BULLETIN

Corpus Christi Geological Society



and

Coastal Bend Geophysical Society



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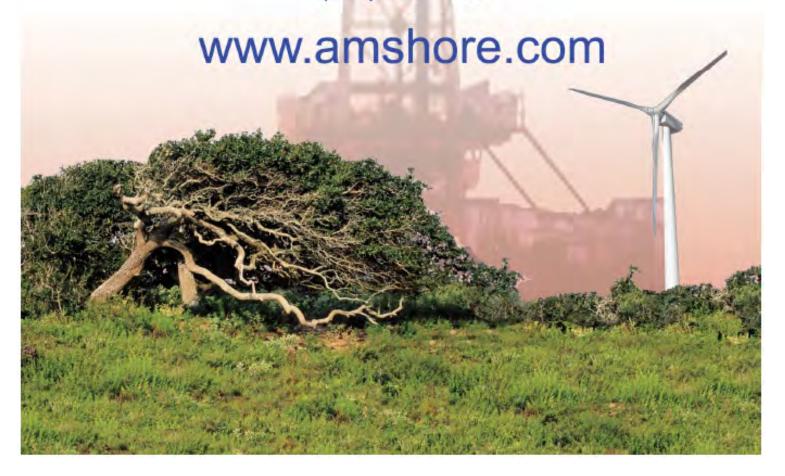


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Type Logs



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Visit the geological web site at www.ccgeo.org

CCGS/CBGS JOINT MEETING SCHEDULE 2019-2020

		Sep	temb	er					Oct	tober	ı					Nov	emb	er		
S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S
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8	9	10	11	12	13	14	6	7	8	9	10	11	12	3	4	5	6	7	8	9
15	16	17	18	19	20	21	13	14	15	16	17	18	19	10	11	12	13	14	15	16
22	23	24	25	<mark>26</mark>	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23
29	30						27	28	29	30	31			24	25	26	27	28	29	30

Thursday, Sept. 26th at 5:30-8:00p.m. Kickoff at Hoegemeyer's Barbeque Barn.

12-1:00pm Speakers: Richard Parker Geophysicist w/Schlumberger Edgar Velez geomechanics domain champion for the western hemisphere

11:30-l:00 pm Speaker: Dr. Neil Bockoven "Early Human Interactions & Migrations—Three Mysteries"

		De	cem	ber					Ja	nuar	y					Fel	rua	ry		
S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S
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29	30	31					26	27	28	29	30	31		23	24	25	26	27	28	29

12-1:00pm

Speaker: Peter M. Duncan President & CEO of Micro-Seismic, Inc. "Frac-Driven Interactions & Well Spacing: A Microseismic Perspective Dr. Charles Puryear-Senior Research Geophysicist at Multi-Physics Technologies **CCGS/CBGS Joint Meeting Schedule 2019-2020**

		M	Iarch						A	April						M	lay			
S	M	T	W	Th	F	S	S	M	T	W	Th	F	S	S	M	T	W	Th	F	S
		2	2020							2020)						2020	0		
1	2	3	4	5	6	7				1	2	3	4						1	2
8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9
15	16	17	18	19	20	21	12	13	14	15	16	17	18	10	11	12	13	14	15	16
22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23
29	30	31					26	27	28	29	30			24	25	26	27	28	29	30
														31						

Calendar of Meetings and Events

Calendar of Area Monthly Meetings

Corpus Christi Geological/Geophysical Society	
SIPES Corpus Christi Luncheons	
South Texas Geological Society Luncheons	Second Wed—noon San Antonio
San Antonio Geophysical Society Meetings	Fourth Tuesday
Austin Geological Society	First Monday
Houston Geological Society Luncheons	Last Wednesday
Central Texas Section of Society of Mining, Metalllurgy & Exp	2 nd Tues every other month in
	San Antonio



CCGS PRESIDENT'S LETTER

For someone like me, there was a distinct advantage to have bailed on the traditional college after high school that most professionals take. Having had an industry job offer while I was drifting through college basics, the decision to enter the work force rather than finish school was an easy one for me to make at the time. Being exposed to every aspect of exploration and production was a good way for me to ultimately decide to go for a geology degree. That exposure allowed me to streamline my collegiate experience and really focus on the disciplines I knew I would be using professionally. I bailed on the three hour silent films in Film & Culture to immerse myself in the lab to study hard rocks for Igneous and Metamorphic Petrology. I chose geomorphology projects that I knew would assist in my understanding of depositional environments, and choosing my field camp in Ireland were among the choices I made in my late twenties that I doubt I would have made in my late teens and early twenties. Field Camp in Ireland was arguably the best decision I ever made, outside of asking my now wife on a date that would eventually provide me with my greatest achievement, fatherhood. Ireland is touted as the best petroleum geology field camp on planet Earth. Chevron sends their first earth geologists to study the same outcrops our class did. We even sat in on one of their classes prior to getting on a boat and salivating over the Ross formation outcrops, beautiful turbidites from the carboniferous age, productive in the North Sea. The anticline on our Nye XP website was taken from that boat trip. Those outcrops look like seismic cross sections above the surface and are fun to "map" in your head as the boat lazily cruises within a stones throw away. Unfortunately, we only received two weeks of petroleum focused field courses. However, Ireland has much to offer in the way of geology. Our first assignment was in a bog, a real one, where the oldest butter in the world was found; no joke, a 2,000 year old 20 pound chunk of butter that was still edible was unearthed in an Irish bog in recent history. Anoxic environments can be pretty cool, I guess. I'll never forget standing there in the bog, sheep bleating, looking at a gorgeous outcrop that didn't seem to belong there. One of the professors walked up and asks if we knew what we were looking at. Of course, I said, that looks like a complete A-F Bouma sequence from my Sed Strat text. After inquiring as to which text I was using, the professor confirmed I was looking at the same outcrop from the text. Ireland is full of these classic geologic type examples, from glaciology, pillow basalts, the most amazing folded marble on the planet, famous shale outcrops in the Burren, the Ross turbidites, the "inconceivable" Cliffs of Moher, karst topography, crinoid forests, gorgeous skarn samples from the Galway uplift contact with the Carboniferous carbonates, and of course, their famous green marble. Ireland enjoyed an extremely exciting geologic history being in the middle of a continental collision and then a rift. The Galway granite is the reason for the Ross turbidite outcrops being frozen in time the way they are as the hydrocarbons were overcooked. I spent a few weeks ahead of the field camp with a mutual friend who ended up becoming family. They took me trout fishing, pigeon and fox hunting, site seeing, the works. The Irish people are much like rural Texans, they go out of their way to be friendly and inviting and are some of the happiest folks I've met in spite of the issues their country is facing. If you ever have a chance to explore Ireland, I highly recommend Connemara and County Clare for geologic

wonder. I cherish that experience and would encourage any students reading this to get way ahead of the deadline and get in on that camp

I am looking forward to an exciting year ahead. Starting off in January we have a very interesting talk by Peter M Duncan, "Frac-Driven Interactions and Well Spacing: a Microseismic Perspective." On Friday April 17th we are having the Golf Tournament and Pub Crawl on Saturday the 18th. These fun events are scheduled back to back so people can participate in both.

I hope everyone has a wonderful holiday season and is geared up to hit 2020 running.

Austin N ye—CCGS President Vice President, Exploration & Land Nye Exploration & Production, LLC 802 N. Carancahua, Suite 1270



December 5, 2019

Randy and Dawn Bissell

Corpus Christi Geological Society

500 N Shoreline Blvd, Ste 902N

Corpus Christi, TX 78401

On behalf of the city of Ingleside, I would like to personally thank you for your involvement at the Backyard Nature event on November 23rd, 2019. This event was a huge success with your commitment to outreach to the local children. I am happy to say that the Mineral Rock Hunt was a huge success; it was by far the kid's favorite.

For it being the first time doing this event we had a decent turn out of about forty individuals. We hope that in the future you would be willing to do another event with us!

Once again thank you for your contribution!

Sincerely

Samantha Cass

Recreation Program Assistant



CBGS President's Letter

CBGS Board 2019-2020

Dr. Subbarao Yelisetti- President Samara Omar- Vice President Erik Scott- Secretary/ Treasurer Matt Hammer - Scholarship Chair Mark Wiley - Golf Chair Education – Robert Schneider

CBGS Scholarships

The Coastal Bend Geophysical Society (CBGS) has donated \$10,000 to the Department of Physics and Geosciences, Texas A&M University-Kingsville in support of the multidisciplinary Petrophysics Graduate Program that has been requested. These funds will be used as scholarships in attracting quality graduate students.

The board awarded three scholarships of \$2,000 each to undergraduate geophysics majors from Texas A&M University-College Station, University of Houston and Texas A&M University-Kingsville in 2017-2018. We will be awarding the scholarships again this year.

Scholarship Requirements

Criteria for awarding the Scholarship from Coastal Bend Geophysical Society of Corpus Christi, Texas:

- 1. Scholarships are open to undergraduate or graduate students.
- 2. Must have declared major in Geophysics, or Geology with a concentration in Geophysics or Petrophysics.
- 3. Preference is given to students attending Coastal Bend schools (TAMU-K, TAMU-CC and Del Mar College), then to Coastal Bend natives attending other universities.
- 4. Must have a GPA of at least 3.0 and be in good standing with the school.
- 5. Must make effort to attend a Coastal Bend Geophysical Society Meeting in Corpus Christi Texas after being awarded a scholarship to be recognized by the society.

News

- According to the U.S. Energy Information Administration (EIA) projections, U.S. crude output would rise to 12.3 million bpd in 2019 from a record 11 million bpd in 2018.
- At the time of writing this report, U.S. crude futures were trading around \$59 a barrel and expected to remain so for the balance of 2019, and \$57 and \$53 in calendar 2020 and 2021, respectively as reported by Scott DiSavino on reuters.com.
- According to Baker Hughes, U.S. oil drillers cut rigs to lowest since April 2017. The current rig count is 663. There were 877 active rigs in the same week a year ago.

CBGS Business

CBGS currently has 42 active members, 4 honorary members, and 40 student members. Raised \$1,200 towards student scholarships through membership revenue.

CBGS workshops/talks

CBGS will be organizing **2020 SEG Distinguished Lecture** entitled "*Automating seismic data analysis and interpretation*" by Sergey Fomel on February, 11th, 2020, from 11:30 am -12:30 pm. Sergey's biography and abstract can be found at https://seg.org/Education/Lectures/Distinguished-Lectures/2020-DL-Fomel

CBGS is also planning to host another lecture featuring Charles Puryear. Contact Samara Omar at Samara Omar@eogresources.com for additional details about these talks.

CBGS is looking forward to offer workshops/talks in the future. Topic/speaker suggestions are welcome. Email your suggestions to Samara_Omar@eogresources.com or Subbarao.Yelisetti@tamuk.edu

Golf Tournament

CBGS organized its annual **Golf Tournament** to fund its scholarship program in the first week of October, 2019 at Northshore Country Club. Raised ~\$1,600 for the scholarship fund. If you are interested in our next Golf Tournament, please contact Mark Wiley at Mark_Wiley@eogresources.com

New Degree Tracks at TAMUK

- Texas A&M University-Kingsville (TAMUK) started its first cohort of MS Petrophysics program in Fall 2018. If you are interested in joining this program in Fall 2019, please contact the graduate coordinator for MS in Petrophysics, Dr. Subbarao Yelisetti at Subbarao Yelisetti@tamuk.edu.
- BS degree in Geophysics, Minor in Geophysics and Certification in Geophysics offered at Texas A&M University-Kingsville since Fall 2017. Interested students can contact Dr. Subbarao Yelisetti (Subbarao Yelisetti@tamuk.edu) for additional information.

Seismology class

PHYS 5385 Seismology class will be offered in Spring 2020 at Texas A&M University-Kingsville. This is available for the professional community as well as our students. You can sign up as a "transient" student in order to take classes without actually enrolling in the school. If anyone in the professional community wishes to sign up for this, please contact, Dr. Subbarao Yelisetti <u>Subbarao.Yelisetti@tamuk.edu</u>.

Education/Events

-<u>SEG</u>

SEG 2020 annual meeting will be held in Houston, TX from Oct 11-16th. See https://seg.org/AM/2020/ for additional details.

See https://seg.org/Education/Lectures/Distinguished-Lectures for information about upcoming SEG distinguished lecture in Houston and other locations.

See https://seg.org/Education/Lectures/Honorary-Lectures for SEG honorary lecture locations in Texas.

-AGU

2019 Fall AGU annual meeting will be held in San Francisco, CA from December 9-13th, 2019. https://fallmeeting.agu.org/2018/future-meetings/

Monthly Saying

"Everything in geology is more complicated than what you see in a luncheon talk" - Jim Letourneau, 2004.

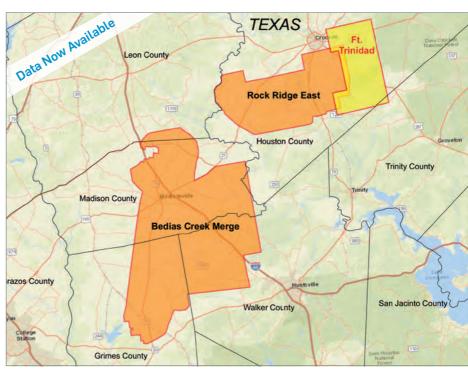
Monthly Summary

Texas Oil and Gas Info	Current Month	Last Month	Difference	
Texas Production	MMBO/BCF	MMBO/BCF	MMBO/BCF	
Oil	130.2	135.4	-5.2	August
Condensate	17.2	17.9	-0.7	August
Gas	799.6	811.7	-12.1	August
	Current Month	Yr to date - 2019	Yr to date - 2018	
Texas Drilling Permits	958	10851	12496	November
Oil wells	208	2639	3176	November
Gas wells	51	631	776	November
Oil and Gas wells	621	6724	7664	November
Other	20	125	119	November
Total Completions	866	8629	10236	November
Oil Completions	711	6555	8024	November
Gas Completions	117	1655	1657	November
New Field Discoveries	4	16	22	November
Other	4	32	37	November

Subbarao Yelisetti President, CBGS



New Ft. Trinidad 3D Survey Houston and Trinity Counties, TX



CGG continues to expand its East Texas footprint with high-quality 3D projects while illuminating the stacked pay formations.

Data is already available from our Bedias Creek Merge and Rock Ridge East projects. Orthorhombic PSTM from our newest project Ft. Trinidad is also now available.

The right data, in the right place, at the right time

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CORPUS CHRISTI GEOLOGICAL SOCIETY COASTAL BEND GEOPHYSICAL SOCIETY



LUNCHEON MEETING ANNOUNCEMENT

January 15, 2020

Location: Water Street Events (Previously the Seafood Company

Restaurant) 300 Block N. Water Street, CC, TX 78401

Student Sponsor: Imagine Resources, Nye Exploration, Viper Exploration, Ltd.

Bar Sponsor: Sponsorship Opportunities Available!!!!!!

Time: 11:30 am Bar, Lunch follows at 11:45 am, Speaker at 12:00 pm

Cost: \$30.00 (additional \$10.00 surcharge without reservation;

NO SHOW may be billed and non-RSVP attendees cannot be Guaranteed a lunch); FREE for students with reservation

(discounted by our generous sponsors)!

Reservations: Please RSVP by 4PM on FRIDAY Jan. 13th before the meeting!

E-Mail: <u>arrangements@ccgeo.org</u>

Please note that luncheons RSVPs are a commitment to the Water Street Events and must be paid even if you can't attend the luncheon.

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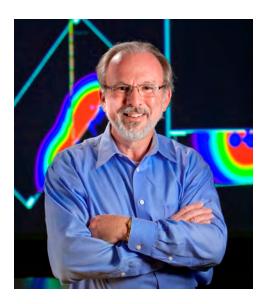
VIPER EXPLORATION,

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CCGS/CBGS January 15th Luncheon Speaker

VP's Note: Mr. Duncan's presentation will enlighten our Society about the realities of horizontal well interactions using the latest generation of seismic imaging technology. It is as much a geological topic, as geophysical. Please also see Peter's provocative essay in this issue of the CCGS Bulletin (previously published in HartEnergy).



Frac-Driven Interactions and Well Spacing: a Microseismic Perspective.

Peter M. Duncan

Summary: The issue of well spacing for optimal economic development remains one of the most important to unconventional development. The solution to the problem has been confounded by the prevalence of frac driven interactions (FDI's) between primary wells, that were often drilled to hold leases, and secondary wells drilled subsequently. Such interactions have often resulted in loss of production, sometimes permanently, in the primary well and below average production from the secondary wells. In turn this has meant a re-evaluation of EUR on several high-profile developments with a negative impact on market cap for the affected operators. Occasionally these frac hits have also resulted in wellbore damage, even to the extent of losing the well entirely. Interactions between wells have been observed at distances of several thousand feet. It appears that avoiding these interactions altogether is practically impossible. Various schemes for mitigation have been tested

and reported upon. After a brief review of this reporting, this paper will present microseismic observations of FDI's, describe how such data can be used to facilitate well bore spacing decisions and minimize negative well interactions.

Peter M. Duncan is President and CEO of MicroSeismic, Inc. a Houston based oil field service company specializing in hydraulic fracture stimulation surveillance and evaluation. He holds a Ph.D. in Geophysics from the University of Toronto. His early career as an exploration geophysicist was with Shell Canada and then Digicon Geophysical, first in Calgary then in Houston. In 1992 he was one of 3 founders of 3DX Technologies Inc., a publicly traded independent oil and gas exploration company. Duncan was 2003-04 President of the Society of Exploration Geophysicists (SEG). Duncan was the Fall 2008 SEG/AAPG Distinguished Lecturer speaking on the subject of Passive Seismic at 45 venues around the world. He is an Honorary Member of SEG, the Canadian Society of Exploration Geophysicists (CSEG), the Geophysical Society of Houston (GSH) and the European Association of Geoscientists and Engineers (EAGE). He received the Enterprise Champion Award from the Houston Business Journal in 2010, the World Oil Innovative Thinker Award in 2011, and was the 2013 EY National Energy Entrepreneur of the Year. In 2014 he received the Virgil Kauffman Gold Medal from SEG.

The King is Dead – Vive le ROI

Peter M. Duncan, MicroSeismic, Inc., Houston TX June 2019

The other day I asked the millennials in my office if they were familiar with King Hubbert. While most had heard of the concept of "peak oil", few knew that it was this celebrated Shell geologist who had modeled the rise and fall of US oil production some 63 years ago. The concept of hydrocarbons as a finite resource whose levels of production must ultimately peak and then decline is almost as old as oil production itself. What set Hubbert apart was that he developed a numerical model that incorporated statistical rates of discovery and for a time his model seemed spot on. He predicted US oil production would peak between 1965 and 71 then retreat. Indeed, US production did peak in 1970 and then declined for the next several decades. The accuracy of his predictions reinforced the perception that hydrocarbons were a limited resource that would become increasingly scarce before the turn of the century.

So long as the concept of "peak oil" was the guiding understanding of our industry and the investors who support it, operators were rewarded for replacing and increasing their reserves. A significant percentage of current income could be invested in finding new reserves that would be produced in the future at presumably ever-increasing prices. Indeed, the market allowed operators to spend more than their current income to find the resources of the future. Exploration and the 3P's (proven, possible, probable) of reserves were the order of the day. This set up an interesting and somewhat contradictory dynamic. Recognition by major producers that their giant fields were in decline was good for commodity prices. At the same time replacing reserves every year was good for attracting investment and maintaining stock prices.

We know now that King Hubbert's predictions of production decline and those of others since have been consistently overthrown by technology, innovation and the industry's resourcefulness. US oil production in 2018 exceeded the previous record set in 1970 and is continuing to grow. Mr. Huppert can hardly be faulted for not predicting horizontal drilling, high intensity fracking, microseismic monitoring and the way these developments have turned nano-Darcy rocks into producing reservoirs. Record setting production and the fact that the other 70 to 80% of the sedimentary rocks in

the world can now be reclassified as potentially productive has understandably called in to question the notion of "peak oil" or at least pushed that event out past the horizon of most investors. Monotonically increasing commodity prices have not materialized. Furthermore, a few rather public downward reserves revisions and the difficulty of estimating reserves in tight rocks have made the old business model unpopular.

The end game of all this has been a change in the way the market evaluates players in the business. It's no longer who can find the most for least, but rather who can produce at the lowest cost. Supply is unlimited. Live within cash flow. Drive cost out of the system. Exploration is mostly unnecessary. Geophysics mostly irrelevant. Geologists and geophysicists are increasingly finding themselves on the streets. Service companies are struggling to find their value in this new paradigm. Near term return on investment (ROI) is the new "king".

Don't get me wrong. Money is how you keep score and investors deserve a good return, but those of us who have been around for more than a decade have learned that nothing continues in a straight line for very long. Prudence requires acknowledgement that King Hubbert was not wrong, he just did not have all the future facts. We would be well advised to expect some surprises as we venture to exploit the tight rocks of the world. We would be well advised to invest in better characterizing these newfound reservoirs so as to drill better not just cheaper wells. I cringe when I hear an operator say they want to drill "a science well or two" with the expectation they will then have the knowledge to design a template to exploit the entire field. Geology is just not that simple. So please, settle down folks, spend a little on understanding these reservoirs to make more in the longer run. Long live the ROI.

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Wilcox	Buda	Cotton Valley
Olmos	Georgetown	Smackover

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Contact Walter S. Light Jr. President/Geologist 713.823.8288 EMAIL: wthunderx@aol.com

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GULF COAST ASSOCIATION OF GEOLOGICAL SOCIETIES

for the GCAGS JOURNAL



The peer-reviewed journal for Gulf Coast geoscience.

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The GCAGS Journal, the Journal of the Gulf Coast Association of Geological Societies, is soliciting manuscripts for the 2020 edition (our 9th volume). This peer-reviewed journal is focused on publishing studies of the geology of the onshore and offshore Gulf of Mexico. For the 2020 Journal, although other themes are welcome, we are soliciting manuscripts focused on the conference themes: "All Things Salt," Innovative Use of Technology, Gulf Coast Carbonates (e.g., Smackover), Sustainability, including Carbon Capture, Geomechanics, Temperature and Pressure, and Oil and Gas Field Studies.

Please submit an extended abstract of at least 600 words, including 1–2 representative figures, to the GCAGS Journal Editor, Bob Merrill, at rmerrill@catheart.com by December 16, 2019. Once topic is approved, a full manuscript must be submitted by April 2, 2020. GeoGulf (GCAGS) Convention presentations of Journal submissions are encouraged but not required. GeoGulf 2020 is scheduled for Lafayette, Louisiana, Sept. 30-Oct. 2, 2020.

Please visit www.gcags.org for open access to all of our 8 previous volumes.

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The GCAGS Journal, a peer-reviewed Journal published yearly by the Gulf Coast Association of Geological Societies, is soliciting member societies for associate editors. You would be involved with managing the peer-review process for 1 to 3 manuscripts that are submitted for publication in the GCAGS Journal. Ideally associate editors will contribute their local knowledge and expertise to the editorial process. If you are interested in being an Associate Editor for the GCAGS Journal, please contact Bob Merrill at rmerrill@catheart.com.







GeoGulf 2020 Call for Papers

70th GCAGS/GCSSEPM Convention and Exposition Sept. 30-Oct. 2, 2020 • Lafayette, Louisiana

Hosted by the Lafayette, Baton Rouge, and New Orleans Geological Societies

GeoGulf 2020 Session Themes

- "All Things Salt"—Tectonics, Oil and Gas, Seismic Acq., Proc., and Interp., Mining, etc.
- Machine Learning and Artificial Intelligence Applications
- GCSSEPM Special Session—Topic to be announced
- Gulf of Mexico Temperature and Pressure
- Smackover Session and Core Workshop
- GIS Technology and Applications
- Gulf Coast Environmental
- The Business Side—Legal, Unitization, Finance, Insurance, etc.
- Geoscience Applications of Drone Technology
- Geomechanics—Conventional and Unconventionals
- Carbon Capture / Underground Storage
- Shallow Hazards
- Success from Failure—Learning from our Mistakes
- And more—We are the place for Gulf Coast Geoactivities! We'll fit you in! Got an idea for a theme session, please let us know!

Professionals and Students: We welcome you to submit an abstract for consideration of oral or poster presentation of 250-300 words by February 3, 2020.

Early abstract submissions will be reviewed within a day or two of receipt with acceptance/rejection notification. Submit via email, title, author(s) (with full contact information for each, including company or school, full address with zip code, email, and phone number), and abstract (preferably with 1-2 representative illustrations including reference from text and with captions) to General Chair, James J. Willis, james.willis@gcags.org.

All accepted presenters are expected to submit an initial draft of full paper or extended abstract for publication in the *GeoGulf Transactions* by April 1, 2020, to the *GeoGulf Transactions* Editor, James J. Willis, <u>james.willis@gcags.org</u>. Full information, instructions, size limitations, and helpful hints for abstracts, extended abstracts, and full papers will be posted soon at <u>www.geogulf.org</u>.

If you'd like to publish in the GCAGS Journal, the peer-reviewed journal of Gulf Coast geoscience, submit an extended abstract of at least 600 words, including 1-2 representative figures, to the GCAGS Journal Editor, Robert Merrill (rmerrill@catheart.com) by December 16, 2019. Once accepted for publication, the deadline for submitting a full manuscript is April 2, 2020. Full instructions for manuscript submissions will be posted online at http://www.gcags.org. Convention presentations of Journal submissions are encouraged, but not required.

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Corpus Christi Geological Society

Golf Tournament

4-Person Scramble

April 17, 2020

12:30 p.m. Shotgun Start

At

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Portland, Texas

Golf Prizes Door Prizes Beverages Dinner

Contact:
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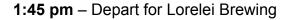




Corpus Christi Geological Society 3rd Annual Brew Pub Crawl Saturday, April 18, 2020

SCHEDULE

1:00 PM TO 1:45 PM – Meet at Railroad Seafood Station & Brewing Company, 1214 N. Chaparral, CC, TX 78401



2:00 pm to 2:45 pm – at Lorelei Brewing

2:45 pm— Depart for Lazy Beach Brewing

3:00 to 3:45 pm – at Lazy Beach Brewing

3:45 pm – Depart for B & J's Pizza & Brewpub

4:00 to 4:45 pm – at B & J's Pizza & Brewpub

4:45 pm – Depart for Nueces Brewing

5:00 to 5:45 pm – at Nueces Brewing

5:45 pm – Depart for Rebel Toad Brewing

6:00 to 6:45 pm – at Rebel Toad Brewing

7:00 pm - Return to Railroad Seafood Station & Brewing



\$75.00 per person, to include transportation and five (5) CCGS Beer Tokens



Brewina Co

For RSVP or questions, please contact B.J. Thompson at 361-816-2326

or william.thompson426@gmail.com

Mail checks to "CCGS Brewery Crawl" 8326 Salsa Dr. CC, TX 78415

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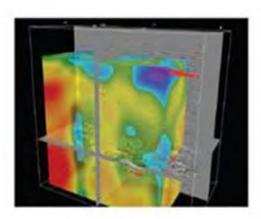
Epeiric Seas C. Downs 6 May, 2019

When the time shall become filled And some restless flame, some Magma finger Shall say "come," The continents will open again And welcome the water, the epeiric seas.

In sighs or tears perhaps the earth shall Unburden itself of a few Heavy mountains. What once stood as vertical architecture, Crag and hanging valley, Butte, caprock, dike, Will dissolve with some relief to play with Gravity at last, Limestone, sandstone, mudstone, clay.



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"FANS OF JEAN AUEL'S CLAN OF THE CAVE BEAR WILL RELISH MOCTU AND THE MAMMOTH PEOPLE...AN INTRIGUING, EXCITING AND MOVING SAGA" -DIANE DONOVAN, EDITOR, CALIFORNIA BOOKWATCH MOCIUAN MAMOUH PEOPLE AN ICE AGE STORY OF LOVE, LIFE AND SURVIVAL "AN EPIC TALE OF STRUGGLE AND SURVIVAL, OF - KIERAN MULVANEY, AUTHOR OF THE GREAT WHITE BEAR, AT THE ENDS OF THE FARTH. THE WHALING SEASON

"UNIQUE, FASCINATING AND DEEPLY-SOURCED . . . "

- MARK MCDONALD, FORMER *NEW YORK TIMES* FOREIGN CORRESPONDENT AND AUTHOR OF THE NOVEL *OFF THE X*

For more information or media inquiries:

ABOUT THE AUTHOR

Neil Thomas Bockoven is an award-winning PhD geologist and journalist with 35 years of experience in minerals exploration.

He has been featured in: Geological Society of America Bulletin, Association of Petroleum Geologists Bulletin, Virginia Journal of Science and many other scientific publications. He has appeared multiple times on several popular radio talk shows to discuss a variety of science-based subjects and his books. Neil is a member of the Archaeological Institute of America, the Archaeological Conservancy, and is an Impact Member of the Center for Study of the First Americans.

Neil worked as a geologist in Denver, Midland, Houston, New Orleans and Albuquerque. He coordinated dozens of joint ventures with oil and gas companies, including rights to the entire King Ranch in Texas.

Neil attended The College of William and Mary, where he was a member of the state champion swim team, and received a Bachelor of Arts. He went on to The University of Texas at Austin, earning a masters and doctorate. He has published articles on topics as diverse as the geology of huge volcanic calderas of the Sierra Madre Occidental Mountains of Mexico to sexual dimorphism in Astarte clams.

His current interests center on the interaction between Early Modern Humans and Neanderthals during the Paleolithic Age, and the amazing related discoveries being made through archaeology and genetics. In addition to *Moctu and the Mammoth People*, Neil also has published a related children's book titled *When We Met Neanderthals* and runs a Facebook page with more than 8000 followers at **authorneilbockoven**.





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ABOUT MOCTU

Set in Paleolithic Italy 45,000 years ago, *Moctu and the Mammoth People* is a compelling coming-of-age story that follows a Cro-Magnon youth who fights for leadership of his tribe and the right to mate Nuri, a beautiful and fiercely independent female, who is being courted by Moctu's rival, the shrewd and cunning Jabil.

Moctu and his people have confrontations with the "Pale Ones," a fearsome group of seemingly cannibalistic Neanderthals known as the People Eaters. But Moctu, alone among his tribesmen, is curious about these human-like creatures. He observes them from afar and wonders about their nature. Will they always be a threat to his tribe? Finding out may get Moctu killed and eaten.



Besides battling mammoths, wolves and saber-tooth cats, Moctu has to deal with his older rival, Jabil, who fights and undermines him at every opportunity. After Jabil secretly murders several elder tribesmen who go against him, he deftly shifts blame onto the Pale Ones. He takes over as the tribe's leader and proceeds to make Moctu's life miserable.

Meanwhile, Nuri is coming of age and finds herself challenging the strict constraints of tribal customs as she tries to avoid being mated to Jabil - a man she despises.

One day on a solo hunting trip, Moctu is captured and enslaved by the Pale Ones. During his time with them, he is shocked to discover that, although these primitive people know little about spear-throwers or making clothes, they can make fire - a skill he comes to learn. He meets the blonde and fair-skinned Effie and, over time, comes to recognize that his hatred for the Pale Ones was misplaced.

Realizing that Nuri by now has been mated to Jabil, Moctu falls in love with Effie and has a child. But when he uncovers evidence that Jabil murdered his tribesmen, Moctu knows he must return home and mount a challenge.

When Moctu returns to the Mammoth People, can he overcome Jabil, and how will Nuri react? Will the interspecies conflict get Moctu or Effie killed? Will Moctu rise to lead his people?

THE SCIENCE BEHIND THE STORY

Neil's Notes from the Underground



High Five
Handprints in the Cueva de las Manos, Argentina, are up to 13,000 years old. Similar handprints from Indonesia date to 40,000 years. Intriguingly, most are left hand prints and those of women (in women, the ring and index fingers are about the same length; in men, the index finger is shorter).

Our forefathers, Early Modern Humans (EMHs), probably reached southeastern Europe less than 45,000 years ago. It's likely that we overlapped with Neanderthals for just a few thousand years before they went extinct.

The rapid demise of the Neanderthals has been attributed to many possible factors, including genocide by EMHs, infection from EMH-carried disease, competition for food and resources, and climate change (although Neanderthals made it through numerous periods of substantial climate change over the previous 250,000 years). The fossil record indicates that Neanderthals disappeared only after EMHs moved into their territory. Analysis of a deep scratch on a rib of Shanidar 3, an adult male Neanderthal, who lived

in present-day Iraq more than 50,000 years ago, suggests he was hit by a spear thrown by an EMH according to Duke investigators.

Based on the brief overlap in time of EMHs and Neanderthals in Europe, the fossil evidence, and the xenophobic nature of early (and many would say current) man, it's a good bet that genocide played a key role. However, EMH-carried disease is also a likely cause that's consistent with the data. In the early 1500s, Cortés unintentionally brought smallpox to the Aztecs and saw a die-off of between 60-90%. Similarly, in the 1600's, Native Americans were nearly eradicated in New England by diseases brought by European settlers.

A great deal of research has substantiated that EMHs and Neanderthals inter-bred, and the average non-African person of today owes 1-5% of their genetics to Neanderthals. Neanderthal genetics have given us some good things like an increased ability to fight viruses, but they also brought along some real negatives, including predispositions for type 2 diabetes, lupus, biliary cirrhosis, depression, actinic keratosis, and Crohn's disease.

Many researchers have concluded that something happened around 45,000 years ago that dramatically and beneficially impacted EMH development and their resultant diaspora out of Africa. Humans successfully made it north into Europe and they were off to the races, overwhelming the Neanderthals and other hominids and spreading to all parts of the globe. Certainly population blossomed, and in what Jared Diamond



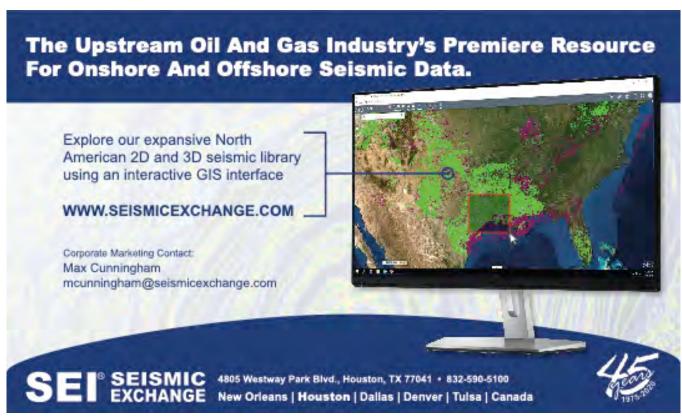
Approximately 40,000 year-old jewelry, flint tools and bone needles from the Grotte du Renne in France (Caron et al. 2011- PLOS ONE)

Was There Peace?

Scientists have found layers of "mixed" technologies that suggest that Neanderthals may have learned some of our innovations, and we learned some of theirs. This mixed layer is known as the Châtelperronian industry and occurs at about the same time as our story.

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has popularized as the Great Leap Forward, technology, culture, art, and music expanded more in the short period thereafter than it had in the past million years. Even if some of these technological and cultural breakthroughs had happened earlier, the intensification of them is undeniable.

What caused this explosion of creativity and success? Various researchers have proposed genetic changes, for example to the FOXP2 gene, which allowed for better language skills (note: genetics within the Basque population suggest that this oldest of Western European languages is probably the most similar to what Moctu and his brethren spoke, so a number of Basque words show up in the book). Others have called on our interactions



Rhinoceros Front Horn Rhinoceros on a wall of Chauvet Cave in France from 20,000 to 30,000 years ago. Note the two-meter (6.5') front horn.

with the Neanderthals for better (e.g. technology transfer and modest beneficial gene flow), or for worse (Neanderthal predation that forced us to become the shrewd, and at times, bloodthirsty race we are).

Meet Venus of Brassempoy!
She is one of the earliest known realistic representations of a human face, carved in ivory, about 25,000 years ago from SW France. This and other evidence suggest that Homo sapiens had wavy hair and may have braided it.
(Photo by Jean-Gilles Berizzi)



We'll probably never know for certain the cause, or causes, of the transformation, but that hasn't stopped us from speculating.

A single breakthrough, such as mastery of fire starting, or the atlatl (spear thrower, which allowed for greater range and safety during hunting) could have played a major role. Studies show that a small but consistent

advantage can make all the difference — just a one percent difference in mortality could have led to the extinction of Neanderthals and the supremacy of EMHs in 30 generations or about 1,000 years.





LITERARY REVIEWS

Neil Bockoven shows us that technology has been crucial to the survival of every human society, beginning with revolutionary innovations like fire-starting and a mastery of the spear. His new novel is nearly revolutionary as well, cleverly melding anthropology with the techniques of historical fiction. *Moctu and the Mammoth People* is unique, fascinating and deeply-sourced."

MARK MCDONALD

Former Award-Winning New York Times Foreign Correspondent Author of the novel Off the X

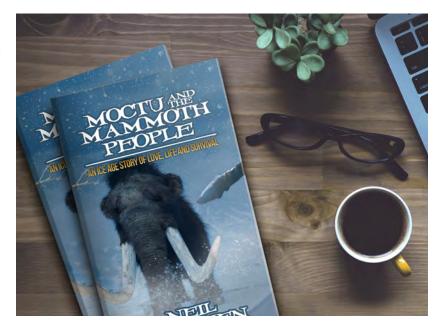
Most of us, if we think of Neanderthals and early humans at all, picture primitive, grunting savages. The reality, we are coming to realize, was vastly different. Neil Bockoven takes a scientific base and adds inspiration and imagination to create an epic tale of struggle and survival, of passion, betrayal and vengeance. It's a tale that highlights our ancestors' lives and loves, their fears and feelings - and, yes, their very humanity."

KIERAN MULVANEY

Author of The Great White Bear, At the Ends of the Earth, The Whaling Season and Witness: Twenty-Five Years on the Environmental Front Lines

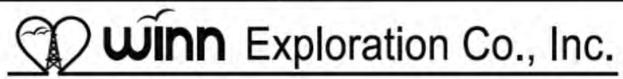
Fans of Jean Auel's *Clan of the Cave Bear* and other stories of prehistoric peoples' lives and adventures will relish *Moctu and the Mammoth People: An Ice Age Story of Love, Life and Survival*, the story of a Cro-Magnon boy who not only battles a tribal rival for leadership and love, but also encounters and is captured by a fearsome group of Neanderthals.

This is no casual story. Award-winning geologist and author Neil Bockoven took two years to review all the current genetic and archeological research about these primitive peoples (our earliest ancestors), and this attention to detail is reflected in a story line that captures not only Moctu's experiences, but the nature of the physical and tribal world in which he operates. Solid science drives this story and - uniquely for a novel - it is annotated in an addendum to the book. Bockoven also has been featured in a number of scientific journals, and is a member of the Archaeological Institute of America, the Archaeological Conservancy, and an Impact Member of the Center for Study of the First Americans.



This background lends authority and authenticity to the story, elevating it above and beyond most tales of the times.

As for the tale itself, Moctu and the Mammoth People is a riveting study in contrasts as Moctu confronts



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(361) 884-8824 www.suemaur.com the cannibalistic Pale Ones (Neanderthals), rivals and murderous plotters, enslavement by primitives who hold the key to one skill that could propel civilization forward, and the possibility of building a presence and family under new conditions.

When he comes full circle to confront his tribe's corruption, Moctu faces further conflicts revolving around an interspecies confrontation and the turmoil surrounding his own heart and choices.

Moctu's vivid discoveries of other peoples and purposes beyond his tribe's approach to life lends a realistic and thought-provoking feel to a story replete with exquisite detail of the physical and emotional landscapes of the times: "He wedged himself in the crook of two large boulders, and with his sharpened stick in front of him, he stared up above, recognizing the Warrior Stars directly overhead. He was strangely comforted by the sight. Maybe it was a good omen. As a youth, he'd been told of them by Tabar, and their appearance tonight resurrected warm memories that seemed to heighten his sense of freedom."

The result is an intriguing, exciting and moving saga that takes the time to build early history and psychological tension alike. More than a light read about Cro-Magnon and Neanderthal confrontations, *Moctu and the Mammoth People* does an outstanding job of considering the evolutionary process of learning and change by focusing on a primitive soul whose very existence and entire belief system are challenged by outsiders and new ideas.

Jean Auel's fans, in particular, will find Bockoven's approach delightfully well detailed, backed by scientific and archaeological facts."

DIANE DONOVAN
Editor of California Bookwatch

UNBIASED VINE REVIEWS

(AVERAGING 4.8 STARS OUT OF 5!)

..wow, did this book take some sharp twists and turns! This book was always on my mind until I finished reading it. The emotional impact is profound...you're in for a wild adventure that's going to leave you stunned when you close the book for the last time."

HAWK EYE

Well researched and a story that really kept my attention. I cared about the characters and that caused me to truly be engaged in the outcomes. What a read! Highly recommended."

FIFI'S MOM

I haven't enjoyed a book like this since reading the Clan of the Cave Bear series."

COCO'S MOM

66very well written and easy to read story. I found the story intriguing and fascinating becoming completely absorbed by it. The characters are so well described and have great depth to them... This is a page-turner and a brilliant read."

SHARON

I really enjoyed this book. It's a very interesting look into what the lives of these ancient peoples would have been like. Mixed into the story are facts and images which made this a fun and educational read for me. I highly recommend giving this a look."

KENDALL B.

...a great read...kept me interested, got me to cringe, got me excited and anxious... I felt for the characters, I wanted to help them. I felt Nuris worries in my bones. Interesting and tense read. I will take a book like this any day."

LA VIDA LOCA

Absolutely BRILLIANT!! This story puts you right there and right then and it is such an adventure of epic proportions. The excitement, the danger, the pain and the sorrow, you will witness it all, you will feel it ALL!! What an incredible story, told so beautifully, and with such impeccable, authentic detail. I hope this book is only just the beginning. Thank you Neil Bockoven for this absolutely spectacular journey!! Well done."

ELIZABETH B.



I think Bockoven could be the new Auel. I hope to see more like this from him!"

REVIEWTOAKILL

I am highly impressed with this book and the articulate writing style the author has. This one went into my Top Shelf Collection of favorites. "

LIFEPATHIN4D

WHAT READERS AND SOCIAL MEDIA FANS ARE SAYING

You really feel the adrenaline, and it's very suspenseful. It's just freaking breathtaking..."

KIMBERLY SHELTON
MBA, Virginia Tech University

Fascinating and dramatic; a truly moving story with compelling characters. And I learned so much, too! You can see how well researched and authentic the whole story is which is filled with so many interesting details. And the ending is quite satisfying. Well done!"

MARLENE ADELSTEIN

Author and Freelance Editor at Fixyourbook.com

Overall the writing was impressive. I thought the characters were well developed and the sense of time and place vivid."

BILL CONTARDI Literary Agent

Great book. Suspenseful and exciting Neanderthal thriller. Honestly, the last thing I thought I would be engrossed in."

T. MALONEY-RAMES
Professional Editor

The best book of this genre since *Clan of the Cave Bear*! I enjoyed it thoroughly and look forward to the sequel."

JEFFREY C ECKERT
MS Geosciences

I have really enjoyed reading your book! It is not my genre at all, so it's all the more surprising that I found myself drawn into the story so much that I couldn't wait to see how the threads were resolved...and you did a fantastic job of weaving everything together, with unexpected plot twists along the way. Very sensitive to women's issues here too, and I know women reading it will appreciate that."

DEBBIE BURKE

Author, Glissando, A Story of Love, Lust and Jazz

...very interesting characters and story. I enjoyed every word! I would recommend it to anyone who enjoyed books by Jean Auel."

PAT MOJARRO Amazon Review Incredible book. You need to teach a class on this..."

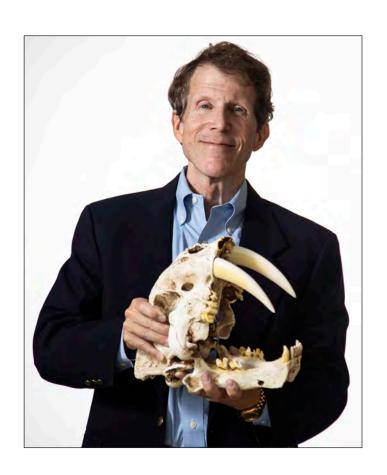
DOUG BEVERIDGE VP Land, King Ranch

Was blown away by Neil Bockoven's novel MOCTU & THE MAMMOTH PEOPLE. Really powerful story...What really impressed me is Bockoven did plenty of research on the era which enhanced the level of detail and I learned alot in the process. This is a real page turner!"

TONY PETTINARI Amazon Review

Really enjoyed this book, and all the real-science background that was included. Hope there's a second book -- can't wait to see what happens next in the lives of the characters."

PENELOPE B. SULLIVAN Amazon Review



Q&A WITH NEIL BOCKOVEN



You're an award-winning geologist and journalist and have published many scientific articles.

What compelled you to write Moctu as a novel?

The inspiration for it came as I was doing research into why Neanderthals died off so quickly after we, Early Modern Humans, arrived in Europe about 45,000 years ago (hint: our rather bloodthirsty species is also a prime suspect in the demise of three other human groups - Homo erectus, Denisovans, and the Hobbit people of Flores). I hadn't planned to write a novel, but I realized that there was an incredible story to be told about these early humans - their interaction with a different human species and their struggles for survival in a violent, primitive world.

What was your writing process for this book?

After an enormous amount of research, some of which is represented in the 130 annotated references at the back of the book, I decided I should write an entertaining story that captured what I'd learned. It was an exciting time - I would often wake in the middle of the night and write down notes of thoughts I had. It took me nine months to write the book and more than two years to research it.

When you were creating your main characters, how did you get inside the head of Moctu - your young protagonist from 45,000 years ago? Was that difficult? What human traits and ambitions did you find yourself sharing with him? And Nuri - the young woman in his tribe that Moctu loves. How did you connect with her emotionally?

I developed these early human characters the same way you'd approach modern-day ones. I spent a lot of time thinking about who they were and what they wanted - their dreams, ambitions and fears. I built Moctu to be a solidly good guy with (mostly) noble intentions, although he is somewhat shy. Nuri, likewise, has a nobility of character, and she's creative, resourceful, brave, and sweet-natured - but she too is not without flaws. Both she and Moctu have characteristics most of us want to identify in ourselves.

There are some great action scenes in the novel. Did you plot those out in advance or did they just flow out of the situation your characters found themselves in? Explain your favorite action scene and how you constructed it so realistically from your research?

Starting the book, I had a basic outline in my head of the overall plot, but most of the action scenes flowed out of the situation and the characters' personalities.

My favorite action scene is the genital-piercing sacrifice and the birthing of a breech baby. The details of the sacrifice stem from research I did about primitive cultures' (especially the Aztec's) fertility practices. The birth drew from memories of the difficult birth of one of my children. I want to mention that the baby is given the name Zaila, which means 'difficult' in Basque - probably the language most similar to what our people spoke back then.

I also love the mammoth hunting scene, but the book isn't mostly about hunting. I pulled from a number of references for



the hunting scenes - how they stalked the beast and used their primitive weapons and methods to kill it. The euphoria and bonding I describe that happens after the mammoth kill came largely from my father's description of how close he and his men became after battles (and near death) in World War Two.

What literary writers in general inspire you? Are there any literary authors who have written about early man that you admire?

I love historical fiction. In the early 1980's I was enthralled with Jean Auel's *Clan of the Cave Bear* that featured Ayla, a blonde-haired, blue-eyed Cro-Magnon girl who was raised by dark, brooding Neanderthals. Recent genetic discoveries have shown us these racial roles were actually reversed when we met up in Europe. We were the dark ones, and many of the Neanderthals were blonde and blue-eyed.

Another historical fiction writer I follow is Bernard Cornwell, who writes fascinating, action-packed stories of medieval Europe. I tried to make *Moctu and the Mammoth People* equally action-packed but also character-driven. I wanted readers to identify deeply



with these Early Modern Humans. They are, after all, our ancestors. We are family.

What science-oriented non-fiction writers have you read? Who do you like and why?

A lot of them, but several of my favorites are David Reich and his book *Who We Are and How We Got Here*, and Chris Stringer with his *Lone Survivors* (Google Chris' interview with Stephen Colbert about that one - very funny). I also enjoyed Thomas Wynn's *Think Like a Neanderthal*, and Paul Ehrlich's *Human Natures*. Jared Diamond has *Guns, Germs and Steel*, Danny Vendramini wrote *Them + Us*, and Harari's book, *Sapiens* - they're fascinating - I could go on and on.

Why is Moctu's time period (roughly 45,000 years ago) and geographic location (Southern Europe) so important?

In 2010, when the Neanderthal genome was first fully sequenced, we discovered that all non-Africans have Neanderthal genes. Since that time it's become clear that one of the places that we met and uh, "interacted" with Neanderthals was southeast Europe, roughly where my story takes place. This was also a time when there was a dramatic increase in our usage of new technologies, and it was the beginning of an explosion in our population and geographic range.

What audiences would you like to reach with Moctu and the Mammoth People?

Jean Auel's *Clan of the Cave Bear* and related books have sold 50 million copies to a diverse audience, both US and international. I expect that Moctu will appeal to a similar group.

I've also published an illustrated children's book called *When We Met Neanderthals*. I think it's essential for young people to understand our origins as a species and how we have arrived at where we are today.

What would you most like them to learn from this story?

I hope people can leave their current world and travel back in time to feel what our ancestors experienced as they tried to survive, from having babies to hunting mammoths and dealing with interspecies conflict. I've worked hard to keep this novel as factually accurate as possible while being exciting and entertaining.

CONTACT

For More Information on Neil Bockoven:

www.neilbockoven.com

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Moctu and the Mammoth People is published by Waldorf Publishing

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Three Paleo Human Mysteries Neil Bockoven, PhD 10/25/2019

Mystery One: Did we mate with Neanderthals and have viable offspring? If so, what genetics did we get from them? Yes, we interbred, but apparently, only male Homo sapien-female Neanderthal pairings survived or were fertile. From the Neanderthal genes we got enhanced viral immunity, but also predispositions for ailments such as lupus, Crohn's disease, type 2 diabetes, actinic keratosis, and depression.

Mystery Two: Neanderthals lived in Europe for more than 250,000 years. When we (*Homo sapiens*) arrived on the scene about 45,000 years ago, they disappeared quickly – forever. What happened? Five major factors played a role in the Neanderthal demise: 1) Homicide by modern humans, 2) Disease brought by modern humans, 3) Competition for food and resources, 4) Our larger population absorbed their smaller one, and 5) Climate change brought on by the Campanian Ignimbrite eruption.

Mystery Three: Why is an Australian aborigine genetically more similar to a Scandinavian than an African tribesman is to a member of a different African tribe? A small subset of the African population (with their relative lack of genetic diversity) left Africa about 70,000 years ago, and they populated the rest of the world.

In addition to answering these and other intriguing questions, we'll discuss the huge breakthroughs coming from ancient DNA analysis, and the different information we get from the three types of DNA.

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CCGS 015TL \$25.00

Type Logs of South Texas Fields, Vol. II, Wilcox (Eocene) Trend. Compiled by M. A. Wolbrink. 98 p., 1979. Ring binder. CCGS 016TL \$25.00

Field Trip Guidebooks

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Hidalgo Canyon and La Popa Valley, Nuevo Leon, Mexico. CCGS 1970 Spring Field Conference. 78 p., 1970. CCGS 103G \$8.00

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Bartell Pass	E. Ramsey	StewartSwan Lake Swan Lake, East	Collegeport MCMULLEN COUNTY	Plymouth Portilla (2)
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Mosca	Loma Novia	KENEDY COUNTY	Flour Bluff/Flour Bluff, East	Yturria
Nomanna	Petrox	Candelaria	GOM St 9045(offshore)	VICTORIA COUNTY
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Strauch_Wilcox	Berclair	Stillman	889S(offshore)	Meyersville
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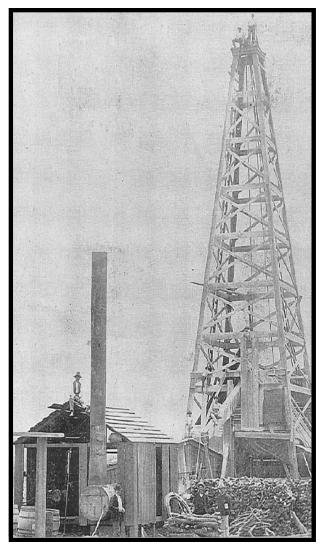
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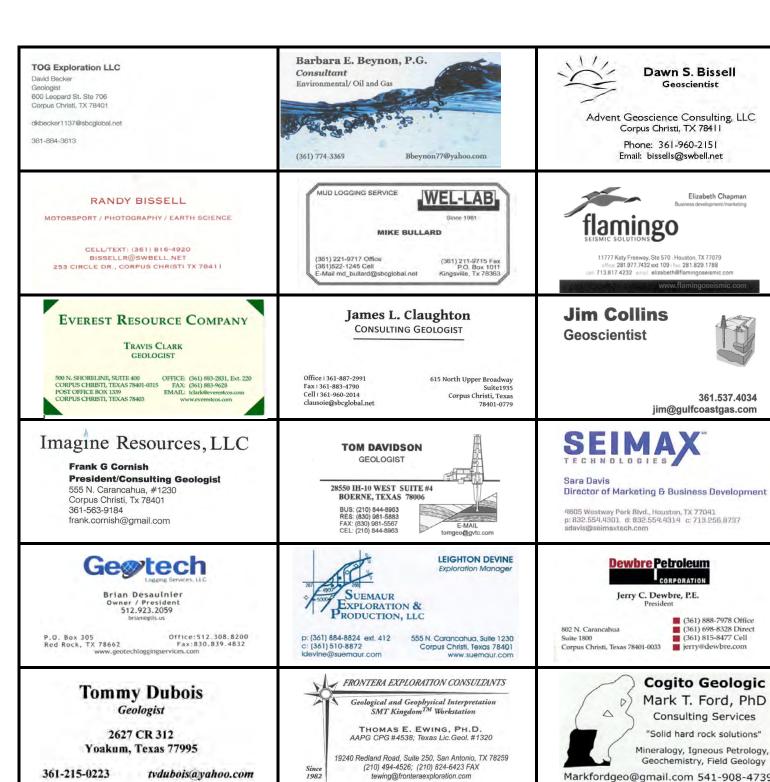
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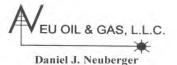
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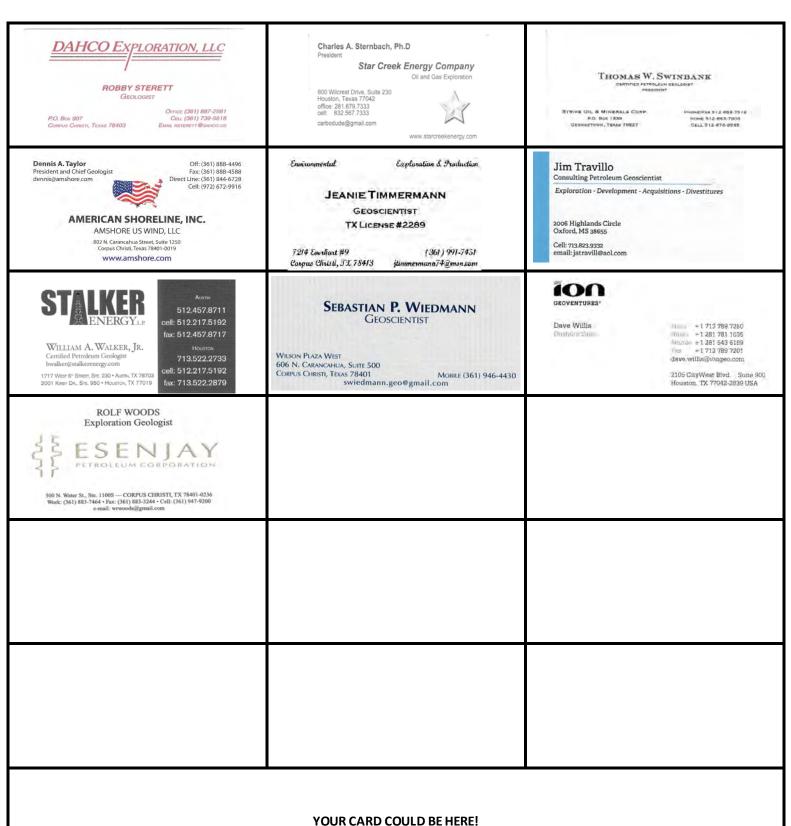
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