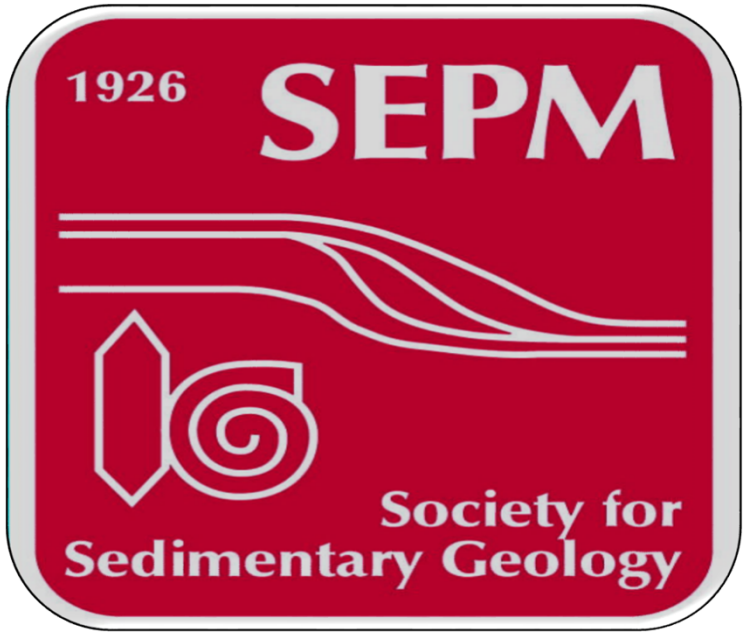
Welcome!
SEPM Carbonate Research Group Meeting



Who We Are

2018 CRG Committee Members:

Marjorie Cantine- MIT

Xiaowei Li-Stanford

Max Tenagila- University of Miami

Andrea Nolting- The University of Texas at Austin

John Reijmer Place Holder

Carbonate Research Group

7:15 PM Opening Remarks & Announcements

7:30 PM In Memorium

7:45 PM Student Introductions (Poster Presenters & Others)

8:00 PM Poster Viewing amd Photo Contest Voting

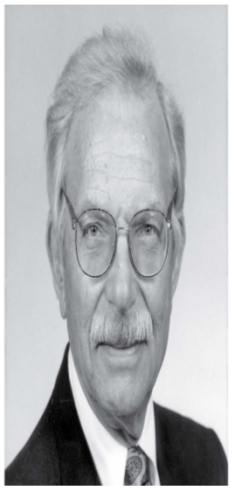
9:30 PM Student Photo Contest Winner Announced

9:45 PM More Poster Viewing & Networking

In Memorium Dr. Robert Ginsburg

The Father of Comparative Sedimentology in Carbonates

Highlights and achievements presented by:
Gregor P. Eberli, Donald F. McNeill,
and Paul (Mitch) Harris



Reminders

- Sign the Sign-in Sheet
- Renew SEPM Membership
- Research group Specific Donations
- Forward ideas/comments to CRG member for:
  - Future meetings
  - SEPM Special Publications
- Please no unauthorized visual documentation of presented materials

Announcements

2020 ISGC (International Sedimentary Geology Congress)

April 26-29-2020, Flagstaff AZ.

The Society for Sedimentary Geology (SEPM) is pleased to announce the first international Congress (ISGC) in conjunction with IAS and SDG (GSA).

Bucket-list field trips

Conference is to foster multidisciplinary and innovative approaches, and offer opportunity for disciplines cross-pollination.

A robust **field trip program** will offer the unique opportunity to visit world-class locations for outcrop discussions, training, and inspiration.

	Field Trip Location	General Theme	Potential Trip Leader(s)
1	Death Valley	Precambrian/Geobiology	Kristin Bergmann
2	Grand Canyon (Colorado River)	Tectonics and sedimentation in the southwestern U.S.	Gary Gianniny
3	Lower Cretaceous-Utah (Chinle, Morrison, Blackhawk-Castlegate)	Fluvial architecture	Mike Blum and Peter DeCelles
4	California coast	Deep water processes and stratigraphy	Zane Jobe
5	Denver to Flagstaff	Pennsylvanian-Permian Ancestral Rocky Mountains	Ryan Leary
6	Kaparowitz Plateau	Kaparowitz Plateau	Cari Johnson
7	Ice Age Fossil/Tule Springs State Park,; Valley of Fire and North Fish Lake Valley	Paleontology	Josh Bonde
8	Death Valley	Sediment supply in Panamint Mountains	Cody Mason/Brian Romans
9	Convergent Margins	Tectonostratigraphy of Western North America	Matthew Malkowski/Glenn Sharman

SEPM Student Membership

www.sepm.org

- Entry into a lively global community of sedimentary geoscientists. Networking, Mentorship, Advice…
- Access to SEPM, JSR, PALAIOS, and Special Publications
- Access to SEPM Foundation Student Travel and Research Grants
- Discounted registration for Research Conferences, Short Courses, and Field Trips
- Discounted prices on all SEPM Publications
- **Free** copies of selected SEPM publications

Thank You to our Sponsors!

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Ali I. Al-Naimi Petroleum Engineering Research Center

Eby Petrography & Consulting, Inc

avaclastics

Individuals/Members of SEPM:

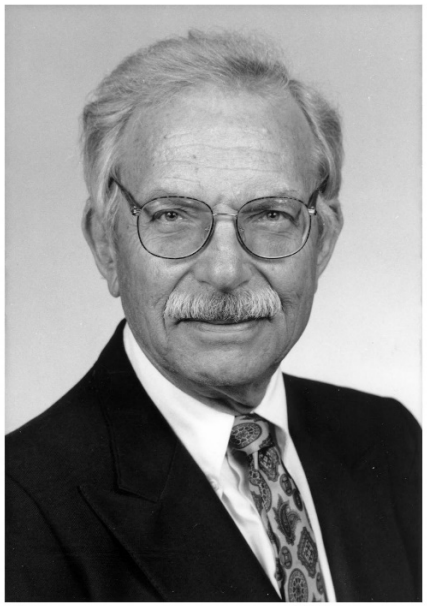
Alton Brown
Marshall Carothers
Gregor Eberli
Gary Hampson
Howard Harper
Dawn Jobe
Charlie Kerans
William Morgan
Don McNeill

ConocoPhillips

Apache

Plus numerous anonymous member donations

Robert Nathan Ginsburg

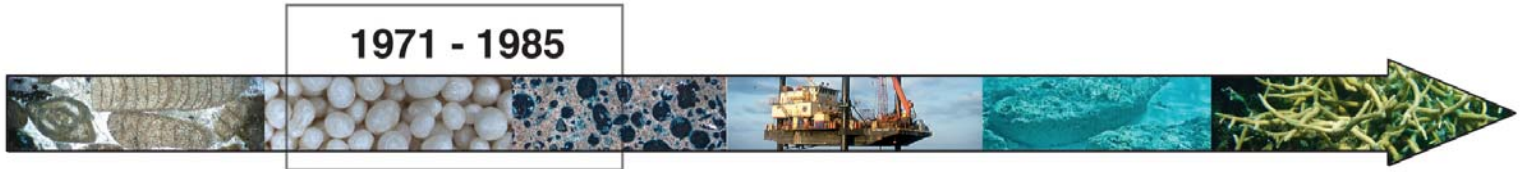


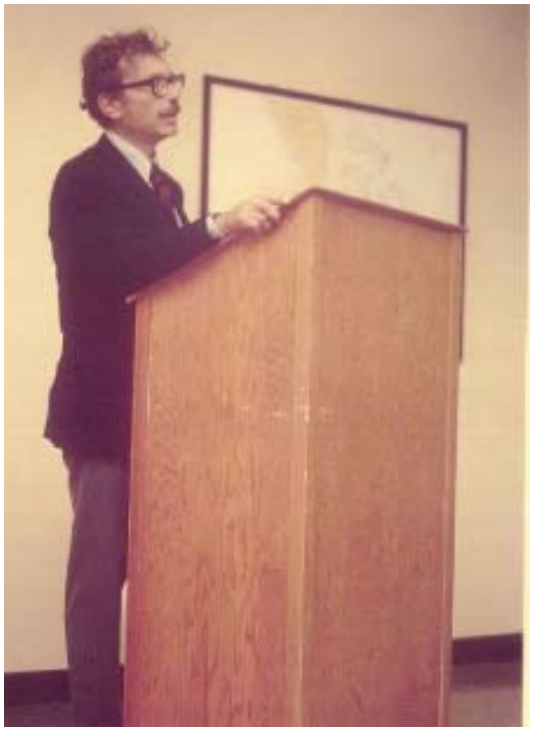
1925-2017

A Celebration of life

Accolades

- PhD from the University of Chicago 1953
- Leader of Shell's Research Lab in modern carbonates (researchers included who is who in carbonates)
- Pioneered the concept of Comparative Sedimentology, particularly as applied to carbonate sediments
- Founder of the Comparative Sedimentology Laboratory (The first university-industrial consortium in 1971)
- Influential in SEPM & IAS (President and Honorary Member of SEPM, Started the Research Groups while President)
- Twenhofel Medal, Sorby Medal
- Mentor to many notable carbonate geologists worldwide


1971 - 1985



Birth and early years of CSL

Carbonate Facies Seminars

Research Emphasis

Interaction with USGS

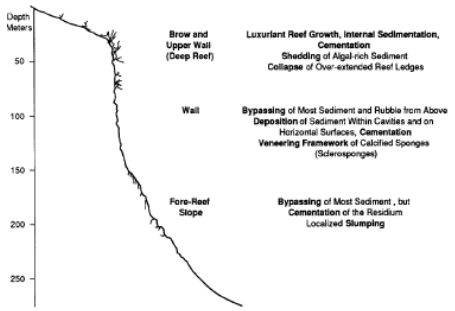
Fisher Island Station

Annual CSL Sponsors Meetings - 1986

Carbonate Facies Seminars - 1987

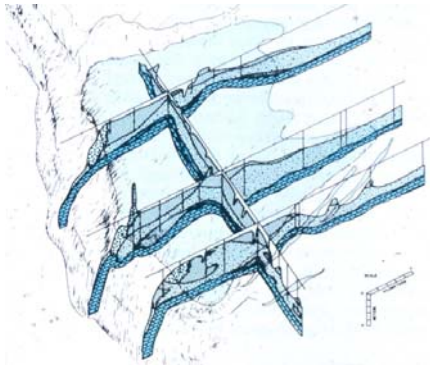
Research Themes

Morphology, diagenesis and evolution of carbonate slopes (Belize and TOTO)



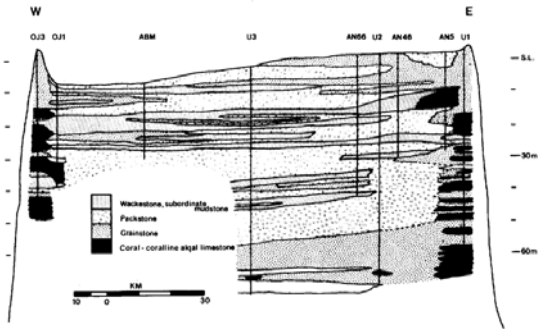
Stratigraphy of modern grainstone shoals

(Joulters and TOTO)

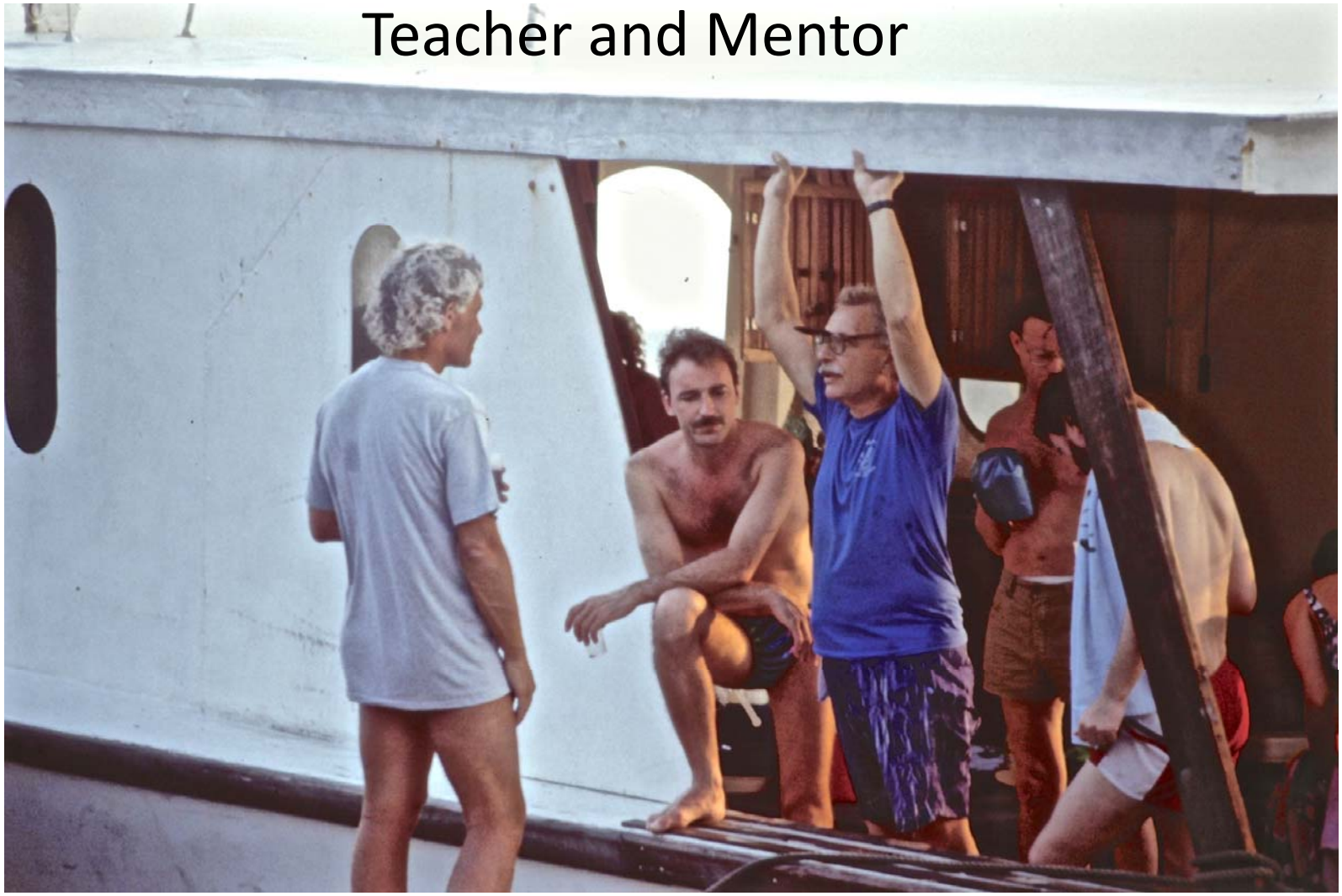


Stratigraphy and diagenesis of Pleistocene platforms

(GBB, LBB, smaller platforms, Belize)



Teacher and Mentor



Mitch Harris Gregor Eberli Robert Ginsburg

End of an Era

CSL Moves to RSMAS

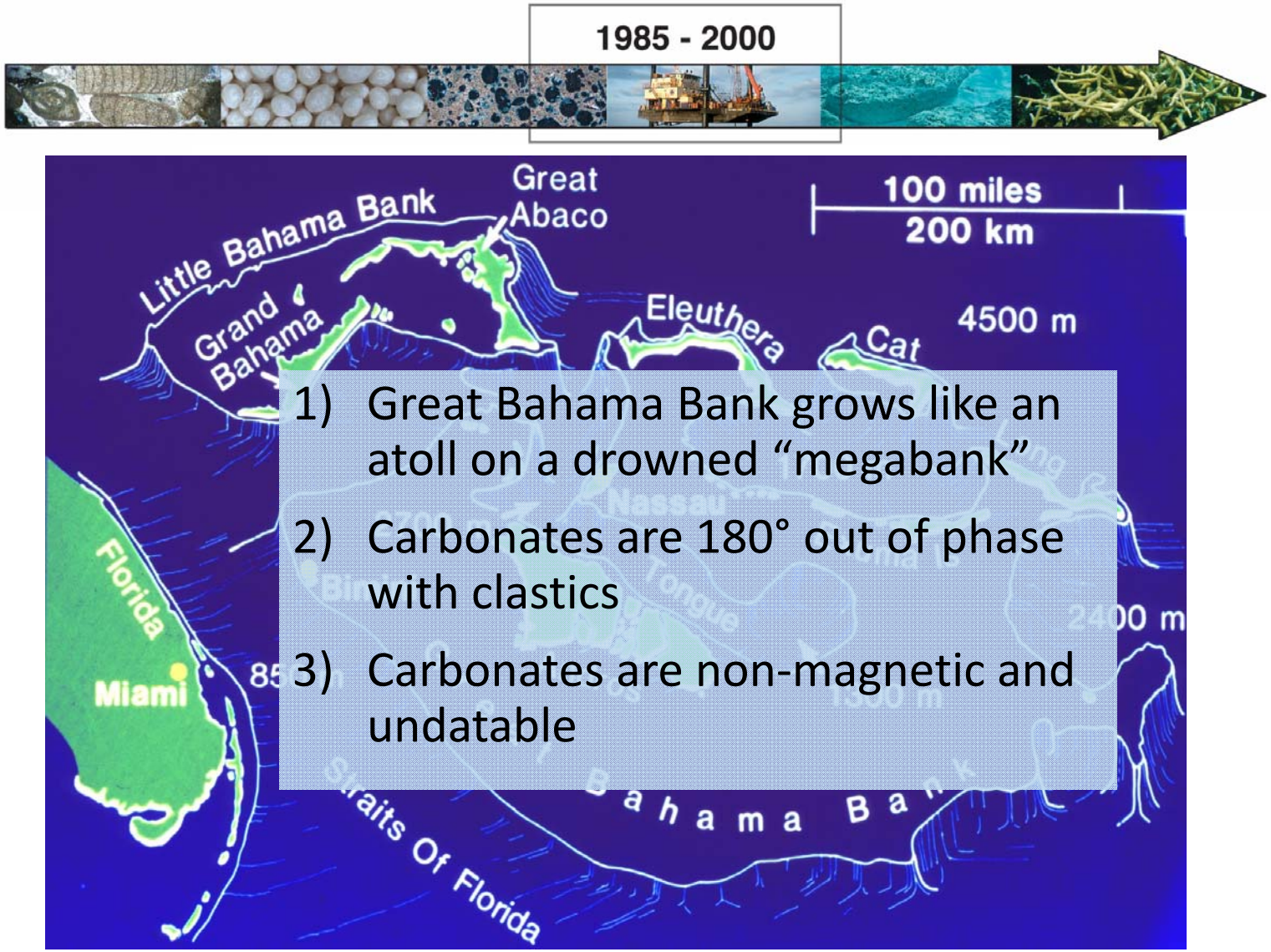
JULY 8, 1990

UM sells property on Fisher Island

Island Developers Ltd., an affiliate of Mutual Benefit Life Insurance Co., has purchased a 15.2-acre parcel at 1 Inlet Blvd. on Fisher Island, legally known as Terminal Island, for a reported $10 million.

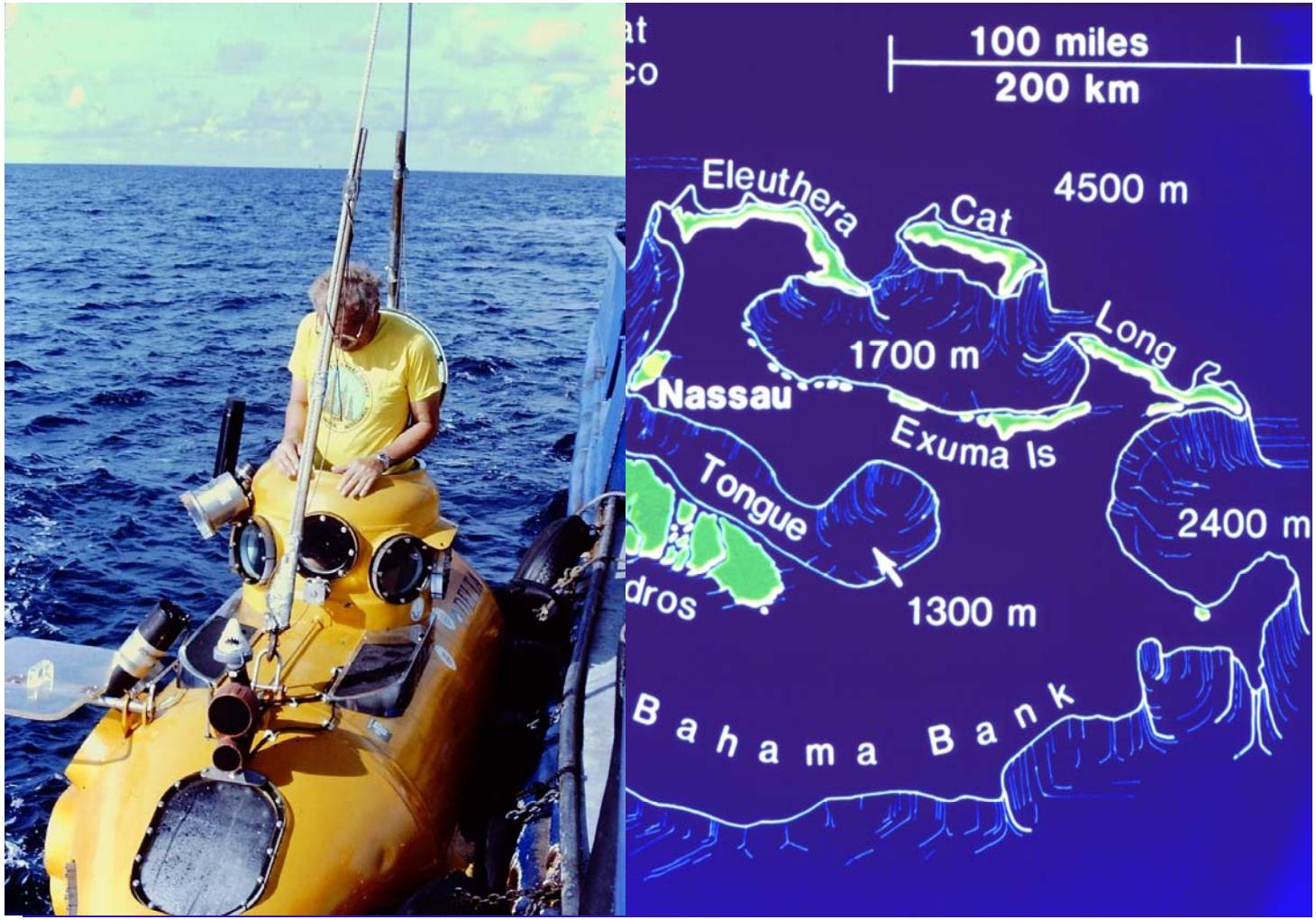
The parcel includes two former residences built by the Vanderbilt estate and sold to the federal government, which used the property as a quarantine station until it was deeded to the University of Miami, the current seller.

Fisher Island has been a leading developer of luxury condominiums.

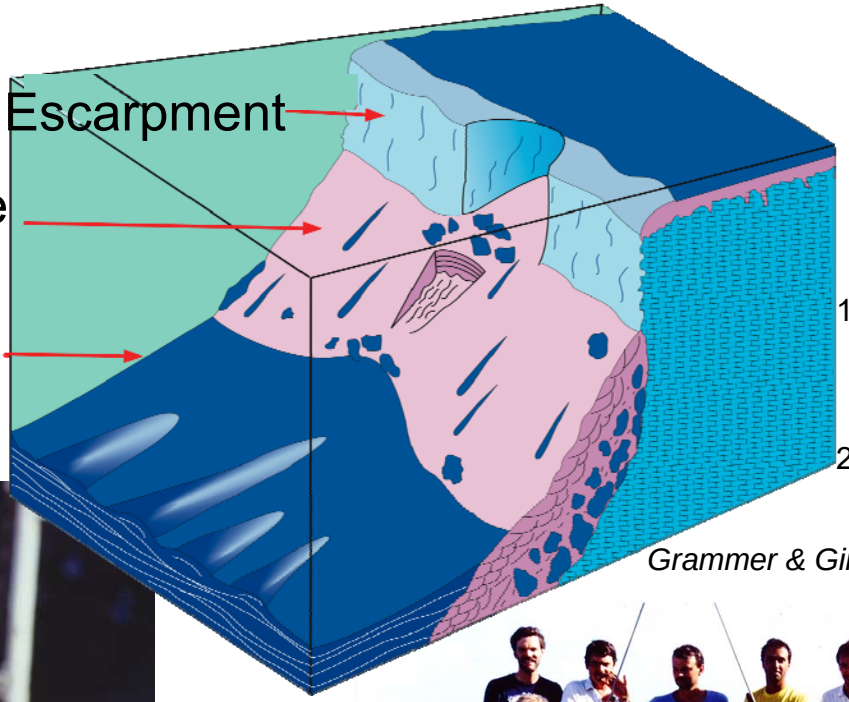


1) Great Bahama Bank grows like an atoll on a drowned “megabank”
2) Carbonates are 180° out of phase with clastics
3) Carbonates are non-magnetic and undatable

Anatomy of the Steep Slopes



Anatomy of the Steep Slopes



Cemented Top Slope

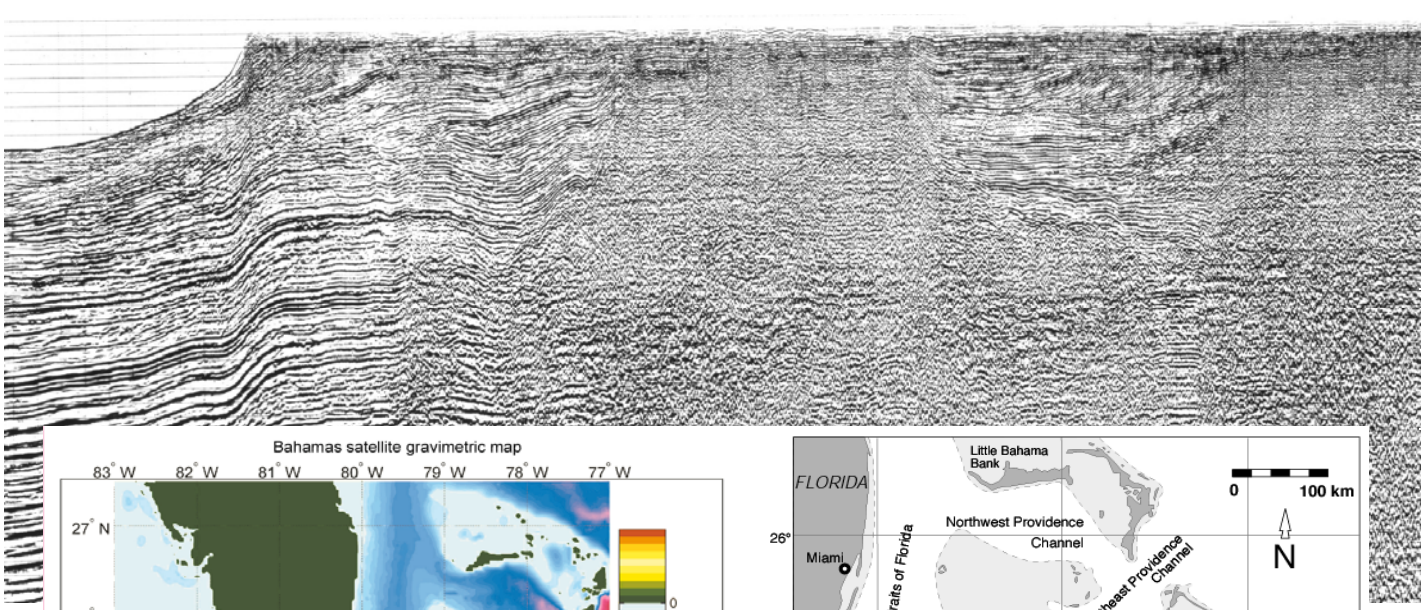
Uncemented Slope
(onlapping sediment wedge)

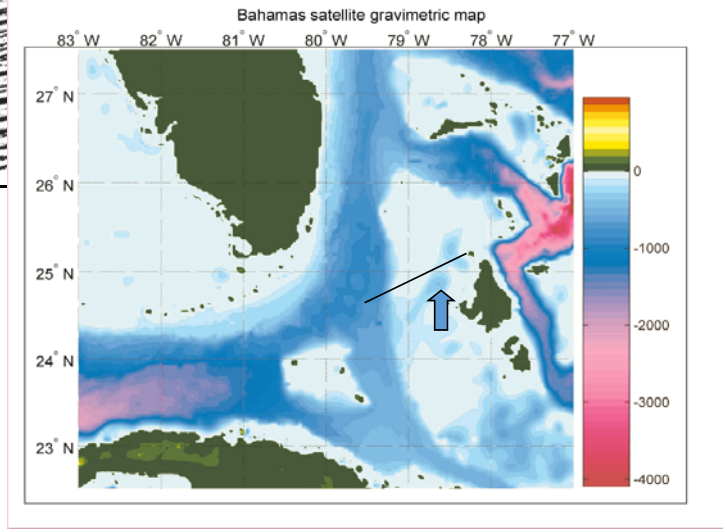
Grammer & Ginsburg 1992

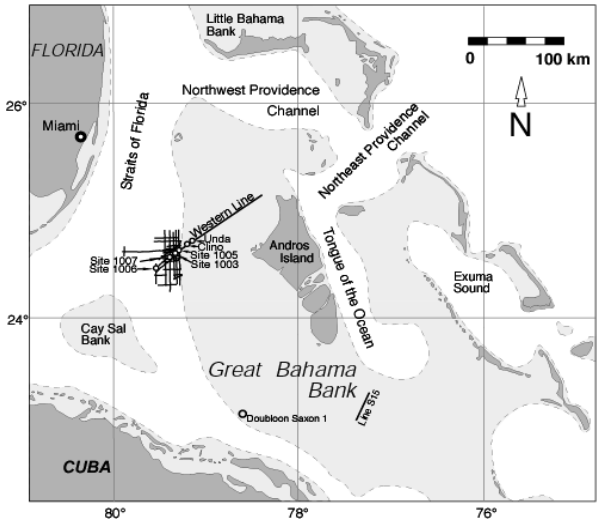
Great Bahama Bank

Leeward
WSW

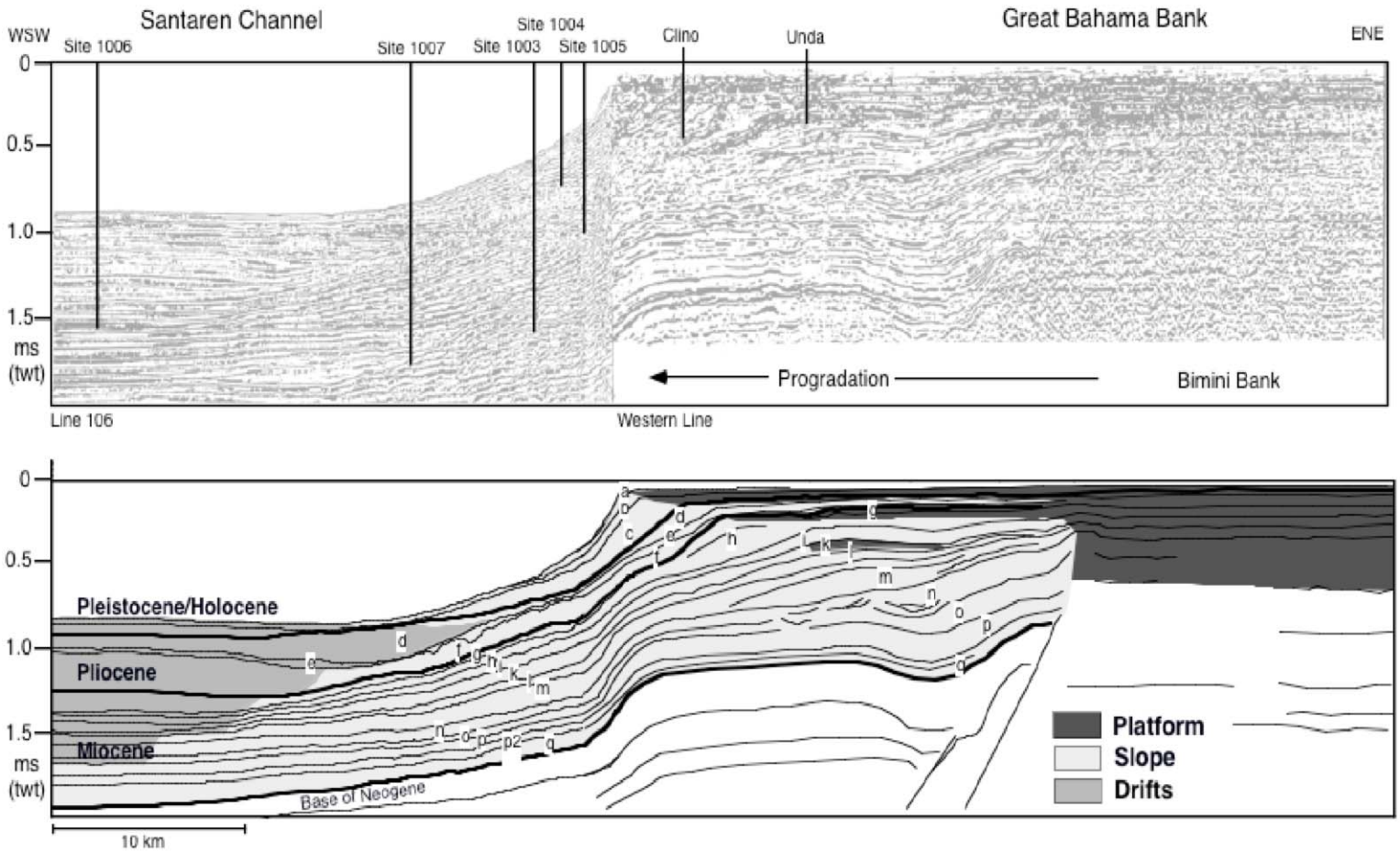
Windward
ENE

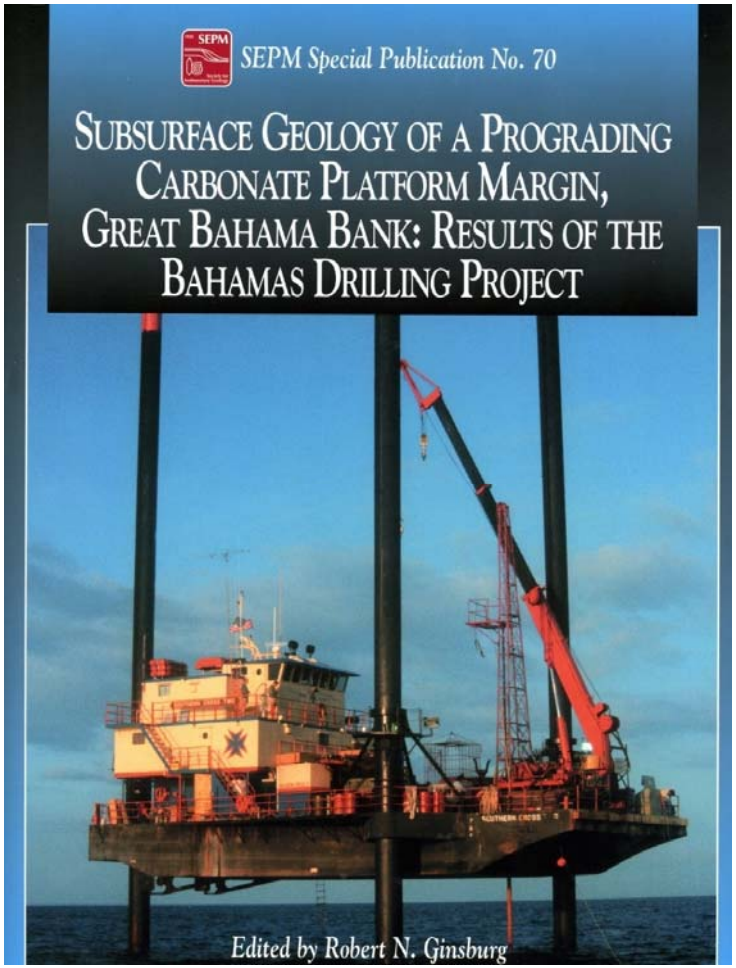






Bahamas Transect: 7 Drill Sites across Margin of Great Bahama Bank





Bahamas Transect

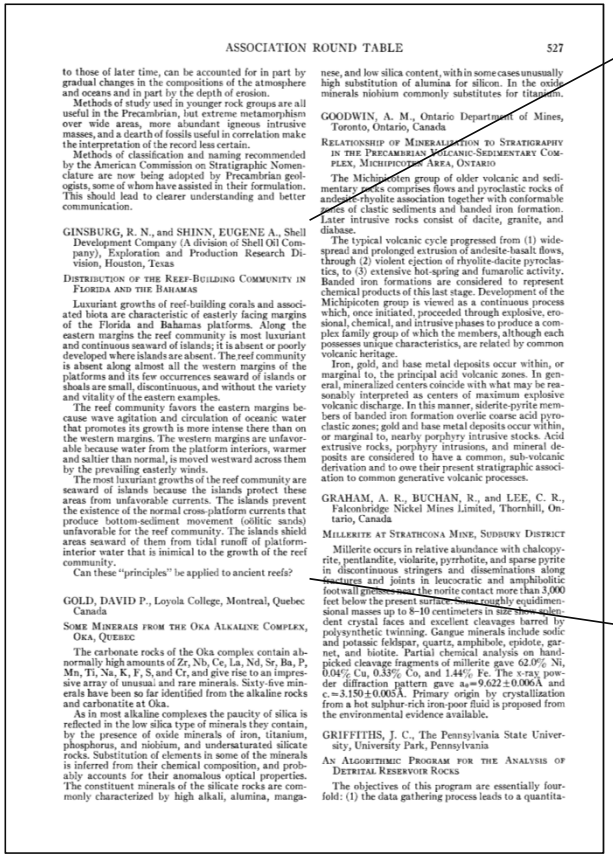
Bahamas Drilling Project, 1990

Ocean Drilling Program Leg 166, 1996

Bahamas Drilling Project – 1990

Coral Reefs
Stromatolites
Hardgrounds
History
Conservation

Longstanding interest in modern & fossil reefs



ASSOCIATION ROUND TABLE 527

to those of later time, can be accounted for in part by gradual changes in the compositions of the atmosphere and oceans and in part by the depth of erosion.

Methods of study used in younger rock groups are all useful in the Precambrian, but extreme metamorphism over wide areas, more abundant igneous intrusive masses, and a dearth of fossils useful in correlation make the interpretation of the record less certain.

Methods of classification and naming recommended by the American Commission on Stratigraphic Nomenclature are now being adopted by Precambrian geologists, some of whom have assisted in their formulation. This should lead to clearer understanding and better communication.

GINSBURG, R. N., and SHINN, EUGENE A., Shell Development Company (A division of Shell Oil Company), Exploration and Production Research Division, Houston, Texas

DISTRIBUTION OF THE REEF-BUILDING COMMUNITY IN FLORIDA AND THE BAHAMAS

Luxuriant growths of reef-building corals and associated biota are characteristic of easterly facing margins of the Florida and Bahamas platforms. Along the eastern margins the reef community is most luxuriant and continuous seaward of islands; it is absent or poorly developed where islands are absent. The reef community is absent along almost all the western margins of the platforms and its few occurrences seaward of islands or shoals are small, discontinuous, and without the variety and vitality of the eastern examples.

The reef community favors the eastern margins because wave agitation and circulation of oceanic water that promotes its growth is more intense there than on the western margins. The western margins are unfavorable because water from the platform interiors, warmer and saltier than normal, is moved westward across them by the prevailing easterly winds.

The most luxuriant growths of the reef community are seaward of islands because the islands protect these areas from unfavorable currents. The islands prevent the existence of the normal cross-platform currents that produce bottom-sediment movement (oölitic sands) unfavorable for the reef community. The islands shield areas seaward of them from tidal runoff of platform-interior water that is inimical to the growth of the reef community.

Can these "principles" be applied to ancient reefs?

GOLD, DAVID P., Loyola College, Montreal, Quebec Canada

SOME MINERALS FROM THE OKA ALKALINE COMPLEX, OKA, QUEBEC

The carbonate rocks of the Oka complex contain abnormally high amounts of Zr, Nb, Ce, La, Nd, Sr, Ba, P, Mn, Ti, Na, K, F, S, and Cr, and give rise to an impressive array of unusual and rare minerals. Sixty-five minerals have been so far identified from the alkaline rocks and carbonatite at Oka.

As in most alkaline complexes the paucity of silica is reflected in the low silica type of minerals they contain, by the presence of oxide minerals of iron, titanium, phosphorus, and niobium, and undersaturated silicate rocks. Substitution of elements in some of the minerals is inferred from their chemical composition, and probably accounts for their anomalous optical properties. The constituent minerals of the silicate rocks are commonly characterized by high alkali, alumina, manganese, and low silica content, within some cases unusually high substitution of alumina for silicon. In the oxide minerals niobium commonly substitutes for titanium.

GOODWIN, A. M., Ontario Department of Mines, Toronto, Ontario, Canada

RELATIONSHIP OF MINERALIZATION TO STRATIGRAPHY IN THE PRECAMBRIAN VOLCANIC-SEDIMENTARY COMPLEX, MICHIPICOTEN AREA, ONTARIO

The Michipicoten group of older volcanic and sedimentary rocks comprises flows and pyroclastic rocks of andesite-rhyolite association together with conformable series of clastic sediments and banded iron formation. Later intrusive rocks consist of dacite, granite, and diabase.

The typical volcanic cycle progressed from (1) widespread and prolonged extrusion of andesite-basalt flows, through (2) violent ejection of rhyolite-dacite pyroclastics, to (3) extensive hot-spring and fumarolic activity. Banded iron formations are considered to represent chemical products of this last stage. Development of the Michipicoten group is viewed as a continuous process which, once initiated, proceeded through explosive, erosional, chemical, and intrusive phases to produce a complex family group of which the members, although each possesses unique characteristics, are related by common volcanic heritage.

Iron, gold, and base metal deposits occur within, or marginal to, the principal acid volcanic zones. In general, mineralized centers coincide with what may be reasonably interpreted as centers of maximum explosive volcanic discharge. In this manner, siderite-pyrite members of banded iron formation overlie coarse acid pyroclastic zones; gold and base metal deposits occur within, or marginal to, nearby porphyry intrusive stocks. Acid extrusive rocks, porphyry intrusions, and mineral deposits are considered to have a common, sub-volcanic derivation and to owe their present stratigraphic association to common generative volcanic processes.

GRAHAM, A. R., BUCHAN, R., and LEE, C. R., Falconbridge Nickel Mines Limited, Thornhill, Ontario, Canada

MILLERITE AT STRATHCONA MINE, SUDBURY DISTRICT

Millerite occurs in relative abundance with chalcopyrite, pentlandite, violarite, pyrrhotite, and sparse pyrite in discontinuous stringers and disseminations along fractures and joints in leucocratic and amphibolitic footwall gneisses near the norite contact more than 3,000 feet below the present surface. Some roughly equidimensional masses up to 8–10 centimeters in size show euhedent crystal faces and excellent cleavages barred by polysynthetic twinning. Gangue minerals include sodic and potassic feldspar, quartz, amphibole, epidote, garnet, and biotite. Partial chemical analysis on hand-picked cleavage fragments of millerite gave 62.0% Ni, 0.04% Cu, 0.33% Co, and 1.44% Fe. The x-ray powder diffraction pattern gave $a_0 = 9.622 \pm 0.006$ Å and $c = 3.150 \pm 0.005$ Å. Primary origin by crystallization from a hot sulphur-rich iron-poor fluid is proposed from the environmental evidence available.

GRIFFITHS, J. C., The Pennsylvania State University, University Park, Pennsylvania

AN ALGORITHMIC PROGRAM FOR THE ANALYSIS OF DETRITAL RESERVOIR ROCKS

The objectives of this program are essentially fourfold: (1) the data gathering process leads to a quantita-

GINSBURG, R. N., and SHINN, EUGENE A., Shell Development Company (A division of Shell Oil Company), Exploration and Production Research Division, Houston, Texas

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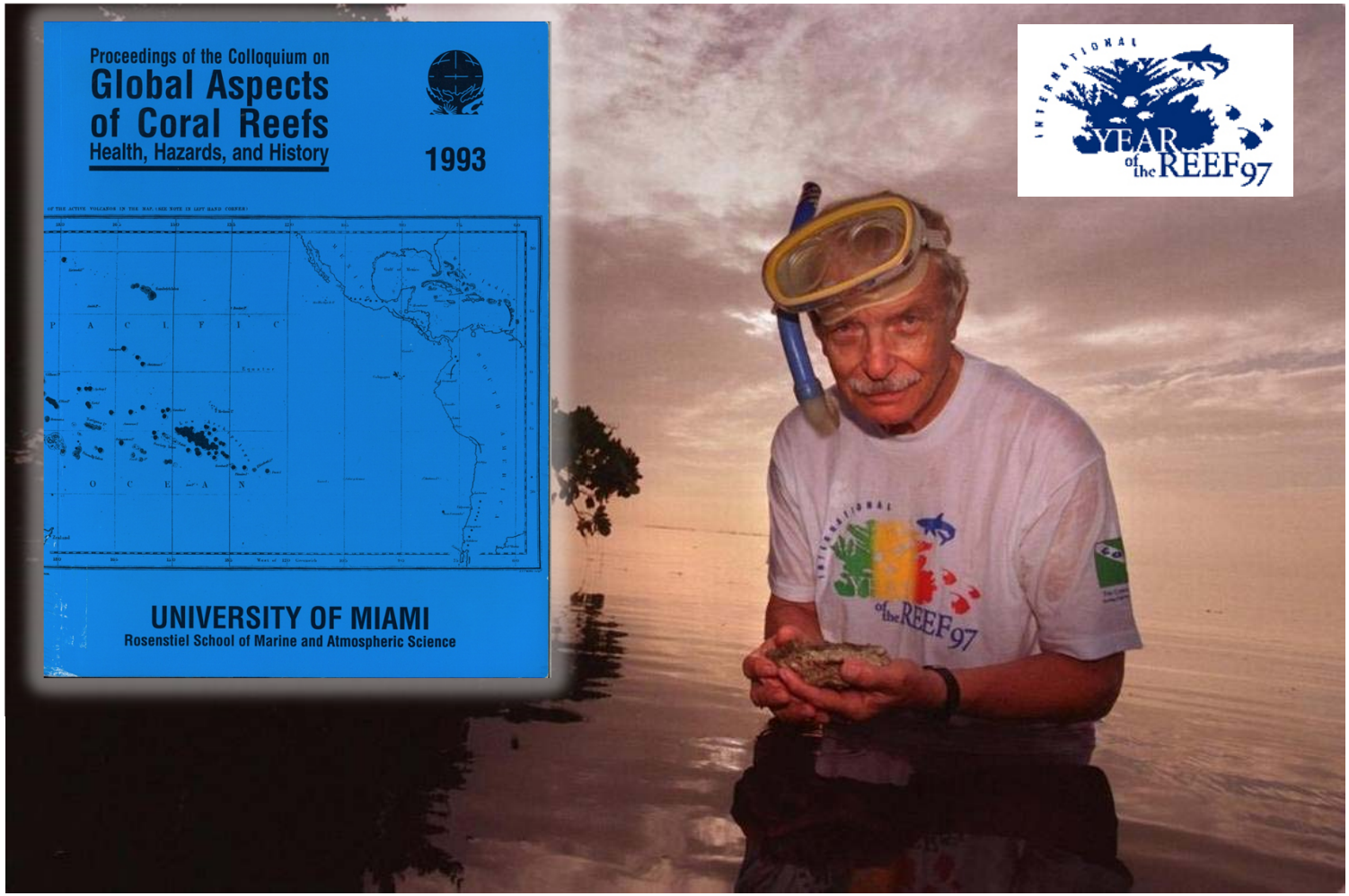
Can these "principles" be applied to ancient reefs?

1964 AAPG Bulletin, v.48, p.527 (abstract)

1955 1961

1997 Proclaimed International Year of the Reef – International Coral Reef Initiative

225 organizations in 50 countries participated



Bob's love of history contributed to the start of GSA Rock Stars

1995 - present

Rock Stars

INTRODUCTION

Bernard of Chartres, an 11th-12th century philosopher and teacher, said that we are like dwarfs on the shoulders of giants, so that we can see more than they and for a greater distance, not by any virtue of our own but because we are carried high and raised aloft by their stature.

All of us have our geological heroes, those giants on whose shoulders we stand. To encourage recognition of these luminaries and to provide inspiration for students and young professionals, the GSA History of Geology Division presents Rock Stars, brief profiles of our geological giants. Here is the first one. If you have any comments on this or subsequent profiles, please contact Robert N. Ginsburg, University of Miami, RSMAS/MGG, 4600 Rickenbacker Causeway, Miami, FL 33149-1098, E-mail: rginsburg@rsmas.miami.edu.

—Robert N. Ginsburg, Chair, History of Geology Division

Formative Years of the Scientific Career of T. Wayland Vaughan

Robert N. Ginsburg

Soon after I came to Florida some decades ago to study recent carbonate sediments and reefs, I found references to publications by T. Wayland Vaughan. At first I thought they could not be of much value to me because they were already decades old and Vaughan's name was not linked with any major concepts in the geology of carbonates. Fortuitously, I did take two of his major papers with me on my first field trip to study reefs and sediments on Loggerhead Key in the Dry Tortugas off Key West. That island was the site of the Carnegie Institution's Marine Biological Laboratory, where Vaughan and other pioneers studied reefs during the first 40 years of this century. I had my first look at beach rock, coral reefs, and associated sediments; I snorkeled over the reefs that Vaughan studied; and I

tory of southern Florida, and that he posed most of the significant questions about the origin of ooids and lime mud in the Bahamas and the effects of Pleistocene lowstands of sea level on the margins of the banks.

The more I read of Vaughan's works, the more I was impressed with his accomplishments not just in Florida, but in the West Indies and Panama, as well as in the Pacific. In addition to his scientific accomplishments, he served with distinction as one of the early directors of Scripps Institution of Oceanography in California. He was a key player on two National Research Council committees that had seminal effects in oceanography and paleoecology. My appreciation for Vaughan's contributions, especially those in Florida and the Bahamas, led

Field geologist T. Wayland Vaughan at 26, in Texas.

junior college level with that of high school and elementary—not exactly the launching pad for a scientific career. But there his curiosity and opportunism led him to study all sorts of plants and animals in the surroundings, and thus began his scientific career at the border between geology and biology. There also were the turning points in his future, those seemingly insignificant circumstances that so often lead in one direction or the other. An interest in plants, inspired probably by the earlier discovery of fossil leaves, led to a summer course in botany at Harvard, where, as a result, he became a graduate student in 1892. The nearby outcrops of Eocene marine sediments near Mt. Lebanon are rich in corals and mollusks. Vaughan's collection of them provided the material for his doctoral dissertation, which in turn led to study of living reefs, carbonate sediments, and Cenozoic geology of the Caribbean.

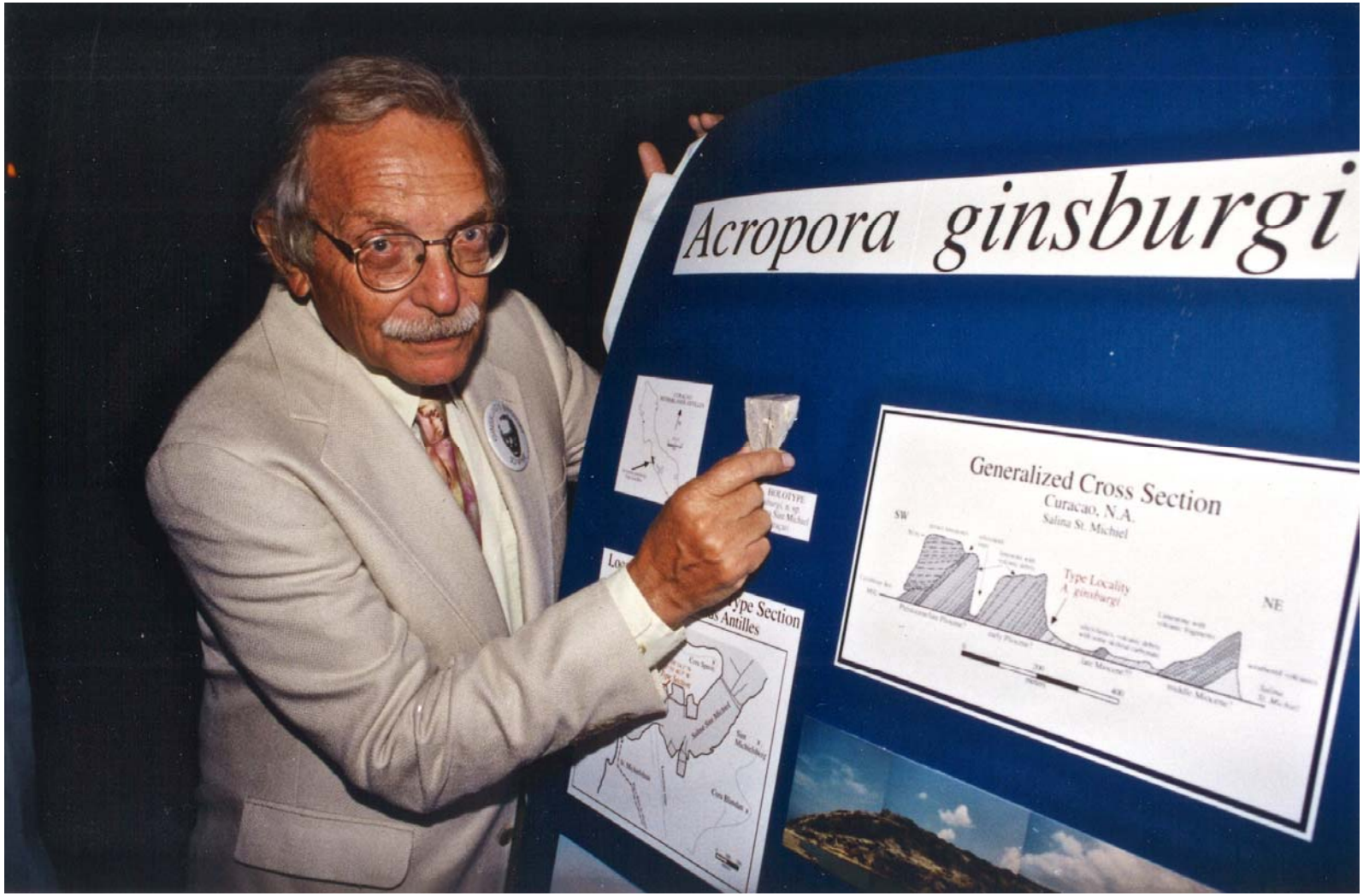
Harvard in the 1890s must have been an exciting experience. It retained the aura of the Louis Agassiz years as the country's premier institution of natural history; it had a faculty that included N. S. Shaler, William Morris Davis, and Alpheus Hyatt at the nearby Boston Society of Natural History—all leaders in the study of sedimentary deposits; and it had the excitement of graduate-student participation in cruises led by Alexander Agassiz to explore the reefs of Florida and the Bahamas. One of these assistants was Vaughan's fellow student, Alfred G. Mayor, a biologist, who subsequently convinced the Carnegie Foundation to establish, in 1904, the first laboratory for tropical marine biology at the Dry Tortugas, reef-ringed islands off Key West, Florida. Given Vaughan's interest in corals, it is not surprising that he soon became a regular researcher at the Carnegie Laboratory on idyllic Logger-

One of the last field projects on hardgrounds & marine cementation, circa 2009-2010 with Paul Enos

Marine hardgrounds & stromatolites in the geologic record

Longstanding interest in stromatolites, both modern & ancient – Total Project

Robert Ginsburg with *Acropora (Isopora) ginsburgi* coral - 1995

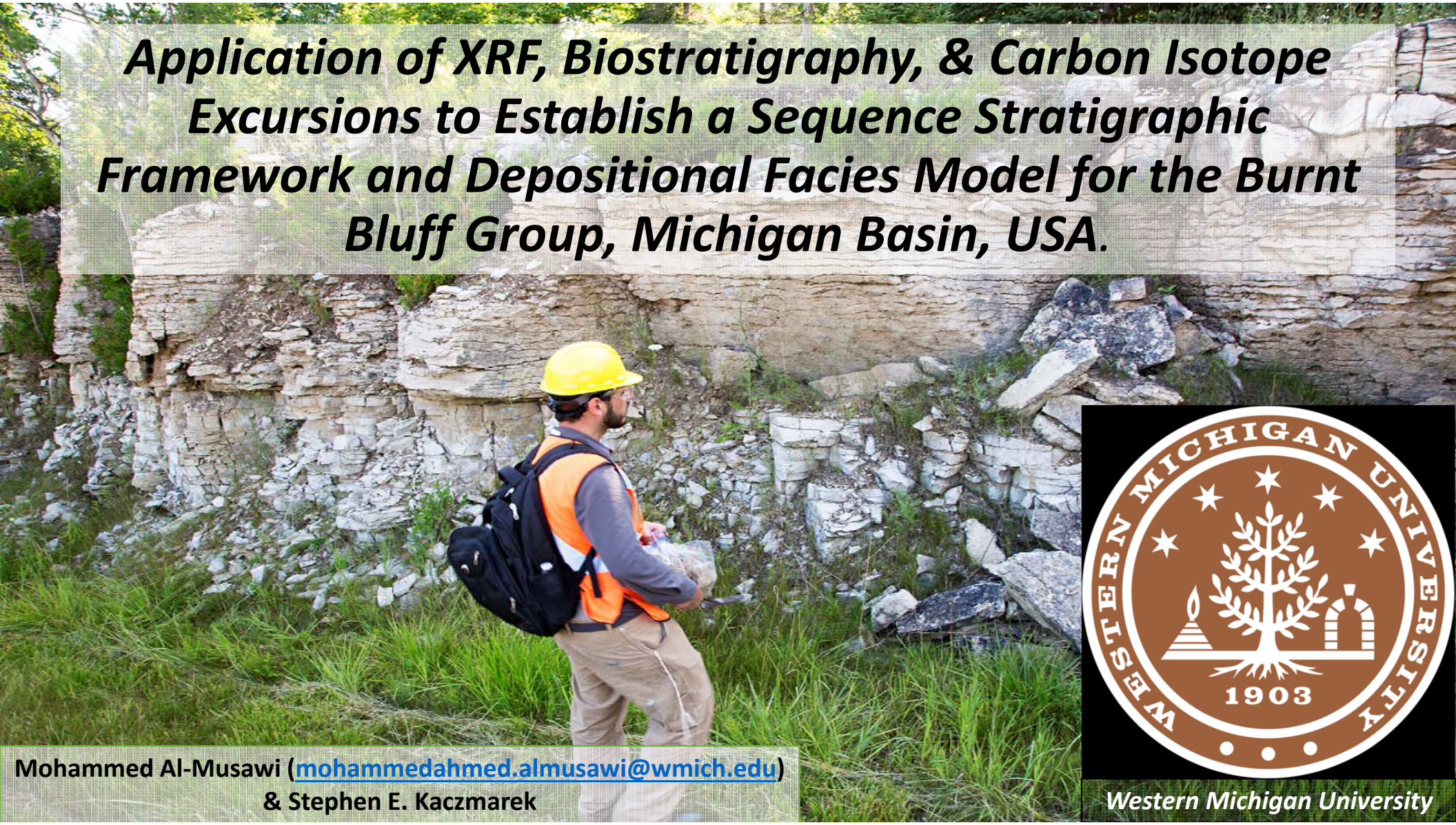


Always asking questions of industry, academia, conservationists…

So What?

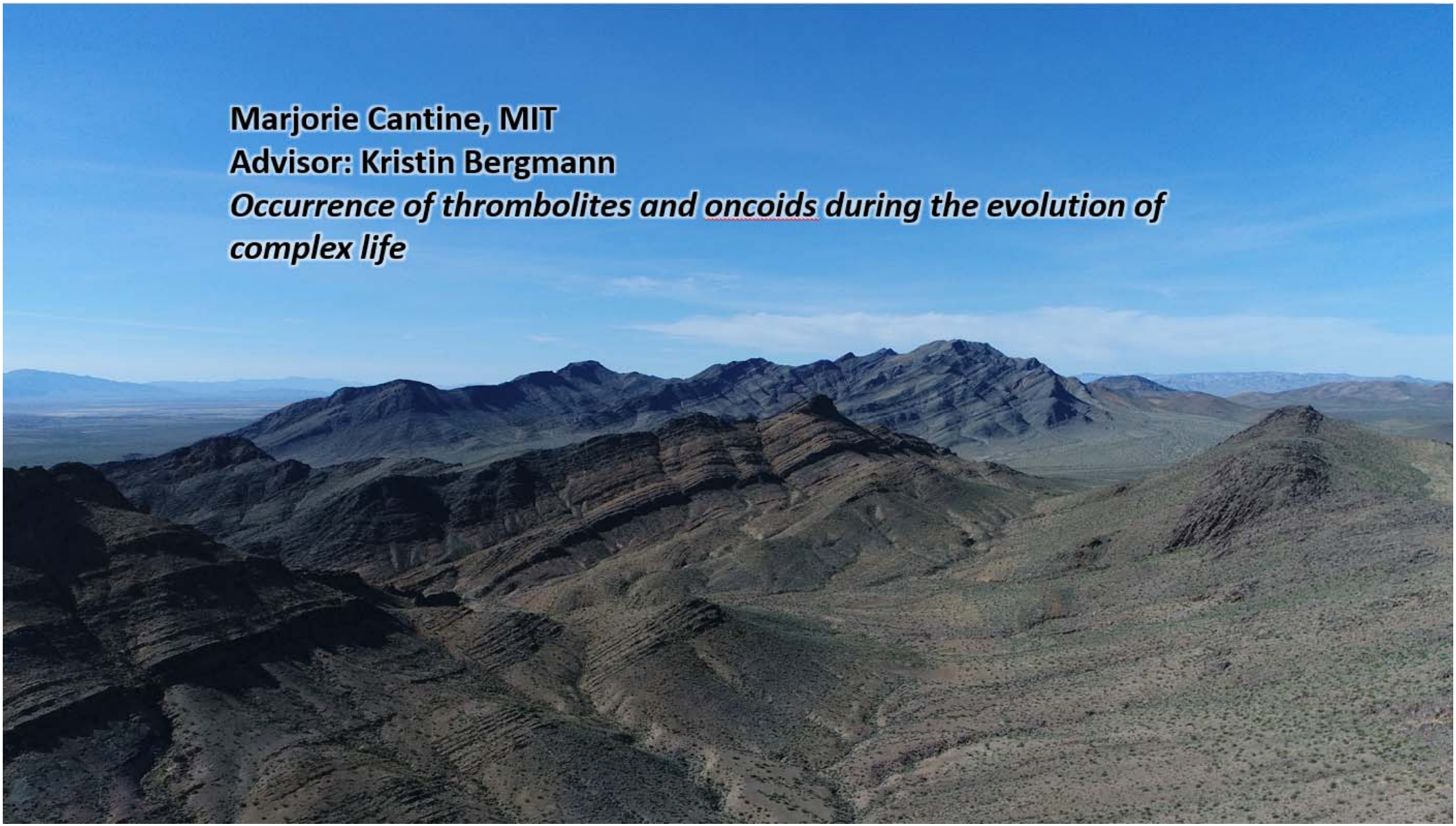
Robert Ginsburg - Pleistocene reef at Ambergris Cay, Belize

Application of XRF, Biostratigraphy, & Carbon Isotope Excursions to Establish a Sequence Stratigraphic Framework and Depositional Facies Model for the Burnt Bluff Group, Michigan Basin, USA.



Mohammed Al-Musawi (mohammedahmed.almusawi@wmich.edu)
& Stephen E. Kaczmarek

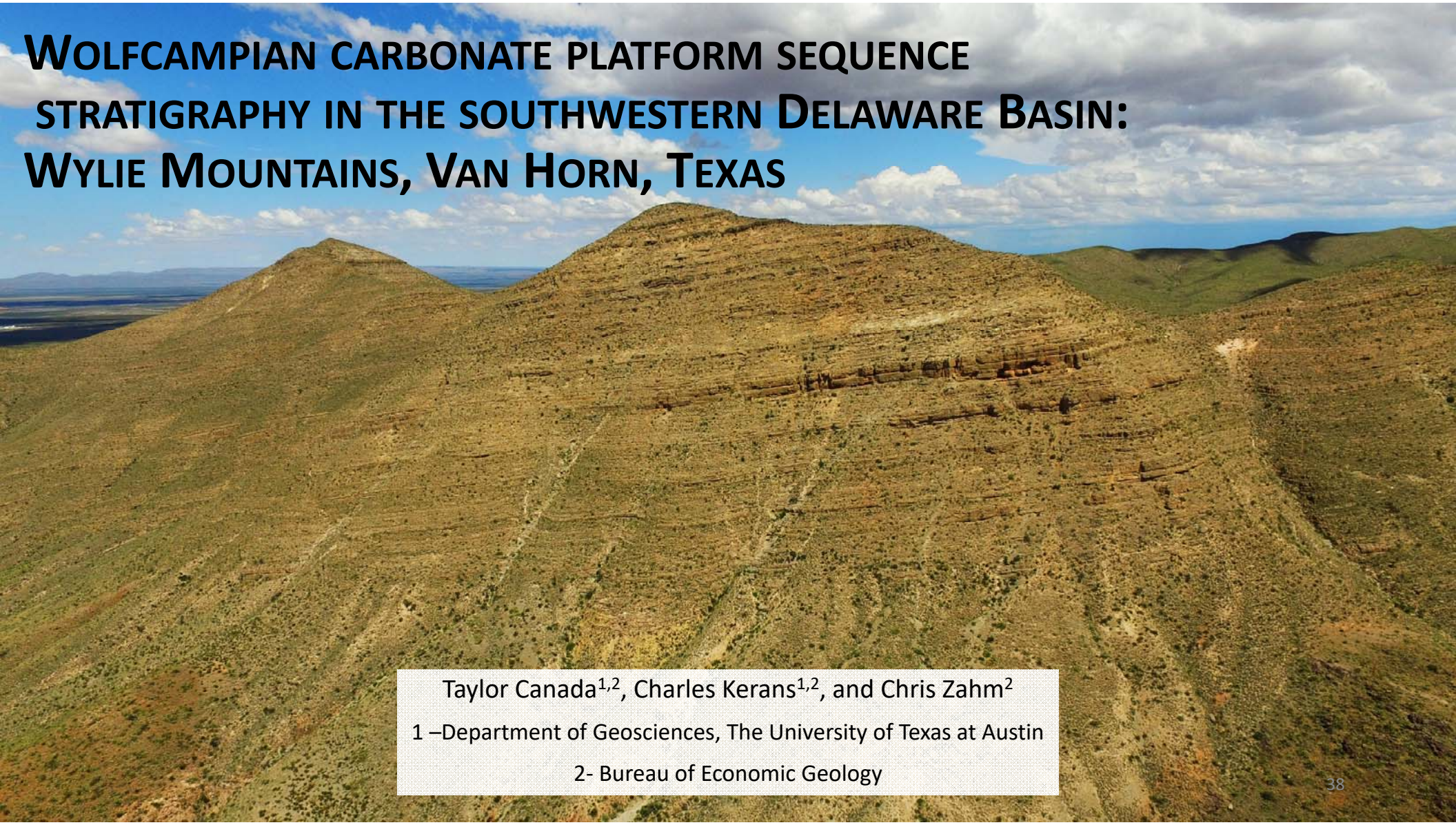
Western Michigan University



Marjorie Cantine, MIT
Advisor: Kristin Bergmann

Occurrence of thrombolites and oncoids during the evolution of complex life

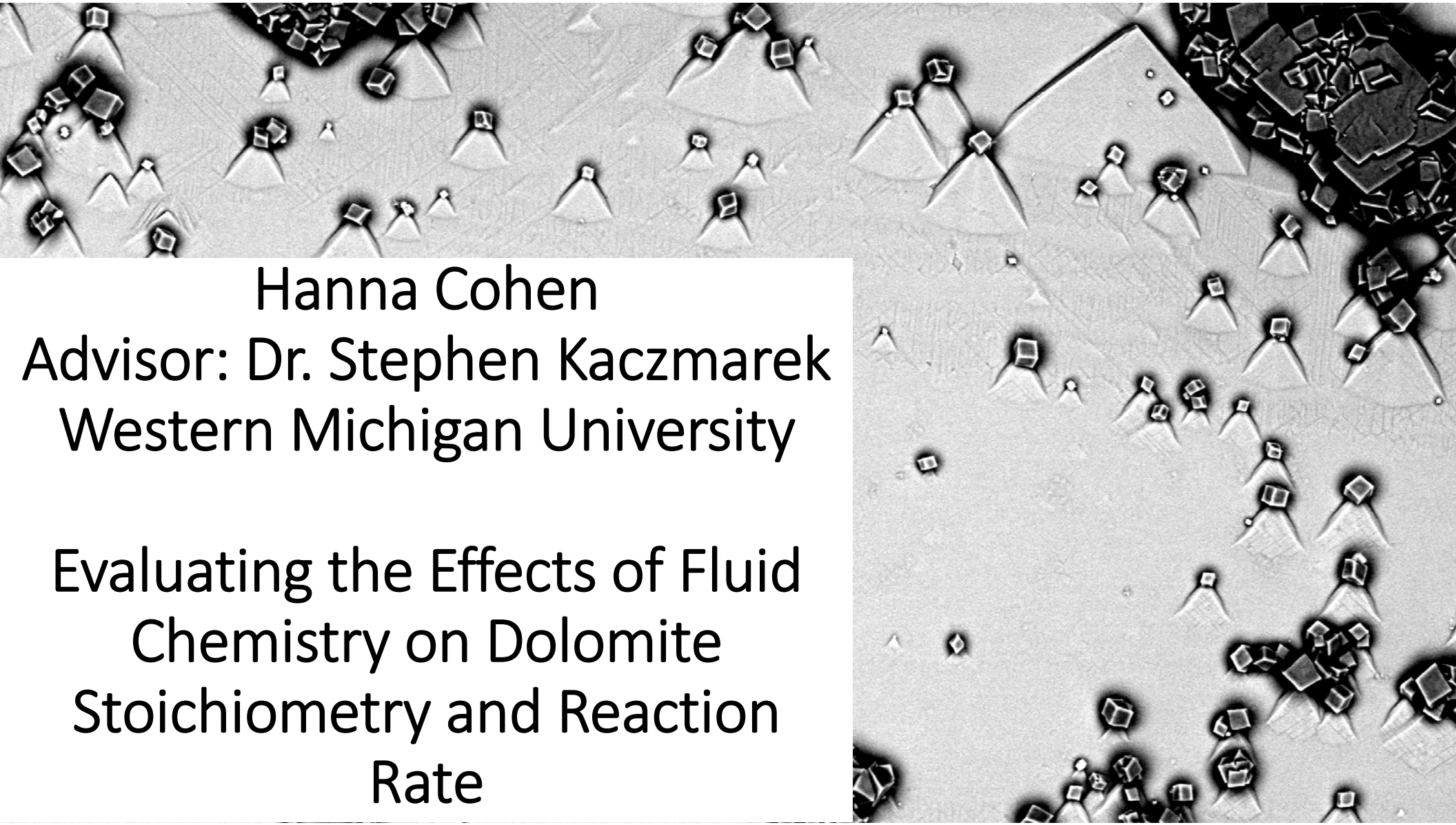
Wolfcampian carbonate platform sequence stratigraphy in the southwestern Delaware Basin: Wylie Mountains, Van Horn, Texas



Taylor Canada[1,2], Charles Kerans[1,2], and Chris Zahm[2]

1 –Department of Geosciences, The University of Texas at Austin

2- Bureau of Economic Geology



Hanna Cohen
Advisor: Dr. Stephen Kaczmarek
Western Michigan University

Evaluating the Effects of Fluid Chemistry on Dolomite Stoichiometry and Reaction Rate

Wolfcampian Shelf-to-Basin Stratigraphic Framework of the Central Basin Platform and Midland Basin, Andrews County, Texas

Cody Draper, Charlie Kerans

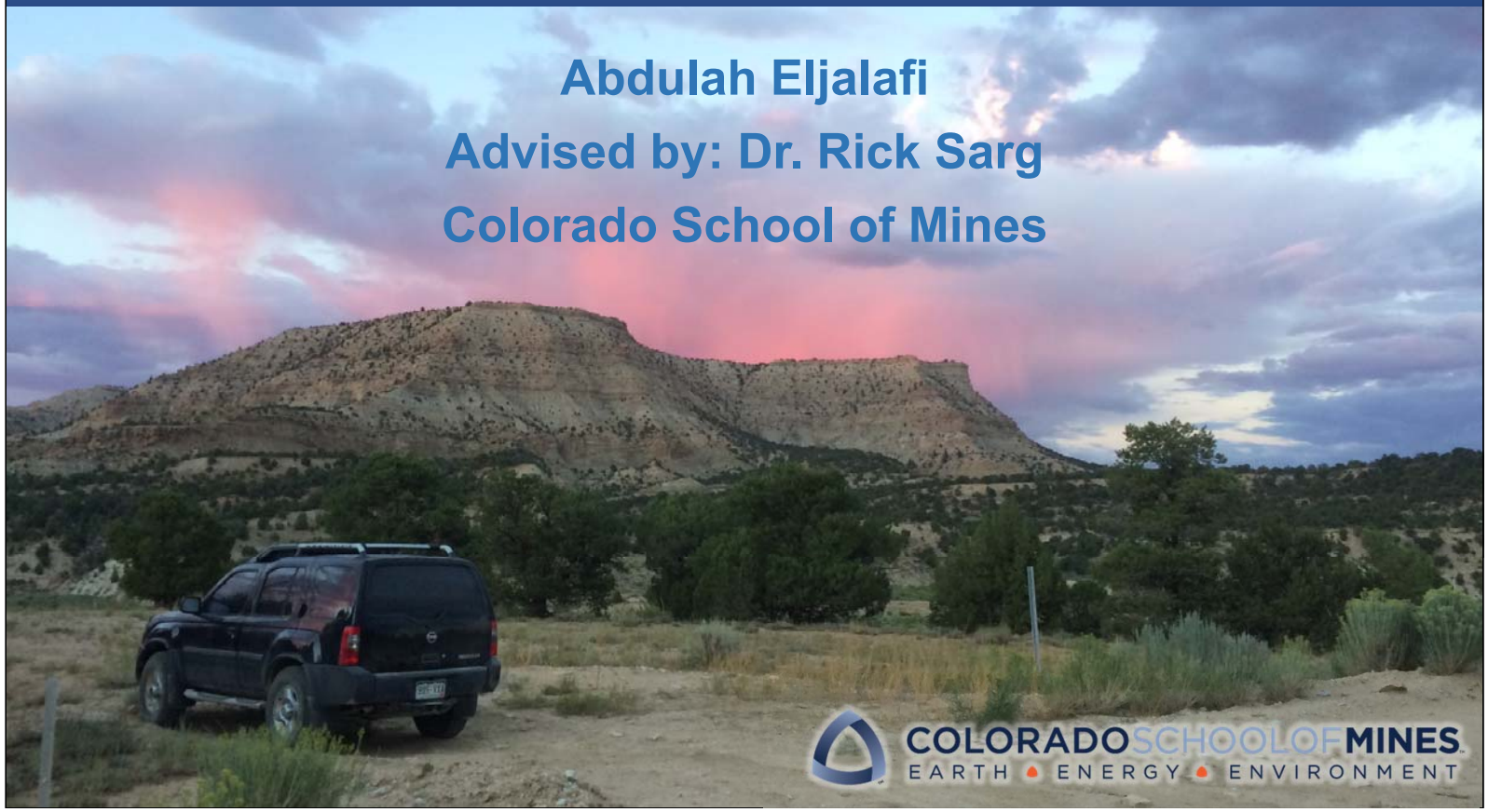
The University of Texas

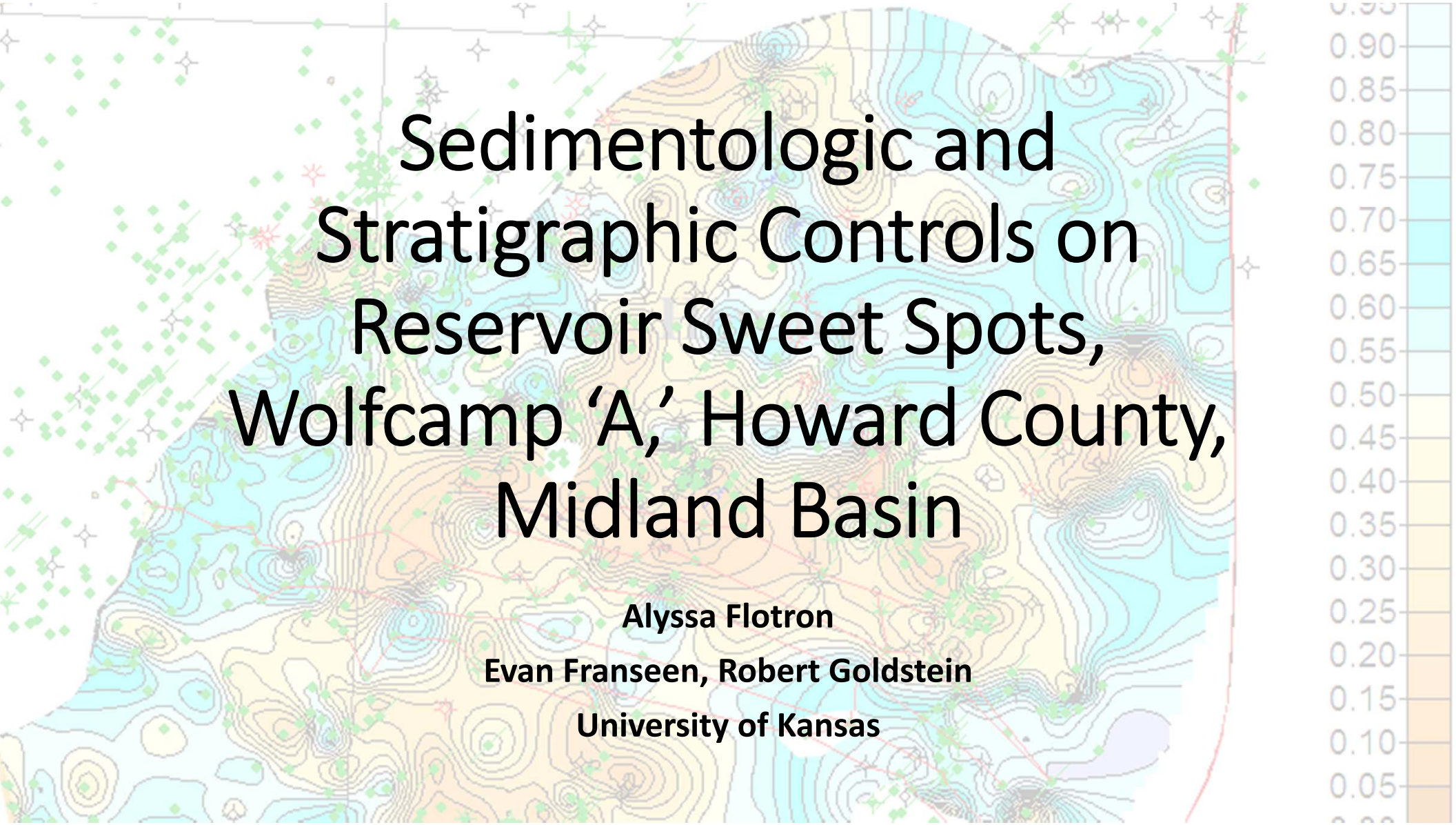
Lacustrine Microbialite Architectural and Chemostratigraphic Trends: Green River Formation, Eastern Uinta Basin, Colorado and Utah

Abdulah Eljalafi

Advised by: Dr. Rick Sarg

Colorado School of Mines





Sedimentologic and Stratigraphic Controls on Reservoir Sweet Spots, Wolfcamp 'A,' Howard County, Midland Basin

Alyssa Flotron

Evan Franseen, Robert Goldstein

University of Kansas

Name: George Ghon, G. Baechle, E. C. Rankey, M. Schlaich, S. Ali, S. Mokhtar, M. Poppelreiter

School: University of Kansas

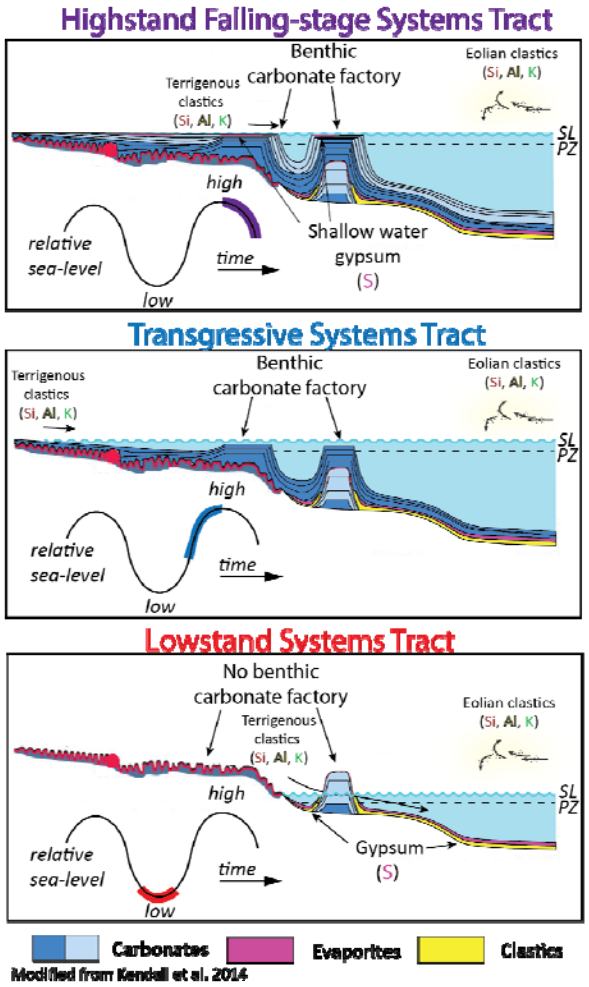
Poster Title: Carbonate rock physics and sequence stratigraphy in central Luconia, Malaysia: towards an integrated acoustic facies for partially dolomitized platforms

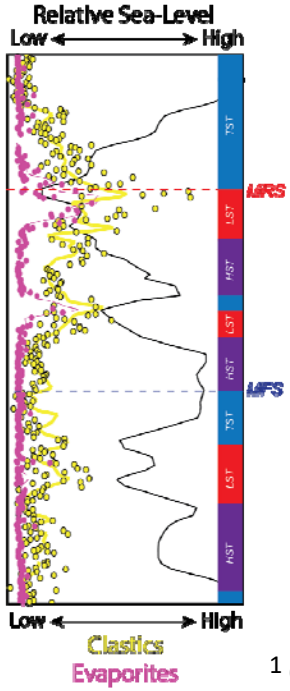
Name: Mohammed Hashim

Advisor: Stephen Kaczmarek

School: Western Michigan University

Poster Title: Genetic origin and diagenetic transformation of LMC microcrystal textures in limestones





Application of Handheld ED-XRF for High Resolution Chemostratigraphy in Texturally Homogeneous Carbonate Mudstones: Salina A-1 Carbonate (Silurian), Michigan Basin

Matthew A. Hemenway[1]

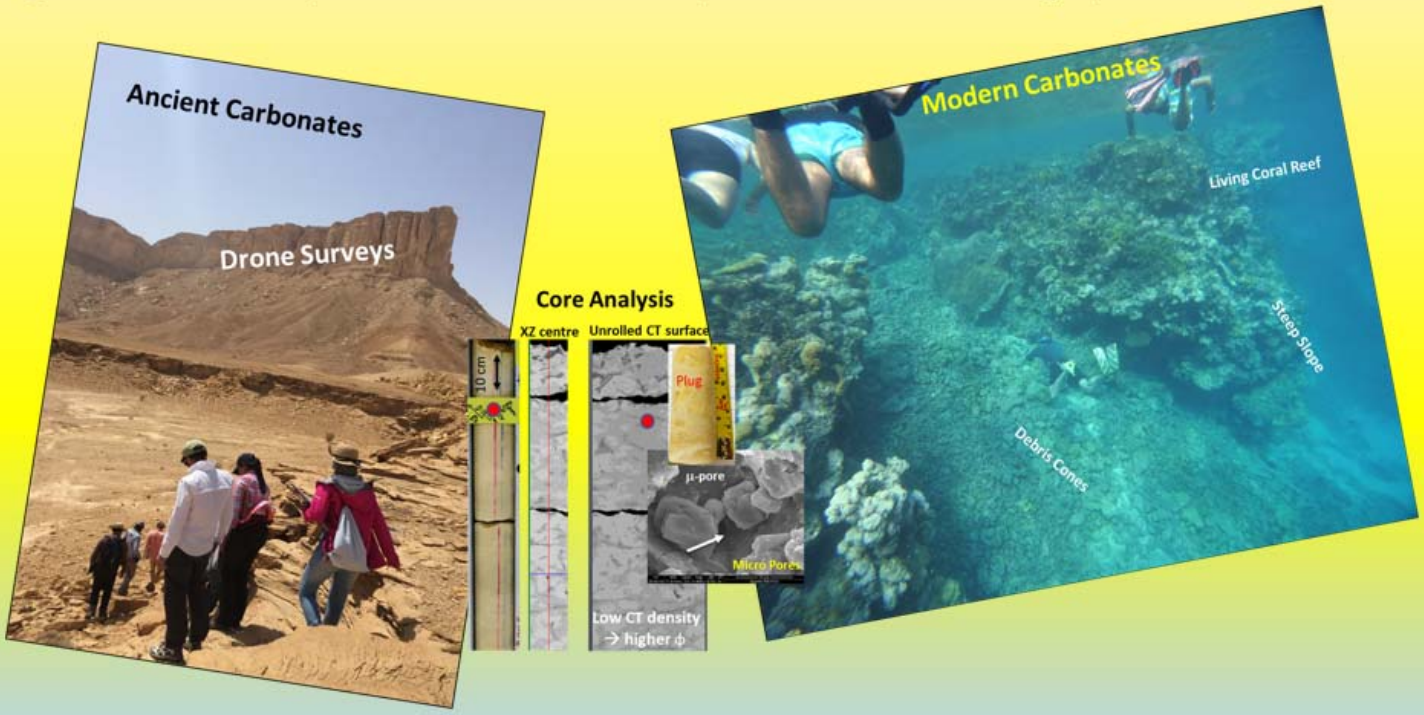
Advisor: Stephen E. Kaczmarek[1]

[1] Geological and Environmental Sciences, Western Michigan University
Kalamazoo, Michigan

Geological & Environmental Sciences
Carbonate Petrology & Characterization Lab

Michigan Geological Repository for Research and Education (MGRRE)
Western Michigan University

Optimizing ultimate recovery from Jurassic and Cretaceous Arabian hydrocarbon reservoirs: Analogs from Modern (Red Sea & Arabian Gulf) and Ancient Outcrops (Saudi Arabia & Oman)



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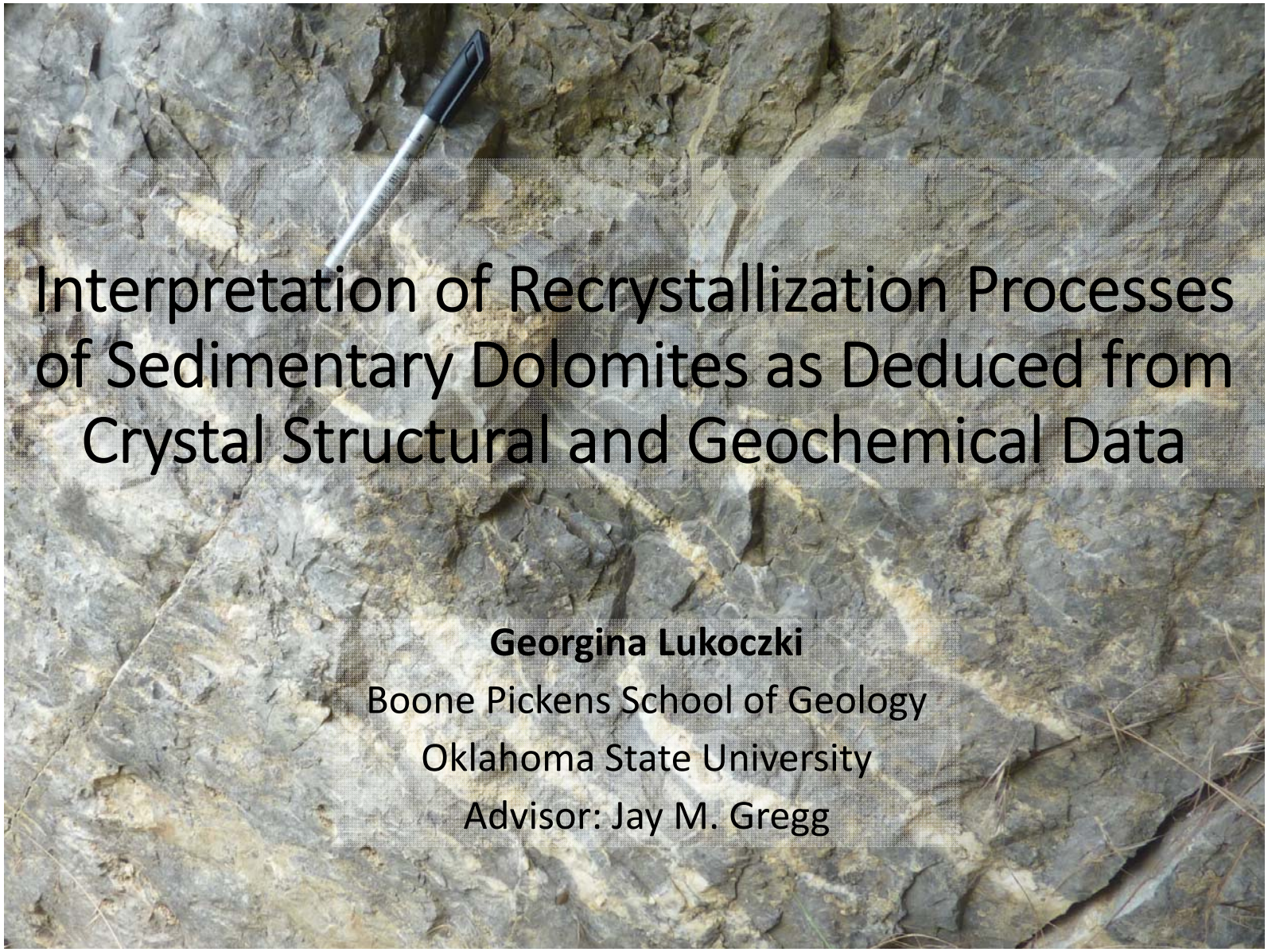


Interpretation of Recrystallization Processes of Sedimentary Dolomites as Deduced from Crystal Structural and Geochemical Data

Georgina Lukoczki
Boone Pickens School of Geology
Oklahoma State University
Advisor: Jay M. Gregg

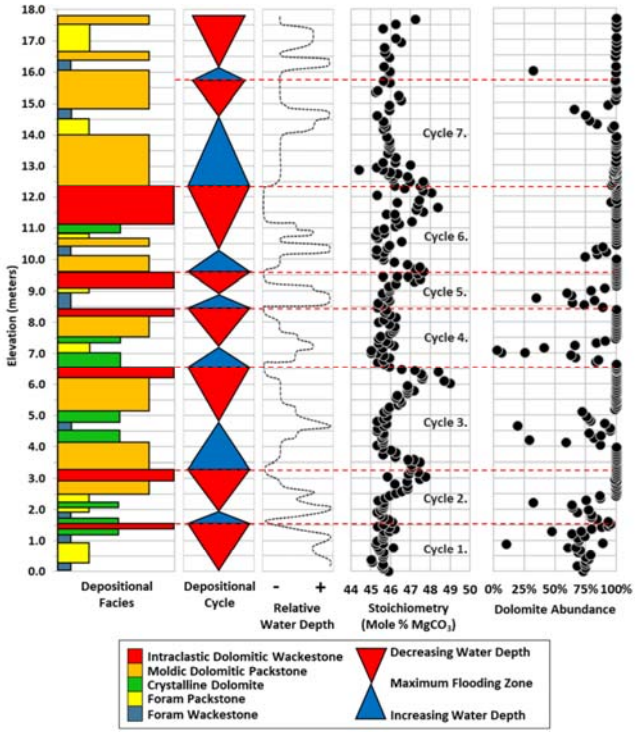
Evaluating Dolomite Stoichiometry as a Proxy for the Chemistry of Dolomitizing Fluids

Cameron J. Manche
Stephen E. Kaczmarek

Geological & Environmental Sciences
Western Michigan University

Theme 2: New Insights on the Complexity of Carbonate Diagenesis

Tuesday, May 22, 2018
2:00 – 2:20 PM, Ballroom B



Name: Zaid Nadhim

Advisor: Stephen Kaczmarek

School: Western Michigan University

Poster Title: Facies architecture and depositional model for the Silurian Niagaran pinnacle reef complexes of the Michigan basin.

Name: Kieron Prince

Advisor: Juan Carlos Laya

School: Texas A&M University

Poster title: Subaerial exposure and diagenesis of the Miocene Kardiva platform, Maldives.

Unraveling the Impact of Sea-level Changes and Early Diagenesis on the Reservoir Quality of Eocene Carbonates in Qatar

Brooks H. Ryan

Advisor: Dr. Stephen Kaczmarek

Western Michigan University

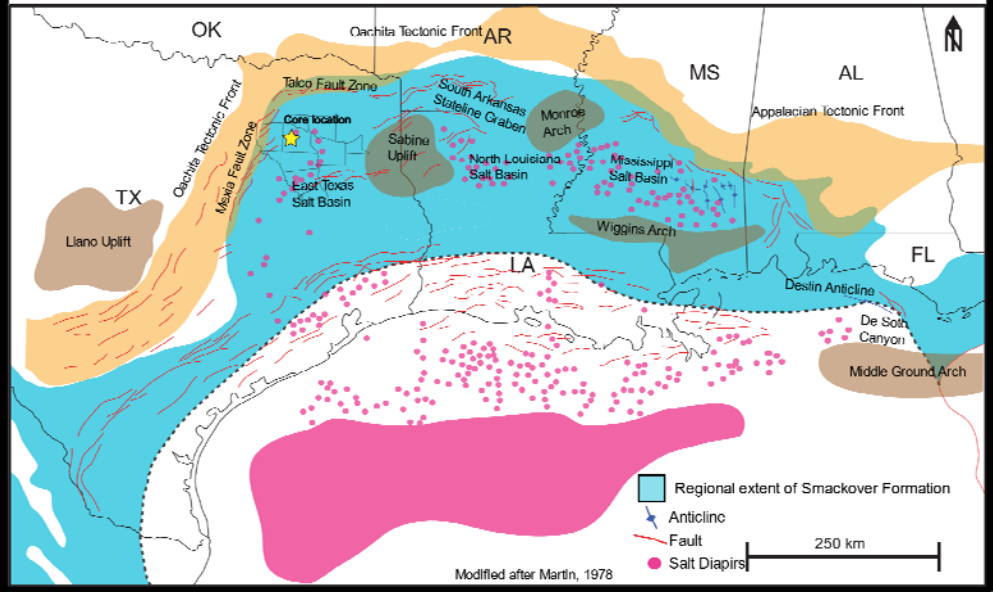
Integrated Approach to Characterizing the Upper Jurassic Smackover Carbonate Ramp Succession in East Texas

By Peter Schemper

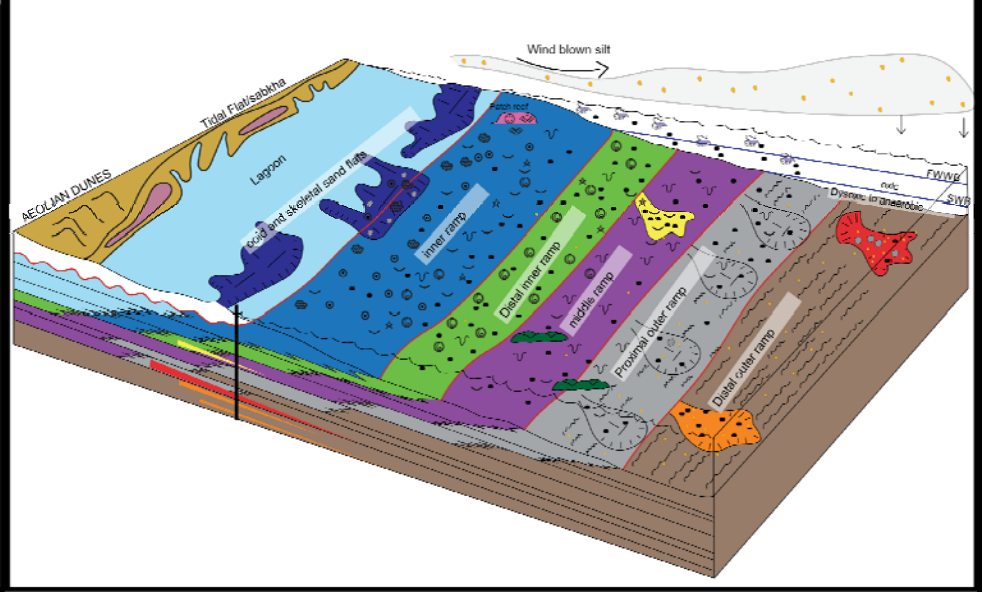
Advisor: Bob Loucks

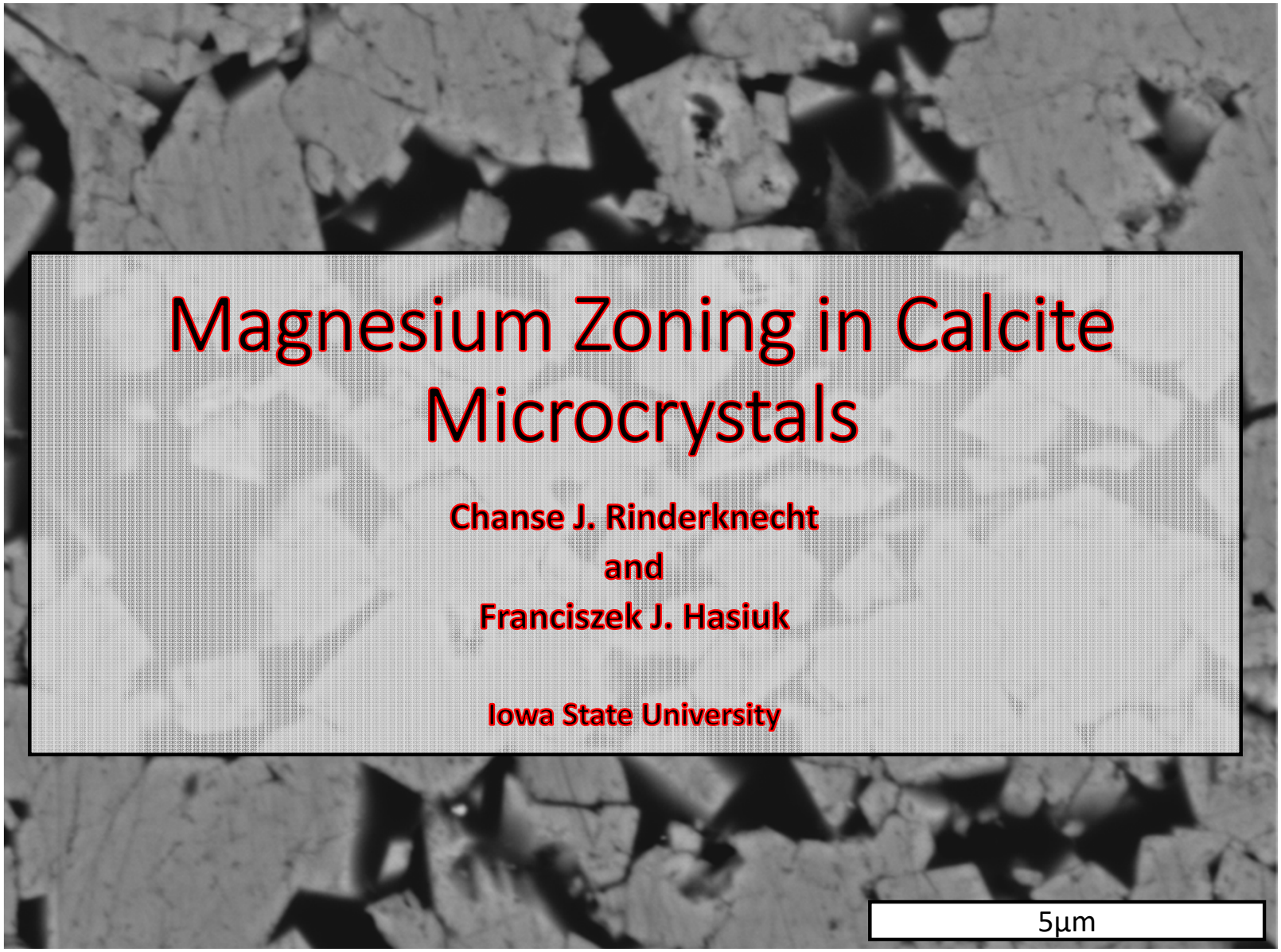
University of Texas at Austin

Regional Structure Map

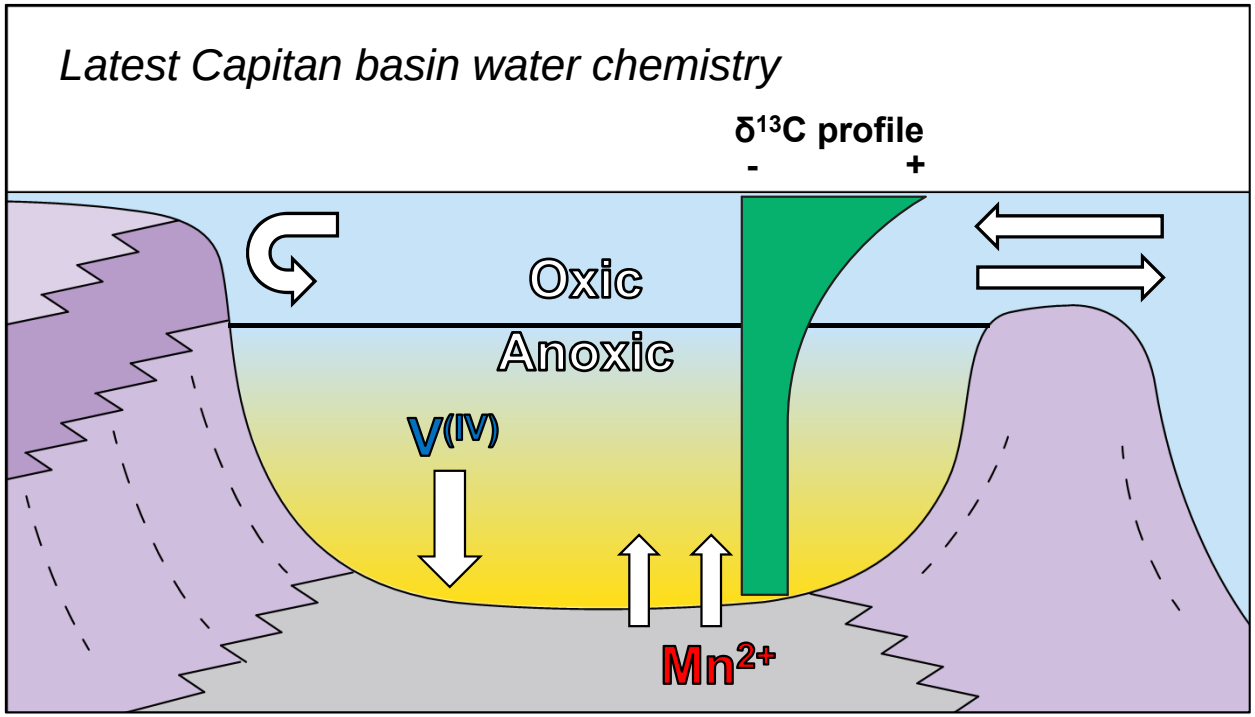


Depositional Model



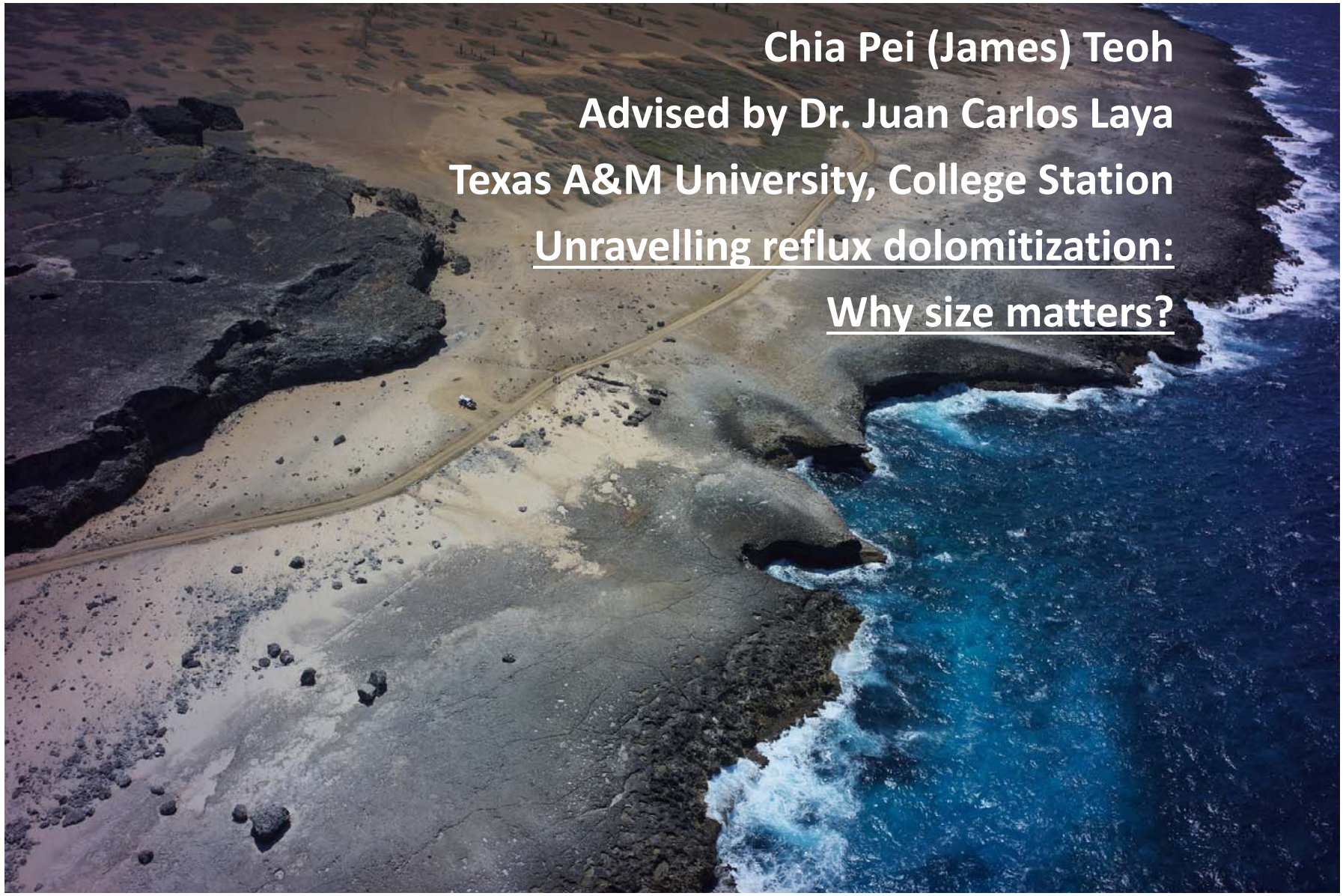

Magnesium Zoning in Calcite Microcrystals
Chanse J. Rinderknecht
and
Franciszek J. Hasiuk
Iowa State University
5µm

Late Guadalupian evolution of the Delaware Basin: insights from stable isotope and trace element geochemistry



Ben Smith [1] and Charlie Kerans [1]

[1]Department of Geological Sciences, Jackson School of Geosciences, University of Texas at Austin, Austin, Texas



Chia Pei (James) Teoh
Advised by Dr. Juan Carlos Laya
Texas A&M University, College Station

Unravelling reflux dolomitization: Why size matters?

Other Poster Presenters:

Other Students?

- Your Name
- University Name
- Advisor’s Name
- Research topic

(23) Poster Presentations

6th Annual Photo Contest – Please VOTE!

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