

Sylvie F1PSH

De: jjreisert@alum.mit.edu
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À: DX-News@njdx.org
Objet: [DX-NEWS] ARLP044 Propagation de K7RA

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ARLP044 Propagation de K7RA

ZCZC AP44
QST de W1AW
Propagation Forecast Bulletin 44 ARLP044
>From Tad Cook, K7RA
Seattle, WA November 1, 2013
To all radio amateurs

SB PROP ARL ARLP044
ARLP044 Propagation de K7RA

It's been a lively couple of weeks, with plenty of sunspots and great HF propagation. The average daily sunspot number for the week was 161.6, unchanged from last week's average of 162. Solar flux values were up quite a bit though, rising from 139.6 to 158.3, quite a healthy jump.

On October 26 the Penticton solar flux reading was 171.8, but NOAA downgraded it to 165, probably because the higher value was an outlier caused by solar events overloading the receivers at Penticton.

Just before ARRL CW Sweepstakes this weekend, predicted daily solar flux for the near term is 140 on November 1, 135 on November 2, 130 on November 3-4, 135 on November 5, 140 on November 6-8, then 105, 110, 120, 125, 130 and 135 on November 9-14, 140 on November 15-18, 145 on November 19, 150 on November 20-21, with flux values peaking at 155 on November 22-25, then dropping to a minimum of 105 on December 6.

Stable geomagnetic conditions are predicted for Sweepstakes weekend, with a predicted planetary A index at 5 on November 1-6, 8 on November 7-8, 5 on November 9, then 12, 15, 10 and 8 on November 10-13, 5 on November 14-25, 8 on November 26-27, 5 on November 28 through December 6, and 12, 15, 10 and 8 on December 7-10.

As October ended yesterday, we can now calculate our 3-month moving average of daily sunspot numbers. The average daily sunspot number for the three-month period centered on September, 2013 (including all daily numbers from August 1 through October 31, 2013) was 91.2, reflecting the recent uptick in solar activity.

So far in 2013 the averages are 73.6, 80.7, 85.2, 106.4, 106.4, 97.5, 85.6, 77.4 and 91.2.

The monthly averages for June through October 2013 were 80.2, 86.2, 90.2, 55 and 127.2. You can see that the month just ended was a very strong period.

You may recall in our last Propagation Forecast Bulletin ARLP043 that Ganesh, VU2TS joked (I think he was joking?) about the possibility that

contesters might charge the ionosphere with some of the big antennas and power beamed skyward.

Apparently K9LA took this seriously enough to do the math, and his comments are quite interesting, and show us just how far-fetched this idea is.

Carl Luetzelschwab, K9LA wrote, "Recently a QST reader asked the same question. My response to him was that the power density needed to modify the E region is around 1 milliwatt per square meter (from 'Radio Techniques for Probing the Terrestrial Ionosphere,' Hunsucker, 1991). That translates to a huge ERP (effective radiated power). For example, the HF ionospheric modification facility (commonly called an ionospheric heater) at Tromso, Norway has an ERP of about 360 megawatts. Their transmitter puts out 1.4 megawatts and the gain of their antenna is 24 dBi, which results in about 3 milliwatts per square meter at 100 km.

"Now let's assume there are 1,000 contesters on the same band, each running 1 kilowatt into a 10 dBi antenna. Let's further assume they are all beaming to the same spot in the E region that's about 400 km down the road (in other words, they're all within an 800km diameter). And let's even further assume that all of these signals are on at the same instant of time and arrive at that spot in-phase. That works out to 0.08 milliwatts per square meter - which is still an order of magnitude less than needed. The F region is even worse, as the transmitted power density decreases due to the increased height.

"Thus I have a problem with the theory that many, many transmitted signals can enhance the ionosphere. I believe the bands are simply open more than we think, and a massive amount of activity (as in a contest) shows this. Note that 10-Meters was really good for several days before the contest - when the amount of people on was considerably less."

Thank you, Carl. Nice to see the numbers applied to this concept.

Solar activity made the news in the Los Angeles Times this week, concerning 28 solar flares in the previous week:

<http://www.latimes.com/science/sciencenow/la-sci-sn-solar-flare-20131031,0,7996603.story#axzz2j0Yyld19>.

And another news article about recent activity:

<http://www.nbcnews.com/science/boisterous-sun-fires-third-huge-solar-flare-many-days-8C11480451>.

Ted Leaf, K6HI sent us this:

<http://www.nasa.gov/content/goddard/sun-emits-2nd-solar-flare-in-2-days/>

Another L.A. Times piece, this time about an astronomer carrying on an old tradition, drawing sunspots by hand, sent to us by David Moore:

<http://www.latimes.com/local/columnone/la-me-cl-mt-wilson-sun-spots-20131028-dto,0,4430093.htmlstory#axzz2j0Yyld19>.

And here is an article about a magnetic storm a decade ago:

<http://www.directionsmag.com/articles/the-magnetic-storm-of-halloween-2003/364078>.

Mike Khokhlov, UA9CIR of Ekaterinburg in Asiatic Russia wrote, "We have just participated in the CQ WW SSB contest and with SF above 160 and A-index below 5 that was the propagation of a lifetime. Not sure if I will ever experience that in my life again when the 3 things coincide: high SF, low A and CQWW.

"We are now crossing fingers for the active region to return on the next lap. The CW leg is 4 weeks after the SSB. With the Sun's cycle of 27 days we have Hope."

Mike Treister, W9NY wrote, "Had such a marvelous time operating the CQ WW SSB contest just on 10 meters. Seems like at times the entire world was coming in at the same time, no matter which way my TH7 beam was pointed. I have not seen conditions this good on 10 meters in decades. Many stations around the world coming in to my northwest Indiana QTH S9 running only 10 watts. I noticed around sunset Saturday and Sunday signals from South American reaching me long path with my beam toward Japan, with that curious fluttering.

Signals would be S9 long path and drop to S3-4 with my beam turned around to the south. Managed 1651 QSOs with 110 countries -- a real blast. Stations from the other side of the world such as India, Malaysia, Hong Kong, Taipei, all very clear and S9. I was running Japanese stations like they were next door. WOW. Hope these sunspots keep up for a while, and I am ready to check out 6 meters."

Peter Gambee, who I think may be K6TTD of Sacramento, California, wrote:

"Weren't some solar scientists saying that we had already passed the second peak of Cycle 24? Well, guess they blew that one.

"I've been licensed since the late 1970s, and have worked my share of DX as a novice during some decent solar cycles. Was QRT through most of Cycle 23, and during the first peak of the current cycle, so missed out on some decent DX.

"I was afraid I'd missed the boat on this cycle - until the end of September rolled around. During the past two weeks I've worked more DX, in more regions of the globe, than I have since I was first licensed.

"In less than ten days I have logged over 50 DX contacts, on virtually every continent, most of them new ones for me.

"Here is one example of my recent stints on the air: BA8AG in Si Chiuan China, Z21DXI in Zimbabwe, ZS2I in South Africa, CN2PM in Morocco, YB9Y in Indonesia, DU3NQM in the Philippines - all in a single thirty minute stretch on October 23rd on 10 meter CW.

"Almost every pileup I dove into, I was successful on my first or second try. Lately, it has gone this way nearly every time I have sat down at the key and put out a call.

"My rig is an Elecraft K3-100, into a two element Yagi at 30 Feet. A decent setup, but no giant killer by any means. DXing ISN'T supposed to be this easy! I know I've been blessed by a sudden burst of sunspots, and big-time dumb luck. I'm thanking my lucky sunspots, knocking on wood and having an absolute BLAST.

"Assuming a decent response rate with my QSLs, I may be able to hit DXCC by the end of 2013.

"Here's hoping this 'second peak' holds out for another few months at least."

I felt comfortable guessing Peter's location by checking the FCC database because there are only a few hams named Gabee, but here is a report from Bob Foster. There are 40 licensees in the FCC database with that name, and actually I don't know what part of the world he is in. He sent this a week ago, plenty of time for me to find out what his callsign and location are, except I ran across his email just before filing this bulletin Friday morning.

Bob wrote, "On Sunday afternoon (10/20) I was able to work D44AC (Cape Verde) on 15M SSB. This type of a contact may be no big deal to the veteran, high powered DXers. However, I run a modest station: 70 W into a ground mounted Gap vertical. The fun thing about this Sun cycle is I have worked more African stations than ever before in my 43 year ham career. There also was far more CW and data activity heard on 10M than I recall for a long time.

"Hams with modest stations, do not be afraid to jump in when you hear DX. For whatever reason, I have been able to get through."

Thanks, Bob.

And for everyone who writes in, please let me know where you are located, and if you are a licensed ham, what your callsign is.

Scott Craig, WA4TTK of Nashville, Tennessee wrote a free program we have been using for many years to harvest the sunspot and solar flux numbers from this bulletin and display them in a Solar Data Plotting Utility. You can download it, along with an updated data file here:

<http://craigcentral.com/sol.asp>

And finally, last week's bulletin was written aboard a Seattle to D.C. flight. This time, I am delayed in Olympia, Washington where I was attending an all night Halloween house party for dancers. Unfortunately, when I tried to leave around 3:00 AM, I found my clutch linkage had broken, so I came back to the house for internet access to finish the bulletin. The host said the best place to sit (not many power outlets in his old house) is at the edge of the dance floor. So here I am, pounding away on the laptop, feeling like a nerd and surrounded by dancers in a hot room with condensation dripping from the windows. I have my headphones on, so perhaps they think I am just planning the next DJ set.

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 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/wlaw-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 24 through 30 were 148, 148, 171, 206, 155, 171, and 132, with a mean of 161.6. 10.7 cm flux was 160.6, 161.4, 165, 166.9, 159.9, 152.6, and 141.9, with a mean of 158.3.

Estimated planetary A indices were 3, 3, 3, 3, 3, 6, and 12, with a mean of 4.7. Estimated mid-latitude A indices were 2, 3, 3, 2, 2, 3, and 10, with a mean of 3.6.

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