Ham Hum

July 2017

The official newsletter of
The Hamilton Amateur Radio Club (Inc.)
Branch 12 of NZART - ZL1UX
Active in Hamilton since 1923

Hamilton Amateur Radio Club Inc.
Serving the Hamilton Community for over 90 Years
ZL1UX

Next Meeting

19th July : 6:30pm

Mid-winter dinner, Cock and Bull, Te Rapa

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From the Editor

The mid-winter dinner is happening this month.

19th July—6:30pm

Cock and Bull, Te Rapa

RSVP to Phil (ZL1PK) by the 12th if you are going, and numbers.

Interesting information about OCAN on Page 11. Working on creating interest in VHF-SHF bands.

SB PROP ARL ARLP026
ARLP026 Propagation de K7RA

Not much change in the numbers since last week, but all indicators were lower. Average daily sunspot number moved from 29.4 last week to 20.3 this week, and average daily solar flux went from 74.6 to 73.6.

Average daily planetary A index went from 9.4 to 6.9, and mid-latitude A index from 8.1 to 7.4.

Predicted solar flux is 72 on June 30 through July 7, 75 on July 8-14, 76 on July 15 -16, 75 on July 17-19, 74 on July 20-22, 72 on July 23-24, 77 on July 25-28, then 74, 73 and 72 on July 29-31, 73 on August 1, 74 on August 2-3, 75 on August 4-10 and 76 on August 11-12.

Predicted planetary A index is 5 on June 30 through July 1, then 12, 20 and 10 on July 2-4, 5 on July 5-12, then 20, 12 and 10 on July 13-15, 5 on July 16-20, then 10, 12, 10 and 5 on July 21-24, 10 on July 25-26, 5 on July 27 through August 8, then 20, 12 and 10 on August 9-11 and 5 on August 12-13.

Tomas Bayer of the Department of Geomagnetism at the Budkov Observatory sends this Geomagnetic activity summary:

"Next week, we expect at most quiet to unsettled level conditions only with a single active episode. The active episodes are possible about June 30 and also at the end of forecast period.

"Geomagnetic activity increase is possible because of a small equatorial coronal hole. Nevertheless, we expect the greater activity increase at the start of the next weekly forecast, i.e. after July 7."

From F.K. Janda, OK1HH of the Czech Propagation Interest Group:

"Geomagnetic activity forecast for the period June 30-July 26, 2017.

"Geomagnetic field will be:

Quiet on July 1, 4-5, 17

Mostly quiet on July 2, 12, 16, 18-20, 24

Quiet to unsettled July 6-7, 10-11, 15, 25-26

Quiet to active on June 30, July 3, 8-9, 14, 21-23

Active to disturbed on July 13

"Amplifications of the solar wind from coronal holes are expected on July (8,) 9-17, (18, 21,) 22-24, (25)

"Remarks: - Parenthesis means lower probability of activity enhancement and/or lower reliability of prediction. - As a result of ongoing changes to the configuration of active areas on the Sun, reliability of forecasts is temporarily lowered."

Dean Pesnell of NASA says the upcoming solar minimum (over the next few years) will bring longer lasting coronal holes: http://bit.ly/2sn0Duy

This report is from N8II in West Virginia:

"Going back to June 17, I operated in the WV QSO Party and conditions were disturbed which may have actually improved conditions for me into the states.

"I worked a total of 892 QSOs with 619 on 20M SSB in 8.3 hours between 1600Z and 0200Z, with 49 states (no calls from Alaska, but about 6 from Hawaii!), 11 WV counties, and 14 DXCC countries without looking for EU which was fairly loud from 1800Z-2300Z.

"There was excellent sporadic-E until about 2400Z with some still toward the Gulf Coast and FL after that. 20 phone featured direct ionospheric propagation at some time to all states except AK (maybe), MD, DE, and PA. I was called at one point from Roanoke, VA which is about 165 miles away and in the first 4 hours I worked many stations in NY and New England. There was apparently no F2 above 20M except to the south on 15M, but I did work Puerto Rico on 10M double hop Es.

"The other propagation highlight was working a VK2 in Australia on 20 SSB in the 2300Z hour via SHORT PATH, a first in 47 years of hamming during the Aussie morning; long path QSOs are pretty common around 2100-2300Z except in our summer. I used my 80M dipole in lieu of the 5 element Yagi or tribander fixed south at times on 20 to get more omni directional coverage as the skip was short in all directions. Many NY stations were loudest off the back of my triband Force 12 Yagi at 60 feet (signals from high angle).

"There was good Es from MI to MN around noon on the 18th on 10M. The highlight of the week was a multi hop Es opening to Europe on the 19th working F5RAG in France first at 2111Z also working Spain, England, and Ireland (tremendous rapid QSB from in the noise to S5) until 2127Z when F5RAG said hello again at S7 (best signal) then working Northern Ireland an hour later. Wednesday, Thursday and Friday were pretty quiet with little 28 MHz Es with a few openings into TX including 2 Dallas area QSOs on 6M around 1500Z on the

21st.

"Field Day was spent between home and K8EP in the field operating from near the foot of a mountain to the west (not the greatest location) near Martinsburg, WV. I can never remember a FD when the sporadic-E was so widespread in different directions on 15 and 10M for such a long duration as 2017!

"There was a high noise level at K8EP on 20M which was found to be a noisy computer power supply after I left Saturday, but I was very aware of Es to the west on 20 starting around 2230Z working many MI and 9th call area stations with OH as the evening progressed as well as some QSOs into New England. When I returned to home and fired up at 0215Z, I found W3AO on 15M (distant local) in MD first and Bob, W3IDT reported some Es, but 'things are slowing down.'

"Having not worked 15 phone, I started a fast paced run with plenty of callers, but prop was limited to mostly W5s (TX was rather weak), 9s, and 0s (no CO, ND, SD) and 4s in GA, FL, AL, and TN. I switched to 20M around 0300Z and had nearly perfect coverage to my west from the 9th area and beyond and south from SC, and TN and beyond running a big pile up with many west coast QSOs. Two KL7s in AK called in with loud signals! Without the Es, skip would have been very long by 0300Z, so many QSOs may have been Es on the east end into F2 out west.

"I returned to the air at 1446Z and single hop Es could not have been much better in all directions on 15 and 10 meters through 1720Z! I stayed on 10 until 1613Z working stations as close as NY, CT, MA, OH, OH (mobile) and KY. The band was wide open to New England, but QSO rates into the 9th and 0 call areas with 4s and 5s to boot were much better.

"I worked CO and AZ on double hop Es, no Dakotas. 15M was even that much better than 10 working stations as close as EPA (about 150-200 miles away), NJ, NY, all of New England, OH, KY, and NC. I was called via double hop Es from CO, AZ, NV, CA (many, mostly San Francisco south), and WA as well! In 5 hours total time I worked 557 QSOs, 272 on 15M and 195 on 10M.

"The few times I checked 6M, there was surprisingly not much Es.

"73, Jeff N8II FM19cj Shepherdstown, WV"

If you would like to make a comment or have a tip for our readers,

email the author at k7ra@arrl.net.

For more information concerning radio propagation, see the ARRL

Technical Information Service web page at,

http://arrl.org/propagation-of-rf-signals. For an explanation of numbers used in this bulletin, see http://arrl.org/the-sun-the-earth-the-ionosphere.

An archive of past propagation bulletins is at http://arrl.org/w1aw-bulletins-archive-propagation. More good information and tutorials on propagation are at http://k9la.us/.

Monthly propagation charts between four USA regions and twelve overseas locations are at http://arrl.org/propagation.

Instructions for starting or ending email distribution of ARRL bulletins are at http://arrl.org/bulletins.

Sunspot numbers for June 22 through 28, 2017 were 23, 22, 28, 20, 19, 17, and 13, with a mean of 20.3. 10.7 cm flux was 73.7, 73.7, 74.1, 73.7, 73.7, 74.1, and 72.1, with a mean of 73.6. Estimated planetary A indices were 6, 5, 9, 11, 7, 5, and 5, with a mean of 6.9. Estimated mid-latitude A indices were 8, 6, 8, 11, 9, 5, and 5,with a mean of 7.4.

Disaster response exercise succeeds 'spectacularly'

Expecting to “fail spectacularly,” hundreds of volunteers representing more than 40 agencies took part in a three-day disaster response exercise in Coos and Curry counties in Oregon, USA over the weekend.

The event, named “Triton 32” was a grass-roots planned full-scale exercise involving both public and private emergency service providers to assess preparedness following an earthquake and subsequent tsunami in the Cascadia subduction zone.

Participants from Oregon Disaster Medical Teams, the Medical Reserve Corps, community emergency response teams as well as public and private air and

ground support were involved.

The Triton 32 Full Scale Exercise tested the capabilities to establish casualty collection points in both Coos and Curry counties culminating at the Cape Blanco Airport, said event public information officer Debbie Simon, with the Coos County Office of Emergency Management.

The state-owned airport was closed off for the weekend to allow for the exercise.

Rather than failing, Simon said on Sunday morning, “We've been succeeding spectacularly well. We're identifying the areas we need to work on and we're finding the holes, and that's the whole intent.”

The exercise consisted of triage, pick-up and tracking done on simulated fake patients.

“It's state, feds and locals working together to practice moving casualties and injured to the hospital,” Simon said. “We're learning how to coordinate all our resources.”

This is the first time a disaster exercise of this scale has been held in Oregon. There was a similar exercise the same weekend at Camp Rilea near Astoria.

“This has been one year in planning efforts,” said Mike Murphy, program manager for the Coos County Office of Emergency Management. “It's taken a huge effort to put it together.”

Murphy said one benefit of the exercise is raising awareness about the usefulness of the Cape Blanco Airport as a supply and patient transfer point.

Tom Noel, a retired anesthesiologist who lives in Bandon with his wife Nancy volunteered Sunday with the Radio Amateur Civil Emergency Services. Noel became a ham radio operator a few years ago and is passionate about the hobby.

“When all else fails, amateur radio goes through,” he said.

Noel explained that even emails can be sent and received through radio transmission.

Dell Mansker, president of Coos County RACES who's had his ham radio license since 1970 said his main job during an emergency would be to help officials talk to various agencies within the county as well as to people at the Oregon Office of Emergency Management in Salem.

“We're a very small organization,” Noel said. “We'd like to have people become licensed radio operators and we can help them.”

In Bandon at Southern Coos Hospital & Health Center, hospital employees Dennis and Edie Jurgenson were incident commanders for the event. The board room became a triage center and the hospital's emergency tent became a “paper patient”

area. Volunteers from hospital staff, BandonPrepares, Bandon CERT, Bandon ham radio operators and Fire Chief Lanny Boston were present. A Coast Guard helicopter practiced landing in the parking lot.

“We had 25-30 volunteers just from the hospital alone here to help,” Edie Jurgenson said.

All weekend, volunteers at Cape Blanco were triaging patients into different treatment areas. On Saturday, simulated "paper patients" were sent south, to Curry General Hospital in Gold Beach and Azalea Park in Brookings. Sunday, simulated patients in serious condition were flown out to Southern Coos Hospital and North Bend High School.

“It's a really intensive triaging exercise,” Simon said.

The exercise involved more than 200 people from multiple agencies from across the state and other states, including local fire departments, Citizen Emergency Response Teams, the Coos County Sheriff's Office and Curry County Sheriff's Office, the Radio Amateur Civil Emergency Services, citizen patrols, civil air patrol, Coos and Curry County Medical Reserve Corps, Coos County Search and Rescue, Coos Forest Protective Association, Curry General Hospital, Curry Health Network, Southern Coos Hospital & Health Center, Bay Area Hospital, Mountain Medics, NVIS Communications, Oregon State Parks, Oregon State Police, Oregon Health Authority, Oregon Department of Transportation, Serve-OR, St. Timothy Emergency Services and members of the U.S. Military from Oregon, Boise, Idaho, Iowa and Nevada.

Aircraft – both fixed wing and helicopter – included Reach, Cal-OR Life Flight, the U.S. Coast Guard, Civil Air Patrol, Oregon Disaster Medical Team and the National Guard.

For Simon, it's all in a day's work. She's been with Coos County Emergency Management for three years and prior to that was a retired emergency manager and a private consultant in California. She's also worked with the Federal Emergency Management Agency and was in law enforcement for 24 years.

“I absolutely love it, god help me,” Simon laughed.

Exercises like this weekend's remind people that when a disaster happens as big as the Cascadia event is expected to be, local governments won't have the resources to take care of everyone.

“So we have to be prepared on the home front,” Simon said.

-Amy Moss-Strong—The World

Codec 2 Wideband

David Rowe VK5DGR creator of Codec2 for narrowband amateur radio HF Digital Voice is developing a 'wideband' variant

On his blog he writes:

I'm spending a month or so improving the speech quality of a couple of Codec 2 modes (FreeDV 1700 Roadmap). I have two aims:

Make the 700 bit/s codec sound better, to improve speech quality on low SNR HF channel (beneath 0dB).

Come up with a higher quality mode in the 2000 to 3000 bit/s range, that can be used on HF channels with modest SNRs (around 10dB)

I ran some numbers on the new OFDM modem and LDPC codes, and turns out we can get 3000 bit/s of codec data through a 2000 Hz channel at down to 7dB SNR.

Now 3000 bit/s is broadband for me – I've spent years being very frugal with my bits while I play in low SNR HF land. However it's still a bit low for Opus which kicks in at 6000 bit/s. I can't get 6000 bit/s through 2000 Hz RF channel without higher order QAM constellations which would means SNRs approaching 20dB.

So – what can I do with 3000 bit/s and a new Codec 2 mode? I decided to try wide-band(-ish) audio – the sort of audio bandwidth you get from Skype or AM broad-cast radio. So I spent a few weeks modifying Codec 2 to work at 16 kHz sample rate, and Jean Marc gave me a few tips on using DCTs to code the bits.

It's early days but here are a few samples:

	Description	Sample
1	Original Speech	Listen
2	Codec 2 Model, orignal amplitudes and phases	Listen
3	Synthetic phase, one bit voicing, original amplitudes	Listen
4	Synthetic phase, one bit voicing, amplitudes at 1800 bit/s	Listen
5	Simulated analog SSB, 300-2600Hz BPF, 10dB SNR	Listen

Couple of interesting points:

Sample (2) is as good as Codec 2 can do, its the unquantised model parameters (harmonic phases and amplitudes). It's all down hill from here as we quantise or toss away parameters.

In (3) I'm using a one bit voicing model, this is very vocoder and shouldn't work this well. MBE/MELP all say you need mixed excitation. Exploring that conundrum would be a good Masters degree topic.

In (3) I can hear the pitch estimator making a few mistakes, e.g. around "sheet" on the female.

The extra 4kHz of audio bandwidth doesn't take many more bits to encode, as the ear has a log frequency response. It's maybe 20% more bits than 4kHz audio.

You can hear some words like "well" are muddy and indistinct in the 1800 bit/s sample (4). This usually means the formants (spectral) peaks are not well defined, so we might be tossing away a little too much information.

The clipping on the SSB sample (5) around the words "depth" and "hours" is an artifact of the PathSim AGC. But dat noise. It gets really fatiguing after a while.

Wideband audio is a big paradigm shift for Push To Talk (PTT) radio. You can't do this with analog radio: 2000 Hz of RF bandwidth, 8000 Hz of audio bandwidth. I'm not aware of any wideband PTT radio systems – they all work at best 4000 Hz audio bandwidth. DVSI has a wideband codec, but it's much higher bit rate (8000 bits/s).

Current wideband codecs shoot for artifact-free speech (and indeed general audio signals like music). Codec 2 wideband will still have noticeable artifacts, and probably won't like music. Big question is will end users prefer this over SSB, or say analog FM – at the same SNR? What will 8kHz audio sound like on your HT?

We shall see. I need to spend some time cleaning up the algorithms, chasing down a few bugs, and getting it all into C, but I plan to be testing over the air later this year.

Let me know if you want to help.

Play Along

Unquantised Codec 2 with 16 kHz sample rate:

```
$ ./c2sim ~/Desktop/c2_hd/speech_orig_16k.wav --Fs 16000 -o - | play -t raw -r 16000 -s -2 -
```

With "Phase 0" synthetic phase and 1 bit voicing:

```
$ ./c2sim ~/Desktop/c2_hd/speech_orig_16k.wav --Fs 16000 --phase0 --postfilter -o - | play -t raw -r 16000 -s -2 -
```

Links

FreeDV 2017 Road Map

Codec 2 page – has an explanation of the way Codec 2 models speech with harmonic amplitudes and phases.

Introducing OCAN - Oceanic Activity Nights

OCAN is a series of regular weekday evening events designed to promote activity on the VHF-SHF bands. They are run in the form of a relaxed mini contest that promotes band activity on our under-used VHF bands, that gives an impetus to try something new, and gives reassurance that if you build something you will have someone to try it out with on a regular basis, versus listening to white noise for weeks!

OCAN is open to everyone in the OC region and we openly promote activity from some of the rarer OC entities found on VHF. You don't need to submit logs if you don't want to. Simply enjoy the activity, but the primary aim of **OCAN** is to create an atmosphere where people can enjoy a bit of light contesting in an activity style environment. You can see the results of improving your station, may be try a new band or mode, or perhaps even get the local club involved, all in the knowledge that on a particular night there will be some activity from across Oceania on the bands to enjoy.

For those who like to enjoy a bit of light hearted contesting we have created some sections to participate in and have some fun. We have made it easy to submit logs and at the end of the year we will hand out some certificates and a trophy to the winners.

How do I get onto OCAN? Go to OCAN.ONLINE (Type it into your search engine or Google it!) – create you own logon using your email address and a password of your choosing. Once you are logged in, there's a wealth of information.

Activity nights: 50 MHz First Monday of each month

144 MHz Second Monday of each month

432 MHz Second Monday of each month

925 MHz Third Monday of each month

1.2 GHz Third Monday of each month

2.4 GHz Fourth Monday of each Month

3.4 GHz Fourth Monday of each Month

5.7 GHz Fourth Monday of each Month

10 GHz Fourth Monday of each Month

24 GHz Fourth Monday of each Month

All activity nights take place between 1900 – 2300 local time. Each hour is classed as a new period i.e. 4 periods per evening.

The first activity night was Monday 5 June but it's not too late to take part. Login, join up and let's have some more activity on our VHF/UHF/SHF bands.

Upcoming Happenings & Events

Date	*Happenings & Events*
1st July	**NZART Memorial Contest**
3rd July	HF Net, 3.575 MHz, 19:30
3rd July	**OCAN 6m Activity Night**
4th July	VHF Net, 146.525 MHz, 20:00
4th July	**ZL Winter Sprint**
7th July	**NZART HQ Infoline**
8th July	**IARU HF Contest**
10th July	HF Net, 3.575 MHz, 19:30
11th July	VHF Net, 146.525 MHz, 20:00
11th July	**ZL Winter Sprint**
15th July	**Trans Tasman Low Bands Challenge**
17th July	HF Net, 3.575 MHz, 19:30
18th July	VHF Net, 146.525 MHz, 20:00
19th July	**Mid-Winter Dinner**
21st July	**NZART HQ Infoline**
24th July	HF Net, 3.575 MHz, 19:30
25th July	VHF Net, 146.525 MHz, 20:00
30th July	**NZART Official Broadcast**
31st July	HF Net, 3.575 MHz, 19:30

4th August—NZART HQ Infoline

5-6 August—NZART Brass Monkey Contest

12th August—WIA Remembrance Day Contest

16th August—General Meeting

18th August—NZART HQ Infoline

27th August—NZART Official Broadcast

1st September—NZART HQ Infoline

15th September—NZART HQ Infoline

24th September—NZART Official Broadcast

7-8 October—NZART Microwave Contest

5th November—NZART Straight Key Night

2-3 December—NZART Field Day Contest

For more information on any of the above please contact myself or any committee member.

Club Information

Contacts :-	
Business Meeting:	1930 First Wednesday of each month except January 88 Seddon Road, Hamilton
General Meeting:	1930 Third Wednesday of each month (except Jan) 88 Seddon Road, Hamilton
Homepage:	http://www.zl1ux.org.nz
eMail:	branch.12@nzart.org.nz
HF Net:	3.575MHz LSB 1930 Mondays
VHF Net:	146.525MHz simplex 2000 Tuesdays
2m Repeater:	145.325MHz -600kHz split
STSP Repeaters:	146.675MHz -600kHz split 438.725MHz -5 MHz split
ATV Repeater:	Off air pending channel changes

Cover Photo: The World Without Engineers cartoon.

Sender	Hamilton Amateur Radio Club (Inc) PO Box 606 Hamilton 3240