



ON THE ROCKS

A Newsletter of the Michigan Basin Geological Society

2022-2023 Edition 2

www.mbgs.org

October 2022



ANNOUNCEMENTS

MBGS Membership Meeting, October 12th, 2022: The October Michigan Basin Geologic Society meeting will be hosted at Michigan State University in the Natural Science Building, East Lansing, Michigan. The speaker is Chris Svoboda, Michigan Department of Environment, Great Lakes, and Energy, presenting “Fractional Crystallization and Crustal Contamination: Evolution of Late-Stage Magmas from the Porcupine Mountains in the 1.1 Ga Mid-Continent Rift”. Additional information is included below.

Opportunity for Presenters: MBGS is seeking volunteers to present topics related to Michigan geology for our 2022-2023 membership meetings. If interested, please contact Andrea Muñoz-Hernandez at munozhernandez@michigan.gov or at (517) 599-7525.

MBGS YouTube channel: In case you missed it, our September meeting presentation, given by Matthew Bell, can be found on our new YouTube channel at [MBGS September 2022 Speaker Mathew Bell](#).

Dam Failure - Hydrogeological Consequences and Effects on the Tittabawassee and Tobacco Rivers and the Groundwater Systems in Southern Gladwin County, Michigan

OTHER NEWS

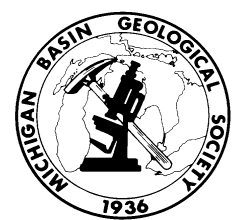
MBGS E.Z. MANOS MEMORIAL SCHOLARSHIP AVAILABLE

Michigan Basin Geologic Society is proud to again offer two scholarships of up to \$500 to students conducting graduate or undergraduate research in geology related to Michigan. Candidates should complete the scholarship application form and submit it to John Yellich (john.a.yellich@wmich.edu) by December 20, 2022. The subject line of the email to Mr. Yellich should include “MBGS Scholarship Application”. The application form and more information can be found at www.mbgs.org.

MBGS MEMBERSHIP DUES

MBGS continues to strive to provide a platform for geologist and environmental professionals to connect and offer learning and field trip opportunities. For the 2022–2023-year, membership fees will be \$35. Invoices are included in the newsletter. Student memberships are **FREE** with registration from the MBGS webpage www.mbgs.org. All membership dues must be submitted by December 31, 2022, for members to remain active.

<https://www.mbgs.org>



Michigan Basin Geological Society 2022 Membership Meeting

When: October 12th, 2022, 7:00PM

Where: Michigan State University in the Natural Science Building, East Lansing, Michigan, Room 204

Speaker: Chris Svoboda, Michigan Department of Environment, Great Lakes and Energy

Presentation: Fractional Crystallization and Crustal Contamination: Evolution of Late-Stage Magmas from the Porcupine Mountains in the 1.1 Ga Mid-Continent Rift

Abstract: The Mid-Continent Rift (MCR) is a geologic structure that outcrops in the Lake Superior region where a mantle plume-influenced continental rift failed to dismember the North American continent 1.1 billion years ago. This rifting was set in a broader plate tectonic framework where the continent moved rapidly from polar to equatorial latitudes during the assembly of the supercontinent Rodinia. Rocks exposed in the Porcupine Mountains of Michigan form a stratigraphic sequence spanning multiple phases of MCR magmatism, from voluminous main-phase flood basalts to late-stage volcanics interbedded with sediments. These lavas are key to probing the crustal magmatic processes active in waning stages of this large igneous province. A basalt and rhyolite sequence lies conformably over the main-phase Portage Lake Volcanics that has isotopic signatures consistent with contamination by continental crust. The basalts in this sequence bear trace element signatures like latent phase magmas in the Mamainse Point Volcanic Group. They are interpreted as the final products of main phase volcanism where input from the mantle plume is greatly reduced. Younger late-stage lavas interbedded with the Copper Harbor Conglomerate also show isotopic evidence of crustal contamination. Trace element modeling suggests that these younger lavas incorporated different crust than the older post main-phase basalts. This difference is interpreted as a vertical change in the system where Porcupine Mountain magmas evolve. The late-stage lavas within the Copper Harbor Conglomerate may be evidence of the crustal magmatic processes involved in the transition from plume-influenced to passive margin continental rifting.

Biography: Chris Svoboda received his bachelors and doctoral degrees in Geological Sciences from Michigan State University. His doctoral studies focused on igneous processes spanning the crust and mantle, and numerical modeling of these processes. He now works as a geologist for the Michigan Department of Environment, Great Lakes, and Energy in the Remediation and Redevelopment Division. He lives in Lansing, Michigan with his wife Allie, his daughter Olive, and their pets.



Chris Svoboda in the Porcupine Mountains

FROM THE PRESIDENT'S DESK

A Note from Jen

Our September BBQ meeting was a hit! The food was delicious and the speaker did a fine job! Congrats again to one of our EZ Manos Scholarship winners, Matt Bell. He has graduated and is off working in the real world. I am working on getting the recording of Matt's presentation out there for everyone to view at their leisure.

Our meetings for October, November, and December are going to be held at MSU in room 204 of the Natural Science Building – live and in person! We will record the presentation but will not be able to have the presentation live on Zoom. We are still working out the bugs on getting that all set up for hybrid Zoom meetings.

Andrea, our new VP, has been doing a fantastic job and we will have the following speakers join us this fall: Dr. Svoboda in October, Dr. Howard Reeves from USGS in November, and Dr. Mike Velbel from MSU in December.

Some MBGS members will be participating in the State Geologist Outreach training at the RAM Center in late October. They will be handing out some freebies as well as recruiting for new MBGS members. And, we have Drs. Bill Harrison and Peter Voice as our Eastern Section AAPG representatives again this year. Thanks!

We are eagerly anticipating the field trip to the Jackson County Historic Coal District on Nov 5th. Dave Westjohn and Bennie See have put together a very interesting trip. We have received quotes for printing the field guidebooks and are finishing up determining the final cost to participants. We plan to have vans to travel between the field trip stops to allow for easier and safer parking. This field trip will be limited to about 25 people! So, when the registration goes live, be ready to jump at the chance to participate!

Remember that membership dues should be paid now. We've made it very easy – you can pay on-line using PayPal! So, if your colleagues aren't already members, why not invite them to join us!

What is it?

Last month's mystery "rock" was suspected to be a fulgerite. Here's the mystery rock for this month. What do you think it is?

"I have an interesting geological sample to identify - we found within a pile landscaping rocks. The density is very very high...completely shiny and metallic looking, would think it's a meteorite but there are vesicles on the interior. Does not react to my earth magnets in any way. The weirdest thing to me is the high density combined with the fact that it exhibits no magnetic properties at all."



EVENTS

We are providing links for your reference. Please visit these sites to learn more about specific events and happenings. If you have an event to share, let us know!



American Institute of Professional Geologist – Michigan Section – <http://mi.aipg.org/newsletters.htm>

Central Michigan Lapidary and Mineral Society - <http://www.michrocks.org/>

Eastern Section AAPG - <https://www.esaapg.org/>

EGLE Calendar of Events - [Calendar \(michigan.gov\)](http://www.michigan.gov)

Flint Rock and Gem - <https://flintrockandgem.org/events>

Michigan Association of Environmental Professionals - <https://www.maep.org/>

Michigan Basin Geological Society – www.mbgs.org

Michigan Clean Water Corps - <https://micorps.net/about/>

Michigan Mineralogical Society - <https://www.michmin.org/>

Midwest Mineralogical and Lapidary Society - <http://www.mmls.us/>

Rock Clubs in USA - [All Mineral, Rock, Gem Shows, GeoSites, Rock Clubs in USA \(rockandmineralshows.com\)](http://rockandmineralshows.com)

Society of Petroleum Engineers - <https://www.spe.org/events/calendar/>

Schedule Events

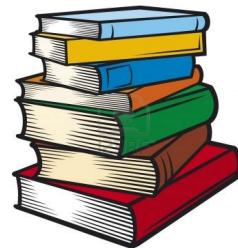
October 9-11, 2020: Detroit Gem, Mineral & Fossil Show, Macomb Community College Expo Center

October 9-15, 2022: Earth Science Week, [Earth Science Week | \(earthsciweek.org\)](http://earthsciweek.org)

November 5, 2022: – MBGS Field Excursion, Sand and Sandstone Revisited: Lithostratigraphy of Carboniferous Sandstones in the Jackson Coal Province, Central Jackson County, Michigan, USA

December 5-7, 2022: Great Lakes PFAS Summit, virtual, [2022 Great Lakes PFAS Summit \(michigan.gov\)](http://2022.greatlakespfasummit.michigan.gov)

December 20, 2022: MBGS Scholarship Applications Due. Mail applications to John Yellich (john.a.yellich@wmich.edu) and title email RE: MBGS Scholarship Application. Applications are available on the website at www.mbgs.org



ONLINE RESOURCES

- **American Geoscience Institute – Interactive Michigan Geology Maps:** [Interactive map of the geology of Michigan | American Geosciences Institute](#)
- **Digital Geology Library Overview:** https://www.michigan.gov/documents/deq/GIMDL-Catalog-2010-01-20_307979_7.pdf
- **GeoWebFace:** [GeoWebFace \(michigan.gov\)](#)
- **Digital Geology Library Mining Overview:** https://www.michigan.gov/documents/deq/GIMDL-Catalog-2013_06_22_mining_425595_7.pdf
- **Michigan Geological Survey:** [Michigan Geological Survey | Western Michigan University \(wmich.edu\)](#)
- **USGS Michigan Geological Map Data:** [Michigan geologic map data \(usgs.gov\)](#)
- **CMU, Clarke Historical Library, Michigan Geology:**
https://www.cmich.edu/library/clarke/ResearchResources/Michigan_Material_Statewide/Michigan_Oil_and_Gas_Industry/History_of_Michigan_Oil_and_Gas/Pages/Michigan-Geology.aspx



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PUBLICATIONS: [Open](#)

ELECTRONIC PUBLICATIONS: Please contact an officer for information

WEBMASTER: JOHN ESCH, eschj@michigan.gov

MBGS PUBLICATIONS

<http://www.mbgs.org/publications.html>

Historical publications now available on USB Flash Drives". Each USB Flash Drive is 8GB

Prices include postage, handling and any applicable sales tax.
Orders for publications should be prepaid in U.S. Funds and addressed to:

MBGS — Publications
P.O. Box 14044
Lansing, MI 48901-4044

Historical CD #1: Nine out-of-print publications from 1949 through 1965 and 1998, 2000, \$15

- The Stratigraphy of Manitoulin Island, Ontario, Canada, June 19-20, 1954
- The Devonian and Silurian Rocks of Parts of Ontario, Canada and Western New York, June 22-23, 1951
- The Traverse Group of the Northern Part of the Southern Peninsula of Michigan, June 16-17, 1949
- The Devonian Strata of the London-Sarnia Area, Southwestern Ontario, Compiled by Erwin C. Stumm, Lewis B. Kellum and Jean Davies Wright, June 9-10, 1956
- The Ordovician Rocks of the Escanaba-Stonington Area, Led by R. C. Hussey, June 2-3, 1950
- The Niagara Escarpment of Peninsular Ontario, Canada, June 18-19, 1955
- Lower Paleozoic and Pleistocene Stratigraphy Across Central Wisconsin, Compiled by C. E. Prouty, Led by L. M. Cline, J. L. Hough and R. F. Black, 1960
- Classic Silurian Reefs of the Chicago Area, by Donald G. Mikulic and Joanne Kluessendorf, June 27, 1998
- Geology of Central Ontario, Canada, 1965

Historical CD #2: Four out-of-print publications from 1947, 1959, 1983 and 1991, 2001, \$15

- Copper Country Field Trip, Michigan, June 20-22, 1947
- Geology of Mackinac Island and Lower and Middle Devonian, South of the Straits of Mackinac, June 12-14, 1959
- Tectonics, Structure and Karst in Northern Lower Michigan, August 1983
- Geology of the Pictured Rocks, Upper Peninsula, Michigan, July 11-13, 1991

Historical CD #3: Six out-of-print publications from 1948, 1952, 1990 - 1995, 2001, \$15

- Pleistocene and Early Paleozoic of the Eastern Part of the Northern Peninsula of Michigan, June 18-21, 1948
- Stratigraphy and Structure of the Devonian Rocks in Southeastern MI and Northwestern OH, June 20-21, 1952
- Lower Ordovician and Upper Cambrian of Wisconsin, May 10-12, 1990
- Guidebook to the Precambrian Geology and Metallogeny of the Central Upper Peninsula of Michigan September 12-13, 1991

Historical CD #4: Six out-of-print publications from 1957, 1958, 1961, 1967, 1968 and 1970, 2004, \$15

- Silurian Rocks of the Northern Peninsula of Michigan, 1957
- Cambrian Geology of Parts of Dickinson and Iron Counties, Michigan, June 1958
- Geologic Features of Parts of Houghton, Keweenaw, Baraga and Ontonagon Counties, Michigan, May 19-21, 1961
- Correlation Problems of the Cambrian and Ordovician Outcrops Areas, Northern Peninsula of Michigan 1967
- The Geology of Manitoulin Island, June 1968
- Devonian Strata of Alpena and Presque Isle Counties, Michigan 1970

Historical CD #5: Five out-of-print publications from 1971, 1989, 2001, and Oil & Gas Fields Vol. 1 & 2, 1969 & 1992, 2006, \$50

- Oil & Gas Fields Symposium, Volume 1, April 1969, 200 pp., maps, illus., second printing with updates
- Oil & Gas Fields Manual of the Michigan Basin, Volume 2, 1992, 520 pp., maps, illus.
- Glacial Geology of Southwestern Michigan, 1989, 53 pp. by A. Kehew, L. J. Schmaltz, and W. T. Straw
- Geology of the Lake Erie Islands and Adjacent Shores, 1971, 65pp., maps, illus. by Jane L. Forsyth
- Glacial Geology of Southwestern Michigan, Landforms of the Lake Michigan Lobe, Southwestern Michigan, 2001, AAPG Eastern Section Meeting Field Trip, 32 pp., maps, illus. by A Kehew and A. Kozlowski

Historical CD #6: Six out-of-print publications from 1946, 1953, 1963, 1966, 1978 & 1987 plus the Richfield Challenge, 1952 & Tom Knapp's MS Thesis, 2007 \$15.

- Guidebook for Ordovician Stratigraphy of the Cincinnati, Ohio and Richmond, Indiana Areas, June 12, 13, 1953 by W. H. Shideler and B. T. Sandefur
- Guidebook for Ontario Geological Excursion to Kettle Point – Owen Sound- Waubesa, June 21, 22, 23 1946 by W. A. Roliff, C.S. Evans and J.F. Caley
- Guidebook for the Stratigraphy of the Silurian Rocks in Western Ohio, May 31- June 2, 1963 by C. H. Summerson, Jane L. Forsyth, Karl V. Hoover and J. R. Ulteig
- Guidebook for Cambrian Stratigraphy in Western Wisconsin, May 21, 22, 1966 by Merideth E. Ostrom
- Geology of the Manitoulin Area, Special Papers #3, September 29, 30 and October 1, 1978 by J. T. Sanford and R. E. Mosher
- Middle Devonian Cratonic Carbonates and Shales in Southwestern Ontario, November 14, 1987 by Bruce Wilkinson
- The Richfield Challenge, A Review of the Richfield Developments in Michigan, 1952 by Gordon H. Hautan
- A Theory of Rogers City and Dundee Relationships in Central Michigan, Masters Thesis, 1947 by Tom Knapp

Historical CD #7: Field Guidebooks from 1962, 1969, 1977, 1980, 1985 & 1988, \$15

- Silurian Rocks of the Southern Lake Michigan Area, 1962, James H. Fisher, Chairman, MBGS Annual Field Conference
- Studies of the Precambrian of the Michigan Basin, by Harold B. Stonehouse, 1969
- The Geology of the Marquette District: a Field Guide By F. W. Cambray, 1977
- Ordovician and Silurian Geology of the N. Peninsula of Michigan, 1980, R.B. Votaw, 40 pp., illus., maps
- Special Paper #4: Ordovician and Silurian Rocks of the Michigan Basin and its Margins, 1985 K.R. Cercione and J.M. Budai (eds.), 96 pp., illus.
- Upper Keweenaw Rift-Fill Sequence, Mid-Continent Rift System, Michigan, 1988, P.A. Daniels and R.D. Elmore, M.S. Wollensak, ed., 150 pp., illus., maps

OTHER SPECIAL OFFERS

- **Historical CD Set - # 1 – 7 (detailed above) for a special purchase price of \$95**
- **NE Lower Peninsula Geological Field Conf., 2004, T. Black, M. Wollensak, On CD \$10**
- **Stratigraphic Lexicon for Michigan, 2001, prepared by MBGS and published by DEQ, \$4**
- **Robert E. Mosher Geological Studies** A lifetime of geological research on Silurian Rocks with John T. Sanford. The disks are organized chronologically and include field work in North America and Europe. 2007, 2 CDs \$35.

Michigan Department of Environment, Great Lakes and Energy Groundwater Warehouse Survey

Michigan's Department of Environment, Great Lakes, and Energy (EGLE) is working to create a warehouse for groundwater data. The goal is to create a system that provides a one-stop shop for groundwater data that can be leveraged easily within the department, gives consultants and members of industry a user-friendly tool for data input, and that also provides relevant and interactable data to the public. This survey is intended to determine what systems like this already exist, to find the best practices already being utilized, and to understand what lessons can be learned before starting this journey.

Your time and effort filling out this survey are greatly appreciated. We recognize that you may need to reach out to other colleagues in order to answer some of these questions. There is only one required question, so if you encounter anything that you cannot answer, you are free to skip it. You are also welcome to share the link that brought you to this survey with anyone you feel could provide relevant information. Please forward this email to any federal, state, or local governmental agency, consulting company, or others who have a groundwater warehouse or have worked on a groundwater database or warehouse.

This survey will be available through Friday, October 21st. We are happy to share our findings with all respondents. You will be asked at the end of the survey if you are interested in receiving them. Please make sure you share your email address with us in the appropriate question.

Please use the following link to access the survey:

<https://survey123.arcgis.com/share/8ee03cfdaabc476d82f7238af8c10867?width=1000>

The 2023 Friends of the Pleistocene Field Conference – Midwest cell

Roscommon, Michigan

May 19-21, 2023



Trip Leader: Randy Schaetzl, Department of Geography, Environment, and Spatial Sciences, Michigan State University soils@msu.edu (517) 648-0207

Trip co-leaders (alphabetical): Alan Arbogast, Chris Baish, Brandon Curry, Kevin Kincare, Ken Lepper, Tom Lowell, Catherine Yansa

The 2023 FOP conference will be held at the Ralph A. MacMullen (RAM) Conference Center, 104 Conservation Drive, Roscommon, Michigan. (MacMullenCenter@Michigan.gov) All registrants must lodge at the RAM Center, on the shore of beautiful Higgins Lake (exceptions can be requested – contact Randy Schaetzl). Registration fees cover lodging, all meals except Friday dinner, refreshments, and busing. Early registrants will be afforded single-occupancy rooms at the RAM Center. Later registrants risk being placed in double-occupancy rooms. Conference participation is limited to 64 persons.

Tentative schedule:

Friday, May 19

4:00 pm. Arrival and check-in.

5:30 pm: Ice-breaker begins. (Dinner is on your own; we will provide a list of restaurants in nearby cities (Roscommon, Houghton Lake, Grayling.) Expect good conversation around the RAM Center's fire pits, right on the Higgins Lake shore.

Saturday, May 20

7:00 am: breakfast.

8:15 am: "Trip overview" presentation in the RAM Center theater. Bus departs at 8:45 sharp.

6:00 pm: arrival back at the RAM Center, and refreshments.

7:30 pm: banquet.

Sunday, May 21

7:15 am: breakfast. Bus and car caravan depart at 8:30 sharp.

2:00 pm: expected return to the RAM Center, and final departure.

IMPORTANT DATES

Feb 1 – Registration opens. Registration fees are due at the time of registration.

April 15 – Last day to withdraw for full refund. (Later withdrawals receive half of their fees back.)

Please contact Randy Schaetzl with questions soils@msu.edu (517) 648-0207

MICHIGAN BASIN GEOLOGICAL SOCIETY FIELD EXCURSION

SATURDAY NOVEMBER 5, 2022

Sand and Sandstone Revisited: Lithostratigraphy of Carboniferous Sandstones in the Jackson Coal Province, Central Jackson County, Michigan, USA

- FEE:** \$50 for all MBGS Members (with paid up dues); \$85 adult/professional non-MBGS members; \$15 for students.
- LOCATION:** Jackson Michigan area
- LEADERS:** D.B. Westjohn, Consulting Geologist, Mason, Michigan, and Bennie E. See, Consulting Geologist, Jackson, Michigan
- REGISTRATION:** Please email Chris Christensen at christensenc@michigan.gov to get your name on the attendees list. Please complete and submit this registration form and submit fee to finalize your reservation by November 1st. A limit of 25 can participate in the field trip.

General outline of this field trip:

The field trip will relate the distribution of coal in the Jackson Coal Province (JCP new term) to a profound unconformity: The Mississippian-Pennsylvanian Hiatus. This unconformity marks the emergence of terrestrial vegetation, erosion, and deposition of vast quantities of organic detritus that was entombed and survived to form coal. We will explore Michigan's Carboniferous section in Jackson County, the birthplace of the coal mining industry in the State. Despite a storied history of the JCP (History of Jackson County, 1881) and the large number of mines reported in MGS reports, locations of most mines are not known with any degree of certainty. Unfortunately, it took structural damage of freeway components (bridges, overpasses, etc.) and subsidence into coal-mine voids to renew interest in the bedrock geology of the area.

ITINERARY:

- 9:30am - Meet in downtown Parma, Michigan (look for large WMU vans), assemble & load vans.
- 10:00am - Departure
- 10:00am-3:00pm - Field Trip (drinks and snacks will be provided but not a full lunch)
- 3:00pm - Review Jackson area cores at Grand River Brewery (food & beverages available for purchase)
- After ~4:00pm - Return to Parma

Name: _____ Phone Number: _____ Email Address: _____

Address, City, State, Zip: _____

Company, Organization or University: _____

MBGS Member (Y/N) _____ Dues Paid (Y/N) _____ Student Member (Y/N) _____

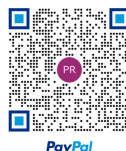
Comments: _____

All attendees must submit a separate completed form (please no group forms). Attendance fees cover vans, gas, guidebook, snacks & drinks. Lunch will not be provided, so bring a sack lunch. Non-MBGS members (fees include membership dues, thus everyone will be an official member of MBGS once you pay your attendance fee – if you are not a member, you will also need to complete the official MBGS membership application.

Please make check payable to "Michigan Basin Geological Society" in USD.

Mail Completed Form and Payment to:

MICHIGAN BASIN GEOLOGICAL SOCIETY
ATTN: Jackson Coal Field Trip
P.O. Box 14044
Lansing, MI 48901, USA



Alternatively, if you prefer to pay via PayPal, scan this QR code:

Once you have submitted form and funds as stated above, please send an email to Chris Christensen, christensenc@michigan.gov with subject line "MBGS–November 2022 Jackson Coal Trip" with your name email and phone number confirming your submittal so that we can communicate any additional notifications to you directly.