The Official Newsletter of the

PAPAKURA RADIO CLUB INC.

November 2022

1960 → *2022*

CONTENTS ...

This Month's Meeting:

Wednesday 7th of December will the next Final meeting for 2022. Following general business, Gavin Zl1NUX will be sharing some of the photos from the grand south island tour.

If transport is a problem, let the committee members know, and we may be able to assist with arranging a ride for you.

CLUB ACTIVITY:

With the AGM out of the way, and the new committee in place for the next year, we can enjoy a Christmas dinner on the 2nd of December at the Papakura club (details of the location are on page 4) and then slid into the quiet relaxed holiday mode of informal meetings at the clubrooms.

We are providing radio operators for the Jack Ridge Car Rally on December 11th and these should now be allocated. Otherwise have a relaxed holiday period, and we look forward to s good 2023 year as we again seek to grow interest in our hobby.

3RD AND 4TH DECEMBER
VHF CONTEST

Field Day Contest

All bands 6 m and up. First Saturday in December, and the following day.

For all contests, the operating periods are 5 pm to 11 pm on the Saturday, and 7 am to 1 pm on the Sunday, NZ local time.

A Field Station is one where all equipment, including power sources, antenna systems and operating shelters are taken to the site, and no other facilities are used.

Repeater, satellite, EME or crossband contacts are not permitted.

Two, or more, stations in close proximity may only participate if the stations are erected and operated entirely independently throughout the Contest.

Only one call-sign may be used by a station for the duration of the Contest.

Contacts must be fully two-way. Serial numbers must be correctly exchanged and acknowledged, before points may be claimed. The serial number is made up of RS(T) plus a three digit number.

Location details of contesting stations must be exchanged on first contact with each new station, especially if mobile, and entered into the log. Stations shall give their location as latitude and longitude, using the NZGD2000/WGS84, to within five minutes resolution or full Maidenhead Locator. As the full Maidenhead is only accurate to 7 km, station location shall be given to within 30 seconds resolution, approximately 0.9 km for contacts above 2.4 GHz. "Christchurch" or "Home station" is an insufficient description. The station giving the insufficient description will be penalised.

Full contest details can be found at: https://www.nzart.org.nz/activities/contests/vhf/

H-NIGHT 2022

H Night commemorates the return of some Amateur Radio privileges after World War 2.

On the evening of 8 December 1945 Amateurs were permitted once more to operate on the 80 metre band (and other allocated spectrum just below today's 6 metre band).

H Night is a way to commemorate this moment in time by getting on air, on the 80 metre band, at 19:30 on the 8th of December each year.

Band- 80 metres
Mode: Amplitude Modulation (AM), Phone only -that is a carrier and sidebands.
Date: Thursday 8 December 2022
Time- 7.30 pm to 10:00 pm - five (5) half-hour periods.

Work individual stations once in each period, unless they are able to change radios, and operate in another category, e.g. use a ZC1 for fifteen (15) minutes then change to a modern radio for fifteen (15) minutes.

There will be a special event station ZL6H. Work this station for the first time for five (5) points… subsequent contacts claim the points for the type of station that ZL6H is.

Transmitting Categories-
Vintage - radios of all valve, in the signal path.
Hybrid - radios with some valves, at least in the final stage.
Modern - solid state, DSP etc.
SDR - radios that are fully software defined, Flex, K3 etc.
Home Brew - where Tx , Rx, or both have been fabricated in the home workshop.
QRP - less than, or equal to 5 watts carrier power.

Exchange a signal report and type of equipment you use, e.g. '59 ZC1'. Suggest you use the following extensions when calling, and claim the points for each station worked-
/V = vintage - 3 points
/H =Hybrid- 2 points
/M= Modern - 1 point
/S= SDR - 2 points
/w=Homebrew - 2 points
/Q=QRP - 3 points
Working ZL6H - 5 points (first time worked only : then claim points as for type of station ZL6H is… for example 1 point for a modern 6H)

Points will be awarded for each station contacted, based on the equipment THE STATION YOU CONTACT uses.

Suggested calling frequencies: **QRP 3750** and **QRO 3850**, giving older receivers a chance to hear weak signals.

Short Wave Listeners (SWL) section

Points awarded will be the same as for transmitting stations, i.e. determined by the type of transmitter the station you hear is using. Use the appropriate multiplier for your style of the receivFor remotemote receivers please use the Modern category.

SWL Category multiplier:

Vintage: All tube line up in receive path.	Multiplier 2.0
Modern: Any solid-state receiver.	Multiplier 1.0
SDR: software-defined receivers e.g. Soft Rock, SDR play etc.	Multiplier 1.5

Please send logs to Rob Carter, ZL2IW rob.zl2iw@gmail.com with a summary of your equipment used and the category you wish to be in.

Good luck on the night, and *most of-all have fun!*

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DX CALENDAR NOVEMBER 2022

01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
5R8WP 5R8WG 5R8MM 5R8CG 5R8PA									S21DX																			TR8CR		
T88PB												8Q7CA																		
YI0CA														FT4YM																
PJ7PL									RI1ANC																					
TO9W																														
FT4XW																														
AU2JCB																														
5H3FM																														
				H44SHD																										
JG8NQJ/JD1																														
C6AGU																														
		XT2AW																												
3D2AG/P																														
RI1ANU																														
FH4VVK																														
HR5/F2JD																														
ZS7ANF																														

Featured DX

H44SHD Uepi Island New Georgia Islands

Remo, HB9SHD will be active as H44SHD from Uepi Island, IOTA OC - 149, New Georgia Islands, Solomon Islands, 5 - 19 December 2022.

He will operate on 160 - 10m.
QSL via home call.

He will also use H44SHD call from MV Bilikini, 20 December 2022 - 3 January 2023.
QSO from MV will not count for DXCC.

But you can add him Maritime mobile for fun.

UPCOMING CONTESTS

December 2022	
Walk for the Bacon QRP Contest	0000Z-0100Z, Dec 1 and 0200Z-0300Z, Dec 2
QRP ARCI Topband Sprint	0000Z-0300Z, Dec 1
SKCC Sprint Europe	2000Z-2200Z, Dec 1
ARRL 160-Meter Contest	2200Z, Dec 2 to 1600Z, Dec 4
Kalbar Contest	0000Z, Dec 3 to 2359Z, Dec 4
UFT Meeting	0500Z-0800Z, Dec 3 and 1500Z-1800Z, Dec 3 and 0700Z-1000Z, Dec 4
PRO CW Contest	1200Z, Dec 3 to 1159Z, Dec 4
INORC Contest	1400Z, Dec 3 to 1359Z, Dec 4
FT Roundup	1800Z, Dec 3 to 2359Z, Dec 4
ARS Spartan Sprint	0200Z-0400Z, Dec 6
VHF-UHF FT8 Activity Contest	1700Z-2100Z, Dec 7
EACW Meeting	1900Z-2000Z, Dec 8
PODXS 070 Club Triple Play Low Band Sprint	0000Z, Dec 10 to 2359Z, Dec 12
ARRL 10-Meter Contest	0000Z, Dec 10 to 2400Z, Dec 11
TRC Digi Contest	**Cancelled for 2022**
SKCC Weekend Sprintathon	1200Z, Dec 10 to 2400Z, Dec 11
ARI 40/80 Contest	1300Z, Dec 10 to 1300Z, Dec 11
International Naval Contest	1600Z, Dec 10 to 1559Z, Dec 11
QRP ARCI Holiday Spirits Sprint	2000Z-2300Z, Dec 11
CQC Great Colorado Snowshoe Run	2100Z-2259Z, Dec 11
4 States QRP Group Second Sunday Sprint	0100Z-0300Z, Dec 12
NAQCC CW Sprint	0130Z-0330Z, Dec 14
VHF-UHF FT8 Activity Contest	1700Z-2100Z, Dec 14
NTC QSO Party	1900Z-2000Z, Dec 15
AGB-Party Contest	1600Z-1700Z, Dec 16
Russian 160-Meter Contest	1800Z-2200Z, Dec 16
RAC Winter Contest	0000Z-2359Z, Dec 17
Feld Hell Sprint	0000Z-2359Z, Dec 17
OK DX RTTY Contest	0000Z-2400Z, Dec 17
Croatian CW Contest	1400Z, Dec 17 to 1400Z, Dec 18
Stew Perry Topband Challenge	1500Z, Dec 17 to 1500Z, Dec 18
ARRL Rookie Roundup, CW	1800Z-2359Z, Dec 18
Run for the Bacon QRP Contest	2300Z, Dec 18 to 0100Z, Dec 19
NAQCC CW Sprint	0130Z-0330Z, Dec 21
VHF-UHF FT8 Activity Contest	1700Z-2100Z, Dec 21
CW QRS Xmas Activity	0000Z, Dec 24 to 2359Z, Dec 31
RAEM Contest	0000Z-1159Z, Dec 25
DARC Christmas Contest	0830Z-1059Z, Dec 26
QCX Challenge	1300Z-1400Z, Dec 26
QCX Challenge	1900Z-2000Z, Dec 26
QCX Challenge	0300Z-0400Z, Dec 27
SKCC Sprint	0000Z-0200Z, Dec 28
YOTA Contest	1200Z-2359Z, Dec 30
Bogor Old and New Contest	0900Z-2359Z, Dec 31

Note: All dates and times are in UTC,

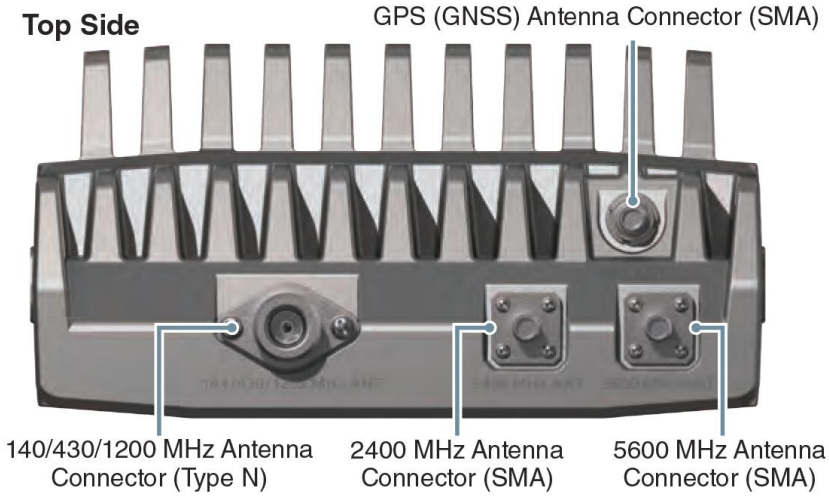
Sorry about the formatting – Hopfully we will be back to normal next month

INTRODUCING THE ICOM 905

It's been a while since we have had a new radio to talk about, and while I have talked about the concept radio a while ago, Icom USA has now started promoting the New ICOM 905 VHF/UHF/SHF radio. (no word from ICOM NZ on dates yet. Watch this space. *Sorry no price indications yet either.*

Yep, this radio *(sorry it won't be in NZ for this Christmas shopping list)* brings an all-mode transceiver covering 133, 430, 1200, 2400 5600 MHZ as well as 10GHz band (Requires additional CX-10G transverter – not supplied) operation.

The modes include SSB, CW, FM, AM, RTTY, D-Star, DV, DD and even ATV modes. The power output is 10 watts from 144 to 1200MHZ, and 2 watts on 2400/5600 and at 10Ghz only a half a watt, the radio is in two parts, The Controller uses the now familiar design of the IC 7300 or IC-705 but is connected to the RF module by means of standard Lan cabling (with PoE), allowing the RF module to be located close to the antenna to reduce cable losses. The RF modules is of course weatherproof (IPX5 rated), A 20 Metre weatherproof LAN cable is supplied in the box (apparently).



The Outdoor RF module includes a GNSS (GPS) receiver to keep the RF frequencies accurate based on the GPS clocking

The IC-705 touch screen controller can be connected to a Camera (an AV jack provides analogue camera input and output). to allow the unit to be used not only as an ATV receiver, but also an ATV transmitter. The USB ports have been changed to a USB-C interface, while to RJ-45 jacks connect the RF module, and also connection to a LAN. And SC card slot is also provided for storage and upgrading use.

The unit can be powered form an external 13.8 volt input or an internal battery pack can be used for portable operation.

So while not yet on the Christmas shopping list, but at least some hams will be doing it with ever increasing frequency, even if it Giga Hertz.

RAMBLINGS FROM THE EDITOR'S DESK

December is knocking on the door of the shack, and the weather … well maybe we should leave the weather to one side, given what a strange start it has been to a December.

I hope the winds have not taken too great a toll on your antenna systems, but at least the summer weather will soon arrive, and we can concentrate on some maintenance tasks. (Mine require some repair)

The Christmas season however has arrived, with decorations at every turn, and my mailbox stuffed with so many advertisements, most of which are unloaded directly to the recycling without so much as a second glance. Fruit trees are budding or showing early fruiting and the grass is growing at rates we had forgotten about, so despite the rain (at least the dams will be full this year) we still see all the signs of a kiwi December.

I hope that you will be able to use this time to connect with family and friends and recharge your emotional batteries with all of the good things we as humans need. I also hope that you will be able to look towards a 2023 that is filled with these same connections.

Over the holiday period many of you may take the opportunity to travel, no doubt you will be planning with a goal of when to arrive, but you will also allow some extra time to enjoy some breaks along the journey. Journeys are always unexpected and unpredictable things happen as you travel from A to B and sometimes you have to make a few detours. But along the way you discover more than you expected to find or know. After all its not just about getting there, it's also about the journey.

I think one of the lessons in life is that you can't just magically appear at the place you wish to end up, you have to somehow get there. All shows, all stories have more than just the events at the beginning and the end, they take you on a journey and it's the stuff in the middle that makes the story memorable or forgettable.

So how is your radio journey going? Yes, it weaves around your life, and, we hope, it adds a new dimension to your journey. It's sometimes unpredictable, and there are good distractions, and some not so good, but they all add to the journey, and hopefully you are making enough time to enjoy it.

Sometimes you find time to make the most of it, and other times you find that other things mean you have to put it to one side.

But like all the other things in life that we put to one side, I hope you find the time to pick your radio back up again, blow off the dust, and have another go. At least until the next disruption means you put it back to one side. Like any journey, the unexpected means you have to make changes to your plans, but given enough time, you get back on track and continue your journey.

The last few years have seen plenty of disruptions, and for some of us the connections we had to our journey have been disrupted to levels that have tested us in ways we would never have expected, but these detours have also shown us that there are options we may not have considered.

One of the best examples of a classic disruption to radio was during World War 2 when the use of radio by anyone other than the Military became an offense. All radio equipment was seized, and all amateur operations ceased. (of course many operators instead worked, in various forms for the state, and their efforts would cover volumes on its own) Post war transmissions were again allowed from the 8th of December 1945.

Every 8th of December (Thursday this year) a memorial night event (contest seem a wrong word) is held users operate on 80 metres with the venerable old AM modulation. And a great excuse to have a go at operating an AM station.

While many of us use H Night to remember our Amateur Radio friends or family who were involved in the War. H Night is a way to commemorate this moment in time by getting on air, on the 80-metre band, at 19:30 on the 8th of December. Various formats of H Night have been used over the years.

There is a form of event/contest that encourages the use of AM. This makes it a great incentive to restore, and use on-air, older style equipment, both civilian and ex- military origin. It is all about getting on the air, we encourage the use of modern, and ancient, AM equipment. You should find a category for your station in the rules.

All are invited to participate in celebrating this important milestone by taking part in a relaxed AM contest style evening. Event start is 1930 local time, to 2200, with 5 half hour periods. There will be a special event station with the callsign ZL6H. Please check the rules for the current year, as we fine tune them slightly to make it more fun for everyone.

This event has a poignance to it, but we really like people to enjoy this evening of AM also.

Details can be found at: https://www.nzart.org.nz/activities/contests/h-night-contest-2021

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Hybrid - radios with some valves, at least in the final stage.
Modern - solid state, DSP etc.
SDR - radios that are fully software defined, Flex, K3 etc.
Home Brew - where Tx , Rx, or both have been fabricated in the home workshop.
QRP - less than, or equal to 5 watts carrier power.

Since the 80 Metre band is used, any licensed ham radio operator, even ones still getting their first 50 contacts, can join the event, so It's a great even for our new Hams too. And the audience are very friendly.

If you're interested in using the Club Radio, let me know, if enough are interested, we can run an event night at the club to increase participation, or just fire up your rig, set it to AM and transmit on 3850.

I might even bring the Hybrid set to the clubrooms (and the portable antenna too.

But irrespective of your equipment availability, or your plans for the holidays, or even the weather it will not matter if you will be travelling or staying home, you will probably find someone at the other end of the radio if you decide to turn it on and put out a call.

But above all, as you make your holiday plans, and as you experience disruptions, please remember that these disruptions may open the door to an unexpected experience, and in years to come, unexpected memories.

So as we close the year, and start the wind down (why does it always get so busy as we slow things down?) and you attend functions, events, or gatherings… or maybe just stay home and chat with the neighbours, I hope that you will remember to connect with people, It does not matter if it is face to face, or over the phone, or even over the radio.

Our need for connection with each other is a basic human need (even for those of us who value our times of solitude).

And it's this connection, that made Ham Radio so great.

It was the original social network, and it remains so even today, it's a community of different (some of us very different) and diverse people, with all of our quirks, and faults, we are connected by a common love of technology. This technology and the fun we can have when connecting is what makes the hobby. Yes, the hardware is fun and the technical challenge of getting your station working right (try AM setup of modulation depth for the first time) but the people, and the friends we have made is what brings us back. Contests are fine, But the "ragchew", or the net, that is where the spirit of the Ham community shines.

I will of course be on air for our club net every Sunday morning at 8:30 and would love to have you join us, and on Christmas day we will have a special net at 8:30 for those of you who are not otherwise busy.

So may each of you have a great holiday season, and may we see you all in 2023 refreshed, recharged and ready for the challenges and disruptions that the year will surely bring. But may we face these challenges with determination and community, and may we find strength in each other. May we embrace the diversions, make the most of the journey, and create lasting memories we will treasure for life.

So, no matter what candles you light this year, be they oil, wax or LEDs

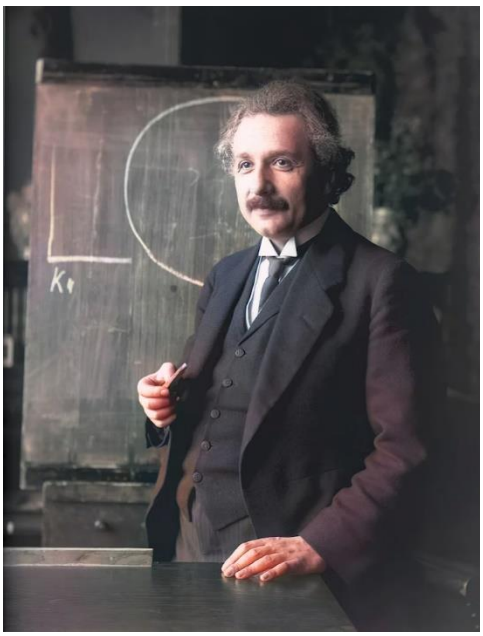
May this holiday be a time of renewal, refreshing and mental clarity, May friends and stranger bring joy to your home, May you find that the candles you have lit have illuminated your path ahead and may you find peace in the turmoil of life, may you be blessed at this time of renewal and rededication.

Until next Time

de ZL1NUX signing

107 YEARS LATER, AND WE ARE STILL TESTING EINSTEIN'S THEORY OF GRAVITY, AND IT IS GETTING WEIRDER

General relativity, first published in 1915, has passed many years of observational tests, from Eddington's measurement of the deflection of starlight by the Sun in 1919 to the recent detection of gravitational waves. It's even used by GPS satellites to explain why the atomic clock on a GPS satellite rums 38 microseconds per day faster than a ground based atomic clock. However, gaps in our understanding start to appear when we try to apply it to extremely small distances, where the laws of quantum mechanics operate, or when we try to describe the entire universe.



A new study, published in Nature Astronomy, has now tested Einstein's theory on the largest of scales. We believe our approach may one day help resolve some of the biggest mysteries in cosmology, and the results hint that the theory of general relativity may need to be tweaked on this scale.
According to Einstein, vacuum energy has a repulsive gravity — it pushes the empty space apart. Interestingly, in 1998, it was discovered that the universe's expansion is accelerating (a finding awarded the 2011 Nobel prize in physics). However, the amount of vacuum energy, or dark energy as it has been called, necessary to explain the acceleration is many orders of magnitude smaller than what quantum theory predicts.
Hence the big question, dubbed "the old cosmological constant problem", is whether the vacuum energy gravitates — exerting a gravitational force and changing the expansion of the universe.

If yes, then why is its gravity so much weaker than predicted? If the vacuum does not gravitate at all, what is causing the cosmic acceleration?

To help explain these anomalies, scientists assumed missing matter and energy called dark matter and dark energy would explain the difference. These assumptions are baked into scientists' standard cosmological theory, called the lambda cold dark matter (LCDM) model — suggesting 70 percent dark energy, 25 percent dark matter, and 5 percent ordinary matter in the cosmos. And this model has been remarkably successful in fitting all the data collected by cosmologists over the past 20 years.
But the fact that most of the universe is made up of dark forces and substances, taking odd values that don't make sense, has prompted many physicists to wonder if Einstein's theory of gravity needs modification to describe the entire universe. A new twist appeared a few years ago when it became apparent that different ways of measuring the rate of cosmic expansion, dubbed the Hubble constant, give different answers — a problem known as the Hubble tension.

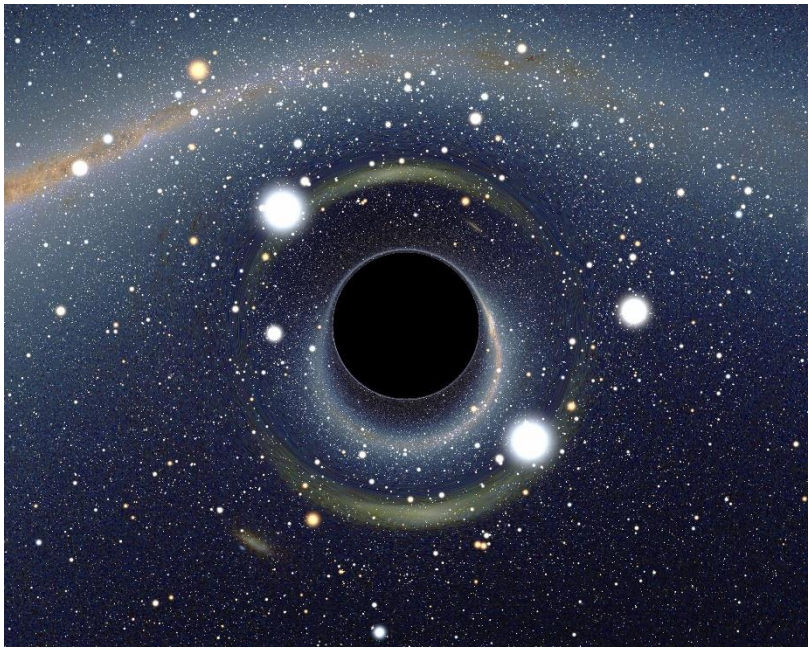
The Team decided to design tests to check if the universe obeyed the rules of Einstein's theory. General relativity describes gravity as the curving or warping of space and time, bending the pathways along which light and matter travel. Importantly, it predicts that the trajectories of light rays and matter should be bent by gravity in the same way.

Together with a team of cosmologists, they put the basic laws of general relativity to test and also explored whether modifying Einstein's theory could help resolve some of the open problems of cosmology, such as the Hubble tension. What the team found was some interesting hints of a possible mismatch with Einstein's prediction, albeit with rather low statistical significance. This means that

there is nevertheless a possibility that gravity works differently on large scales, and that the theory of general relativity may need to be tweaked.

The study also found that it is very difficult to solve the Hubble tension problem by only changing the theory of gravity. The full solution would probably require a new ingredient in the cosmological model, present before the time when protons and electrons first combined to form hydrogen just after the Big Bang, such as a special form of dark matter, an early type of dark energy, or primordial magnetic fields. Or, perhaps, there's a yet unknown systematic error in the data.

The study has demonstrated that it is possible to test the validity of general relativity over cosmological distances using observational data. While it hasn't solved the Hubble problem, we will need to have more data to solve the problem.



And just in case that was not enough weirdness for you, the gravity of the black hole will really do your head in.

As you get closer to an object, the gravity of that object slows down time. time is slower as gravity increases.

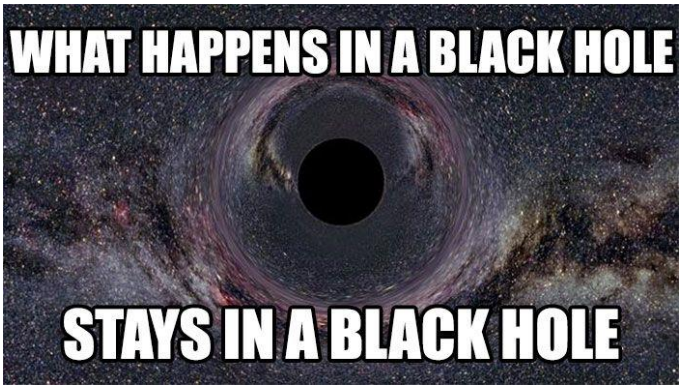
As you get closer to a black hole, time slows, and you fall slower and slower.

At the event horizon (where light no longer escapes) time is zero, so in fact, you stop falling, if you crossed this event, then time would actually run backwards and you would fall back up.

Weird right?

So Black holes can't have anything fall into them, so their mass never increases, yet black holes get bigger by feeding and they do increase their mass, and this means we have absolutely no idea of time and gravity on this enormous scale.

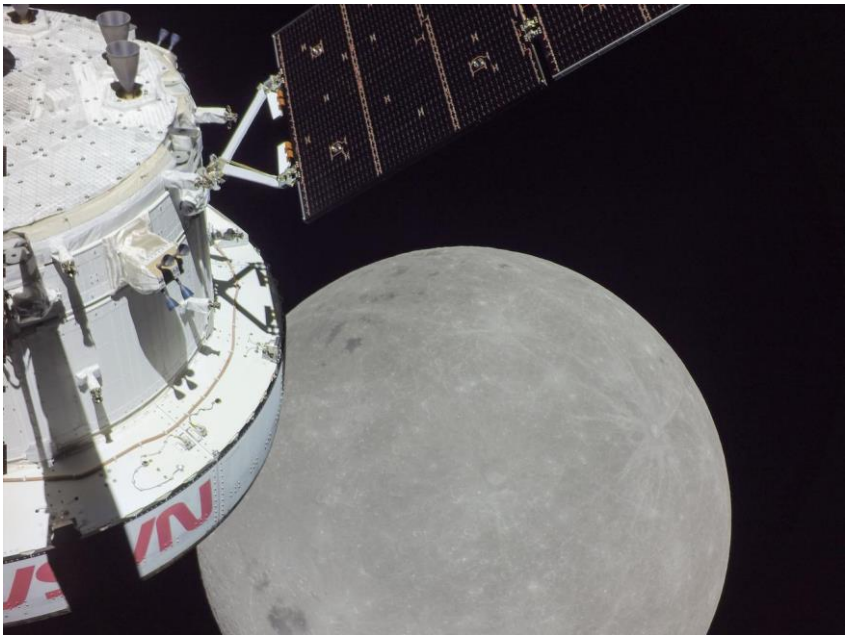
Black holes were first theorized by John Michell in 1783, but no-one could understand how gravity would affect a weightless beam of light.
Ironically it was Einstein who first provided evidence that black holes could exist ,and was told they were a mathematical absurdity … Yet we now know that they are very common in the universe.



But they still have the power to make all our knowledge come to grinding halt, and leave us wondering … "just what in space is really going on"?

Artemis 1 – The moon is getting interesting again.

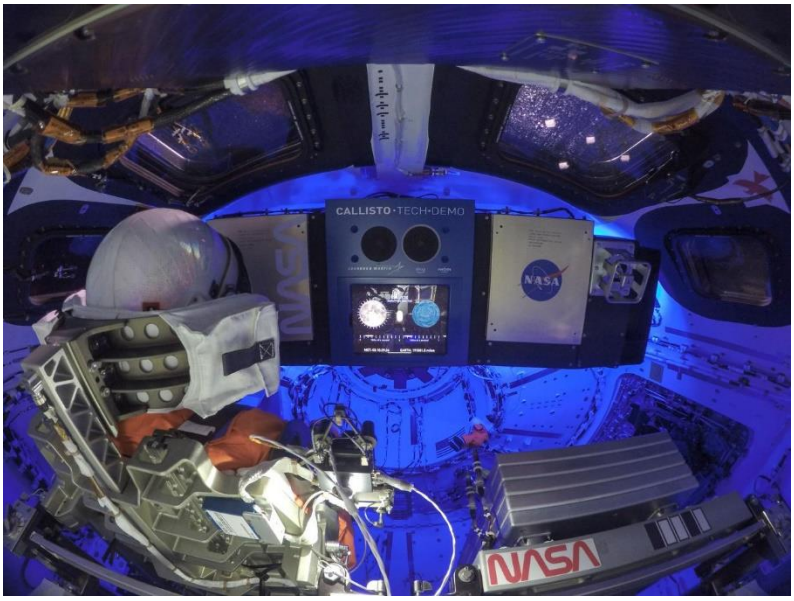
With the SLs finally operational, Artemis one launched the Back to the moon mission as America once again tries to play catch up in the new space race.



With China showing some serious space interest, and Japan, and Europe keen to get to the moon for possible mining, the race is back on again.

The Orion Capsules orbit of the far side of the moon showed just how impacts have left much of the lunar surface jagged and rough, while achieving a closest approach of just 80 miles above the lunar surface.

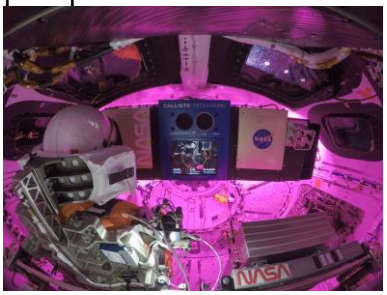
NASA TV streamed many hours of live footage from the mission, and it should be a wild time once the crewed mission get underway.

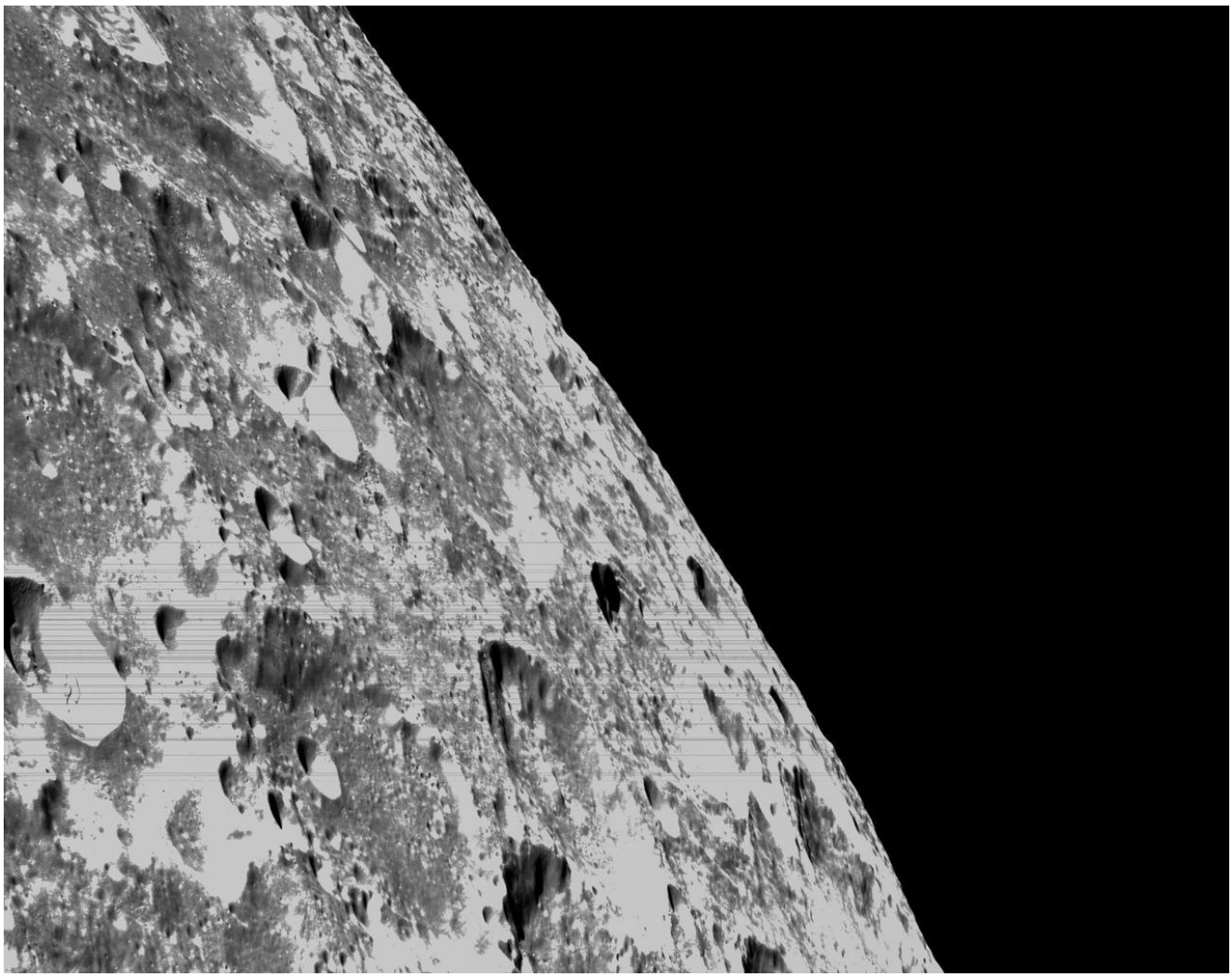


Especially with Alexa (sorry Callisto) listening to every word they say.

Yep Google is building itself into space too.

"Callisto, Change the lighting to pale pink please … "





So in the interest of keeping it a little weird, here are 10 things you may not now about the Artemis mission.

Amazon's Alexa, a.k.a. Callisto

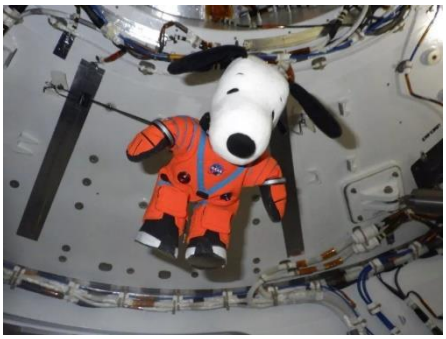
Amazon's famed virtual assistant now has experience tasking in space. Alexa has been in power for more than a decade on Earth, controlling many types of devices, such as speakers, phones and home appliances. And a technology demonstration on Artemis 1 called Callisto is based on Alexa's prowess.

Callisto was built to include Cisco's Webex video conferencing software, integrating voice technology, video and artificial intelligence on board the Orion spacecraft, which was built for NASA by Lockheed Martin. The tech could be used in the future to enable astronauts to be more self-reliant as they explore deep space

…

Or it may just turn out to be a HAL-9000 “Sorry Dave, But I Can’t do that”!

Snoopy



In a throwback to the famed Apollo program, NASA officials are letting a very special dog out. Snoopy, a star of the Peanuts comic strips that ran from 1950 to 2000, is the zero-G indicator for the Orion spacecraft. The beagle famously landed on the moon in a series of comic strips in 1969, and the Apollo 10 lunar module was named Snoopy in his honor.

The Artemis 1 Snoopy is spacesuited, wearing a replica of the same pressure suit NASA has for its Artemis astronauts. His association with NASA dates back to 1968, when agency officials asked Peanuts creator Charles Schulz to use the dog's image as a safety mascot. NASA introduced the Silver Snoopy award that year to honor workforce members who made significant strides in mission safety and success in human spaceflight.

Four LEGO minifigures

Four LEGO minifigures are riding aboard Orion, cosplaying NASA astronauts, with a crew of six LEGO ground controllers supporting the group in space. The quartet includes characters "Kate" and "Kyle" from LEGO Education's SPIKE Prime system, as well as "Julia" and "Sebastian" from the LEGO City toy line.

All four figurines are featured in the "Build to Launch: A STEAM Exploration Series which includes 10 weeks of digital content about space and science on the LEGO Education. Parents, educators and students can use the minifigures to learn more about STEAM (science, technology, engineering, art and mathematics.)

Shaun the Sheep

In what has been dubbed a "giant leap for lambkind", Shaun the Sheep is flying well beyond the borders of Shropshire for his eponymous kids' show in the United Kingdom.

Shaun, sporting an ESA flight suit, made it to space for the 15th anniversary of his first television series in 2007, although his first appearance overall was in 1995 in the short film "A Close Shave." The TV series has been seen in 180 countries. Shaun also stars in two feature-length films, the latest in 2019 featuring a visitor from outer space in "A Shaun the Sheep Movie: Farmageddon."

Two manikins and a 'moonikin'

A famed Apollo 13 engineer's name is returning his lunar mission's spirit of can-do to the moon. NASA opened a naming contest for a "moonikin" (a manikin bound for the moon, laden with two radiation sensors). The winning entry was Arturo Campos, after an engineer key to solving the problem of bringing three people home safely from the moon after a series of critical problems beset Apollo 13 in deep space.

Joining Campos are Helga and Zohar, two manikin torsos from the German space agency (known by its German acronym DLR). Each of the DLR pair is fitted with 5,600 sensors to measure radiation, and Zohar will wear an AstroRad radiation protection vest.

The three simulated astronauts will show how much risk to astronauts comes from moving outside the Van Allen radiation belts that shield Earth's lower orbits from radiation. Astronauts are more vulnerable to cosmic rays from deep space when they reach into high Earth orbit and beyond, but the risk is still being quantified.

Yeast cells

Living organisms from Earth were tasked with the deepest space journey yet aboard a cubesat called Biosentinel, which is part of the Artemis 1 manifest. (Biosentinel didn't ride aboard Orion; it and nine other cubesats were packed into the SLS upper stage.) The effect of space radiation on yeast cells will be quantified in the cubesat's orbit around the sun, which will be pretty close to that of Earth.

Yeast cells, like human cells, carry genetic information in double strands of DNA. The cells are thus a model organism to better understand how radiation affects humans exposed to similar conditions.

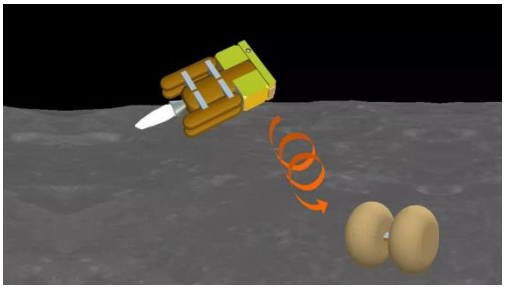
A water hunter

NASA is on the hunt for water supplies to keep astronauts going on the lunar surface, which is where Lunar IceCube comes in. The cubesat is designed to look for water and other potential resources on the moon, to reduce the amount of material astronauts need to ship from Earth (and save on cost and complication.)

Its key instrument is capable of seeking ice and wisps of exospheric (trace atmosphere) water vapor. The Lunar IceCube team — led by NASA's Goddard Space Flight Center, Morehead State University and the Busek Company — say the little cubesat will map resources for future explorers to consult.

A tiny moon lander

A tiny nanolander is the only part the Artemis 1 manifest tasked with deliberately alighting on the moon's surface. It's a small spacecraft, at just 2.2 pounds (1 kilograms), and is designed to fly toward the moon after detaching from a cubesat in lunar orbit.



Called the Outstanding Moon exploration Technologies demonstrated by Nano Semi-Hard Impactor (OMOTENASHI), the landing tech leverages experience gained by its maker, the Japanese Aeroscape Exploration Agency (JAXA). On the Hayabusa2 mission, JAXA successfully deployed a series of landers on the asteroid Ryugu, which has lower gravity than the moon but similar dusty conditions.

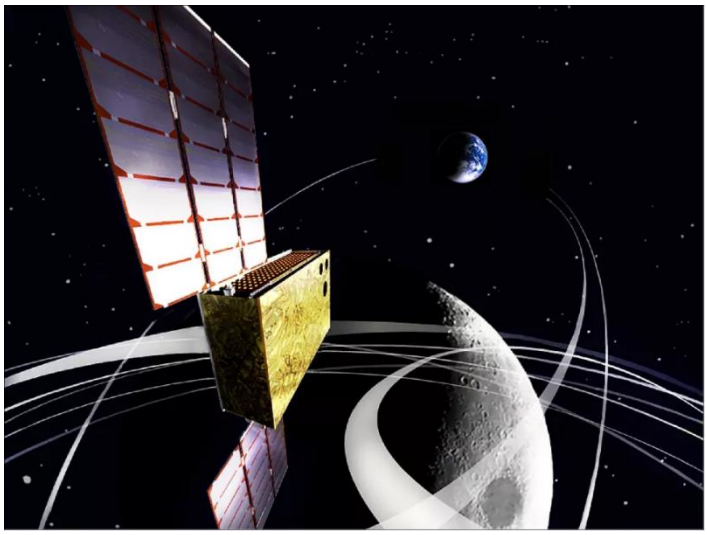
A solar sailing asteroid hunter

Another cubesat, NEA (Near-Earth Asteroid) Scout will use a solar sail to travel to a target asteroid. During its roughly two-year mission, NEA Scout will image the asteroid with NEACam, a 20-megapixel image sensor, to learn more about the asteroid's rotation, shape, dust and position in space.

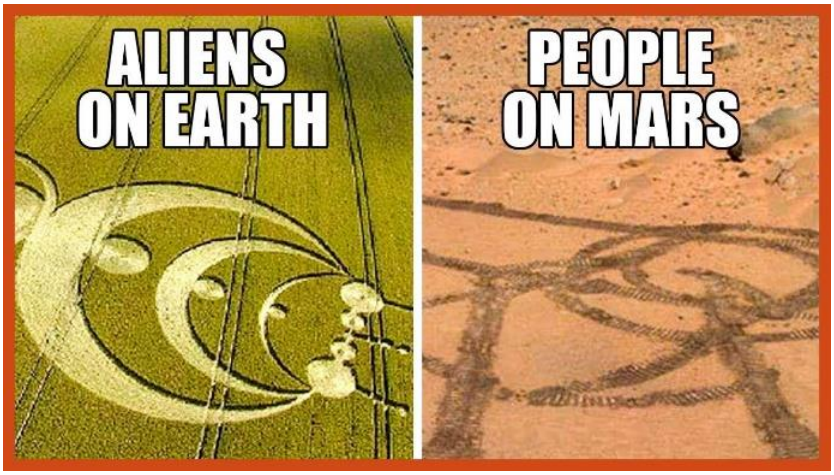
A water-propelled spacecraft

The EQUilibriUm Lunar-Earth point 6U Spacecraft (EQUULEUS), another JAXA entry with assistance from the University of Tokyo, is designed to explore radiation in an orbit between the Earth and the moon. The cubesat has a novel water propulsion system that allows it to minimize conventional fuel usage.

Mission managers are collecting data on the plasmasphere, which is the inner region of the magnetosphere. This zone has "cool" plasma, which refers to gas with atoms stripped of electrons. It's a potentially useful radiation experiment and may also assist with planning low-energy lunar flybys on future missions.



So there you have it, 10 things you may not have known about Artemis. It may not yet have a standard crew, but its far from an empty shell.



YOU CAN LISTEN IN ON ARTEMIS

Back in the days of Apollo, hams were listening in to Apollo 11 and other space flights. An article entitled “Lunar Eavesdropping” from the ARRL talks about how a couple of hams listened in on Apollo 11, and outside of getting a 10 second head start on the rest of the world, made it work but didn’t hear anything unique.

Looking at NASA pages, and ITU-R sites I have found out a few things of interest

PST rotator has software to track Artemis https://www.amsat.se/2022/09/04/tracking-artemis-1-with-pstrotator/

You can use the DSN module of the PstRotator program for Artemis-1 tracking. The program automatically download the necessary files from Horizons and use them to control the rotator and the radio with Doppler corrections.

The NASA Artemis 1 mission, is going to carry many CubeSat secondary payloads to the Moon. Here you will find a short description of each Artemis I payload as well as their associated ITU frequency allocations. The vast majority of the communications will be conducted within the X-band, so an amateur observer probably won't be able to track most of the mission, at least not without an expensive setup, however some S-band and UHF emissions are also expected.

Allocation summary

Mission	Frequency (MHz)	Bandwidth (kHz)
Lunar-IceCube UHF beacon	400.6	200
OMOTENASHI orbiter	437.31	80
OMOTENASHI lander	437.41	160
Orion RPOD	2203.2	6000
Orion TDRS 1	2216.5	6000
Orion TDRS	22287.5	5000
Team Miles	2295.74	20
LunIR	8200	400000
NEA-Scout	8402.78	162
BioSentinel	8409.57	2400
CuSP	8416.36	2000
EQUULEUS X-band	8443.52	43920
LunaH-Map	8451.7	512
ArgoMoon	8475	2000
OMOTENASHI X-band	8494.53	10920
Lunar-IceCube X-band	8498.95	2080
EQUULEUS Ka-band	32085.4	46460

The primary payload, Orion CM-002, is an uncrewed Orion lunar vehicle. It has three frequency allocations, one for its docking system and two TDRS return links.

2203.2 MHz @ 6000 kHz - RPOD docking system
2216.5 MHz @ 6000 kHz - TDRS return link
2287.5 MHz @ 5000 kHz - TDRS return link

So, while I'm limited to tracking just a few UHF (and I will need a high gain antenna pointed at the moon, there will be others with capability to do much more, and NAS is taking advantage of that.

Amateur radio operators will join a powerful international network tracking NASA's Orion spacecraft after it launches toward the moon.

NASA officials announced that a network of 18 volunteers, organizations and space agencies will assist with tracking Artemis 1, which will send an uncrewed Orion spacecraft to orbit around the moon after blasting off from Earth atop a Space Launch System (SLS) rocket.

The selected volunteers, including two individuals in the amateur radio community, will "demonstrate whether they can receive Orion's signal, and use their respective ground antennas to passively track and measure changes in the radio waves transmitted by Orion," NASA officials said in a statement on Monday Oct. 31.

"These measurements will be made during three distinct phases of Orion's approximately 25-day mission: the journey to the moon, its orbit above the lunar surface and the journey back to Earth," agency officials added.

NASA collected the proposals in a Request for Information released in August. Data the participants pick up will be sent to the agency's Space Communications and Navigation (SCaN) program. The goal is to improve tracking information for future deep-space missions, NASA officials stated. (NASA will also gather its own tracking data on Orion.)

"We received dozens of calls from antenna owners and operators around the world asking, 'How can we get involved?'" John Hudiburg, SCaN's mission commitment manager, said in the statement. "This was our answer: Show us what you can do while supporting the next big thing in human space exploration."

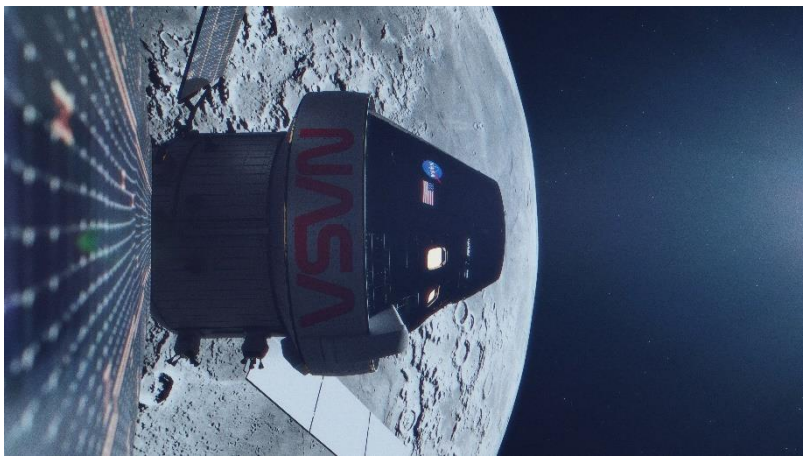
So If you're feeling a bit spaced out, maybe you have some S-band capabilities.

As the Orion capsule now starts its return journey back to earth the signals will only get stronger

If so Let me know how its working out for you?

Should be even more fun, one a crew is aboard.

But until then, I'll have to stick to Nasa TV streams ☹



EARTH NOW WEIGHS SIX RONNAGRAMS: NEW METRIC PREFIXES VOTED IN

Say hello to ronnagrams and quettameters: International scientists gathered in France voted last month for new metric prefixes to express the world's largest and smallest measurements, prompted by an ever-growing amount of data.

It marks the first time in more than three decades that new prefixes have been added to the International System of Units (SI), the agreed global standard for the metric system.

Joining the ranks of well-known prefixes like kilo and milli are ronna and quetta for the largest numbers—and ronto and quecto for the smallest.

The change was voted on by scientists and government representatives from across the world attending the 27th General Conference on Weights and Measures, which governs the SI and meets roughly every four years at Versailles Palace, west of Paris.

The UK's National Physical Laboratory, which led the push for the new prefixes, confirmed that the resolution had passed in a statement.

SI prefixes make it easier to express large amounts—for example, always referring to a kilometer as 1,000 meters or a millimeter as one thousandth of a meter would quickly become cumbersome.

Since the SI was established in 1960, scientific need has led to a growing number of prefixes. The last time was in 1991, when chemists wanting to express vast molecular quantities spurred the addition of zetta and yotta.

A yottameter is a one followed by 24 zeroes. Jupiter, that's about two quettagrams, That's a two followed by 30 zeros.

The idea for the update came after media reports using unsanctioned prefixes for data storage such as brontobytes and hellabytes. Google in particular has been using hella for bytes since 2010.

However metric prefixes need to be shortened to just their first letter—and B and H were already taken, ruling out bronto and hella. The only letters that were not used for other units or other symbols were R and Q. Convention dictates that the larger prefixes end in an A, and the smaller ones in an O.

Anyone wanting to work out the wavelength of a quettahertz ?

Now I have to go and update my student textbooks.

Table 5. SI prefixes

Factor	Name	Symbol	Factor	Name	Symbol
10^{24}	yotta	Y	10^{-1}	deci	d
10^{21}	zetta	Z	10^{-2}	centi	c
10^{18}	exa	E	10^{-3}	milli	m
10^{15}	peta	P	10^{-6}	micro	μ
10^{12}	tera	T	10^{-9}	nano	n
10^{9}	giga	G	10^{-12}	pico	p
10^{6}	mega	M	10^{-15}	femto	f
10^{3}	kilo	k	10^{-18}	atto	a
10^{2}	hecto	h	10^{-21}	zepto	z
10^{1}	deka	da	10^{-24}	yocto	y

1960 ——————————→ *2022*

HEARD AROUND THE SCENES

Our intrepid Wally has been at it again, helping Gran get an antenna up at the village.

Wally ZL1JLM and Gran ZL1BYD with the 4 band trapped vertical Comet H422 antenna (10, 15, 20 and 40m) with 8 concealed radials installed by ZL1JLM & ZL1JKD at Gran's unit, Stevenson Village, Howick,

Successful QSO'S on 15,20&40m on first day following installation.

Great work – Well done - *Only problem is my wife wants to know why my installs are not so discrete*

NZ STRAIGHT KEY NIGHT (SKN)

Straight Key Night (Summer Edition) will be held on Sunday 4 December from 9pm to 10pm on 80 metres.

SKN is not a contest, but it is a great chance to dust off that straight key and let us hear what it can do.

New to CW? No problem, we'll happily match your speed. Details are at radio1nz.com/skn

RADIO HARDWARE SEEKING A NEW HOME.

Just a reminder, that I still have multiple ex-commercial 2 metre radios programmed for the HAM band 144-148 MHz. (they are programmed with all of the NZ repeaters (and have channelised (25KHz) spacing programming too. (but FM only)

If you are not on air, and need some gear to help you (or you need a second or mobile rig) I am more than happy to give these away (really I need the space), I also have some Home Made (student made) flowerpots that can be provided, You will need some Coax and a power supply, but they are available for anyone who needs them.

I also have some VHF and UHF handhelds (limited channels, but available)

I am also happy to help with station set up if required.

So if you know anyone who needs a rig, Please let me know. My contact details are on the back page.

Gavin ZL1NUX

COMBINED CHRISTMAS FUNCTION 2022.

We gathered wit the Franklin club this year at the Papakura club, after years apart, it was good to again combine for some food and friendship.

Thanks to all that made it, and hopefully a few more will be able to join us next year.

Here some images from the night

SOME NETS – FOR WHEN YOU ARE LOOKING FOR SOME COMPANY

Day	Time (Local)	Freq (MHz)	Group
Sunday	08:00	3.750	Southern Net
	09:00	3.700	Bch 10. Franklin.
	09:15	3.755	Bch 65. Papakura.
	19:00	146.625	YL Net
	20:00	3.710	Bch 42. Titahi Bay
	21:30	3.595	Duran WIA Net.
Monday	19:30	3.757	Bch 12. Hamilton
	20.00	3.540	CW Practice Net
	20:00	3.605	Br 80. Hibiscus Coast
	20:00	Nat System	W.A.R.O
	20:30	3.870	O.T.C (Old Timers Club)
Tuesday	09:00	7.096	Ex Post Office Techs
	21:00	1.850	160m Net _ Ron ZL4JMF
	19:30	3.690	QRP ZL2BH
	20:00	3.581	CW improvers Net
Wednesday	11:30	3.850	SPAM Net
	20:00	3.660	Geek Net
	20:00	3.645	Bch 02. Auckland
	20:00	3.745	Bch 84. Bay of Islands
	20:30	146.525	W.R.S.C
Thursday	09:00	7.096	Ex Post Office Techs
	19:30	3.690	QRP ZL2BH
	20:00	3.540	CW Practice Net
	20:00	3.615	Bch 89. REG Net
	20:30	3.696	ZL1OA
	20:30	3.666	LF Net ZL2CA
	20:00	3.690	ZL QRP SSB Net
Friday	20:30	3.850	SPAM (AM Mode)
	20:30	3.650	W.S.R.C.
	20:30	3.560	Digital Modes Net
Saturday	10:30	28.530	10-10 Down Under
	19:30	3.650	Christian Fellowship
	20:00	3.760	???
	20:30	3.600	Ch 62. Reefton/Buller
Daily or Other	07:30	3.696	ZL2OA
	08:30	3.730	ZL3RP
	15:00	14.300	Pacific Seafarers
	17:30	3.760	Home Brew
	05:00 Zulu	14.183	ANZA DX Net
	18:00	7.115	VK7OB
	19:30	3.720	ZL1MO
	18:30	3.766	ZL3LE
	08:30/20:00	3.730	ZL3RP
	20:30	3.725	ZL2HN / ZL4RF
	21:00	3.677	Counties Net ZL2MA
	21.00	3.535	New Zealand Net (CW)

This is designed to be a living list, Please update whenever you are able:

Papakura Radio Club Inc.
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PO BOX 72-397 Papakura 2244
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Westpac 03-0399-0019896-00
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Vice President	ZL1BNQ	Richard Gamble	021 729 270
Secretary	ZL1AOX	Ian Ashley	021 198 1810
Treasurer	ZL1MR	David Wilkins	021 185 7903
Committee	ZL1DK	David Karrasch	021 560 180
	ZL1IRC	Ian Clifford	021 082 48400
	ZL1ASN	Rolly Adams	021 042 7760
	ZL1RAH	Rodger Hanson	027 568 7659
	ZL1RIC	Ricky Hodge	027 533 8155
AREC Section Leader	ZL1BNQ	Richard Gamble	021 729 270
CD Liaison	ZL1AOX	Ian Ashley	021 198 1810
Newsletter Editor	ZL1NUX	Gavin Denby	021 459 192
Hall Custodian	ZL1AOX	Ian Ashley	021 198 1810
Newsletter.	Contact:	zl1nux@outlook.com	

Our newsletter is published monthly and normally distributed just before the club meeting. Please forward articles etc to the editor Wednesday 1 week before the general meeting. Please notify any change of address. Including E-Mail Address to the secretary.

Meetings
General Meetings are held at the Clubrooms on the 1st Wednesday of each month, starting at 7.30 pm. Look at your calendar and mark these nights. The speaker follows the General Meeting.
Project Evenings are on the 4th Wednesday of each month.
Committee Meetings are held on the 3rd Wednesday of each month at 7.30 pm unless advised.
Activity Nights are held on the 2nd Wednesday starting at 7.30 pm.
AREC Meetings are on the 5th Wednesday night, also starting at 7.30 pm
AGM: Held in November

Subscription: Full membership and newsletter $25.00 Family Membership and newsletter $40.00
Bank Account number: 03-0399-0019896-00 Working Bees As required.
Branch 65 21 Award: For contacts with ZL1VK (5 Points) and 8 Papakura Radio Club Members (2 Points each) after January 2011. Total 21 Points. Cost $5-00. Certified list and $5-00 to Secretary, Papakura Radio Club. Address above.

ZL1VK Club Nets
146.900 MHz Sunday at 8.30 am. Controller ZL1NUX, Gavin Denby. If the repeater is not available, listen 146.475MHz simplex.
3.755 MHz Sunday at 9.15 am. Controller ZL1BNQ Richard Gamble. (Linked to 146.675 & 438.775)