

**Institute on Lake Superior Geology
May 8 to 11, 2013
Houghton, Michigan, USA**

**FIRST CIRCULAR AND
CALL FOR PAPERS**



**ILSG 2013
Fifty-ninth Annual Meeting**

Sponsored by:

**Michigan Technological University
A. E. Seaman Mineral Museum
Ted Bornhorst and Allan Blaske, Co-Chairs 59th ILSG**

**Additional Information at:
www.lakesuperiorgeology.org**

Please respond by **February 14, 2013** using the Online Response Form found at:

<http://www.lakesuperiorgeology.org/Houghton2013/index.html>

Your response is appreciated for planning of the meeting.
Field trips with insufficient interest may be cancelled.

GENERAL INFORMATION

The 59th Annual Institute on Lake Superior Geology will be held from **Wednesday, May 8 to Saturday, May 11, 2013** at the Franklin Square Inn, Houghton, Michigan.

IMPORTANT DATES:

March 25, 2013 Abstracts Due

April 8, 2013 Pre-registration Deadline

TENTATIVE SCHEDULE

Meeting Headquarters Franklin Square Inn, Downtown Houghton, Michigan

Wednesday, May 8

8:00 a.m. - 5:00 p.m.

Field Trips 1, 2, and 3

4:00 p.m. - 10:00 p.m.

Registration, Poster Session and Social at Franklin Square

Thursday, May 9

8:00 a.m. - 12:00 p.m.

Registration continues

9:00 a.m. - 12:00 p.m.

Technical Session I

2:00 p.m. - 4:30 p.m.

Technical Session II

6:30 p.m. - 7:30 p.m.

Social with Cash Bar

7:30 p.m. - 9:30 p.m.

Annual Banquet, Awards Presentation, and Guest Speaker

Friday, May 10

9:00 a.m. - 12:00 p.m.

Technical Session III

1:00 p.m. - 3:00 p.m.

Technical Session IV

3:00 p.m. - 7:00 p.m.

Field Trip 4 - A.E. Seaman Mineral Museum

Saturday, May 11

8:00 a.m. - 6:00 p.m.

Field Trips 5, 6, and 7

STUDENTS

Students are especially encouraged to participate in all facets of the ILSG. Travel subsidies are available for qualified students who attend the 59th meeting. Applications for student travel awards are available on the website or may be requested from Ted Bornhorst (tjb@mtu.edu). Applications must be completed and returned by **April 8, 2013**. Cash prizes will be awarded for the best student-authored presentations.

TRANSPORTATION

Houghton is located on the Keweenaw Peninsula of Lake Superior access by automobile via M-28 and U.S. Highway 41. Houghton is 350 km east of Duluth, 265 km west of Sault Ste Marie. Houghton County International Airport (CMX) serves Houghton with airline United Express via Chicago. Marquette, 160 km east of Houghton, has additional flight options.

ACCOMMODATIONS

All events for the 59th Annual ILSG Meeting will take place at the Franklin Square Inn, downtown Houghton, Michigan. The Franklin Square Inn has a block of rooms for ILSG registrants; Super 8 is an easy walk in good weather along the City of Houghton walking path. Other motels offering special rates for ILSG registrants are posted on the ILSG web site.

CALL FOR PAPERS

Abstract Submission Deadline: March 25, 2013

All abstracts will be reviewed for content.

Specifications include:

- A. Limit of two pages (8½" x 11") including illustrations and references
- B. Use left margin of 1.5", top, bottom, and right margins of 1"
- C. Follow ILSG Format (see recent Proceeding Volumes online as guideline)

TITLE: Times **New Roman 12 point font BOLD** following the "ILSG title" style

SURNAME in caps, First name (use the "ILSG author" style), **SECOND AUTHOR, first name, THIRD AUTHOR, first name**

Address (use the "ILSG affiliation" style)

Example:

Geochemistry and petrology of Midcontinent Rift-related intrusive rocks of the Sibley Peninsula, Ontario

CARL, Christian¹, HOLLINGS, Peter¹, and SMYK, Mark²

¹*Department of Geology, Lakehead University, 955 Oliver Road Thunder Bay, ON P7B 5E1 Canada*

²*Ontario Geological Survey, Ministry of Northern Development, Mines and Forestry, Suite B002, 435 James St. South Thunder Bay, ON P7E 6S7 Canada*

ABSTRACT TEXT AND FIGURES: Times **New Roman 11 point font**

The main text, figures, and references **maximum of two pages**. Use the "ILSG Main text" style. Figures should be inserted in the text in the appropriate place. The abstract volume will be printed in black and white, although the PDF of the volume will be in color, so you should insure your figures reproduce correctly in black and white.

Figure 1: Figure captions should be **Times New Roman 10 point** and placed under the figure. Use the "ILSG Figure caption" style

REFERENCES: Times **New Roman 10 point font** using the "ILSG References" style.

Example:

Hollings, P., Hart, T., Richardson, A., and MacDonald, C., 2007. Geochemistry of the Midproterozoic intrusive rocks of the Nipigon Embayment, Northwestern Ontario. *Canadian Journal of Earth Sciences*, 44: 1087-1110.

Abstract Submittal and Questions

Authors must submit a print-ready abstract in two forms (PDF and MS Word). **Send Abstracts by March 25, 2013 deadline to:**

Allan R. Blaske, AECOM, Lansing, MI 48933
allan.blaske@aecom.com

D 517-913-5815 C 517-974-2891

PROPOSED FIELD TRIPS

Pre Meeting: Wednesday May 8

1) Geology of Silver Mountain, Houghton County, Michigan. *Trip leader: Evgeniy Kulakov (Michigan Tech).* This field trip will examine the geology of Silver Mountain and its relationship to other Midcontinent Rift related rocks. Silver Mountain is a 100 meter high glacially polished dome-shaped hill surrounded by Jacobsville Sandstone, younger sediments and glacial deposits. It is underlain by fourteen shallow-dipping tholeiitic lava flows. On the basis of gravity and magnetic surveys the flows are interpreted as part of Siemens Creek Formation, an upper part of Powder Mill Group. During the trip some geological, geochemical and geophysical characteristics will be discussed. The trip will end with scenic views from the top of Silver Mountain where copper sulfides occur in the uppermost flows. This trip involves strenuous physical exertion via steep stairs to climb to the top of the mountain.

2) Geologic Overview of the Keweenaw Peninsula, Michigan. *Trip Leaders: Ted Bornhorst and Bob Barron (both Michigan Tech).* This field trip will provide a geologic overview of the Keweenaw Peninsula from Houghton to Copper Harbor. The trip will visit sites including all of the major Midcontinent Rift related bedrock units and the glacial overburden. The Keweenaw Peninsula is well known for hosting stratiform native copper deposit hosted by tops of rift-filling subaerial basaltic lava flows and interflow coarse clastic sedimentary rocks. The trip will visit one or more rock piles from now closed mines. This trip will be of easy difficulty.

3) Keweenaw Peninsula Chalcocite Exploration, Michigan. *Trip Leaders: Ross Grunwald, Joe Strapko, and Jim Hantulla (Keweenaw Copper Co).* Although chalcocite copper mineralization on the Keweenaw was known since at least the 1960's when it was explored by Calumet and Hecla geologists, it was not until the Homestake-Keweenaw Venture exploration activities in the 1970's that deposits of potentially economic grade and tonnage were known. As a result of Homestake-Keweenaw Venture's work, several previously unknown chalcocite occurrences were discovered. While economics prevented the serious consideration of any of these deposits until recently, higher copper prices have renewed interest in the area. Highland Copper Company, through its US subsidiary, Keweenaw Copper Co., began work to evaluate the district in July 2011. The prospective area lies in Keweenaw County along a twenty mile zone near the base of the exposed Portage Lake Volcanics bounded on the south by the Keweenaw Fault. Two of these deposits have a historic aggregate copper resource of over 250 million pounds of copper. The trip will include inspection of Keweenaw Copper's field office and a tour to include visits to the primary project sites, including one of the few surface exposures of mineralization.

4) Sediments of the Paleoproterozoic Baraga Group in the Western Michigamme and Baraga Basins. *Trip Leader: Dean Rossell (Rio Tinto).* This field trip will compare outcrops of Paleoproterozoic Baraga Group sediments in the western portion of the Michigamme Basin with potential analogs in the Baraga Basin to the north. The integration of 20 years of mapping by Rio Tinto geologists in the Baraga Basin, with data from a number of airborne and ground geophysical studies, have allowed for a more detailed understanding of the distribution of sediments in the Baraga Basin. These studies suggest that there are some interesting differences between the Baraga Basin and the surrounding similar age basins in the Lake Superior region. The field trip will require a few relatively short to intermediate in length hikes over mostly flat ground. Some stops on the trip will be dependent on water levels in rivers at the time of the trip.

Syn-Meeting: Friday afternoon May 10 following technical session

5) A.E. Seaman Mineral Museum at Michigan Tech. Trip Leader: Ted Bornhorst (museum Director)

This “field” trip will be to the nationally recognized A.E. Seaman Mineral Museum. You will have the opportunity to observe minerals from across Michigan, the Great Lakes region and around the world. This “novel” field trip for 2013 will continue the recent tradition of a short field trip on Friday afternoon after the technical sessions. The museum will stay open extra hours and ILSG participants will get free admission and 10 % discount in the museum gift shop. ILSG participants must show their meeting badge.

Post Meeting: Saturday May 11

6) Geology of the Porcupine Mountains-a late Keweenaw central volcano complex, Michigan.

Trip leaders: William F. Cannon, Laurel G. Woodruff, Klaus J. Schulz, and Suzanne S. Nicholson (all USGS). The Porcupine Mountains in the western upper peninsula of Michigan are underlain by andesitic to rhyolite volcanic rocks and mantling sediments that formed in a central volcano within the Midcontinent Rift central graben at the close of Midcontinent Rift magmatism. Participants will overnight (Friday night) in Silver City at the edge of Porcupine Mountains State Park and can drive personal vehicles to Silver City to have a head start home at the end of the trip. Transportation will be provided as needed from Houghton to Silver City. The trip will depart from Silver City and spend the day Saturday examining the various rock types of the area. Logistical details will be provided at a later date.

7) Geology of the Copperwood Sediment-Hosted Copper Deposit and Environmental Site Conditions, Michigan. Trip Leaders: Ted Bornhorst (Michigan Tech), Allan Blaske (AECOM), and Dave Anderson (Orvana Resources US Corp).

This trip will examine the geology, geochemistry, and environmental conditions at the Copperwood project in Gogebic County, Michigan. The trip will begin at the Orvana office in Ironwood to examine drill core from the copper-bearing basal portions of the Nonesuch Formation upwards. The project site will be visited with exact locations pending site activities. The current plan is to begin by visiting the rock pile remaining from the historic test mine to see the ore and discuss its weathering. The unconsolidated glacial overburden will be examined along the shoreline of Lake Superior. Groundwater, surface water, wetlands, and other environmental aspects of the project site will be observed and discussed. This trip will require a hike of approximately 3.5 miles of easy to moderate difficulty. Participants can drive personal vehicles to Ironwood to have a head start home at the end of the trip but transportation will be provided as needed to and from Houghton to Ironwood.

8) Caledonia Mine, Ontonagon County, Michigan. Trip Leaders: Bob Barron, Ted Bornhorst (both Michigan Tech) and Richard Whiteman (Red Metal Minerals). The Caledonia Mine, owned by Red Metal Minerals, is part of the southwestern extension of the Keweenaw Peninsula native copper district and is located about 40 km southwest of most of the major producing mines. It is one of the few remaining accessible mines where one can observe native copper and associated minerals in place as well as the nature of the host basalt lava flow. Underground hard hats, lights, and boots (if desired) will be provided. The Caledonia Mine is relatively dry and field boots are usually sufficient. The trip includes an easy walk underground to observe lava flows and alteration in a cross-cutting adit and to observe native copper mineralization in a strike parallel adit. An optional more difficult segment involving climbing up into an underground stope where collecting will be allowed. The last component of the trip will be surface collecting on the Caledonia rock pile.

**Field Trip Offered in Conjunction with Houghton 2013 Meeting:
May 25 to 31, 2013**

Geological Field Trip – Eastern Isle Royale, Michigan. *Trip leaders: Bill Rose and Justin Olson*

For More Information go to:

<http://www.geo.mtu.edu/~raman/IRFieldTrip12/IRFieldTrip12/Welcome.html>

“CALL FOR ROCKS”

No Deadline

The A.E. Seaman Mineral Museum is installing a Great Lakes Garden. The garden will contain rocks from the Great Lakes region among plants and flowers. The rocks will be organized into three areas corresponding to the rock cycle: igneous, sedimentary, and metamorphic.

Bring along to ILSG Houghton 2013 your favorite rock(s) for the rock garden

Ideal size < 100 lbs and at least about 1 by 1 foot surface area

For each specimen locality information, rock name, and your name for recognition

Email proposed contributions to tjb@mtu.edu so they can be posted online to avoid duplication

For more information see: http://www.museum.mtu.edu/news/rock_garden.htm