

Center for Sedimentary Basin Studies 2003-2004 Statistical Report

Center Mission

The purpose of the Center for Sedimentary Basin Studies (CSBS) is to provide a structure and program for interdisciplinary research and education in the sciences and engineering for the study of sedimentary basins. The CSBS focuses on basin analysis and modeling; petroleum system modeling; reservoir characterization, modeling and simulation studies; and the effective transfer of research findings and technology to the public and industry.

Center Objectives

- Recognition nationally and internationally as a premier interdisciplinary research and education program in the study of sedimentary basins.
- Establishment of an integrated research team of scientists and engineers who are competitive in securing external funding nationally at the \$1 million level.
- Recruitment and education of graduate students nationally and internationally who are funded through CSBS.
- Establishment of an outreach program for the Eastern Gulf Region.

Accomplishments

1. Recognition

- Researcher (Ernest Mancini) has been selected to receive an award from the American Geological Institute for outstanding research, teaching and public service contributions.
- Researcher (Mancini) is invited to be a presenter at the International Geological Congress.
- Researcher (Mancini) has been elected Editor for the American Association of Petroleum Geologists.
- Researcher (Mancini) has been selected as President-Elect of the American Geological Institute.
- CSBS is cooperating with 19 participating organizations, including other universities, federal and state agencies and industry.

2. Funding Support

- CSBS secured 3 new contracts totaling \$4,733,953.
- Annual external support for CSBS is more than \$1 million annually.

3. Faculty and Student Support

- CSBS has 17 participating faculty researchers in geology, geophysics, biology, petroleum engineering, chemical engineering, computer engineering, and civil engineering.
- CSBS is providing funding support for 3 research scientists, 6 Ph.D. students and 7 M.S. students.

4. Productivity

- Researchers associated with CSBS have published 32 papers and abstracts, made 25 presentations and have been awarded 7 new or continuation research contracts/grants in 2002-2003.

5. Outreach

- CSBS is the recognized leader in the Eastern Gulf Region for oil and gas technology transfer and information dissemination, conducting 8 technology workshops in 2003-2004, publishing a quarterly newsletter, maintaining a Web Site and answering information requests.

Statistics

1. Participating Faculty (17)

- Geological Sciences/Geophysics
 - Ernest A. Mancini
 - Joe Benson
 - Paul Aharon
 - Tony Rodriguez
 - Rick Major (U. Miss.)
 - Bruce Hart (McGill)
 - Wayne Ahr (TAMU)
 - Don Goddard (LSU)
 - Ron Zimmerman (LSU)
 - William Parcell (WSU)
- Chemical Engineering
 - Eric Carlson
- Civil Engineering
 - Charles Haynes
- Computer Engineering
 - Hannah Chen
- Petroleum Engineering
 - Tom Blasingame (TAMU)
 - Rosalind Archer (Auckland)
 - Alex Vadie (MSU)
- Biology
 - Lou Brown (MSU)

2. Participating Research Scientists (3)

Bennett Bearden
 Brian Panetta
 Leo Lynch (MSU)

3. Participating Graduate Students (13)

- Geological Sciences
 - Brian Panetta (Ph.D.)
 - William Tedesco (Ph.D., U. Miss.)
 - Jamal Obid (Ph.D.)
 - Kaiyu Liu (Ph.D.)
 - Juan Carlos Llinas (Ph.D.)
 - Peng Li (Ph.D.)
 - Aaron Adams (M.S., TAMU)
 - Dylan Morgan (M.S., TAMU)
 - Juliana Tebo (M.S., McGill)
 - Monica Williams (M.S., Wichita)
- Petroleum Engineering
 - Juan Avila (M.S., TAMU)
 - Ekene Chijuka (M.S., TAMU)
 - Ammi Tan (M.S., TAMU)

4. Participating Organizations (19)

- Universities
 - Texas A&M University
 - University of Mississippi
 - Mississippi State University
 - McGill University
 - Louisiana State University
 - Wichita State University
- Federal Agencies
 - U.S. Department of Energy
 - U.S. Minerals Management Service
- State Agencies
 - Alabama Geological Survey
 - Mississippi Office of Geology
- Industry
 - Petroleum Technology Transfer Council
 - Smackco Operating
 - Pruet Production
 - Paramount Petroleum
 - Strago Petroleum
 - Platte River
 - Landmark
 - Seismic Micro-Technology
 - Geoplus

5. Publications (32)

- Adams, A.J., 2004, Connectivity in carbonate reservoirs: solving tough plumbing problems, AAPG 2004 Abstract Volume, p. A2.
- Ahr, W.M., 2004, Hydrothermal dolomite and hydrocarbon reservoirs, AAPG 2004 Abstract Volume, p. A2.
- Ahr, W.M., and Morgan, D., 2004, Microbial buildups as hydrocarbon reservoirs, AAPG 2004 Abstract Volume, p. A3.
- Aurell, M., Badenas, B., Mancini, E.A., Parcell, W.C., and Llinas, J.C., 2003, Use of Upper Jurassic coral-microbial and thrombolitic reefal buildups of northeast Spain as outcrop analogs for Upper Jurassic coral-microbial and microbial reservoirs in the U.S. Gulf of Mexico, AAPG 2003 Barcelona Abstract Volume, p. A5.
- Aurell, M., Badenas, B., Mancini, E.A., Parcell, W.C., and Llinas, J.C., 2004, Use of Upper Jurassic coral-microbial and thrombolite reef buildups of northeast Spain as outcrop analogs for Upper Jurassic microbial reef petroleum reservoirs, p. A7.
- Badali, 2004, Lower Cretaceous microbial deposits, northeastern Gulf of Mexico, p. A8.
- Liu, K., 2003, Milankovitch cycles in the Mooreville Chalk (Campanian) in the northeastern Gulf of Mexico area, GSA Abstract Volume, v. 35, p. 600.
- Llinas, J.C., 2003, Carbonate reservoir facies associated with paleotopographic features: examples from the Upper Jurassic (Oxfordian) Smackover Formation, U.S. Gulf Coastal Plain, AAPG 2003 Barcelona Abstract Volume, p. A55.
- Llinas, J.C., 2003, Petroleum exploration for Upper Jurassic Smackover carbonate shoal and microbial reef lithofacies associated with paleohighs, southeast Alabama, GCAGS Abstract Volume, p. 14-15.
- Llinas, J.C., 2003, Petroleum exploration for Upper Jurassic Smackover carbonate shoal and microbial reef lithofacies associated with paleohighs, southwest Alabama, GCAGS Transactions 53:462-474.
- Llinas, J.C., 2004, Controlling factors on the occurrence of microbial buildups in the Upper Jurassic Smackover Formation, Eastern Gulf Coastal Plain, p. A85.
- Mancini, E.A., 2003, Mesozoic transgressive-regressive cycles in the northeastern Gulf of Mexico and their use in stratigraphic correlation, basin reconstruction and petroleum exploration, ETGS 2003 Newsletter, June-July-August, p. 5-6.
- Mancini, E.A., 2003, Mesozoic thrombolitic reef play, northeastern Gulf of Mexico, Eastern Section AAPG-SPE 2003 Abstract Volume, p. 25-26.
- Mancini, E.A., 2004, Sequence stratigraphic analysis of continental and shelfal strata, northern Gulf of Mexico, AAPG 2004 Abstract Volume, p. A91.
- Mancini, E.A., Llinas, J.C., and Parcell, W.C., 2004, Upper Jurassic shallow water thrombolites from the northeastern Gulf of Mexico, p. A91.
- Mancini, E.A., Obid, J., and Puckett, T.M., 2003, Upper Jurassic transgressive-regressive cycles, northern Gulf of Mexico, USA, GSA Abstract Volume, v. 35, no. 6, p. 88.
- Mancini, E.A., and others, 2003, Integrated geologic-engineering models for reef and carbonate shoal reservoirs associated with paleohighs: Upper Jurassic Smackover Formation, northeastern Gulf of Mexico, DOE Project Technical Report, Year 3, 191 p.
- Mancini, E.A., and others, 2004, Improved oil recovery from Upper Jurassic carbonates through the application of advanced technologies at Womack Hill oil field, Choctaw and Clarke Counties, eastern Gulf Coastal Plain, DOE Final Technical Project Report, Phase 1, 300 p.
- Mancini, E.A., and others, 2004, Integrated geologic-engineering models for reef and carbonate shoal reservoirs associated with paleohighs: Upper Jurassic Smackover Formation, northeastern Gulf of Mexico, DOE Final Technical Project Report, 430 p.
- Mancini, E.A., Parcell, W.C., and Puckett, T.M., 2003, Oxfordian carbonate petroleum system characterization and modeling: Upper Jurassic Smackover Formation, northeastern Gulf of Mexico, USA, AAPG 2003 Barcelona Abstract Volume, p. A59.
- Mancini, E.A., Parcell, W.C., Puckett, T.M., Benson, D.J., 2003, Upper Jurassic (Oxfordian) Smackover carbonate petroleum system characterization and modeling, Mississippi Interior Salt Basin, northeastern Gulf of Mexico, USA, Carbonates and Evaporites 18:125-150.
- Mancini, E.A., and Puckett, T.M., 2003, Integrated biostratigraphic and sequence stratigraphic approach for correlation and basin interpretation, GCAGS Transaction 53:517-526.

- Mancini, E.A., and Puckett, T.M., 2003, Petroleum potential of aggrading sandstones of transgressive-regressive cycles in the Mississippi-Alabama area, *GCAGS Transactions* 53:527-536.
- Mancini, E.A., and Puckett, T.M., 2003, Transgressive-regressive (T-R) cycles: advancement in sequence stratigraphic analysis of continental and coastal plain strata of US Gulf of Mexico and Western Europe, *AAPG 2003 Barcelona Abstract Volume*, p. A58-59.
- Mancini, E.A., and Puckett, T.M., 2003, Integrated biostratigraphic and sequence stratigraphic approach for correlation and the reconstruction of basin geohistory: Upper Cretaceous transgressive-regressive cycles in the northern Gulf of Mexico, *GCAGS 2003 Abstract Volume*, p. 16.
- Mancini, E.A., and Puckett, T.M., 2003, Petroleum potential of aggrading sandstones of transgressive-regressive cycles in the Mississippi-Alabama area, *GCAGS 2003 Abstract Volume*, p. 17.
- Mancini, E.A., and Scott, R.W., 2004, Outcrop study: Lower Cretaceous carbonate petroleum reservoir characterization, northeastern Gulf of Mexico, *MMS Technical Report*, 55 p.
- Panetta, B.J., 2004, Integrated geologic modeling and simulation, North Blowhorn Creek Oil Field, Lamar County, Alabama, *AAPG 2004 Abstract Volume*, p. A107.
- Parcell, W.C., Kasten, L., Minks, K., and Williams, M.K., 2004, Mapping Middle Jurassic microbial buildups, Cody, Wyoming: implications for stratigraphic correlation of Middle Jurassic units across the Bighorn Basin, p. A108.
- Parcell, W.C., and Williams, M.K., 2004, Development of Middle Jurassic shallow-water microbial buildups in association with mixed carbonate and evaporite deposition, Bighorn Basin, Wyoming, p. A108.
- Tebo, J., and Hart, B.S., 2004, 3-D Seismic imaging of porosity in Jurassic carbonates: Smackover Formation, southern Alabama, p. A137.
- Williams, M.K., and Parcell, W.C., 2004, stratigraphic framework for microbial buildups in the Middle Jurassic (Bajocian and Bathonian), Bighorn Basin, Wyoming, p. A148.

6. Presentations (25)

- Adams, A.J., Connectivity in carbonate reservoirs: solving tough plumbing problems, *AAPG Meeting*, Dallas, April 18-21, 2004.
- Ahr, W.M., Hydrothermal dolomite and hydrocarbon reservoirs, *AAPG Meeting*, Dallas, April 18-21, 2004.
- Ahr, W.M., Microbial buildups as hydrocarbon reservoirs, *AAPG Meeting*, Dallas, April 18-21, 2004.
- Badali, M., Lower Cretaceous microbial deposits, northeastern Gulf of Mexico, *AAPG Meeting*, Dallas, April 18-21, 2004.
- Blasingame, T.A., An integrated reservoir study of the Womack Hill (Smackover) Field, reservoir engineering, petrophysics and upscaling: from pore to reservoir, *SPWLA Topical Conference*, March 30, 2003.
- Liu, K., Milankovitch cycles in the Mooreville Chalk (Campanian) in the northeastern Gulf of Mexico area, *GSA Meeting*, Seattle, November 2-5, 2003.
- Llinas, J.C., Carbonate reservoir facies associated with paleotopographic features: examples from the Upper Jurassic (Oxfordian) Smackover Formation, U.S. Gulf Coastal Plain, *AAPG International Conference*, Barcelona, Spain, September 21-24, 2003.
- Llinas, J.C., Petroleum exploration for Upper Jurassic Smackover carbonate shoal and microbial reef lithofacies associated with paleohighs, southwest Alabama, *GCAGS Meeting*, Baton Rouge, October 22-24, 2003.
- Llinas, J.C., Controlling factors on the occurrence of microbial buildups in the Upper Jurassic Smackover Formation, Eastern Gulf Coastal Plain, *AAPG Meeting*, Dallas, April 18-21, 2004.
- Llinas, J.C., Petroleum exploration for Upper Jurassic Smackover carbonate shoal and microbial reef lithofacies associated with paleohighs, southwest Alabama, *GCAGS Meeting*, Baton Rouge, October 22-24, 2003.
- Mancini, E.A., Integrated biostratigraphic and sequence stratigraphic approach for correlation and the reconstruction of basin geohistory, *GCAGS Meeting*, Baton Rouge, October 22-24, 2003.
- Mancini, E.A., Mesozoic thrombolitic reef play, northeastern Gulf of Mexico, *Eastern Section AAPG-SPE Meeting*, Pittsburgh, September 6-10, 2003.

- Mancini, E.A., Mesozoic transgressive-regressive cycles in the northeastern Gulf of Mexico and their use in stratal correlation, basin reconstruction and petroleum exploration, ETGS Meeting, August 27, 2003.
- Mancini, E.A., Oxfordian carbonate petroleum system characterization and modeling: Upper Jurassic Smackover Formation, northeastern Gulf of Mexico, USA, AAPG International Conference, Barcelona, Spain, September 21-24, 2003.
- Mancini, E.A., Petroleum potential of aggrading sandstones of transgressive-regressive cycles in the Mississippi-Alabama area, GCAGS Meeting, Baton Rouge, October 22-24, 2003.
- Mancini, E.A., Upper Jurassic transgressive-regressive cycles, northern Gulf of Mexico, USA, GSA Meeting, Seattle, November 2-4, 2003.
- Mancini, E.A., Use of Upper Jurassic coral-microbial and thrombolitic reefal buildups of northeast Spain as outcrop analogs for Upper Jurassic coral-microbial and microbial petroleum reservoirs in the U.S. Gulf of Mexico, AAPG International Conference, Barcelona, Spain, September 21-24, 2003.
- Mancini, E.A., Transgressive-regressive (T-R) cycles: advancement in sequence stratigraphic analysis of continental and coastal plain strata of US Gulf of Mexico and Western Europe, AAPG International Conference, Barcelona, Spain, September 21-24, 2003.
- Mancini, E.A., Sequence stratigraphic analysis of continental and shelfal strata, northern Gulf of Mexico, AAPG Meeting, Dallas, April 18-21, 2004.
- Mancini, E.A., Upper Jurassic shallow water thrombolites from the northeastern Gulf of Mexico, AAPG Meeting, Dallas, April 18-21, 2004.
- Mancini, E.A., Use of Upper Jurassic coral-microbial and thrombolite reef buildups of northeast Spain as outcrop analogs for Upper Jurassic microbial reef, AAPG Meeting, Dallas, April 18-21, 2004.
- Panetta, B.J., Integrated geologic modeling and simulation, North Blowhorn Creek Oil Field, Lamar County, Alabama, AAPG Meeting, Dallas, April 18-21, 2004
- Parcell, W.C., Development of Middle Jurassic shallow-water microbial buildups in association with mixed carbonates and evaporite deposition, Bighorn Basin, Wyoming, AAPG Meeting, Dallas, April 18-21, 2004.
- Parcell, W.C., Mapping Middle Jurassic microbial buildups, Cody, Wyoming: implications for stratigraphic correlation of Middle Jurassic units across the Bighorn Basin, AAPG Meeting, Dallas, April 18-21, 2004.
- Tebo, J., 3-D Seismic imaging of porosity in Jurassic carbonates: Smackover Formation, southern Alabama, AAPG Meeting, Dallas, April 18-21, 2004.
- Williams, M.K., Stratigraphic framework for microbial buildups in the Middle Jurassic (Bajocian and Bathonian), Bighorn Basin, Wyoming, AAPG Meeting, Dallas, April 18-21, 2004.

7. Grants Awarded (14)

- Mancini, Ernest A., Basin Analysis of the Mississippi Interior Salt Basin and Petroleum System Modeling of the Jurassic Smackover Formation, Eastern Gulf Coastal Plain, U.S. Department of Energy, \$1,400,000, 1996–2001.
- Mancini, Ernest A., Jurassic-Cretaceous Hydrocarbon Play Characterization and Jurassic Petroleum System Modeling, Eastern Gulf of Mexico, Minerals Management Service and Industry, \$450,000, 1997-2002.
- Mancini, Ernest A. and Parcell, William C., BasinMod Software-Platte River Academic Software Loan Agreement, Platte River Associates, \$96,877, 1998-2003.
- Mancini, Ernest A. and Bearden, Bennett L., University Grant Software Partnership Program, Landmark Graphics Cooperation, \$1,851,804, 1998-2003.
- Mancini, Ernest A. and Bearden, Bennett L., Seismic Micro-Technology Software Loan Agreement, Seismic Micro-Technology, \$85,495, 1999-2003.
- Mancini, Ernest A., Information and Technology Transfer, Eastern Gulf Region, Petroleum Technology Transfer Council and U.S. Department of Energy, \$1,356,900, 1999-2003.
- Mancini, Ernest A., Integrated Geologic-Engineering Model for Reef and Carbonate Shoal Reservoirs Associated with Paleohighs: Upper Jurassic Smackover Formation, Northeastern Gulf of Mexico, U.S. Department of Energy, \$1,296,022, 2000-2003.

- Mancini, Ernest A., Improved Oil Recovery from Upper Jurassic Smackover Carbonates through the Application of Advanced Technologies at Womack Hill Field, Choctaw and Clarke Counties, Alabama, Eastern Gulf Coastal Plain (Class II Reservoir), U.S. Department of Energy, \$8,117,000, 2000-2006.
- Mancini, Ernest A., Lower Cretaceous Carbonate Petroleum Reservoir Characterization, Northeastern Gulf of Mexico, Minerals Management Service, 2003-2004, \$142,000.
- Mancini, Ernest A., T-R Cycle Characterization and Imaging: Advanced Diagnostic Methodology for Petroleum Reservoir and Trap Detection and Delineation, U.S. Department of Energy, 2003-2006, \$919,448.
- Mancini, Ernest A., Resource Assessment of the In-Place and Potentially Recoverable Deep Natural Gas Resource of the Onshore Interior Salt Basins, North Central and Northeastern Gulf of Mexico, U.S. Department of Energy, 2003-2006, \$954,753,
- Mancini, Ernest A., Basin Analysis and Petroleum System Characterization and Modeling, Interior Salt Basins, Central and Eastern Gulf of Mexico, U.S. Department of Energy, 2003-2008, \$1,359,053.
- Mancini, Ernest A., Petroleum Information and Technology Transfer for Independent Companies, Petroleum Technology Transfer Council and U.S. Department of Energy, 2003-2008, \$1,500,000.
- Mancini, Ernest A., Landmark Strategic University Grant, Landmark Graphics, 2004-2008, \$2,279,200.

Outreach

1. Technology Workshops (8)

<u>Type of Workshop</u>	<u>No. of Attendees</u>
AVO Technology	38
Coalbed Methane	197
PETRA	17
KINGDOM Suite	11
Exploration & Production	65
Alabama Oil & Gas	71
Paraffin & Asphaltene	18
Environmental	<u>38</u>
TOTAL	455

- 2. Newsletter**—circulation of 600 quarterly.
- 3. Web Site**—average 3,989 user sessions per month
- 4. Information Requests**—average 75 requests per month.

Awards

- Ernest A. Mancini has been selected to receive the 2004 AGI Ian Campbell Medal at the annual GSA meeting.

Other Activities

- Regional Director was organizer for a session on microbial reservoirs at the 2004 AAPG meeting.
- Regional Director is organizer for a session on the origin of petroleum at the 2005 AAPG meeting.
- Regional Director is an invited speaker at the 2004 IGC session on unconformity-bounded/discontinuity-bounded units.