

FOURTH EDITION

This OVARC email newsletter is sponsored by the Oro Valley Amateur Radio Club <http://www.tucsonhamradio.com>



CLUB MEETING LOCATION

*Ascension Lutheran Church
1220 W Magee Rd
Tucson, AZ 85704 (near LaCanada and Magee)*



THANKS TO THE OFFICERS AND BOARD MEMBERS for 2014

President	Bob Molczan	KA7VPR
Vice-president	Ron Herring	W7HD
Secretary	Howard Chorost	KC7AC
Treasurer	David Beauchesne	AK2L
Board Members	David Branson	KCOLL
	Scott Boone	K7ADX
	Dave Coccio	N7AKC
	Gary Schmitz	KT7AZ



Sunday Night Net 19:00 MST OVARC Repeater System

Join the group every Sunday night at 19:00 MST (7:00PM) on the OVARC repeater system for the Sunday Night Net. On the Sunday after our general membership meeting we have our Radio Tradio where you can list ham radio items for sale. The other nights is a general discussion. Everyone is welcome on the net regardless of club affiliation.

We are always looking for Net Control Stations so if you would like to try your hand at being NCS, contact Lanny, KF7LV our Net Manager.

The Oro Valley Amateur Radio Club currently has four wide area repeaters. All of our repeaters are normally linked via VOIP over internet connections.

All of our repeaters are open to ANY licensed ham. We invite you to use these repeaters as often as you like.

2 Meters

146.620(-) PL 156.7 - Callsign WØHF

Located on Keystone Peak (Map: <http://g.co/maps/5tdjg>)

Antenna Height: 100+ Feet
Elevation: at nearly 7,000 feet
Power Output: 100 Watts
Antenna: Decibel DB-224
Feedline: 7/8" Hard Line
Repeater: Kenwood TKR-720

145.190(-) PL 156.7 - Callsign WØHF

(This freq will be changing to 146.76(-) in the near future as approved by ARCA on 14-Aug-2014)

Located on the Oro Valley Police substation tower on Oracle Rd at Magee Ave, Tucson, Arizona

Antenna Height: 57 Feet
Elevation: 2584 Feet
Power Output: 100 Watts
Antenna: Tram 1491
Feedline: LMR-400

Repeater: Kenwood TKR-720
 Echolink: Node: 99946
 Auto Patch Instructions:
 PLACE CALL: ID, Push 1+Area Code(even for a local call)+Number. When done, to
 HANG UP: Press 2, Then, ID and Clear.
 You are welcome to place long distance calls as we are not charged for long distance.

70cm

444.100(+) PL 156.7 - **Callsign WØHF** (MOVED to OVPD Main at Tangerine and LaCanada)

WIDE Northwest coverage and additional Tucson Coverage (including Sahuarita)

Antenna Height: Feet (adi)
 Power Output: 50 Watts
 Antenna: JetStream JTB3
 Feedline: LMR-400
 Repeater: Kenwood TKR-820

440.400(+) PL 156.7 - **Callsign WØHF**

Located on the Golder Ranch Fire District tower on Golder Ranch Road in Catalina, Arizona.

Antenna Height: 67 Feet
 Elevation: 3081 Feet
 Power Output: 50 Watts
 Antenna: Diamond X-30
 Feedline: Andrews 1/2" Hard Line
 Repeater: Kenwood TKR-820

445.800(-) **DSTAR WØHF**

Located at Magee and Oracle with the 145.19 repeaters

Antenna Height: 50 feet
 Elevation: 2584 feet
 Power Output: 20 watts
 Repeater: Icom V4000
 Controller: Icom RP-2

Computer: Dell Dimension running CentOS 5.10 Linux and Icom RP-2 Gateway software

Notes: This has been an exercise in frustration due to lack of support by Icom plus
 poor documentation but thanks to the hard work of those involved it was brought
 online on 07-Aug-2014.

Public Service Opportunites

There are many opportunities to provide public service in Southern Arizona. Specific requests for help will be communicated via email. If you would like to volunteer for any of these events contact public_service@tucsonhamradio.com

Handyman Corner

A new feature of OVARC monthly meetings is the Handyman Corner. These short presentations will show how to accomplish small projects around the shack. Although these sessions are targeted to our newer hams, they may provide some new ideas for the more experienced hams to accomplish these tasks. A couple of examples are the noise-reducing headset (\$1.00), and the high-quality microphone (also \$1.00). Thanks to Tom W8TK for those!

Using your MFJ-269 antenna analyzer to measure advanced functions

Did you know that by pressing and holding the GATE and MODE pushbuttons for several seconds, you can enter the ADVANCED modes that allow you to measure distance to a fault, and much, much more. I recently needed to set the length of a phasing coax for my new satellite antenna. The preset measurements were not working for me. So by entering the advanced mode I was able to measure the electrical length of the line in degrees at the desired frequency. I was also able to measure the actual impedance of the coax!

Solar Data (from NOAA) Linked by: <http://www.n3kl.org/sun/noaa.html>

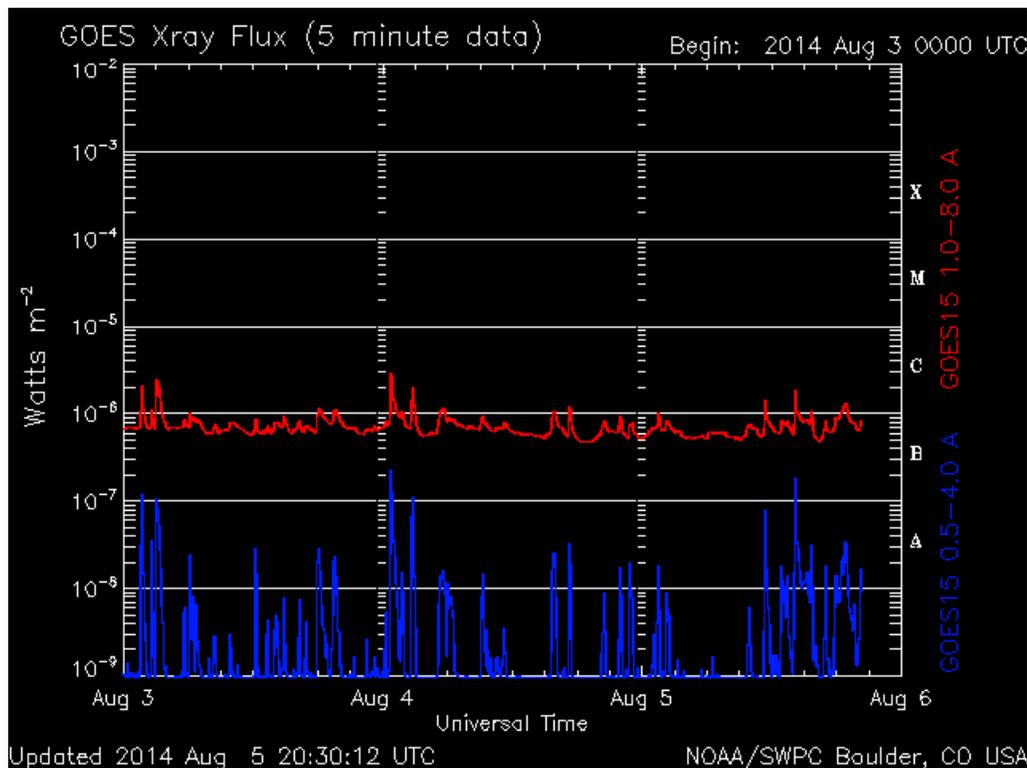
What do the graphics from NOAA for solar data mean for an amateur radio operator, and why do I care?

Summary:

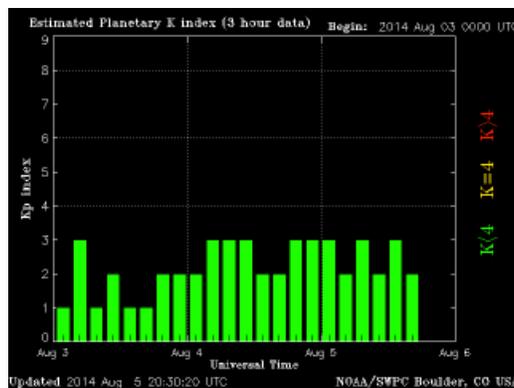
- Xray flux above 10^{-5} indicates a geomagnetic storm of M-class with decreased propagation.
- Xray flux above 10^{-4} indicates a geomagnetic storm of X-class (very severe with radio blackouts likely)
- Kp index of 5 or less is desirable – the lower the better, but remember that this is only updated every 3 hours.
- Electron flux orange line above 10^4 means a solar storm in progress with interruptions to propagation likely.

[You can also see this data linked at many amateur radio sites, including http://w7hd.net](http://w7hd.net)

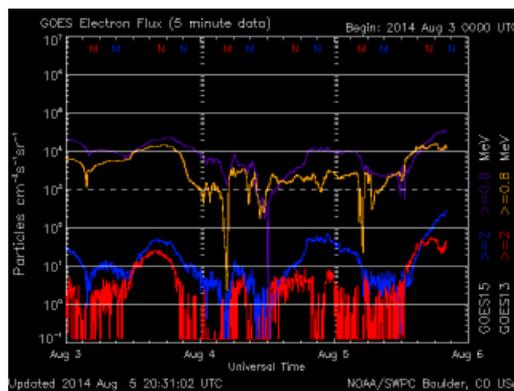
[The graphics below represent conditions on August 5th around 21:00 GMT.](#)



Updated 2014 Aug 5 20:30:12 UTC NOAA/SWPC Boulder, CO USA Red line above 10^{-5} is a storm



Updated 2014 Aug 5 20:30:20 UTC NOAA/SWPC Boulder, CO USA Estimated Kp Index (the lower the better)



Updated 2014 Aug 5 20:31:02 UTC NOAA/SWPC Boulder, CO USA Electron Flux (orange line above 10^4 is a solar storm)

KP Index (Estimated Planetary K-index) Tutorial:

Open <http://sunearthday.gsfc.nasa.gov/swac/data.php> and click on "Kp Index" (live data). A web page containing a bar graph called the "Estimated Planetary K-index (3-hour data)" will appear. Observe the graph for any deviations. (K-indices of 5 or higher indicate 'storm-level' geomagnetic activity. Values of 7 or higher indicate a severe geomagnetic storm.)

Every three hours throughout the day, magnetic observatories around the world measure the largest magnetic change that their instruments recorded during this time. The result is averaged together with those of the other observatories to produce an index that tells scientists how disturbed the Earth's magnetic field is on a 9-point scale. This scale is called the Kp scale. The larger the index (7+) the more active the Earth's magnetic field becomes due to a storm from the sun. The smaller the index (1-2) the more quiet it is. Sometimes changes in the sun's activity can cause big changes in Kp. At other times, large Kp values can indicate sudden rearrangements of the Earth's magnetic field due to the solar wind. Kp-indices of 5 or greater indicate storm-level geomagnetic activity.

Summary: The lower the Kp value the better for radio communications.

GPS is affected by adverse space weather when solar eruptions disturb the near-earth plasma layer -- the ionosphere -- and alter the signal characteristics of the wave passing through. The high-precision user community is most affected, estimated to number 333,000 in the U.S. alone by 2017.

Satellites are impacted due to both the radiation (for higher altitude) and increased drag (for low-earth-orbit) operations. The economic value of the satellite enterprise is well in excess of \$100B.

Commercial airlines cannot fly over the pole during solar radiation and/or geomagnetic storms. Communication may be blacked out and some impacts to navigation accuracy may occur. Estimates of direct costs for reroutes to accommodate bad space weather go up from, \$100K per flight.

Solar flares impact Earth only when they occur on the side of the Sun facing Earth. Because flares are made of photons, these travel out directly from the flare site, so if we can see the flare, we can be impacted by it.

Coronal mass ejections, also called CMEs, are large clouds of plasma and magnetic field that erupt from the Sun. These clouds can erupt in any direction, and then continue on in that direction, plowing right through the solar wind. Only when the cloud is aimed at Earth will the CME hit Earth and therefore cause impacts.

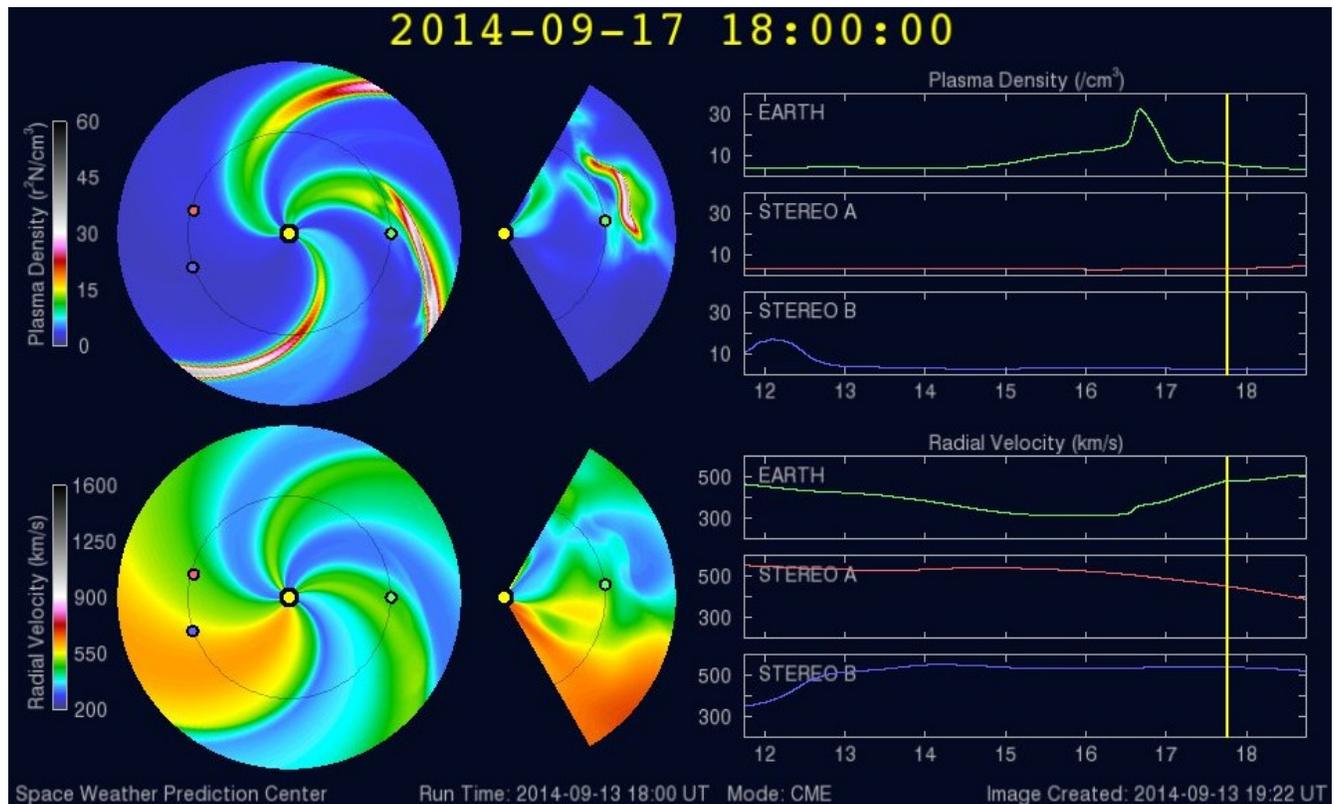
High speed solar wind streams coming from the Sun come from special areas on the Sun known as coronal holes. These holes can form anywhere on the Sun and usually only when they are closer to the equator than to the solar poles do the winds they produce impact Earth.

Solar energetic particles are high energy charged particles, thought to primarily be released by coronal mass ejections. Where the cloud of a CME plows through the solar wind, the solar energetic particles are travelling much faster and because they are charged, must follow the magnetic field lines that pervade the space between the Sun and the Earth. Therefore, only the charged particles that follow magnetic field lines that intersect the Earth will have an impact on Earth.

In this screen capture, you can see a CME that WILL arrive around 20:00 UTC on Sep. 16th.

Now you can know in advance of its arrival. The CME is shown just past earth in this capture. Go to this URL to view it:

<http://www.swpc.noaa.gov/wsa-enlil/>



Planning on the OVARC Hamfest on Nov. 8th is coming along nicely. Not too many vendors will be coming because it is only a half-day event, and they can't make enough money in that short of a time to cover trip expenses. BUT many are willing to donate prizes, and we're asking them to consider giving reduced prices to attendees that order from their website using a special code that will only be available at the hamfest. There will be couple of very nice radios for grand prizes.

===== END NEWSLETTER =====

Enjoy,

Ron Herring W7HD