

On the Rocks



A Newsletter of the Michigan Basin Geological Society

2002-2003 Number 9

www.mbgs.org

April 2003

EVENTS

March 20, 2003: PTTC Workshop; "Horizontal Drilling--Real Michigan Field Experiences", 8am to 5pm Comfort Inn, Mount Pleasant, Michigan. For more information, please contact Bill Harrison at (269) 387-8633 or at: harrison@wmich.edu.

March 26, 2003: AIPG Michigan Section Meeting. Dr. Lance Stokes of ECI Environmental Compliance, Dr. Robert Kelley of Carus Chemicals, and Dr. Stan Reitsma (professor of engineering) of University of Windsor will present: "Lessons learned: Case study of a successful insitu chemical oxidation (ISCO) application and the use of an alcohol flooding technique to remediate PCE at a site located in Macomb County." Location: Comfort Inn, Mt. Pleasant, Michigan. Cost: Students \$20.00, Members \$30.00, Non-members \$35.00. Cash Bar 5:30-6:00, Dinner 6:00, Presentation 7:00. Dinner choices: prime rib, champagne chicken with wild rice. Vegetarian meal available upon request. Call Dawn Checcobelli at (313) 271-2223 with reservations and dinner preference. Reservations must be in no later than March 19th.

April 9, 2003: MBGS meeting: The scheduled speaker will be AAPG Distinguished Lecturer G. Michael Grammar. His presentation will cover: "Predicting the Distribution and Geometry of Platform Carbonate Reservoirs - Insights from the Integration of Modern and Outcrop Analogs".

April 26, 2003: MBGS Field Trip – Detroit Salt Company Mine Tour.

May 11-14, 2003: AAPG 88th Annual Meeting Salt Lake City, Utah. The theme is: "Energy-Our Monumental Task".

May 14, 2003: Joint MBGS-SPE Meeting in Traverse City, Michigan

June 18, 2003: AIPG Michigan Section Meeting. Dana Debel, Environmental Policy Advisor to Governor Granholm will be speaking on groundwater related policy. Lansing, Michigan.

September 6-10, 2003: Joint Technical Conference; "Taking a Closer Look", 2003 AAPG Eastern Section Meeting - 2003 SPE Eastern Regional Meeting, Pittsburgh, Pennsylvania. See aapg-spe-2003.org.

September 21-24, 2003: The Society for Organic Petrology (TSOP), 20th Annual Meeting Washington, DC, USA. For further details: <http://www.tsop.org/mtgdc.htm>.

October 1-3, 2003: Midwest Ground Water Conference. To be held at the Fetzer Center at Western Michigan University. Additional details available at: <http://www.wmich.edu/geology/mwqwc.html>.

October 4-9, 2003: AIPG 40th Annual Meeting in Glenwood Springs, Colorado.

MBGS Meeting

April 9, 2003

Location: Mountain Jacks
5800 W. Saginaw Highway, Lansing, Michigan

Schedule: 4:30-5:30 PM Executive Committee Meeting
5:30-6:15 PM Cash Bar
6:15-7:15 PM Dinner
Presentation after Dinner

Cost \$25.00/member \$10.00 Student (includes dinner)

Topic: "Predicting the Distribution and Geometry of Platform
Carbonate Reservoirs - Insights from the Integration of
Modern and Outcrop Analogs"

By
G. Michael Grammar
AAPG Distinguished Lecturer

MBGS Dinner Meeting Reservation

Name _____

Number attending _____ Society _____

Enclosed Registration Fee _____

Please make your check out to the MBGS by February 21, 2003 and send to:

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Jackson, Michigan 49204
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2002-2003 MBGS Officers

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University Talks and Seminars Websites

Western Michigan University,
www.wmich.edu/geology/SeminarGeos.html

Michigan State University,
www.glg.msu.edu/news/lectures.html

University of Michigan, Turner Lecture Series,
www.geo.lsa.umich.edu/announce/turner02b.html

Michigan AIPG Section website: www.aipg-mi.org.

MEETING CANCELLATION POLICY

Monthly meetings will be automatically cancelled whenever the National Weather Service issues a "Storm Warning" for the Lansing area. If driving conditions are poor but a "Warning" has not been issued please contact any member of the Executive Committee for the status of the meeting.

MICHIGAN BASIN GEOLOGICAL SOCIETY PUBLICATIONS

Historical CD #1: Nine out-of-print publications from 1949 through 1965 and 1998, Devonian to Silurian Rock Fieldtrips to MI, WI, IL and Ontario, 2000, \$15

Historical CD #2: Four out-of-print publications from 1947, 1959, 1983 and 1991, Northern Devonian and UP Fieldtrips in MI, 2001, \$10

Historical CD #3: Six out-of-print publications from 1947, 1959, 1983 and 1991, Northern Devonian and UP Fieldtrips in MI, 2001, \$12

Special Price - Historical CD #1, #2 & #3, \$30

Stratigraphic Lexicon for Michigan, 2001, prepared by MBGS and published by DEQ, 56 pp., chart, \$2.65 picked up or \$4 mailed, Can be ordered from MBGS or Geological Survey Div. of the DEQ

Price Includes postage, handling and any applicable sales tax. Orders for publications should be prepaid in U.S. Funds and addressed to:
MBGS - Publications
c/o Dept. of Geological Sciences
206 Natural Sciences Building
Michigan State University
East Lansing, Michigan 48824-1115

MBGS Mug and Jacket Sale

The Michigan Basin Geological Society is offering mugs and jackets with the society logo for sale. The mugs are \$5.00 each. The jackets are \$60.00 each plus postage. Please contact Dan McGuire at: Phone (517) 772-5219, Fax (517) 772-7021, or danmcguire@sensible-net.com. Remember to include the correct size of the jacket and the quantity of each item. Checks should be made out to the MBGS.

**MICHIGAN BASIN GEOLOGICAL SOCIETY FIELD TRIP
DETROIT SALT COMPANY MINE TOUR
April 26, 2003**

WHERE: Detroit Salt Company, 12841 Sanders Street, Detroit, MI 48217, 313-841-5144

WHEN: Saturday, April 26th, 2003, two tours - 8am & 11am

COST: None

DRESS: The mine is 59°F so a light coat, jeans or field attire, and boots, preferably steel-toed boots, are required.

EQUIPMENT: Bring a sample bag along for salt specimens. Hard hats, a mine belt, and a mine light will be provided by the Detroit Salt Company.

PHOTOGRAPHY: Still cameras only. **No video cameras please.**

AGE LIMIT: 18 and above.

PARTICIPANT LIMIT: Twelve for each tour and **MBGS MEMBERS ONLY!** Also, after those on last years waiting list are confirmed, it will be first come, first served.

REGISTRATION DEADLINE: Wednesday 23 April 2003

LUNCH: After the last tour we will all descend on Vince's for a superb Italian meal as recommended by our tour leader, Emanuel Z. Manos.

DETROIT SALT COMPANY MINE TOUR	
NAME: _____	
ADDRESS: _____	
E-MAIL ADDRESS: _____	
TX#: _____	FAX#: _____
PLEASE MAIL, FAX, OR E-MAIL THIS FORM	
TO: Len Espinosa, Forest, Mineral, and Fire Management, PO Box 30452, Lansing, MI 48909-7952; Fax# 517-373-2443, Tx# 517-335-3248, E-mail espinosl@Michigan.gov	

MBGS Elections

It is time to start thinking about serving the MBGS as an officer of the Society. This is a one-year commitment to serve your peers and to contribute to an organization that seeks to bring together people of similar interests and professions to socialize, exchange ideas, and increase their knowledge. The Society cannot function without members who are willing to volunteer their time to serve on the Executive Committee. Please consider running for Vice-President, Treasurer, or Secretary. Contact any one of the present officers to be placed on the ballot. Don't let the MBGS fade away because of lack of interest.

Biography G. Michael Grammer

Education:

1980 University of South Florida, Tampa, Florida; B.A., Geology

1983 Southern Methodist University, Dallas, Texas; M.S., Geology (Sedimentology)

1991 University of Miami, Rosenstiel School of Marine and Atmospheric Science, Miami, Florida; Ph.D., Marine Geology and Geophysics (Carbonate Sedimentology)

1994 University of Miami, Comparative Sedimentology Laboratory, Miami, Florida; Post-Doctoral Fellow

Experience:

1983-1985 Rocky Mountain and Mid-Continent Regions, Texaco USA, Denver, Colorado; Development Geologist

1985-1987 Texaco, Inc., Denver, Colorado; Sedimentologist, Formation Evaluation and Reservoir Characterization, Applied Geological Laboratory

1987-1991 University of Miami; Doctoral Fellow, Comparative Sedimentology Laboratory University of Miami; Post-Doctoral Fellow, Comparative Sedimentology Laboratory

1994-1997 Consultant and Field Trip Leader for several domestic and international petroleum companies

1994-1997 University of Miami, Comparative Sedimentology Laboratory; Research Assistant Professor

1997-2001 Texaco Upstream Technology, Houston, Texas; Senior Research Associate

2001-2002 ChevronTexaco Exploration and Production Technology, Houston, Texas; Staff Research Scientist

2002-Present Western Michigan University, Kalamazoo, Michigan; Associate Professor of Geology

Publications:

Grammer, G. M., Harris, P. M., and Eberli, G. P., 2002, editors (in review), Integration of Outcrop and Modern Analogs in Reservoir Modeling, AAPG Memoir.

Grammer, G. M., Harris, P. M., and Eberli, G. P., 2001, Carbonate platforms: exploration and production scale insight from modern analogs in the Bahamas, *The Leading Edge* (Society of Economic Geophysicists), vol. 20, p. 252-261.

Grammer, G. M., et al., 2000, Application of High-resolution Sequence Stratigraphy in Developing an Exploration and Production Strategy for a Mixed Carbonate/Siliciclastic system (Carboniferous), Paradox Basin, U.S.A., in P.W. Homewood and G. P. Eberli, eds., *Genetic Stratigraphy on the Exploration and Production Scales: Case Studies from the Pennsylvanian of the Paradox Basin and the Upper Devonian of Alberta*, *Elf Aquitaine Memoir* 24, p. 29-69.

Eberli, G. P., Schwab, A. M., and Grammer, G. M., 2000, Anatomy of Ismay algal mound fields - a comparison of outcrop and 3-D seismic data, Paradox Basin, U.S.A., in P.W. Homewood and G. P. Eberli, eds., *Elf Aquitaine Memoir* 24, p. 93-107.

Grammer, G. M., et al., 1999, Quantifying rates of syndepositional marine cementation in deeper platform environments - new insight into a fundamental process, *Journal of Sedimentary Research*, vol. 69, p. 214-219.

McNeill, D. F., Grammer, G. M., and Williams, S. C., 1998, A 5my chronology of carbonate platform margin aggradation, southwestern Little Bahama Bank, Bahamas, *Journal of Sedimentary Research*, vol. 68, p. 603-614.

Grammer, G. M., Ginsburg, R. N., and Harris, P. M., 1993, Timing of Deposition and Failure of Steep Carbonate Slopes in Response to a High-Amplitude/High-Frequency Fluctuation in Sea Level, Tongue of the Ocean, Bahamas, in R. Loucks and R. Sarg (eds.), *AAPG Memoir* 57, Recent advances and applications of carbonate sequence stratigraphy, p. 107-131.

Professional Interests and Awards:

Technical Session Chair for AAPG and GSA

Co-leader, AAPG Field Seminar, Sequence Stratigraphy and Reservoir Distribution in a Modern Carbonate Platform, Bahamas

Co-leader, AAPG Field Seminar, Sequence Stratigraphy and Reservoir Characterization of a Carboniferous Mixed Carbonate/Siliciclastic System, Paradox Basin, Utah

Memberships:

American Association of Petroleum Geologists

Society for Sedimentary Geology

Geological Society of America

American Geophysical Union

Abstract: "Predicting the Distribution and Geometry of Platform Carbonate Reservoirs - Insights from the Integration of Modern and Outcrop Analogs"

The integration of detailed outcrop data along with modern analogs can provide valuable information on the distribution and geometry of subsurface reservoir facies that otherwise may not be obtainable. Outcrop data from reservoir analogs can provide insight into the vertical architecture of reservoir facies and associated flow barriers, while also providing some information on the geometry of the reservoir in either strike or dip directions. Integrating this data with modern analogs, which provide the aerial distribution of reservoir and non-reservoir facies during a single time slice (i.e. the current Holocene "highstand"), can provide further insight into the 3-D geometrical attributes of potential reservoirs in the subsurface.

The Paradox Basin of southeastern Utah is a petroleum-rich basin (>400 MMBO produced) currently undergoing mostly secondary and tertiary recovery efforts. One of the most common methods for enhancing production is to drill horizontal wells in both the phylloid algal mound and ooid grainstone reservoirs, but the vertical positioning and directionality of such wells is often driven by prior well distribution and not necessarily by geologically-defined parameters. Many of the horizontal wells, particularly in the ooid grainstones, are characterized by a rapid lateral variability in both the quality and the extent of reservoir facies that is difficult to explain from subsurface data alone.

Detailed outcrop analysis of coeval strata exposed along the nearby San Juan River, combined with the evaluation of modern analogs, provided a much-refined model for the distribution of the ooid grainstone reservoirs in the subsurface of the Paradox Basin. Outcrop evaluation showed that 5th order ooid grainstone-capped cycles typically stack vertically into a hierarchical distribution of individual sand bodies within an overall 4th order sequence, and that the grainstones are both thicker and of better reservoir quality towards the top of the 4th order sequence. Integration of this data, along with the aerial distribution of analogous ooid shoals in the modern, provided additional information on the importance of strike vs. dip orientation of horizontal wells to maximize sand body distribution, as well as explaining the smaller-scale lateral variability in reservoir quality observed in the subsurface.

The process of integrating data from modern depositional environments along with outcrop and subsurface data can be applied to the development of more geologically-constrained drilling programs in carbonate reservoirs. This process should then lead to better well placement and higher recovery efficiencies, both in the Paradox Basin as well as in other basins with carbonate reservoirs