



PBS-SEPM NEWSLETTER



March—April 2014

*“Those who can,
do. Those who
can do more,
volunteer.” --
Anonymous*

Inside this issue:

3/11-WTGS Luncheon and Presentation “The Geology of the Arbuckle Grp in the Mid-Continent: Sequence Stratigraphy, Reservoir Development and Potential for Hydrocarbon Exploration.” See www.wtgs.org

3/18-PBS-SEPM Luncheon & Presentation “Stratigraphic Framework and Controls on Pennsylvanian Granite Wash Production, Anadarko Basin Texas and Oklahoma.”

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4/1-WTGS Luncheon and presentation, Dr. Xavier Janson, BEG, Preview of SW Section AAPG field trip.

4/15 PBS-SEPM Luncheon & presentation. Dr. Gary Gianniny (Ft Lewis College) “Synchronous Maximum Flooding Across the Paradox Basin, Pennsylvanian Hermosa Grp, SE Utah and SW Colorado”

President-Elect Column

Vol-un-teen

1. A person that actively takes on a task, responsibility, or project on his own accord willingly without needing to be assigned, ordered, forced, or paid to do it.

Have you thought about the benefits you could get from volunteering to serve on a committee of the PBS-SEPM society? It provides an opportunity to promote geoscience by participating in fieldtrips, core workshops, by networking with peers and staying abreast of current science through attendance of monthly luncheons. You will get more out of your volunteer experience than you put into it.

One reason to volunteer is to be challenged. All of us who work in the oil industry are busy these days and we are used to applying certain skills to our daily tasks. The main reasons we geoscientists are able to maintain our job or our career is because we are great at what we do, at getting the job done under excessive pressure. But even-

ry now and then we all need a challenge. And if you don't already know, challenges can be very humbling, yet they give us the desire to seek and strive for excellence in everything we do. Helen Keller said “Life is either a daring adventure or nothing at all.”

Volunteering can be very powerful. We can get things done by collaborating with a wide variety of people's skill sets. Paid staff are often limited by the long list of “to do's” but volunteers can make things happen by stepping up. Seeing what could be and working to achieve goals set has been a powerful experience for me.

From serving on the PBS-SEPM board the last three years, I found volunteering to be an overall awesome and rewarding experience. It has given me the opportunity to learn more about myself, and to learn more about those whom I have served with and for. Additionally I have built new relationships both personally and professionally that I otherwise would not have

made.

A true example of sincere volunteerism is our Executive Director, Paula Sanchez. I am truly blessed to have had the opportunity to serve with her. Our society is surviving and is at the level of excellence it is because of her devotion to the society.

I would encourage you to consider volunteering to serve on a committee, or even run for elected office on the board in the future. Whatever the reasons for volunteering may be, someone else's quality of life is benefiting.

Curtis Helms Jr.

President-Elect
PBS-SEPM 2013-2014
<http://www.pbs-sepm.org>

Mark Your Calendars! (all presentations at the Midland Center)

MARCH

- **11: WTGS** Presentation and Luncheon: Rick Fritz, et al.(SM Energy): “The Geology of the Arbuckle Group in the Mid-Continent: Sequence Stratigraphy, Reservoir Development and Potential for Hydrocarbon Exploration”. (11:30-1:00 PM)
- **18: PBS-SEPM** Luncheon: Ed LoCricchio (Independent Geologist) “Stratigraphic Framework and Controls on Pennsylvanian Granite Wash Production, Anadarko Basin Texas and Oklahoma.” (11:30—1:00 pm)

APRIL. Note the date change

- **1: WTGS** Presentation and Luncheon. Xavier Janson, (BEG): Topic is a preview of the SW Section of AAPG, Premeeting Field Trip to the Glass Mountains. (11:30—1:00 pm)
- **15: PBS-SEPM** Luncheon and presentation. Presenter Dr. Gary Gianniny (Ft Lewis College) “Synchronous Maximum Flooding across the Paradox Basin, Pennsylvanian Hermosa Group, Southeastern Utah and Southwestern Colorado,” Gianniny, G., Miskell-Gerhardt, K.J., and Ritter, S. (11:30—1:00 pm)

MAY

- **6: WTGS** Presentation and Luncheon. Topic TBA (11:30—1:00 pm)
- **9-11 SW Section AAPG Glass Mtns Field Trip.** See <http://www.southwestsection.org/>
- **11-14 2014 Southwest Section AAPG, Midland, TX: Old Basins, New Ideas: Exploiting the Resource, Reaping the Reward.** See <http://www.southwestsection.org/> for additional information.
- **20: PBS-SEPM** Presentation and Luncheon. Topic TBA (11:30—1:00 pm)

PBS-SEPM Luncheon Talk –March 18, 2014

Ed LoCricchio.

“Stratigraphic Framework and Controls on Pennsylvanian Granite Wash Production Texas and Oklahoma”

Independent Geologist, Littleton, CO
 Tuesday, March 18, 2014 - Midland Center, 11:30 a.m.

Abstract

The Granite Wash play extends over 130 miles across seven counties in the Anadarko basin. This prolific hydrocarbon resource has recently come to the forefront of domestic resource development due to: 1) advancements in horizontal drilling and frac technology; 2) recognition of variable pressured regimes; and 3) a better understanding of the stratigraphic framework.

Granite Wash sediments are the result of detritus shed from the Wichita Mountain-Amarillo Uplift into the basin. This deep water deposit can be divided into at least fifteen reservoirs by mapping regionally correlative flooding surfaces. This complex stratigraphy results from the interplay between tectonically controlled Granite Wash sediments from the south and shelf derived sediments from the north. Detailed net sand maps and regional cross-sections demonstrate these stratigraphic and structural controls on reservoir extents and lateral continuity of this important resource.

Biography

Ed LoCricchio received his B.S. in Geology from Fort Lewis College in Durango, Colorado in 1981. He has worked over thirty years in the Denver area as an exploration geologist for several independent oil companies, primarily focused on exploration projects in the Rocky Mountain basins, and the Anadarko basin of the Mid-continent. Mr. LoCricchio joined Cordillera Energy Partners LLC in 2004 as Senior Geologist responsible for exploration and development of the Texas Panhandle and southwest Oklahoma. During his time at Cordillera, Mr. LoCricchio drilled over 100 vertical and 50 horizontal Granite Wash wells.



Map to left is a play map of the Granite Wash in western Oklahoma and the northeasternmost Panhandle of Texas indicated in red.

*“I always remember an epitaph which is in the cemetery in Tombstone, AZ. It says: “Here lies Jack Williams. He done his damnedest.” I think that is the greatest epitaph a man can have—
 When he gives everything that is in him to do the job he has before him. That is all you can ask of him and that is what I have tried to do.”*

Harry S. Truman

The mystery of life isn't a problem to solve, but a reality to experience.

Frank Herbert
 Author of Dune

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“No one is useless in this world who lightens the burden of it for someone else” –

Benjamin Franklin

Do you have an idea for an interesting luncheon talk? Have a core workshop you'd like to present? Have some suggestions on how PBS-SEPM can better serve the geologic community? Just click on the e-mail above & drop us a note, your PBS-SEPM Executive Board would love to hear from you!

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Volunteering is the ultimate exercise in democracy. You vote in elections once a year, but when you volunteer, you vote every day about the kind of community you want to live in.
~Author Unknown

If you are interested in a sponsorship opportunity, please call Paula Mitchell-Sanchez for more details at (432) 683-1573.

PBS-SEPM 2014 Calendars are in!



Permian Basin Section-SEPM Calendar

The calendars are now available in the WTGS office. The price is \$15.00 each or can be purchased at a special volume discount: "Buy 5, get 1 free".

For additional information contact: PBS-SEPM Office (432) 683-1573 or email wtgs@wtgs.org

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“..When times get tough there is a lower margin for error, therefore we should be putting more geoscience into understanding plays, not less, i.e., if you're going to develop a play in tough economic times, it's best to know as much as possible about it in order to minimize the amount of money spent unproductively.”

Kirk Campion
2009

PBS-SEPM is the Permian Basin Section of SEPM—the Society for Sedimentary Geology. However, you do not need to be a SEPM member or a geologist to join PBS-SEPM.

Our non-profit society relies upon the efforts of dedicated volunteers to serve the geological community—primarily through educational events. These events include monthly luncheon talks, core workshops, annual field trips, and special geological publications. Additionally, we are involved on the college campuses—reaching out to future earth scientists through scholarships, discounted memberships, and offering full-time geology students the ability to participate in professional-grade field trips at little to no cost.

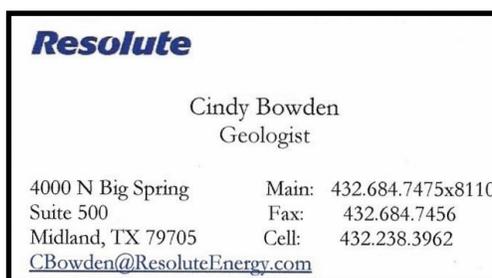
If you would like to join PBS-SEPM, you may visit our website (www.pbs-sepm.org) to learn more about us, download a membership form, and learn how to get involved.

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Individual sponsors are advertised on the PBS-SEPM website and each Newsletter. Cost is \$85/year. If you are interested in an individual sponsorship opportunity, please call Paula Mitchell-Sanchez for more details at (432) 683-1573.

Your Business Card Could be here

Your card will be in every newsletter for one year June to May, on the Website, the Power Point shown prior to every luncheon and in the calendar credits.



“Volunteering is an excellent way to provide meaning in your life and help give back to your local community.”

Peter Muggeridge

WTGS Luncheon Talk –April 1, 2014

Xavier Janson, Ph.D.

“Early Permian stratigraphy and slope system in the Southern Delaware Basin, Glass Mountains”

Bureau of Economic Geology, The Jackson School of Geosciences, The University of Texas at Austin

Tuesday, April 1, 2014 - Midland Center, 11:30 a.m.

Abstract

The Glass Mountains have long been a classic exposure of the Permian stratigraphy in the Southern Delaware Basin. Due to limited access, no modern (post 80's) work has been done on those outcrops that expose the entire section from folded Ordovician through Pennsylvanian to nearly undeformed Early Permian (Leonardian) to Late Permian (Castile Fm. and younger equivalent) The RCRL long term goals in the Glass Mountains are to better understand the controls (if any) of platform development, margin geometry and trajectory, and slope system for the delivery of deep water to basinal sediment. This is particularly relevant for the current exploration effort in the southern Delaware Basin. In addition, the Glass Mountain paleogeographic and tectonic setting provide a unique opportunity to understand the development of carbonate platforms, and slope and basins in an active compressional tectonic setting.

Our initial aerial reconnaissance and field mapping of the Wolfcampian through Early Capitanian slope sections in the Glass Mountains shows 5 types of slope systems:

- A grainy crinoid/fusulinid dominated upper slope in the late Wolfcampian
- A grainy/debris dominated slope system during the Leonardian
- A muddy to silty dominated slope during the Leonard /Guadalupian time with small lenticular debris flows.
- A sandy to silty slope with microbial mounds during the Goat Seep equivalent with large reef olistholiths probably equivalent to the “get away” debris
- A “classic” deep reef and debris dominated Capitanian slope, very similar to the one in the Guadalupe.

The first two are beautifully exposed on Leonard Mountain. There, the deformed and eroded upper Wolfcampian slope is characterized by 5-20 m thick polymict conglomerate with large blocks overlain by medium bedded, faintly graded, 5-10 m thick set of crinoid and fusulinid grain-dominated packstone to grainstone with lenticular (channelized) massive bed of grainstone up to 8 meter thick. The lower conglomerates are interpreted as syntectonic mega-breccia whereas the upper grainy interval is interpreted as concentrated density flows (aka grain flow). The top of the Wolfcampian is marked by an angular unconformity. Above this surface, the initial Leonardian platform consists of thickly bedded dolomitized crinoidal, fusulinid grainstone. The margin of this platform is scalloped by a steep erosional surface onto which younger slope deposits onlap. The Leonardian slope system displays from bottom to top, large reefal blocks up to 10 m high within a megabreccia overlain by dolomitized concentrated density flows and debris flows. Then, a couple of 5-10 m thick grainy flow complexes are overlain by a medium bedded graded crinoid packstone interpreted as carbonate turbidites interbedded with thin-bedded siltstone. The upper part of the slope section is dominated by conglomerates and soft sediment deformed conglomerate that are commonly rich in quartz. The amount of deformation and erosion in the upper part of the section is spectacular. This slumped and channel complex is overlain by a thick stack of thin bedded silt intervals with a few sandy debris flows and thin sandy carbonate turbidites throughout.

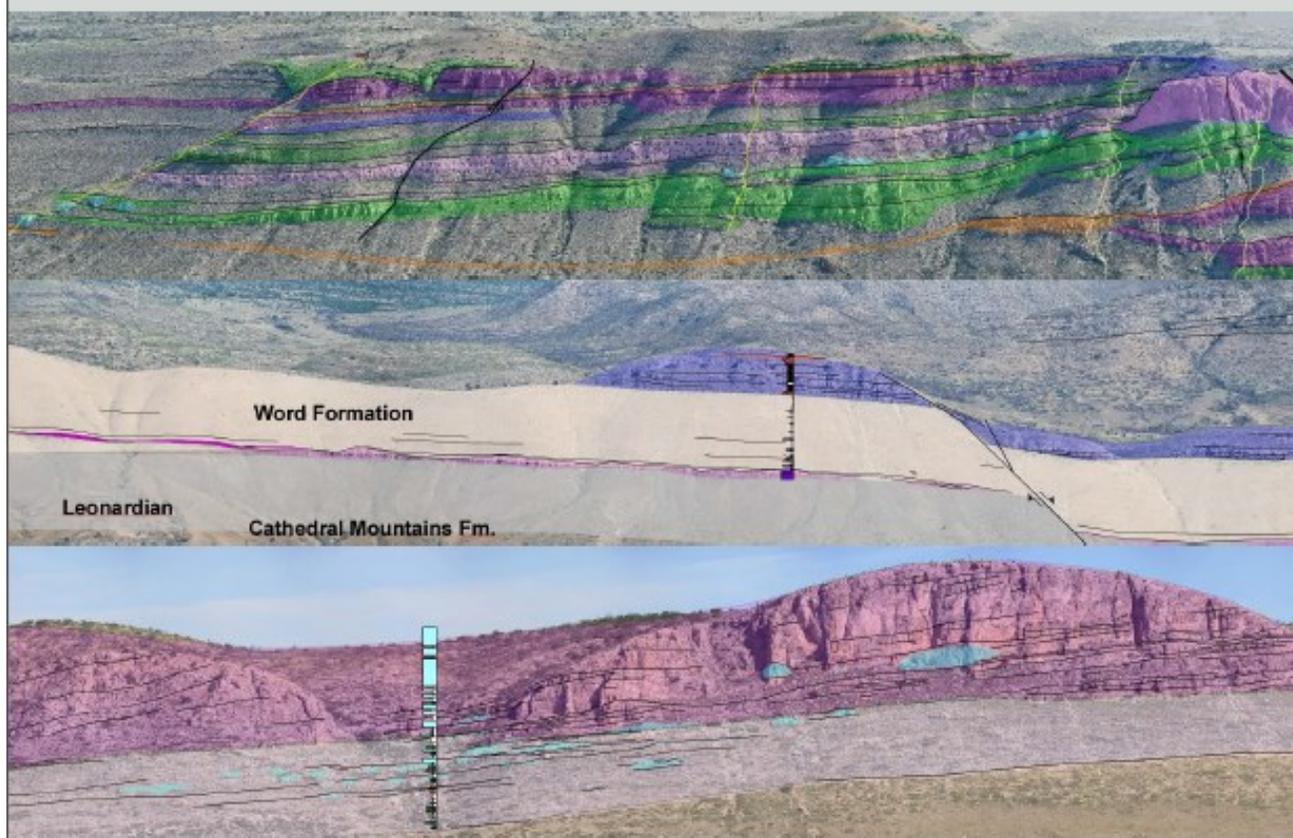
Further up section, the Cathedral Mountain Fm., the Road Canyon Fm., and the base of the Word Fm. consists of a thick (~150 m) stack of thinly bedded siltstone intercalated with thin sandstone and carbonate turbidites with several 8-20 m thick debris flows. The Leonardian Guadalupian boundary has been established at the base of those debris flows in the Road Canyon Fm., making this interval a time equivalent of the Cut Off Fm. in the Guadalupe Mountains. This silty slope section is overlain by approximately 50 m of crinoidal sandy grainstone grading upward into sand-rich well-sorted peloidal grainstone. This shallower water interval is overlain by a thick section of silt to medium grained sandstone interbedded with rare thin carbonate gravity flows. This interval contains however, massive (up to 30 m thick and 100 m wide) blocks of bedded dolomitized boundstone floating in a conglomerate matrix. These blocks are interpreted as a massive failure of probably an aggrading dolomitized reefal margin. The sand-rich slope grades upward into an interval of thin-bedded silty dolomitized mud to wackestone, with rare fine-grained sandstone beds and coarse faintly graded crinoid brachiopod rudstone interpreted as thin carbonate gravity flow deposits. This thin bedded silty slope interval gradually changes into an interval with similar thin-bedded silty dolomitized mud-wackestone, interbedded with more massive dolomitized boundstone forming 1 to 6 m bioherms. Gradually the bioherm interval becomes more massive to form clinothems that make up the massive cliff Vidrio Fm. at the top of the section.

WTGS Luncheon Talk –April

(Jenson, Abstract Cont'd)

The stratigraphy exposed in this part of the Glass Mountains is somewhat different to the one established in the Diablo and Guadalupe Mountains. Based on our work, existing literature and the available biostratigraphic data, we are proposing an initial correlation to the well-established stratigraphy of the Guadalupe Mountains using the sequence architecture and nomenclature established in the Guadalupe Mountains.

Early to Mid-Permian stratigraphy and slope system in the Southern Delaware Basin, Glass Mountains



Biography

Xavier Janson received his Ph.D. from the University of Miami in 2002, where he was a student in the Comparative Sedimentology Laboratory. He received a D.E.A. degree (equivalent to an M.Sc.) from the Institut Francais du Petrole. He joined the Reservoir Characterization Research Laboratory at the Bureau of Economic Geology of the Jackson School of Geosciences at the University of Texas at Austin in 2002, where his current research involves using outcrop and subsurface geologic and petrophysical data from carbonate reservoir strata as the basis for developing new and integrated methodologies for better understanding and describing the 3D reservoir environment.

PBS-SEPM Luncheon Talk –April 15,2014

Gary Gianniny, Ph.D.

“ Synchronous Maximum Flooding Across the Paradox Basin, Pennsylvanian Hermosa Group, Southeastern Utah and Southwestern Colorado”

Fort Lewis College, Durango, CO 81301
Tuesday, April 15, 2014 - Midland Center, 11:30 a.m.

Abstract

While the idea of relative sea level being controlled by a combination of eustasy, tectonism and sediment supply is not new, the ability to demonstrate this in Pennsylvanian sediments of the Hermosa Group on opposing sides of the Paradox basin in SW Colorado and SE Utah has only recently become possible. New studies on the eastern shelf of the basin facilitate this by combining sequence stratigraphy (Gianniny and Miskell-Gerhardt, 2009), conodont and fusulinid biostratigraphy (Ritter et al., 2002, and 2010) as well as outcrop to basin well log correlations (Miskell-Gerhardt et al., 2010).

On the more tectonically quiescent western shelf, the maximum flooding surface of the entire Hermosa Group is marked by the open marine conodont-bearing black dolomudstones, of the Chimney Rock Shale in the Desert Creek oil and gas interval. Ritter et al., 2002 demonstrated that this shale shares a distinctive conodont and fusulinid fauna with the eustatic highstand of the Midcontinent Verdigris cyclothem. Also on the western basin margin, the anomalously thick, stacked Desert Creek carbonate mound parasequences in the Aneth field, SE Utah (Weber et al., 1995), occur 20-40 km basinward of the older and younger carbonate shelf buildups exposed in outcrops of the Goosenecks area. However, in contrast to the eastern margin, subsurface data indicate that the Aneth Field carbonate mound complex developed as an isolated platform on a fault block that was insulated from sediment supply dynamics on the western shelf during the deposition of the Desert Creek interval.

On the tectonically active, eastern margin of the basin north of Durango, Colorado, thick carbonate phylloid biostromes cap coarse delta deposits that are coeval to Chimney Rock Shale/early Desert Creek interval sediments. In the latest part of the Desert Creek interval the marine portion of the sequence was terminated by a 9 km basinward shift in facies. Even though sediment supply (coarse clastics and shallow water carbonate) during the deposition of previous sequences moved the shoreline towards the basin, the Verdigris-equivalent eustatic high in the lower Desert Creek interval created enough accommodation space to produce back-stepping and the thickest carbonate unit of the eastern shelf of the basin.

Biography

Professor Gary Gianniny of the Fort Lewis College Geosciences Department started his geology trek by earning his B.A. in Geology from Colorado College in 1983. In 1990 he received his M.S. in Geology from the University of Wisconsin, Madison, with an emphasis on Paleobiology, and in 1995 he received his Ph.D. in Geology from the University of Wisconsin, Madison. Dr. Gianniny's doctoral research focused on the facies and sequence stratigraphic evolution of the mixed carbonate-siliciclastic strata from the Lower Desmoinesian of the southwestern Paradox basin, Utah. After his graduate work he joined the Wisconsin Geologic and Natural History Survey as a carbonate sedimentologist and worked with a team of scientists investigating the stratigraphic control on dissolution in the karst aquifer of Silurian carbonates of Door County Wisconsin. Dr. Gianniny then taught at Beloit College as a visiting assistant professor for a semester before moving to a postdoctoral research and teaching position at Idaho State University in 1996. His collaborative research on the Snake River Plain has combined sedimentological characterization of the aquifer with a fascinating record of Pleistocene climate change from lacustrine sediments. From 1997 to the spring of 1999 he was an assistant Professor of Geology at Bucknell University, in the heart of the Appalachian fold belt. Dr. Gianniny joined the faculty at Fort Lewis College in 1999, and was awarded the FLC Scholar of the Year in 2011. His current research focuses on the interaction of sea level, climate, and tectonics on the sedimentary record. In these studies he has recently authored or co-authored papers and or abstracts on the sequence stratigraphy and microbial carbonates of the Pennsylvanian Hermosa Group, the sequence stratigraphy and diagenesis of the Mississippian Leadville Limestone, and Cretaceous Fruitland Formation. In addition Dr. Gianniny been collaborating with his wife, Dr. Cynthia Dott of the FLC Biology Department on studies of the impacts of dams on riparian aquifers, sediment storage, and the resultant changes in plant communities on the Dolores, Animas, and San Juan Rivers. Currently he is teaching stratigraphy and sedimentology, historical geology, sequence stratigraphy, weather and climate. For the last 8 years Dr Gianniny has also taught upper division interdisciplinary courses on regional and international water issues in his Water in the West and Rivers of Thirst classes.

Dr. Gianniny is a member of Geological Society of America (GSA), the Society for Sedimentary Geology (SEPM), The International Association of Sedimentologists (IAS), The American Association of Petroleum Geologists (AAPG), The Rocky Mountain Association of Geologists, and is the President of the Four Corners Geological Society.