

# Ham Hum

November 2014



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



**Next Meeting 19<sup>th</sup> November : 7:30pm**

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## From the Editor

A Conference Committee has been formed to work through all the details of hosting the NZART Annual Conference in Hamilton on Queens Birthday Weekend 2015 (May 29th to May 31st 2015).

As I mentioned last month, accommodation can be tight over Queen's Birthday weekend. So I draw your attention to a list of accommodation options that the Conference Committee has gathered together at : [http://z1ux.org.nz/conference\\_accommodation.html](http://z1ux.org.nz/conference_accommodation.html)

As it says on that web page, Book Early, Book Now.

Up to date information can be found at <http://www.z1ux.org.nz> or send an email to [conference2015@nzart.org.nz](mailto:conference2015@nzart.org.nz) Regular updates will appear in NZART publications such as Break-In, HQ Info-Line or the Official Broadcast. Updates may also appear on the NZART Facebook page : <https://www.facebook.com/groups/79243702154/>

**Next Committee Meetings -  
5<sup>th</sup> November & 3<sup>rd</sup> December**

# Propagation de K7RA

## 25 October, 2014

### ARLP043

Solar activity is making a healthy comeback, just in time for the SSB weekend of the CQ World Wide DX Contest. The contest began today at 0000 UTC and ends Sunday October 26 at 23:59:59 UTC.

See <http://www.cqww.com/rules.htm> for rules. The contest is always held on the last full weekend of October, while the CW contest is the last full weekend in November.

A series of large solar flares erupted this week, almost too many to count. Space-weather.com says a single large sunspot has produced 27 C-class flares, 8 M-class flares, 2 X-flares. The most powerful was an X1.6 flare on October 22. On Wednesday evening in North America the sunspot was directly facing earth. By early Friday morning it had moved off dead center by about 15 degrees, according to the image on the STEREO website at <http://stereo.gsfc.nasa.gov/>. The magnetically active areas are represented by those white splotches.

Average daily sunspot numbers rose from 55.1 during October 9 to 15 to 83.9 this week, and average daily solar flux increased from 117.4 to 174.

The predicted solar flux for this weekend is 230, which is higher than on any day since January 7 of this year, when it was 237.1. Prior to that, we didn't see solar flux values this high since 11 years ago, in late October 2003. But accompanying the high solar flux back then was a great deal of geomagnetic activity. On October 29, 2003 the mid-latitude A index was 199! Several 3-hour K index values were 9, which I believe is the top of the scale. On that same day the daily sunspot number was 330 and the solar flux was 291.7. Those are huge numbers. You can read about it by looking in the archives of propagation bulletins at <http://arrl.org/w1aw-bulletins-archive-propagation>.

Now back to the present, predicted solar flux is 230 on October 24 to 26, 225 on October 27 and 28, then 220, 205 and 190 on October 29 to 31, and 130 on November 1 to 3. Solar flux drops to a low of 110 on November 8 and rises to 180 on November 19 and 20.

Along with that relatively high solar flux this weekend will be unsettled geomagnetic conditions.

Predicted planetary A index is 15 on October 23 and 24, 10 on October 25, 12 on October 26 and 27, 10 on October 28 and 29, 8 on October 30, 5 on October 31 through November 3, 8 on November 4, 10 on November 5, 8 on November 6 and

7, 5 on November 8 and 9, 8 on November 10 and 11, then 5 and 8 on November 12 and 13, 12 on November 14 and 15, 15 and 12 on November 16 and 17, 15 on November 18 and 19, then 12, 10 and 8 on November 20 to 22 and 10 on November 23 and 24.

OK1HH has his own geomagnetic prediction, and he sees the geomagnetic field as active to disturbed on October 24, quiet to active October 25, active to disturbed October 26 and quiet to active October 28, mostly quiet October 29, quiet October 30 through November 1, mostly quiet November 2, quiet to unsettled November 3, quiet to active November 4, active to disturbed November 5 (although he is unsure about that date), quiet to active November 6, mostly quiet November 7, quiet November 8 and 9, quiet to active November 10, quiet to unsettled November 11 and 12, quiet to active November 13 and 14, active to disturbed November 15 and 16 (but he is unsure about November 15), quiet to unsettled November 17 and mostly quiet on November 18.

In an email Mark Challender, NG2G, said in part: "...nobody ever really says, in plain English -- the higher the solar flux the better the bands are going to be. There are a lot of people, I am sure, who could benefit from this information."

Thanks, Mark! OK, I will say it. Higher solar flux means a greater chance for long distance HF communications. It also suggests propagation at higher frequencies, so that is why 10 meters is better at the top of the solar cycle, when there is more solar activity and greater ionization of the ionosphere. Except when solar flares cause a geomagnetic storm, with higher A index numbers, right now the combination of the fall season and higher solar activity signals greater opportunities on HF radio.

You can use a propagation prediction program to get a sense of how seasonal variations, location and solar activity affect communications. K9LA has a free download of W6ELprop and a tutorial on how to use it, at <http://k9la.us/html/tutorials.html> . It is a Windows program that works great in Windows XP, but in Windows 7 I've only made it work using XP mode.

This week's solar activity generated a lot of interest from the press, and here are a few articles to check out:

[http://www.slate.com/blogs/bad\\_astronomy/2014/10/22/sunspot\\_2192\\_x\\_flare\\_seen\\_this\\_morning.html](http://www.slate.com/blogs/bad_astronomy/2014/10/22/sunspot_2192_x_flare_seen_this_morning.html)

<http://www.theweathernetwork.com/news/articles/mammoth-earth-swallowing-sunspot-blasts-out-x-class-flare/38243/>

[http://www.huffingtonpost.com/2014/10/22/solar-flares-disrupting-radio-communications\\_n\\_6029862.html?utm\\_hp\\_ref=email\\_share](http://www.huffingtonpost.com/2014/10/22/solar-flares-disrupting-radio-communications_n_6029862.html?utm_hp_ref=email_share)

<http://www.tampabay.com/news/science/space/ginormous-sunspot-makes-todays-solar-eclipse-much-cooler-wvideo/2203375>

Thanks to W9IND and David Moore for news tips.

A glance at geomagnetic indicators shows that the main geomagnetic effect was on Monday, October 20:

<http://www.swpc.noaa.gov/ftplib/latest/DGD.txt>

Note that in Fairbanks, Alaska the college A index reached 48, which is quite high.

Strangely, we received no reports from readers this week about on air activity or observations. Perhaps everyone was too busy on the air to write.

If you would like to make a comment or have a tip for our readers, email the author at, [k7ra@arrl.net](mailto:k7ra@arrl.net)

For more information concerning radio propagation, see the ARRL Technical Information Service at

<http://arrl.org/propagation-of-rf-signals>.

For an explanation of the 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 October 16 through 22 were 66, 39, 60, 86, 93, 120, and 123, with a mean of 83.9. 10.7 cm flux was 139, 146, 160, 173, 185, 199, and 216, with a mean of 174. Estimated planetary A indices were 7, 8, 15, 11, 26, 15, and 14, with a mean of 13.7. Estimated mid-latitude A indices were 5, 6, 11, 9, 17, 11, and 10, with a mean of 9.9.



## 4M lunar payload integrated – Keps released

{An interesting satellite using JT65B on 145.980—Editor}

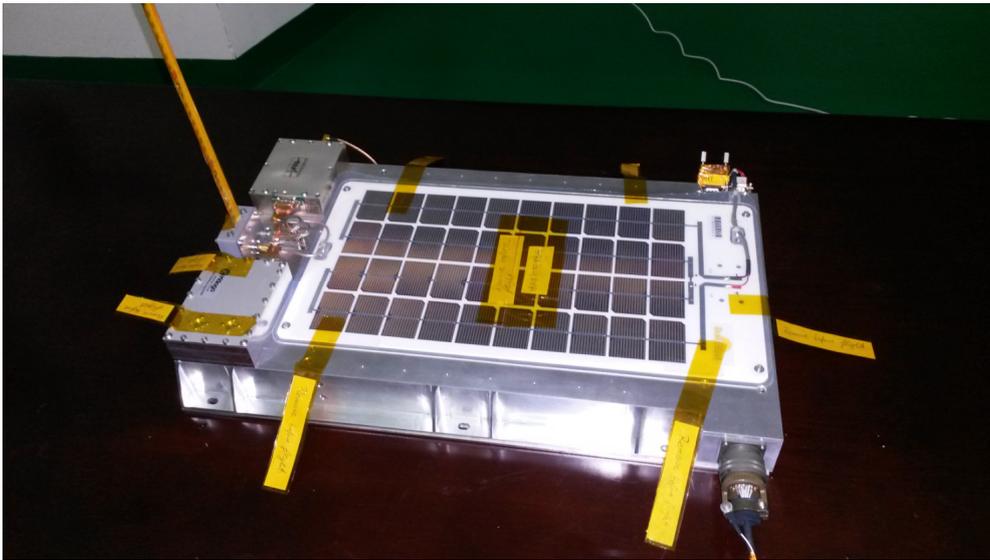
The integration of the LX00HB-4M amateur radio payload was completed on Sunday night, October 12 and is now ready to launch.

The onboard clock has been adjusted to start JT65B (145.980 MHz) at the UTC minute +/-1 second. It is likely to drift during the mission, and manual offset introduction will be required after a week or so. The launch date is October 23 at 1759 UTC.

Beginning of transmission of 4M will start between 1917 UTC and 1927 UTC. Refer to the provided maps and animations links in the blog section (see also older messages) to determine your visibility. Alternatively, use the 'tracking' section where you can compute your tracking elements by introducing your geographic coordinates. The table can be copied/pasted into a text file. As the apparent movement will be close (and closer) to the one one of the Moon, manual pointing is easy but for the largest arrays. We'll try to publish equivalent TLE's to input in usual tracking software.

The link budget is quite tight, but the first hours should give comfortable signals. QSB is to be expected.

As JT65B is used: please remind those not yet too familiar with it that the receiver must not be tuned during the transmission. A dedicated webpage is being written to detail the procedure.



*LX0OHB-4M amateur radio lunar payload – Credit LuxSpace*

A dedicated java application is also available to automatically transmit the decoded messages to the 4M website and ease the data collection. (Thanks to LSE Space).

Alternatively, you can also send the decoded messages by eMail, sending the ALL.txt file.

For those not wishing to use JT65B, please record the signals (11025s/s, 8or 16 bits, mono), taking care not to saturate the recording and **NO MP3** please.

SpectrumLab is an excellent choice, although some may wish to use simpler recording software.

You can imagine that the team is quite eager to receive the first reports, so, do not hesitate to mail immediately, send decoded messages or even phone or text me at +352 661 678 986.

Our friends of IC CMalaga are also quite eager to receive the results of their radiation dosimeter experiment.

Basic rules of the contest have been delineated in the blog section. Complete rules will be published soon.

Stay tuned on our [website](#) or [Facebook](#) page.

The following is a tentative set of orbital elements that should remain valid from the launch to at least up to the October 27 when using usual classical and simple tracking software that do not integrate Moon.

```
1 999990      14298.79728009 .00000066 00000-0 00000-0 0 00006
2 99999 030.6553 295.6956 9746689 147.2577 071.9585 00.10600338000010
```

The following set is to be used after the flyby from October 28 onwards



1 99999U 14301.79728009 .00000000 00000-0 00000-0 0 00009  
2 99999 049.9434 067.2017 6639865 045.9865 124.5019 00.06612018000010

Ghislain Ruy LX2RG  
Email: [ruy@luxspace.lu](mailto:ruy@luxspace.lu) with "4M Amateur" in the subject

Manfred Memorial Moon Mission (4M) <http://moon.luxspace.lu/>  
Facebook <https://www.facebook.com/LuxSpaceSarI>

The launch will be broadcast by CNTV/CCTV: <http://www.cntv.cn/> or <http://english.cntv.cn/> or <http://english.cntv.cn/live/p2p/index.shtml>

Information animations and some JT65B test files at  
[https://cloud.luxspace.lu/public.php?  
service=files&t=33c4a21c09ba3736a55fc09896e463f6](https://cloud.luxspace.lu/public.php?service=files&t=33c4a21c09ba3736a55fc09896e463f6)

Read the paper 4M Mission: a Lunar FlyBy experiment  
<http://tinyurl.com/4M-Mission-V3>

EME 2014 slides: 4M, A Moon Flyby Mission  
<http://tinyurl.com/4M-slides-eme2014>

4M lunar ham radio payload shipped  
<http://amsat-uk.org/2014/10/04/4m-lunar-ham-radio-payload-shipped/>



## Earth is being blasted by solar flares, largest active region since 1990

Posted on October 27, 2014 | By [Jake Ellison](#)

The sun's currently active solar flare region — 2192 — is blasting away at us and causing strong radio blackouts in hotspots across the planet. This is the largest active solar flare region since November 1990, and even that large event didn't produce X-class flares causing R3-R5 (strongest) radio blackouts.

This current active region has shot four of those big suckers at us in four days and the 6th since the region went hot on the 19th.

The Space Weather Prediction Center [wrote on Friday](#) (note the current region has produced two more R3-R5 events):

During its entire transit across the Earth facing side of the Sun, (the 1990 region) did not produce any R3 or larger Radio Blackouts (X-class flares). Already, (the current region) has surpassed that region in term of production of significant solar flares.

Comparing two large active regions

	Region 6368 (1990)	Region 12192 (2014)*
R3-R5 (X-class) flares	0	2
R1-R2 (M-class) flares	14	13
(C-class) flares	96	42

\*Through mid-day October 24.

Here's Space Weather's list of events:

**2014-10-27 14:49 A new day, another R3 (Strong) Radio Blackout:** Another day and another R3 (Strong) Radio Blackout from active region 2192. This one is underway, currently at the X1.6 level, having begun at 10:12 am EDT (1412 UTC). Communications issues can be expected in the Atlantic Ocean basin as well in South America and western Africa. That's four R3 Radio Blackouts in four days and 6th overall from this active region. As space weather activity occurs, we will keep you updated here.

**2014-10-26 12:03 And it's a hat trick!** Three in three days, also known as a hat trick? Region 2192 produced yet another R3 radio blackout (X2 flare), reaching its peak at 6:56 am EDT (1056 UTC) on 26 Oct. Communications impacts were likely in the Atlantic Ocean region. This was the fifth R3 event from this region, the largest region in area in nearly a quarter century. Stay tuned to this page for updates as events develop.

**2014-10-25 18:45 Region 2192 strikes again!** Region 2192 produced another R3 radio blackout (X1 flare) today. It was a long duration event, beginning at 12:55 pm EDT, peaking at 1:08 pm and ending at 2:11 pm. This was the fourth R3 event from this region, the largest region in area in nearly a quarter century. No significant coronal mass ejections have been observed. Stay tuned to this page for updates as events develop.

**2014-10-25 12:35 Region 2192 is still at it:** The R3 (Strong) Radio Blackout that

began at 5:07 pm EDT (2107 UTC) peaked at the X3.1 level at 5:41 pm EDT (2141 UTC) and was over by 6:13 pm EDT (2213 UTC). This was the third R3 event from this region, the largest region in area in 24 years. Stay tuned to this page for updates as events develop.

**2014-10-25 02:34 Region 2192 is still at it:** The R3 (Strong) Radio Blackout that . The event began at 5:07 pm EDT (2107 UTC) peaked at the X3.1 level at 5:41 pm EDT (2141 UTC) and was over by 6:13 pm EDT (2213 UTC). This was the third R3 event from this region, the largest region in area in 24 years. Stay tuned to this page for updates as events develop.

**2014-10-24 21:41 R3 (Strong) Radio Blackout in progress:** We said it remained a threat and here it is, producing another R3 (Strong) Radio Blackout that at the time of this posting, is still on the climb. The event began at 5:07pm EDT (2107 UTC) and is still going strong over 30 minutes later. The main communications impacts from this event are over the Pacific Ocean. In the meantime, forecasters remain vigilant to see if there is an associated coronal mass ejection. As we learn more about this event we will update this space.

**2014-10-24 14:18 ACTIVE REGION 2192 – STILL A THREAT:** Since the Strong (R3) [Radio Blackout](#) solar flare on 22 Oct, Region 2192 has only managed to give us 3 Minor (R1) [Radio Blackout](#) solar flares. It remains a potent force in both area (the largest active region since November, 1990) and complexity and is favorably positioned for generating both [Geomagnetic](#) and [Solar Radiation](#) Storms. Is this a sleeping giant or a region lying in wait to hit us with more fury? NOAA forecasters remain vigilant and will update this page as activity occurs.

**2014-10-22 16:51 R3 (STRONG) ACTIVITY FROM REGION 2192:** Region 2192 produced an X1 (R3 - Strong) flare at 10:28 EDT (1428 UTC) on October 22nd. Further analysis will be conducted to determine if there is a CME associated with this event as imagery comes in. This region has produced 7 M-class (R1/R2 – Minor/Moderate) flares in the past 48 hours as well as an X1 flare on October 19th. So far none of the CMEs associated with these events are expected to be geoeffective, however, forecasters will keep an eye out for both CME activity and solar radiation storm possibility as the region approaches center disk. Stay tuned for updates.

**2014-10-22 04:08 R2 (MODERATE) ACTIVITY FROM REGION 2192:** Region 2192 produced its 7th M-class (R1/R2-Minor-Moderate) flare in the past 48 hours. The M8 (R2-Moderate) flare occurred on October 21st at 9:59 EDT (22/0159 UTC) and is the largest flare to occur since the X1 flare from the same region on October 19th. Region 2192 remains a very large spot group with a fairly complex magnetic structure and will continue to be the area of interest for the next several days. Stay tuned for updates.

**2014-10-20 23:46 R1-MINOR AND G1-MINOR ACTIVITY (UPDATED 20 OCT 2014 7:30 PM EDT):** Region 2192 continues to produce M-class (R1-Minor) flare activity as it transits the solar disk. It was the source region for five (5) M-class flares over the past 24 hours, as well as multiple C-class flares. At this time, there has been no indication of significant coronal mass ejection (CME) activity from these flares, but with its size and magnetic complexity, it will continue to be moni-

tored closely. The increase in geomagnetic activity (G1-Minor) is mainly attributed to an enhancement in the solar wind environment, caused by coronal hole high speed stream effects. Enhanced geomagnetic conditions are possible for the next few days as the well-connected coronal hole transits the western solar hemisphere. Stay tuned for updates.

**2014-10-19 21:03 R3 (STRONG) EVENT FROM REGION 2192**

**(Update):** Region 2192, the relatively large region that rotated on to the visible disk on October 17<sup>th</sup>, produced a R3 (Strong) Solar Flare Radio Blackout event at 0503 UTC (1:03 a.m. EDT) on October 19<sup>th</sup>, following a R1 (Minor) Solar Flare Radio Blackout event shortly before. Although a small CME can be seen in NASA's SDO imagery, the ejecta was too weak to be reflected in coronagraph imagery and was moving well off the Sun-Earth line. Stay tuned for updates.

**2014-10-19 05:32 R3 (STRONG) EVENT FROM REGION 2192:** Region 2192, the relatively large region that rotated on to the visible disk on October 17<sup>th</sup>, produced a R3 (Strong) Solar Flare Radio Blackout event at 0503 UTC (1:03 a.m. EDT) on October 19<sup>th</sup>, following a R1 (Minor) Solar Flare Radio Blackout event shortly before. Forecasters are currently awaiting coronagraph imagery to assess if there were any coronal mass ejections (CMEs) associated with these events. However, based on the location of Region 2192, any associated CME will likely *not* be Earth directed and should not have significant impacts on Earth. Stay tuned for updates.

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<b>Switching Protocol</b>	Ethernet
<b>Browser Based Management</b>	Yes
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<b>Ethernet ports</b>	1xWAN, 4xLAN
<b>Plug &amp; Play</b>	Yes

If interested, please contact Gavin Petrie at – Ph: 07 8430326 or Email: [gavinwp@ihug.co.nz](mailto:gavinwp@ihug.co.nz)



**6-7 December—NZART Field Day Contest**  
**12th December—NZART HQ-Infoline**  
**17th December—Club General Meeting/End of Year BBQ**  
**21st December—NZART Official Broadcast**  
**31st December—Hamilton AREC Section Meeting**  
**21st January 2015—Combined Business/General Meeting**  
**28 Feb/1 Mar 2015—NZART Jock White Memorial Field Days**  
**30 May/1 Jun 2015—NZART AGM & Conference (Br 12, Hamilton)**

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.z1ux.org.nz>  
**eMail:** [branch.12@nzart.org.nz](mailto: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: T-Shirts available from Zazzle.com [http://www.zazzle.com/retro\\_punk\\_vintage\\_radio\\_tube\\_vacuum\\_tube\\_shirts-235896412326707249](http://www.zazzle.com/retro_punk_vintage_radio_tube_vacuum_tube_shirts-235896412326707249)*

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