The REPEATER

The OFFICIAL newsletter of the Rogue Valley Amateur Radio Club

W7OEK

Volume 2010, Issue 3 **March 2010**

Herb Grey	**W7MMI**	**(541) 773-4765**		**President**
Don Bennett	**KG7BP**	**(541) 618-5189**		**Vice President**
Lud Sibley	**KB2EVN**	**(541) 855-5207**		**Treasurer**
Jack Schock	**WA7IHU**	**(541) 535-8471**		**Secretary**
Tom McDermott	**N5EG**	**(541) 734-4675**	**n5eg@tapr.org**	**Newsletter and Membership**
Dave Basden	**W7OQ**		**dave@basden.us**	**Webmaster**
Club Web Page:		**http://www.qsl.net/w7oek**		

Next Club Meeting

Thursday, March 4, 2010, 7:00 PM
Red Cross Building, 60 Hawthorne St., Medford, OR
Across from Hawthorne Park
Program: Practical Test Instruments, Bud Larson, W7LNG

President's Letter

A big thank you to Lud Sibley, KB2EVN for his explanation and display about the history of vacuum tube development at the February meeting. The March 4 program will feature Bud Larson, W7LNG telling us about " Practical Test Instruments." He will also display several devices that hams can use in building and maintaining station equipment.

Congratulations to Van Sias, K7VS for his DXCC #1 Honor Role award!

Perhaps some of us take for granted the refreshments we enjoy at each meeting. Not surprisingly, someone has to make this happen. Give thanks to our secretary Jack Schock, WA7IHU for bringing the donuts, and Don Bennett, KG7BP, the Club's VP, for seeing that we have coffee, tea and hot chocolate. Don has to procure, store and

(Continued on page 2)

Secretary's Report

Minutes of the 4 FEB 10 Rogue Valley Amateur Radio Club Meeting

The meeting was called to order by president Herb Grey, W7MMI at 1905L in the Red Cross building in Medford, OR. 30 people were present.

Several guests were in attendance: Jessee Reed KD7AUA, George Reed KD7GVH. Gerry Shute, Desmond Armstrong, Ellis Feinstein, Rob Patrick, and Gary Hensly.

Herb turned the meeting over to Lud Sibley, KB2EVN who presented a program on the history and development of vacuum tubes.

After Lud's presentation Herb put the meeting on hold for coffee and "eyeball QSOing."

(Continued on page 2)

President's Letter, Continued

clean the stuff that goes into making the beverages available .

The change-of-club-station-call-sign effort is moving forward and should be accomplished well in advance of field day.

73,
Herb W7MMI

Two Meter Repeater Frequency

In order to provide a common place to find fellow RVARC club members on two meters, we recommend using the K7RPT 147.62 / 02 repeater as a calling and monitoring frequency. This is an open repeater (no tone or PL access required). The repeater listens on 147.62 MHz and transmits on 147.02 MHz.

Secretary's Report, Continued

Herb called the meeting back into session at 2015L.

After much discussion Herb asked for a motion to change our club call sign from W7OEK to one without the 'K' at the end. Bud W7LNG made the motion, Dale Trautman, N7IXS seconded it and the motion passed.

Van Sias, K7VS made a motion that Herb and Bud find a call sign and do what it takes to change the call sign to the new one. Dale seconded it and the motion passed.

Treasurer Lud Sibley, KB2EVN told us that the club bank account balance is $1563.18.

Bud announced that he and Dale Trautman will begin a General class licensing class next week. He has some study manuals. For more information, call any club officer.

Herb announced that the VE's will be giving amateur radio exams at the "DOM" on 27 Feb 2010. Contact Harry, AE7NY for more information. The date on the ARRL website, in the RVARC newsletter, and on the RVARC website are incorrect. (*The RVARC website has since been corrected — ed*).

Herb announced that Bill Shrader, W7QMU is selling his log-periodic ham antenna at a good price. Call club officers for more info.

Herb adjourned the meeting at 2100L

Submitted by Jacob O. (Jack) Schock, WA7IHU secretary.

The Sunspots have returned! Solar Dynamics Observatory Launched.

Good news for HF propagation—sunspots have returned! There was a very long lull time between the end of Cycle 23 and the start of Cycle 24.

In the first week of February 2010, the sunspot number averaged 43.3 with a daily peak of 71 on February 8. Those are the highest average sunspot numbers since April 4, 2008, when the average was 43.6. The daily peak sunspot number has not been as high as 71 since May 28, 2006.

I normally utilize the 2800 MHz (10.7 cm) solar flux number for propagation when forecasting with the W6ELPROP tool. The solar flux for the first week of February averaged 87, as compared to 68 during the bottom of the sunspot cycle a few months ago.

An example of what this means is: at the lower flux level, 40 meters does not have a opening from Medford to Portland at all. At the higher flux level, it opens during the day to Portland with better than 75% probability at noon.

NASA's Solar Dynamics Observatory (SDO) was launched on February 11, 2010. It will be put into a tilted geosynchronous orbit over the next few weeks, and full observational capability is expected around July of this year. The satellite carries a number of scientific and solar imaging experiments. Of particular interest to amateur radio operators is the MEGS-A imager package produced at the University of Colorado Laboratory for Atmospheric and Space Physics (LASP).

The MEGS-A (Multiple Extreme-ultra-Violet Grating Spectrograph for the 5—37 nm range) is a 2048 x 1024 pixel CCD camera and diffraction grating that can measure the Extreme ultra-Violet spectrum from the sun in the 5 to 37 nm range with 0.1 nm spectral

(Continued on page 4)

2010 Dues are Due

2009 memberships expire at the end of December 2009. Dues for 2010 are due starting January 1st, I will hand out renewal information sheets.

Please consider if you can go to email-only newsletter, as currently it costs the club $1 per month per member per posted paper newsletter. The electronic version is in color, has better quality photographs, active hyperlinks, and you should receive it about a week earlier than the mailed version.

Membership dues are:

Senior (age 62 and above):	$15
Regular:	$20
Family:	$20
Student:	$10

Please make checks payable to:
Rogue Valley Amateur Radio Club

You can give check or cash to our treasurer, Lud at any meeting, or mail (checks only) to:

Rogue Valley Amateur Radio Club
c/o 3950 Southview Ter.
Medford, OR 97504

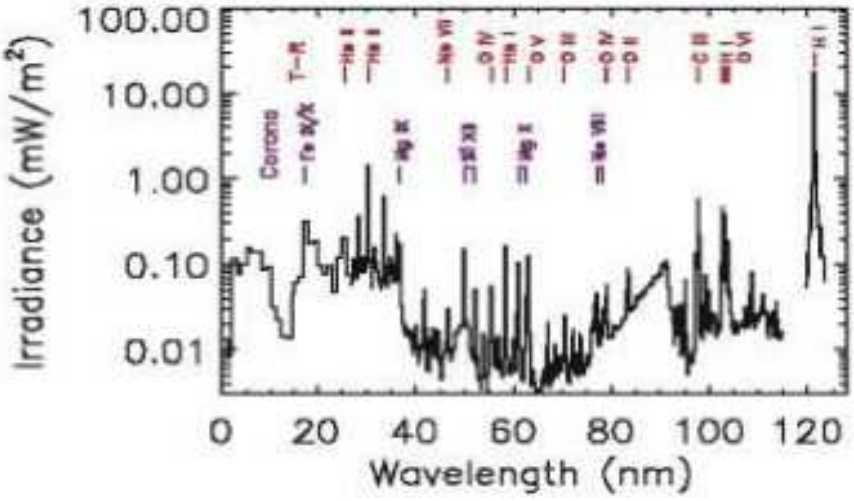
ARRL Contest Update Newsletter - Technical & Operating (Free)

The ARRL publishes several free newsletters—usually bi-weekly. The Contest Update Newsletter contains good general technical information, operating activities, log deadlines, and a lot of useful links. Every issue has something worthwhile—even if you are not a contester. Ward Silver, N0AX is the editor.

ARRL members can receive by email, anyone can read the archives & current issue:

http://www.arrl.org/contests/update/

resolution (essentially a detector and spectrum analyzer for extreme ultra-violet radiation). It's capable of an image update rate (cadence) of once per 20 seconds. The experiment is expected to operate for 5 years, and will provide High-Definition images in the extreme ultra violet part of the spectrum.



Ultraviolet Solar Spectral Irradiance

Our sun contains a lot of Helium. In the sun's chromosphere, much of the Helium is doubly-ionized (both electrons have been stripped off). When that He II captures one electron (and reverts to singly-ionized) it emits a photon of 30.4 nm wavelength (304 Angstroms). This is a very energetic photon, and the sun produces a lot of them.

The figure shows the extreme ultraviolet spectral irradiance from the sun; 30.4 nm is the tallest peak in the 30 nm range. The spectral irradiance at 30.4 nm is roughly 2 milliWatts / square meter. Visible green light has a wavelength of 550 nm for comparison.

Irradiance is the received power density in watts per square meter impinging on a surface normal to the radiation, **Spectral Irradiance** is the irradiance within a narrow band of wavelengths.

The high energy level of these photons is far more damaging to people than the uV-A and uV-B radiation that is responsible for skin damage. This strong spectral line is completely absorbed by the very upper reaches of the earth's atmosphere, thankfully preventing it from reaching the surface of the earth.

It turns out that this one particular emission line is responsible for over half of the ionization of the F-layer of the earth's ionosphere. Thus the emission of the sun at this wavelength is much more tightly correlated to the F-layer ionosphere than the solar flux measured at 2800 MHz., or than the visual indication of sunspots (smoothed sunspot number, or SSN).

In the past it was not possible to easily measure the 30.4 nm emission, because it does not reach the ground, and the more easily measured 2800 MHz radio signal (10.7 cm) which reaches the ground is used to predict the solar flux. The SDO satellite, being in the very high (22,000 mile) tilted geosynchronous orbit is above the portion of the earth's atmosphere that absorbs the 30.4 nm emission, so it is capable of measuring the intensity of the received radiation.

(Continued on page 5)

Sunspots! Solar Dynamic Observatory. Continued

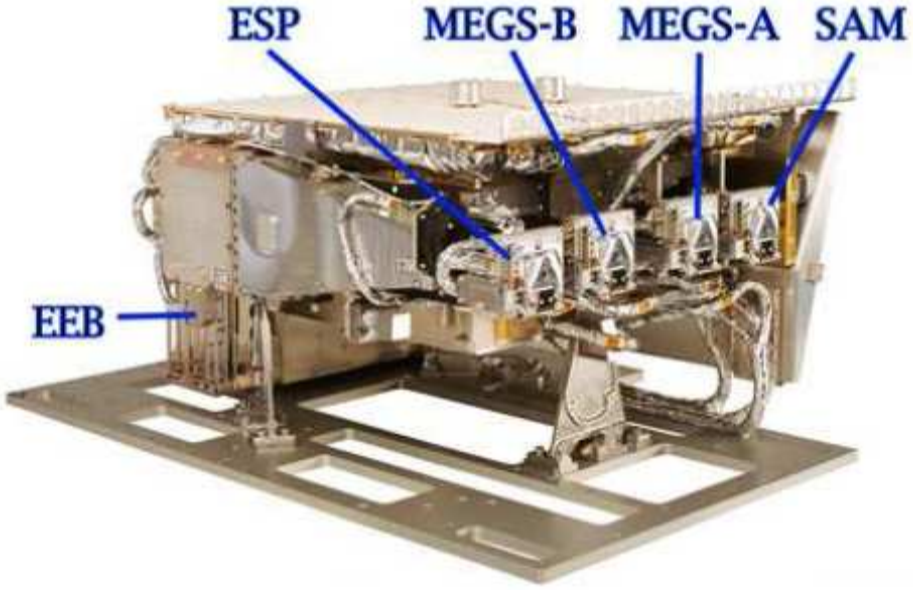
The F-layer of the earth's ionosphere is responsible for long-range band openings, and is especially important for HF communications. It is located about 150-250 miles above the earth's surface, and consists primarily of oxygen and nitrogen.

At that altitude, the atmospheric density is very low, and the atoms are spaced (on average) relatively far apart. This means that once ionized, these atmospheric ionized atoms live (on average) for a long time before bumping into one of their neighbors, acquiring an electron and returning back to a non-ionized state, a process called recombination. During the daytime, the EuV radiation from the sun ionizes the F-layer. At night time the F-layer is shielded by the earth's shadow from the sun, but it remains heavily ionized for many hours, due to the slow recombination rate.

In contrast, the D– and E– layers are much closer to earth (lower in the atmosphere) and the density of various atoms is much higher in those layers than in the F-layer. This means that at night time, the D-layer immediately de-ionizes, and the E-layer quickly de-ionizes.

The D-layer generally only affects radio signals below about 300 kHz, and is normally of little concern to amateur HF operators.

However the E-layer absorbs our radio signals on their way up to and back down from the F-layer. The quick evening de-ionization of the E-layer means that our HF signals suffer less attenuation on their way up to and back down from the F-layer. Assuming that we have an F-layer, then we get good band openings on 20m, 40m, and 80m in the evening, sometimes lasting until dawn at the lower frequencies.



SDO Extreme Ultra Violet Variability Experiment Instrument Package

This rapid E-layer evening recombination is also responsible for the opening of the AM broadcast band to long-distance propagation (and co-channel interference) right after sunset.

At the peak of the sunspot cycle, the F-layer can be sufficiently well-ionized to refract even 15m and sometimes 10m signals well into the evening hours as the F-layer slowly decays throughout the night. Our 10m and 15m signals are not as heavily affected as the lower bands by the E-layer during the daytime, so they normally are great daytime

(Continued on page 6)

bands. With low F-layer ionization, they are daytime-only bands (or non-existent bands!). However, during the peak of the sunspot cycle they can stay open well into the evening.

At this time, I've not seen whether the imaging data from the MEGS-A package will be made available to the general community in near-real-time. If it does becomes available, then much improved hour-by-hour ionospheric forecasting would become possible. That would be a very exciting development!

A NASA webpage with more information about the Solar Dynamics Observatory is located at: http://www.nasa.gov/sdo or http://sdo.gsfc.nasa.gov

More details on the University of Colorado LASP MEGS extreme ultra violet imaging experiment package is located at: http://lasp.colorado.edu/eve/instrument/eve_instrument.htm

Next Club Meeting

Thursday, March 4, 2010, 7:00 PM
Red Cross Building, 60 Hawthorne St., Medford, OR
Across from Hawthorne Park
Program: Practical Test Instruments, Bud Larson, W7LNG

Rogue Valley Amateur Radio Club
c/o 3950 Southview Ter.
Medford, OR 97504