



Ohio Section

American Institute of Professional Geologists

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February 2025 Newsletter

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AIPG Ohio Section Winter Meeting

Earthquake History of Ohio Through Paleozoic, Imprinted as Seismites in Bedrock Units

Presenter: Dr. Mohammad Fakhari, Ohio Department of Natural Resources

Date: Thursday, February 20, 2025

Location: The Boat House at Confluence Park
679 W. Spring Street
Columbus, OH 43215

Schedule: Social hour begins at 5:00 pm followed by Dinner at 6:00 and Presentation at 7:00

Event Registration Payment: <https://aipg-ohio.org/meetinginfo.php>
See Page 13 for event details

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Message from the President

Dave Follett, CPG - 12034

Dear Fellow AIPG Ohio Section members,

I am honored to serve as your President once again in 2025. Before I introduce the rest of this year's Executive Committee and discuss the exciting things planned for 2025, I would like to thank Mike Friedhoff for serving as the Ohio Section President in 2024. He did an outstanding job leading the section last year launching a new student chapter at Miami University. For those who do not already know me, I currently work as an Environmental Compliance Manger for WIN Waste Innovations where I handle environmental compliance for several solid waste facilities throughout Ohio. I earned a Bachelor of Science degree from the University of Wisconsin-Oshkosh. I became a member of AIPG in 2019 and have been active with the Ohio Section since. The rest of my biography can be found on the section's web page at www.aipg-ohio.org by selecting Officers under the AIPG Ohio Section pull down menu.

For 2025, the Section's Executive Committee is full of phenomenal individuals with great ideas for the direction of the Section. The Members-At Large for the Section's Executive Committee will be Lauren Decker and Michelle Torres. Lauren Decker is new to the Executive Committee in 2025. Michael Friedhoff will serve as President-Elect and Past President for 2025. Paul Chasco will serve as Secretary and Hugh Downer will serve as Treasurer, both of which are serving as their second year in the respective elected roles. I look forward to working with all of these individuals along with the following committee chairs in 2025: Paul Chasco (Newsletter Editor), Brent Huntsman (Section Historian), Tom Jenkins (Membership Chair), Robert Andrews (Awards Chair) and Nelson Novak (Website Manager).

The Section's schedule for 2025 will include hosting four regular dinner meetings with the Section hosting the February and Annual meeting in Columbus along with plans to host meetings in other regions of the State. The Section's first dinner meeting will be held at the Boathouse at Confluence Park in Columbus on February 20th. More details on this meeting can be found on page 12 of this newsletter. Looking into March, I am happy to announce that the Section is coordinating a geologic hike at Blendon Woods Metro Park tentatively scheduled for March 22nd, details are currently in the works.

With the marked success of the Section's Charity Golf Scramble over the past 6 years having raised over \$11,000 for our Student Chapters, the Section will once again host the charity golf scramble in Central Ohio in June. More details on the exact date and location of this year's golf scramble will be forthcoming.

Again, I am looking forward to serve as your President in 2025. If you have any questions or concerns about activities of the Ohio Section, do not hesitate to contact me.

Sincerely,

Dave Follett, CPG-12034
2025 AIPG Ohio Section President



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AIPG Ohio Section 2025 Schedule

February 11, 2025	Workshop: Improving Understanding and Treatment of Uncertainty in Groundwater Science Part 1 see aipg.org/events/ for more details
February 18, 2025	Workshop: Improving Understanding and Treatment of Uncertainty in Groundwater Science Part 2 see aipg.org/events/ for more details
February 20, 2025	Ohio Section 2024 Winter Meeting The Boathouse at Confluence Park
February 22, 2025	National Executive Committee 1 st Quarterly hybrid meeting
February 24, 2025	AIPG Lunch During the SME Conference – Denver
February 25, 2025	Workshop: Improving Understanding and Treatment of Uncertainty in Groundwater Science Part 3
March 12, 2025	International Geosciences Employment Truths
March 15-22, 2025	AIPG Kentucky Section Bahamas Short Course
March 19, 2025	Ohio Section Executive Committee Meeting
March 20, 2025	AIPG Ethics Webinar
April 10, 2025	Tentative date for Ohio Section Spring Meeting at Wright State University
May 8-16, 2025	AIPG 2025 Cornwall England Field Trip
May 14, 2025	Ohio Section Executive Committee Meeting
June 10, 2025	AIPG Michigan Section 14th Annual Workshop
August 20, 2025	Ohio Section Executive Committee Meeting
September 18, 2025	Tentative date for Ohio Section Fall Meeting at Miami University
October 4-7, 2025	AIPG National Annual Conference, St. Louis, Missouri
October 22, 2025	Ohio Section Executive Committee Meeting
November 20, 2025	Tentative date for Ohio Section Annual Meeting

Save the date: We are organizing a hike at Blendon Woods with a tentative date of March 22nd, please check aipg-ohio.org often for details when they become available.

Save the date: The 7th Annual Charity Golf Scramble will continue out tradition at Chapel Hill Golf Course.

We are hoping to announce other events. Please check out our website frequently: aipg-ohio.org

Last Tuesday of every month – AIPG Lunch and Earn @ 1:00 PM Eastern aipg.org/events/ for more details

Third Tuesday of every month at 12:00 PM (Central Time) the Texas Section hosts a webinar for 1 PDH credit. February 18, 2025 is going to be by Dr. Rebecca Smyth of the Texas Bureau of Economic Geology on Groundwater Systems of the western Panhandle of Texas.

Have an event you want to add, please send submittals to the editor at pchasco@nrmsolution.com or pdchasco@gmail.com.



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A Memorial to Ann G. Harris-Noel

By: Paul D. Chasco, CPG-12024

Ann G. Harris-Noel (September 6, 1934 – September 23, 2024) was born in Cleveland, Ohio and was a former member of AIPG and the Ohio Section. Ann was also a member of the American Association of Petroleum Geologists and a professor at Youngstown State University.

Ann earned her Bachelor of Science degree in Geology from Kent State University in 1956 where she met her first husband, Earl. She and Earl both continued their studies at Miami University where she received her Master of Science degree in Geology 1958. Ann started her career with the U.S. Geological Survey in Colorado. In the 1960s they moved to Wisconsin to teach at Wisconsin State University. In the mid-1960s they moved back to Ohio where Ann was a professor of Geology at Youngstown State University until she retired in 2001.

Ann's list of achievements during her 60-year career include: professional geologist certifications in Indiana and South Carolina, and membership in ten different professional organizations and societies.

As a geology professor, Ann taught courses covering many topics, but her passion was paleontology, abandoned deep coal mine research and the geology of the National Parks. Ann worked to get Ohio House Bill 383 passed in 1985. This bill is known as the Mine Subsidence Insurance Bill. Ann's published the "Geology of National Parks" textbook through the 6th edition, this textbook is currently in its 8th edition and is available in several National Park gift shops.

Her career at Youngstown State University included her receiving the most prestigious award Youngstown State University bestows to former faculty for their service – the Heritage Award in 2010.

After she retired as a professor, Ann continued her work with the Abandoned Deep Coal Mine Research lab investigating mine subsidence issues and sharing her research with the public, students and fellow faculty and researchers. Her collection of mine information and maps led to the establishment of the Ohio Department of Natural Resources Geological Survey Abandoned Mine Locator interactive website.

Ann is a mother of two daughters, Laurie and Kelli, and grandmother to Chase and Rachel; sharing with them her passion for geology, paleontology, and the natural world. Her collection of historic coal mining equipment was donated to the Youngstown Museum of Labor and Industry, where it is currently on display. WKBN of Youngstown aired a memorial for Ann on October 27, 2024.

Ann will be missed by our members that knew her.



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Ohio Section 2024 Annual Meeting Recap

Feature Presentation: Phosphorus transport across the groundwater-surface water interface in intensively managed agricultural streams and relevance to Great Lakes water quality

Presented By: Dr. Audrey Sawyer, Professor in the Department of Earth Sciences at The Ohio State University

By Michelle Torres, MEM-2972

The American Institute of Professional Geologists (AIPG) Ohio Section held its 2024 annual meeting at The Boat House at Confluence Park in Columbus, Ohio on Thursday, November 21, 2024. AIPG members braved the cold to attend, arriving for a lively social hour followed by dinner and the feature presentation.

Mike Friedhoff (CPG-11093), AIPG Ohio Section President, opened the presentation portion of the meeting with recognition of the 2024 Annual Meeting sponsors, then introduced Dr. Audrey Sawyer of The Ohio State University as the evening's guest speaker. Dr. Sawyer is a professor of Earth Sciences with a courtesy appointment in Civil, Environmental, and Geodetic Engineering.



2024 Annual Meeting dinner, preceding the feature presentation.



The view of the Columbus city skyline from The Boathouse at Confluence Park.

Her research focuses on surface water and groundwater interactions in streams and coastal waters using a combination of numerical modeling, physical modeling, and field observations. Dr. Sawyer's background includes a B.S. in geology and environmental engineering from Rice University, M.Sc. in geoscience from the Pennsylvania State University, and Ph.D. in geological sciences at the University of Texas-Austin. She also conducted post-doctoral research at the University of Delaware, and has served as a visiting scientist at institutions in Spain.

Dr. Sawyer's presentation titled "Phosphorus transport across the groundwater-surface water interface in intensively managed agricultural streams and relevance to Great Lakes water quality" discussed the methods, reasoning, and outcomes of a study into nutrient transport in an agricultural system. The work presented was performed by herself and her research group. She credited Lauren Decker, a member of AIPG Ohio Section in the audience, for her contribution to the project, which is published in the Journal of Hydrology.



Dr. Sawyer presenting.

There is an ongoing struggle with excess nutrients in surface water associated with agricultural drainage. For example, phosphorus can be released to surface water attached to sediment particles, or as dissolved phosphorus, which is bioavailable. Headwaters to surface water bodies have been heavily influenced by channelization and installation of drainage tiles in agricultural areas. This raises the question at the center of Dr. Sawyer's research: how do these modified systems export nutrients to Lake Erie?

The presented research is based in the Portage River Watershed, and utilized a combination of tracers to understand the subsurface transport of phosphorus along tile drain flow paths. The combination of tracers included chloride to represent a conservative solute and act as an electrically conductive tracer; fluorescent fine particles to represent particulate phosphorus sorbed to sediment, and dissolved phosphorus to represent non-conservative transport of dissolved phosphorus. Core samples of the soil horizon were collected to quantify tracers retained in shallow soil. Time-lapse electrical resistivity surveys of the field monitored chloride movement in the subsurface. Water samples were collected at the drainage tile outlet to measure breakthrough of tracers.

Breakthrough behavior at the tile outlet showed there was a big slug of tracers initially, followed by a longer period of smaller concentration release. Using the field observations of tracer travel, Dr. Sawyer's team modeled the travel of solutes through mobile and immobile zones. She shared modeled images illustrating the distribution of solutes in the system overtime. Continued monitoring showed the system continued to get flushes of residual dissolved phosphorus and chloride with subsequent precipitation events.

The various tracers acted differently in the system. The chloride tracer was recovered $\frac{1}{3}$ in tile discharge water, $\frac{1}{3}$ in shallow soil, and was $\frac{1}{3}$ unrecoverable. Dissolved phosphorus tracer was over 50% unrecoverable, moving too quickly in the subsurface to be captured in tile discharge water. Fine sediment particles were 90% retained in shallow soil.

Once nutrients travel from a field to a stream, dissolved phosphorus is taken up by vegetation in the stream channel and phosphorus attached to sediment accumulates in the restricted flow associated with dense vegetation. Further research noted seasonal variation in both dissolved

and particulate phosphorus transport, with more rapid uptake of dissolved phosphorus during the spring when vegetation is dense.



Dr. Sawyer accepting a trilobite plaque from AIPG Ohio President Mike Friedhoff following her presentation.

Cores of streambed sediments show phosphorus is stored in these sediments, such that the sediments serve as a phosphorus source. Sediments in drainage ditch soils that have previously absorbed phosphorus can supply between 8 and 27% of the phosphorus load to surface water. Dr. Sawyer concluded her presentation and invited questions from the audience. Attendees asked how farmers can potentially reduce phosphorus loading to surface water, what the role of each tracer was in the research project and how the tracers were applied to the farm field, and the applicability of the results to various soils types. The

research presented was limited to very clayey soils, but Dr. Sawyer indicated there are plans to repeat the study in different soil types. There is opportunity to compare results to USDA research, which includes similar monitoring sites in other states and drainage basins.

AIPG President, Mike Friedhoff, presented Dr. Sawyer with a plaque of the Ohio State Fossil, the trilobite (*Isotelus Maximus*), as a token of appreciation. Attendees joined in thanking Dr. Sawyer with applause and appreciation.

The annual meeting included a 50/50 raffle, wherein 50% of proceeds from raffle tickets went to support student chapters, and 50% was available to the winner. AIPG Ohio Section President Mike Friedhoff won the 50/50 raffle, and generously donated his winnings to the student chapter, resulting in 100% of proceeds from the 50/50 raffle going to student chapters.

Following the 50/50 raffle announcement, AIPG Ohio Section award chair, Robert Andrews, announced awards to executive committee members Hugh Downer and David Follett for Outstanding Service to the Institute. Hugh Downer has served on the Executive Committee since 2022 and as treasurer since 2023. David Follett has served in several capacities since 2019, including member-at-large, treasurer, president elect, and president.



AIPG President Mike Friedhoff with Robert Andrews, Awards Chair, during the presentation of Outstanding Service to the Institute awards.

President Mike Friedhoff then presented an award to Robert Andrews for his outstanding service to the institute, as well.

Mike Friedhoff announced the results of the committee elections. In 2025, Dave Follett will serve as President, Mike Friedhoff will serve as Past President and President Elect, Hugh Downer will continue to serve as Treasurer, and Paul Chasco will continue to serve as Secretary. Michelle Torres will continue to serve as a Member-at-Large and Lauren Decker will also serve as a Member-at-Large.

The annual meeting concluded with raffling of door prizes, consisting of donated items from AIPG, swag from member companies, and wine donated by ALS Environmental.

Dave Follett presented closing remarks, alluding to additional planned events for 2025. Please stay tuned to the newsletter and AIPG Ohio Section emails for more information on upcoming events.

Thank you to all of the members that were able to attend the 2025 Annual Meeting of the AIPG Ohio Section, and to the 2024 Executive Committee for arranging the event. In addition, thank you to all of the sponsors of the annual meeting and dinner presentation: Cindrill, K3 Complete, ERIS - Environmental Risk Information Services, Lightbox EDR, White Oak Environmental & Safety, Terran Corporation, Ohio Soil Recycling, Pace Analytical Services, ALS Environmental, and Buckeye Elm Contracting.



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Ohio Section 2025 Winter Meeting

Feature Presentation: Earthquake History of Ohio Through Paleozoic, Imprinted as Seismites in Bedrock Units

Presented By: Dr. Mohammad Fakhari, Ohio Department of Natural Resources

The Ohio Section of AIPG is pleased to host Dr. Mohammad Fakhari, at the Section's Winter Meeting presentation, which will take place Thursday, February 20, 2025 at the Boathouse at Confluence Park located at 679 W. Spring Street in Columbus. Dr Fakhari will be presenting a talk on the Paleozoic earthquake history of Ohio. This event is sponsored by ALS Environmental, Buckeye Elm Contracting, Environmental Risk Information Services, Ohio Soil Recycling, and Pace Environmental Services.

The event begins at 5:00 pm with social hour, followed by dinner at 6:00, and the feature presentation at 7:00. The cost is \$40 for members and guests or \$15 for students. Please preregister and submit payment for the event via the AIPG Ohio Section website <https://aipg-ohio.org/meetinginfo.php>.

The featured topic will be: Earthquake History of Ohio Through Paleozoic, Imprinted as Seismites in Bedrock Units presented by Dr. Mohammad Fakhari

SUMMARY

Please join us for a presentation by Dr. Fakhari on Earthquake History of Ohio Through Paleozoic, Imprinted as Seismites in Bedrock Units. Ohio generally is considered an aseismic state with simple geology, lacking major folding, faulting, and tectonic activity. However, past and present studies of bedrock outcrops, with an emphasis on seismites, reveal that the state has experienced significant earthquakes in geologic history. The convoluted beds (seismites) between undeformed layers are found in geologic formations across Ohio and are physical evidence of high-magnitude earthquakes caused by major tectonic activities during deposition of the layers. For the present study, outcrops of the reported soft-sediment deformation features, and other geologic formations with deformation potential were visited for seismite verification and data collection for further analysis. Over the past 30 years, small-scale seismites have been documented in Ordovician- and Silurian-age marine shale and carbonate layers exposed in southwest and western Ohio (Pope et al 1997, Onasch and Kahle 2002). Since the 1950's the large-scale seismites in the Devonian-age Berea Sandstone and sandstone layers in the Bedford Formation, which are extensively exposed from northeast Ohio through central and south-central Ohio, have been reported as convoluted soft-sediment deformation (Pepper et al 1954). The current study examines seismites in Mississippian-age Cowbell Member of the Borden Formation, the Black Hand Member of the Cuyahoga Formation, the Fairfield and Berne Members of the Logan Formation in southern and central Ohio, and the Pennsylvanian Sharon Conglomerate in northeastern Ohio.

Rock units in Ohio that include seismite horizons range from Ordovician through Pennsylvanian in age and were deposited in marine, nearshore, deltaic, and fluvial environments. The size and distribution of the seismites in these sedimentary environments indicate their distance from regions of tectonic activity and active fault sources during the Acadian and Alleghenian Orogenies. The abundance of seismites in different geologic units reveals that Ohio experienced numerous significant seismic events during its Paleozoic history. Seismic activity from the end of the Paleozoic to the Pleistocene is unclear because of the absence of post-Paleozoic geologic formations. However, it is possible that seismites

were formed by earthquakes during the Quaternary and have been preserved in glacial sediments, though no evidence of such features has been documented.

Tentative issuance of 0.1 CEU / 1 PDH for attending the Winter Meeting and Dinner Presentation; Pending approval of credits through AIPG National.

Bio:

A short list of Dr. Mohammad Fakhari's accomplishments include:

Structural geologist, at the Ohio Geological Survey since 2014.

Received BS and MS in geology in 1972 and 1977, and PhD in Structural Geology in 1996.

1974 – 1979 Worked in Oil Service Company Consortium (OSCO) as paleontologist and structural geologist.

1979 – 2003 Headed Structural Geology Department in “National Iranian Oil Company”.

2004 – 2007 Part-time Visiting Research Scholar at UCLA.

As part-time consulting geologist prepared geologic reports for 8 large earthen dams and over 75 industrial and civil projects.

Published 19 geological maps, numerous papers and abstracts in Tectonophysics, Tectonics, GSA, and Ohio Journal of Science.

His 2022 paper on “Evidence for Possible Late Paleozoic Alleghenian Deformation Structures in the Devonian Rocks of Erie County, Ohio” is published in “Ohio Journal of Science”.

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Photograph Submittal Guidelines

The Ohio Section welcomes and encourages members to submit photographs for the newsletter. We are looking for photographs with short captions that you think are interesting or showcase geology and geologists at work. Topics of interest include scenery, geologic disasters, interesting or historical geologic events, interesting work sites, and similar topics. Contributing photographers are requested to abide by the following guidelines to ensure civility and professionalism.

1. Submissions should include your name and membership number.
2. Title of the photograph and year the photograph was taken.
3. A brief description of the photograph.
4. Names of any identifiable persons in the image and permission to publish their photo. No minors please.
5. Please do not submit photographs with confidential or proprietary information.
6. The Ohio Section also welcomes and will consider relevant photographs from non-members, provided contributions abide by the above stated guidelines.

Contributions to the Ohio Section newsletter do not necessarily reflect the opinion of the Ohio Section or the editor. We reserve the right to choose photographs published for space considerations. Please send submittals to the editor at pchasco@nrmsolution.com or pdchasco@gmail.com.



Photograph submitted by Paul Chasco, CPG 12024. Photograph taken in June 2004. Inside Rio Camuy Cave, Puerto Rico.



Photograph submitted by Paul Chasco, CPG 12024. Photograph taken in June 2004. Cretaceous diorite porphyry dikes and Cretaceous amphibole-hornfels at Punta Tuna (Caribbean coast), Puerto Rico.



Photograph submitted by Paul Chasco, CPG 12024. Photograph taken in June 2014. Miocene fossils at Agate Fossil Beds National Monument in Nebraska.



Photograph submitted by Paul Chasco, CPG 12024. Photograph taken in March 1994. Ubehebe Crater (a maar) at Death Valley National Park.

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Letters to the Editor and Editorial Submittal Guidelines

The Ohio Section welcomes and encourages membership discourse via the Section newsletter on relevant geopolitical and geological topics, in accordance with our chartered purpose. Contributing authors are requested to abide by the following guidelines to ensure civility and professionalism.

1. Scientific interpretations should include accurate and effective references.
2. Opinion pieces should be presented with reasoning. Fellow members may choose to comment or challenge a submittal with their own contribution.

Authors must abide by the AIPG Code of Ethics. Any author who violates this code will not be published. Authors must be respectful to fellow members, all political parties, officials and candidates.

3. Letters to the Editor should be under one page in 12 pt. Arial font.
4. Member authors should provide their name and certification number.
5. The Ohio Section also welcomes and will consider relevant articles from non-members, provided contributions abide by the above stated guidelines.

Contributions to the Ohio Section newsletter do not necessarily reflect the opinion of the Ohio Section or the editor. We reserve the right to edit for clarity and space considerations.

Please send submittals to the editor at pchasco@nrmsolution.com or pdchasco@gmail.com.

I'm not just looking for letters to the editor, I'm also looking for your articles. As the Ohio Section Newsletter Editor, I am working to engage our members and looking for content that you think our members would enjoy. I cannot do this by myself and I am asking for your submissions. I am looking for student papers, abstracts, ongoing research, technical articles, case studies, guides. and, of course, letters to the Editor. While I am limiting the space for letters to the editor, articles can be longer.

The guidelines are pretty simple (see above). All submissions must be professional and must not violate the AIPG code of ethics. Submissions must not be copy right protected or previously submitted for publication elsewhere. We will not publish articles that are clearly marketing for a product or company.

Articles submitted from January 1 to March 15 will be published in the spring newsletter. Articles submitted from March 16 to July 31 will be published in the Summer newsletter. Articles submitted from August 1 to October 15 will be published in the fall newsletter. Finally, articles submitted on or after October 16 will be published in the winter newsletter. I look forward to reading and publishing your articles.



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