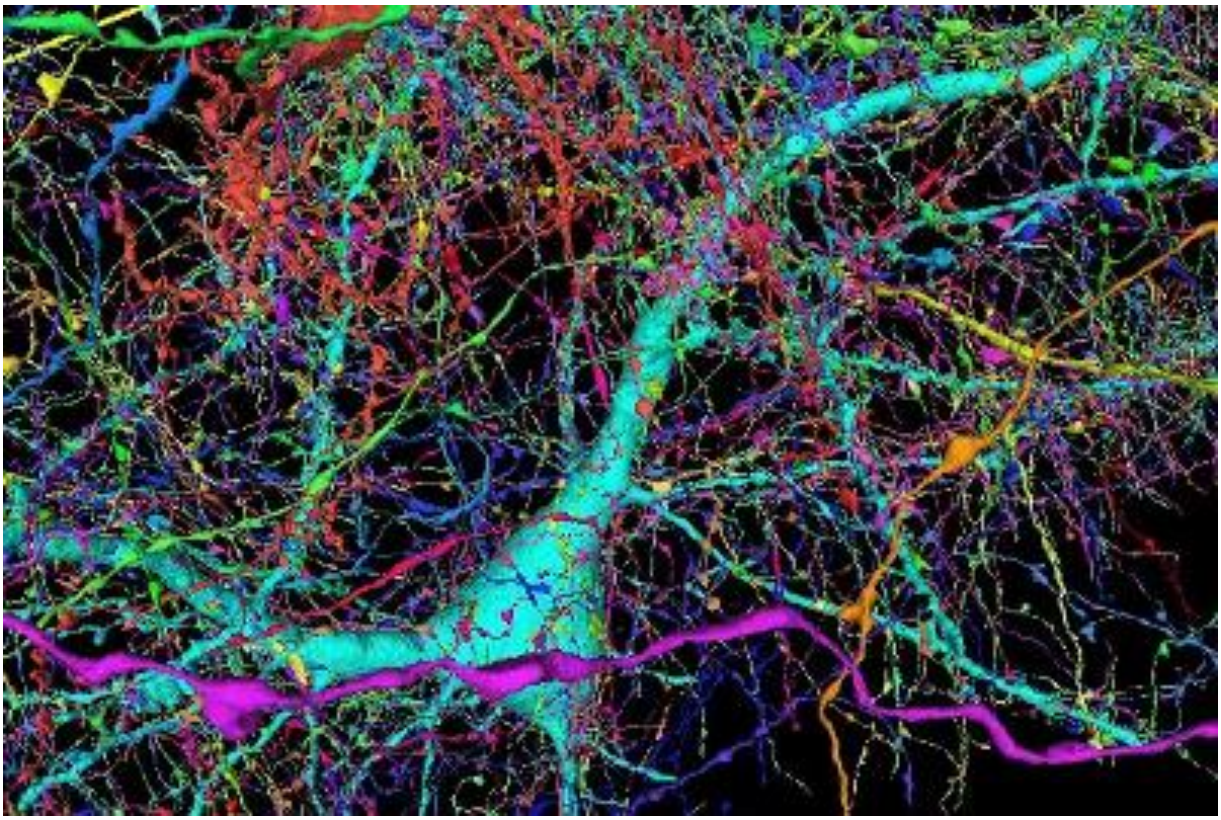
Ode to Happiness for Sunday June 27 2021

Google Has Mapped a Piece of Human Brain in the Most Detail Ever

By Michael Marshall for Mind



Around 4000 nerve fibres connect to this single neuron
Google/Lichtman Laboratory

Google has helped create the most detailed map yet of the connections within the human brain. It reveals a staggering amount of detail, including patterns of connections between neurons, as well as what may be a new kind of neuron.

The brain map, which is freely available online, includes 50,000 cells, all rendered in three dimensions. They are joined together by hundreds of millions of spidery tendrils, forming 130 million connections called synapses. The data set measures 1.4 petabytes, roughly 700 times the storage capacity of an average modern computer.

The data set is so large that the researchers haven't studied it in detail, says Viren Jain at Google Research in Mountain View, California. He compares it to the human genome, which is still being explored 20 years after the first drafts were published.

It is the first time we have seen the real structure of such a large piece of the human brain, says Catherine Dulac at Harvard University, who wasn't involved in the work. "There's something just a little emotional about it."

This mammoth undertaking began when a team lead by Jeff Lichtman, also at Harvard University, obtained a tiny piece of brain from a 45-year-old woman with drug-resistant epilepsy. She underwent surgery to remove the left hippocampus, the source of her seizures, from her brain. To do this, the surgeons had to remove some healthy brain tissue that overlaid the hippocampus.

Lichtman and his team immediately immersed the sample in preservatives, then stained it with heavy metals like osmium, so the outer membranes of every cell were visible under an electron microscope. Then they embedded it in resin to toughen it. Finally, they cut it into slices around 30 nanometres thick, or about one-thousandth the width of a human hair, and used an electron microscope to image every slice.

At this point, Jain's team at Google took over, assembling the two-dimensional slices – which Jain calls "a deli slicer approach to the brain" – to form a three-dimensional volume. They used machine learning to reconstruct the tendrils linking one neuron to another and labelled the different cell types.

All of this details just a tiny fraction of the brain. Jain says its scale is best understood by thinking of a functional magnetic resonance imaging (fMRI) scan, used to show activity in different brain regions. "The entire data set we produced is a cubic millimetre, which is usually one pixel in an MRI scan," he says. "It's interesting to uncover all the stuff under the hood of one pixel of an MRI."

For Dulac, the data set is "a trove of goodies for years to come". The team has already made new discoveries about how our brain is wired: for example, there was a stark discrepancy in the numbers of connections between neurons.

Normally, when a tendril from one neuron passed close to another, it would form just one synapse, or more rarely two to four. But there were also some tendrils that formed up to 20 synapses onto one target neuron, meaning this tendril by itself would probably be able to trigger that neuron to fire.

It isn't clear why, but Lichtman speculates that the multi-synapse connections underlie learned behaviours. "There's lots of things your brain does by cognition, by thinking and puzzling it out and making a decision, and there are many things you do automatically that could not have come genetically," he says, such as braking when you see a red light. The super-strong connections would allow a message to pass swiftly through the network.

The team also found mysterious pairs of neurons deep in the cortex that hadn't been observed before. "The two cells pointed in exactly the opposite direction on the same axis," says Lichtman. Nobody knows why.

Brain mapping, or connectomics, has come a long way since its first breakthrough in the 1980s, when researchers mapped the 302 neurons in the nervous system of a worm called Caenorhabditis elegans. Jain, Dulac and Lichtman were part of a group that, in 2020, argued in favour of mapping an entire mouse brain at a similar level of detail.

"A whole mouse brain is only 1000 times bigger than this, an exabyte instead of a petabyte," says Lichtman. "It's on a scale where we probably will be able to do that within a decade, I suspect." Dulac wants to see how the cortex links to other parts of the brain, and mapping the mouse brain would reveal that.

Mapping an entire human brain would need a data set that is a further 1000 times larger, a zettabyte, which Lichtman says is "comparable to the amount of digital content generated in a year by the planet Earth".

But doing so might not be worthwhile. "We may discover that a lot of it is coding information that came in through experience, and therefore every brain will be something different from every other one," he says. Without understanding how information is stored, the data would be gibberish, he says.

A more immediate benefit would be to explore how the cell map differs in people with mental health conditions, says Dulac. "Similar studies could be done in patients that also have some mental illness," she says, to shed more light on how conditions like schizophrenia manifest.

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Inside the World's Largest Airship

By Edd Gent - Live Science Contributor

The Airlander 10 rides tcould start as soon as 2025.
(Image credit: Hybrid Air Vehicles)

New details about one of the world's largest aircraft, Airlander 10, reveal a spacious cabin with floor-to-ceiling windows (and plenty of legroom) inside the blimp-like exterior. And the futuristic aircraft will be loads better for the environment.

British company Hybrid Air Vehicles recently released concept images of its forthcoming airship, which is 299 feet (91 meters) long and 112 feet (34 m) wide, with the capacity to hold about 100 people. But rather than being crammed in like sardines, passengers will be treated to floor-to-ceiling windows and the kind of space and legroom commercial airlines currently reserve for business-class customers.

The firm thinks the vehicle, which is expected to enter service by 2025, will soon challenge conventional jets on a number of popular short-haul routes, thanks to its improved comfort and 90% lower emissions.

"The number-one benefit is reducing your carbon footprint on a journey by a factor of 10," Mike Durham, Hybrid Air Vehicles' chief technical officer, told Live Science. "But also, while you're going to be in the air a little bit longer than you would if you were on an airplane, the quality of the journey will be so much better."

The Airlander 10 would have a roomy interior for rides that could start as soon as 2025.
(Image credit: Hybrid Air Vehicles)

The Airlander is so much greener than a passenger plane, Durham said, primarily because it relies on a giant balloon of helium to get it into the air. In contrast, airplanes need to generate considerable forward thrust with their engines before their wings can provide the lift to get them airborne.

Once it's in the air, the airship relies on four propellers on each corner of the aircraft to push it along. In the first generation, two of these propellers will be powered by

kerosene-burning engines, but the other two will be driven by electric motors, further reducing the vehicle's carbon emissions. By 2030, the company expects to provide a fully electric version of the Airlander.

Rather than conventional batteries, liquid hydrogen fuel cells will power the Airlander's electric motors. Liquid hydrogen can store much more energy for a given weight than batteries, Durham said. The hydrogen will be kept in cryogenically cooled tanks in the hull and pumped to the fuel cells, where it will react with oxygen to generate electricity.

The airship design does come with some trade-offs, though. For one, its top speed will be about 80 mph (130 km/h), and it will generally average closer to 60 mph (100 km/h). That's closer to a car or train than a short-haul jet, which cruises at more than 450 mph (720 km/h).

For some intercity journeys of around 100 to 250 miles (160 to 400 kilometers), Durham said traveling from one city center to another is only slightly slower, thanks to the airship's ability to land in much smaller spaces or even on bodies of water.

For example, the company estimates that traveling between Seattle and Vancouver would take just over 4 hours by Airlander compared with slightly more than 3 hours by plane. Crucially, it would produce only 10 lbs. (4.6 kilograms) of carbon dioxide per passenger over that journey, compared with 117 lbs. (53 kg) for a conventional plane.

But considering the journey only takes 2.5 hours by car, passengers are more likely to be wooed by the aircraft's creature comforts than it's speed. On that front, Durham is confident the Airlander will be a much more pleasant experience than the alternatives. The cabin is such a small part of the vehicle's overall cross section that it has little effect on drag, which means the company has been able to make the airship much more spacious than a streamlined jet ever could be.

The floor-to-ceiling windows, combined with a cruising altitude below 10,000 feet (3,040 meters), means passengers will get spectacular views. And because the gigantic, helium-filled hull separates the engines from the cabin, there's little vibration and almost no noise. The aircraft is also largely unaffected by turbulence.

"Once you're up into the climb, you're pretty much running in a near-silent flight environment," Durham said.

Original article on Live Science.

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17th Century European Paintings Found in Roadside Dumpster

By Sheena McKenzie, CNN

A self-portrait of the artist Pietro Bellotti, one of two 17th century paintings found in a roadside dumpster.

(CNN)Police are appealing for information on how two original paintings from 17th century European artists, ended up in a roadside dumpster in southeast Germany.

The framed oil paintings were found by a 64-year-old man at a highway service station in the Bavaria region last month. The man later handed the paintings to police in the western city of Cologne, the police department said.

Officers have launched an appeal for the owner of the paintings. An initial assessment from an art expert concluded the paintings were likely original works, police said.

One of the paintings is a smiling self-portrait of Italian artist Pietro Bellotti, dating back to 1665.

Bellotti is best known for painting portraits. According to the Galleria Canesso in Switzerland, the artist "worked for highly prominent families in Venice and beyond" including patrons such as Cardinal Ottoboni and the Governor of Milan.

The discovered painting by artist Samuel van Hoogstraten.

The other painting is of a grinning boy in a red cap, date unknown, by the Dutch artist Samuel van Hoogstraten.

Hoogstraten was a painter and writer who trained under Rembrandt in Amsterdam, according to the Leiden Collection, one of the world's largest private collections of works from the Dutch Golden Age.

In the later part of the 17th century, the elite of Hague "lined up to sit" for Hoogstraten's portraits, said the Collection.

The artist also wrote an "Introduction to the High School of the Art of Painting," which was published the year he died, in 1678.

It includes reminiscences of his stay in Rembrandt's studio, and is what the UK's National Gallery called "a valuable source of information about Rembrandt's views on painting."

CNN's Elle Pickston contributed to this report.

[My question is why didn't van Hoogstraten toss them in a dumpster himself…I guess this is why I know nothing about art]

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Groaners

I switched all the labels on my wife's spice rack.
She doesn't know it yet, but her thyme's cumin.

As I put my car in reverse, I thought to myself...
"This takes me back."

What's the difference between in-laws & out-laws?
Outlaws are wanted.

If a woman says she'll be ready in 15 minutes, she will be.
No need to remind her every half hour.

There's a new game called "Silent Tennis."
It's like regular Tennis, but without the racquet.

Technically Moses was the first man to download files from the Cloud...
....using a tablet.

Initially I didn't believe that my chiropractor was any good.
But now I stand corrected.

My wife told me I was immature...
So I told her to get out of my pillow fort.

My wife dated a clown before she started going out with me.
I had some pretty big shoes to fill.

I got fired from my job as a masseur.
There wasn't any specific incident, apparently I just rub people the wrong way.

I got a box of Viagra teabags last night.
They do nothing for your sex life but they do stop your cookie going soft when you dunk it.

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Geometry of a Seedhead

Katherine Holden

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An In-Depth Look at the Blue Angels

https://www.youtube.com/watch?v=_VV2XzFjzmk

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Scientists Convert Plastic Waste into Vanilla Flavoring

By Yasemin Saplakoglu – Live Science Staff Writer

In the future, your vanilla ice cream may be made from plastic bottles.

A pile of plastic bottles.
(Image credit: Shutterstock)

In the future, your vanilla ice cream may be made from plastic bottles. Scientists have figured out a way to convert plastic waste into vanilla flavoring with genetically engineered bacteria, according to a new study.

Vanillin, the compound that carries most of the smell and taste of vanilla, can be extracted naturally from vanilla beans or made synthetically. About 85% of vanillin is currently made from chemicals taken from fossil fuels, according to The Guardian.

Vanillin is found in a wide variety of food, cosmetic, pharmaceutical, cleaning and herbicide products, and the demand is "growing rapidly," the authors wrote in the study. In 2018, the global demand for vanillin was about 40,800 tons (37,000 metric tons), and it's expected to grow to 65,000 tons (59,000 metric tons) by 2025, according to the study, published June 10 in the journal Green Chemistry.

The demand for vanillin "far exceeds" the vanilla bean supply, so scientists have resorted to synthetically producing vanillin. For the new study, researchers used a novel method to convert plastic waste into vanillin, as a way to both supply vanillin and reduce plastic pollution.

Previous studies showed how to break down plastic bottles made from polyethylene terephthalate into its basic subunit, known as terephthalic acid. In the new study, two researchers at The University of Edinburgh in Scotland genetically engineered E. coli bacteria to convert terephthalic acid into vanillin. Terephthalic acid and vanillin have very similar chemical compositions and the engineered bacteria only needs to make minor changes to the number of hydrogens and oxygens that are bonded to the same carbon backbone.

The researchers mingled their genetically engineered bacteria with terephthalic acid and kept them at 98.6 degrees Fahrenheit (37 degree Celsius) for a day, according to The Guardian. About 79% of the terephthalic acid subsequently converted into vanillin.

"The global plastic waste crisis is now recognized as one of the most pressing environmental issues facing our planet," the authors wrote in the study. About 1 million plastic bottles are sold every minute around the world, and only 14% are recycled, according to The Guardian. Those that are recycled can only be turned into fibers for clothing or carpets.

"Our work challenges the perception of plastic being a problematic waste and instead demonstrates its use as a new carbon resource from which high-value products can be made," co-author Stephen Wallace, a senior lecturer in biotechnology at The University of Edinburgh, told The Guardian.

Now, the study authors hope to further improve the bacteria to be able to convert even more terephthalic acid into vanillin.

Read more about this technology in The Guardian.

Originally published on Live Science.

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Cows Run Loose in California Neighborhood

Forty cows escaped from a meatpacking facility when a gate was accidentally left open. One person was injured in the stampede.

By Wilson Wong

Video showed dozens of cows running loose in a California neighborhood on Tuesday after escaping from a meatpacking facility.
ABC news
https://www.youtube.com/watch?v=hpvSpVv-HvM

Shortly after 7:30 p.m. PT, authorities responded to a report about the herd galloping down the streets of Pico Rivera, about 11 miles southeast of Los Angeles, according to the Los Angeles County Sheriff's Department. Nearby residents were asked to avoid the area as officials tried to gather the 40 cows that took off from the slaughterhouse when a gate was accidentally left open.

Several videos captured the stampede as bystanders appeared to watch in disbelief. One clip showed a cow bucking and knocking over a person as he tried to recapture one of the loose animals.

One cow charged at a family of four, knocking some members to the ground, the sheriff's department said. A deputy fatally shot the animal.

The family members, who authorities did not identify, were taken to the hospital and treated for minor injuries.

More than an hour after their escape, most of the cows were corralled into a cul-de-sac on Friendship Avenue, NBC Los Angeles reported. Of the 39 remaining cows, 38 were safely recaptured and one was still on the move.

No other injuries were reported.

The Pico Rivera incident echoes other animal escapes in the past year.

In February, a herd of more than 65 cows escaped from a farm in northwest Indiana. In September, a deputy with the Knox County Sheriff's Office spotted a tiger wandering the roads in Tennessee. And in May 2020, a herd of nearly 200 goats broke the boards of an electric fence and took over the streets of San Jose, California.

[Can't blame them, since they were under a death sentence. I'm rooting for number 39]

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Kenny Loggins

American singer-songwriter and guitarist, Loggins early songs were recorded with the Nitty Gritty Dirt Band in 1970 that led to seven albums recorded as Loggins and Messina from 1972 to 1977. His early soundtrack contributions date back to A Star Is Born in 1976, and he is known as the King of the Movie Soundtrack.

Danger Zone https://www.youtube.com/watch?v=siwpn14IE7E

I'm Alright (Caddyshack Theme) https://youtu.be/rbQgaHZOFZ0

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Low Tech Backup Aid

https://www.youtube.com/watch?v=wY068GfqXlo

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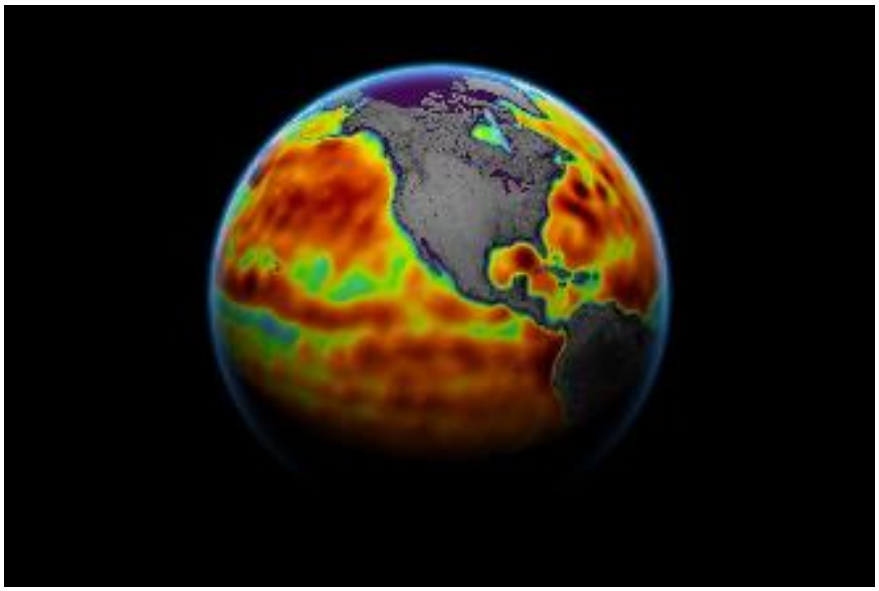
Major Ocean-Observing Satellite Starts Providing Science Data



This map shows sea level measured by the Sentinel-6 Michael Freilich satellite from June 5 to15. Red areas are regions where sea level is higher than normal, and blue areas indicate areas where it's lower than normal.

Credit: NASA Earth Observatory Full Image Details

Sentinel-6 Michael Freilich, the latest spacecraft to monitor sea surface height, releases its first science measurements to users.

After six months of check-out and calibration in orbit, the Sentinel-6 Michael Freilich satellite will make its first two data streams available to the public on June 22. It launched from Vandenberg Air Force Base in California on Nov. 21, 2020, and is a U.S.-European collaboration to measure sea surface height and other key ocean features, such as ocean surface wind speed and wave height.

One of the sea surface height data streams that will be released is accurate to 2.3 inches (5.8 centimeters) and will be available within hours of when the instruments aboard Sentinel-6 Michael Freilich collect it. A second stream of data, accurate to 1.4 inches (3.5 centimeters), will be released two days after collection. The difference in when the products become available balances accuracy with delivery timeliness for tasks like forecasting the weather and helping to monitor the formation of hurricanes. More datasets, which will be accurate to about 1.2 inches (2.9 centimeters), are slated for distribution later this year and are intended for research activities and climate science including tracking global mean sea level rise.

Launched in November 2020, Copernicus Sentinel-6 Michael Freilich Europe's latest radar altimetry technology to extend the long-term record of sea-surface height measurements that began in the early 1990s. To make sure that any differences between the historical time series and the new data from Copernicus Sentinel-6 Michael Freilich are fully understood, for 12 months after the launch the two satellites orbit in tandem, just 30 seconds apart, following the same ground track
https://www.youtube.com/watch?v=Dz0ONVNe3Is

The satellite, named after former NASA Earth Science Division Director Michael Freilich, collects its measurements for about 90% of the world's oceans. It is one of two satellites that compose the Copernicus Sentinel-6/Jason-CS (Continuity of Service) mission. The second satellite, Sentinel-6B, is slated for launch in 2025. Together, they are the latest in a series of spacecraft starting with TOPEX/Poseidon in 1992 and continuing with the Jason series of satellites that have been gathering precise ocean height measurements for nearly 30 years.

Shortly after launch, Sentinel-6 Michael Freilich moved into position, trailing the current reference sea level satellite Jason-3 by 30 seconds. Scientists and engineers then spent time cross-calibrating the data collected by both satellites to ensure the continuity of measurements between the two. Once they have are assured of the data quality, Sentinel-6 Michael Freilich will then become the primary sea level satellite.

"It's a relief knowing that the satellite is working and that the data look good," said Josh Willis, project scientist at NASA's Jet Propulsion Laboratory in Southern California. "Several months from now, Sentinel-6 Michael Freilich will take over for its predecessor, Jason-3, and this data release is the first step in that process."

Keeping an Eye on Rising Seas

The ocean absorbs more than 90% of the heat trapped in the Earth system by increasing concentrations of greenhouse gases, which causes seawater to expand and sea level to rise. Monitoring ocean height is important because it helps forecasters predict things, including ocean currents and potential hurricane strength.

"These initial data show that Sentinel-6 Michael Freilich is an amazing new tool that will help to improve marine and weather forecasts," said Eric Leuliette, program and project scientist at the National Oceanic and Atmospheric Administration in Maryland. "In a changing climate, it's a great achievement that these data are ready for release."

Ocean Altimetry Programme Manager Julia Figa Saldana of EUMETSAT (European Organisation for the Exploitation of Meteorological Satellites), added that the operational release of the first data streams from this unique ocean altimetry mission was a significant milestone at the start of the Atlantic hurricane season.

"The altimetry data are now being processed at EUMESAT headquarters in Darmstadt, from where the satellite is also being controlled, and released to ocean and weather forecasting data users around the world for their operational usage," Saldana said.

Scientists also anticipate using the data to gauge how fast sea levels are rising because of climate change. The expansion of warm seawater accounts for about one-third of modern-day sea level rise, while meltwater from glaciers and ice sheets accounts for the rest. The rate at which the oceans are rising has accelerated over the past two decades, and researchers expect it to speed up more in the years to come. Sea level rise will change coastlines and increase flooding from tides and storms. To better understand how rising seas will impact humanity, researchers need long climate records – something Sentinel-6 Michael Freilich will help provide.

More About the Mission

Sentinel-6/Jason-CS is being jointly developed by ESA (European Space Agency), EUMETSAT, NASA, and NOAA, with funding support from the European Commission and technical support from France's National Centre for Space Studies.

JPL, a division of Caltech in Pasadena, is contributing three science instruments for each Sentinel-6 satellite: the Advanced Microwave Radiometer, the Global Navigation Satellite System - Radio Occultation, and the Laser Retroreflector Array. NASA is also contributing launch services, ground systems supporting operation of the NASA science instruments, the science data processors for two of these instruments, and support for the U.S. members of the international Ocean Surface Topography Science Team.

For more about Sentinel-6 Michael Freilich, visit: https://www.nasa.gov/sentinel-6

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"The reward for work well done is the opportunity to do more."
Jonas Salk

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How Do These People Survive?

ONE

Recently, when I went to McDonald's I saw on the menu that you could have an order of 6, 9 or 12 Chicken McNuggets.

I asked for a half dozen nuggets.

'We don't have half dozen nuggets,' said the teenager at the counter.

'You don't?' I replied.

'We only have six, nine, or twelve,' was the reply.

'So I can't order a half dozen nuggets, but I can order six?'

'That's right.'

So I shook my head and ordered six McNuggets

(Unbelievable but sadly true..)

TWO

I was checking out at the local Woolworths with just a few items and the lady behind me put her things on the belt close to mine. I picked up one of those 'dividers' that they keep by the cash register and placed it between our things so they wouldn't get mixed.

After the girl had scanned all of my items, she picked up the 'divider', looking it all over for the bar code so she could scan it.

Not finding the bar code, she said to me, 'Do you know how much this is?'

I said to her 'I've changed my mind; I don't think I'll buy that today.'

She said 'OK,' and I paid her for the things and left..

She had no clue to what had just happened.

THREE

A woman at work was seen putting a credit card into her floppy drive and pulling it out very quickly.

When I inquired as to what she was doing, she said she was shopping on the Internet and they kept asking for a credit card number, so she was using the ATM 'thingy.'

(keep shuddering!!)

FOUR

I recently saw a distraught young lady weeping beside her car. 'Do you need some help?' I asked.

She replied, 'I knew I should have replaced the battery to this remote door unlocker. Now I can't get into my car. Do you think they (pointing to a distant convenience store) would have a battery to fit this?'

'Hmmm, I don't know. Do you have an alarm, too?' I asked.

'No, just this remote thingy,' she answered, handing it and the car keys to me. As I took the key and manually unlocked the door, I replied, 'Why don't you drive over there and check about the batteries. It's a long walk....'

Please just lay down before you hurt yourself !!!

FIVE

Several years ago, we had an Intern who was none too swift. One day she was typing and turned to a secretary and said, 'I'm almost out of typing paper. What do I do?' 'Just use paper from the photocopier', the secretary told her. With that, the intern took her last remaining blank piece of paper, put it on the photocopier and proceeded to make five 'blank' copies.

Brunette, by the way!!

SIX

A mother calls 911 very worried asking the dispatcher if she needs to take her kid to the emergency room, the kid had eaten ants. The dispatcher tells her to give the kid some Benadryl and he should be fine, the mother says, 'I just gave him some ant killer....'

Dispatcher: 'Rush him in to emergency!'

The question is whether things will improve in the future.

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Verse from the Bard Hisself

Hamlet's Cat's Soliloquy from "Hamlet's Cat"

By William Shakespeare's Cat

[As translated into understandable English by Joe Horton]

To go outside, and there perchance to stay
Or to remain within: that is the question:
Whether 'tis better for a cat to suffer
The cuffs and buffets of inclement weather
That Nature rains on those who roam abroad,
Or take a nap upon a scrap of carpet,
And so by dozing melt the solid hours
That clog the clock's bright gears with sullen time
And stall the dinner bell. To sit, to stare
Outdoors, and by a stare to seem to state
A wish to venture forth without delay,
Then when the portal's opened up, to stand
As if transfixed by doubt. [emphasis Joe's] To prowl; to sleep;
To choose not knowing when we may once more
Our readmittance gain: aye, there's the hairball;
For if a paw were shaped to turn a knob,
Or work a lock or slip a window-catch,
And going out and coming in were made
As simple as the breaking of a bowl,
What cat would bear the household's petty plagues,
The cook's well-practiced kicks, the butler's broom,
The infant's careless pokes, the tickled ears,
The trampled tail, and all the daily shocks
That fur is heir to, when, of his own free will,
He might his exodus or entrance make
With a mere mitten? Who would spaniels fear,
Or strays trespassing from a neighbor's yard,
But that the dread of our unheeded cries
And scratches at a barricaded door

No claw can open up, dispels our nerve
And makes us rather bear our humans' faults
Than run away to unguessed miseries?
Thus caution doth make house cats of us all;
And thus the bristling hair of resolution
Is softened up with the pale brush of thought,
And since our choices hinge on weighty things,
We pause upon the threshold of decision.

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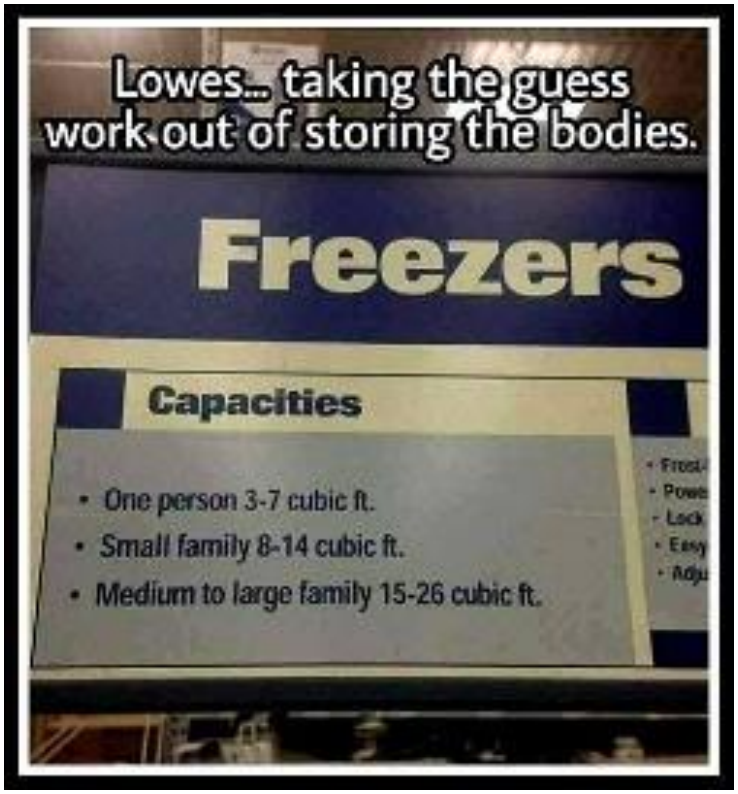

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So it's Only a Harmonica

https://www.youtube.com/watch?v=zoauBe465qQ

Buddy Green seems to have learned to make his toy do some special tricks.

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Game Changers?

So, are we Getting Flying Cars or What?

"Blade Runner" led us to believe we'd have flying cars by 2019, so where are they?

Well, a few companies are working on what's known as eVTOL (Electric Vertical Takeoff and Landing) tech, as recently explored by The New York Times.

Meet the contenders…

1) Joby, the metro air taxi

Joby Aviation is testing an electric air taxi that fits 1 pilot and 4 passengers. It plans to be airborne over major cities like Los Angeles (very "Blade Runner") by 2024, and it has some big partners.

Toyota led a $620m Series C funding round in early 2020, per TechCrunch. In late 2020, Joby acquired Uber's air taxi program Elevate in a deal that included a $75m investment from Uber.

2) BlackFly, the single passenger vehicle

Opener's BlackFly is a 1-person pod that can go ~25 miles per charge. This one's for rural use; customers can learn to fly via VR simulation.

Should BlackFly hit the market, it'll likely cost $150k+.

3) The autonomous air taxi

Kitty Hawk was founded by Sebastian Thrun, formerly of Google's self-driving car project. Its electric air taxi is called Heaviside.

Right now it only has 1 seat but will later have 2. Though it costs ~$300k to build a Heaviside, Thrun sees the cost offset by its use as a ridesharing vehicle.

Okay, but how feasible is any of this?

While the benefits might include less traffic, faster commutes, and more sustainable urban mobility, some experts don't think a 2024 launch is realistic.

For one, the Federal Aviation Administration would have to sign off on it.

And as both the NYT and the more skeptical Jalopnik point out, customers would have to feel comfortable taking an air taxi -- and that could take some time.

So, promising, but maybe hold your air-horses.

"No Bucks, No Buck Rogers"

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