Michigan Geology: A Bibliography

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Volume 2
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A Brief Introduction to the Second Edition of the Bibliography of Michigan Geology

Introduction
The Michigan Geological Survey produced a historic Index of Michigan Geology with an extensive bibliography in 1956. A revision of the bibliography was compiled in Voice (2016) with approximately 6,600 citations. This current bibliography is a revision of the Voice (2016) bibliography, as it extensively updates the prior edition with over 1,100 new citations. In addition, the current bibliography continues to update and correct citations with incomplete information or typos. It is not comprehensive but provides a starting place for anyone interested in Michigan Geology. The Michigan Geological Survey plans to update this bibliography periodically with newly published citations as well as other older citations we find.

Sources
The following sources were used to compile this bibliography:

12. Lake Superior Legacy Collection (http://data.wghs.uwex.edu/lake-superior-legacy/index.html) – a scanned database of field notes and sample inventories for a
variety of workers at the Wisconsin Geological and Natural History Survey and the United States Geological Survey who worked on Lake Superior Geology in the late 1800’s and early 1900’s.

15. AGI Geologic Guidebooks of North America Database (https://www.americangeosciences.org/)
16. University Library Databases
   a. Western Michigan University Scholarworks (https://scholarworks.wmich.edu/do/discipline_browser/articles?discipline_key=156)
   b. University of Michigan Deep Blue (https://deepblue.lib.umich.edu)
   c. Wayne State University Digital Commons (https://digitalcommons.wayne.edu/geo/)
   d. Eastern Michigan University Digital Commons (https://commons.emich.edu/geo/)
   e. Michigan State University Electronic Theses and Dissertations (https://d.lib.msu.edu/etd)
   f. Michigan Technological University Digital Commons (https://digitalcommons.mtu.edu/etdr/)


In addition, targeted searches were performed using the bibliographic search engines: Georefs, GeoscienceWorld, Proquest Dissertations and Web of Science and in publisher search engines: Springerlink, Elsevier’s Science Direct and Taylor and Francis Online. Citations were compiled into an Endnote library. Bill Harrison, Alan Kehew, Patrick Colgan, and John Esch provided lists of publications and suggestions for sources that were used to compile the current bibliography.

Bibliographic lists of theses from the major universities with graduate geology programs were also used to compile the bibliography. The lists were filtered for theses that dealt with all aspects of Michigan Geology. In the previous version of the bibliography, the following faculty or Library Staff provided lists of publications and resources or advice on accessing their university’s student research publications. Larry Lemke provided a list of Wayne State University Department of Geology theses. The Library Research staff, John Gierke and Wayne Pennington provided information on Michigan Tech’s student works – from the Department of Geology and Geological Engineering and its predecessors. Clara Castro and Lori Tschirhart provided lists and advice on accessing the library resources at the University of Michigan in order to find student work from the Department of Earth and Environmental Sciences. The faculty (Ron Chase, Bill Harrison, Al Kehew, Carla Koretsky, R.V. Krishnamurthy, and Bill Sauck) in the Western Michigan University Department of Geological and Environmental Sciences provided lists of the students that they oversaw who worked on aspects of Michigan geology as well as relevant publications. Mike Velbel, Dave Long and Duncan Sibley provided lists of Michigan State University Department of Geological Sciences student theses and dissertations. For the current edition, Beth Lincoln provided a list of student theses from Albion College and advice on using Albion College’s library search platform.
Attempts were made to record items that had undergone some critical review before publication. Journal articles, theses, edited books and survey publications were added first. Some publications from the gray literature - magazine articles, popular works, etc. were also incorporated into this database when relevant. Conference abstracts were usually ignored, unless they were longer (Conference papers) or one of the few resources on a specific formation. Articles that were in press with some of the major publishers were not included in the current bibliography but will be added as they are formally published to future versions of this document.

Finding these Citations
Citations in this document can be found at your local university library or can be accessed through the assistance of the Library staff and their interlibrary loan program. Some of the publications can be accessed at the Michigan Electronic Library (http://mel.org). Older publications (pre-1910) may be accessible online at Google Books (https://books.google.com), the Biodiversity Heritage Library (http://www.biodiversitylibrary.org) or the Hathi Trust Digital Library (https://www.hathitrust.org). Publications produced by the Michigan Geological Survey are available for purchase at http://wmich.edu/geologysurvey/publications.

Organization
The references compiled in this database were sorted with 4 main keywords: Basin, Glacial, Precambrian and Other. These keywords were assigned as the reference was added to the original endnote library. Some references fell under more than one of the 4 categories – and can be found in two or more sections of the bibliography. The terms Basin, Glacial and Precambrian best encapsulate the three major partitions in Michigan Geology and provide a natural way to organize the bibliography.

Basin papers deal with the sedimentology, stratigraphy, paleontology and petroleum geology of the Paleozoic rocks of Michigan. This section also includes papers that deal with non-petroleum resources hosted in Paleozoic rocks – salt, crushed rock, and bedrock aquifers. Papers on karsting of Michigan’s shallow limestones are included in both this section and in the glacial section of the bibliography. The handful of articles and theses dealing with the Jurassic units in the Basin are also included in this section.

Glacial papers include topics such as soil science, hydrology/hydrogeology, environmental geology and modern depositional environments. In addition, papers dealing with the Pleistocene glaciation including landform analysis, glacial dynamics, quaternary paleontology and glacial depositional environments/sedimentology are in this section. Publications that describe aggregate resources were also added to the glacial section.

Precambrian papers deal with the metallic economic resources of the western Upper Peninsula including copper, iron, nickel and gold. Precambrian stratigraphy and bedrock mapping were also included. Papers dealing with the pre-basin rock record in the Lower Peninsula were added to this section on the assumption that these rocks are likely Precambrian in age. Topics also include Precambrian Paleontology (microfossils, Grypania, stromatolites).

Other documents include a variety of topics that do not necessarily fit into the other three general categories. This section includes papers on the history of the geological survey and biographies of famous Michigan Geologists. In addition, documents that provide broad overviews of Michigan Geology or of Michigan’s natural resources were included in this section.
Materials designed for the general public including Helen Martin’s county overviews and other educational resources were included in the Other section.

Bibliography Metrics
Approximately, 7,700 citations were compiled in the second edition of the Michigan Geology Bibliography. The oldest publication in the database was published in 1818 and publications are found almost every year after that to the present (see Figure 1). There are even a few fully citable articles already available for 2019 that were also included in the bibliography. Figures 2 through 5 show trends in the publication history sorted for specific aspects of Michigan geology.

Feedback
Any feedback on the Bibliography of Michigan Geology is greatly appreciated. If you come across citations that are not in this bibliography but should be, please contact the author (peter.voice@wmich.edu). Any corrections or suggestions for clarification of a citation should also be sent to the author.

Figure 1: Historical trends in publication counts per calendar year. Note the overall increase in publication through the late 1970’s followed by a drop off in publication. The last drop-off in 2019 is a boundary effect due to the limited number of 2019 publications currently available; as the year proceeds this number will hopefully increase!
Figure 2: Trends in publications dealing with all aspects of Precambrian geology in Michigan. Note that Precambrian studies dominated the early history of Michigan geologic research until the 1930’s. After the 1930’s, Precambrian studies continued to be important through the 1990’s. In the last decade there has been a resurgence in interest in the Precambrian geology of the Western Upper Peninsula.
Figure 3: Studies of the Paleozoic geology of Michigan became prevalent in the 1920’s as hydrocarbon exploration started to boom in the state. Note that Paleozoic studies were the dominant type of research over the mid-part of the twentieth century until the 1990’s.
Figure 4: Studies of the Quaternary sediments in Michigan show an increasing trend over time, with the bulk of studies performed after 1960. Currently research in the Quaternary deposits of Michigan dominates geological research activity in Michigan.
A Note on Stratigraphic Nomenclature

Michigan has a long history of geological exploration continuing from the 1820’s to the present. The Geological Survey was the first state agency founded by the State of the Michigan after attaining statehood. A large amount of stratigraphic terminology has been developed to define and delineate the rock record in Michigan. The following charts provide a brief summary of the current understanding of the geologic age relationships and stratigraphic nomenclature currently in use in Michigan. A large number of historical terminology and drillers terminology have been proposed for different stratigraphic units. For a review of historic naming conventions in Michigan, the reader is encouraged to refer to Martin and Straight (1956) and Catacosinos et al. (2001). Stratigraphic nomenclature has been proposed for both the Precambrian and Paleozoic intervals in the Michigan stratigraphic record. The Glacial Record lags behind, as no comprehensive stratigraphic summary has been proposed yet to subdivide this package into formal units.

The Precambrian can be subdivided into several major packages of rocks in the Western Upper Peninsula. The oldest package are Archaean and Early Paleoproterozoic rocks dominated by metaigneous and meta-sedimentary rocks. These rocks form the basement on the edge of the Superior
Craton. Overlying the Archean rocks, are Paleoproterozoic rocks of the major iron ranges in the region (Figure 6). Most of these units have limited distributions – present primarily within the narrow belts that define the iron ranges. The units of the Baraga Group are not as constrained and are found over a much wider region of the Western Upper Peninsula. The Paleoproterozoic rocks are dominantly metasediments and include thick packages of iron formation (highlighted in blue in Figure 6). A younger batch of Mesoproterozoic rocks are found in the far western Upper Peninsula (on the Keweenaw Peninsula and west) as well as in narrow belts along the Lake Superior Coastline as far east as Sault Ste. Marie. The Keweenawan rocks (Figure 7) are composed of massive basalt lava flows and interbedded siliciclastic sedimentary rocks. Keweenawan rocks host the major Copper Deposits of the Western Upper Peninsula.

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<tr>
<th>Mesabi Range Northern Minnesota</th>
<th>Gunflint Range Western Ontario</th>
<th>Gogebic Range Wis.-ML</th>
<th>Crystal Falls-Menominee Range - Dickinson Co.</th>
<th>Marquette Range Marquette Co.</th>
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<tr>
<td>Virginia Fm.</td>
<td>Rove Fm.</td>
<td>Tyler Fm.</td>
<td>Badwater Greenstone</td>
<td>Jacobsville Sandstone</td>
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<td>Michigamme Fm.</td>
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<td>Goodrich Quartzite</td>
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<td>Archean Metaigneous Rocks (2.5 Ga+ in age)</td>
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Figure 6: Stratigraphic nomenclature from the major iron ranges in northern Michigan and adjacent areas. Highlighted intervals include the major iron formations. Modified from Ojakangas, 1994.
Stratigraphic Nomenclature in the Michigan Basin has evolved over the past two centuries as increased drilling has provided access to deeper portions of the basin across the Lower Peninsula and the Eastern Upper Peninsula. These rocks host a variety of natural resources included crushed rock (limestone and dolomite), dimension stone, salt and brine, rock gypsum, oil, natural gas, and coal. The Michigan Basin has deposits that range in age from Late Cambrian to Middle Jurassic (Figure 8), with a significant unconformity between the Pennsylvanian Grand River Formation and the Jurassic Ionia Formation.

Figure 8 (succeeding page): Stratigraphic Nomenclature for the Michigan Basin. The stratigraphic distribution of major resources is also highlighted (modified from Grammer et al., 2018, Catacosinos et al., 2001).
<table>
<thead>
<tr>
<th>Period</th>
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<th>N.A. Stages</th>
<th>I.C.S. Stages</th>
<th>Group</th>
<th>Lithostratigraphic Nomenclature</th>
<th>Oil</th>
<th>Natural Gas</th>
<th>Coal</th>
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<th>Gypsum*</th>
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<th>Aquifers</th>
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1991: Antrim Shale Core Workshop
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Godbold, T. and Wellman, T., Permiting, bonding and Other Aspects of Horizontal Wells in Michigan
Howland, K., Successes and Failures, with Drilling Horizontal Wells in Michigan
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Myers, R., Low Gel-load Fracturing Fluids Reduce Formation Damage

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Myles, J., The Albion-Scipio Trend: A View from Afar
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Barnes, D. A., Hydrothermal Dolomite (HTD): Occurrence and Possible Mechanisms in the Michigan Basin, USA
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Ohanian, M., Baker Hughes INTEQ Presents: Directional Drilling Answers for Coiled Tubing Applications

Poli, P., Michigan Public Service Commission: On-line Information and How to Access It

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2008: Michigan Field Experiences – Focus on the Trenton-Black River

March 20, 2008, Mount Pleasant, MI

Bauman, W., Behind Pipe Reserves and Untested Pay Zones in Old Devonian Fields in Michigan

Clark, J., and Kurtzweil, L., 3-D Seismic: Design, Logistical Considerations, Applications

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Gay, S. P., Jr., Basement Fault Control on Black River-Trenton Oil and Gas Production in Michigan, West Virginia and New York

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Jennings, J., and Snow, M., Michigan Oil and Gas Regulations – Spacing *Then and Now*

Knox, C., The Lima-Indiana Oil and Gas Field

Mesbergen, M., and Maness, T., Muskegon Development Company’s Williams Berea Waterflood

Moodro, A., Examples of “Flower Structures”

O’Brien, T. P., and Klimetz, S., Presented a Brief Overview of BLM’s Involvement with Oil and Gas Development in the Eastern United States [Note no slides in Workbook]

Quirein, J., Exact Frac ®

Smith, L., Nyahay, R., and Reservoir Characterization Group at the New York State Museum, Widespread Hydrothermal Dolomitization of Trenton and Black River Groups, Eastern North America

**2008: Trenton-Black River Core Workshop and Reservoir Characterization Symposium**

**September 25-26, 2008, Kalamazoo, MI**

[Note Workbook also includes an overview of the Trenton/Black River Cores and Thin Sections available at MGRRE as well as drillers reports and wireline log data for selected cores displayed during the workshop and an extract from Grammer, G. M. 2007, DOE Final Scientific/Technical Report: DE-FC26-04NT15513]

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**March 26, 2009, Mount Pleasant, MI**

Brock, T., J., Playing the Edge of the Antrim is a function of ...

Canter, L., Role of Primary Depositional Facies on Reservoir Development and Distribution, Ordovician Red River Formation, Williston Basin


Kirschner, J., Geologic Controls on Dundee Reservoirs

Knox, C., The Fort Wayne and Moore Fields
Kulka, D., The Last Drop

McDaniel, H., Shale Log Analysis: A New Way of Looking at an Old Formation

Murray, L., Recent Activity in the Trenton/Black River Formation and the Relationship between the Van Wert Zone of the Black River and Hydrothermal Reservoirs

Schaefer, S., and Philo, J., Lyon 20 Niagaran Reef Gas Storage Conversion: A Seismic Case Study

Schmude, D., and Schmude, P., The Keys to Successful Redrilling of Niagaran Reefs in Northern Michigan

2009: Computer Mapping for Petroleum Exploration

November 5, 2009, Mount Pleasant, MI

Leetaru, H. E., Computer Mapping for Exploration and Production: A Short Course

2010: Michigan Basin Insights and Field Experiences

March 25, 2010, Mount Pleasant, MI

Barratt, M. W., Fort Knox Military Reservation New Albany Gas Development Project, Meade, Hardin, and Bullitt Counties, Kentucky and Antrim-New Albany Shale Comparison

Esch, J., Free GIS Data Viewers, and Free Petroleum, Geological and Base GIS Datasets for Petroleum Exploration

Fowler, J., Matson, M., and Van Sickel, W., Field Evaluations of Trenton and Black River Reservoirs


Harrison, W. B., III, Michigan Geological Repository for Research and Education (MGRRE), Geosciences Department, Western Michigan University

Learn, M., An Overview of Drilling Experiences in Karsted Formations in Huron County


Rock, F., and Barnes, D., Application of Oil Field Reservoir Characterization Methodology to Geosequestrion Studies

Stewart, R., Tilden: Improved Oil Recovery Strategies in Micro-fractured Silurian Reef Using Nitrogen Gas

Strunk, K., Jointing, Fracturing, Faulting, Structural Patterns, and Stress Fields in the Southern Portions of the Michigan Basin

Thompson, P., Lost Circulation Solutions

2010: Characteristics of Evaporites and Restricted Carbonates for the Petroleum Geologist

April 26, 2010
Schreiber, C. and Harrison, W. B., III, Characteristics of Evaporites and Restricted Carbonates for the Petroleum Geologist: A Short Course

2010: Trenton and Black River Core Workshop [Eastern Section AAPG Meeting]

September 25, 2010, Kalamazoo, MI

Grammer, G. M., Harrison, W. B., III, Schulz, J., Thornton, J., Robinson, M., and Feutz, P., Trenton and Black River Core Workshop


September 29, 2010, Kalamazoo, MI

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2011: Michigan Basin Insights and Field Experiences

March 31, 2011, Mount Pleasant MI

Astore, C., Lipid Biomarkers in Assessing Biogenic Reservoirs


Fowler, J., Rice Creek Pool, Albion-Scipio field – A New Discovery in the Trenton and Black River of Southern Michigan

Harrison, W. B., III, The Collingwood/Utica Shale in Michigan

Henderson, R., and Jankowski, P., Regulatory Issues Related to the Utica/Collingwood Development

Hinks, A., Gravity Anomalies Associated with Michigan Basin Dundee Formation: Fractured Hydrothermal Dolomite Reservoirs and Implications for Exploration

Knox, C., The Trenton Gas Field of Indiana

Kohler, S., Out and About the Prairie du Chien

Kohler, S., What Does the Mature Antrim Play Look Like?

McCloskey, S., Harrison, W. B., III, and Grammer, G. M., [POSTER] Sequence Stratigraphy and 3-D Reservoir Characterization of the South Buckeye Field, Dundee Formation (Devonian), Michigan Basin, USA

Mesbergen, M., and Bach, R., Enhancing Production and Improving Lift Efficiency in Low Pressure Wells with Liquid Loading Conditions Using a Sequential Lift System

Solow, J., HyperScratcher, Well Rejuvenation Overview


2012: Michigan Basin Insights and Field Experiences: Focus on the Trenton/Black River

March 30, 2012, Mount Pleasant, MI

Augustine, J., Horizontal Completion Options for the Trenton/Black River Region

Brock, T. J., Analysis of BHP Data and Production in TBR Reservoirs

Budros, R., Hydrothermal Dolomite Reservoir Pore Types Observed in the full diameter core from the West Bay Exploration Co. West Bay 1-22 Wellbore, Napoleon Field, Jackson County, Michigan [Slides not in Workbook]

Esch, J., GeoWebFace Introduction

Feutz, P., [POSTER], Evaluating the Effects of Lithofacies and Thin Shales on the Later Distribution of Hydrothermal Dolomite Reservoirs in the Michigan Basin

Fowler, J., Geology of the Napoleon Field, Jackson County, Michigan


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Johnston, M., and Schaefer, S., Seismic Evolution of the Napoleon Field, Jackson Co., Mi [Slides not in Workbook]

Knox, C., Elshoff #3H, The Trenton Horizontal: Drilled in March of 2010 by Innex Oil and Gas Co. at St. Marys, Ohio

Prezbindowski, D. R., Depositional Sequences and Reservoir Development in the Black River Group of Eastern Indiana

Van Sickel, W., A Stratigraphic Model of HTD (Hydrothermal Dolomite) Occurrences in the Napoleon Field, Jackson County, MI

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August 23, 2012

Harrison, W. B., III, Office of Oil, Gas, and Minerals Staff Meeting and Core Workshop

2013: Michigan Basin Insights and Field Experiences
March 21, 2013, Mount Pleasant, MI

Abduslam, A., Harrison, W. B., III, and Barnes, D. A., Reservoir Characterization and Enhanced Oil Recovery Potential in Middle Devonian Dundee Limestone

Esch, J., Bedrock Topography, Glacial Drift Thickness, Bedrock Outcrops, Bedrock Valleys, and Potential Structural Features Reflected up Through the Bedrock Surface of Michigan


Harrison, W. B., III, Facies, Fabrics and Organic Geochemistry of the A-1 Carbonate in Michigan

Kohler, S. P., Production Declines of Hot Plays [Slides not in Workbook]

Maness, T., Drilling of a Dundee Well in Isabella County [No slides – Video Presentation]

Patterson, D., Mekic, N., Bolshakov, A., Harrison, C., and Tang, X., Conventional and Unconventional Reservoir Fracture Evaluation Utilizing Deep Shear Wave Imaging

Paul, W., Utica/Collingwood Play in Northern Michigan

Quinlan, W. C., The Dual Lift System: Artificial Lift for Horizontal Wells

Snow, M., Michigan’s Regulatory Response to High Volume Hydraulic Fracturing and Update of Current Activities


2013: How to Find Bypassed Pay in Old Wells Using DST Data

October 15-17, 2013, Traverse City, MI

Reid, H. W., How to Find Bypassed Pay in Old Wells Using DST Data: A Short Course

2014: Michigan Basin Field Experience and Devonian Carbonate Reservoir Core Workshop
March 20, 2014
**Volume 1:**

Brock, T. J., *A Review of Selected Michigan Niagaran Reef Waterfloods to Estimate the Fractional Flow Behavior During Flooding and Hysteresis Effects After Flooding*

Donham, C., and Dennen, C., *Post Water Flood Development*


Quinlan, W. C., *The Dual Lift System: Trenton-Black River Production Application*

Schmude, D. R., and Schmude, P. D., *The Value of Seismic Attributes in Oil Exploration: Case Study of the Allis 24 Reef*

Wygant, A., *Hydraulic Fracturing Proposed Rules*

**Volume 2:**


Harrison, W. B., III, and Voice, P. J., *Devonian Carbonate Reservoirs of the Michigan Basin: A Core Workshop*

Manche, C. J., Mohamed, K. B, and Voice, P. J., *The Geological Context of the Late Silurian to Early Devonian Units in the St. Charlton #4-30 Well: Otsego County, Michigan*

Panyard, N. R., and Aljammaz, A. I., *Parasequences and Facies Identifications of the Detroit River Group, Amherstburg Formation and Lucas Formation, Richfield Member, Benchley #1-29, Clare County, Michigan Basin, USA*

Rine, M., and Othman, A., *The Depositional Facies of the Bois Blanc Formation and Sylvania Sandstone of the Michigan Basin*

Sattler, F., and Suhaimi, A. A., *Middle Devonian Traverse Group, Michigan Basin, USA: A Core Description and Environmental Interpretation*


**2015: Michigan Basin Field Experience and Carbonate and Shale Reservoir Core Workshop**

**March 26, 2015, Mount Pleasant, MI**

Bohjanen, D., *What is an Anomaly?*

Crumrine, C. C., III, and Beckett, D., *The Use of Micro-CT Scanner to Characterize Pore Size Distribution*

Esch, J., *Bedrock Depth Determination Using the HVSR Passive Seismic Method*
Esch, J., GeoWebFace Enhancements
Gould, J. H., Water Conformance
Matson, M., The Origin of Natural Fractures in the Antrim Shale, Michigan
Rine, M. J., Petrophysical and Stratigraphic Characterization of Michigan Silurian Reefs
Updyke, B. S., Electronic Flow Measurement for Natural Gas Storage Field Optimization
Voice, P. J., Revising the Basement Map of the Lower Peninsula: New Constraints from Cores and Cuttings.

**2015: Pathways of Exploration in the Michigan Basin Petroleum Systems and Examination of Cores from Prospective Strata**

**November 12, 2015, Kalamazoo, MI**

Sweezey, C. S., Petroleum Systems of the Michigan Basin
Sweezey, C. S., Stratigraphic Settings of Organic-Rich Shale in the Eastern United States

**2016: Michigan Basin Going Forward – Future Development Potential and Lessons Learned from the Past**

**March 16, 2016, Mount Pleasant, MI**

Bohjanen, D., Money Ideas Oil
Currie, B. J., [POSTER], Review of the Upper Devonian-Lower Mississippian Stratigraphy with an emphasis on the Ellsworth Shale Petroleum System Michigan Basin, USA
Fowler, J., The Mid-Continent Gravity High

**2016: Michigan Basin Going Forward – Future Development Potential and Lessons Learned from the Past**

Manche, C. J., [POSTER] Diagenetic Influence on Dolomitization and the Development of Porosity in the Richfield Member of the Lucas Formation (Detroit River Group), Michigan Basin
Rine, M. J. [POSTER] - Using a combination of chemo-, bio-, and sequence stratigraphy to resolve the chronostratigraphic relationships of Niagara-Lower Salina Reef Complexes throughout the Michigan Basin

Sweezey, C., Petroleum Systems of the Michigan Basin

Sweezey, C., Stratigraphic Settings of Petroleum Source Rocks in the Eastern United States

Voice, P. J., Central Basin Burnt Bluff Group Deposits: A Review of their Production History and Reservoir Properties


2017: Return to the Dundee: A Core Workshop - Lessons Learned from Research and Past Exploration
March 16, 2017, Kalamazoo, MI

Crumrine, C. C., W. B. Osborn Oil and Gas Operations, Ltd.

Elenbaas, D. J., Reed City Zone Oil Recovery at Loreed and Goodwell

Harrison, W. B., III, Dundee, Rogers City and Reed City Stratigraphy, Geology and Production History

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Kaczmarek, S., There’s dolomite, and then there’s dolomite

Voice, P. J., Depositional Controls on the Dundee-Rogers City Interval: Lithofacies and Modern Analogs

2018: Michigan Basin Going Forward – Focus on the Traverse Group
April 12, 2018, Traverse City, MI (Joint Meeting with the Michigan Oil and Gas Association)

Al Musawi, M., Core Facies Analysis of the Traverse Limestone and the Squaw Bay Formation, Grand Traverse County, Michigan [Poster]

Barratt, M., Michigan Basin Exploration and Production “Going Forward”

Fowler, J. H., Traverse Limestone Oil Production in Southwest Michigan

Harrison, W. B., III, Traverse Oil and Gas Play in the Michigan Basin

Hemenway, M., Application of handheld ED-XRF for high-resolution chemostratigraphy in texturally homogenous carbonate mudstones: Salina A-1 Carbonate (Silurian), Michigan Basin [Poster]

Johnson, A., Detailed Petrophysical study of the Smith and Gerarrd Unit 1, PN: 38732 [Poster]
Joupperi, C., Salt Dissolution Controls on Southwest Michigan Traverse Fields [Poster]


Manche, C., Evaluating the Influence of Dolomite composition and mineralogy on Reservoir Quality: Examples from the Traverse Group, Michigan Basin [Poster]

Matson, M., Henrietta Field – Jackson CO., MI: Recent Exploration and Structural Definition defining the Field as a Possible Impact Structure

Modroo, A., Victory Section 20-19N-17W Field (Traverse Lime)

Nadhim, Z., Depositional Facies Modeling and Constructing Facies Volumes, Geometry and Internal Structure in the Niagaran Pinnacle Reefs, Michigan Basin [Poster]

Rine, M., A basin-wide core study of the Traverse Group in the Michigan Basin [Poster]


Wygant, A. Michigan Department of Environmental Quality Oil, Gas, and Minerals Division, Petroleum Technology Transfer Council Update
Publications of the Groundwater Education in Michigan Center, Institute for Water Sciences, Western Michigan University

The GEM Center and the Institute for Water Sciences were long running programs in Western Michigan University’s Department of Geology. Their missions were to produce resources and publications on the nature, quality and distribution of Michigan’s Groundwater for the general public, for teachers and for state officials. The list below represents some of the documents produced by these programs. In addition, journal articles and other peer-reviewed documents were generated by the staff of the Institute for Water Sciences - these are cited in the Quaternary section.


Anonymous, 1995, A Collection of Groundwater Protection Activities and Actions Undertaken by Local Communities within the State of Michigan, Western Michigan University Department of Geology.


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