

Ode to E Pluribus Unum for Sunday January 16 2022

## Draining the World's Oceans to Visualize Earth's Surface



Although many maps of our planet go into great topographical detail on land, almost two-thirds of the Earth's surface is covered by the world's oceans.

Hidden from sight lie aquatic mountain ranges, continental shelves, and trenches that dive deep into the Earth's crust. We might be familiar with a few of the well-known formations on the ocean floor, but there's a whole detailed "world" that's as rich as the surface, just waiting to be explored.

This animation from planetary researcher James O'Donoghue of the Japan Aerospace Exploration Agency (JAXA) and NASA simulates the draining the world's oceans to quickly reveal the full extent of the Earth's surface.

### How Deep Does the Ocean Go?

Above sea level, Earth's topography reaches all the way up to 8,849 meters (29,032 ft) to the top of Mt. Everest. But going below sea level, it actually goes deeper than the height of Everest.

Open ocean is called the pelagic zone, which can be broken down into five regions by depth:

**0m–200m:** Epipelagic (sunlight zone). Illuminated shallower waters that contain most of the ocean's plants and animals.

**200m–1,000m:** Mesopelagic (twilight zone). Stretches from where 1% of surface light reaches to where surface light ends. Contains mainly bacteria, as well as some large organisms like the swordfish and the squid.

**1,000m–4,000m:** Bathypelagic (midnight zone). Pitch black outside of a few bioluminescent organisms, with no living plants. Smaller anglerfish, squid, and sharks live here, as well as a few large organisms like giant squid.

**4,000m–6,000m:** Abyssopelagic (abyssal zone). Long thought to be the bottomless end of the sea, the abyssal zone reaches to just above the ocean floor and contains little life due to extremely cold temperatures, high pressures, and complete darkness.

**6,000m–11,000m:** Hadopelagic (hadal zone). Named after Hades, the Greek god of the underworld, the hadal zone is the deepest part of the ocean. It can be found primarily in trenches below the ocean floor.

To put ocean depths into context, the bottom of the ocean is more than 2,000m greater than the peak of Mount Everest.

### **What “Draining” the World’s Oceans Reveals**

For a long time, the ocean floor was believed to be less understood than the Moon.

The sheer depth of water made it difficult to map without newer technology, and the tremendous pressure and extreme temperatures make navigation grueling. A manned vehicle reached the deepest known point of the Mariana Trench—the Challenger Deep—in 1960, almost 90 years after it was first charted in 1872.

But over the last few decades, humanity’s understanding and exploration of the ocean floor has grown in leaps and bounds. O’Donoghue’s animation shows just how much detail we’ve been missing.

The first easily noticeable characteristic is the Earth’s continental shelves, which appear quickly. Most are visible by 140 meters, though the Arctic and Antarctic shelves are far deeper.

<https://vimeo.com/653007652>

The animation then speeds up, as thousands of meters of depth reveal the tops of small mountain ridges and aquatic islands. From 2,000 to 3,000 meters, mid-ocean ridges appear that span the length of the Arctic, Pacific, and Indian oceans.

From 3,000 to 6,000 meters of ocean drained, these aquatic mountains slowly give way to the vast majority of the ocean floor. Little changes over the final 5,000 meters except to illustrate just how deep the ocean’s trenches reach.

Of course, technically the bottom of the Challenger deep is the deepest known point of the Mariana Trench. As satellite and imaging technology improves further, and aquatic mapping voyages become more possible, who knows what else we’ll discover beneath the waves.

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### **1969 F-4 Blues Reunion**



[https://www.youtube.com/watch?v=i2P\\_ZVL-POM](https://www.youtube.com/watch?v=i2P_ZVL-POM)

This is long and nothing but talk, but as a piece of aviation history, I think it's something you'd like to keep.

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## **A Class Taught Completely in Virtual Reality**



*Gabriella Fedetto using her VR headset for COMM 166.  
(Photo: ULA LUCAS/The Stanford Daily)*

By Adri Kornfein on December 1, 2021

Stanford communication professor Jeremy Bailenson has formatted his class COMM 166/266: "Virtual People" to take place in virtual reality (VR) after 20 years of teaching the subject and seeing the technology develop. It is the first class set entirely in VR in Stanford's history.

"We live in a time where virtual reality is rapidly expanding its roles in how we work, play and communicate," said music professor Ge Wang when he introduced Bailenson and first-year communication Ph.D. student Cyan DeVeaux as this month's presenters at the Art and Tech Salon, a speaker series devoted to bringing together students and professors from across campus disciplines.

When planning the class, Bailenson took a gamble on whether VR software and technology would be advanced enough in time for him to teach it as a summer course. The software the class ended up using, ENGAGE, became ready in late May, just in time to run the course in the Summer. ENGAGE is a virtual meeting platform that provides tools for students and teachers to build and interact in virtual environments.

DeVeaux, who is a teaching assistant for the class, described how VR allows people to imagine the impossible, adding that the teaching team tried to incorporate that tenet into the curriculum. Class assignments include participating in a guided meditation in outer space, creating a performance with different avatars and building a unique scene.

"The only limitation to this assignment was a student's own imagination," DeVeaux said, referencing the scene-building assignment.



Bailenson and DeVaux had to budget hardware expenses, find a platform to host the class and create a new curriculum that utilized the advantages of teaching a class in VR. They decided to embrace the flipped classroom method, where students do readings over the weekend in preparation for interactive lessons the following week. Class sessions were also limited to 30 minutes to avoid simulator sickness, a subset of motion sickness that can be caused by VR devices.

Another concern the class had to navigate was privacy. Bailenson made a deal with Facebook to allow students to use fake accounts in order to protect their privacy while using their University-provided headset from Oculus, a subsidiary of Facebook's parent company Meta.

To assess when VR is the appropriate medium to use as a teaching tool, Bailenson and the Virtual Human Interaction Lab, of which he is the founding director, created a model: "Dangerous, Impossible, Counterproductive and Expensive" (D.I.C.E.). For example, VR allows educators to teach things that would otherwise be too dangerous, like traveling to the middle of the ocean, or too expensive, like viewing cities around the world.

The course is part of a study that the Virtual Human Interaction Lab is running on education in virtual spaces. They are interested in studying people in VR over time and evaluating how people adapt their behavior to virtual environments. Over the course of the two classes taught over the summer quarter and this fall, Bailenson and DeVaux were able to collect over 3,000 hours of data.

Bailenson and DeVaux are hoping that the data collected from the course will spur discoveries in behavioral adaptation to VR environments and continue expanding the ability of educational VR.

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## **The Marines' Hymn, Apotheosis by MGYSGT Sammy Nestico, USMC**



The Marines' Hymn is one of the most readily recognized songs and is the oldest of the country's service songs. The history of the hymn has been clouded by the passing of

time and confused by oral tradition. There is no confusion, however, on the part of the hearer when The Marines' Hymn is performed: it is as easily identified with the United States Marine Corps as "The Star-Spangled Banner" is with the nation. To all Marines, it has become a sacred symbol of pride, professionalism, and esprit de corps. Marines stand tall at the position of attention when the hymn is performed.

The setting by former Marine Band arranger Sammy Nestico presents the hymn as an apotheosis, the most elevated and exalted setting of the music imaginable. It begins with a strong introduction which ends with a brief reference to the bugle call "Taps." Following a quiet and unadorned statement of the melody, the arrangement grows in intensity until it becomes a glorious and dramatic declaration of the sacred music, fitting to resound even in Heaven's scenes where "the streets are guarded by United States Marines."

**Nestico - The Marines' Hymn, Apotheosis** <https://youtu.be/vpNmdjhTF8>

Also, as long as we're here:

**MacDowell - "In a Haunted Forest"** <https://youtu.be/JRC7VXF6TTA>

Edward MacDowell was an American composer and contemporary of Sousa. MacDowell was best known for his piano miniatures, short works with poetic and evocative titles, but he was also an accomplished orchestral composer, as demonstrated by his Suite No. 1, Opus 42, the work from which "In a Haunted Forest" was extracted.

It is not difficult to ascertain the mood MacDowell seeks to establish in this brief work that begins quietly, against a recurring heartbeat that is bound to increase as the woods come alive with the shrieking spirits and malevolent forces one would expect to find in any good nineteenth century ghost story.

**Elgar Nimrod** <https://youtu.be/jAUIEopJxa4>

*I could listen to Nimrod until the cows, crocodiles, and anything else come home.*

"The President's Own" United States Marine Band Brass Ensemble, Washington National Cathedral

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**Thank Goodness Massage Parlors are Still Open for the Kneady**



<https://youtu.be/qJJz-LXUxrA>

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## **NASA's Parker Solar Probe Samples Particles in Sun's Corona**

By Mindy Weisberger for Live Science



*Artist's concept of the Parker Solar Probe spacecraft approaching the sun. Launching in 2018, Parker Solar Probe will provide new data on solar activity and make critical contributions to our ability to forecast major space-weather events that impact life on Earth  
(Image credit: NASA/Johns Hopkins APL/Steve Gribben)*

A NASA probe has entered the sun's atmosphere and "touched" the blazing corona, in a first for solar science.

The Parker Solar Probe, which launched in 2018, conducted seven flybys of the sun before dipping into the corona during its eighth flyby on April 28, 2021. It made three trips into the sun's atmosphere, one of which lasted for 5 hours, mission scientists reported at a press briefing on Tuesday (Dec. 14) at the annual meeting of the American Geophysical Union (AGU).

In the upper reaches of the solar atmosphere, where temperatures average about 2 million degrees Fahrenheit (1 million degrees Celsius) — hotter than the light-emitting surface of the sun, which is only 10,000 F (5,500 C) — the spacecraft collected atmospheric particles in a special instrument called the Solar Probe Cup. By entering and sampling the sun's atmosphere, the Parker Solar Probe accomplished a scientific achievement akin to landing on the moon, scientists said at the briefing.

"Imagine yourself sitting on a beach and staring at the ocean wondering what lies beneath the surface. This is basically what scientists have been doing for decades, wondering what mysteries lie in the sun's corona," said Nicola Fox, Heliophysics Division Director of the Science Mission Directorate at NASA Headquarters. And just three years after Parker Solar Probe's launch, "we have finally arrived; humanity has touched the sun," Fox said at AGU, held this year in New Orleans and online.

Powerful solar winds made of streaming plasma and high-energy particles are born in the corona, but are mostly held back by the sun's magnetic fields, which also restrain bursts of plasma that spurt from the sun's surface. When solar winds exceed a certain speed and extend just past the sun's atmosphere, a location known as the Alfvén point, they can break free of their magnetic restraints. However, scientists didn't know where exactly that point was located.

Now, Parker Solar Probe has answered that question. Prior estimates based on remote images of the corona predicted that the Alfvén point would be found approximately 4.3 million to 8.6 million miles (6.9 million to 13.8 million kilometers) from the solar surface. Parker detected those conditions on April 28, at a distance of about 8.1 million miles (13 million km) above the sun, telling researchers that it had entered the sun's atmosphere for the first time.

### **"A range of surprises"**

Solar winds and solar flares — swift eruptions of solar radiation — can affect electrical grids and disrupt communication networks on Earth, and the new data from the probe provides an unprecedented glimpse into these solar events, the researchers reported Dec. 14 in the journal *Physical Review Letters*.

"Our voyage is revealing a range of surprises as we venture into new places," Nour Raouafi, Project Scientist for NASA's Parker Solar Probe and a researcher at The Johns Hopkins Applied Physics Laboratory, said at the briefing. "The new physics we are learning about the immediate solar environment and the solar wind is mind-boggling."



A heat shield protects most of the probe from the sun, but the Solar Probe Cup had to extend beyond that protection in order to sample the corona. Engineers constructed the cup from materials with very high melting points — sapphire, tungsten, molybdenum and niobium — so that it could function under the extreme heat, according to representatives of the Harvard and Smithsonian Center for Astrophysics (CfA).

When the cup is exposed and making its measurements, "it's literally red-hot, with parts of the instrument at more than 1,800 degrees Fahrenheit [1,000 degrees Celsius], and glowing red-orange," CfA astrophysicist Anthony Case, the instrument scientist for the Solar Probe Cup, said in a statement.

Data collected by Parker Solar Probe in the corona reveals the sun as it's never been seen before, which will help scientists to better understand the roiling forces that generate the enormous quantities of energy powering our sun and other stars.

"This milestone is a first for any spacecraft, and marks one major step for Parker Solar Probe — and one giant leap for solar science," Fox said.

*Originally published on Live Science.*

### **In Case You've Dreamed of Flying Through the Sun's Corona...**

<https://twitter.com/i/status/1471338963772321795>

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Remember When We Used to Piggyback?

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**The One, the Only...**



<https://www.youtube.com/watch?v=UWEjkkkB8Xs>

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## Dance by the Water



*by wayne lawrence*

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## Detailed Footage Finally Reveals What Triggers Lightning



Scientists have never been able to adequately explain where lightning comes from. Now the first detailed observations of its emergence inside a cloud have exposed how electric fields grow strong enough to let bolts fly.

[https://d2r55xnwy6nx47.cloudfront.net/uploads/2021/12/Lightning\\_1238x826\\_Lede\\_Video.mp4](https://d2r55xnwy6nx47.cloudfront.net/uploads/2021/12/Lightning_1238x826_Lede_Video.mp4)

In this animation of a lightning flash recorded by the LOFAR radio telescope network, each dot is the location of a radio source. The flash, which is 5 kilometers wide, grew out of a small region of the cloud measuring tens of meters across.

By Brian Hare

During a summer storm in 2018, a momentous lightning bolt flashed above a network of radio telescopes in the Netherlands. The telescopes' detailed recordings, which were processed only recently, reveal something no one has seen before: lightning actually starting up inside a thundercloud.

In a new paper that will soon be published in the journal *Geophysical Research Letters*, researchers used the observations to settle a long-standing debate about what triggers lightning — the first step in the mysterious process by which bolts arise, grow and propagate to the ground. "It's kind of embarrassing. It's the most energetic process on the planet, we have religions centered around this thing, and we have no idea how it works," said Brian Hare, a lightning researcher at the University of Groningen and a co-author of the new paper.

The schoolbook picture is that, inside a thundercloud, hail falls as lighter ice crystals rise. The hail rubs off the ice crystals' negatively charged electrons, leading the top of the cloud to become positively charged while the bottom becomes negatively charged. This creates an electric field that grows until a gigantic spark jumps across the sky.

Yet the electric fields inside clouds are about 10 times too weak to create sparks. "People have been sending balloons, rockets and airplanes into thunderstorms for decades and never seen electric fields anywhere near large enough," said Joseph Dwyer, a physicist at the University of New Hampshire and a co-author on the new paper who has puzzled over the origins of lightning for over two decades. "It's been a real mystery how this gets going."

A big impediment is that clouds are opaque; even the best cameras can't peek inside to see the moment of initiation. Until recently, this left scientists little choice but to venture into the storm — something they've been trying since Benjamin Franklin's famous kite experiment of 1752. (According to a contemporaneous account, Franklin attached a key to a kite and flew it beneath a thundercloud, observing that the kite became electrified.) More recently, weather balloons and rockets have offered snapshots of the interior, but their presence tends to interfere with the data by artificially creating sparks that wouldn't naturally occur. "For a long time we really have not known what the conditions are inside a thunderstorm at the time and location that lightning initiates," said Dwyer.

So Dwyer and his team turned to the Low Frequency Array (LOFAR), a network of thousands of small radio telescopes mostly in the Netherlands. LOFAR usually gazes at distant galaxies and exploding stars. But according to Dwyer, "it just so happens to work really well for measuring lightning, too."

When thunderstorms roll overhead, there's little useful astronomy that LOFAR can do. So instead, the telescope tunes its antennas to detect a barrage of a million or so radio pulses that emanate from each lightning flash. Unlike visible light, radio pulses can pass through thick clouds.

Using radio detectors to map lightning isn't new; purpose-built radio antennas have long observed storms in New Mexico. But those images are low-resolution or only in two dimensions. LOFAR, a state-of-the-art astronomical telescope, can map lightning on a meter-by-meter scale in three dimensions, and with a frame rate 200 times faster than previous instruments could achieve. "The LOFAR measurements are giving us the first really clear picture of what's happening inside the thunderstorm," said Dwyer.

A materializing lightning bolt produces millions of radio pulses. To reconstruct a 3D lightning image from the jumble of data, the researchers employed an algorithm similar to one used in the Apollo moon landings. The algorithm continuously updates what's known about an object's position. Whereas a single radio antenna can only indicate the rough direction of the flash, adding data from a second antenna updates the position. By steadily looping in thousands of LOFAR's antennas, the algorithm constructs a clear map.

When the researchers analyzed the data from the August 2018 lightning flash, they saw that the radio pulses all emanated from a 70-meter-wide region deep inside the storm cloud. They quickly inferred that the pattern of pulses supports one of the two leading theories about how the most common type of lightning gets started.

One idea holds that cosmic rays — particles from outer space — collide with electrons inside thunderstorms, triggering electron avalanches that strengthen the electric fields.

The new observations point to the rival theory. It starts with clusters of ice crystals inside the cloud. Turbulent collisions between the needle-shaped crystals brush off some of their electrons, leaving one end of each ice crystal positively charged and the other negatively charged. The positive end draws electrons from nearby air molecules. More electrons flow in from air molecules that are farther away, forming ribbons of ionized air that extend from each ice crystal tip. These are called streamers.



*LOFAR, a large network of radio telescopes mostly in the Netherlands, records lightning when it isn't doing astronomy.*

*lofar / astron*

Each crystal tip gives rise to hordes of streamers, with individual streamers branching off again and again. The streamers heat the surrounding air, ripping electrons from air molecules en masse so that a larger current flows onto the ice crystals. Eventually a streamer becomes hot and conductive enough to turn into a leader — a channel along which a fully fledged streak of lightning can suddenly travel.

“This is what we’re seeing,” said Christopher Sterpka, first author on the new paper. In a movie showing the initiation of the flash that the researchers made from the data, radio pulses grow exponentially, likely because of the deluge of streamers. “After the avalanche stops, we see a lightning leader nearby,” he said. In recent months, Sterpka has been compiling more lightning initiation movies that look similar to the first.

The key role of ice crystals dovetails with recent findings that lightning activity dropped by more than 10% during the first three months of the COVID-19 pandemic.

Researchers attribute this drop to lockdowns, which led to fewer pollutants in the air, and thus fewer nucleation sites for ice crystals.

“The steps set by LOFAR are certainly very significant,” said Ute Ebert, a physicist at Eindhoven University of Technology in the Netherlands who studies lightning initiation but was not involved in the new work. She said LOFAR’s initiation movies offer a

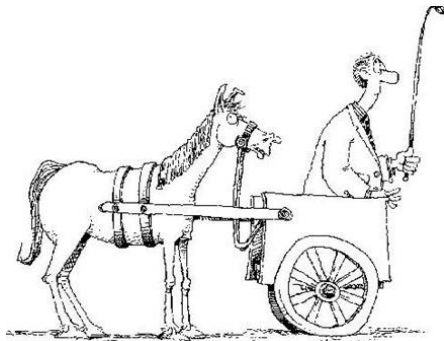


framework from which to build accurate lightning models and simulations, which until now have been held back by a lack of high-resolution data.

Ebert notes, however, that despite its resolution, the initiation movie described in the new paper does not directly image ice particles ionizing the air — it only shows what happens immediately afterward. “Where is the first electron coming from? How does the discharge start near to an ice particle?” she asked. Few researchers still favor the rival theory that cosmic rays directly initiate lightning, but cosmic rays could still play a secondary role in creating electrons that trigger the first streamers that connect to ice crystals, said Ebert. Exactly how streamers turn into leaders is also a “matter of great debate,” said Hare.

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### **Borrowed from George Smith** *(Who borrowed it from Jennifer Brown)*



A horse walks into a bar. The bartender says, “You know, you come in here a lot, and I think you might be an alcoholic.”

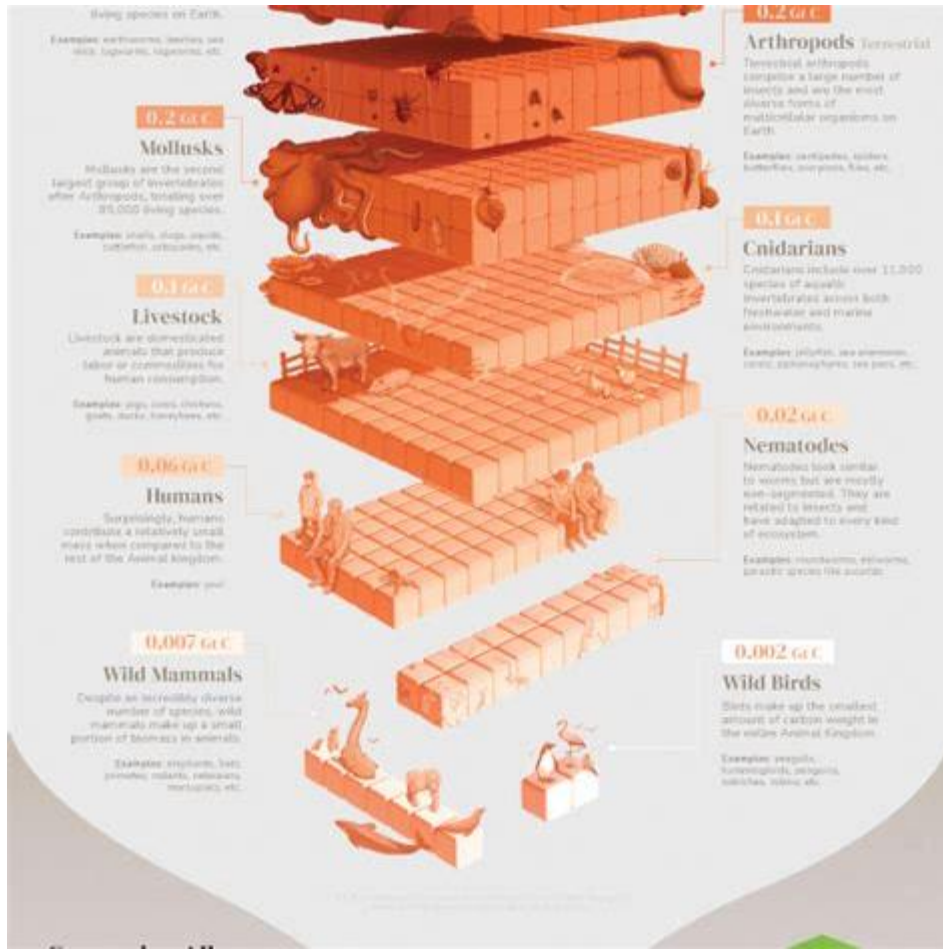
The horse replies, “I don’t think I am,” and promptly vanishes into thin air.

This joke is based on the famous philosophy from René Descartes: “I think, therefore I am.”

But I couldn’t explain that before the joke because, you see, that would be putting Descartes before the horse.

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### **All the Biomass of Earth, in One Graphic**



<https://www.visualcapitalist.com/all-the-biomass-of-earth-in-one-graphic/>

Biomass and its distribution make for some interesting thoughts.

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## 5-Year-Old Basset Hound Elected Mayor of Colorado Town



*Littleton dog mayor Murdoch*  
*inkl.com*

By: KMGH Staff

LITTLETON, Colo. — It only took newly elected Mayor Kyle Schlachter a few days to realize that he wasn't the only top dog in politics in Littleton.

"They didn't ask me about it," Schlachter told Denver7.

A few days into his term as mayor, the first time the voters directly elected a mayor in Littleton, Schlachter learned that he wouldn't be the only one in the city with that title.

"We weren't electing a human," said Katherine Roxborough of Historic Littleton Inc. "The candidates were of the canine sort."

Littleton was set to elect its first honorary dog mayor. It was a contest to bring attention to historic preservation within the city.

"We wanted to heighten awareness," Roxborough said.

Each dog candidate posed for photos in front of historic sites in Littleton. Voters responded, casting a total of more than 6,000 votes. In the end, the winner was Murdoch, a 5-year-old basset hound.

"He's a lover of people," owner Beverly Pillow said. "And he loves to give big sloppy kisses."

The 6,000-vote total was nearly half as many votes as the actual mayoral election.

"They had a shorter campaign cycle," actual Mayor Schlachter said. "If they had gone the same length that we did, who knows how many votes the dogs would've gotten."

Schlachter sat down with Denver7 to discuss his canine counterpart, including if he was ever worried about the "other" mayor.

"I feel confident," he said. "Thankfully, this new dog only has a two-year term. I have a four-year term."

Meanwhile, Mayor Murdoch is out and about in the community every day (on his daily walk). He shakes hands with almost every constituent that stops him.

"That's the only trick he knows," owner Beverly said with a smile, giving Murdoch the command and rewarding him with a treat.

The new mayor also didn't come alone. He was elected alongside his dog mayor pro tem, a French bulldog named Netty.

For more information about Historic Littleton, head to <https://hlinc.org/>.

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## **Can a 22-lb Hydrogen Engine Compete with ITCs or Electrics?**

The company behind the engine claims it overcomes the shortcomings of hydrogen fuel cells.

By Chris Young



Israel-based Aquarius Engines unveiled a new hydrogen engine that it says could do away with the global reliance on hydrogen fuel cells and fossil fuels, the company explained in a press statement via PR Newswire.

The machine, which weighs only 22 lb (10 kg), is a single-piston-linear-engine, that runs exclusively on hydrogen. As it has only 20 components and one moving part, the engine is also much cheaper to produce and maintain than traditional engines.

Though Aquarius Engines has so far released little in the way of specifications for their new engine, the company says the Aquarius Hydrogen Engine's "lightweight design and unique internal-gas-exchange-method would greatly reduce emissions and lower the global carbon footprint."

The company said its new hydrogen engine has successfully passed a test by Austrian engineering firm AVL-Schrick, showing that the model does indeed operate on hydrogen.

"It was always our dream at Aquarius Engines to breathe oxygen into hydrogen technology as the fuel of the future," said Gal Fridman, Chairman of Aquarius Engines.

"From initial tests it appears that our hydrogen engine, that doesn't require costly hydrogen fuel-cells, could be the affordable, green and sustainable answer to the challenges faced by global transport and remote energy production," Fridman continued. "As the world moves away from fossil fuel, our new hydrogen engine could spark the dawning of the age of Aquarius."

The electric versus hydrogen debate rages on

Indeed, as with many green initiatives, the financial incentive behind going hydrogen is set to play a big role, and will likely determine whether we eventually drive hydrogen cars or electric at a mass scale.

Really, the main selling point of the new Aquarius Hydrogen Engine, with its one moving part, is the fact that it's much cheaper than hydrogen fuel cells. The company adds that the machine doesn't even need lubrication for maintenance.



Still, it might take more for the current trend to veer away from electric vehicles. This week, Volkswagen Auto Group CEO Herbert Diess criticized hydrogen cars on Twitter and stated the group is backing electrification.

Elon Musk was quick to reply, saying "Diess is right. Hydrogen is a staggeringly dumb form of energy storage for cars. Barely worth considering it for a rocket upper stage, which is its most compelling use."

That's not to say plenty of companies aren't exploring hydrogen fuel as a sustainable method for transportation — including Segway with its bonkers Tron-inspired hydrogen-fueled motorbike.

In fact, Aquarius Engines recently announced partnerships with auto-parts manufacturers TPR and Honda-affiliate Musashi Seimitsu. Japan is one of the few countries to have bet big on hydrogen as part of its Green Growth Strategy.

Aquarius Engines unveiled the first iteration of its 22-lb engine in 2014, though that one didn't run on 100 percent hydrogen. It was designed to be used as an onboard power generator in vehicles or as a stationary electricity generator.

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## **Jeremy Clarkson at the Bonneville Salt Flats**



<https://youtu.be/qBSMnK6pQo4>

Top Gear in a Hot Rod is new territory for a slimmed down Jeremy

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## **An Archaeological Dig Reignites the Debate Over the Old Testament's Historical Accuracy: The Copper King?**



*A reconstruction of a smelting furnace with bellows. Ore placed in the charcoal-burning chamber disintegrates. Molten slag drains out; copper remains.*  
*Yadid Levy*

[https://www.smithsonianmag.com/history/archaeological-dig-reignites-debate-old-testament-historical-accuracy-180979011/?utm\\_source=join1440&utm\\_medium=email](https://www.smithsonianmag.com/history/archaeological-dig-reignites-debate-old-testament-historical-accuracy-180979011/?utm_source=join1440&utm_medium=email)

Beneath a desert in Israel, a scholar and his team are unearthing astonishing new evidence of an advanced society in the time of the biblical Solomon.

*This article from Smithsonian Magazine is long and detailed, but provocative. Definitely worth your time if the subject lies anywhere near your wheelhouse.*

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Day 4 and they suspect nothing 🤔🤔



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**Museum of the World: History Connections**



*The Museum's oldest artifact.*  
*flickr*

[https://britishmuseum.withgoogle.com/?utm\\_source=join1440&utm\\_medium=email&utm\\_placement=newsletter](https://britishmuseum.withgoogle.com/?utm_source=join1440&utm_medium=email&utm_placement=newsletter)

This study by the British Museum in conjunction with Google looks at the archaeological record of human activity throughout the world over the last 2 million years, showing their interconnections.

*It's another of those works you should view, then bookmark for future reference*

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## **Yo-Yo Ma Answers Cello Questions from Twitter**



<https://youtu.be/XPv4ohPTC4M>

Yo-Yo Ma uses the power of Twitter to answer some common questions about playing cello. Would Yo-Yo Ma ever collaborate with a rapper? Why is it that in every movie the



cellist plays Bach's Cello Suite No. 1? Why are cellos so expensive? Can you hurt you arm playing the cello? Yo-Yo answers all these questions and much, much more.

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### Why Doesn't he James Webb Space Telescope Have Cameras?



By Elizabeth Howell for Space.com



Engineers must make do with traditional telemetry because of a lot of practical problems.

NASA's James Webb Space Telescope separates from its Ariane 5 rocket with the bright blue Earth in the background in this view captured after its launch on Dec. 25, 2021.

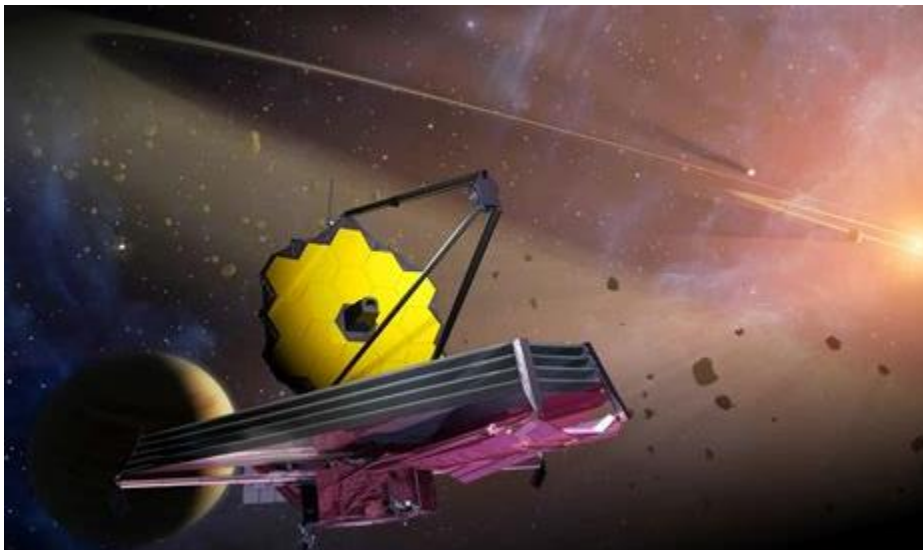
The public is now used to seeing space up close, thanks to cameras watching everything from satellites deploying to a spacesuit-clad "dummy" cruising in a Tesla — so why doesn't NASA's giant new observatory have any cameras on board?

It has to do with light and heat, Julie Van Campen, deputy commissioning manager for the James Webb Space Telescope at NASA's Goddard Space Center in Maryland, said during a live broadcast Tuesday (Jan. 4) showing the last stages of the tricky sunshield deployment.

Webb launched on Dec. 25 and is now on a month-long journey to its observing destination, nearly 1 million miles (1.5 million kilometers) from Earth. But engineers in charge of the telescope's nerve-wracking development have no photographs to work from.

Van Campen noted that Webb's multi-decade development began when portable cameras were not widely available. But even if a camera was included on board, it might mess up the sensitive optics on Webb, which are sensitive in infrared to gaze back at the young universe.

So the first challenge for an onboard camera would be overcoming that the telescope literally operates in the black: "Looking at the telescope, it would be dark," Van Campen explained of a theoretical camera's view.



*An artist's illustration of NASA's James Webb Space Telescope deployed in space. Artist views and telemetry-driven graphics are the only images we'll see of Webb after its launch.  
(Image credit: ESA)*

"We would need some kind of light system on a camera system," Van Campen continued. "We would have problems if we wanted to do flash photography, obviously."

Our mirrors are very sensitive. Our optics inside are very sensitive, and most importantly, [so are] our detectors all the way deep inside of our instruments."

Another problem with deploying cameras would be interference with keeping Webb cool. Webb must operate at a very low temperature so as not to disturb its infrared observations, which means attaching a camera would be very complicated.

"Plastics fall apart" in the cold, Van Campen said, "and they shrink and crack glues ... to make something that would work in the cryogenic temperatures on the cold side of the sunshield will take a lot of engineering and design."

And running heat cables out to keep the cameras warm could cause Webb to accidentally study the heat signature of the cables, rather than the signature of the universe.

So Van Campen said the engineers are relying on traditional data transmitted from the telescope. That data, known as telemetry, does the job — even if it's perhaps not quite as satisfying.

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## **If it's a Duet Does it Become Woogie Boogie?**



<https://youtu.be/dxK6dTcaJTc>

Well for certain it's different

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## **From Greek to Latin: Visualizing the Evolution of the Alphabet**

### **Usage (Year)**

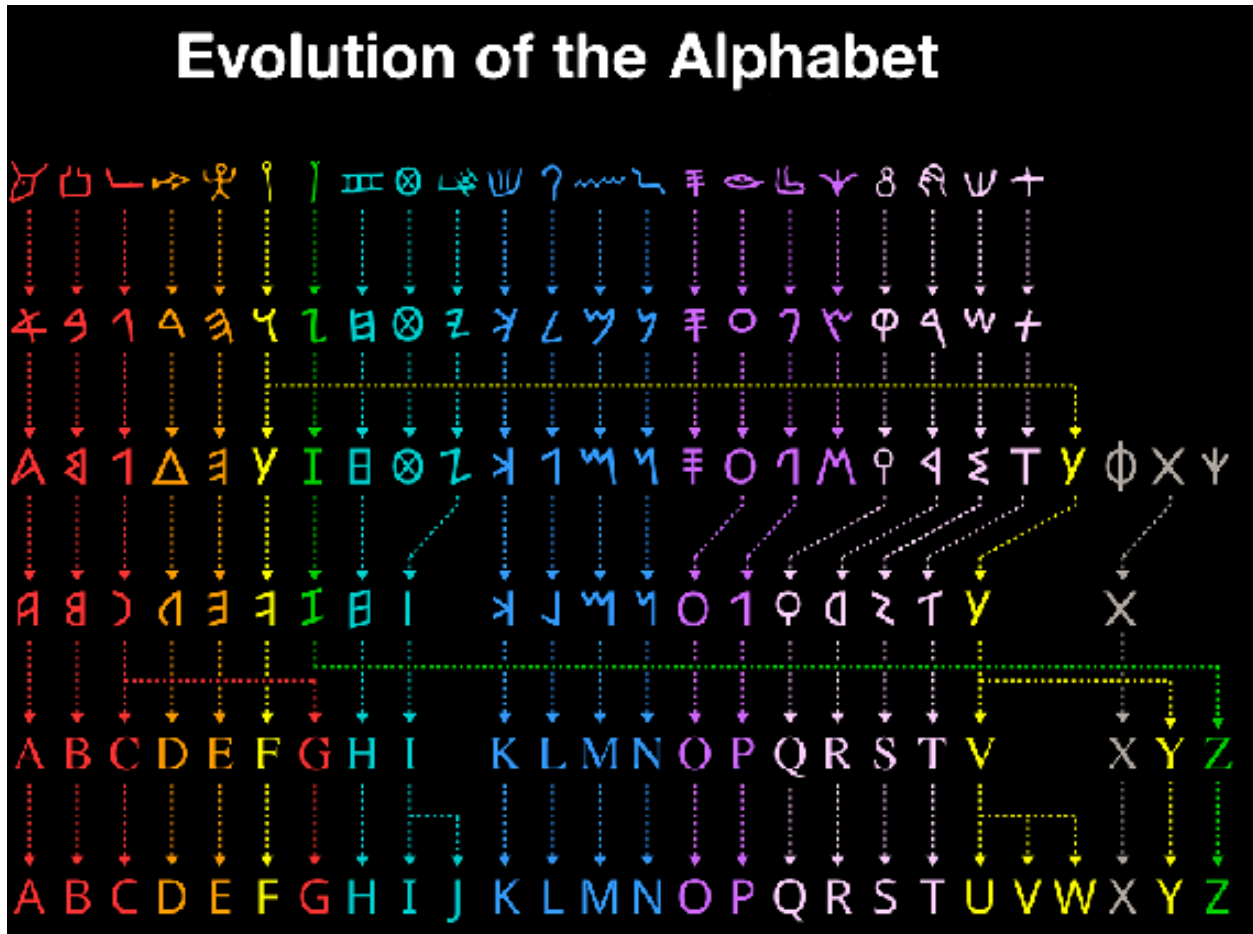
Proto-Sinaitic ~ 1,750 BCE

Phoenician ~ 1,000 BCE

Archaic Greek ~ 750 BCE

Archaic Latin ~ 500 BCE

Roman ~ 1 CE  
Modern Latin Today



Many of the letters which first came from Egyptian hieroglyphs made their way into modern English, but they took a long and convoluted journey. As the graphic above highlights, some letters evolved into multiple forms, while others fell out of use entirely.

And this is just a snapshot of the many scripts and languages that the modern English alphabet evolved from. Lowercase letters came from Roman cursive, which evolved into the Insular and Carolingian scripts before becoming modern lowercase English. Over the course of 2021, the Greek alphabet was a major part of the news cycle.

COVID-19 variants, which are labeled with Greek letters when becoming a variant of concern, normalized their usage. From the Alpha variant in the UK, to the Delta variant that spread from India to become the dominant global strain, the Greek alphabet was everywhere. Seemingly overnight, the Omicron variant discovered in South Africa has now taken the mantle as the most discussed variant.

But the Greek alphabet is used in other parts of our lives as well. For example, Greek letters are commonly used in mathematics and science, like Sigma ( $\Sigma$ ) denoting a sum or Lambda ( $\lambda$ ) used to represent the half-life of radioactive material.

And the study of linguistics shows us why using Greek letters in English isn't completely farfetched. This visualization from Matt Baker at UsefulCharts.com demonstrates how the modern Latin script used in English evolved from Greek, and other, alphabets.

### **It's All Proto-Sinaitic to Me**

Before there was English, or Latin, or even Greek, there was Proto-Sinaitic.

Considered the first alphabet ever used, the Proto-Sinaitic script was derived in Canaan, around the biblical Land of Israel. It was repurposed from Egyptian hieroglyphs that were commonly seen in the area (its name comes from Mount Sinai), and used to describe sounds instead of meanings.

### **Proto-Sinaitic Letter (Reconstructed Name)/Original Meaning**

ʾalp / ox	naḥaš / snake
bayt / house	šamk / peg
gaml /throwstick	ʿayn / eye
dag / fish	ḡabi / calyx
haw/hillul / praise	pʿit / corner
waw/uph / fowl	šaday plant
zayn/zayt / oxhide ingot/sword	qoba / needle/nape/monkey
ḏiqq manacle	raʾš / head
ḥašr / courtyard	šimš / sun
ḥayt thread	šadeh / field
ṭab / good	ṭann / bow
yad / hand	tāw / mark
kap / palm	
lamd / goad	
maym / water	

As the first Semitic script, Proto-Sinaitic soon influenced other Semitic languages. It was the precursor to the Phoenician alphabet, which was used in the area of modern-day Lebanon and spread across the Mediterranean and became the basis for Arabic, Cyrillic, Hebrew, and of course, Greek.

### **Evolving into the Greek, Roman, and Latin Alphabets**

Over time, the alphabet continued to become adopted and evolve across different languages.

The first forms of the Archaic Greek script are dated circa 750 BCE. Many of the letters remained in Modern Greek, including Alpha, Beta, Delta, and even Omicron, despite first appearing more than 2,500 years ago.

Soon the Greek alphabet (and much of its culture) was borrowed into Latin, with Archaic Latin script appearing circa 500 BCE. The evolution into Roman script, with the same recognizable letters used in modern English, occurred 500 years later in 1 CE.

Like many things in the long arc of human culture, alphabets are not as far removed from each other as you might think.

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## **Kim Carnes**



Born and raised in Los Angeles, California, she began her career as a songwriter in the 1960s, writing for other artists while performing in local clubs and working as a session background singer with the famed Waters sisters.

In her breakthrough year, 1980, Carnes was commissioned by Kenny Rogers to co-write the songs for his concept album *Gideon* (1980), and their duet "Don't Fall in Love with a Dreamer" hit No. 4 on the Billboard Hot 100, and earned the duo a Grammy Award nomination. The following year, Carnes released *Mistaken Identity*, which featured the worldwide hit, "Bette Davis Eyes". This became the best-selling single of the year in the United States, spending nine weeks at No. 1 on the Billboard Hot 100, going Gold, and won the Grammy Award for Record of the Year and Song of the Year.

**Bette Davis Eyes** <https://youtu.be/EPOIS5taqA8>

**I'll Be Here Where The Heart Is** <https://youtu.be/UloymAa1ZIM>

**Miss You Tonite** <https://youtu.be/UbTLns5F9MM>

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## **Thangs**

### **Enter the Dragon**





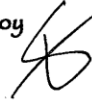
## A Dragon Thang

Everyone needs a dragon  
At our back or leading the way  
Defender in our battles  
Or chasing fears away.

A dragon makes an excellent pet  
In the good times and the bad  
Employing a sense of humor  
And a comfort when we're sad.

A dragon is the friend who helps us begin  
Each day to meet the challenges  
We might lose or maybe win.  
Folk tales have made the dragon  
A fearsome aberration  
But this mystical creature thrives  
In our hearts and imagination.

Francie Troy



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## **My Walking Thoughts; January 16 2022**

### **Getting to Know Me**

Excepting an occasional sally into the world of short stories, the bulk of my writing has been non-fiction. For the last two years, however, I've been facing and occasionally overcoming the daunting challenges of fiction writing.

It's a novel titled Phantoms from Vietnam about POWs and MIAs from the perspective of a pilot who spends three years as a POW before returning to an America that has undergone changes in many ways more profound than those affecting him from his time in captivity. With luck I will finish the book by summer. And then what? Who knows.

But that's not what this Walking episode is about. Instead, it is about what the process has shown me about myself...sadly a person less worthy than one who began the effort in March 2020.

The story reveals in its protagonist a catalog of flaws that threaten to become his undoing. As things unfold it is Gordon, my creation, who is directing my hands on the keyboard, forcing me to recognize flaws in his character that mirror my own, exposing features of me I have managed to ignore since childhood.

- Gordon is quick to disparage others, even complete strangers, without questioning his motives for doing so.
- He is certain of his ability to meet challenges when they arise, even when he has more than ample proof he is merely a fellow traveler embarked on an uncertain journey.
- So much of what moves him is selfishness, even when he pretends otherwise...as you see, not a great catalog of virtues.

There are many more, of course, but those are enough to paint the picture.

It's a painful experience to lay bare the fallacies and falsehoods of a lifetime without realizing that's what you're doing as you listen to what your fictional character is telling you about you. Painful, yes, but invigorating; frightening but also obsessing.

There are so many hidden rules and understandings involved in fiction writing, but none so critical as coming face-to-face with yourself on a distant battlefield, knowing that at best you may limp away from the contest battered, bowed, and bested...but hopefully a little better for the effort.

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