visit Lost River Cave to learn about urban karst environments and the impact of humans on those environments.

This trip is perfect for earth science and environmental science teachers, pre-service teachers and college students!

Itinerary

July 12– Arrive by 2 (Central Time) at Hamilton Valley Research Center, introductions, rock exchange, orientation, MC Visitor Center

July 13– Dye trace, Highland Rim Escarpment, Bats

July 14– Crumps Cave, Sinkhole Plain, Historic Tour (Mammoth Cave)

July 15– Great Onyx Cave mapping and Educational Activities

July 16– Great Onyx Cave surface mapping, Water discharge study, MC Visitor Center

July 17– Analyze dye trace, Lost River Cave and human impact on karst, Waterfall hike

*Note: itinerary is subject to change

If you are flying, you will need to fly into the Louisville, KY airport. Your flight will need to arrive **by noon (Eastern Time) if you want to be picked up and transported to Mammoth Cave.

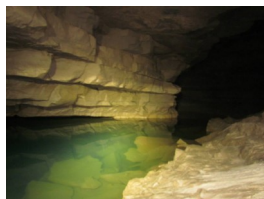
Return flights should be made on Saturday **after** 10 am (Eastern Time) if you want a ride to the airport.

There are no shuttles from the airport to Mammoth Cave!



Teachers mapping Great Onyx Cave.

"I love the idea that the data we collected will be used in a real study"



The Green River in Mammoth Cave. The lowest section of the cave. Photo credit: Devin Cherry

Why Attend a Field Camp with GSA?

Field Camps are a fantastic way to increase your content knowledge and to learn new ways to teach Earth science to your students.

Sure, you can go to several of these spots on your own; however, you won't have experts teaching you about the geology of the area and helping to share ways for you to teach these concepts in your classroom.

Additionally, most of our trips take you to places that the general public does not have access to. On the Mammoth Cave Field Camp, you will visit four caves. Two of

these caves are closed to the public and only researchers have access to these caves. You will see parts of Mammoth Cave that you would not be able to see if you went to Mammoth Cave on your own. GSA helps to get you to remote parts of these caves.

Each field camp provides professional development hours. You will earn one professional hour for each hour that you spend in the field. Field camps typically award 40–60 professional hours. Professional development in the field sure beats professional development at your school or district!

Meet the MCFC Experts!

Dr. Chris Groves from Western Kentucky University, Cheryl Messenger from Mammoth Cave National Park, and Shannon Trimboli and Rick Toomey from Mammoth Cave International Center for Science and Learning (MCICSL) will join us throughout the week. All four have extensive knowledge of Mammoth Cave and the geology in the area. GSA is excited to have them join us on our field camp and we know that they will help create an incredible learning experience for you.

Funding

Teachers often ask about funding for GeoVentures and Field Camps. Unfortunately, we are unable to assist with grants or stipends at this time. Here are some ways that previous teachers have been able to secure funding to attend a trip:

1. **Fund For Teachers**– Several teachers have attended GeoVentures and Field Camps through these funds. www.fundforteachers.org
2. **Your school or district.** It doesn't hurt to ask! Each year we have several teachers who have all or part of their trips paid for by their school or district.
3. **Local Lions and Rotary Clubs**– they have given small grants to teachers as long as they give a presentation at a meeting
4. **Rural teachers**– Rural Trust's Global Teacher

Fellowship website at www.globalteacherfellowship.ruraledu.org

5. **Become a GSA member** and save \$100!

We wish you the best of luck securing funding!



Fitness

Expect to hike several miles on and off trail each day on this trip. Terrain can be rough and uneven. While we do our best to keep hikes easy to accommodate various levels of ability, some hikes will be long and/or strenuous.

On two of our hikes we will climb a set of stairs that contains several flights of stairs. We take our time climbing these stairs; however, if you have difficulty with stairs, we recommend climbing stairs to prepare for this trip.

We recommend hiking 2–3 miles several times a week prior to the Mammoth Cave



Hiking down to the Green River in Mammoth Cave. Photo credit: Devin Cherry

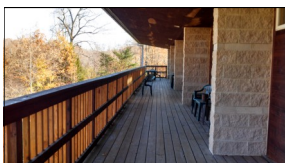
Field Camp. Last year's teachers estimated that they hiked over 21 miles during the five days.

Email Davida Buehler at dbuehler@geosociety.org if you have questions about specific hikes.

If you have any concerns, consult your physician.

Accommodations and Food

Hamilton Valley Research Center



Our accommodations are at the Hamilton Valley Research Center. The Center is used primarily by cave researchers who visit Mammoth Cave from around the world. They stay here while they map new parts of the cave or while they conduct research. It is very likely that we will meet a researcher or two during our stay!

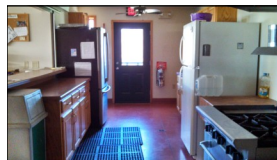
The Center will host our group and the facility has two bunkhouses, a fully equipped kitchen, a dining area, bathrooms, a lounge and a fantastic deck with a beautiful view where you can drink your morning cup of coffee!



Bunkhouses contain two sets of bunkbeds, an air conditioning unit and storage areas for your items.

You just need to bring linens and a pillow!

Food



We will take full advantage of the fully stocked kitchen. On Sunday, we will go to the grocery store to buy items for breakfasts and lunches. Five of your dinners are included with the price of the field camp. However, we will break up into groups and we will take turns cooking dinner each night. Special diets will be accommodated.



Roadside discussions. A common site on field camps.

Previous Participants Comments

"Trip was very good and I'd do it again. I will be able to take things I learned back to my classroom and I'm glad I came."

"Super fun. I love going to places that so few other people can go. I feel like those are the real cave experiences. I also liked seeing the little water critters and hearing about the ongoing monitoring."

"Many, many things that I can use or adapt to my region."

Good lessons. Appropriate for any level. Great pacing too. Excellent! Wonderful presenter!"



"Great Onyx was wonderful. A true cave experience. Useful and fun activity learning to map the cave."

"The choice of Chris as our guide was superb! He was very interesting and was truly an expert in Geology and the cave world! The dye activity was very interesting and to see the practical application of the dye was exciting to see as it pertains to protecting our environment."

"I love the fact that we are learning and doing a skill used in the field!"

"Very fun activity (measuring stalagmites) and great opportunity to combine math and science."

Fine Print and Cost

The cost of this trip is \$850. GSA members and their partners receive a \$100 discount and the price for them is \$750.



Price includes lodging from July 12-17, all fees to parks, field guide, waterproof field

notebook, transportation to and from the airport (Louisville, KY), transportation during the field camp and five dinners. Lodging for July 17th is included in the cost of the trip. Bring money for breakfasts, lunches and souvenirs.

Registration form and a **non-refundable \$150** deposit are due by March 15, 2015.

Trip must be paid in full by May 1, 2015.

A full refund (minus the \$150 deposit) will be issued for cancellations prior to May 12, 2015 COB.

No refunds will be issued after May 13, 2015.

Please contact Davida Buehler at dbuehler@geosociety.org with any questions or for additional information.



You will have a chance to do some "rough caving." This is optional.



The Geological Society of America

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"Because the best geologists have seen the most rocks!"



www.geoventures.org

GeoVentures are an exciting way for you to learn about our amazing planet by joining enthusiastic leaders to sites of geological wonder around the globe. Whether you are a complete geological novice, a keen student, a school/college educator or a professional geoscientist, GeoVentures has a perfect trip for you to attend.

Backed by the resources, professional membership and experience of The Geological Society of America, GeoVentures offer high quality experiences for every participant and we strive to include programs that reach beyond the pure geoscience and include cultural, environmental and historical aspects.

Meet Your Trip Leaders!

Originally from Va's Eastern Shore, **Rebecca Ludden** grew up boating and canoeing around the Chesapeake Bay. She is a graduate of James Madison University with 28 years of teaching experience at the middle and high school levels. Rebecca is endorsed in Special Education, Life Science, and Earth & Space Science and is currently teaching Advanced Earth Science and Earth Science II at Massaponax High School in Fredericksburg, VA. She has a passion for the outdoors and helping her students understand the world around them. She loves being outside (in any weather!) and she spends her free time hiking, camping, canoeing and exploring our State and National parks.



Trip leader Rebecca Ludden measuring a stalagmite.



Trip Leader Cathy with her daughter at her college graduation.

Cathy Pritchett has a wealth of science knowledge and teaching experience to bring to the field camp. She teaches Earth Science, Advanced Earth Science and Anatomy and Physiology. In past years, she has also taught all levels of Biology. Mammoth Cave has captivated Cathy's attention for years and her former students always remember the story of Floyd Collins. In her free time, Cathy enjoys helping others develop an appreciation for nature. She has been a naturalist for many years and often leads guided hikes and talks in the Fredericksburg, Virginia area.