

Atlanta Geological Society Newsletter

Next meeting of the Atlanta Geological Society is
November 24, 2015
Fernbank Museum of Natural History (Clifton Road)
Social begins at 6:30 pm – Meeting begins at 7:00 pm

November 2015

ODDS AND ENDS

Dear AGS members,

As luck would have it, this month's stories focus on sedimentology; the unseen beauty in sand and ancient rivers that once flowed in what is now the western Sahara. And our Speaker will be presenting on paleosoils. A lucky coincident.

Don't know if anyone else has caught some of the current series on NOVA about Making North America but I have enjoyed the scenes and the activities. I guess I'm a little jealous that I could not rapel down the wall of the Grand Canyon to observe the cross bedding and find fossils. I guess being the geology director of the Smithsonian does have it's perks.

I would like to remind you that our elections will take place during this month's meeting. We could still use a nominee for Vice President. And as our usual schedule, this is the last meeting of the year. We'll see you next on January 26, 2016.

Ben Bentkowski,
Newsletter Editor

November Meeting

Join us **Tuesday, November 24, 2015** at the Fernbank Museum of Natural History, 760 Clifton Road NE, Atlanta GA. The meeting social starts at 6:30 pm and the lecture starts shortly after 7 p.m.

This month the speaker will be William Lukens, Baylor University PhD Candidate and his presentation will be **The Nerdy, Dirty World of Fossil Soils**. The Speaker's bio are presented on the following page.

The sponsor for the evening is John Kilman of Kilman Bros., Inc. We appreciate the continued sponsponship of John and Kilman Bros., Inc. Please see more details on page 3. As always, we appreciate the generous support of our sponsors and hope you consider their products.

Please come out, enjoy a slice, the camaraderie, and an interesting talk.

NOVEMBER SPEAKER'S INFORMATION

The Nerdy, Dirty World of Fossil Soils

By William Lukens, Baylor University PhD Candidate

Atlanta Geological Society

Tuesday, November 24th at 7:00 p.m. at the Fernbank Museum

Soils mantled ancient landscapes just as they cover the world around us today. Through the study of modern and ancient soil, geologists can now reconstruct many properties crucial to our understanding of Earth's climate, biota and geosystems evolution through time. In this talk, we'll explore what constitutes a fossilized soil--what they look like and what gets preserved--and we'll dive into the soil zone of the ancient North American Heartland, as well as a few famous fossil sites across Kenya, Africa.



Bill Lukens is a PhD. candidate in the Department of Geology at Baylor University. His research falls under the broad umbrella of paleogeomorphology, which consists of deconstructing the formation and evolution of ancient terrestrial environments. He and his colleagues tackle such questions through the analysis of sedimentary deposits and ancient soils (paleosols), using field descriptions, a variety of geochemical methods and statistical comparisons to modern soil systems. He is currently studying the Neogene to Recent history of the North American Great Plains and the early Miocene record of Kenya, Africa.

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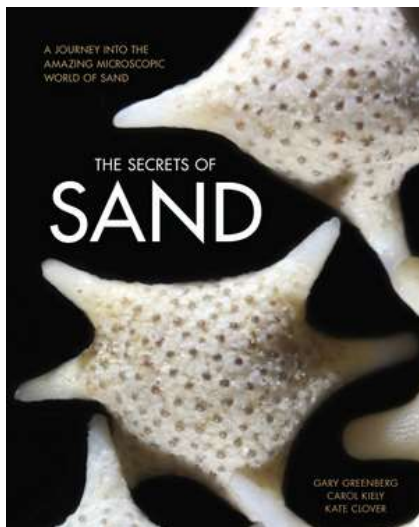
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Sand's Tiny Secrets Unlocked in Dazzling Images

Gary Greenberg | October 28, 2015

Gary Greenberg is a photographer and filmmaker with a Ph.D. in biomedical research. Following an assistant professorship at the University of Southern California, he co-founded Edge Scientific Instrument Corp., developing high-definition 3D light microscopes, for which he has been issued 19 U.S. patents. He is currently a research affiliate at the University of Hawaii Institute for Astronomy. He contributed this gallery to Live Science's [Expert Voices: Op-Ed & Insights](#).

As you walk along a beach, you are treading upon years of geological and biological history. Modern microscopes allow us to perceive and appreciate the amazing details of these tiny sculptures that make up much of the world around us. Present-day microscope technology reveals how different environments shape grains of sand into nature's tiny works of art, showing that each particle is a jewel waiting to be discovered — each with its own story to tell.



"[The Secrets of Sand](#)" by Gary Greenberg, Carol Kiely & Kate Clover. This 120-page, 10,000-word picture book combines art and science to inspire human imagination. Credit: Gary Greenberg

Mineral sands originate from the erosion of rock into tiny grains. When granite rock erodes by the forces of wind, rain, ice and multiple freeze-thaw cycles, the angular grains of feldspar, quartz, mica and other minerals are liberated. They are transported to lakes via streams, rivers and glaciers, and on their journey, their original crystal shapes begin to become more rounded by the forces of erosion. Many continental beaches have a high percentage of quartz sand grains because quartz survives the forces of erosion longer than other minerals. The pounding surf is responsible for rounding and polishing the rugged quartz grains.



When [granite rock erodes](#) from the forces of wind, rain, ice and multiple freeze-thaw cycles, the angular grains of feldspar, quartz, mica and other minerals are liberated.

[Biological sands tell the story of the plants and animals that live along the shorelines](#) . Fragments of coral, tube worms, barnacles and sea urchin spines get washed up onto the beach, along with the amazing, shell-like, minuscule bodies of foraminifera, tiny amoeboid protists. Although sand from the moon is made of the same minerals as sand from the Earth, the individual grains look different from terrestrial sand because of the lack of water and atmosphere on the moon. There, the primary cause of erosion is bombardment by meteorites and micro-meteorites for more than 4 billion years.

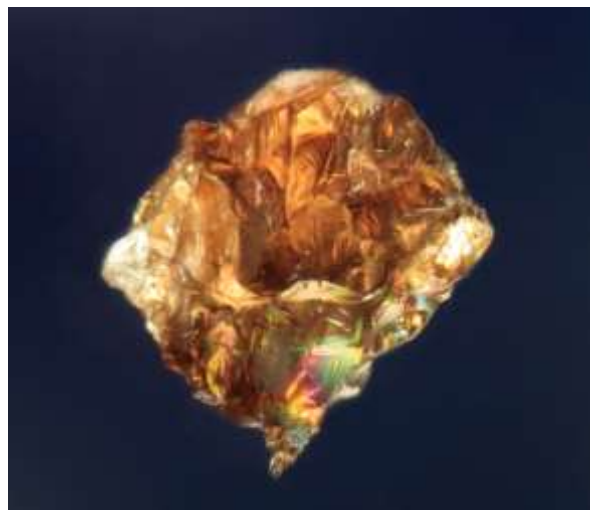


[Every beach is unique](#) , such as this green olivine sand from the Green Sand Beach at South Point on the Big Island of Hawaii.



[Modern microscope technology explores](#) how different environments shape grains of sand into nature's tiny works of art. These grains include shell fragments (middle), a glassy sponge spicule (bottom middle), a green sea urchin spine (top middle), a foraminiferan (to the left of the sea urchin spin), microscopic shells and various minerals.

People often ask Mr. Greenberg "Is that what sand really looks like?" What you see is a function of your tools of observation. A light microscope picture of sand, a high-resolution scanning electron microscope image, and an X-ray micrograph show different aspects of the intricate details of the same object. Below are some of my favorite images from my work, collected in "[The Secrets of Sand: A Journey into the Amazing Microscopic World of Sand](#)" (Voyageur Press, 2015) co-authored with Carol Kiely and Kate Clover.



A single grain of sand from the moon.

Announcement for the next Atlanta Geological Society PG Candidate Workshop:

Saturday

Jim Fineis P.G.

Atlas GeoSampling Company

(770) 883 3372

jimfineis@atlasgeo.com www.atlasgeo.com

Site Assessment Tools for Environmentally Impacted Sites.

What Tools Should you Have in Your Arsenal?

Has technology changed in the past 5 or 10 years? iPhones, Facebook, android phones, tablet computers were not around 5 or 10 years ago; and now most of us can't live our daily lives without these "new" inventions. Has the way you investigate environmentally impacted sites changed over the past 5 or 10 years? Join us for a discussion on the latest and greatest (sometimes) technology that can be used for site assessments as well as new approaches using "old" tools.

Check with the receptionist as you come in Fernbank Science Center for directions to the classroom we will be using. The Center is approximately 1-mile north off East Ponce deLeon Avenue from the Fernbank Museum Of Natural History where the AGS monthly meetings are held.

Also, please forward this message to anyone interested in becoming a Georgia Registered Professional Geologist, or anyone who might be interested in the topic. The classes are open to all. Membership in the AGS is not required, however, \$25 per year (\$10 for students) is quite a bargain for one the most active geological groups in the Southeast.

If you have any questions, go to the AGS web site at <http://www.atlantageologicalsociety.org> or contact us below. We hope to see you there!

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Atlanta Geological Society

Professional Registration Committee

Ancient river network discovered buried under Saharan Sand

<http://www.theguardian.com/science/2015/nov/10/ancient-river-network-discovered-buried-under-saharan-sand>

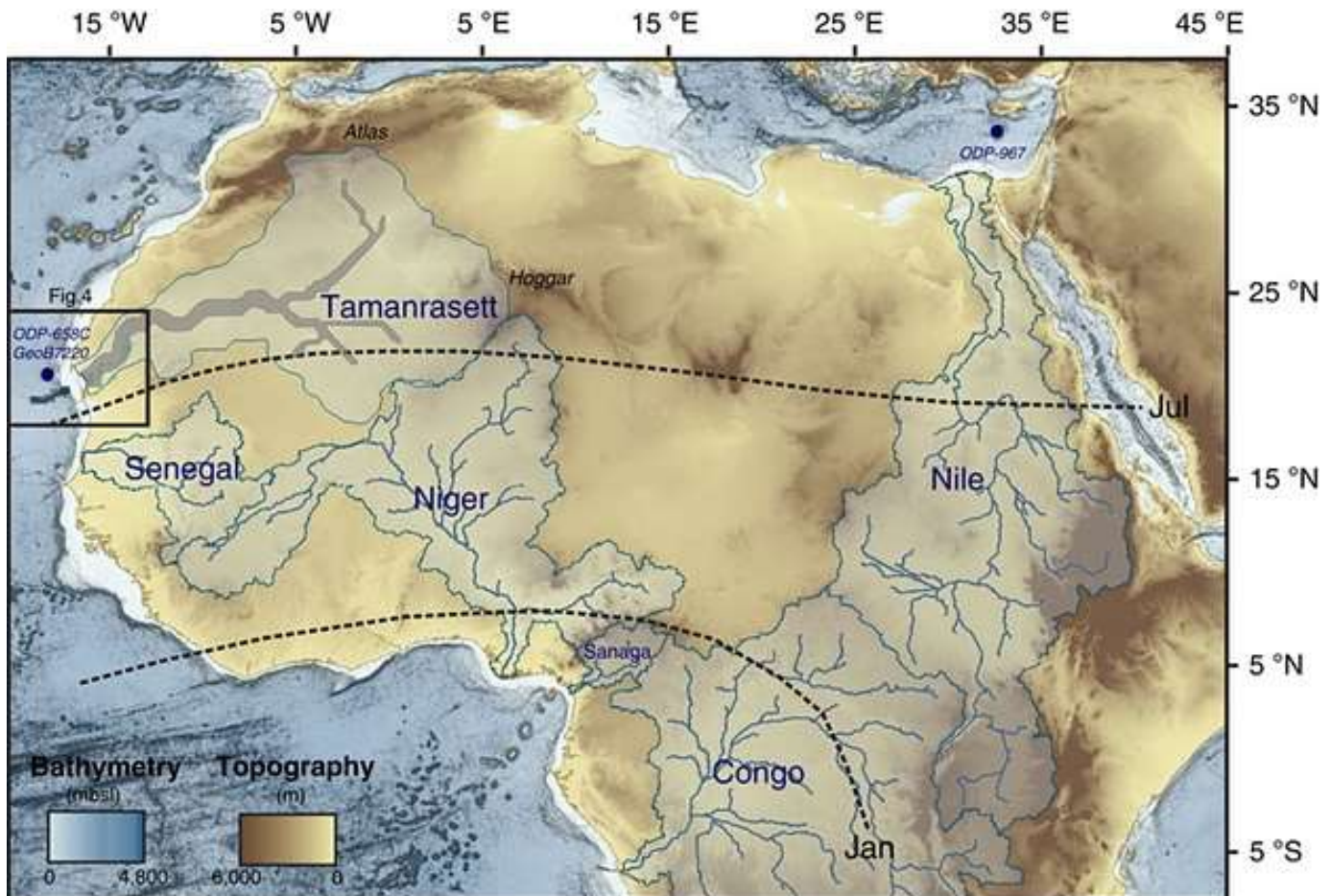
A vast river network that once carried water for hundreds of miles across [Western Sahara](#) has been discovered under the parched sands of Mauritania.

Radar images taken from a Japanese Earth observation satellite spotted the ancient river system beneath the shallow, dusty surface, apparently winding its way from more than 500km inland towards the coast.

The buried waterway may have formed part of the proposed Tamanrasset River that is thought to have flowed across parts of Western Sahara in ancient times from sources in the southern Atlas mountains and Hoggar highlands in what is now Algeria.

The French-led team behind the discovery believe the river carried water to the sea during the periodic humid spells that took hold in the region over the past 245,000 years. Water may last have coursed through the channels 5,000 years ago.

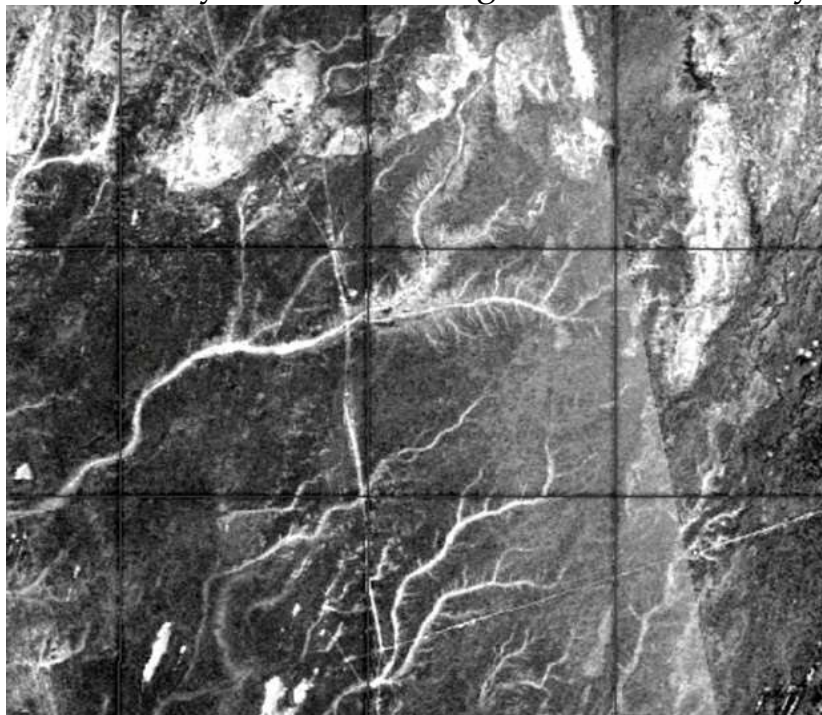
The river would have helped people, plants and wildlife to thrive in what is now desert land, and would have carried nutrients crucial for marine organisms far into the sea. Were it still flowing today, the river system would rank 12th among the largest on Earth, the researchers write in the journal [Nature Communications](#).



[Russell Wynn](#) at the National Oceanography Centre in Southampton was among the researchers who created the first 3D map of the canyon from the German Meteor research vessel. Sediment cores brought up from the canyon bottom contained fine-grained river-borne particles that suggested a massive river had first formed, and later fed into, the deep channel carved into the continental shelf. “It’s a great geological detective story and it confirms more directly what we had expected. This is more compelling evidence that in the past there was a very big river system feeding into this canyon,” said Wynn, who was not involved in the latest study. “It tells us that as recently as five to six thousand years ago, the Sahara desert was a very vibrant, active river system.”

In full flow, the river would have carried organic material from the land out into the ocean, where it sustained a rich ecosystem of filter feeders and other organisms in the canyon. But the river was destructive too, occasionally sending rapid, turbulent rushes of water and sediment down the canyon. Similar flows are still active off the coast of Taiwan today, and hold enough power to destroy submarine cables and other infrastructure.

“People sometimes can’t get their head around climate change and how quickly it happens. Here’s an example where within just a couple of thousand years, the Sahara went from being wet and humid, with lots of sediment being transported into the canyon, to something that’s arid and dry,” Wynn said.



A radar image of the discovered paleo-rivers. Water may last have coursed through the newly discovered network’s channels 5,000 years ago.

Photograph:
Philippe Paillou



FERNBANK MUSEUM

of NATURAL HISTORY

SEARCHING FOR

THE QUEEN OF SHEBA

OPENS SEPT 26

Searching for the Queen of Sheba On view September 26 - January 3

Myth. Mystery Legend. Shrouded in mystery, the Queen of Sheba has been passed down through the centuries in legend, with conflicting details of her tale found in the Bible, the Qur'an, and in the Ethiopian Holy Book *Kebrä Nagast*. Rumored to be magnificently wealthy, beautiful and wise, the Queen of Sheba has inspired artists, mystics, poets, composers, and even modern film-makers since time immemorial. But who was she? Discover the myth and mystery behind one of history's most elusive female figures in the world premiere of *Searching for the Queen of Sheba*. Included with Museum admission. [Members always free](#). *Searching for the Queen of Sheba* is organized by Contemporanea Progetti and the Polo Museale del Lazio / Museo Nazionale d'Arte Orientale 'G. Tucci', Rome, Italy. Sponsored locally and in part by The Rich Foundation, Inc.

Women of Vision On view September 26 - January 3, 2016

For 125 years, National Geographic has documented the world featuring photography that communicates the nuances of a narrative beyond the words on a page. For the last decade, some of the most powerful and impactful stories have been produced by a new generation of photojournalists who are women.

From the savannahs of Botswana to the war torn streets of Libya and Afghanistan; the beaches of the Jersey Shore to the Mongolian steppe or the rainforests of New Guinea — these 11 women have traveled the world as explorers, capturing compelling stories of our planet and its people. *Women of Vision*, a new photographic exhibition, is a tribute to the spirit and the ambition of these journalists who have created powerful experiences for millions through the insightful, sensitive and strategic use of a camera.

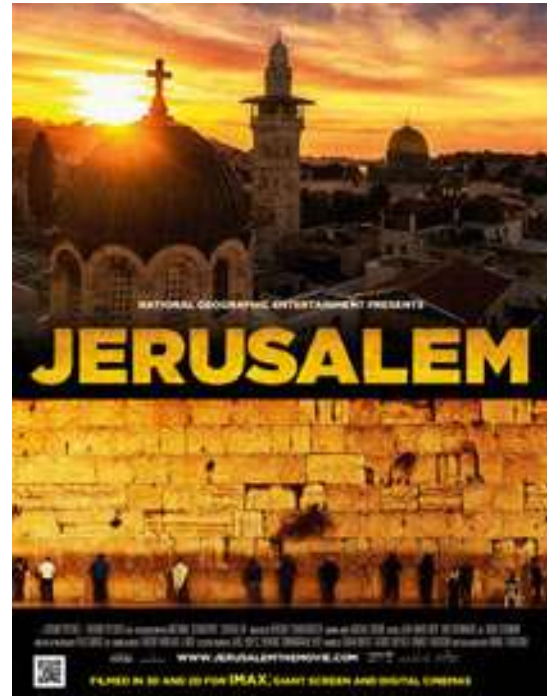
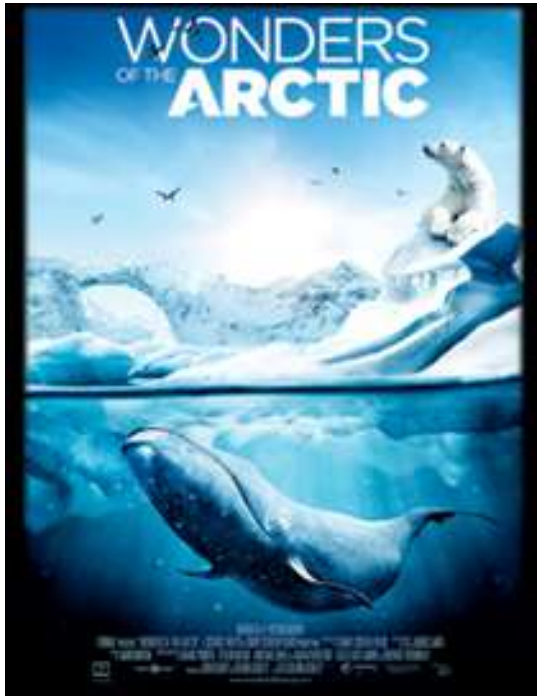
Included with Museum admission and [free for members](#). Presented in conjunction with [Searching for the Queen of Sheba](#).



Fernbank Museum of Natural History

(All programs require reservations, including free programs)

Now Showing in the Fernbank IMAX movie theater:



[Wonders of the Arctic](#)

Now showing through February 11, 2016*

Enter a glittering world of ice and snow, where polar bears tussle, huskies howl and narwhals dive through turquoise waters. In this wilderness at the top of the world, tiny flowers blossom in the brief but brilliant summer and whales breach in an iceberg-studded ocean. This is a story of survival in one of the most unforgiving environments on earth, an environment dominated by a single element: ice.

[Learn more](#)

[Jerusalem](#)

Now showing through January 7, 2016*

Immerse yourself into one of the world's most beloved cities. Discover why this tiny piece of land is sacred to three major religions through the stories of Jewish, Christian and Muslim families who call Jerusalem home. Unprecedented access to the city's holiest sites, as well as rare and breathtaking aerial footage of the Old City and the Holy Land, combine to make Jerusalem a unique and stunning cinematic experience. [Learn more](#)

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AGS 2015 Meeting Dates

Listed below are the planned meeting dates for 2015. Please mark your calendar and make plans to attend.

NOVEMBER

PG Study Group November 21

AGS Meeting November 24

DECEMBER

No AGS meeting, enjoy the holidays

2016 Meeting Schedule

January 26 February 23

March 29 April 26

May 31 June 28

August 30 September 27

October 25 November 29

PG Study Group meetings not scheduled just yet but are reliably the last Saturday of the month.

AGS Committees

AGS Publications: Open

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ATLANTA GEOLOGICAL SOCIETY

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Please print the required details and check the appropriate membership box.

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PROFESSIONAL MEMBERSHIP \$25

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(Includes 4 professional members, please list names and emails below)

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For further details, contact the AGS Treasurer: Lucy Mejia: telephone: 404-438-9584;
Lucytaylor360@gmail.com

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2143 Melante Drive, Atlanta, GA 30324

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