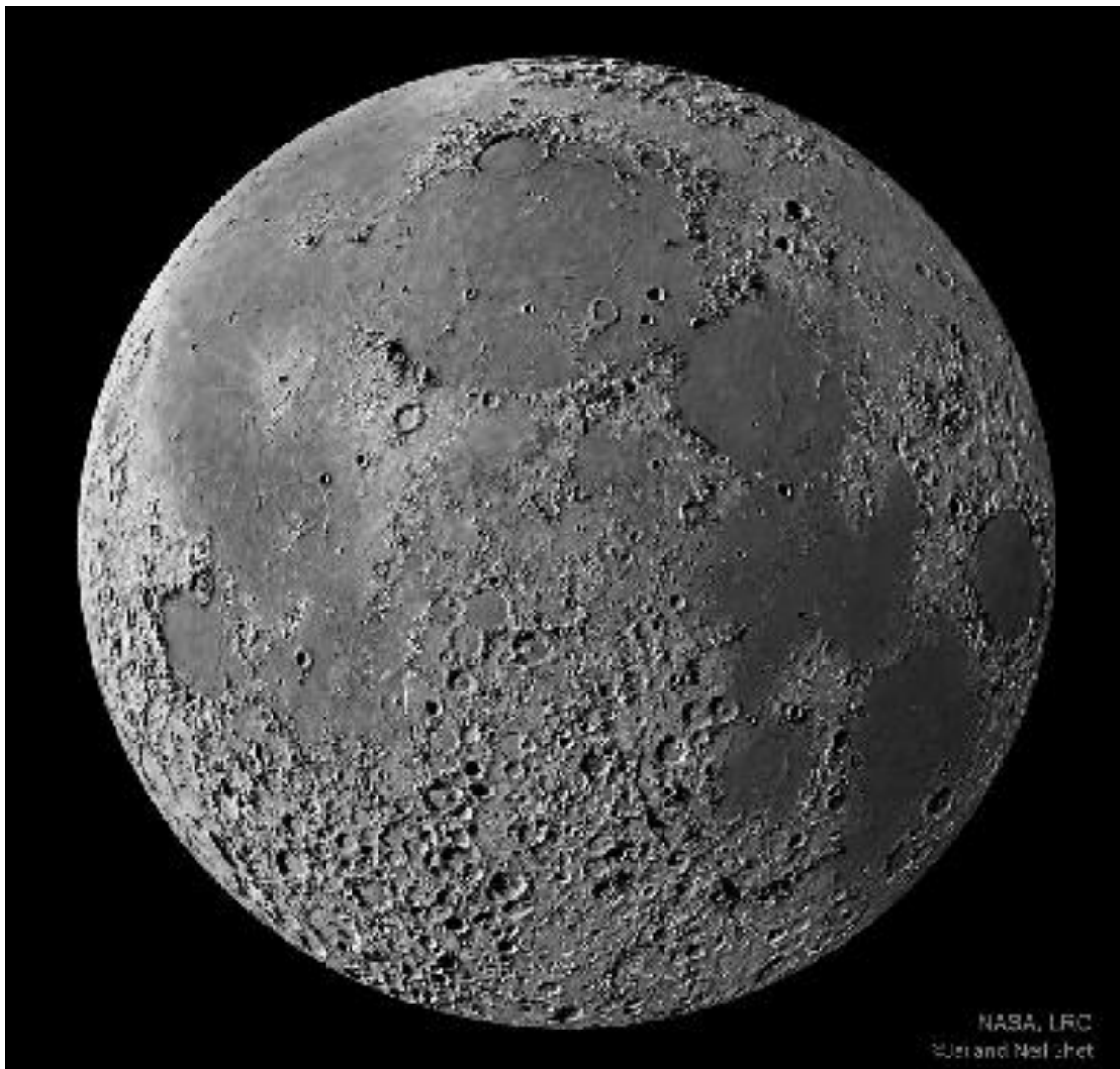


Ode to E. Pluribus Unum for Sunday February 20 2022



## Terminator Moon



*NASA, Lunar Reconnaissance Orbiter, SVS; Processing & Copyright: Jai & Neil Shet*

What's different about this Moon? It's the terminators. In the image you can't directly see any terminator -- the line that divides the light of day from the dark of night. That's because the image is a digital composite of 29 near-terminator lunar strips.

Terminator regions show the longest and most prominent shadows -- shadows that by their contrast and length, allow a flat photograph to appear three-dimensional.

The original images and data were taken near the Moon by NASA's Lunar Reconnaissance Orbiter. Many of the Moon's craters stand out because of the shadows they all cast to the right. The image shows in graphic detail that the darker regions known as maria are not just darker than the rest of the Moon -- they are flatter.

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## **Saving Our Constitution**



At Naval Support Activity Crane, near Bloomington, Indiana the U.S. Navy maintains "Constitution Grove," where a forest of white oaks are grown for the sole purpose of restoring and refitting the USS Constitution, the oldest commissioned vessel still sailing (the UK's HMS Victory is older than Constitution, but remains in drydock).

NAS Crane is the third largest naval base in the world, and Constitution Grove is not only protected for the white oak trees, but also the biological diversity an oak forest provides, including the wildlife that live there. Three Navy civilian foresters help maintain the wood and ensure that no tree removed from the ecosystem will have an adverse effect on the grove's biodiversity.

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"Peace is that brief glorious moment in history, when everybody stands around reloading-- Thomas Jefferson

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## **Things that are Good for the Soul**

A married Irishman went into the confessional and said to his priest, 'I almost had an affair with another woman.'

The priest said, 'What do you mean, almost?'

The Irishman said, 'Well, we got undressed and rubbed together, but then I stopped.'

The priest said, 'Rubbing together is the same as putting it in. You're not to see that woman again. For your penance, say five Hail Marys and put \$50 in the poor box.'

The Irishman left the confessional, said his prayers, and then walked over to the poor box.

He paused for a moment and then started to leave.

The priest, who was watching, quickly ran over to him saying, 'I saw that. You didn't put any money in the poor box!'

The Irishman replied, 'Yeah, but I rubbed the \$50 on the box, and according to you, that's the same as putting it in!'

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### **Lemon Squeeze**

There once was a religious young woman who went to Confession. Upon entering the confessional, she said, 'Forgive me, Father, for I have sinned.'

The priest said, 'Confess your sins and be forgiven.'

The young woman said, 'Last night my boyfriend made mad passionate love to me seven times.'

The priest thought long and hard and then said, 'Squeeze seven lemons into a glass and then drink the juice.'

The young woman asked, 'Will this cleanse me of my sins?'

The priest said, 'No, but it will wipe that smile off of your face.'

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### **Catholic Dog**

Muldoon lived alone in the Irish countryside with only a pet dog for company. One day the dog died, and Muldoon went to the parish priest and asked, 'Father, my dog is dead. Could ya' be saying a mass for the poor creature?'

Father Patrick replied, 'I'm afraid not. We cannot have services for an animal in the church. But there are some Baptists down the lane, and there's no tellin' what they believe. Maybe they'll do something for the creature.'

Muldoon said, 'I'll go right away Father. Do ya' think \$5,000 is enough to donate to them for the service?'

Father Patrick exclaimed, 'Sweet Mary, Mother of Jesus! Why didn't ya tell me the dog was Catholic?'

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### **Donation**

Father O'Malley answers the phone. 'Hello, is this Father O'Malley?'

'It is!'

'This is the Taxation Department. Can you help us?'

'I'll try!'

'Do you know a Ted Houlihan?'

'I do!'

'Is he a member of your congregation?'

'He is!'

'Did he donate \$10,000 to the church?'

'He will!'

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### **Confession**

An elderly man walks into a confessional. The following conversation ensues:

Man: 'I am 92 years old, have a wonderful wife of 70 years, many children, grandchildren and great grandchildren. Yesterday, I picked up two hitch-hiking college girls. We went to a motel where I had sex with each of them three times.'

Priest: 'Are you sorry for your sins?'

Man: 'What sins?'

Priest: 'What kind of a Catholic are you?'

Man: 'I'm Jewish.'

Priest: 'Why are you telling me all this?'

Man: 'I'm 92 years old . . . I'm telling everybody!'

---

### **Brothel Trip**

An elderly man goes into a brothel and tells the madam he would like a young girl for the night. Surprised, she looks at the ancient man and asks how old he is.

'I'm 90 years old,' he says.

'90?' replies the woman. 'Don't you realize that you've had it?'

Oh, sorry,' says the old man. 'How much do I owe you?'

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### **Senility**

An elderly man went to his doctor and said, 'Doc, I think I'm getting senile. Several times lately, I have forgotten to zip up.'

'That's not senility,' replied the doctor. 'Senility is when you forget to zip down.'

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### **Pest Control**

A woman was having a passionate affair with an Irish inspector from a pest-control company. One afternoon they were carrying on in the bedroom together when her husband arrived home unexpectedly.

'Quick,' said the woman to the lover, 'into the closet!' and she pushed him in the closet, stark naked.

The husband, however, became suspicious and after a search of the bedroom discovered the man in the closet. 'Who are you?' he asked him.

'I'm an inspector from Bugs-B-Gone,' said the exterminator.

'What are you doing in there?' the husband asked.

'I'm investigating a complaint about an infestation of moths,' the man replied.

'And where are your clothes?' asked the husband.

The man looked down at himself and said, 'Those little bastards!'

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### **Marriage Humour**

Wife: 'What are you doing?'

Husband: Nothing.

Wife: 'Nothing . . . ? You've been reading our marriage certificate for an hour.'

Husband: 'I was looking for the expiration date.'

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Wife: 'Do you want dinner?'

Husband: 'Sure! What are my choices?'

Wife: 'Yes or no.'

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### **Stress Reliever**

Girl: 'When we get married, I want to share all your worries and troubles and lighten your burden.'

Boy: 'It's very kind of you, darling, but I don't have any worries or troubles.'

Girl: 'Well. that's because we aren't married yet.'

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Son: 'Mum, when I was on the bus with Dad this morning, he told me to give up my seat to a lady.'

Mum: 'Well, you have done the right thing.'

Son: 'But mum, I was sitting on Daddy's lap.'

---

A newly married man asked his wife, 'Would you have married me if my father hadn't left me a fortune?'

'Honey,' the woman replied sweetly, 'I'd have married you, *no matter who left you a fortune!*'

---

A wife asked her husband: 'What do you like most in me, my pretty face or my sexy body?'

He looked at her from head to toe and replied: 'I like your sense of humor!'

---

### **Husbands are husbands**

A man was sitting reading his papers when his wife hit him round the head with a frying pan.

'What was that for?' the man asked.

The wife replied, 'That was for the piece of paper with the name Betty on it that I found in your trouser pocket.'

The man then said 'When I was at the races last week, Betty was the name of the horse I bet on.'

The wife apologized and went on with the housework.

Three days later the man is watching TV when his wife bashes him on the head with an even bigger frying pan, knocking him unconscious.

Upon re-gaining consciousness the man asked why she had hit him again.

Wife replied, 'Your horse phoned!'

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### **Let us pray.....**

Give me a sense of humor, Lord,  
Give me the grace to see a joke,  
To get some humor out of life,  
And pass it on to other folk

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## The Making of a Steinway Piano



<https://youtu.be/6rAhrs4AKT8>

Note By Note is a feature-length documentary that follows the creation of a Steinway concert grand, L1037. It explores the relationship between musician and instrument, chronicles the manufacturing process, and investigates what makes each Steinway unique.

Watch the evolution L1037 from forest floor to concert hall. Meet the craftsmen and women who shape L1037's personality. Discover the depth of the artist's relationship with their instrument. From the factory floor in Queens to Steinway Hall in Manhattan,

each piano's journey is complex, spanning 12 months, 12,000 parts, 450 craftsmen, and countless hours of fine-tuned labor. Filmed in key Steinway locations, the factory, Steinway's reserve Bank, and private auditions. Note By Note is the first documentary to portray the patience, craft, and personality built into each Steinway.

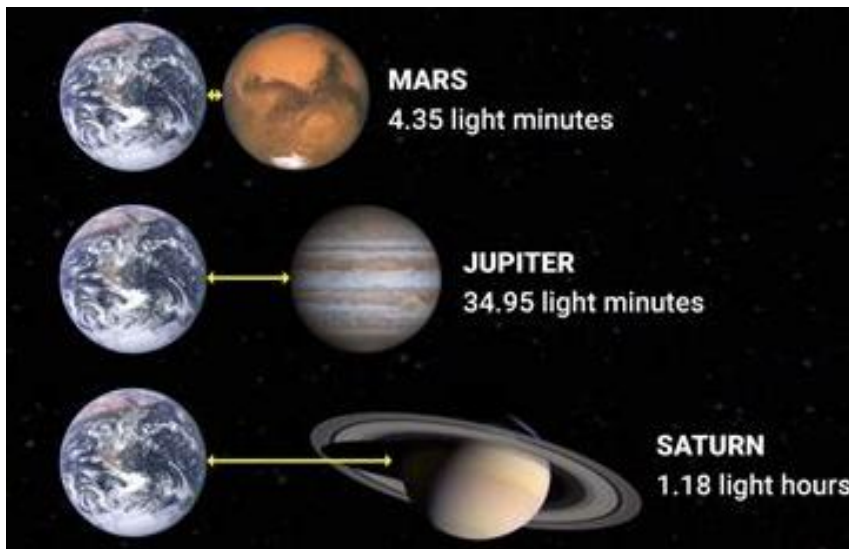
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## Animation: Using Planets to Visualize the Speed of Light

By James O'Donoghue  
*green checkmark icon* Featured Creator



We often come across the term "light-year" in the context of space travel. But what does it actually mean?



<https://youtu.be/HV7q9VrDgBo>

A light-year is the distance light travels in one year. At a speed of 186,000 miles/sec (300,000km/sec), light travels 5.88 trillion miles (9.46 trillion km) in a year—a distance well beyond immediate comprehension.

Scientists created the term light-year to measure astronomical distances beyond the confines of the Earth. And in the vastness of space, light photons, which can go around the Earth 7.5 times in just one second, seem slow.

The above animation from planetary scientist Dr. James O'Donoghue helps put the speed of light into a broader perspective while highlighting the vast distances between celestial bodies.

### **Light Speed: Fast, but Slow**

The Moon is the nearest celestial body to Earth at 239,000 miles (384,400 km) away. A light photon emitted from Earth would get to the Moon in a mere 1.25 seconds.

But how does this compare to other celestial bodies in our solar system?

<b>Celestial Body</b>	<b>Distance</b>	<b>Time from Earth</b>
Moon	0.38 million km	1.25 sec
Mars	54.6 million km	3 min
Sun	150 million km	8 min
Jupiter	588 million km	33 min
Saturn	1.2 billion km	67 min
Pluto	4.3 billion km	4 hrs

If you watched the entire length of the above video, you probably saw how “slow” light is. The same photon of light that reached the Moon in a little over a second took three long minutes to reach Mars, the next planet beyond Earth in our solar system.

It takes light just over eight minutes to get from the Sun to Earth. This means that when we look at the Sun, we see it as it was eight minutes ago, and if it were to disappear suddenly, we wouldn't realize it for eight whole minutes.

Therefore, how “fast” or “slow” light is depends on your perspective. To us Earth-dwelling humans, it feels instantaneous. But the vastness of the universe makes even light seem slow—and it travels at a speed that our spacecraft aren't even close to matching.

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### **More Random Thoughts for Coping with the 21<sup>st</sup> Century**

- I really don't mind getting older, but my body is taking it badly.
- It turns out that being an adult now is mostly just googling how to do stuff.
- I miss the '90s when bread was still good for you and no one knew what kale was.

- Do you ever get up in the morning, look in the mirror and think "That can't be accurate."
- I want to be 14 again and ruin my life differently. I have new ideas.
- As I watch this new generation try to rewrite our history, one thing I'm sure of.... it will be misspelled and have no punctuation.
- I told my wife I wanted to be cremated. She made me an appointment for Tuesday.
- Confuse your Doctor by putting on rubber gloves at the same time he does.
- I went line dancing last night. OK, it was a roadside sobriety test .. same thing.

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## **Celine Schoenmaker Duets with a Busker in Covent Garden**



Stephen Berry had just sung a song from Phantom of the Opera, and then something incredible happened....



A young woman stepped forward and asked him to sing 'All I Ask Of You'.

Stephen replied 'I can't do two Phantom songs in a row'.

The young woman said 'if you do, I'll sing it with you'.

Stephen looked skeptical and asked 'are you any good?'

<https://youtu.be/Hxm5pJsgKVo>

The young woman replied 'I'm currently Christine in Phantom of the Opera

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## **Amazing Video Shows a Mom Chimp Medicating Her Child's Wound with Insects**

By Ben Turner for Live Science



The chimps could be using the insects for medicinal purposes

Scientists have released stunning footage of chimpanzees using insects to treat wounds on themselves and others.

<https://youtu.be/AgshpCVVkk>

The video was captured by Alessandra Mascaro, a volunteer at the Loango Chimpanzee Project in the rainforest of Gabon, and marks the first recorded instance of this behavior.

Mascaro recorded the footage while following an endangered female central chimpanzee (*Pan troglodytes troglodytes*) named Suzee and her son, Sia. After inspecting a wound on Sia's foot, Suzee promptly snatched an insect from the underside of a leaf. The mother chimp then squeezed the insect in her mouth before applying the crushed bug to her child's wound.

After discussing what they had found, Mascaro and her colleagues "realized that we had never seen such a behavior and that it had also never been documented before," she said.

Over the following 15 months, the researchers documented the behavior in 22 chimps from the group of roughly 45 individuals. Their observations revealed 19 instances

where the chimps applied insects to their bodies, and two occasions where injured chimps were nursed by their fellows.

"An adult male, Littlegrey, had a deep open wound on his shin and Carol, an adult female, who had been grooming him, suddenly reached out to catch an insect," Lara Southern, an Ozouga volunteer, said in a statement. "What struck me most was that she handed it to Littlegrey, he applied it to his wound and subsequently Carol and two other adult chimpanzees also touched the wound and moved the insect on it. The three unrelated chimpanzees seemed to perform these behaviors solely for the benefit of their group member."

This is the first time that chimpanzees have been seen applying insects both to their wounds and to the wounds of others in their community. While animals have been spotted self-medicating before, those instances have mostly involved the animal simply consuming beneficial plants or insects, rather than performing a topical application to a wound.

The researchers don't yet know what insects the apes are snatching, but they think the chimps might be using some sort of winged insects as antibiotics, antivirals, or as a means to soothe pain and reduce inflammation. The wounds on chimpanzees can sometimes be several inches wide, and they are often inflicted during conflicts between groups or within the group itself.

In humans, the medicinal application of insects to wounds goes back as far as 1400 B.C., according to the researchers, and insects are still used for medicinal purposes today, ranging from honeybee products to treat inflammation to flesh-eating maggots to treat necrotic tissue.

The researchers argue that by applying insects to each other's wounds, the chimps are showing that prosocial behavior — or acting in the interests of others instead of just oneself — is not just a human trait.

"This is, for me, especially breathtaking because so many people doubt prosocial abilities in other animals," Simone Pika, a cognitive biologist at Osnabrück University In Germany, said in the statement. "Suddenly we have a species where we really see individuals caring for others."

Next, the researchers plan to identify the insects that the chimps are using and to figure out their potential pharmaceutical benefits. The researchers also want to tease out the social rules that govern this bug-sharing behavior.

"It is just fascinating to see that after decades of research on wild chimpanzees they still surprise us with unexpected new behaviours," Tobias Deschner, a primatologist at the Max Planck Institute for Evolutionary Anthropology in Germany, said in a statement.

The researchers published their findings Feb. 7 in the journal *Current Biology*.

*Originally published on Live Science.*

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## Rare Animal Sighted in Residential Neighborhood

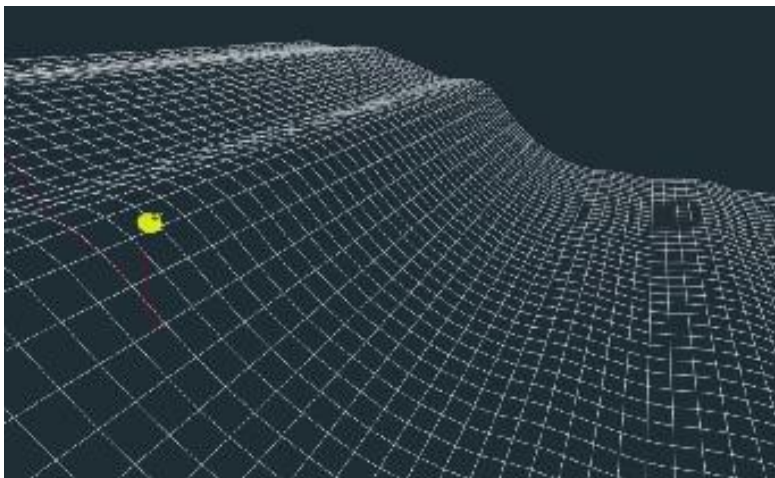


<https://www.youtube.com/watch?v=g6CWyzdl2RM>

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## 4-story rogue wave in the Pacific Ocean

By Harry Baker



*A simulation of the rogue wave based off movement from a monitoring buoy.  
(Image credit: MarineLabs)*

A four-story-tall rogue wave that briefly reared up in the Pacific Ocean off the coast of Canada in 2020 was the "most extreme" version of the freaky phenomenon ever recorded, scientists now say.

Rogue waves, also known as freak or killer waves, are massive waves that appear in the open ocean seemingly from nowhere.

The rogue wave was detected on Nov. 17, 2020, around 4.3 miles (7 kilometers) off the coast of Ucluelet on Vancouver Island in British Columbia, by an oceanic buoy belonging to Canadian-based research company MarineLabs. Now, in a new study published online Feb. 2 in the journal *Scientific Reports*, scientists have revealed that the Ucluelet wave was around 58 feet (17.6 meters) tall, making it around three times higher than surrounding waves. Rogue waves this much larger than surrounding swells are a "once in a millennium" occurrence, the researchers said in a statement.

"Proportionally, the Ucluelet wave is likely the most extreme rogue wave ever recorded," lead author Johannes Gemmrich, an oceanographer at the University of Victoria in British Columbia, said in the statement.

Rogue waves are enormous "walls of water" that form and dissipate in the open ocean, according to the National Oceanic and Atmospheric Association (NOAA). They are different from tsunamis, which are caused by displaced water from underwater earthquakes, landslides or volcanic eruptions and do not become massive until they near the coast.

A rogue wave is scientifically defined as being at least twice as high as the surrounding sea state — the average height of the waves for a given area at a given time.

Researchers think that rogue waves are formed when smaller waves merge into larger ones, either due to high surface winds or changes in ocean currents caused by storms, according to NOAA. However, the exact mechanisms behind the freakish crests are still something of a mystery, according to the statement.

The Ucluelet wave formed in a sea state of around 19.5 feet (6 meters), making it just under three times as large as neighboring swells, which is the most extreme size difference ever observed. "Only a few rogue waves in high sea states have been observed directly, and nothing of this magnitude. The probability of such an event occurring is once in 1,300 years," Gemmrich said.

The first official rogue wave was detected in Norway in 1995 and is known as the Draupner wave. Scientists had previously suspected that rogue waves existed; and stories of sailors being caught out or even killed by freakishly massive waves have long filled maritime folklore, but until that 1995 report, scientists had never observed them. Since then, scientists have studied only a handful of rogue waves, but they estimate that one forms every two days somewhere in the world's oceans, researchers wrote in the paper.

The Ucluelet wave is not the largest rogue wave that has ever been discovered. The Draupner wave, for example, measured a much more considerable 84 feet (25.6 m)

high. However, the sea state during the Draupner wave was around 39 feet (12 m), making the rogue wave just over twice as tall (not three times) as surrounding crests.

Rogue waves like the Ucuelet wave normally go completely unnoticed. However, if a ship or oil rig were to be caught in one of these freakishly large crests, the result could be disastrous. "The unpredictability of rogue waves, and the sheer power of these 'walls of water' can make them incredibly dangerous to marine operations and the public," Scott Beatty, the CEO of MarineLabs, said in the statement.

But researchers hope that networks of monitoring buoys, such as the 26 MarineLabs buoys strategically positioned along North American coastlines, could reveal more about these oceanic anomalies. "The potential of predicting rogue waves remains an open question, but our data is helping to better understand when, where and how rogue waves form, and the risks that they pose," Beatty said in the statement.

Climate change could affect the intensity and frequency of rogue waves, according to past research. A study published in the journal *Science Advances* in June 2020 revealed that extreme wave conditions have already increased by between 5% and 15% due to stronger winds and currents caused by rising ocean temperatures.

*Originally published on Live Science.*

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## **Random Thoughts for Coping with the 21<sup>st</sup> Century**

- I'm on two diets. I wasn't getting enough food on one.
- A cold seat in a public restroom is unpleasant. A warm seat in a public restroom is worse.
- Apparently RSVP'ing to a wedding invitation "Maybe next time," isn't the correct response.
- Don't irritate old people. The older we get, the less "Life in prison" is a deterrent.
- Have you ever listened to someone for a minute and thought, "Their cornbread isn't done in the middle."
- Aliens probably fly by earth and lock their doors.
- "You will hit every cone on the highway before I let you merge in front of me because you saw that sign 2 miles ago like I did."

## **Sunlight Helps Clean Up Oil Spills in the Ocean More than Previously Thought**

*Solar radiation may have dissolved up to 17 percent of the surface oil from Deepwater Horizon*



*On April 28, 2010, eight days after an explosion on the Deepwater Horizon oil rig in the Gulf of Mexico, this U.S. Coast Guard boat collected spilled oil. Sunlight may have helped dissolve 3 to 17 percent of the surface oil, researchers say.*

*chris graythen/getty images*

By Carolyn Gramling

Sunlight may have helped remove as much as 17 percent of the oil slicking the surface of the Gulf of Mexico following the 2010 Deepwater Horizon spill. That means that sunlight plays a bigger role in cleaning up such spills than previously thought, researchers suggest February 16 in *Science Advances*.

When sunlight shines on spilled oil in the sea, it can kick off a chain of chemical reactions, transforming the oil into new compounds (SN: 6/12/18). Some of these reactions can increase how easily the oil dissolves in water, called photodissolution. But there has been little data on how much of the oil becomes water-soluble.

To assess this, environmental chemists Danielle Haas Freeman and Collin Ward, both of Woods Hole Oceanographic Institution in Massachusetts, placed samples of the Macondo oil from the Deepwater Horizon spill on glass disks and irradiated them with light using LEDs that emit wavelengths found in sunlight. The duo then chemically analyzed the irradiated oil to see how much was transformed into dissolved organic carbon.

The most important factors in photodissolution, the researchers found, were the thickness of the slick and the wavelengths of light. Longer wavelengths (toward the red end of the spectrum) dissolved less oil, possibly because they are more easily scattered by water, than shorter wavelengths. How long the oil was exposed to light was not as important.



Though the team didn't specifically test for seasonal or latitude differences, computer simulations based on the lab data suggested that those factors, as well as the oil's chemical makeup, also matter.

The researchers estimate irradiation helped dissolve from 3 to 17 percent of surface oil from the Deepwater Horizon spill, comparable to processes such as evaporation and stranding on coastlines. What impact the sunlight-produced compounds might have on marine ecosystems, however, isn't yet known.

#### Citations

*D.H. Freeman and C.P. Ward. Sunlight-driven dissolution is a major fate of oil at sea. Science Advances. Published online February 16, 2022. doi: 10.1126/sciadv.abl7605.*

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### **What Happens When Blond City Girl Marries a Wisconsin Farmer?**



One morning, on his way out to take care of the cows, the farmer says to her, "The artificial insemination man is coming over to impregnate one of our cows today, so I drove a nail into the 2 by 4 just above the cow's stall in the barn.

Please show him where the cow is when he gets here, OK?"

The farmer leaves for the fields. After a while, the artificial insemination man arrives and knocks on the front door. Melody takes him down to the barn.

They walk along the row of cows and when Melody sees the nail, she tells him, "This is the one right here."

The man, assuming he is dealing with an airhead blond asks, "Tell me lady, how would you know this is the right cow to be bred?" "

That's simple," she said, "by the nail that's over its stall", she explains very confidently.

Laughing rudely at her, the man says, "and what, pray tell, is the nail for?"

Melody turns to walk away and says sweetly over her shoulder.....  
I guess it's to hang your pants on."

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## **Inventions that Changed the World Forever**



<https://youtu.be/ortpIJOj1b4>

Which led to the invention of *science*

<https://youtu.be/ez-LAFwn1pI>

Transformed *art*

[https://youtu.be/a\\_f9NCehACM](https://youtu.be/a_f9NCehACM)

Became the backbone of *education loans*

<https://youtu.be/eJy6z2yC-LM?list=TLPQMTgwMjIwMjK6QyqR8Udcmw>

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## **Cosmonaut Brains Are 'Rewired' by Space Missions, Scientists Find**

By Chelsea Gohd



*In a new study, researchers have shown how spaceflight affects the brains of cosmonauts.  
(Image credit: Ivar Mendez)*

Our brains change as we age and grow here on Earth. But what happens to the human brain after being in space for a long time?

In a new study, a collaborative effort between the European Space Agency and Russia's space agency Roscosmos, researchers have explored how cosmonauts' brains change after traveling to space and back. And they showed how the brain adapts to spaceflight, finding that the brain is almost "rewired," and both fluid shifts and shape changes occur. These changes can last for months after a person returns to Earth, the researchers found.

The strange brain changes that the team observed were "very new and very unexpected," study lead Floris Wuyts, a researcher at the University of Antwerp in Belgium, told Space.com.

### **How to study the brain in space**

For this study, the international research team studied the brains of 12 male cosmonauts shortly before and after their flights to the International Space Station. They also observed these same cosmonauts' brains seven months after returning to

Earth. All cosmonauts in this study took part in long-duration flights that lasted, on average, 172 days, or just over five and a half months.

"We focused initially on neuroplasticity to see how the brain adapts to spaceflight," Wuyts said, adding that the team also focused on connectivity within the brains of the cosmonaut subjects.

"Structural analyses [of astronaut brains] have been done already, but not yet connectivity research," Wuyts said. "With this paper [on] connectivity, we finally approach the answers regarding this neuroplasticity."

To accomplish this, the team used a brain imaging technique called fiber tractography, a 3D reconstruction technique that uses data from diffusion MRI (magnetic resonance imaging), or dMRI scans to study the structure and connectivity within the brain.

"Fiber tractography gives a sort of wiring scheme of the brain. Our study is the first to use this specific method to detect changes in brain structure after spaceflight," Wuyts said in an emailed statement.

MRI data can tell researchers quite a lot about a subject's brain, Wuyts explained.

"MRI looks at structure at the level [of] gray matter (like the microprocessors in a PC) and white matter (the connections on the motherboard of a PC, between all the processing units). MRI also looks at the fluid in the brain, called the cerebrospinal fluid (CSF)," Wuyts told Space.com.

### **What changes in the brain?**

"After spaceflight, these structures appear to be altered, mainly due to the deformations that are caused by the fluid shift which happens in space," Wuyts said. Interestingly, the team also found an increase in gray and white matter. In the brain, white matter facilitates communication between gray matter in the brain and between gray matter and the rest of the body.

In addition to this fluid shift, the team noticed shape changes in the brain, specifically in the corpus callosum, which is a large bundle of nerve fibers that Wuyts described in the statement as "the central highway connecting both hemispheres of the brain."

Previously, it was thought that spaceflight could cause structural changes in the corpus callosum itself. However, the team found that the ventricles nearby actually dilate, which shifts the neural tissue of this region around the corpus callosum, changing its shape, Wuyts explained. Ventricles in the brain are pockets that both produce and store CSF, the fluid that surrounds the brain and spinal cord.

The researchers also "found changes in the neural connections between several motor areas of the brain," lead author Andrei Doroshin, a researcher at Drexel University in Pennsylvania, said in the statement. "Motor areas are brain centers where commands for movements are initiated. In weightlessness, an astronaut needs to adapt his or her movement strategies drastically, compared to Earth. Our study shows that their brain is rewired, so to speak."

"From previous studies, we know that these motor areas show signs of adaptation after spaceflight. Now, we have a first indication that it is also reflected at the level of connections between those regions," Wuyts added in the statement.

But these changes weren't just noticed immediately after cosmonauts returned to Earth. In the brain scans taken of the subjects seven months after landing, the team found that these changes were still present.

This study is part of a growing body of research that is exploring exactly how spaceflight, especially long-duration space travel, affects the human body. This isn't the end of our understanding on the subject, but it does reveal new insights into how the brain can be affected, information which researchers can then use to better protect humans going to space.

"Our research shows that we should invoke countermeasures to be sure that the fluid shifts and shape changes of the brain are limited," Wuyts told Space.com.

Wuyts added that one measure that could reduce these effects would be artificial gravity. Artificial gravity is, in theory, created by an inertial force to replicate the feeling of gravity as, for example, we experience it here on Earth. A well-worn staple of science fiction, scientists in recent years have started to bring this concept into reality.

"Using artificial gravity on board the space station or [a] rocket to Mars will most likely solve the fluid shift issue. The rotating donut like in the film by Stanley Kubrick 'Space Odyssey 2001' is a great example of what would be ideal. However, it is complicated to realize. Yet, it may be the way to go. Future research will tell," Wuyts said.

*This work was published Friday (Feb. 18) in the journal Frontiers in Neural Circuits.*

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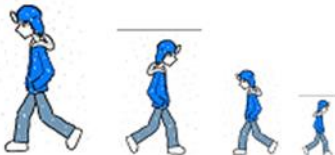


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## My Walking Thoughts February 20 2022



### One More Try

In last week's [Walking Thoughts](#), I sought to open dialog on the state of our education system, believing it to be an issue of concern throughout the nation. The effort failed miserably, and I received a grand total of two comments—one from a daughter—a response leading me to two possible conclusions:

- (1) I am off my rocker and there is no problem
- (2) You think the system is so far gone there's nothing to be done about it.
- (3) There may be other reasons for your silence, but I don't want to go there.

Before sharing the two responses I did receive, I want to put forth one more facet in the 'dumbing down' issue I raised in my tale of the 'Stull Bill' mandate in 1971. This was the law that ushered in California's Behavioral Objectives plan whose purpose was as presented to our committee by the State's Education informant .

He said that by the near future we had to be prepared to deal with a situation in which there would not be jobs for as many as 50% of our population. Therefore—and this was the scary part of his presentation—we had to modify our education system to meet that situation. I read that as the State's justification for dumbing the curricula down, and I think they deserve an A+ for their performance.

Here are the responses I received last week:

There has to be a shared responsibility though of education. Parents treat schools as babysitters, so they can go to work, then by the time they see their kids again, it is dinner, unwind, bed, and do the day over again.

It used to be the hand that rocked the cradle was mom's. Now it takes 2 incomes to survive & mom has been replaced by the state. It's a vicious cycle.

Kitty Trotti

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I doubt that anybody of thinking age is not discouraged by what's happening to the kids.

First, they get no significant introduction to math, nor history. Second, they do get active indoctrination – when the teachers decide actually to open the schools. Third, the lack of development of socialization by mask wearing (critically damaging for kids) will better bitter fruit in years to come..

I'm not so distressed as you are by the lack of education in the newer understandings of the universe. The upper five percent will get it, as they always do. I'm more worried about population wide fundamentals. If it were up to me, as soon as addition, subtraction, multiplication and division were mastered (at least by the fourth grade), then I would start on probability theory, on statistics, and close on their heels, game theory, all of which are critical skills for adult decision-making, All of which have been completely ignored in our educational system. I admit that algebra does lubricate the mind's gates and hinges, but I've never used it, nor my facility in differential equations, nor integral calculus (except when studying physical chemistry). What I really, really needed was statistics and probability theory and how to apply their precepts to critically analyze when looking at a newspaper or the evening news.

Ask to see your kids workbooks, ask the teachers at teachers night, what is the curriculum for the year & learning objectives. Then look the books over. If there assigned reading, read it too. Know what the there objective is and do you agree with it or not. Have conversations with your kids on those themes. Parents are so concerned with the grades being brought home and what they should concern themselves with is there indoctrination going on.

Charles Kerber MD

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So I'll give it one more shot before I give up on the attempt to create a platform for dialog.