

SB PROP @ ARL \$ARLP020
ARLP020 Propagation de K7RA

ZCZC AP20
QST de W1AW
Propagation Forecast Bulletin 20 ARLP020
>From Tad Cook, K7RA
Seattle, WA May 16, 2014
To all radio amateurs

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Nice numbers this week, with average daily sunspot numbers rising from 118.4 (during May 1 to 7) to 142.4 in the past reporting week, May 8 to 14. Average daily solar flux rose from 135.6 to 157.5.

The latest prediction from USAF/NOAA has solar flux values of 155 and 150 on May 16 and 17, 145 on May 18 to 20, 140 on May 21 and 22, 120 on May 23 to 26, 115 on May 27 to 29, 120 and 125 on May 30 and 31, 135 on June 1 and 2, 140 and 145 on June 3 and 4, and 150 on June 5 to 9. Flux peaks at 165 on June 10 and 11, and hits a minimum on June 23 to 25 at 115.

The latest planetary A index prediction sees a planetary A index of 7 on May 16, 5 on May 17 to 20, 8 on May 21 and 22, 5 on May 23 through June 3, 8 on June 4 to 6, 10 and 8 on June 7 and 8, then 5, 10 and 8 on June 9 to 11.

ARRL Field Day is now six weeks away, so those dates (June 28 and 29) are moving into the 45-day forecast window that is updated daily by NOAA. Although this is a long way out, we see solar flux rising from 115 on June 23 to 25, to 120 on June 26, 125 on June 27, and 135 on June 28 and 29. Planetary A index is predicted at a nice stable level of 5 from June 19 forward.

This looks like good conditions for the 2014 Field Day. The 2013 Field Day was on June 22 and 23, and last year on Friday through Sunday (June 21 to 23) the planetary A index was 17, 14 and 15, quite a bit more unsettled than the prediction for this year. Both the planetary and mid-latitude numbers saw a K index of 4 over several periods.

The daily sunspot numbers on June 21 to 23, 2013 were 135, 137 and 118, and daily solar flux values on those dates were 133.2, 130 and 128.2.

The relevant records from last year are at http://www.swpc.noaa.gov/ftplib/warehouse/2013/2013_DGD.txt and http://www.swpc.noaa.gov/ftplib/warehouse/2013/2013_DSD.txt and the daily 45-day forecast is at <http://www.swpc.noaa.gov/ftplib/forecasts/45DF.html>.

44 days into the future is a long time for solar indices predictions, but this is all we have. This forecast indicates slightly better conditions for Field Day than we experienced last year.

Every week we are fortunate to receive a geomagnetic prediction from OK1HH in Prague, Czech Republic. This week he believes the

geomagnetic field will be quiet to active on May 16, mostly quiet May 17 to 19, quiet to active May 20, quiet to unsettled May 21 to 26, quiet to active May 27, quiet on May 28 to 30, quiet to unsettled May 31, active to disturbed June 1, quiet on June 2 and 3, quiet to unsettled June 4, mostly quiet June 5 and 6, active to disturbed June 7 and 8, mostly quiet June 9, and back to quiet on June 10 and 11.

OK1HH believes that the cycle 24 peak is just behind us. He notes that sunspot activity increased toward the end of October 2013, but the response in the ionosphere was particularly evident later, around the end of February and early April. He expects roughly a four year decline in solar activity to the next minima.

Lawrence, GJ3RAX of Jersey, one of the Channel Islands between England and France, wrote on May 14: "Since the beginning of this month I have been catching some good Es openings on 6 meters. On May 1 I was getting into EA3, EA5 and EA6. On May 7 it was HA, YO and ER. This evening I got some more in EA as well as ZB2, EA8, EA9, CT1 and CN8. It is interesting that the openings are occurring about once a week, although I might have missed a few. I usually check DXmaps (see <http://www.dxmaps.com>) to see if anything is happening, and there have been more over Europe but not reaching me. Soon it should be happening again almost every day.

A long time ago I was told that there can be a correlation between thunderstorms and E-skip. The first two of those openings this month did coincide with lightning activity that was about half way between me and the DX worked. There was not any indicated for the opening today.

I have not had many QSOs this year on 10 meters and the band is usually much quieter than it should be now. Back on March 24 I did get W1AW/5 when it was being operated from New Mexico. I have heard it from other states but not as strong as that one was. The best DX recently was a couple of days ago on May 12 when I got VP8LP (Port Stanley, Falkland Islands).

The 10 meter QSOs were with 100 watts to an R5, as I do not want to scare the neighbours with an HF beam. On the VHF bands I am still using a log periodic that covers 50 MHz to 1300 MHz. I am planning on replacing it soon with higher gain antennas for those bands as my results this year have not been good on 70 cm and 23 cm, although last year I had some nice ones if I was on at the right time.

Looking at the solar graph we are now very obviously into the second peak which, for a change, is being indicated as being much stronger than the first one. What has surprised me is that the photos of the sun are still showing a similar number of sunspot groups in the north and the south. From previous cycles I would have expected to see most of them in the south by now. As we usually see the second peak as being weaker than the first one I am wondering if we could be due to see a third peak this time that could be weaker like the first one. It is amusing to speculate on such things from following the photos and graphs but I am not aware of any reason why this should happen based on the previous cycles."

Max White, M0VNG of Worcester, England sent this article about solar wind and lightning on Earth:
<http://www.bbc.com/news/science-environment-27406358>

Norman Kenyon, G4AYU of Lancashire sent a link concerning that huge July 2012 CME that was fortunately a week too late to affect Earth.

Had it occurred on July 16, 2012, the effect on telecommunications, satellites and the electric power grid would have been a major disaster. Here is the link:

<http://www.unmannedspaceflight.com/index.php?showtopic=7843&hl>

Carl Zelich, AA4MI of Chuluota, Florida reports that on two occasions earlier this month he worked a Russian Antarctic station, RI1ANT on 40 and 20 meter CW. On May 3 at 0249 UTC the QSO was on 7.011 MHz, and their signal was 559. On May 5 at 0147 UTC they were 599 on 14.032 MHz. Carl used 40 watts and a dipole for both contacts.

Carl also reported: "Also heard their operations on three additional dates/times but without any QSOs. I think that many operators did not recognize the significance of the 'RI' and just assumed it was just another Russian station. Too bad because it was several days of missed opportunities."

An item in last week's bulletin mentioned sprites, and on May 11 Martin McCormick, WB5AGZ wrote: "Back in the days of analog television, I used to sometimes listen to video carriers from Channel 7 which is 175.25 MHz with offsets at 175.24 and 175.26 MHz.

Before the change to DTV, Stillwater, OK could faintly receive signals from both Wichita, KS and Wichita Falls, TX on a normal day. With active thunderstorms in the area, but not too close to here, I remember hearing the carriers pop up in level a bit during a lightning discharge. The effect is similar and about as long-lasting as a meteor ping only without the Doppler Effect. If you have a receiver with a BFO for those frequencies, the note of the carrier gets louder for maybe 1-tenth to 1-quarter of a second at about the time one heard the static crash.

If a storm was between two stations up to a few hundred miles apart, one might get a meteor-style path for a fraction of a second.

The Channel 7 weak-signal listening ended many years ago when KOCO Channel 5 in Oklahoma city put it's digital output on VHF Channel 7 plus all the other analog Channel 7's left the air.

Another strong steady carrier source was the Air Force Space Fence transmitter at Lake Kickapoo near Wichita Falls, TX. The system was shut off in October of 2013 due to budget constraints, but its 700-kilowatt ERP transmitter on 216.97 MHz was designed to reflect off of satellites as they passed over the United States. It also bounced off aircraft as they flew overhead and I remember one evening a few years ago, tuning that frequency to hear an almost continuous barrage of sound that can best be described as sounding like a crackly phonograph record or bowl of Rice Krispies. It so happened there was a large thunderstorm over the Wichita Falls area and I strongly suspect that each lightning discharge was creating an ion cloud that dissipated almost as quickly as it occurred.

CW might have worked, but I can't imagine any other mode of communication working properly.

A read of Wikipedia searching for Air Force Radar Fence will get you a description of the system and why it no longer exists. It was actually 3 VHF transmitters and 6 receiving sites with Lake Kickapoo being the largest transmitter site. Strong steady carriers for propagation experiments are an endangered species.

As for Es, there are still a large number of analog TV signals in Mexico and other countries outside of the US and Canada. One North-South Es opening occurred around 1400 UTC on Sunday May 4, and was indicative of something I have heard numerous times. Mexican TV signals with local quality sound, full-quieting audio appeared on TV channels 2-4 with nary a beacon or QSO audible on 6 meters. I don't know if it is because nobody is on or maybe the coverage area of the path is extremely narrow but one would expect to hear something on 6. At other times, the low end of 6 sounds like 20 during a contest, so it is hard to say what is happening.

Stillwater, Oklahoma is roughly 36 deg N, 97 deg W. Last Sunday's opening lasted a couple of hours but was truly strong for only half an hour or so."

N0JK, Dr. Jon Jones, MD of Lawrence, Kansas wrote about trans-equatorial propagation on May 12, 2014: "Several Es to TEP openings over the weekend.

May 10 many on the East Coast through W8 worked ZD7VC (St. Helena Island) around 1900z. TJ3SN (Cameroon) also worked by W1.

Sunday May 11 Es to TEP across much of the Midwest states. Here in Kansas I worked LW5EE from home with a M2 HO loop at 2155z. Portable worked PY1RO and PP1CZ. PY1RO peaked to 599 at times."

Jon never indicated which mode he made these contacts on, but since PY1RO had a signal report of 599 instead of 5x9, I will assume the mode was CW. These reports concern 6 meters.

George Hall, N2CG of Saddle Brook, New Jersey wrote about the Mother's Day six meter band opening from North America to South America.

"I wanted to report my experience in the Mother's Day 2014 6 meter band opening between North America and South America from my Northern New Jersey, FN20wv, QTH.

My 6 meter station consists of a KLM 8 element log periodic Yagi antenna at 35 feet above ground and my transceiver is an Icom IC-756 Pro III at 80 watts driving a pair of 8874 tubes in my Alpha 374 converted to a 6 meter mono-band amp yielding 800 Watts output power.

Around 3:30 PM EDT/1930Z I received a text message on my phone from Rob, KC2RDW alerting me that 6 meters was open. I soon got on the air and at 1943Z I worked 9Y4VU (Trinidad and Tobago) in FK90 on CW on 50.106 MHz. Following that QSO I started hearing W4 land stations (GA, FL, AL) in QSO with other stateside stations. I kept on monitoring the band for possible DX stations and beginning around 2100Z I started to hear South American stations coming in fairly strong, and they got stronger as time progressed for the next 1-1/2 hours!

I worked PV8ADA, LW3EX, LU4FPZ, PY1RO and FM5WD all on CW and on SSB I worked LU9AEA, LU9EOF and CX4CR. All signals were S7 or greater.

I've been operating on 6 meters for over 37 years and to date I've never heard South America stations coming into Northern New Jersey so strong and so long as I witnessed on Mother's Day 2014. This opening yielded me CX and LU for two new 6m DXCC entities!"

We received another report from N0JK on May 14: "Received many

reports about the big Mother's Day, May 11, 6 meter Es to TEP opening. I worked LW5EE at 2155z using the attic M2 HO loop with 559 reports. Portable with the 2 el Yagi I logged PY1RO and PP1CZ at 2220z.

Heard PV8ADI (not sure if via multi-hop Es or Es - TEP) for over an hour but no QSO.

The opening was due to Es propagation linking to the afternoon TEP on to deep South America. NOLL EM09 worked FG8OJ and TG9AJR via regular Es during this opening and there were many Es contacts spotted confirming the mode.

The next afternoon May 12 I heard LU5FF at 2210z while driving from KC to Lawrence on 50.106 MHz."

Jon sent another report/observation on May 14 concerning the May 6 report from TI3/W7RI which said "But beginning about a week ago, with the dip in solar activity, there's been almost nothing but a few weak sporadic E openings into the Leeward Islands."

Jon noted, "This is a seasonal effect, not directly related to solar activity or solar flux. There is often strong afternoon TEP propagation from the South Pacific to Central America on 6 meters in March and April during solar cycle peaks. I recall similar propagation from American Samoa in April, 2000 during solar cycle 23. It usually weakens and dissipates by the end of April."

A comment regarding reports from readers: Please tell us your callsign, location, which band and mode you were operating on, and the date and time. Often we receive most of this information, but have to hunt down the rest or make assumptions at the last minute before publication. Thanks!

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 May 8 through 14 were 124, 123, 125, 161, 164, 138, and 162, with a mean of 142.4. 10.7 cm flux was 148.1, 152.3, 152.1, 164.4, 162.9, 159.4, and 163.2, with a mean of 157.5. Estimated planetary A indices were 20, 8, 9, 12, 8, 5, and 6, with a mean of 9.7. Estimated mid-latitude A indices were 13, 8, 10, 10, 10, 7, and 8, with a mean of 9.4.

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