

Ham Hum

June 2017



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



Next Meeting
21st June : 7pm

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From the Editor

Congratulations to ZL1GWP who is now an examiner for Br 12. That gives us 4 examiners, making it even easier to fit in with candidates needs.

NZART Conference has been and gone. Remits 1 & 2 passed, Remit 3 failed. Further information is in NZART HQ Infoline.

Interesting news about ICOM NZ on Page 6.

The K7RA Solar Update

The average daily sunspot number rose this week from 15.6 to 19.3. This was largely due to the fact that there was one zero-sunspot day last week, and no days with zero sunspots this week.

The average daily A index, planetary and mid-latitude were both 5.6 this week. Last week they were 13.3 and 10.6.

Predicted solar flux is 72 on June 9-10, 75 on June 11-13, 72 on June 14-15, 78 on June 16-26, 80 on June 27 to July 1, 78 on July 2-8, 80 on July 9, and 78 on July 10-23.

Planetary A index is predicted at 5 on June 9-11, 8 on June 12-13, 5, 12, 25 and 10 on June 14-17, 8 on June 18-19, 5 on June 20 to July 10, then 10, 12, 25 and 10 on July 11-14, 8 on July 15-16, and 5 on July 17-23.

Our usual Czech source for geomagnetic forecasts is away this week, so here is another Czech resource with predictions for only the next week:

"Geomagnetic activity forecast for the period June 9-June 15, 2017

Quiet: Jun 9-12, 14-15
Unsettled: Jun 13-14
Active: Jun 14-15
Minor storm: possible Jun 15
Major storm: 0
Severe storm: 0

Geomagnetic activity summary:

Except the last days, we expect at most quiet to unsettled conditions til the next week. From June 13-14 the unsettled conditions may be more frequent but the general activity forecast should remain at the quiet to unsettled level.

Because the last flare occurred at the central part of solar disk, we expect an active episode at the end of the forecast period. About June 15, active conditions can also reach minor storm level.

Tomas Bayer
RWC Prague
Institute of Geophysics of the ASCR, Prague
Department of Geomagnetism

Budkov observatory (BDV)"

Bruce Smith, AC4G, of Taft, Tennessee wrote: "Just wanted to inform your readers that on 7 June, at approximately 2100z, I heard PA2M (Netherlands) calling CQ into my area EM65, southern Tennessee. I went down to 50.081 called CQ (CW) and began working many European stations. When the bands finally faded after about 2 hours, I ended up making QSOs with 18 European stations such as PA, G, GM, and GD (were the main areas worked)."

Jim Wilson, K5ND, of Grapevine, Texas wrote: "I'm sure you're getting plenty of comments about the recent openings on 6 meters. I've observed daily openings into Europe, but with no luck from Texas. However, this afternoon I was able to work into Japan for the first time ever, running 100 watts with JT65 into a Moxon antenna at 25 feet.

"I wrote up my experience, along with screen shots, at <https://www.k5nd.net/2017/06/six-meters-once-more-magic/>."

According to Rick Lindquist, WW1ME, K5ND is the organizer of the annual Boy Scout Jamboree on the Air. Check out the K5ND bio at QRZ.com, and of course his blog at www.k5nd.blog.

Dick Ferry, K2KA of Westford, Massachusetts wrote: "On June 7, I enjoyed the epic opening on 6 meters. I have never seen the band lit up like that before. I worked 32 NA stations (wasn't hearing EU) and 2 new states (Idaho and Wyoming). All signals were strong. Mid-west was working JA too, so was EU. Wall to wall stations 2230Z to well beyond 2359Z.

"Today, June 8, the band has been open all morning again, but there does not seem to be as much activity. We'll see how it goes."

Lloyd Rasmussen, W3IUU, wrote: "SWPC.NOAA.GOV does some nice alerts, watches and warnings for ionospheric and flare events above the R1, S1 or G1 levels. I should have saved the report for May; it is in reverse chronological order for a month at a time. Anyway, it showed that the K index went to 5 just after 2200Z on the May 27, as I remember, to 6 after 2300Z, and to 7 at I think around 0430Z.

"Around 0300Z we had strong signals from the Washington, DC area to several points west on 20, and to the west coast and out to ZL and VK on 15. WWV was very loud on 20 MHz, with some flutter on their signal; but not really audible on 25 MHz. One Texas beacon was still heard on 10 meters; I probably missed a lot of 10-meter action before or after that time.

"Having heard some of this during severe disturbances in the late 1950s while living in Iowa, I think some of this is auroral E layer propagation, multi-hop in some cases. At least the E layer needs to be factored into the mix."

George Hall, N2CG, of Saddle Brook, New Jersey wrote: "I'm located in Northern New Jersey, FN20wv, and I knew earlier in the day on June 7 that there was ongoing US East Coast and Midwest 6m openings to Europe by observing the spotting websites on my tablet at work. However, by the time I got home from work at 6 PM EDT (2200Z) the band shifted to single and double hop Es openings over a large part of the US and Canada.

"A few minutes after 2200Z I turned on my rig and I immediately started hearing the VE4VHF beacon in Winnipeg, MB EN19 on 50.036 MHz with a true 599+ signal report! Shortly after I began tuning around and began hearing several more beacons, all with RST 589 to 599+ signals as follows: W9JN/B 50.062 MHz EN54, N8PUM/B 50.068 MHz EN66, and K0KP/B 50.073 MHz EN36. So, based on the signal strength of these beacons, I knew I was in store for a good 6m band opening but had no idea how long this opening would last!

"During the course of the next 6-1/2+ hours I worked on CW or SSB mode stations in WA, OR, MT, ID, WI, MN, IL, KS, MO, TN, KY, GA and AL. I most likely would have easily worked more stations but I had to go QRT for over 2 hours and when I got back on the air at 0035Z (08 June) I thought perhaps the "wireworks" would be over ... but that was NOT the case. I was pleasantly surprised to hear the band was still wide open to the Midwest as well as the Pacific Northwest. Around 0130Z I started hearing the N0LL beacon on 50.078 MHz in EM09 and remained coming in to my QTH for over 2 hours with signal strength ranging from RST 559 to 579.

"I don't work the JT digital modes but I know those ops were also very busy because I monitored their frequencies (50.276 to 50.280 MHz) several times during the opening and I could hear their warbling signal tones indicating much JT digital mode activity.

"The 2017 Es Season started off very slow for me and I missed the big Es opening to Europe and elsewhere when I was attending the Hamvention in Xenia, Ohio a few weekends ago. This June 7 Es opening sure made up for my slow start of this year's Es Season for me."

ICOM In New Zealand Changes Hands

Sharon and I are writing to you inform you that after 23 years with the Dawson family, she has decided to sell ICOM Communications NZ limited and pursue other interests in Australia.

ICOM NZ was sold to RWB Communications, effective from Friday 28th April 2017.

Sharon looked for a buyer who shared the same family values and principles as her and her father (Dave) before her. She believes that the new owner Richard Binns will bring exactly that. Richard has over 30 years' retail management experience, latterly in senior roles within organisations within the UK, New Zealand and Australia.

There are no major changes planned for the business and we are both delighted that Simon Green, Justin Lewis, Deborah Wallbank and Peter Beekmans have agreed to move to the new business. Priscilla Halstead will remain with us for the time being to ensure a smooth hand-over. Unfortunately, Mike Anderson and Charlotte Brandreth will not be part of the team going forward.

The new business will trade as RWB Communications Limited and continues to be the exclusive distributor for ICOM products within New Zealand. Other than updated bank account details and (if necessary) contracts / agreements it will be business as usual.

Sharon and Richard want to thank you for your continued support for ICOM New Zealand and Richard is particularly looking forward to meeting you all in person and developing the ICOM brand and its products within New Zealand.

Kind regards, Richard Binns & Sharon Dawson Main Line: 09-2744062 or 0800-744062

{Update from Conference 2017, Sharon ZL1TJU will work for RWB Communications as their Amateur Radio person for ICOM gear—editor}

LilacSat-1 with Codec2 Digital Voice transponder

The student built **LilacSat-1** satellite with amateur radio 145/436 MHz FM to Codec2-BPSK digital voice transponder, APRS Digipeater and camera was deployed from the ISS on May 25 at 0845 GMT

The satellite was developed at the Harbin Institute of Technology and is part of the QB50 mission which aims to study the lower thermosphere. The main payload is an ion and neutral particle mass spectrometer (INMS) developed by the University of London (UCL) to measure the mass and distribution of charged and neutral atoms.

Shortly after deployment LilacSat-1 took a picture of the solar panels on the ISS. The image was received by the students on 436.510 MHz +/- 10 kHz Doppler Shift using 9600 bps BPSK.

The FM to Codec2-BPSK transponder was activated late afternoon GMT on Thursday, May 25:

- FM Uplink 145.985 MHz with 67 Hz CTCSS (PL Tone)
- Codec2 9600 bps BPSK Downlink 436.510 MHz

LilacSat-1 radio information

http://lilacsat.hit.edu.cn/?page_id=594

LilacSat-1 Codec2 downlink by **Daniel Estévez EA4GPZ / M0HXM**

<http://destevez.net/2016/10/lilacsat-1-codec-2-downlink/>

Harbin Institute of Technology Amateur Radio Club BY2HIT

<http://www.by2hit.net/>

<https://www.qrz.com/db/BY2HIT>

Countdown to World Radiocommunication Conference 2019

Bryan Rawlings, VE3QN, RAC Special Advisor, is in Geneva, Switzerland attending Preparatory Meetings for the **World Radiocommunication Conference (WRC)**.

The current meetings are the third of a series of meetings which will continue until just before WRC-19 now scheduled to be held in Geneva from October 28 to November 22, 2019.

Preparatory Meetings are almost always two weeks in duration and are held at the International Telecommunication Union (ITU) headquarters in Geneva. This time Bryan is attending as a member of the Canadian Delegation and also as an Expert Consultant for the International Amateur Radio Union (IARU).

Preparatory Meetings primarily prepare documents on the agenda items identified for the upcoming WRC. They are in turn preceded by meetings and the submission of documents from the participating administrations, for example, Canada through its authorized government agency, the Department of Innovation, Science and Economic Development (ISED; formerly Industry Canada). Canada is represented by ISED. The RAC representative is made a member of the delegation by invitation and Bryan's role is to advise on Amateur issues.

The principal Amateur Radio issue is an international authorization of the 50 to 54 MHz band in ITU Region 1 (Europe, Africa and the Middle East) – not a critical issue for Canadian Amateurs.

Also under consideration are:

- 1) an expansion of Radio Local Area Networks (RLANs) into the 5 GHz band. Amateurs have a secondary allocation here in 5650 to 5925 MHz which we already share with the Primary Users and with ISM (Wi-Fi, etc.).
- 2) proposals to study frequencies for wireless power transfer, e.g., charging cell-phones and bigger devices. Depending upon the frequencies planned and the technical characteristics there may be a significant potential for interference to Amateurs.
- 3) studying the possible frequency range for International Mobile Telephony (IMT) in a range between 24.25 and 81.5 GHz. Radio Amateurs will be carefully watching our Primary allocation in 47 to 47.2 GHz.

As was the case during the WRC-15 conference, Bryan will be tweeting comments on Amateur Radio issues from the meeting using the hashtag #RACatITU. You can also follow him via @ractweets.

Bryan will also be including a report in the next issue of *The Canadian Amateur* magazine at the conclusion of the meetings.

For more information visit the RAC website at:
<http://wp.rac.ca/wrc-preparatory-meetings-may2017/>

[Radio Amateurs of Canada](http://www.rac.ca/)

Our Sun's 11-Year Magnetic Cycle Destined to Disappear:

The Sun's 11-year magnetic cycle appears to be ending, but that won't happen anytime soon. In a paper <https://arxiv.org/pdf/1705.09668.pdf> submitted on May 26 to the journal *Solar Physics*, two solar scientists are reinterpreting earlier evidence to hypothesize that the Sun's rotation rate and magnetic field are in a transitional phase that could lead to lengthening solar cycles, with the cycle ultimately disappearing altogether between 800 million and 2.4 billion years from now. Travis S. Metcalfe and Jennifer van Saders propose the scenario in their paper "Magnetic Evolution and the Disappearance of Sun-like Activity Cycles."

"After decades of effort, the solar activity cycle is exceptionally well characterized, but it remains poorly understood," the authors say in the paper's abstract.

"Pioneering work at the Mount Wilson Observatory demonstrated that other Sun-like stars also show regular activity cycles and suggested two possible relationships between the rotation rate and the length of the cycle. Neither of these relationships correctly describe the properties of the Sun, a peculiarity that demands explanation."

The authors cite stellar evidence for the shutdown of "magnetic braking" in stars similar to our Sun. "The new picture of rotational and magnetic evolution provides a framework for understanding some observational features of stellar activity cycles that have until now been mysterious," they said.

Metcalfe explained their observations through a recent *Forbes* magazine article <http://www.forbes.com/sites/brucedorminey/2017/05/27/the-suns-magnetic-dynamo-is-weakening/#3dc2dc2df4fee>. "Our previous discoveries identified an unexpected transition in the rotation and magnetism of middle-aged stars," Metcalfe is quoted in the article, "The Sun's Magnetic Dynamo Is Weakening" by Bruce Dorminey. "We now have direct evidence that the stellar dynamo -- the mechanism inside stars that sustains their magnetic fields -- actually shuts down during this transition."

In their paper, the authors said that future observations with the Las Cumbres Observatory global telescope network "promise to probe the onset and duration of the magnetic transition that drives the evolution and eventual disappearance of Sun-like activity cycles."

A 2016 paper Travis co-authored -- "Stellar Evidence that the Solar Dynamo May Be in Transition," published in The Astrophysical Journal Letters, concluded, "The Sun still exhibits a dipole component to its global field, particularly near magnetic minimum, but the solar analogs also suggest a gradual concentration of the field into smaller spatial scales, leading to weakened magnetic braking,"

Metcalf is listed on the paper as being associated with the Space Science Institute and the White Dwarf Research Corp, both in Boulder, Colorado. Van Saders is listed as being associated with the Observatories of the Carnegie Institution for Science in Pasadena, California, and the Department of Astrophysical Sciences at Princeton University in New Jersey.

Source:

The ARRL Letter



Three DIY CubeSats score rides on NASA's first flight of Orion, space launch system

NASA's Space Technology Mission Directorate (STMD) has awarded rides for three small spacecraft on the agency's newest rocket, and \$20,000 each in prize money, to the winning teams of citizen solvers competing in the semi-final round of the agency's [Cube Quest Challenge](#).

The three winning teams secured space to launch their CubeSats on Exploration Mission-1, the first integrated flight of NASA's [Space Launch System](#) (SLS) and [Orion spacecraft](#). Once deployed, the CubeSats will vie for a share of a \$5 million prize in the first-ever competition in deep space. The three teams are:

[Cislunar Explorers](#), Cornell University, Ithaca, New York

[CU-E 3](#), University of Colorado in Boulder

[Team Miles](#), Fluid & Reason, LLC, Tampa, Florida

"We are delighted in the profound achievements of these teams," said Steve Jurczyk, STMD associate administrator. "Each team has pushed the boundaries of technology and innovation. Now, it's time to take this competition into space – and

may the best CubeSat win."

Tucked into the Orion stage adapter – the ring that connects Orion to the SLS rocket – the CubeSats will deploy after the Orion spacecraft separates from SLS and starts on its journey into deep space.

These small satellites are each about the size of a large shoebox and designed to be efficient and versatile. As some of the first CubeSats to operate in deep space, they will drive advances in small spacecraft propulsion and communication tech-



nology.

"Opening our first SLS test flight beyond the moon to citizen inventors and the scientific community creates a rare opportunity for these small spacecraft to reach deep space," said Bill Gerstenmaier, associate administrator of NASA's Human Exploration and Operations Mission Directorate. "These CubeSat-class payloads are expanding our ability to explore by demonstrating affordable and innovative capabilities relevant to future deep space missions."

The final phase of the Cube Quest Challenge comprises two segments: the Deep

Space Derby and the Lunar Derby. In the Deep Space Derby, teams must demonstrate communications capabilities from a range of at least four million kilometers from Earth – more than 10 times the distance to the moon – while the Lunar Derby requires teams to achieve a lunar orbit where they will compete for near-Earth communications and longevity achievements. Prizes will be awarded for orbiting the moon, communicating the fastest and farthest, and surviving the longest.

The Cube Quest Challenge offers a total of \$5 million, NASA's largest-ever competition prize purse, to teams that meet the challenge objectives of designing, building and delivering flight-qualified, small satellites capable of advanced operations near and beyond the moon.

The challenge is a part of NASA's [Centennial Challenges](#) program, based at the agency's Marshall Space Flight Center in Huntsville, Alabama. Centennial Challenges is a part of the agency's [Space Technology Mission Directorate](#). The challenge is managed at NASA's Ames Research Center in California's Silicon Valley.



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of
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It serves you at
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levels.

*It deserves our full support
if we are to continue to have
the frequencies and operating privileges
we currently enjoy.*

**The Association
is what you and I make it.**

1st July—NZART Memorial Contest
7th July—NZART HQ Infoline
15th July—Trans Tasman Low Bands Challenge
19th July—General Meeting
21st July—NZART HQ Infoline
30th July—NZART Official Broadcast
4th August—NZART HQ Infoline
5-6 August—NZART Brass Monkey Contest
18th August—NZART HQ Infoline
27th August—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



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88 Seddon Road, Hamilton

General Meeting: 1930 Third Wednesday of each month (except Jan)
88 Seddon Road, Hamilton

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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 146.675MHz -600kHz split
Repeaters: 438.725MHz -5 MHz split
ATV Repeater: Off air pending channel changes

Cover Photo: A morse key as a brooch
<https://nz.pinterest.com/pin/409264684867132789/>

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