

Midland in Spring, Weather Atlas

PBS-SEPM NEWSLETTER

April 2021

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KEY DATES For April and May 2021

APRIL 2021

- **7: PB-SPE Luncheon**, [Virtual](#), 11:30am-1pm, Kyle Haustveit, Making Decisions Using Completions Diagnostic Tools in Unconventional Reservoirs
- **13: WTGS Luncheon**, [Virtual](#), 11:30am-1pm, Robert Villegas, Machine Learning 101
- **20: PBS-SEPM Luncheon**, Bush Convention Center & Virtual, 11:30am-1pm
- **27: SPWLA-PB Luncheon**, [Virtual](#), 11:45am-1pm, Alberto Ortiz, Petrophysical Evaluation of the Vaca Muerta Formation in the Last 5 Years of Unconventional Shale Play Development (YPF)
- **27-29: SPE Virtual Career Pathways Fair**, [Register](#)

MAY 2021

- **6-9: WTGS 2021 Spring Field Trip**, Old Rocks, New Ways: The Precambrian through Devonian of Far West Texas & New Mexico, Andy Roark, [Register](#)
- **18: PBS-SEPM Luncheon**, Bush Convention Center & Virtual, 11:30am-1pm
- **27: SPWLA-PB Luncheon**, [Virtual](#), 11:45am-1pm, Mayank Malik, Maximizing Value from Mudlogs: Integrated Approach to Determine Net Pay

President's Column

Welcome to April, and the greening up (such as it is) of the Permian Basin. After a rough winter in many ways, it is nice to see the sun shining, oil prices rising, and Covid declining. Let's hope all three continue, two of them in sustainable moderation!

This month is a busy time, marking our Residual Oil Zone Core Workshop and Field trip chaired by Dr. Bobs (Lindsay and Trentham) and Steve Melzer, along with results from others field trips to see Bone Spring Outcrops, as Dr. Zane Jobe presents his current research efforts to the monthly technical luncheon. Be sure to check out both! Registration is available on the website, or you can mail in the ROZ Registration form later found on page 6 in this newsletter. To RSVP for the luncheon, you can use the website, or simply email the office at info@pbs-sepm.org.

Next month continues the outcrop theme as Dr. Carol Hill (author of our popular Delaware Basin tome) visits Midland in person (we hope) to discuss her two decades (plus 10%) of research in the karst system caves and along the outcrops of the Grand Canyon. She will also be available (possibly with one of her co-authors) to autograph her new book about that topic. She has also expressed a willingness to autograph any copies of the Delaware Basin book that folks bring with them. Additionally, Dr. Hill has all afternoon available before her flight leaves Midland. If you or your company would like to schedule some time to talk to her about the Delaware Basin privately, please let us know (using that same office email address above) and we will block off 30 minutes in her schedule for you. Appointments are on a first-come, first served basis. Also, please don't forget that May's technical lunch will also be our annual meeting, including awards and the scholarship give-away.

We have already started putting together the roster of candidates for the 2021/2022 Board to join Dan Scott as he takes over the presidential position. Don't be shy, throw your name in the hat if you have a desire to help your fellow geoscientists, improve your network, or just have input into the things PBS-SEPM brings to its members!

Finally, I would like to remind you that Dr. Rebecca Dodge will have her "Texas As Art" calendars available at the April luncheon (see Alexis' article in last month's newsletter to learn more). Proceeds from the calendar will go to scholarships for remote-sensing based student research.

Stay safe. See you at the meetings!

Mike Raines

PBS-SEPM President 2020-2021



PBS-SEPM Luncheon Talk – April 20, 2021

Zane Jobe

**Research Professor at Colorado School of Mines
Chevron Center of Research Excellence (CoRE)**

“Progradational Slope Architecture and Carbonate-Siliclastic Sediment Partitioning in the Outcropping Bone Spring Formation: Implications for Reservoir Heterogeneity in the Delaware Basin”

Wylie Walker, Rick Sarg, Lesli Wood

Tuesday, April 20, 2021 - [Bush Conventional Center & Virtual](#), 11:30 a.m.

~Will be available virtually through [GoToMeeting](#).~

Abstract

Sediment transport and partitioning are important for understanding slope-building processes in mixed carbonate-siliciclastic sediment routing systems. The Bone Spring Formation, Delaware Basin, west Texas is a mixed carbonate-siliciclastic system that has been extensively studied in its basal extent, but poorly constrained at its proximal, upper slope segment. In this study, we constrain the stratigraphic architecture of the proximal Bone Spring outcrops in Guadalupe Mountains National Park in order to delineate the dynamics of carbonate and siliciclastic sediment delivery to the basin. These upper-slope deposits are composed predominantly of fine-grained carbonate slope facies interbedded at various scales with terrigenous hemipelagic and sediment gravity flow deposits. We identify ten slope-building clinothem that vary from siliciclastic-rich to carbonate-rich; each clinothem is truncated by slope detachment surfaces that record large-scale mass-wasting of the shelf margin. X-ray fluorescence data indicates that slope detachment surfaces contain a higher-than-normal proportion of terrigenous siliciclastic sediment, suggesting failure is triggered by accommodation or sediment supply changes at the shelf margin. Furthermore, a well-exposed siliciclastic-rich clinothem, identified here as the 1st Bone Spring Sand, provides evidence that carbonate and terrigenous sediment were deposited contemporaneously, suggesting both autogenic and allogenic processes influenced the Bone Spring Fm. stratigraphy. This mixing of lithologies at multiple scales and the prevalence of mass-wasting act as a primary control on the stacking patterns of siliciclastic and carbonate lithologies on not only the Bone Spring margin, but also in the distal portion of the Delaware Basin.

Biography

Zane Jobe is a research professor at Colorado School of Mines and the Director of the Chevron Center of Research Excellence (CoRE) - <http://core.mines.edu/>. Prior to Mines, Zane spent 6 years in the Clastics Research Team at Shell Oil Company. His research interests aim to better understand the stratigraphic architecture, scaling relationships, and sediment budgets for clastic depositional systems, with an emphasis on submarine environments. Zane also manages the “Earth Resource Data Science” program at Mines (<https://online.mines.edu/er/>), which focuses on applied data science and machine-learning using python and subsurface datasets. Zane also enjoys cycling and hunting and thinks that copious amounts of yard work can be cathartic. Zane received a B.S. in Geology from the University of Texas at Arlington in 2004, and a Ph.D. in Geology from Stanford University in 2010 (advisor - Don Lowe).





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Luncheon Program
Speaker Award
Publications

Please email us at info@pbs-sepm.org to get more details about the position
or committee.

PBS-SEPM Luncheon Talk & Annual Meeting– May 18, 2021

Carol Hill

**Adjunct Professor of Earth & Planetary Sciences
at the University of New Mexico**

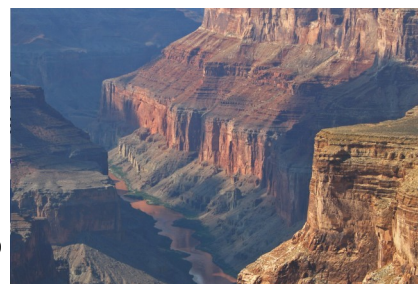
“Grand Canyon: Monument to an Ancient Earth, Can Noah's Flood Explain the Grand Canyon?”

Tuesday, May 18, 2021 - [Bush Conventional Center & Virtual](#), 11:30 a.m.

~Will be available virtually through [GoToMeeting](#).~

Abstract

There are three profound mysteries involving the origin of Grand Canyon: (1) How old is Grand Canyon – is it old (~85 Ma) or young (~6 Ma)?; (2) How did the Colorado River cross the topographic high of the Kaibab arch – water cannot flow uphill?; and (3) How could the Colorado River have become “lost” through Glen Canyon and Grand Canyon – there is no trace of it from the Utah-Colorado border to the mouth of the canyon from ca. 11 Ma to 5.5 Ma. This is the story of our 20+ year Grand Canyon project that has tried to solve these three mysteries from our knowledge of caves and karst. It starts from the time of writing my Carlsbad Cavern book (1986) and my Geology of Delaware Basin book (1996), and it continues to the present. It focuses on Grand Canyon caves, and you will see lots of beautiful Grand Canyon and Grand Canyon cave photos as I tell this story.



Biography

Carol Hill is a graduate of the University of New Mexico and is now an Adjunct Professor in the Earth and Planetary Sciences and Continuing Ed Departments. Her main research areas have been the Guadalupe Mountains of New Mexico and the Grand Canyon of Arizona. One of her specialties is caves and karst, and she is the author of the books Cave Minerals of the World and Geology of Carlsbad Cavern. She has also published the book Geology of the Delaware Basin: Guadalupe Mountains, Apache Mountains, and Glass Mountains with the SEPM-PBS on the regional geology of the area, tying in the hypogene origin of Guadalupe caves with the oil and gas fields of the Delaware Basin. She has worked in the Grand Canyon for the last 23 years and is the author of the all-color book Grand Canyon: Monument to an Ancient Earth and also of many published papers on the geology and karst hydrology of the Grand Canyon, including those in Science and Earth-Science Reviews (Elsevier). She has been featured on NOVA and National Geographic TV for her work in Carlsbad Cavern and Grand Canyon.





Permian Basin Section-SEPM ROZ Core Workshop & Field Trip



Friday April 16 (8 AM-2 PM), Bush Convention Center, Midland, Texas
Saturday-Sunday April 17th-18th, 2021 – Field Trip, New Mexico

Registration Form

PBS-SEPM is Hosting a Two-Part Residual Oil Zone (ROZ) Core Workshop and Field Trip

The ROZ Core Workshop will begin at 8 AM in the Ballroom at the Bush Convention Center. Light pastry options will be available for breakfast. We will have a total of 5 cores available:

- Goldsmith San Andres Unit #1-335A (Main Pay), XTO, Ector - Goldsmith San Andres Unit # 1-9-WC (ROZ), XTO, Ector
- Goldsmith-Landreth San Andres Unit 190, Kinder Morgan, Ector - Hanford San Andres Unit #501, Faskin, Gaines
- Shafter Silver District, Ross Mine Formation, Marfa Basin (*Faults, Hydrothermal Silver, and Oil*), Pecos (2 Cores)
- Cleveland # A-601, Riley Permian, Yoakum - Miss Kitty # 669-704, Riley Permian, Yoakum

Lunch at the Bush Convention Center will be included. The workshop will end at 2 PM. Field trip attendees will board SUVs to head to the Stevens Hotel in Carlsbad, New Mexico. Friday evening will include a group dinner along with an overview of the outcrop stops. Saturday begins at 6 AM (MT) with breakfast at the hotel and a 7 AM departure to Laurel Canyon west of Carlsbad. Box Lunch is provided (both days). Saturday stops end at Stone Canyon. Everyone is free to decide their individual plans for dinner. Sunday morning's schedule is identical to Saturday, with stops starting at Cloudcroft, then moving to Northern Ruidoso before heading east. Sunday's stops will include the present day lower San Andres recharge area west of Roswell, which has well developed karst. The trip will end with a return to Midland, arriving around 6 PM at the Bush Center.

If you are interested in sponsoring this event, either for the food, supplies, transportation, or student sponsorship, please send an email to info@pbs-sepm.org with your name, company, contact information, and amount you would like to contribute.

If you are interested in driving one of the 5 SUVs on this trip, please send an email to info@pbs-sepm.org with a copy of your Driver's License, Insurance Information, and a few notes of previous experience driving off road in SUVs.

Field trip attendance is limited to 35 registrants, on a first-come, first-served basis.

The Core Workshop and Field Trip give you a chance to see:

- The ROZ interval (and its oil saturation variations with depth)
- Lower San Andres Limestones below the ROZ
- Pay Zones in the Horizontal San Andres Play*
- San Andres meteoric water recharge area
- Impact of Meteoric water-sweep (on fluids and rock)
- Maturity enhancements in clastics exposed to volcanics
- Diagenesis related to volcanic hydrothermal waters
- Stratigraphic and depositional styles of the San Andres
- Karst/ collapse breccia in San Andres in outcrops
- Two newly slabbed silver mine cores, never before described

* Yoakum is the most active area, with 250 wells since 2014, producing 300,000 BOPD. Riley's cores are in the heart of the play.

Registration Fees

Core and Field Trip:	PBS-SEPM Members \$425 ()	Non-Members \$460 ()	** Students \$325 ()
Workshop Only:	PBS-SEPM Members \$250 ()	Non-Members \$285 ()	** Students \$125 ()
Field Trip Only:	PBS-SEPM Members \$350 ()	Non-Members \$385 ()	** Students \$200 ()

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To purchase online, go to <https://www.pbs-sepm.org/events-1/roz-core-workshop-and-fieldtrip> and pay by card

** - Student rate is limited to full time students who are not employed full time

Get Two Free Months of Membership!

Join now and receive the remainder of the 2020-2021 season for **Free !**

Purchase your 2021-2022 Annual Dues now (\$25) and become a member in good standing this year, too!

- *Help provide Geoscience Scholarships*
- *Annual YP Field Trip led by discipline leaders*
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- *Monthly Technical Luncheon series*
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Please visit our website, www.pbs-sepm.org, to find our membership form, or reach out via email to info@pbs-sepm.org to speak to a board member. Pay by check made out to PBS-SEPM and send to our physical address – 2900 West Front St, Midland, Texas 79701 – call (432) 279-1360 to make a credit card payment – or pay online via the website.





PBS-SEPM
Young Professional & Intern Field Trip
Save the Date
June 4th - 6th, 2021



Designed for Engineers, Geologists, and Landmen

A three day long multi-disciplined field trip in the **Guadalupe Mountains** for geology, engineering and land young professionals, interns, and new hires.

The intention is to educate participants in combining outcrop data with industry exploration and production techniques in a multi-disciplined environment

POSTPONED TO 2022

Participants will leave Midland, TX on Friday, June 4, and travel to Carlsbad, NM, where they will stay at the Stevens Inn for both Friday and Saturday night. In the evening of Sunday, June 6, all will return to Midland, TX.

~More information to come as well as our registration flyer. Also, reach out to [Robert Campbell](#) for questions.~



PBS-SEPM Publications



PBS-SEPM PUBLICATION HIGHLIGHT

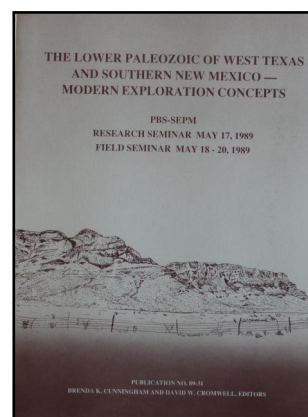
“The Lower Paleozoic of West Texas and Southern New Mexico—Modern Exploration Concepts” 1989

[\\$17.50 Members \\$21.88 Non-Members](#)



Section I: Field Seminar Road Log for all three days

Section II: Technical Papers covering both the Cambrian-Ordovician Systems and the Silurian-Devonian Systems, including but not limited to depositional facies and models, sequence stratigraphy, geochemistry, petrophysical characteristics, and geologic controls on reservoir development, from authors: J. Stageman, David LeMone, Russell Clemons, Charles Kerans, F.J. Lucia, Joachim Amthor, Gerald Friedman, S Mazzullo, B Ijirigho, J Schreiber Jr, M Holt, Noel Tyler, T Versepunt, Charles Mear, Richard Geesaman, Alan Scott, Timothy Garfield, Mark Longman, Louis Mazzullo, Terry Durham, Tim Speer



Entire PBS-SEPM publication library (1955 – 2007)

There is a fully searchable Table of Contents—find a topic or author just by typing in the word(s). All publications are in Adobe PDF with all major articles being bookmarked, and all the figures are linked in the text for quick reference. Those areas that are off limits to geologists like the Glass Mountains or Sierra Diablos have been written up in these publications. Numerous out-of-print publications and figures and/or plates not published in the original guidebooks are now available in this library.

DVD I - Symposia & Guidebooks (1955-1989)

Member- **\$125.00** plus 8.25% tax and \$5.00 shipping and handling
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Entire Set of three DVDs

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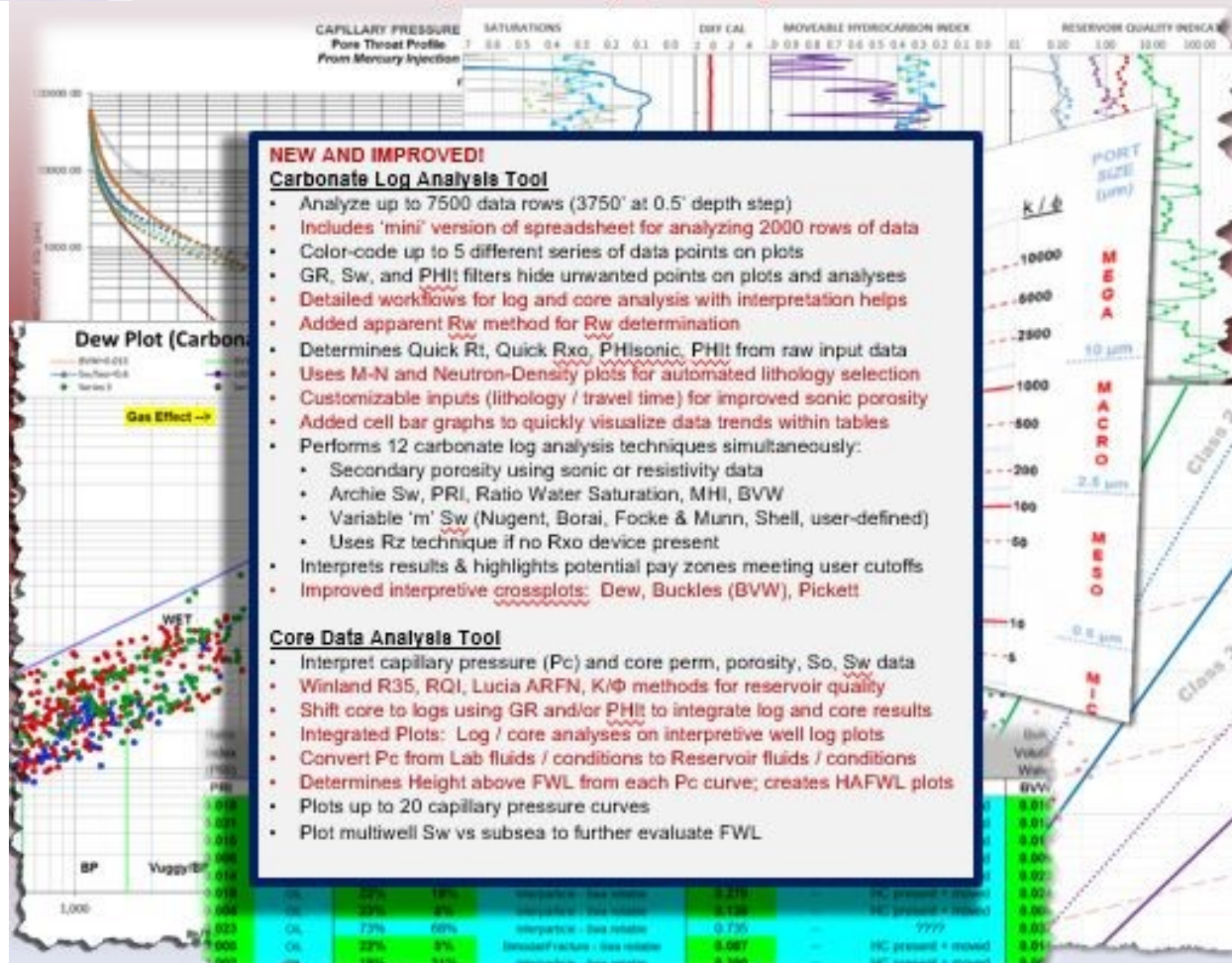
For additional information contact: PBS-SEPM office (432) 279-1360 or info@pbs-sepm.org.



Carbonate Log & Core Analysis Spreadsheet v. 5.0 By Cory L. Hoffman, Ph.D.

Major Upgrade (January 2020)! [Designed for Microsoft Excel 2013]

Carbonate Log analysis draws heavily upon teachings of George Asquith
Core Data analysis draws heavily upon teachings of Dan Hartmann



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Sponsorship Information (2020-2021)

Our non-profit society relies entirely upon the efforts of dedicated volunteers to serve the geological community—primarily through educational events. The PBS-SEPM hosts luncheon lectures, core workshops and field trips that are led by experts in their chosen areas of the geosciences. If you would like to sponsor the PBS-SEPM in anyway, we have various levels of commitment you can choose from.

Platinum: \$1500+: Company Logo for 2 years on YPFT field trip, core workshops, luncheon slides, newsletters, website, or new publications (from date of donation)

Gold: \$1000: Company logo for 1 year on the YPFT field trip (which includes guidebooks and other paraphernalia-stickers, pens/pencils, rite in the rain books), luncheon slides, newsletter, and website

Silver: \$700: Logo on the core workshop / one day field trip (which includes guidebooks), luncheon slides, newsletter, and website

Bronze: \$400: Will get their logo on all PBS-SEPM luncheons, newsletters, and the website.

Aluminum: \$250: Will get logo on all luncheons slides, and table tent for one luncheon date.

If you are interested in a sponsorship opportunity, please call PBS-SEPM for more details at (432) 279-1360 or e-mail info@pbs-sepm.org.

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If you are interested in a sponsorship opportunity, please call PBS-SEPM for more details at (432) 279-1360 or e-mail info@pbs-sepm.org.

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? Send us an e-mail to share your idea, your PBS-SEPM Executive Board wants to hear from you!

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.

PBS-SEPM prides itself on its success in providing high caliber speakers as well as exceptional core workshops and field trips. PBS-SEPM also provides scholarships to graduating high school students in western Texas and New Mexico. These scholarships are on occasion, offered to college students that have declared their desire to pursue a degree in the geosciences. Through continued support from the industry, PBS-SEPM can continue to provide excellent educational opportunities for the oil and gas industry.

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

Scholarship and Distinguished Speaker Events (2020-2021)

Wendell J. Stewart Fund: so named for the famous sequence stratigrapher, was initially funded by the family, and then later through PBS-SEPM members who have contributed over the years. In the past, the scholarship was established to award high school students intending to pursue a college education in the geoscience field (declared major), and had evolved to include college students actively pursuing a geology degree when there were no other qualified candidates. Funding for this scholarship has waxed and waned over the years with the changes of the petroleum industry and because this scholarship is set up in such a manner that only the interest can be used to distribute funds, most scholarships in the last 30 years have been awarded through the PBS-SEPM main budget and not the scholarship fund.

We are proud to announce that we had two receivers for the Wendell J. Stewart Scholarship Fund in May 2020: Vanessa Armendariz, an undergraduate petroleum geologist at UTPB, and Heather Dudley, a paleontology graduate student at Sul Ross.

Robert Read Distinguished Lecturer Fund: was founded to honor a bright, young geologist who had been an active member of both PBS-SEPM and WTGS and was tragically killed by a drunk driver. Donations from various members of both societies contributed to a membership donation fund that both encourages our continuing education efforts by helping offset the cost of bringing in a distinguished lecturer, usually in geosciences, but not required.