



THE OHIO GEOLOGICAL SOCIETY

An Affiliate (1963) of the American Association of Petroleum Geologists (AAPG)

The Newsletter of the Ohio Geological Society

February 2002

2001-2002 Officers

President

James McDonald
Ohio Geological Survey
4383 Fountain Square Drive
Columbus, OH 43224
(614) 265-6601
(614) 447-1918
jim.mcdonald@dnr.state.oh.us

Vice-President

Ron Rea
Ohio Geological Survey
4383 Fountain Square Drive
Columbus, OH 43224
(614) 265-6585
ron.rea@dnr.state.oh.us

Secretary

Paul L. Archer
Geopetro, LLC.
6463 Proprietors Rd. Suite 204
Worthington, OH 43085
(614) 885-9350
geopetrollc@aol.com

Treasurer

Nicole Venteris
CGAS Exploration, Inc.
4770 Indianola Ave.
Columbus, OH 43214
(614) 781-3259
nicolev@cgasinc.com

Past President

John L. Forman
Appalachian Geophysical
Services, L.L.C.
262 N. Cassingham Rd.
Columbus, OH 43209-1490
(614) 237-6353
(614) 237-6465 (Fax)
jlforman@att.net

President's Column

Geez, maybe Punxsutawney Phil is right, maybe we are headed for six more weeks of winter. It sure didn't feel like that way last month. It felt more like it was spring, with the temperature being in the 50's and 60's for a number of days. Well, with the somewhat "cooler" temperatures that have come since Punxsutawney Phil has made his prediction, I hope that it results in higher natural gas prices.

As I said last month, Larry Wickstrom is stepping down as our AAPG Delegate. I would like to thank Larry for serving in the House and representing Ohio's interests at the national level. Also, I would like to thank Pete MacKenzie and Jay Henthorne for running for the AAPG House of Delegates position. As many of you know, Pete is Vice President of Geophysics at CGAS Exploration Inc. and Jay is President of Petro Evaluation Services, Inc. The AAPG House of Delegates position is very important for the Society. The House of Delegates is the legislative body for AAPG and our delegates represent you and the Society's interests at the national level. In addition to working on legislation, Society's delegates also perform a number of other duties, such as bringing back information on AAPG's activities that would be of interest to the members, helping process requests for information regarding membership applications in AAPG, and helping process requests for information regarding applications to the Certified Petroleum Geologists program. All Active AAPG members should be getting a ballot in the next few weeks. Please remember to vote.

Our February speaker is Dr. Tom Algeo, from the University of Cincinnati. He will be speaking on *Effects of the Middle-to-Late Devonian Spread of Vascular Land Plants on Terrestrial Weathering Processes, and Potential Links to Coeval Marine Extinction Events and Global Climate Change*. In the past few years, Tom has had students working on the Ohio Shale in central and southern Ohio and has been working with Dr. Carlton Brett on the Ordovician shales in the Cincinnati area. I hope to see you at this month's meeting for this interesting talk.

UPCOMING OGS MEETINGS AND EVENTS

February 18th, 7:30 p.m. at the H.R. Collins Laboratory at Alum Creek State Park

Dr. Thomas J. Algeo, of the University of Cincinnati will be our speaker. The meeting will be at the Horace R. Collins Laboratory, Alum Creek State Park, 3307 South Old State Road, Delaware, OH 43015 (740) 548-7348. Dinner will be at the Corner Café at 5:30 p.m. Please RSVP for dinner by noon of the day of the meeting (February 18th) to Jim McDonald (614-265-6601). For more information, please contact Jim McDonald at (614) 265-6601 or by e-mail at jim.mcdonald@dnr.state.oh.us.

Contact one of the officers if you need directions to either the meeting place or Corner Café.

Effects of the Middle-to-Late Devonian Spread of Vascular Land Plants on Terrestrial Weathering Processes, and Potential Links to Coeval Marine Extinction Events and Global Climate Change

Thomas J. Algeo, Dept. of Geology, University of Cincinnati

Abstract

The Middle-to-Late Devonian world experienced far-reaching changes in the terrestrial and marine biotas as well as in global climate, although causal links between these changes remain poorly understood. In the terrestrial realm, evolutionary innovations among early vascular land plants led to the appearance of the first trees and forests and to the spread of vegetation into previously inaccessible upland areas. Associated increases in total root mass, i.e., owing to greater penetration depths and expanded geographic ranges, resulted in profound changes in weathering rates and processes. Rapid expansion of terrestrial floral biomass at this time is likely to have been accompanied by a transient increase in rates of pedogenesis (soil formation) and to have induced permanent increases in the thickness and areal extent of soils, as well as long-term changes in the hydrologic cycle, sediment fluxes, and landform stabilization. In the marine realm, a coeval biotic crisis of fluctuating intensity eliminated 70-80% of species and destroyed the Middle Paleozoic reef community. Owing to close links with episodes of marine anoxia, the proximate cause of individual extinction events must have been bottomwater oxygen depletion or a related environmental stress such as increased turbidity or seawater cooling. Coeval changes in global climate are indicated by evidence of rapid drawdown of atmospheric CO₂, climatic cooling, and the onset of continental glaciation. A common explanation for marine anoxic/extinction events and global climatic cooling may be found in changes in the global carbon cycle, i.e., a transfer of carbon from the atmosphere and ocean to the sedimentary reservoir. An unresolved question, however, is how these changes are linked to coeval developments in the terrestrial realm. Although it is possible that global climate change precipitated evolutionary innovations among early vascular land plants, the converse is equally plausible, i.e., that rapid evolutionary development and spread of land plants caused changes in weathering fluxes that precipitated marine anoxia and global climate change. One potential mechanism is that elevation of pedogenic weathering rates led to an increase in riverine nutrient fluxes, which in turn promoted eutrophic conditions in epicontinental seas that resulted in opportunistic phytoplankton blooms, high sedimentary organic carbon fluxes, and widespread bottomwater anoxia. Although this model provides a framework for understanding links between vascular land plant evolution and coeval marine anoxic and biotic events, further paleobotanical, paleopedological, and sedimentary geochemical research is needed for evaluation of terrestrial-marine teleconnections during the Middle and Late Devonian.

**Remember 2001-2002 Ohio Geological Society Annual Dues are now due!
This will probably be your last newsletter for the year if your dues have not been paid.**

PUBLICATIONS

The in-print publications of the Ohio Geological Society may be purchased from the Ohio Division of Geological Survey. Members of the Society receive a discount; the member price is in parentheses (M:). For more information, write the Ohio Geological Society, P.O. Box 14304, Columbus, OH 43214.

OGS 1. Guidebook to the Middle Devonian rocks of north-central Ohio, by A. Janssens. 30 p., 1970. \$2.50. (M: \$2.00).

OGS 2. Geology of Silurian rocks, northwestern Ohio, by C. F. Kahle and J. C. Floyd. Guidebook for First Annual Meeting, Eastern Section, American Association of Petroleum Geologists. 91 p., 1970. \$7.00 (M: \$6.00).

OGS 3. Seminar on industrial self-help programs for natural gas supplies, edited by Arie Janssens. 55 p., 15 figs., 1 table, 1977. \$3.50 (M: \$3.00).

OGS 4. Clinton sandstone papers presented at the Ohio Oil and Gas Association Winter Meetings 1961 to 1978 (abridged reprint of 1980 volume). 228 p., 1985. \$25.00 (M: \$20.00).

OGS 5. The new Clinton collection--1985, edited by Jack Gray, Andy Maslowski, Warren McCullough, and W. E. Shafer (2nd printing). This edition includes a transcript of "Deeper Clinton-Medina drilling in southeastern Ohio" from a March 1986 Ohio Geological Society meeting. 257 p., 1985. \$25.00 (M: \$20.00).

OGS 6. Principles of seismic exploration. A collection of papers from a seminar presented at the 1987 AAPG Eastern Section meeting. 1987. Out of print.

OGS 7. Computer-aided analysis of geologic data, edited by Lawrence H. Wickstrom. A collection of papers from a seminar presented at the 1987 AAPG Eastern Section meeting. 100 p., 1987. \$15.00 (M: \$12.00).

OGS 8. Maps and cross sections of the Cambrian and Lower Ordovician of central Ohio, by G. G. Shearrow. 31 p., 8 pls., 1987. \$12.00 (M: \$10.00).

OGS 9. An update on Ohio's subsurface geology. Proceedings from the October 1993 technical symposium held in Canton, Ohio. 11 papers, separately paged, 1993. \$25.00 (M: \$20.00).

OGS 10. The Ohio Geological Society anthology, the Morrow County, Ohio "oil boom" 1961-1967 and the Cambro-Ordovician reservoir of central Ohio, edited by William E. Shafer. 452 p., 1994. \$65.00 (M: \$55.00).

OGS 11. Major natural gas plays of the Appalachian basin and surrounding areas. Proceedings from the October 1994 technical symposium held in Canton, Ohio. 11 papers, separately paged, 1994. \$25.00 (M: \$20.00).

OGS 12. Structural influences on oil and gas reservoirs. Proceedings from the October 1995 technical symposium held in Canton, Ohio. 14 papers. 129 p., 1995. Out of print.

OGS 13. Enhanced recovery--historical development and future potential in Ohio and the Appalachian Basin and Integration of geology and geophysics in exploration. Proceedings from the October 1996 technical symposium held in Akron, Ohio. 16 papers. 209 p., 1996. \$25.00 (M: \$20.00).

OGS 14. Ohio Geological Society Fifth Annual Technical Symposium. Proceedings from the November 1997 technical symposium held in Akron, Ohio. 11 papers. 117 p., 1997. \$25.00 (M: \$20.00).

OGS 15. Petroleum Seismology in the Digital Age. Course notes from the Ohio Geological Society's 3-D Seismic Seminar presented at the 1998 AAPG Eastern Section meeting. \$20.00 (M: \$15.00).

OGS 16. Fossil Collecting in the Silica Formation at Sylvania, Ohio. Guidebook for the 1998 AAPG Eastern Section meeting. 16 p., 1998. \$7.00 (M: 6.00).

OGS 17. Into The New Millennium: The Changing Face of Exploration In The Knox Play. Proceedings from the Sixth Annual Fall Symposium held in Akron, Ohio, October 1999. 12 papers. 120 p., 1999. \$25.00 (M: \$20.00).

To order any of the Society's publications call or write: The Geologic Records Center, Ohio Geological Survey, 4383 Fountain Square Drive, Columbus, Ohio 43224-1362. Telephone (614) 265-6576. E-mail: geo.survey@dnr.state.oh.us.

Other Meetings and Events:

Ohio Geological Society Meetings:

March 18th - Dr. Loren Babcock , time and location to be determined

April 15th - Dr. Scott Bair, time and location to be determined

Others of note:

20 February 2002	Joint PAPG/PGS Monthly Meeting Speaker to be announced Parkway Center Best Western, Pittsburgh, pA
21 March 2002	SPE-PAPG joint Monthly Meeting Charles Thomas, SPE Distinguished Lecturer “Methane Hydrates – A Major Energy Source for the Future or Wishful Thinking?” Location to be announced
April 2002	PAPG Monthly Meeting Chris Kulander, U.S. Geological Survey (tentative) Seismic analysis of the Rome Trough

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