



the exchange



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The Prez says.....

Hello All

We will be at our second meeting location in 2 months, but this one we have used before. I am hopeful that many of you will meet in person and that those that can't, will at least join us via ZOOM. Page 4 has the new meeting location details. Virtual attendance still counts as attendance towards your eligibility to vote for the DXpedition of the Year.

Speaking of which, what a job your DX Committee did, chaired by Dave, K8DV. I have the ballot in hand and it will be ready for voting after the April 11th meeting. This was a tough job and kudos to Dave, K8DV, Dwight, K4YJ, and Tom, NR8Z.

March is also the meeting where we collect nominations for the W8OK award. This is the most prestigious award we confer on our members. If there is someone who you feel meets the criteria, let me know. (<https://www.swodxa.org/w8ok-award/>)

Every meeting I ask for volunteers and we will get the occasional person stepping up. Here is a way that **you** can volunteer. Buy some raffle tickets! You can send me, or Mike, W8RK0, a check or cash and we will send back the Raffle Tickets. We can fill out the stub and put it in the drawing barrel for you! This is essentially “free” money and really helps with the extra expenses each year.

Now, stop reading and get on the air to fill some band slots!

73 and Gud DX

AJ8B => Bill



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SWODXA 2024—2025 Calendar

March 2025

1-2 ARRL DX SSB
 13 SWODXA Meeting
 29-30 CQWW WPX SSB

April 2025

10 SWODXA Meeting

May 2025

8 SWODXA Meeting
 16 SWODXA DX Dinner
 16-18 Dayton Hamvention
 24-25 CQWW WPX CW

June 2025

12 SWODXA Meeting
 14-16 ARRL VHF
 21-22 All Asian CW
 28-29 ARRL Field Day

July 2025

12-13 IARU HF Championship
 19-20 CQWW VHF

August 2025

9-10 WAE DX CW
 23 Ohio QSO Party

September 2025

6-7 All Asian DX SSB Contest
 13-15 ARRL Sept. VHF Contest
 11 SWODXA Meeting
 13-14 WAE DX SSB Contest
 27-28 CQWW RTTY

October 2025

9 SWODXA Meeting
 25-26 CQWW DX SSB

November 2025

1-2 ARRL SS CW
 13 SWODXA Meeting
 15-16 ARRL SS SSB

December 2025

5-7 ARRL 160M CW
 11 SWODXA Meeting
 13-14 ARRL 10M
 27-28 Stew Perry 160M CW

January 2026

3-4 ARRL RTTY Roundup
 8 SWODXA Meeting
 18-19 ARRL January VHF
 23-25 CQWW 160M CW

February 2026

14-15 CQWW WPX RTTY
 14 SWODXA Meeting
 21-22 ARRL DX CW
 20-22 CQWW 160M SSB

Upcoming Club Dates and Topics

Meeting Date	Topic
Thursday, March 13th, 2025	POTA & SOTA—K4SWL— Thomas Witherspoon
Thursday, April 10th, 2025	All about RTTY and RTTY Contesting -W0YK—Ed
Thursday, November 13th, 2025	Is 3dB worth a divorce? - W0GJ—Glenn Johnson

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We Have A Meeting Place!! (Again)

The January meeting place was OK at the very best. It is really not suited to a meeting place. We had internet issues, but that can be expected at any location. However, the top two complaints from the members who responded to my email was that it was noisy from the other patrons and the bar area and it is just too far from I-75. They tried to accommodate us and I appreciate the effort. The food was very good and seemed a reasonable value. If you have a chance, stop in and have lunch or dinner.

We contacted our previous meeting place, the one before Hunters Pizzeria, and they welcomed us with open arms. They have reserved the dates we need and they have waived the group fee. The next meeting will be held at Marions Piazza in Mason.



MASON PIAZZA

6176 Soundwave Boulevard,
Mason, Ohio

Phone: (513) 398-9998

Let's see how this works out. As always, your input is appreciated!

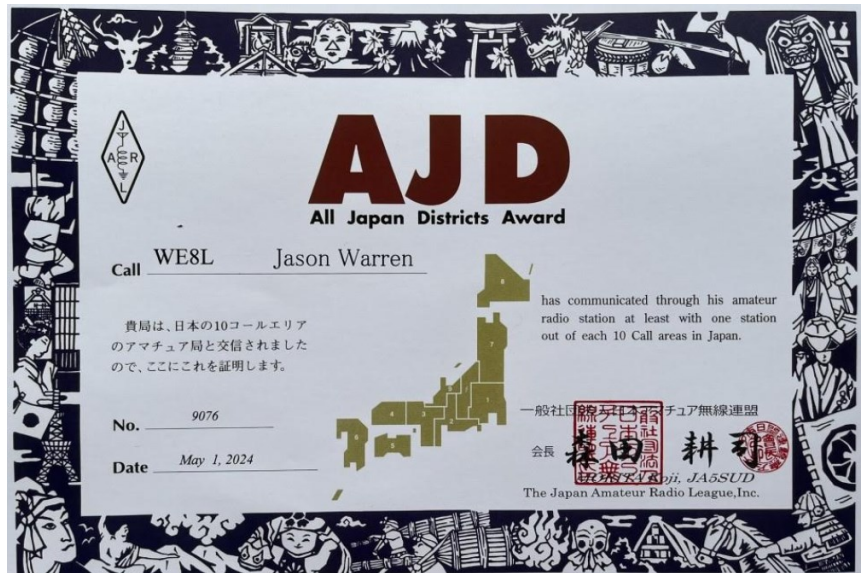
Congrats to Jason, WE8L



I thought I would share a couple of fun achievements from the past year and the corresponding certificates that go with them. As my list of needed DX entities gets shorter, I wanted a challenge that didn't feel like a contest to keep me motivated. Chasing the various "worked all" awards for different countries seemed like a great way to stay sharp.

In the past year, I managed to complete both the Worked All Japan and Worked all Australia awards offered by their respective organizations. Neither of these are new awards but I don't see a lot of U.S. amateurs chasing them. Both JARL and WIA offer nice looking certificates and for the AJD award, you don't even have to be a member of JARL to apply. You do have to be a member of WIA to apply for the Worked all VK award but it's not an unreasonable fee and includes all award applications for a year, so still essentially a one-time fee.

I thought that perhaps sharing these would encourage some folks to check their logs and get on the air to fill some gaps.



Award details for these two can be found at the following two URLs:

https://www.jarl.org/English/4_Library/A-4-2_Awards/Award_Main.htm
<https://www.wia.org.au/members/wiaawards/about/>

All best and 73 my friend,
 Jason, WE8L

K7BV— Dennis Motschenbacher (SK)

Thoughts by Jope Pater, W8GEX

K7BV

10-X # 5414

Dennis Motschenbacher

170 Mill Hill Road
Colchester, CT 06415
New London County

Grid Square FN31vi
www.qth.com/k7bv
k7bv@aol.com

One of the ARRL Headquarters Gang

This is going back many years while I was the clubs door prize chairman. K7BV Dennis Motschenbacher SK, at the time was the head of US sales for Yaesu North America. He was in charge of setting up Yaesu at hamfests and for giving away door prizes to radio clubs like ours.

For years he gave our club a new radio for the Friday night DX dinner as well as one for the Saturday DX Forum. This went on for many years until his retirement caused by cancer. He also presented the radios to the winners at both venues.

Dennis had been on many DXpeditions and knew the DX world as well as anyone. He was so happy to give radios to clubs. He never questioned me when I asked every year as he knew it was going to a good cause; SWODXA.

I never saw Dennis without his big smile. Years ago he gave me his cell number in case I every needed anything, even besides the donated radios.

What a great guy he was in so many way. RIP my friend.

Healthy Contesting Habits

Our own club member, KØMD, Scott Wright, was presented with the QST Cover Plaque Award for his article that appeared in the November, 2024 issue of QST. Below is a “Congratulations plate” and a group picture. The article is reprinted with permission, copyright ARRL. Congratulations, Scott!

Congratulations

November 2024
QST Cover Plaque Award Winner

Scott Wright KØMD

In his article, “Healthy Contesting Habits,” Scott suggests some healthy approaches to contesting that will help minimize the physical and mental demands of contesting, and some unhealthy habits to avoid.

QST Cover Plaque Awards are given to the author or authors of the most popular article in each issue. You choose the winners by casting your vote online at

www.arrl.org/cover-plaque-poll

Log in now and choose your favorite article in this issue!

Healthy Contesting Habits

Minimize the physical demands of contesting with these tips.

Scott Wright, KØMD
Amateur radio contesting is a fun and competitive activity that's growing in popularity among ham radio operators of all ages.

Contesting is physically demanding, and big contests, such as the ARRL International DX CW and phone contests, require a commitment of up to 48 hours. This is equivalent to working a full-time job, all within the confines of a weekend typically a Friday night through a Sunday night. It's no wonder so many contesters are exhausted by the time they return to work on Monday.

Let's review some healthy practices to consider while contesting (see the sidebar “Healthy and Unhealthy Approaches to Contesting” for more information).

Get Sufficient Sleep
Try to get enough sleep during the week leading up to the event. If you have difficulty sleeping, talk with your healthcare provider to see if you might have a sleep disorder. Much of the insomnia we see today is due to too much screen time after 6:00 PM and/or the consumption of too much caffeine after dinner.

Being well rested allows for alertness and freshness of mind, preventing common mistakes that can lead to missed information and score reductions. You may want to take a half day off work on the Friday before a major contest weekend to spend the afternoon getting some sleep. Having a 1- to 2-hour nap ahead of time will often prevent early fatigue during the first night.

I believe it's important to go to bed when you're tired during a contest weekend. Sleep deprivation and the use of stimulants to stay awake do not improve your accuracy and may lead to health consequences such as cardiovascular disease and early-onset type 2 diabetes mellitus. The use of stimulants such as highly caffeinated beverages can cause a heart attack and sudden cardiac death, especially among individuals younger than 50 years old. Use of these aids to stay awake while contesting may lead to premature health problems, or worse. No top contest score is worth this cost.

Eat a Nutritious Diet
Stick to eating healthful foods before, during, and after a contest. There are no data to suggest that carbohydrate loading, something frequently done by marathon runners, has any benefit with ham radio contesting. In fact, you may want to consume fewer calories during a contest weekend because you'll be more sedentary than usual. Keep some fresh vegetables available to snack on—carrots, radishes, broccoli, cauliflower, and small quantities of nuts are likely your best options. Of course, you should stay hydrated as well. Drink plenty of water and/or non-caffeinated, sugarless beverages to counter any dehydration induced by the heat from your shack lighting and the warmth of your tube amplifier. Allow yourself to take bathroom breaks to avoid any risks to your kidneys.

Set Up an Ergonomic Station
Design your station to minimize the damage from injuries associated with repetitive motion. Adjust the table so that the keyboard and computer monitor(s) are at appropriate heights for your arms and head to avoid straining your neck, back, or wrists and arms. I experienced significant neck strain one contest season until I realized my wall-mounted monitors were several inches too high for my height. Now I use a desk-mounted monitor that prevents such strain. Find a comfortable chair that supports your lower back. I typically recommend gaming chairs. I also operate standing for periods of time while contesting, because it allows me to stretch my back and legs, restores circulation to my lower extremities, and combats fatigue. Because of this, I use wireless keyboards that I can move to a shelf on my operating desk when I want to stand. Someday, I hope to try a walking treadmill desk or stationary bicycle while contesting.

Take Regular Breaks
Most contest advice focuses on keeping your body in the chair to maximize your score. This advice is good, but like all things, it becomes a



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Healthy Habits (cont.)



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Take Regular Breaks

Most contest advice focuses on keeping your body in the chair to maximize your score. This advice is good, but like all things, it becomes a hindrance when taken to an extreme. I recommend you take regular breaks to clear your mind, restore your focus, and stretch your muscles. The breaks can be as short as 5 minutes or as long as 30 minutes; you'll figure out what works for you.

Healthy Habits (cont.)



Attend to Your Mental Health

Contesting can become an obsession, especially if you're an extremely competitive person. Talk with loved ones to determine if frequent contesting is altering your mood or keeping you from being engaged and involved with your family and friends. There are no awards given at the end of a year, decade, or lifetime for completing a given number of contests. It's not uncommon to become irritated during a contest at typing mistakes you make or with the poor operating practices of those you meet on the air, but there's no reason to let your frustration boil into anger, which can raise your blood pressure, trigger a heart attack or stroke, or simply rob you of the fun and joy of the contest activity. If you're finding yourself getting frustrated, take a short break, have a bite of food, take a walk, or change bands.



Maintain Life Balance

You're ultimately responsible for the choices you make with contesting. If you feel that going all out for 48 hours is impacting your ability to work the Monday following a contest weekend, then finish operating early enough on Sunday to recover and prepare for the work week. Contesting is part of our hobby; it's not a way of life or a source of income.

Healthy and Unhealthy Approaches to Contesting

Healthy Habits

- Focusing on the fun of operating and worrying less about the score
- Striving to improve skills with communication and radio operation, not just earning a high score
- Savoring personal achievements with improving metrics and meeting goals
- Reconnecting with friends on the air
- Discovering more about propagation and band performance
- Learning to set and achieve goals
- Tempering personal expectations about what can be achieved
- Practicing gratefulness for the opportunity to be on the air and making contacts

Unhealthy Habits

- Depriving self of sleep for more contesting
- Excessive use of stimulants
- Dehydration
- Repetitive use of strained body parts from a non-ergonomic station
- Anger, with associated changes in blood pressure
- Poor posture, with associated joint and back pain
- Obsession with winning, especially to the point of detrimental effects on family and friendships

Healthy Habits (cont.)



Stay in Shape During the Off Season

Professional athletes stay in shape year-round. We should approach contesting health in the same way. The most successful testers I know practice outside of the contest season to improve skills, such as copying CW despite noise, expanding their understanding of station and/or logger operations, and regularly participating in events that keep their S02R skills fresh.

Additionally, the healthiest testers I know, mentally and physically, exercise regularly during and outside of the contest season. Some are runners and credit running for their stamina while participating in longer contests. Consider starting an exercise routine to improve your overall health. Lose any excess weight, and work with your healthcare provider to manage any medical conditions you may have, such as hypertension, type 2 diabetes, heart disease, COPD, and arthritis. Work with a mental health coach on any psychological issues that may be impacting your ability to enjoy contesting.

Above all, stay connected with your community of contest friends, because they make the contest contacts worthwhile during the season.

Scott Wright, KØMD, has been a ham for 47 years and enjoys DXing and contesting most of all. He is a past editor of NCJ and a past member of the ARRL Contest Advisory Committee. Scott has an S02R contest station at his home in Minnesota, where he enjoys a range of contest events. He also operates overseas in contests as travel allows. Scott can be reached at drscott.wright@gmail.com.

Japanese Castles on the Air— JACOTA

Greg Cook— J03SLK (kgregc1@mac.com)

I had a great call with Icom's Ray Novak, N9JA. Somehow we started talking about our newsletter and Ray suggested that I contact Greg, J03SLK. Greg has a series of articles describing his activations of Japanese Castles. I read the first several and knew that these would be great for our newsletter. Greg was kind enough to allow me to reprint these.

Thanks to Ray for the connection and for Greg for his permission to reprint. You can slow watch the discussion about the Castles on the Air with Greg and the DX Mentor at (<https://youtu.be/HrhHDzzqCjM>)

Castle 9. Sumoto castle (Hyogo prefecture)

I decided to take a trip to Awaji Island in the Inland Sea for my next castle visit. Sumoto is a small castle on the east coast of Awaji, about two hours from my house. I departed at 6:30 am, took the Shin-Meishin expressway, the Sanyo expressway, then the Kobe-Awaji-Naruto express. I crossed over the very long Akashi-Kaikyo bridge and then continued on to Sumoto city, arriving at the castle around 8:30. There were few people at that time, so I could take a leisurely walk up the path to the castle. The castle is a small one, and the only building is the Tenshu, which was reconstructed in 1928.

History of Sumoto castle

A castle was first founded on this site by Atagi Haruoki in 1526. When the Awaji area was conquered by Toyotomi Hideyoshi, he assigned Sengoku Hidehisa as lord of the castle. In 1585, Wakisaka Yasuhara was reassigned from Takatori Castle to Sumoto Castle. Wakisaka renovated much of the castle during his 24 year reign. In 1615, Awaji came under the control of the Tokushima domain and Hachisuka Yoshishige became the new lord. The castle lordship was passed to Inada Shigetane, a retainer of the Hachisuka in 1631. The Inada clan continued to rule until the Meiji Restoration. (Courtesy of Jcastle at <https://jcastle.info/view/Home>)

Layout of Sumoto castle

Sumoto is a very small castle, with only the Tenshu (main keep) remaining. The ishigaki (stone walls) are not that tall, and are old looking with moss growing on them. The bailey grounds are well maintained, and there are places that offer spectacular views of parts of Awaji island and of the Inland sea. The walk from the small parking lot, through the gate and around the baileys and stones walls to the castle takes only about 3 or 4 minutes.

JACOTA (cont.)



Steps leading up to the castle entrance



Entrance to the Honmaru



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JACOTA (cont.)



Stone wall at the entrance



Ishigaki of the Honmaru

The stones are smaller than the ones at castles I have visited so far, but the walls are well built, sturdy, and surround the whole Honmaru bailey.

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60th Anniversary

IC-7760
HF/50 MHz TRANSCEIVER

IC-PW2
HF/50 MHz 1 kW LINEAR AMPLIFIER

JACOTA (cont.)



Sumoto Tenshu



Stay on Top of all that is Happening in Amateur Radio
via a Podcast. A weekly Radio News Magazine

JACOTA (cont.)

Tenshu panorama

The Tenshu was reconstructed with a concrete base that looks similar to the Eiffel tower base.

The city of Sumoto is to the right.



The Tenshu looks like it is leaning to the right. I wonder if this is the reason you cannot go inside....it might be a bit unstable.

JACOTA (cont.)



Panorama of Sumoto city. Kobe is on the other side of the mountains. Osaka and Wakayama are to the right.

Operating location and setup

There is one small upper parking lot just below the Honmaru bailey of the castle, and it has a small park with a view opening up to Kobe, Osaka and Wakayama cities. I put a UHF mobile whip antenna on the roof of my car, set up the IC-705 on the dashboard and tuned to 430MHz D-Star repeaters and made several contacts. Then I dropped down to the 430 MHz FM frequencies, and then the SSB frequencies and made a few more contacts in each mode. Then I switched the antenna to a 2 meter center loaded whip, tuned the IC-705 to the lower 144 MHz band and worked several SSB stations. Two meter SSB is very popular, and there are well equipped stations on the air most any time of the day.



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JACOTA (cont.)



My mobile ham shack Suzuki Lapin



Mobile whip for 2 meters

I have a collection of Diamond HF Whips and a friend gave me a center loaded whip for 2 meters that I used for SSB contacts. I have a magnet mount on the roof and two additional magnetic “ground” pads connected to the base.

I could have taken my tripod and gear to the park, set it up and worked stations from there, but the sun was getting warm, my car seat is comfortable, and I could run the air conditioner occasionally to keep cool. Another reason for the mobile station is that the parking lot is convenient, and close to the castle entrance, so people are coming in, staying a short time at the castle, then coming to the park to enjoy the view. Social distancing, wearing a mask and trying to operate in the crowds would be much more difficult than operating out of my car.

Working VHF and UHF FM and SSB stations is enjoyable and enables more hams to make contact with me at a castle. HF signals, especially 40 meter signals lately, seem to skip over the area I am operating in. Also, the castles I have visited so far are not that well known to all Japanese, so working local stations on V/UHF gives you the opportunity to talk to hams that probably know the castle, and sometimes a few of them have been to the castle and remember their visit. But, I will be using both HF and the upper bands for future castle visits. Stay tuned!



Loops...Personal opinions, ramblings, and experience

de Lynn, W4NL

I like full wave loops for several reasons, and they have always worked well for me. Hopefully this will serve as an incentive for you to try your luck with one, and then you may write a piece on loops for others.

Some of the positives of full wave loops are lower noise, broader efficiency across the band you design it for and perhaps pick up a little directive component on the broad side directions. A huge positive is being able to change the angle of radiation depending on where it's fed with your coax. Another positive is loops are not affected by close proximity to towers, trees or houses as much as a dipole, etc. I'm talking about a vertical loop and not one which runs horizontal to the earth. I have little knowledge of the latter, except to say they are a high angle antenna.

A circle I'm told provides the best and most efficient loop, but you can imagine a full wave loop for 40 meters in a circle. If you figure how to do this for a 40 full wave loop (136' or so) PLEASE let me know!

The square full wave loops are popular and are called cubical quads. One of the most interesting issues has been the running battle that a 2 element, or any number of element, quad was better at lower heights than yagis. I have found this to be true, but at a point it's a wash for the equal number of elements, say a wave length or more above the terrain. At height, the quad was always quieter than a yagi but far harder to keep in the air even with good material.

The negatives may be the size and the need for places to install them on a smaller lot. If not made fairly strong, being they are fairly long overall, they can come down, probably in the cold hard winter. Otherwise, I know of no negatives for full wave loops.

As you will see by examining the crude drawings below, if fed half way up the side of an equal sided loop, it will be a low angle radiator used for long haul work. Fed exactly at the top center or bottom center, it becomes a high angle radiator and is better closer in.

The delta loop (3 sided) is the easiest to install and there are two main ways to do this. One takes two 'holders' at the top and the other with the top point up requires one, but the other corners must be tied off to something. I've also found some variance of the equal lateral triangle is okay but has an impact on the feed point impedance. With an analyzer, you can work this out nicely.

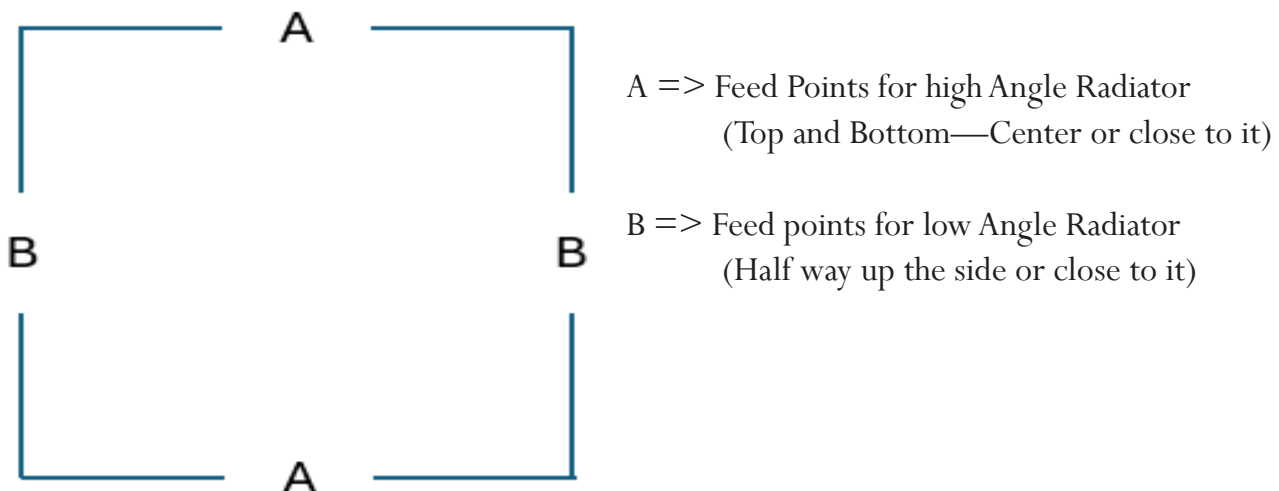
Talking about the feed of the antenna, a normal loop feed point impedance is 100 Ohms. Naturally, we would like for it to be 50 Ohms so the transmitter will be happy. More on this later.

Loops (cont.)

If you want to have a lot of directivity in one direction, this is possible with two or more loops, be it a director or reflector to go with the driven loop. For a 2 element loop, somewhere between .1 and .2 wave length separation is fine. If a reflector is used, make it 5% longer than the antenna/DE.

I lean toward loops for 40 meters down to 80, 60 and 160. Trees are a good place to start and towers of course are good sky hooks, which is what we refer to; anything to tie beautiful antennas on. Sky hooks are good!! I suggest at least 10' off of the ground across the lower part to save the spouse on the tractor cutting the grass.

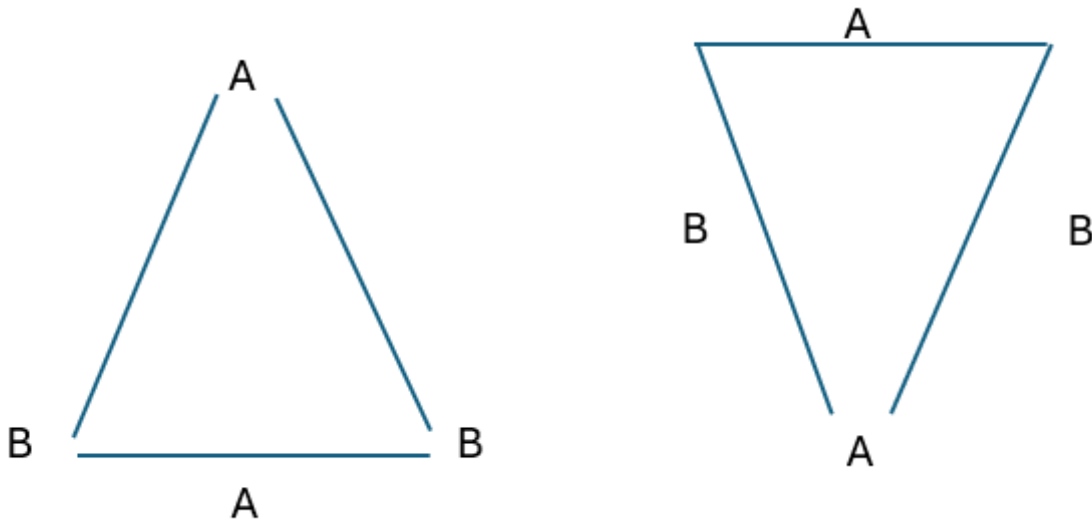
What I'll do now is to make some drawings and use numbers derived from math and my experience instead of boring you with numbers you may not need to get one on the air. Keep in mind to know the formulas is a good thing, but that can come in time AFTER you are on the air.



Square loop Fed at high angle and low angle

Delta loop (next page) = 'A' is the place to connect for high angle and 'B' is for low angle. Technically, the low angle feed point should be where wave length is down from the top center point, but I go with the 'B' on the left configuration and 'B' on the right one. My delta loops have been 90% of the left configurations.

Loops (cont.)



The lengths for each side for the band indicated is offered. They can vary for tuning of course:

Band	Square	Delta
40	34'	45'7"
30	24'	32'
20	17'2"	22'11"
17	13'4"	17'10"
15	11'6"	15'4"
12	9'9"	13'
10	8'6.5"	11'4.5"
6	4'10"	6'5"

Loops (cont.)

Now let's get it from a 100 ohm feed point impedance to near 50 ohm for the transmitter. In all cases, I use a length of 75 ohm coax (RG-59) electrical $1/4 \pm$ wave length for the freq. For most coax the velocity factor is 66%. Take the quarter wave length for the frequency of the antenna, multiply by 66% and you have the cable to be inserted between the antenna and the coax to the transmitter. This should be close to 50 ohms. These lengths are:

Band	Length	Freq
80	41'2"	3.75 Mhz
40	21'7"	7.15 Mhz
30	15'3"	10.12 Mhz
20	10'10"	14.15 Mhz
17	8'6"	18.12 Mhz
15	7'4"	21.2 Mhz
12	6'2.5"	24.9 Mhz
10	5'5"	28.3 Mhz
6	3'	50.1 Mhz



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If this appears to be somewhat complicated, it really isn't and it may be my presentation.

Do your research and if you have the space the loop is worth the effort.

To experiment with parasitic elements and have a good directive array is something later, but it's fun and very rewarding.

73, Lynn

Propagation Banners Explained

By Robert Gulley (k4pkm@radioranchero.com)

Robert is a club member and submitted this excellent article for publication. Thanks Robert!

Visit any popular amateur radio website and one is likely to see a propagation banner showing current solar and atmospheric conditions using data gathered from around the world. Unfortunately, most of us do not take advantage of the wealth of information provided by these banners, so in this article I give some brief information on each category in hopes that these reports will become more understandable, as well as useful.

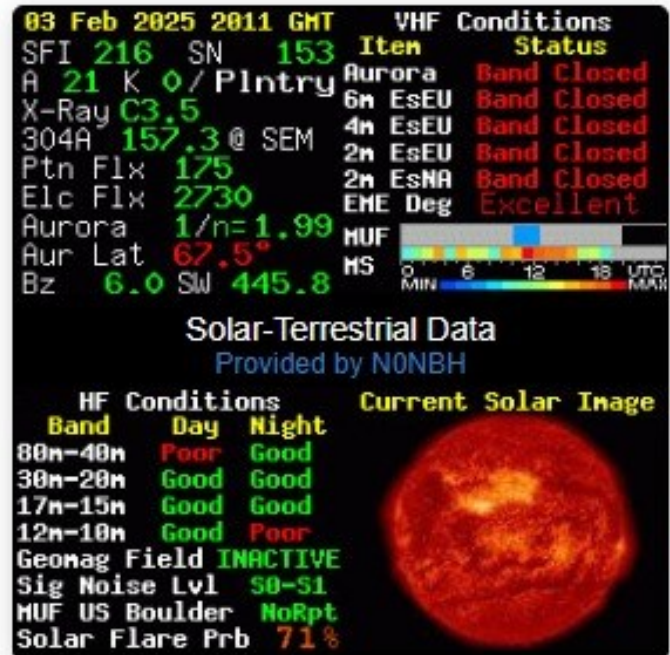
There are numerous variations of banners, but most of the data is sourced from one or two reliable locations. The propagation banners we see everywhere are usually the product of Paul Herrman, N0NBH, and images from his site are used with his permission.

These banners are not just useful for amateur radio operators, however, but are of great interest to shortwave radio listeners, utility monitoring folks, and a whole host of other radio-related hobbyists and professionals.

Unfortunately, most amateur and shortwave radio folks only look at one or two numbers to determine what conditions will be like. This yields a much less than accurate understanding of solar and atmospheric conditions, because these numbers can tell us so much more.

Now, I admit to being one who looked only at the K and A indices for a number of years, and my brief glance also looked to see which bands were listed as possibilities for activity.

One day my curiosity got the best of me, however, and I started trying to learn what all the other numbers meant. Now I am by no means a propagation expert, but what I discovered has been quite helpful to me in understanding current conditions, as well as indicating possible future conditions. I hope the following explanations will help you as well.



Propagation Banners (cont.)

The SFI is considered a reasonably good indicator of the F-Layer ionization level, although it does not tell the whole story. There are many other factors which affect propagation, and a high or low number does not always reflect actual conditions, as we will see.

The 2.8 GHz measurement (sometimes called the 10.7 cm flux) is measured daily with typical ranges between 60-300. Higher numbers usually indicate higher MUFs, and therefore higher bands for DXing. This number should be seen more in terms of a pattern rather than an individual number.

A high Solar Flux Index on any given day does not mean conditions will be great—rather several days of a high SFI can mean favorable conditions have developed which will offer good DXing on some of the higher bands.

Sunspot Number

Sunspot numbers indicate overall sunspot activity and the size/quality of the sunspot groups. The ranges go from 0-250, with higher numbers indicating more upper-level ionization. Folks start talking about them on the ham bands when the sunspot numbers are up, because they are a very useful indicator of when upper bands might allow some serious DXing.

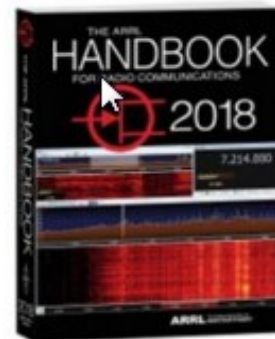
For example, an SFI of 126 is respectable (and would be so welcome in our current solar minimum!), and which might indicate possible upper-level ionization, but we may notice a sunspot number that is rather low, say 49. The SFI may indicate good solar activity, but with a low sunspot number we will see band predictions which are moderate

Sunspot numbers are averaged monthly over 12 months. The 12-month average gives the best correlation for propagation activity, but it does not account for unusual sunspot activity. (And unusual solar activity may not be immediately reflected in other indices as well, if at all. One just cannot contain nature in a tight little box!)

ARRL OH Section Updates

From our ARRL Section Manager,
Tom Sly, WB8LCD

Hey Gang, Do you get updates from your ARRL Ohio Section Manager via email? If not, go to: <http://arrl-ohio.org/handbook.html> and get registered.



What's the catch? I want to get everyone checking in to the Ohio Section website as often as possible, and in order to register each month, you have to visit the website often! There's nothing else to it. I pay all expenses, and from time to time, I Give Away more than just a Handbook. And, you'll never know just what months will be those special times that I will have more than just a Handbook to Give Away!!

Did you see the ad from ARRL recently? Well, they liked my idea so much that they've copied it. Yup, they were giving away a Handbook too!

Many of you ask me just how do I know when the drawing is on? Well, that's easy all you need to do is check in on the Ohio Section Website on a regular basis and watch for the big RED Arrow that will appear on the left side of the page. This is the sign that the drawing is on and you need to get registered. So, keep a sharp eye out on the web-

Propagation Banners (cont.)

A and K Indices

The A and K indices are the other two most commonly read indicators of ionosphere conditions, and folks will often refer to the K index as an explanation for good or bad propagation conditions.

The A Index is an averaged number, meaning it is based on the previous day's readings. The A index is a scaled value in the range of 0–400.

The K index is based on the latest average of eight readings taken every three hours from around the world. The K index is a logarithmic value, 0–9, with levels of 4 or more indicating a geomagnetic storm. High geomagnetic activity can lead to HF radio blackouts.

<u>K Index Ranges</u>	<u>A Index Ranges</u>
K1=Very quiet	A0 - A7 = quiet
K2=Quiet	A8 - A15 = unsettled
K3=Unsettled	A16 - A29 = active
K4=Active	A30 - A49 = minor storm
K5=Minor storm	A50 - A99 = major storm
K6=Major storm	A100 - A400 = severe storm
K7=Severe storm	
K8=Very severe storm	
K9=Extremely severe storm	

XRY

The XRY reading is a measure of the X-ray intensity of X-rays hitting the atmosphere. “B” and “C” readings indicate the lowest levels of activity, while readings of “M” and “X” indicate possible blackout conditions for Regions 1-2, and Regions 3-5 respectively.

More useful is the indication this number/classification gives for the D-layer activity, which is the layer responsible for blocking signals from the broadcast band up to 4-5 MHz during daylight hours.

Propagation Banners (cont.)

If the X-ray level is high enough, the absorption effect of the D-layer is greatly increased, potentially reaching up through the entire HF band. This means signals from earth never make it through to F-layer, and therefore would not be reflected/refracted back to earth.

X-ray intensity varies greatly with solar activities such as solar flares and CMEs. X-ray intensity increases based solely on the strength of the solar flare. E-layer activity is directly affected by X-ray flux, whereas F-layer activity is more affected by the UV flux.

304A

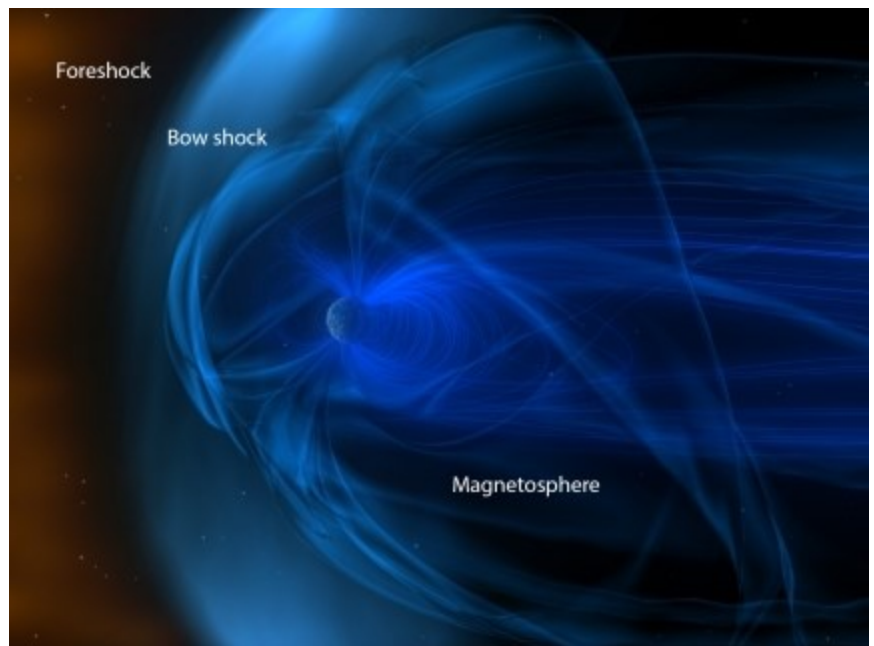
This category refers to the solar radiation level measured in the ultraviolet light range of 304 angstroms, produced by ionized helium in the sun's photosphere. Radiation in the ultraviolet spectrum creates much of the F-layer ionization, reflecting/refracting RF signals back to earth.

Two different measuring stations are used— one here on earth and the other comes from the SOHO (**Solar and Heliospheric Observatory**) satellite. The range is 0– infinity. This number increases with increases in the solar flux index (SFI).

Bz

Interplanetary magnetic field, Bz, indicates a positive or negative pull with or against the earth's geomagnetic field. The solar winds are responsible for carrying the interplanetary magnetic field through space.

A positive value indicates the interplanetary field is working with, or oriented in the same direction, as the earth's field. Negative numbers mean it is pulling or distorting the earth's magnetic field and therefore increasing the effect of geomagnetic disturbances. These effects are seen most readily when using weak-signal software, such as WSJT-X.



Propagation Banners (cont.)

In effect the shielding of the earth's magnetic field is reduced when the readings are negative. The geomagnetic field is a teardrop shape pattern giving us the north and south magnetic poles. The field helps direct ionization flow around the atmosphere.

(The image here shows a representation of the field, including the tail which faces away from the sun, and the bow shock created by the resistance of the earth's magnetic forces encountering the sun's radiation forces.)

The magnetic field traps charged particles which might cause a great deal of damage if they were to reach earth's surface, as well as greatly influencing the shape and direction of radio signals.

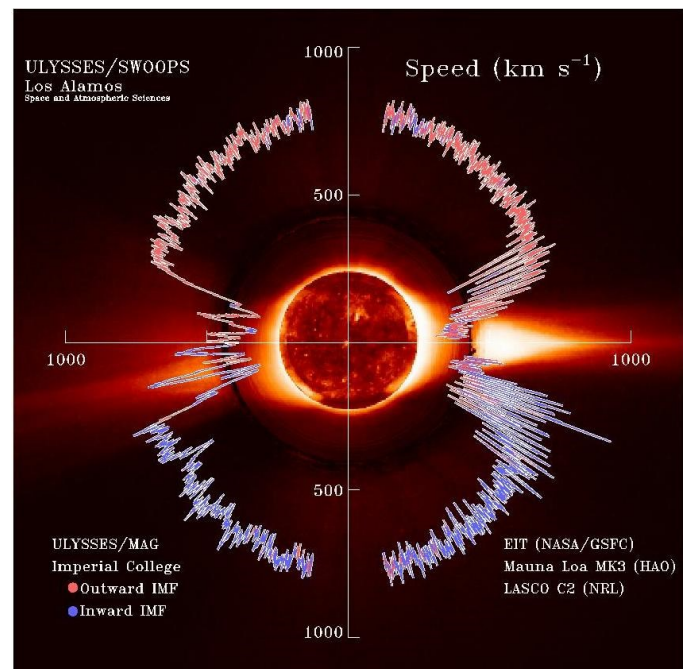
The geomagnetic field is weakest near the polar regions and strongest near equatorial regions and on the night side of the earth opposite the sun. The variations in the geomagnetic field are much of what these forecasts are designed to predict, because they are the most likely to affect day-to-day HF propagation.

Solar Wind

The SW reading is a measure of the solar wind speed, ranging from 0–2000 km/s, with readings typically well under 500. If the speed increases to more than 500 there is increased pressure on the ionosphere, weakening it, and causing disturbances to the F-layer.

The solar wind contains charged particles and magnetic fields. Stronger winds will create a more distorted shape to the earth's magnetic field—in effect flattening it—which further reduces the magnetic strength at the poles, as well as causing the tail to extend even further behind the earth.

The movement of the solar wind (or plasma) is outward from the sun, and fills an area known as the *Heliosphere*. The Heliosphere is a bubble-like region in space emanating from the Sun, and expanding outward into the solar system. Galactic cosmic rays are partially blocked or reduced by the effects of heliosphere.



Propagation Banners (cont.)

Proton Flux (0-unknown)

The *proton flux* (PF) is a measurement indicating the density of protons in the magnetic field of the earth, particularly along the polar magnetic lines.

Solar flares and CMEs can cause proton storms which allow for a greater influx of protons to penetrate the magnetic field, which in turn, causes a rise in the E-layer of the atmosphere. This increase in activity can reduce or completely block signals from getting beyond the E-layer, effectively shutting down HF signals until the magnetic field stabilizes.

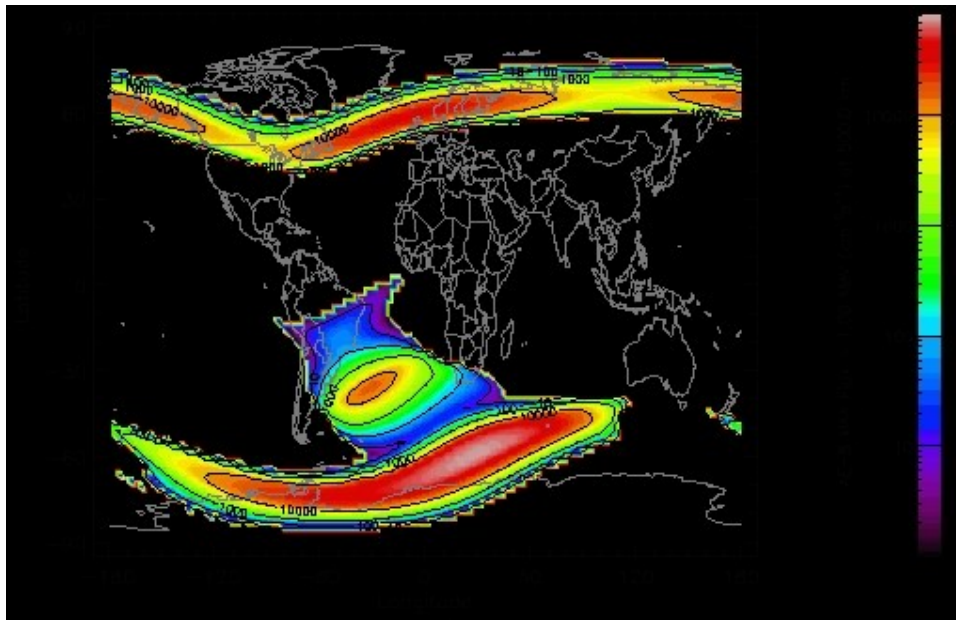
The protons are drawn into the earth's magnetic field toward the poles, meaning they do not typically penetrate the lower latitudes. The increased levels can cause geosynchronous satellites to be interfered with, as well as Polar Cap Absorption events, or PCAs.

The PF levels have to exceed 10 PFUs before this occurs, but as long as levels remain this high, communication will be disrupted. In addition to disrupting communications, extreme proton storms have been known to interfere with spacecraft equipment and optics, and some astronauts have reported seeing streaks or flashes of light. This coincides with optical imagery issues experienced by cameras monitoring solar events.

Electron Flux (0-unknown)

A similar measurement reported on the solar banners is the electron flux. Like the proton flux, an electron flux reading indicates the density of electrons in the magnetic field of the earth, and increased numbers indicate potential interference with communications.

Solar flares can dramatically increase the electron density, affecting the E-layer of the atmosphere. Both the proton flux and the electron flux are measured hourly.



Propagation Banners (cont.)

Maximum Usable Frequency (Boulder CO)

The maximum usable frequency (MUF BDR) is a measurement of the MUF at the given time from Boulder Colorado. MUFs are measured at various locations around the world, and each location will be different

Keep in mind that any MUF reading is *only a guide*, nothing is set in stone! The MUF may be low at night and still signals might come through on 20 meters, for example.

Also, the reading is reflective of measurements taken from a specific area, so the MUF will be different at each location, as well as different at various times of day. All of this to say again, the MUF is only a guide, and often signals will go beyond the reported/estimated MUFs in any given area.

EME Degradation

The Earth-Moon-Earth Degradation is a measure of expected EME conditions based on signal attenuation for a given day, dependent upon the sky noise temperature and the astronomical sky, along with the moon's location in the sky.

The measurements are from "Very Poor" to "Excellent", meaning an attention of >5.5 dB to <1.5 dB, respectively. For more excellent information on EME and meteor scatter propagation, go here: <http://www.mmonvhf.de/>.

Band Conditions Forecast

Many solar banners will include the band forecast for both day and night conditions. These are determined using the solar flux index and the sunspot number. Again, these are only suggestions, and are not necessarily accurate for any given location.

Many times I have found good propagation conditions when bands were reported likely to be poor, as well as the reverse situation. This is why the more we understand all of the resources available to us the more accurately we can predict propagation conditions.

As an aside, when conditions seem to run counter to the general predictions, this is the very time to pay closer attention to the various numbers and their contribution to the whole. The more attention we pay to various individual indices, the more the significance of each category will become evident as see patterns emerge.

As an example, when I am looking at the basic banner information, I always check the solar winds indicator and the direction of the winds, because I have learned a negative direction greatly increases the chances for poor propagation than typical "A" or "K" indices.

Propagation Banners (cont.)

Geomagnetic Field

This indicator gives an indication of the level of disturbance to the geomagnetic field. This is based on the K index value, ranging from Inactive to Extreme Storm over nine levels. -- The last three levels, Major, Severe and Extreme usually indicate blackout potential as well as high Auroral activity.

Signal Noise Level

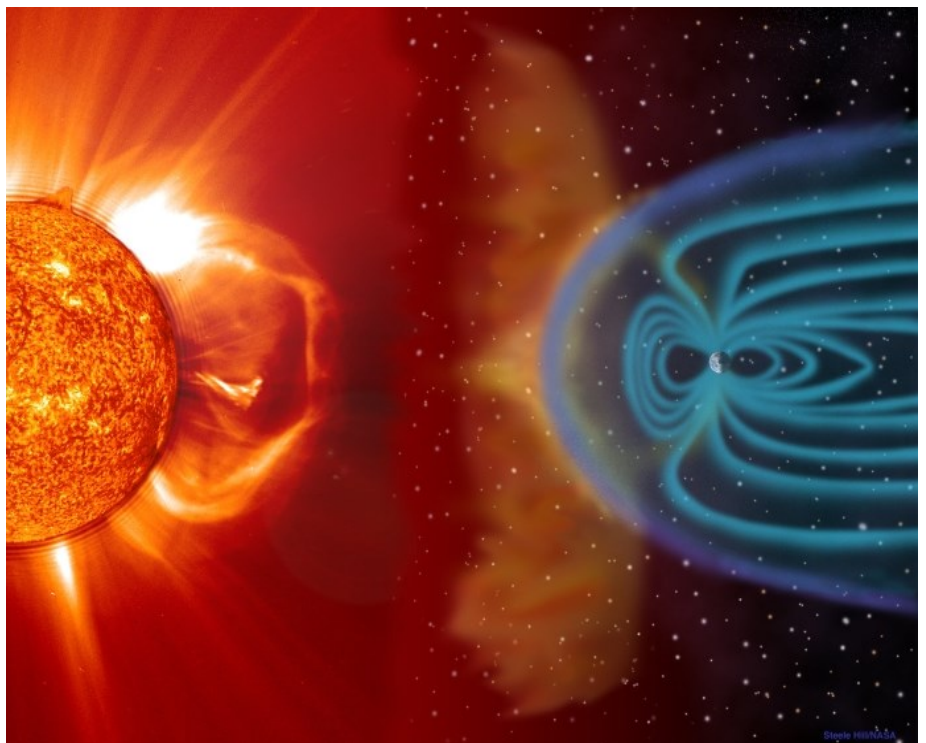
The signal noise level is an indication of the interaction of the solar winds with the earth's magnetic field. Increased solar wind activity means more signal noise (measured in S-units), and this number is updated every ½ hour. Following strong geomagnetic activity, the signal noise level may actually be very quiet, presenting a good opportunity to work the lower bands.

Likewise right after a solar flare the MUF will be raised, but the noise levels will be lower, so daytime propagation will usually be better. This is because while the noise burst during a flare is significant, as soon as the flare is over noise levels drop considerably, *but the ionization levels are still high.*

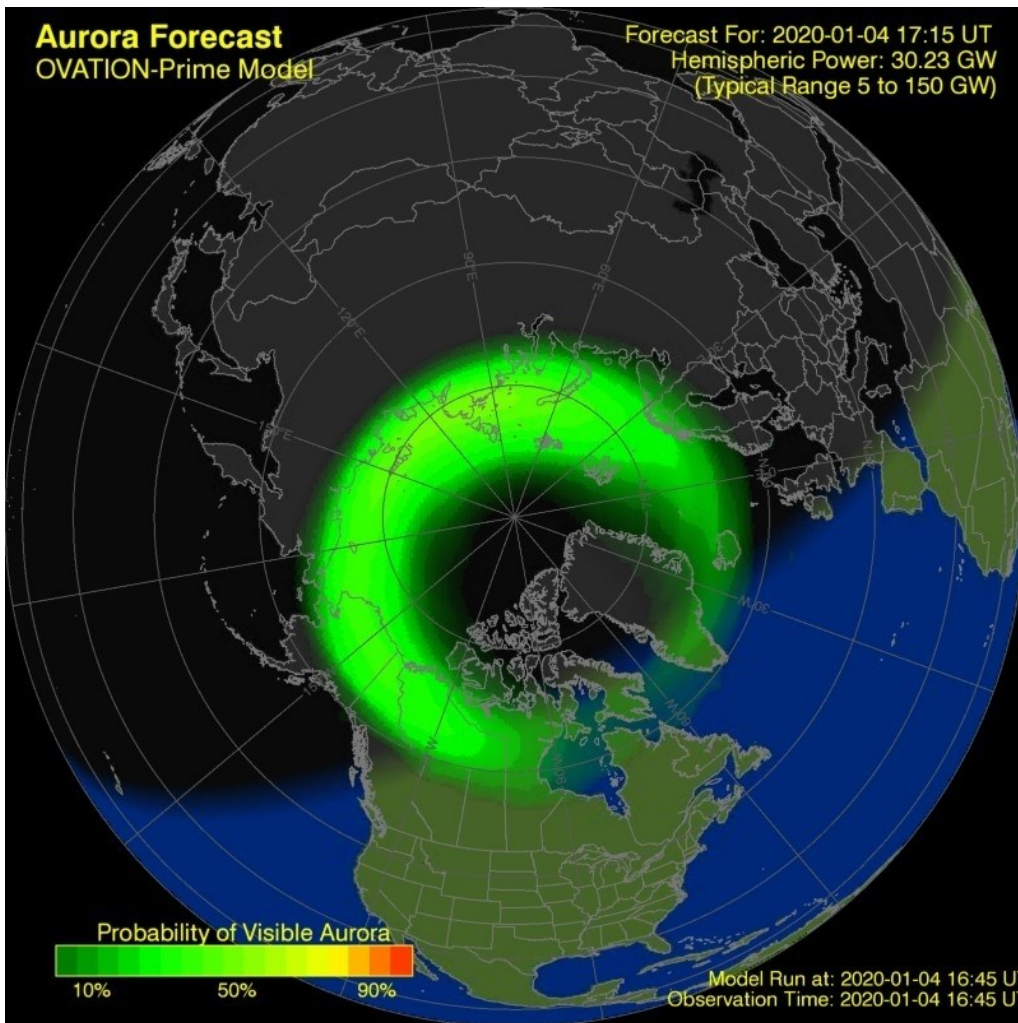
Two to three days after a solar flare there will be an impact from the shock wave of the flare which can cause a geomagnetic storm. Again, after this storm subsides, noise levels can be quite low. Keep an eye on the noise levels during and after a solar event to make the best use of these opportunities.

CME

The CME (Coronal Mass Ejection) reading is a prediction of when the next CME is likely to occur. Unless there is a reason for NOAA to think a CME is headed to earth, this reading is not updated. The color code signifies the threat level, with green being mild, yellow being moderate, and red being severe.



Propagation Banners (cont.)



Auroral Activity

Two additional categories are the Aurora and the Aurora Latitude indicators. The Aurora number is a range from 1-10, with higher numbers indicating an expansion of the auroral oval.

The aurora oval is an elliptical band around each geomagnetic pole, normally ranging from about 75 degrees magnetic latitude at noon to about 67 degrees magnetic latitude at midnight. As greater amounts of energy strike the geomagnetic field at the poles, the auroral oval increases, mean-

ing it moves to lower latitudes. This has the benefit of increasing VHF communications at the expense of HF communications.

When the Northern and Southern lights are greatest, a result of heightened auroral activity, there is the possibility of the polar black-outs. The aurora latitude measurement is the expected lowest latitude of the auroral oval. The text is also colored according to activity, with red being low activity, yellow being high-latitude activity, and green being mid-latitude activity.

Some Additional Information

Other banners may show some additional information, representative of some of the different styles of banners available from N0NBH. This can include VHF propagation condition predictions, as well as a solar flare prediction category similar to the CME prediction.

Propagation Banners (cont.)

The VHF propagation tool is particularly useful during periods of expected E-skip activity and solar flare activity, where VHF propagation is likely to increase dramatically. One of the lessons learned from studying the solar banners is that when HF conditions worsen, VHF conditions often improve, even if only for a few hours.

Some banners will give indications for the MUF specifically as it relates to VHF, while others will show the probability of E-skip conditions in various parts of the world.

As an example, the color coding for E-skip Europe is Band Closed (Red) = No Sporadic E (ES) activity; High MUF (Green) (2M only) = Conditions support 2M ES; 50/70/144MHz ES = the respective band is open.

There is also a meteor scatter color coded bar on some banners which indicates the probability of meteor scatter activity, from Min. to Max., measured by the hour (UTC).

More than Meets the Eye

There is a wealth of information just upon a casual glance at one of these banners, but the greater benefit comes from studying them, discovering patterns, and applying the information in the real world, whether amateur, SWL, or utility aficionado.

No amount of propagation information will help us make or log contacts unless we turn our radios on and use them! Propagation maps and banners like these can be a help or a hindrance depending upon how they are used. They can be a challenge or an excuse!

For an additional source of information and very cool visual displays of the sun and other areas of interest, check out Solarham.com

The study of propagation can be a life-long pursuit. The monthly column by Tomas Hood NW7US is a perfect example. Tomas puts propagation study into practical terms each month by giving us predictions of likely conditions based on solar patterns he has studied for years. I can confidently say even Tomas, with all his knowledge (immensely greater than mine!) learns new things all the time.

So, whether you are a beginning radio hobbyist or a seasoned veteran of all things radio, there will always be more to learn and patterns to recognize in the pursuit of propagation. I hope you will enjoy the ride!

Images

QRZ-Banner.jpg - Sample Common Propagation Banner (courtesy QRZ.com/N0NBH)

Magnetosphere.jpg - Image from NASA showing teardrop shape of the Magnetosphere

Solar-Wind-Speed.jpg - Graphic showing the pattern of the Solar Winds (courtesy NASA.gov)

Electron-Flux.jpg - Model of Electron Flux coverage based on NASA modeling

CME.jpg - Image of Coronal Mass Ejection (courtesy of European Space Agency)

auroraloval.jpg - Example of Auroral Oval (courtesy NASA.gov)

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SouthWest Ohio DX Association (SWODXA)

Club Fact Sheet

Who We Are: *SWODXA* is comprised of active DX'ers and contesters with a deep passion for all aspects of Amateur Radio. We welcome everyone who is interested in joining our club to please contact us. *SWODXA* members are active in all facets of DX and Contesting. We also travel to, and fund various DXpeditions all over the world. *SWODXA* sponsors the annual DX Dinner held on the Friday evening of Hamvention weekend in Dayton, Ohio. In addition, *SWODXA* members moderate the Hamvention DX Forum and host the *W8DXCC DX Convention*. *SWODXA* is proud sponsor of the prestigious *DXpedition of the Year Award*.

DX Donation Policy: The policy supports major DXpeditions that meet our requirements for financial sponsorship. Details are available on the website at: <https://www.swodxa.org/dxgrant-application/> and elsewhere in this newsletter

Club History: The Southwest Ohio DX Association (SWODXA) is one of the country's premier amateur radio clubs. Though loosely formed in mid-1977, the club had its first formal organizational meeting in August of 1981 where Frank Schwob, W8OK (sk), was elected our first President. While organized primarily as a DX club, SWODXA members are active in all aspects of our hobby.

Requirements for Membership: We welcome all hams who have an interest in DXing. It doesn't matter whether you're a newcomer, or an old-timer to DXing; everyone is welcome! Visit <http://swodxa.org/member.htm>

Meetings: The club meets on the second Thursday of each month at Hunter Pizzeria in Franklin, OH, and virtually via ZOOM. Members gather early in the private room for dinner and then a short business agenda at 6:30 PM, followed by a program. If you enjoy a night out on the town with friends, you'll enjoy this get together. Meeting attendance is NOT a requirement for membership.

Club Officers: Four presiding officers and the past president (or past VP) make up the Board of Directors. The current roster of officers are: Past President Tom Inglin, NR8Z, President Bill Salyers, AJ8B; Vice President Brian Bathe, AD8FD; Secretary Ken Allen, KB8KE, and Treasurer Mike Suhar, W8RKO.

Website: We maintain websites at www.swodxa.org and www.swodxaevents.org managed by Bill, AJ8B. These sites provide information about a variety of subjects related to the club and DXing.

SouthWest Ohio DX Association (SWODXA)

DX Donation Policy

The mission of SWODXA is to support DXing and major DXpeditions by providing funding. A funding request from the organizers of a planned DXpedition should be directed to the DX committee by filling out an online funding request.

(<https://www.swodxa.org/dx-grant-application/>)

The DX Grant committee will determine how well the DXpedition plans meet key considerations (see below). If the DX Grant committee recommends supporting the DXpedition in question, a recommended funding amount is determined based on the criteria below. The chairman of the committee will make a recommendation at the general meeting on the donation.

Factors Affecting a DXpedition Funding Request Approval

DXpedition destination	Website with logos of club sponsors
Ranking on the Clublog Most Wanted Survey	QSLs with logos of club sponsors
Online logs and pilot stations	Logistics and transportation costs
Number of operators and their credentials	Number of stations on the air
LoTW log submissions	Bands, modes and duration of operation

H40GC	H44GC	ZL9HR	XX9D	HK0NA	FT4TA
KH1/KH7Z	EP2A	FT5ZM	C21GC	VK9WA	NH8S
K4M	CY9C	VK9MA	PT0S	FT4JA	YJ0X
6O6O	VP6D	TO4E	XR0ZR	VP8STI	VP8SGI
W1AW/KH8	K1N	3D2C	VK0EK	S21ZBB	E30FB
ST0RY	TI9/3Z9DX	VK9MT	K5P	9U4M	TX3X
VU7AB	3Y0Z	3C0L	TX7EU	CE0Z	3C1L
TI9A	3D2CR	3B7A	K9W	VU7RI	6O7O
C21WW	CE0Z	T30GC	T30L	D68CCC	W8KKF/WP5
K5D	3Y0J	T33A	3Y0J	CY9C	