

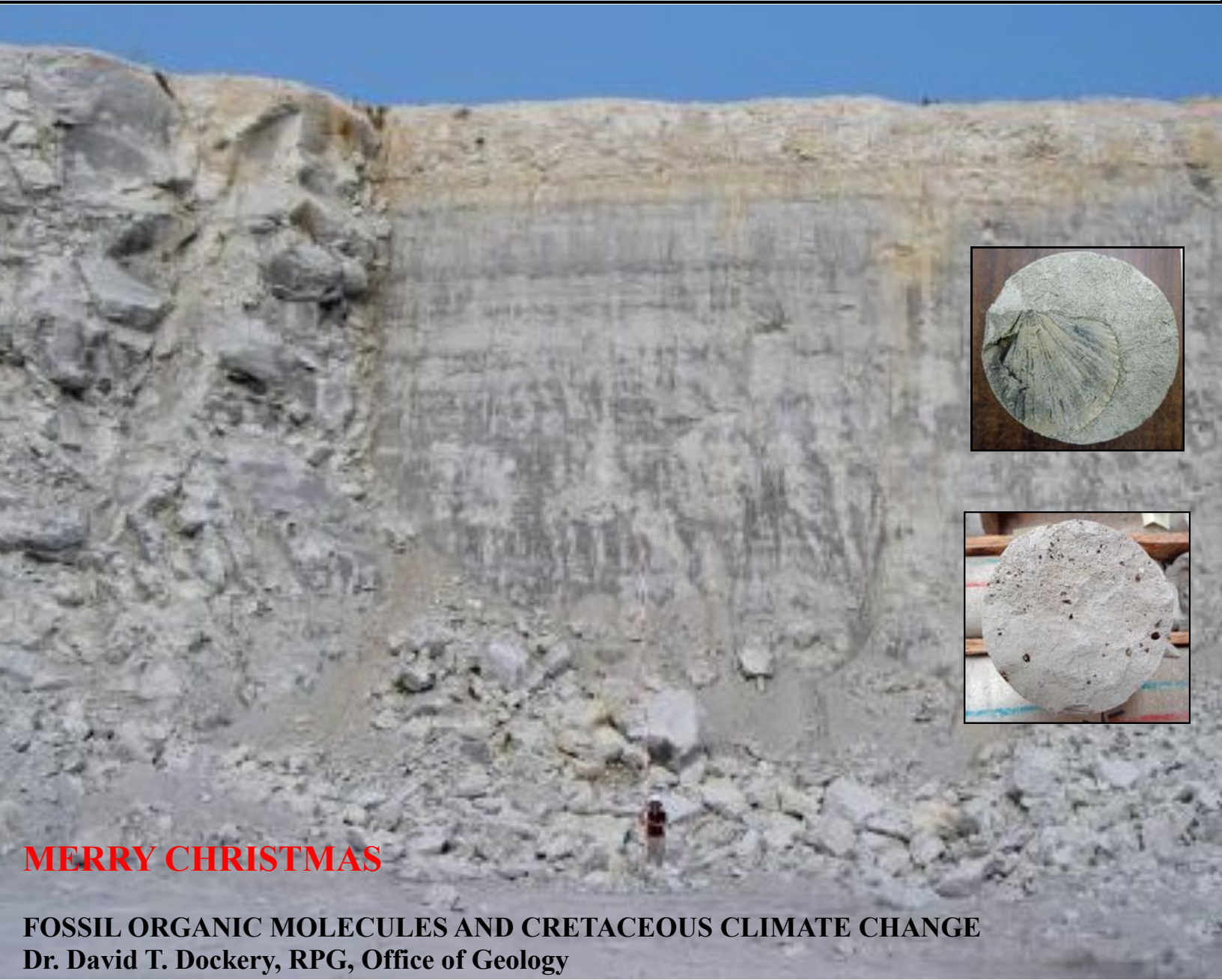
MISSISSIPPI GEOLOGICAL SOCIETY

eBULLETIN

Volume 68

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December 2019



MERRY CHRISTMAS

FOSSIL ORGANIC MOLECULES AND CRETACEOUS CLIMATE CHANGE
Dr. David T. Dockery, RPG, Office of Geology



www.missgeo.com



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PRESIDENT'S LETTER

James O. Sparks, RPG



MGS Members,

Wishing everyone a Merry Christmas and Happy New Year. Our next meeting will be held on January 8th at River Hills. After much discussion, the MGS has decided to combine our 2020 monthly meeting with the Society of Petroleum Engineers (SPE). MGS and SPE have many of the same speakers and similar interests. Instead of meeting on the second Thursday, we will now meet on the second Wednesday of the month from January to April. The April meeting will be for the Boland Scholarship Awards and the SPE Scholarship awards. MGS will have our Spring Fling in May of 2020 and will resume with our Fall BBQ in September of 2020.

SPE has monthly meetings from January thru December and our membership may wish to attend the meeting in the months we do not meet. For those months, an announcement will be emailed to MGS members with the speaker biography and information on speech topic.

2019-2020 MGS MEETING SCHEDULE

When	What/Who	Where
September 12, 2019	Fall BBQ	Jackson Yacht Club-5:30pm
October 10, 2019	Jess New—MSOGB	River Hills – 11:30am
November 14, 2019	Stephen Champlin, RPG MDEQ	River Hills – 11:30am
	Merry Christmas	
January 8, 2020	TBD	River Hills – 11:30am
February 12, 2020	TBD	River Hills – 11:30am
March 11, 2020	TBD	River Hills – 11:30am
April 8, 2020	Boland Scholarship Awards	River Hills – 11:30am
May 13, 2020	Spring Fling	Jackson Yacht Club– 5:30pm

*Merry
Christmas*



OFFICERS MEETINGS

September 10, 2019
October 8, 2019
November 12, 2019
January 7, 2020
February 11, 2020
March 10, 2020
April 7, 2020
May 12, 2020



BOLAND SCHOLARSHIP WATCH

Faculty & Students,

This is a new year and the Mississippi Geological Society along with the Boland Scholarship Fund would like to remind you that we want to honor the most outstanding overall students for the 2019-2020 year.

Each year, the Boland Scholarship awards 1 student from each institution a check that rewards students for their hard work and dedication to the Geosciences and their community.

We look forward to a great year and hope to see you at our monthly meetings.

Best Regards,

Matt Caton
Editor



THE UNIVERSITY OF
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CURRENT PRICES

Crude Oil WTI (NYM \$/bbl) Front Month

+ WATCHLIST

CREATE ALERT

☀ OPEN

Last Updated: Dec 12, 2019 at 9:29 a.m. EST - Delayed quote

\$ **58.93**

▲ 0.17 0.29%

SETTLEMENT PRICE 12/11/19
\$58.76

< Advanced Charting 1M \$ % VOL



Natural Gas Continuous Contract

+ WATCHLIST

CREATE ALERT

☀ OPEN

Last Updated: Dec 12, 2019 at 9:30 a.m. EST - Delayed quote

\$ **2.283**

▲ 0.04 1.78%

SETTLEMENT PRICE 12/11/19
\$2.243

< Advanced Charting 1M \$ % VOL



Marketwatch





MONTHLY POST

Dr. David T. Dockery III RPG

FOSSIL ORGANIC MOLECULES AND CRETACEOUS CLIMATE CHANGE

David T. Dockery III, RPG

Cores through the Cretaceous chalk of the Mooreville and Demopolis formations of Late Cretaceous age (figures 1-6) in northeastern Mississippi hold valuable information on climate change at a time that dinosaurs inhabited lands north of the Arctic Circle in Alaska. Stuart Robinson and his Ph.D. graduate student Lauren O'Conner of the Department of Earth Sciences, University of Oxford, Oxford, England, sampled cores of Cretaceous chalk from Shuqualak, Mississippi, at the Core and Sample Library on April 27 - May 1, 2015 (Figure 7). An earlier study of these cores provided excellent data, and Robinson and O'Conner's visit was to sample the core at finer intervals. Using fossil molecules (TEX86) of the distinct lipids of marine archaea bacteria as a proxy for seawater temperature, the cores showed a cooling trend during the Campanian Stage of the globally warm Late Cretaceous Period (Figure 8). Also in the Shuqualak cores were fossil shells and biotite mica ash from the eruption of the Jackson Volcano some 75 million years ago (Figure 4).

The article above is from *Mississippi Environmental Geology*, pages 366-367. Stuart Robinson gave the following update in a December 5, 2019, email: "I thought you might like to know that my former doctoral student, Lauren O'Connor, who came with me to Jackson a few years ago, has recently had a paper accepted in *Newsletters on Stratigraphy* documenting cyclicity in the Shuqualak-Evans core - I will send you a copy once we have the proofs! It provides further support for the age models previously proposed and suggests that the Campanian is almost entirely complete. Additionally, a colleague of mine in Bristol (David Naafs) is keen to do some further work on the organic geochemistry of the core and is currently drafting a proposal to fund his work. We have generated some interesting pilot data from the samples I have but we might need to collect some more samples in the future."



MONTHLY POST

Dr. David T. Dockery III RPG



Figure 1. George Phillips holding survey rod in front of a vertical joint plane in the Muldrow Member of the Demopolis Formation in the high wall of the Holcim Inc. Artesia Plant chalk quarry near Artesian in Lowndes County, Mississippi. Picture taken on August 24, 2007.



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Figure 2. Dark and light banded layers, indicating oxic and anoxic deposition, in the Muldrow Member of the Demopolis Formation in a freshly quarried high wall of the Holcim Inc. Artesia Plant chalk quarry near Artesia in Lowndes County, Mississippi. Picture taken on August 24, 2007.



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Figure 3. Cretaceous chalk cores from the Demopolis Formation at Shuqualak, Mississippi, in MDEQ's Core and Sample Library in Jackson.



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Figure 4. Bedding planes in the Cretaceous chalk core from Shuqualak, Mississippi, in MDEQ's Core and Sample Library in Jackson. At left is the fossil pecten *Neithea quinquecostata* and at right are biotite crystals (black) from a volcanic eruption at Jackson 75 million years ago.

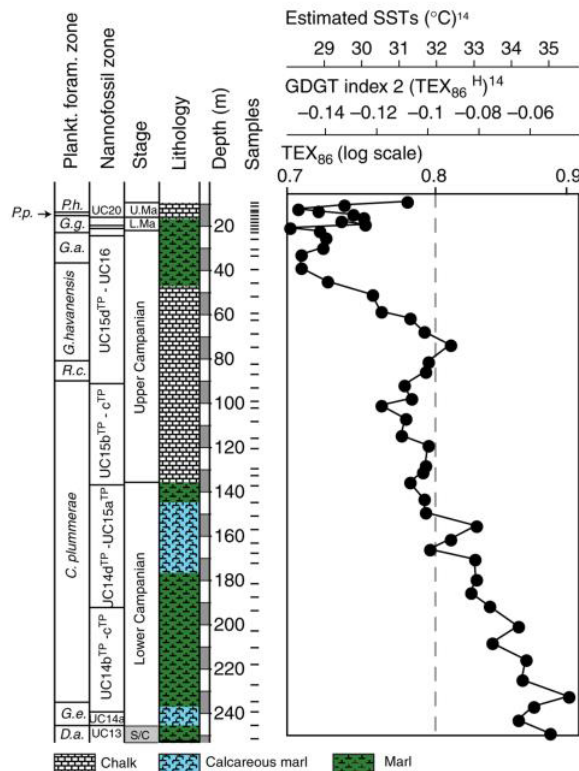


Figure 5. TEX₈₆ data and calculated surface sea-water temperatures from the Shuqualak core from Lin-nert et al., 2014, Evidence for global cooling in the Late Cretaceous: Nature Communications, June 2014.



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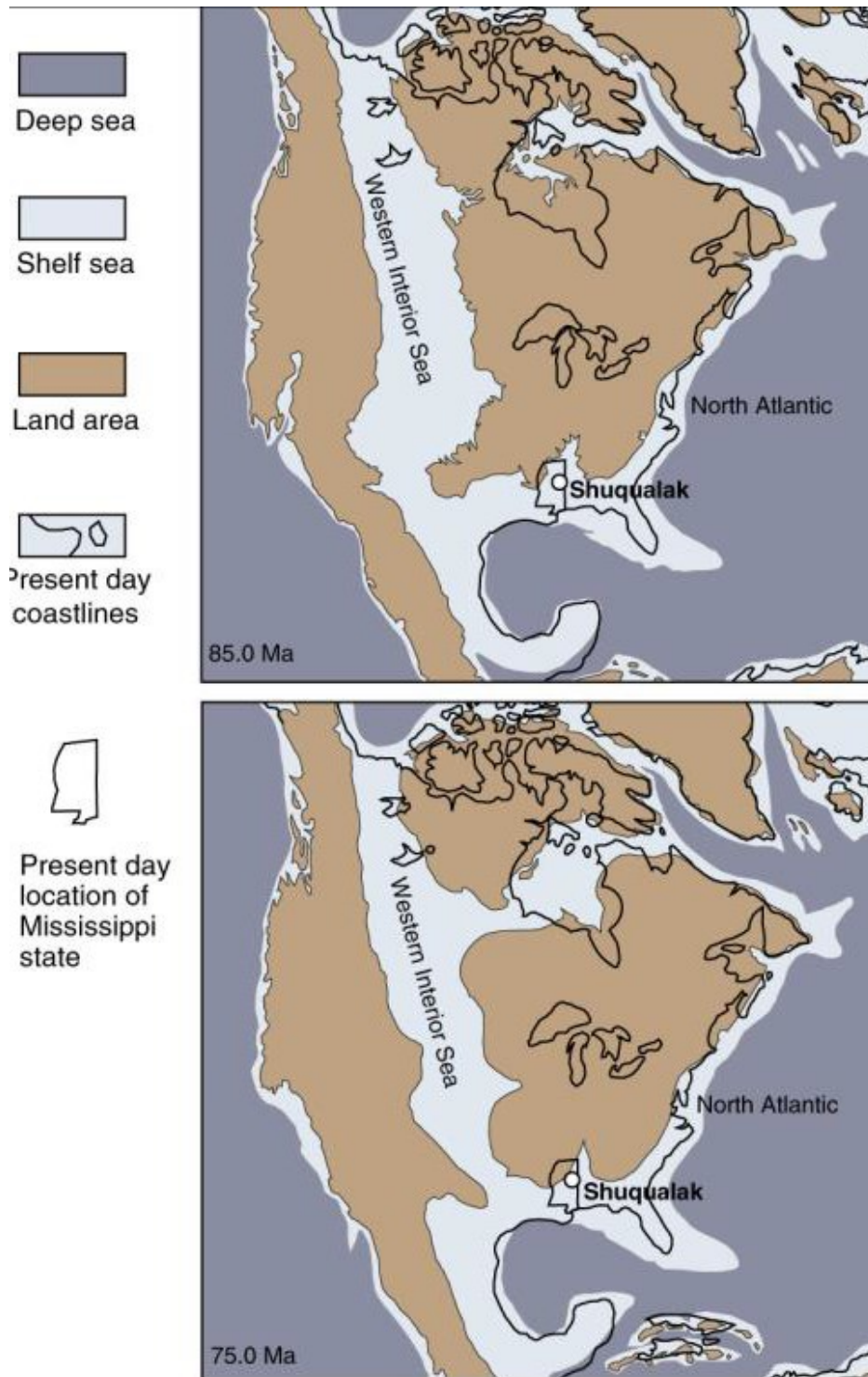


Figure 6. The Late Cretaceous sea that covered parts of North America at the time of chalk deposition at Shuqualak, Mississippi, at 85 and 75 million years ago from Linnert et al., 2014, Evidence for global cooling in the Late Cretaceous: Nature Communications, June 2014, 7 p.



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Figure 7. Lauren O'Conner and Stuart Robinson of the University of Oxford sampling a Cretaceous chalk core from Shuqualak, Mississippi, at MDEQ's Core and Sample Library in Jackson on April 27, 2015.



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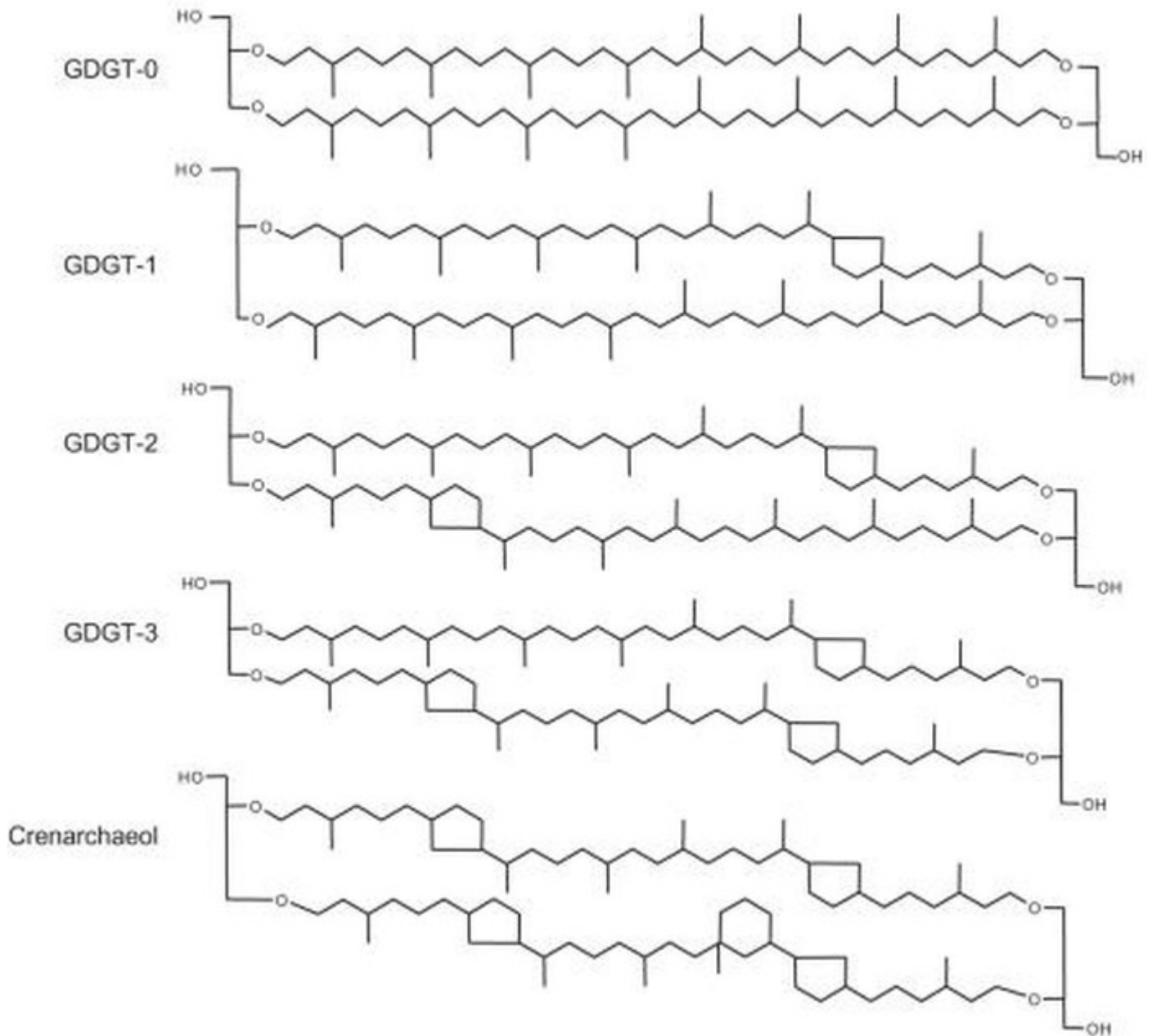


Figure 8. Crenarhaeol region-isomer. Structures of isoprenoid glycerol dibiphytanyl glycerol tetraethers (GDGTs), which are mainly biosynthesized by Marine Group I Crenarchaeota, one of the dominant prokaryotes in today's oceans. Different types of isoprenoid GDGTs contain 0-3 cyclopentane moieties and 4 cyclopentane moieties with additional cyclohexane moiety. The number of cyclopentane moieties increase with increasing temperature of the annual mean sea surface temperature (from Kim et al., 2010).



GEOLOGY POST

ARTICLES, PAPERS or NEWS?

ATTENTION!!!!!! Industry, Professors and Students:

I am adding a dedicated section that includes more content from the industry and our schools.

Submissions can include anything from professional papers, thesis abstracts, job opportunities to pictures. Anything!!!!

If you have any information or news you would like to share with the Society **PLEASE** email them to the MGS Editor at:

mcaton@tellusoperating.com

Thanks & Regards,

Matt Caton
Editor

GEO LINK POST

USGS TAPESTRY OF TIME AND TERRAIN <http://tapestry.usgs.gov> The CCGS is donating to all of the 5th and 6th grade schools in the Coastal Bend. Check it out—it is a spectacular map. You might want a framed one for your own office. The one in my office has glass and a metal frame, and it cost \$400 and it does not look as good as the ones we are giving to the schools. Call Owen 510-6224 if you want one for your office for \$150. Duncan, Mike, Chris, Dave, Bob Randy, Seb., Kevin, Ken, Craig, Patrick, Robert.

FREE TEXAS TOPO'S <http://www.tnris.state.tx.us/digital.htm> these are TIFF files from your state government that can be downloaded and printed. You can add them to SMT by converting them first in Globalmapper. Other digital data as well.

FREE NATIONAL TOPO'S [http://store.usgs.gov/b2c_usgs/b2c/start/\(xcm=r3standardpitrex_prd\)/.do](http://store.usgs.gov/b2c_usgs/b2c/start/(xcm=r3standardpitrex_prd)/.do) go to this webpage and look on the extreme right side to the box titled TOPO MAPS DOWNLOAD TOPO MAPS FREE.

<http://www.geographynetwork.com/> Go here and try their top 5 map services. My favorite is 'USGS Elevation Date.' Zoom in on your favorite places and see great shaded relief images. One of my favorites is the Great Sand Dunes National Park in south central Colorado. Nice Dunes.

<http://antwrp.gsfc.nasa.gov/apod/astropix.html> Astronomy picture of the day — awesome. I click this page everyday.

<http://www.spacimaging.com/gallery/ioweek/iow.htm> Amazing satellite images. Check out the gallery.

<http://www.ngdc.noaa.gov/seg/topo/globegal.shtml> More great maps to share with kids and students.

www.geo.org Don't forget we have our own web page.

<http://micro.magneet.fsu.edu/primer/java/scienceoptiscu/owersof10/>

<http://asterweb.jpl.nasa.gov/galery/default.htm> Great satellite images of volcanoes

<http://terra.nasa.gov/gallery/> More here

www.ermapper.com They have a great free downloadable viewer for TIFF and other graphic files called ER Viewer.

www.drillinginfo.com This is an incredible (subscription) well and completion data service for independents. Can be demo'ed for free.

<http://terrasrver.com/> Go here to download free aerial photo images that can be plotted under your digital land and well data. Images down to 1 meter resolution, searchable by Lat Long coordinate. Useful for resolving well location questions.

<http://www.fs.fed.us/gpnf/volcanocams/msh/> This is a live cam of Mt. St. Helens refreshed every 5 minutes. At the bottom are old videos of past eruptions in this cycle. It is worth a watch especially now.



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(Note: Please contact Steve Walkinshaw at (601) 607-3227 or mail@visionexploration.com for details concerning placing your ad on the MGS web site.)

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