

ON THE ROCKS

A Newsletter of the Michigan Basin Geological Society



2022-2023 Edition 8

www.mbgs.org

April 2023

ANNOUNCEMENTS

MBGS Membership Meeting, April12th, 2023, 7:00PM

Dr. Jeffrey Freymueller and Dr. Anthony Kendall, Michigan State University will present "Developing a Groundwater Model for the Great Lakes Basin Using Multi-disciplinary Observations".

Join Zoom Meeting

https://us06web.zoom.us/j/89053576903?pwd=T1NtM2tSaGxTN3pWdER1QitEbXpsUT09

Meeting ID: 890 5357 6903

Passcode: 100966 One tap mobile

+16469313860,,89053576903#,,,,*100966# US



Core Display Educational Tool Available to Members

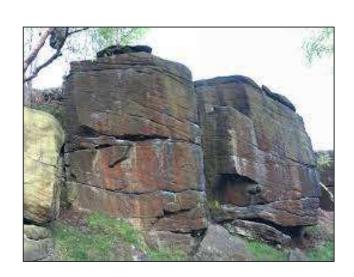
MBGS has a core display available for use that visually demonstrates permeability/porosity. There are educational posters available for use with the core display. Contact any of the officers to reserve this great educational tool.

What is it?

Last month's rock was the Blarney Stone in Ireland! We had many correct answers, but the quickest to come in were only minutes apart. The lucky recipients of the fabulous prizes were Rick McGregor (EGLE) and Chuck Graff (EGLE). Congratulations! Did you know?

Farewell Rock – (Mining)

The Millstone grit; - so called because no coal is found worth working below this stratum. It is used for hearths of furnaces, having power to resist intense heat. - Ure.



April 2023 MBGS Virtual Membership Meeting

Presentation: Developing a Groundwater Model for the Great Lakes Basin Using Multi-disciplinary Observations

Presenters: Dr. Jeffrey Freymueller and Dr. Anthony Kendall, Michigan State University

When: April 12th, 2023, 7:00 PM

Join Zoom Meeting:

https://us06web.zoom.us/j/89053576903?pwd=T1NtM2tSaGxTN3pWdER1QitEbXpsUT09

Meeting ID: 890 5357 6903

Passcode: 100966 Mobile +16469313860

Abstract: Developing a Groundwater Model for the Great Lakes Basin Using Multi-disciplinary Observations

The Great Lakes are perhaps the world's single most evident store of freshwater, including five of its largest lakes and over 20% of total surface freshwater. Yet, below the land surface of the Great Lakes Basin lies a sixth, mostly unknown store of water. Hidden from view, groundwater flows through a complex collection of groundwater aquifers containing more water than Lake Huron. Scientists and engineers struggle to understand the dynamic nature of Great Lakes groundwater due to factors including complex glacial terrain and a lack of long-term monitoring data across the Basin. Yet this vast flow and store of water is not completely invisible; scientists from MSU's Earth and Environmental Sciences, in partnership with five universities across the US, are bringing together traditionally isolated practices, tools, and data, to form a new understanding of Great Lakes groundwater. The tremendous mass of all of the Great Lakes Basin flowing waters deforms the land's surface, which geodesists can measure using millimeter-accurate measurements of hundreds of points across the basin from GPS, similarly-precise maps of surface deflections from satellite radar, and orbital instruments that map Earth's gravity field. Water, seeping up from below, saturates hundreds of thousands of wetlands across the Basin-a seasonal transformation visible to remote sensing scientists using both optical and radar satellites. Hydrologic modelers can then build synthetic versions of the Great Lakes aquifer systems, simulating how weather, climate, and human land and water use control the movement of groundwater. Through this interdisciplinary effort, we will develop a deeper understanding of this critical groundwater resource, and create for the first time complete, dynamic maps of groundwater levels and movement across the Basin. Researchers, policymakers, engineers, and the general public across the US and Canada will directly benefit from this new view of one of the Earth's most important yet invisible-water resources.

Biographical Sketch

Dr. Jeffrey Freymueller – Dr. Freymueller is a geodesist who works to understand the structure and movements of Earth's crust, either through the deep forces that drive plate tectonics, or the near-surface movements of water. He employs an ever-expanding network of global positioning satellites to measure the vertical and horizontal movements of the surface over years to decades. These often slow, but sometimes startlingly abrupt, motions reveal the processes otherwise hidden underneath. Dr. Freymueller holds an endowed Chair for Geology of the Solid Earth in MSU's Earth and Environmental Sciences, and also serves at that department's chair.

Dr. Anthony Kendall - Dr. Kendall is a hydrogeologist who studies human and climate interactions with the terrestrial water cycle, focusing on water resource quantity and quality. He uses computational models of groundwater and surface water systems, along with machine learning and remote sensing, to answer questions that data and experiments alone cannot. He is an Assistant Professor in MSU's Earth and Environmental Sciences, but is a long-time Spartan, holding three degrees from MSU and working there as a full-time researcher for over a decade.

FROM THE PRESIDENT'S DESK

A NOTE FROM JEN

Spring is upon us! We have another interesting speaker this month. Jeff Freymueller from Michigan State University will be presenting to us over Zoom. I'm excited to hear what he has to present.

We continue to work on the historical marker at the Kate Palmer Wildlife Sanctuary for the mining of coal in the area. Onward and upward! We'll be updating you on our progress. We won't be having a monthly membership meeting in May due to all the activity concentrated around the GSA meeting in Grand Rapids. That means that our next membership meeting will be in September.

to Glacial Geomorphology, Midwestern Glacial Geology, and Geologic Mapping".



The GSA meeting should be a great opportunity to meet up with old colleagues and friends and learn about what's going on in the North-Central Section. I know that WMU plans to have a large presence and will be shuttling students in vans up to the meetings. They have several field trips planned, many workshops, and lots and lots of speaker and poster presentations. WMU and MGRRE will be involved in 2 of the field trips. We hope to see you there. MBGS will have a booth with some swag and hopefully will recruit some new members. There will also be a special technical session in honor of WMU's outstanding teacher, scientist, and friend "Remembering Our Colleague, Al Kehew: His Contributions

Please, check out the "Friends of the Pleistocene" field trips the following weekend. We are also working on a future field trip to Hocking Hills State Park in Ohio, possibly in the fall.

Well, it's been a fun year and it has been my pleasure serving as MBGS President. However, my role ends in July and I'll be handing over the reins to Andrea Munoz-Hernandez who has served us very well as VP. We are still looking for people to take on the role of VP next year. Responsibilities include running the monthly meetings and coordinating speakers. But, the following year you get to be the Pres and sit back and write short notes!

Thanks, Jen



REFERENCES

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)

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)

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

EVENTS

April 11-12, 2023: EGLE MI Healthy Climate Conference, MI Healthy Climate Conference - Michigan Department of Environment, Great Lakes, and Energy (idloom.events)

June 4-6, 2023: Improving Michigan's Access to Geographic Information Networks (IMAGIN)'s 30th Annual Conference, Crystal Mountain Resort, MI.

June 13-14, 2023: AIPG Environmental Risk Management Workshop, Roscommon, Mi

June 21-22, 2023: Michigan Environmental Justice Conference <u>Michigan Environmental Justice Conference - Michigan Department of Environment, Great Lakes, and Energy (idloom.events)</u>

October 25-27, 2023: Michigan Communities Association of Mapping Professionals (MiCAMP)'s Annual Conference October 25-27, 2023, Boyne Mountain Resort, MI.

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_Indus_try/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- Waubaushene, 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

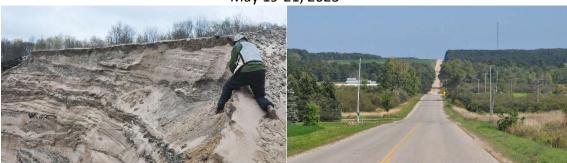
- Silurian Rocks of the Southern Lake Michigan Area, 1962, James H. Fisher, Chairman, MBGS Annual Field Conference
- Studies of the Precambrian of the Michigan Basin, by Harold B. Stonehouse, 1969
- The Geology of the Marquette District: a Field Guide By F. W. Cambray, 1977
- Ordovician and Silurian 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. Cercone and J.M. Budai (eds.), 96 pp., illus.
- Upper Keweenawan 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.

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. (*MacMullanCenter@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

State of Michigan Opportunities

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is currently recruiting for two Environmental Engineer 9-P11 positions within the Air Quality Division (AQD). These positions are located at 3058 West Grand Boulevard, Suite, 2-300. These positions are open to all and interested applicants must apply through NEOGOV. Posting

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is currently recruiting for an Environmental Quality Specialist 13 position within the Remediation and Redevelopment Division. This position is located in Lansing, MI and is Open to all applicants. Interested applicants must apply through NEOGOV. Click here for posting

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is currently recruiting for an Environmental Engineer Licensed Specialist 14 (Drinking Water Distribution Specialist) position within the Drinking Water and Environmental Health Division (DWEHD). The location of this position will be determined based on the selected candidate. This position is open to all qualified applicants. Interested applicants must apply through NEOGOV. <u>Job Posting</u>

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is currently recruiting for an Environmental Engineer Licensed Specialist 14 (Surface Water Treatment Specialist) position within the Drinking Water and Environmental Health Division (DWEHD). The location of this position will be determined based on the selected candidate. This position is open to all qualified applicants. Interested applicants must apply through NEOGOV. Job Posting

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is currently recruiting for an Environmental Engineer Licensed 12 position within the Drinking Water & Environmental Health Division (DWEHD). This position is located at the Warren District Office, 27700 Donald Ct., Warren, MI 48092. The position is open to all qualified applicants. Interested applicants must apply through NEOGOV.

Job Posting

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is currently recruiting for an Environmental Quality Analyst 9-P11 position within the Water Resources Division. This position is located at Constitution Hall, 525 W. Allegan Street, Lansing, MI. Interested applicants must apply through NEOGOV. Job Posting

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is currently recruiting for an Environmental Quality Analyst 9-P11 position within the Water Resources Division. This position is located at Constitution Hall, 525 W. Allegan Street, Lansing, MI. Interested applicants must apply through NEOGOV. <u>Job Posting</u>

The Michigan Department of Environment, Great Lakes, and Energy (EGLE) is currently recruiting for three Geologist 9-P11 positions within the Oil, Gas, and Minerals Division (OGMD). The location of these positions will be within the Gaylord or Cadillac districts, and they are open to all applicants. Interested applicants must apply through NEOGOV. Posting



2023 AIPG MICHIGAN SECTION ANDREW MOZOLA SCHOLARSHIP

The Michigan Section of the American Institute of Professional Geologists (AIPG) is committed to supporting undergraduate scholarships and has established the Andrew Mazola Memorial Scholarship to support undergraduate students majoring in geology with college education costs while encouraging student participation in AIPG.

Application Deadline and Award Date

Completed applications must be received by June 1, 2023. The scholarship awardee will be notified no later than June 30, 2023. The presentation of the scholarship shall be made to the student at the next scheduled Michigan Section meeting; the student awarded the scholarship is expected to attend the meeting.

\$4,000 AWARD FOR AN UNDERGRADUATE STUDENT ENROLLED IN AN ACCREDITED MICHIGAN COLLEGE OR UNIVERSITY

ELIGIBILITY REQUIREMENTS:

- At least a Sophomore
- Must be a student member of AIPG at the time of application
- Must have an overall GPA of 3.0 and a 3.5 or better in geology

Students!

Why do you want to be a Geologist?

What was it that sparked your interest?

What are your career goals?

Do you participate in activities outside of the classroom that are geology related?

Apply today!

Basis of Awards

The scholarship award will be based on content and creativity of the cover letter, the letter of recommendation, and transcripts, as judged by the Scholarship Committee. Financial need is not a consideration for the basis of the award.

Application Process

- 1. Submit a cover letter introducing yourself and tell us why you want to be a geologist.
- 2. Submit a copy of your transcript (unofficial is acceptable) as documentation that you are a current student, and documentation indicating you have declared a major in geology/geoscience.
- 3. Submit a letter of recommendation from a geology/geoscience professor that provides an emphasis on your performance and activities in the classroom, in the department, and your character in how you work and help other students.

The application packet should be submitted to:

Attn: MI-AIPG Scholarship Committee Chair Mr. Timothy B. Woodburne, CPG Prein & Newhof 3355 Evergreen Drive, NE Grand Rapids, MI 49525

e-mail: twoodburne@preinnewhof.com

Questions? Please contact Tim Woodburne at (616) 364-8491 or via e-mail.