



ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917

February 2019

PRESIDENT'S MESSAGE

BY GERRY VILLHAUER, W0GV

Hello DRC Members,

The holiday season is over, now we can get back to a more normal schedule. Cathy and I attended the NCARC hamfest in January and passed out flyers for our DRC Hamfest in August. We can't start too early getting the word out. We plan to have someone from DRC attend all the local hamfests and pass out flyers. Doing that really helps the vendors get our event on their calendar. Our 2019 event will be August 18th at Jeffco Fairgrounds.

We had a good attendance for our January meeting and a very good presentation by Robert White (K0RCW). He did a demonstration on the Shark RF OpenSpot 2. It is amazing how these devices have developed and the popularity is spreading like a wild fire. The newer open spots are so much easier to set up than the older versions. Besides that they are compatible with all the popular and not so popular digital modes. Thanks Robert for a great presentation!

Our February program presentation will be a bit different from the usual. Bill (W6OAV) has made arrangements with Ed Fong (WB6IQN) to make a presentation from California via Skype. Ed is a PhD in electrical engineering and holds several patents on the TBJ-1 series antennas. Ed is on staff at UC Santa Cruz where he teaches RF Wireless Communications and I/O Design Fundamentals. Ed has had several articles published in QST and CQ magazines along with other ARRL and commercial publications. Ed claims to have over 18,000 of these antennas distributed worldwide in amateur and commercial applications. This promises to be a interesting and educational program. Mark your calendar for Wednesday February 20th.

I also want to again mention, we are in winter season and as you all know, the weather can change quickly. If travel conditions are deemed to be unsafe, we will put out a cancellation notice or other related information in the timeliest manner possible. *If the weather looks questionable on a meeting night, listen to our 145.49/448.625 and 449.350 repeaters for last minute information prior to setting out to the meeting.*

Thanks to all of our new members who have recently joined the DRC. Your support is very much appreciated. Please come to meetings and events and stay active. Your name and call will be posted in this edition of the Round Table.

73 for now,

Gerry
W0GV
President



The DRC needs you!

Please contact W0GV (w0tx@w0tx.org) if you are interested in helping with:

Tower climbers for antenna maintenance: Training will be provided by our experienced tower climbers.

Chairperson for DRC Field Day in 2019: Assistance and guidance will be given to new chairperson. You will have help.

WHO'S NEW IN THE DRC?

BY BOB WILLSON, KC0CZ

The DRC is a very active club in the Denver metro area and we'd like to have all of our members listen for these new calls and personally to make them feel welcome. Welcome to our newest members:

Randy Williamson - KE0TNG	Gary Gillespie - K0HDI
James Parks - N0LTT	William Heldman
Fred Hollendorfer - KE0EF	Stan Smetana - KE0TSH

We have a number of activities throughout the year and we'd like very much for you to participate in serving your community. If you have questions please feel free to ask on any of the repeaters or see the contact information on the last page of this publication.

Also, please join us once a month at the regular club meeting on the 3rd Wednesday at 7:00 p.m. For new hams we have the Elmer session which starts at 6:00 p.m. before the regular meeting.

TECHNICAL COMMITTEE REPORT

BY BILL RINKER, W6OAV

The following is an overview of current issues.

DRC/TSA Aurora Site

Goal: Work with the TSA relative to establishing a "communications room" for the DRC.

Status: The Board is reviewing the MOU received from the TSA.

Station 4 Remote Power Control

Goal: Install Internet controlled power outlets.

Status: W0GN has installed an Internet controlled outlet power strip at Station 4. W0GN and KE0HFH will reconfigure the equipment and test the system ASAP.

Fusion Repeater

Goal: Train several club members how to program and maintain the Fusion Repeater system.

Status: W0GV will see if he can find a knowledgeable volunteer instructor. He will forward the volunteer's name to W6OAV who will locate volunteer students and establish a training date and location.

6 Meter Repeater

Goal: Troubleshoot audio and "buzz" issues.

Status: W0GV and N0ETV will organize a work party to troubleshoot the issues and to routine the systems.

JANUARY MEETING - WHAT'D I MISS?

BY BILL RINKER, W6OAV

The meeting was well attended which included a good number of visitors. After introductions club president Gerry Villhauer, W0GV, turned the meeting over to the guest speaker, Robert White, K0RCW. Robert's agenda consisted of a PowerPoint covering the MMDVM and the Openspot 2 hotspots followed by a live demonstration of the Openspot 2. Robert's presentation was titled "MMDVM Hotspots with Focus on Openspot 2".

After describing the features of the MMDVM and the Openspot 2 hotspots, Robert demonstrated how to configure both hotspots. Robert then demonstrated using an HT to communicate with the Openspot 2 and the BrandMeister network. There were interesting questions both during and after the presentation. Several members were heard to say that they were now interested in getting involved with the BrandMeister system.



FEBRUARY MEETING PRESENTATION

By BILL RINKER, W6OAV

If you are interested in learning about a high performance vhf/uhf vertical antenna, plan to attend the February meeting. Ed Fong, WB6IQN, will provide an interesting presentation via Skype from California. He will discuss his patented dual band antenna and the theory behind it. Ed's bio follows:

My name is Ed Fong WB6IQN and I am currently on the faculty of UC Santa Cruz- Silicon Valley. I currently teach the RF Wireless Communications course (EECS 407) and I/O Design Fundamentals (EECS 440). Previously I was with UC Berkeley, ext teaching RF Wireless (EECS 416) from 1998-2011.

I am the inventor of the TBJ-1 (US patent 9,608,336), DBJ-1, DBJ-2 and DBJ-UHF (US patent 8,947,313) antennas which are extremely popular among the ham and commercial communications community. Please email me if you wish copies of these patents. We have sold over 18,000 of these antennas in the last 10 years to hams, commercial and government agencies. I have published numerous articles on these antennas in QST and CQ (QST March 2017, QST February 2003 and QST March 2007, CQ Summer 2012). They also appear in the ARRL VHF/UHF Antenna Classics, ARRL Vol 8 Antenna Compendium, ARRL Vol. 3 Antenna Compendium. The proceeds of these antennas go to support my group at UC Santa Cruz - Santa Clara Valley.

LEARNING NET REPORT

BY FRED HART, AA0JK



Thanks go out to our Net Controllers: Doron (K1DBC), and Jim (AD0ZM).

The following topics were discussed this past month:

- Antenna, vertical vs horizontal take-off angle.
- Home brew 30 meter dipole.
- Homebrew 20 Meter Dipole Antenna -- Home Depot / Lowes Part 1 and 2
- AF5DN <https://youtu.be/P523GAymx7Q>
- W2T & W2P special event contacts.
- K3Y/9: <https://youtu.be/YhFK4idU3j8>
- MFJ-2386 antenna.
- New General Class Question Pool, Effective July 1: <http://ow.ly/NIDn101qNro#ARRL#HamRadio>.
- Scouts, Troop #999, new techs, and Radio Merit Badge awards recipients.
- Yaesu FT60 / FT70 programming.
- Differences between 75/80 meters.
- Touch lamps and RF interference.
- FCC operations during government shutdown.
- Fort Collins CW Group: <https://fococw.com/>
- Open Spot: <https://qrznow.com/openspot-is-a-standalone-digital-radio-ip-gateway-hotspot/>
- Echo Link: <http://echolink.org/>
- DMR: <http://www.dmr-marc.net/>
- 1010 net / Ten Ten International: <http://www.ten-ten.org/>

Great topics from our group. We certainly enjoy everyone's participation. Thanks to all. If you are listening and don't yet have your license, you can contact us via w0tx@w0tx.org or elmer@w0tx.org.

We are always looking for additional net control operators. If you would like to participate we can help you with the basics of becoming a net controller. This is a great opportunity to learn and get experience running a net.

Net controllers are always needed to perform Emergency Communications services. The Amateur Radio Emergency Service® (ARES) consists of licensed amateurs who have voluntarily registered their qualifications and equipment, with their local ARES leadership, for communications duty in the public service when disaster strikes. <http://www.arrl.org/ares>. In the event of emergencies such as floods, fires, or other public service, the amateur radio community is always ready to help. If you have an interest in participating, when the need arises, learn and train now to be prepared. For additional information contact our EmComm Coordinator: Mike Vespoli (KE0HFH) at emcomm@w0tx.org.

If we don't have the answer here on the net, we have a lot of experienced hams in the club that can help. Questions can also be submitted on the YAHOO Learning Net web page <https://groups.yahoo.com>. Here you will also find information from past activity that you might find of interest.

Getting that first Technician license? Upgrading to General or Extra? We're here to help. We would encourage those who have been Hams for several years to also join us. Your experience and input is welcomed. What topics would you like to discuss? Join us Wednesday nights, 7:30 PM, 145.490, 100 Hz PL tone & linked to 448.625, 100 Hz PL tone.

(Note: The third Wednesday of the month is devoted to the DRC club meeting. See the [W0TX web site](#) for additional information.)

73,

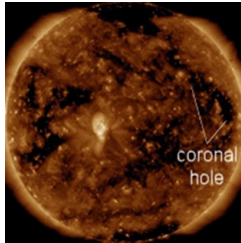
Fred
AA0JK

SOLAR UPDATE

PROVIDED BY FRED HART, AA0JK

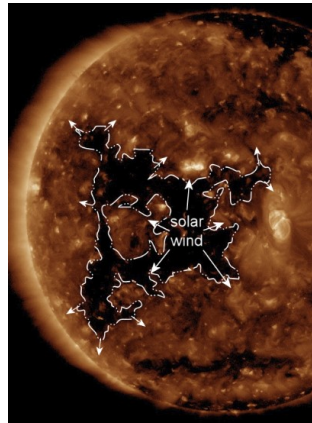
Happy New Year! The first day of 2019 was NOT spotless, since we saw emergence of a new region (but of old cycle polarity) AR 12732. The region had just produced a nice eruptive B2.8 flare.

January 1st - Solar wind had finally plateaued. Geomagnetic conditions were returning to normal.



Despite the Sun being spotless, we did have a bright region lighting up the Earth-facing Sun. It was enough to keep the solar flux near the low end of marginal for radio propagation on Earth's day side, and would continue to do so over the remainder of the week.

The next geomagnetic storm: A large hole in the Sun's atmosphere was turning to face Earth and spewing a stream of solar wind in our direction. NASA's Solar Dynamics Observatory photographed the structure on December 31st :

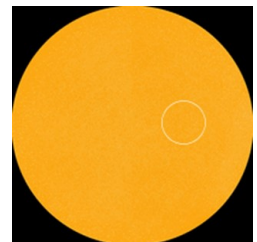


Traveling faster than 600 km/s, the gaseous material was expected to arrive on January 4th, 2019, possibly sparking the first geomagnetic storm of the New Year.

We've seen this hole before. It has been spinning around with the rotating Sun, lashing Earth with solar wind approximately once a month since it opened in August. The last time we felt its exhaust, was on December 7th and 8th.

The solar wind was slowly calming. Geomagnetic conditions were quiet. Solar flaring was low and expected to stay that way through the first few days of 2019.

A new sunspot, AR2732, was growing at the circled location. Its magnetic polarity marked it as a member of decaying Solar Cycle 24. Credit: SDO/HMI



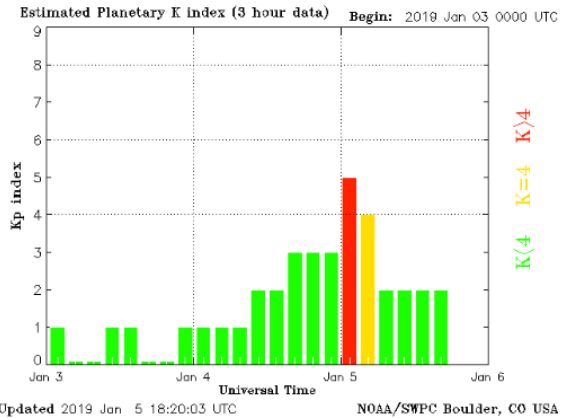
January 5th -

(Side Note: Amateur Extra Exam: E3 CO2 - What is indicated by a rising A or K index? An Increasing disruption of the geomagnetic field.)

Solar wind ignites big auroras: Earth was entering a stream of solar wind flowing from a large hole in the Sun's atmosphere. First contact on January 4th ignited big auroras around the Arctic Circle.

Intermittent G1-class geomagnetic storms were in progress as Earth moved deeper into the stream on January 5th. This stream of solar wind was wide and was expected to influence our planet for the following ~48 hours.

HF Band Conditions Were:
 80m – 40m - Day, Fair --- Night Good.
 30m - 20m - Fair.
 17m – 10m – poor.



Communications Conditions courtesy of www.hamqsl.com/solar.html

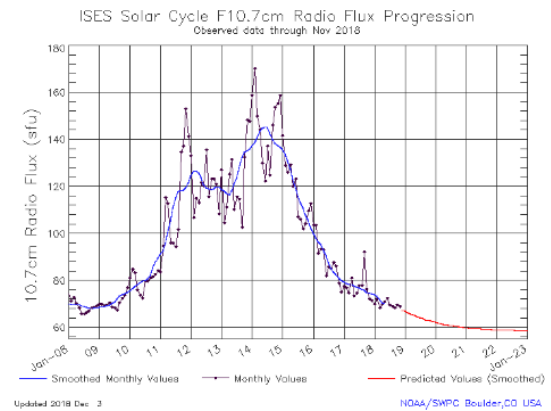
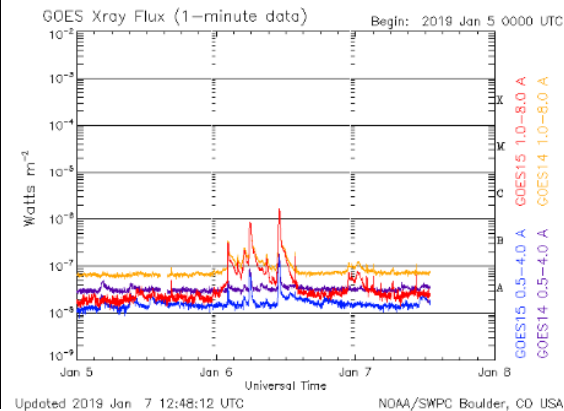
For current solar data / propagation information, see your [Denver Radio Club](http://Denver Radio Club website) website for the Solar - Terrestrial Data chart.

Week two

Solar-Terrestrial Data		
05 Jan 2019 1843 GMT		
SFI 72	SN 13	
A 9	K 2	
X-Ray A1.8		
304A 96.7 @ SEM		
PF 0	Ef 9	
Aurora	/n=	
Bz 1.2 SW	515.6	
HF Conditions		
Band	Day	Night
80m-40m	Fair	Good
30m-20m	Fair	Fair
17m-15m	Poor	Poor
12m-10m	Poor	Poor
VHF Conditions		
Aur Lat	No Report	
Aurora	Band Closed	
6m EsEU	Band Closed	
4m EsEU	Band Closed	
2m EsEU	Band Closed	
2m EsNR	Band Closed	
EHE Deg	Very Poor	
Solar Flare Prb	17%	
MUF	ES- SEASON BREAK	
MS	0 MIN 6 12 18 UTC MAR	
Geomag Field QUIET		
Sig Noise Lvl	S1-S2	
MUF US Boulder	NoRpt	
Current Solar Image		
http://www.noanh.com		
Copyright Paul L Herrman 2019		

January 6th - Earth was inside a stream of high-speed solar wind. When it arrived on January 5th, the onset of pressure against our planet's magnetic field produced a G1-class geomagnetic storm. After the geomagnetic activity had subsided, NOAA forecasters said it could renew as Earth continued its passage through the stream on January 6th.

Usually we can judge solar activity by sunspot number and solar flare magnitude but sometimes that is not the case. The sunspots can be inactive or the flares can be on the side of the Sun, or there could be filament, coronal holes, nano flares or other activity. The radio flux is a great all-around measurement of activity.



January 7th - Aurora Borealis: <https://youtu.be/1AYUJYSRTvM>

This is a "nitrogen fringe." Most auroras are green, the color of oxygen atoms being struck by energetic particles from space between 100 km and 300 km above Earth's surface. Pink appears when energetic particles descend lower than usual, striking nitrogen molecules at the 100 km level and below.

"Auroras--both pink and green--danced all above us on January 6th,"

There is anecdotal evidence that Solar Minimum produces an unusu-

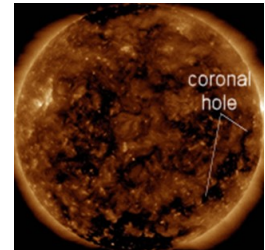


al number of pink and even white auroras. Why? The "flavor" (chemical and magnetic composition) of solar wind during Solar Minimum may differ from other phases of the solar cycle, producing its own palette of color. If this is the case, more pink lights were in the offing on January 7th as the solar wind continued to blow.

Earth was inside a stream of solar wind flowing from the indicated coronal hole. Credit: SDO/AIA

The sunspots and solar storms that cause the most magnificent displays of the northern lights occur roughly every 11 years. The solar cycle peaked in 2013, but it was the weakest solar maximum in a century.

"This solar cycle continues to rank among the weakest on record." Since record-keeping of the ebb and flow of the Sun's activity began in 1749, there have been 22 full cycles. Researchers monitor space weather events because they have the potential to affect spacecraft in orbit, knock out power grids, communications infrastructure on Earth, and ramp up normal displays of the northern and southern lights. Scientists are also investigating how fluctuations in the Sun's activity affect weather on our planet.



<https://www.space.com/15139-northern-lights-auroras-earth-facts-sdcmp.html>

What causes the colors? - The colors most often associated with the aurora borealis are, green, yellow, blue, violet, and occasionally orange pink and white. Typically, when the particles collide with oxygen, yellow and green are produced. Interactions with nitrogen produce red, violet, and occasionally blue colors.

The type of collision also makes a difference to the colors that appear in the sky: atomic nitrogen causes blue displays, while molecular nitrogen results in purple. The colors are also affected by altitude. The green lights typically in areas appear up to 150 miles (241 km) high, red above 150 miles; blue usually appears at up to 60 miles (96.5 km); and purple and violet above 60 miles.

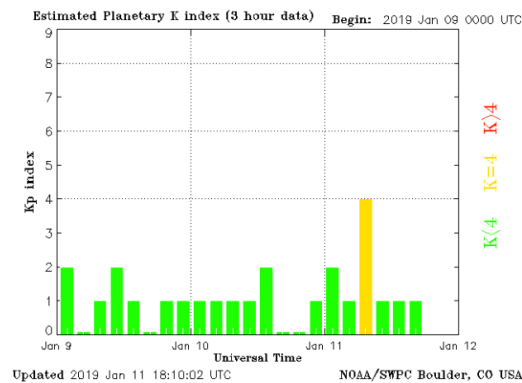
These lights may manifest as a static band of light, or, when the solar flares are particularly strong, as a dancing curtain of ever-changing color.

You can have an aurora experience without even leaving your house if you so choose. The Canadian Space Agency offers a live feed of the skies above Yellowknife, in Canada's Northwest Territories: <http://www.asc-csa.gc.ca/eng/astronomy/auroramax/>.

AuroraMax - Canadian Space Agency: <https://youtu.be/fCdcBAhQrVE>

Aurora Borealis Radio Propagation 101: <https://youtu.be/yShIAI2kMZw>

January 11th -



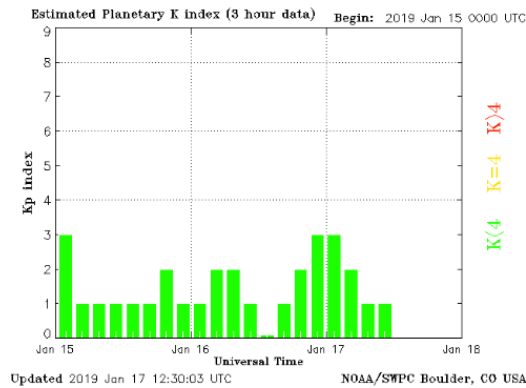
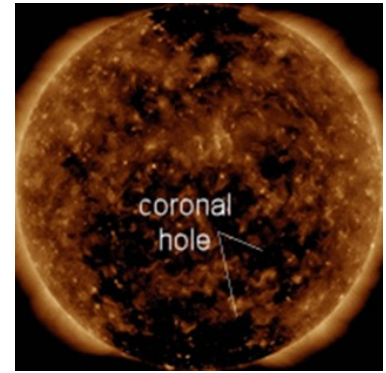
Weekend geomagnetic unrest: For the following few days, Earth was expected to pass through a number of minor solar wind streams associated with a southern hole in the Sun's atmosphere.

Solar wind flowing from this southern coronal hole was expected to graze Earth's magnetic field on January 12th or 13th. Credit: SDO/AIA

Week Three

January 13th - Solar minimum conditions were in effect: The Sun was without spots for 6 straight days--a sign that Solar Minimum conditions are in effect. This phase of the solar cycle brings high levels of cosmic rays, and long-lasting holes in the Sun's atmosphere.

January 17th - Space weather remained calm, and without solar flare activity. However a large coronal hole was nearly at center-disk, and was expected to be geo-effective over the weekend.

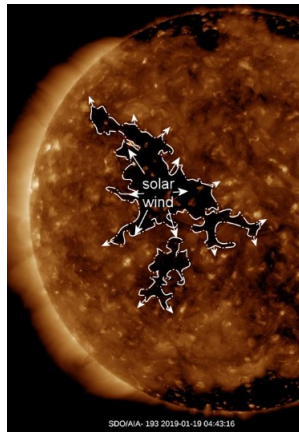
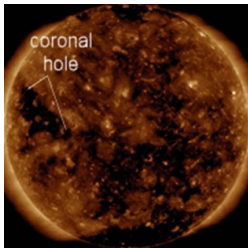


Minor geomagnetic storms were possible on January 23rd and 24th, when a stream of solar wind was expected to hit Earth's magnetic field. The gaseous material was flowing from an equatorial hole in the Sun's atmosphere.

Solar wind flowing from this equatorial coronal hole was expected to hit Earth's magnetic field, squarely, on January 23rd. Credit: SDO/AIA

The visible solar disk was spotless for the 11th straight day. The only feature of interest was coronal hole #68, which was expected to go geoeffective during the following week.

January 19th -
Credit: SDO/AIA



This equatorial coronal hole in the Sun's atmosphere was turning to face Earth, and it was spewing a stream of solar wind in our direction. Time of arrival was expected to hit Earth on January 23rd. NASA's Solar Dynamics Observatory photographed the structure on January 19th.

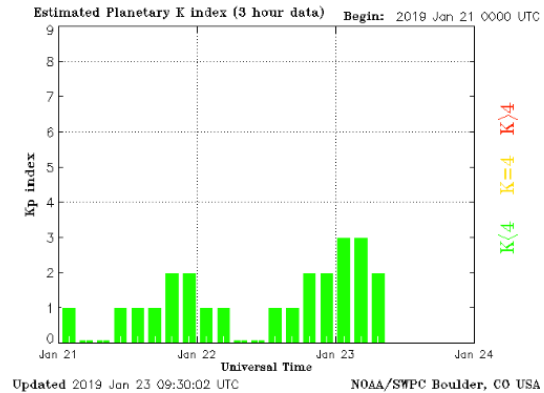
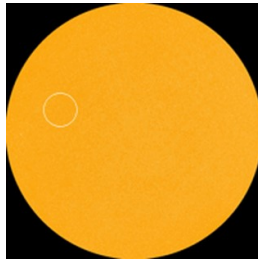
Solar-wind escaping from this coronal hole was emerging faster than 600 km/s. This is an ongoing region that first opened back in July 2018, and has continued to spin around the Sun, lighthouse-style, lashing us with solar wind once a month ever since. In late December 2018, it sparked a G1-class geomagnetic storm, disrupting HF communications.

(Extra Class Exam: E3C08 - What does the space weather term G5 mean? Ans: An extreme geomagnetic storm.)

Week Four

January 21st - A new sunspot AR2733 was emerging at the circled location. Credit: SDO/HMI

New sunspots were cresting into view on the eastern limb – no solar flaring. The coronal hole would begin to depart from the Earth-facing position, and its solar wind was expected to arrive within about 36-48 hours.



Sun 101 | National Geographic: https://youtu.be/2HoTK_Gqi2Q

Summary: Prepared jointly by the U.S. Dept. of Commerce, NOAA, Space Weather Prediction Center:

Solar activity remained very low, despite the emergence of new Region AR2733. (N06E22, Cro/beta). Region AR2733s growth stalled midway through the period, and appeared to show some signs of decay in the trailing, positive polarity field. No Earth-directed CMEs were observed in available coronagraph imagery.

Forecast: Solar activity was expected to remain very low, with a slight chance for an isolated C-class flare due primarily to the emergence, and development of Region AR2733. The recent stalled growth and early signs of possible decay lead to a trend forecast of very low solar activity, and less than a slight chance for flares.

73,

Fred
AA0JK

Note: This article is for the Denver Radio Club's Roundtable newsletter only. It is not authorized for any other use.

~Editor's Note: We would love to publish a monthly column profiling DRC members' stories about how they got into the ham radio hobby, their interests and backgrounds. The purpose of the column is to introduce DRC members to each other and to find commonalities between them. Please use Microsoft Word set to Arial and 10 point, and submit your story to drc.editor@gmail.com.

SCOUT TROOP OF ARVADA VISITS THE DRC

BY FRED HART, AA0JK

Scout Troop 999 of Arvada visited the January club meeting and introduced their newly licensed hams and radio merit badge winners.

Rhonda (Tech, merit badge counselor), Francis (KE0SIA, 12 yrs old), Doug (KE0SHI, merit badge counselor) and Caleb (call pending, 12 yrs old) were present.



The BSA's radio site is: <https://k2bsa.net/usa-radio-scouting-net/>

The Radio Merit Badge is among the BSA's most popular STEM (Science, Technology, Engineering, Math) merit badge and overall is in the top 50% of merit badges earned in Scouting with over 6,600 earned each year.

Scouting's Jamboree on the Air (JOTA) 2018 reported that total Scout participation in the annual fall event jumped by 36% from 2017. Each year more than 1 million Scouts and Guides get together over the airwaves for JOTA, which takes place on the third weekend of October. Since the first JOTA in 1958, millions of Scouts have become acquainted via Amateur Radio, and contacts sometimes result in relationships that extend for many years.

Thanks to everyone who joined us at the Denver Radio Clubs monthly meeting, and introducing us to their newly licensed Hams, and Merit Badge winners. A great accomplishment, and we encourage the Scouts to join us on a regular basis, and keep us informed about their exploits in the world of Amateur Radio. The Denver Radio Club is available to help Scouts experience the technology, fun, and magic of Amateur Radio. It was great to have you join us.

73,

Fred (AA0JK) and the DRC

Scout Frequencies: Here's detailed information on frequencies suggested as Scout amateur radio frequencies. These were initially suggested by the World Organization of the Scout Movement and their Jamboree on the Air organizer. As with all amateur radio frequencies they are a shared resource. If someone else is already on that frequency, move up or down to find a clear frequency for calling.

<https://k2bsa.net/scout-frequencies/>

The USA Radio Scouting net is active the second Thursday of every month beginning at 9 PM Central at Echolink Conference Node *JOTA-365* (480809). Tune in to join the discussion about Radio Scouting and particularly Jam-boree on the Air.

Local access: 449.350, -5 Mhz, 100.0 Hz. The reapter is located at Squaw Mountain (West of Denver), provides Wide Area Coverage, and is linked to EchoLink® node 4140. For additional DRC repeater information visit: <https://www.w0tx.org/repeaters.htm>

73,

Fred
AA0JK

VE UPDATE AS IT RELATES TO THE GOVERNMENT SHUTDOWN

PROVIDED BY TOM KOICIALSKI, KC2CAG

The recent government shutdown has caused delays in processing amateur radio licenses. For further information, please see the ARRL news items on the website:

<http://www.arrl.org/news/amateur-radio-applications-in-limbo-as-partial-shutdown-continues> (01/10/2019)
<http://www.arrl.org/news/fcc-outlines-impact-on-its-operations-of-potential-funding-lapse> (01/02/2019)

SPATIAL INTERFERENCE FILTERING TECHNIQUES

By JOHN FALLOWS, VE6EY

Earlier this year, I published a series on my web site about "Spatial Interference Filtering Techniques". The purpose of this information is to show hams and shortwave listeners some different ways to reduce interference and improve reception.

Spatial Interference Filtering, or beamforming, has traditionally been accomplished with analog components and phased antennas. Today, software defined radios can do beamforming and diversity reception digitally. This is accomplished with a dual-channel coherent SDR. By manipulating the phase and amplitude of IQ data, beamforming is easily achieved with two antennas. It's a great approach for diversity reception and interference cancellation. PowerSDR and Linrad both support these techniques.

Please take a moment to review the Spatial Interference Filtering Techniques articles. If you find them to be useful, please consider passing these along to [others].

These articles are located at: <http://play.fallows.ca/wp/series/spatial-interference-filtering-techniques/>

73,

John Fallows
VE6EY
Calgary, Alberta

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WHAT IF THE WEATHER CHANGES?

If we should experience a turn in the weather on the day of our monthly DRC meeting it may be necessary to cancel the meeting. If this should happen listen for meeting status reports on 145.49 or 448.625 MHz repeaters during the afternoon on the day of the meeting.

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A RADIAL PLATE FOR CHEAPSKATES

SUBMITTED BY BILL RINKER, W6OAV
FROM ROCKWELL COLLINS "SIGNALS" BY BILL SAVAGE, K3AN

A well-known ham antenna manufacturer sells a stainless steel plate that's designed to mount to a vertical antenna's support mast and provide connections for at least 60 ground radials. It appears to be a well-made product and has gotten good reviews on eHam.

However it's rather expensive and considerable overkill for my Inverted-L installation, so I set out to look for something that could serve the same purpose at a lower cost. What I ultimately found is remarkably cheap, and should meet the needs of anyone who doesn't have the time, real estate, or inclination to put down more than 30 ground radials.

What is it? It's nothing more than a replacement kitchen sink strainer that you can buy at Home Depot or Lowe's for about \$2.00. It's made from stainless steel and is "pre-drilled" for 10-24 size screws. You can readily install ten screws and nuts in the outermost ring of holes, and another five in the next ring. Install two solder or crimp-type terminal lugs under each nut and there's your 30-radial capacity. Furthermore, as shown in the photo, the strainer's center hole is large enough to fit over a copper-clad ground rod. You just have to remove the rubber stopper and pull out the metal center stem.

In my installation, each screw is fastened to the strainer with a compression lock washer and nut. Then the radial lugs are placed over the nut and secured by a second nut. To prevent "galling" or seizing up of the stainless hardware, I placed Noalox grease on the screw threads. I also placed some grease on the flat surfaces of the lugs. Home Depot and Lowe's carry Noalox in the electrical section.

Depending on how many sets of stainless hardware you buy, the total cost for the strainer, the stainless steel screws, nuts and washers, and a small tube of Noalox will be under \$10 to maybe as much as \$16. For that price there's no excuse for not sprucing up (and adding to) your vertical's radial system.



FACT OF THE DAY

Point-of-Use Surge Protectors

A point-of-use surge protector should protect each item of expensive electronic equipment in a home or office even if there is a service entrance surge protector on the incoming power line. There are several reasons this is important. Service entrance surge protectors sometimes fail if there is a direct lightning strike to power mains. However, the magnitude of the surge from a mains lightning strike likely will be reduced to some extent by a service entrance surge protector even if it fails. It may be reduced enough that 'second-line-of-defense' point-of-use protectors will be able to prevent damage to expensive equipment. Furthermore, lightning may directly strike wiring that is behind service entrance protection.

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Note to DRC Members:

Our club depends on the involvement and participation of YOU, our members. Do you have a skill or interest that could help the club. Maybe you want to volunteer to be on a committee? Like to write? Have ideas for improving what we do? Speak up and let someone know, all ideas are welcomed and participation is always helpful. ~Editor

THE ROUNDTABLE ARCHIVE

Go to: <http://www.wotx.org/roundtables.htm>

THE ROUNDTABLE ARTICLE INDEX

Go to: <http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf>

HAM SITE OF THE MONTH

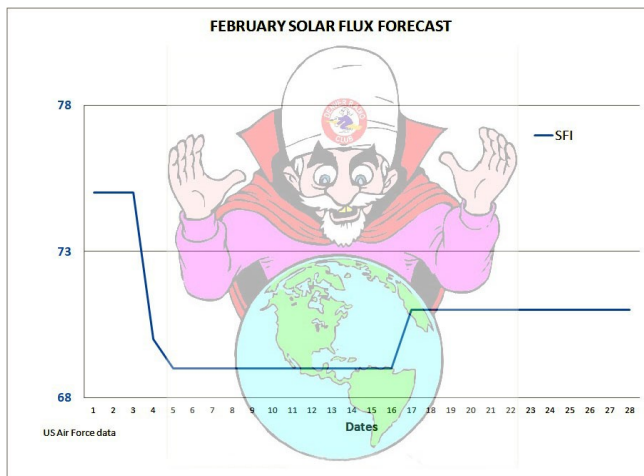
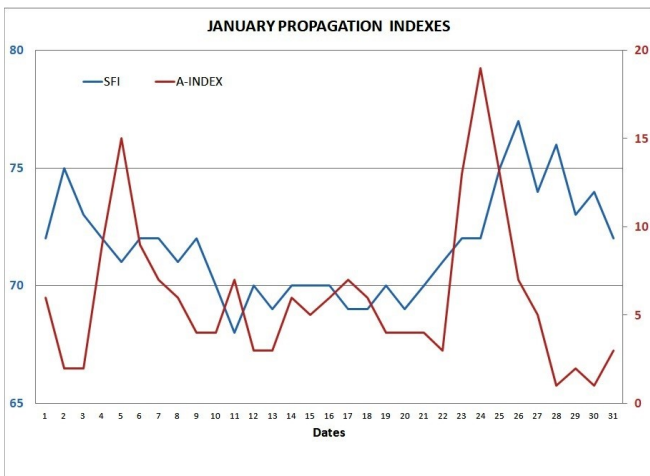
[EchoLink](#)

PAST & FUTURE PROPAGATION CONDITIONS

By Bill Rinker, W6OAV

The charts below show the Solar Flux and "A" indexes for last month and the forecast for this month's Solar Flux index.

Refer to the September 2010 *Roundtable* for more complete information on interpreting these charts, which is available at: [http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009\(SEP\).pdf](http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009(SEP).pdf)



UPCOMING EVENTS
HAMFESTS & CONVENTIONS

Event	Date	Location	Sponsor Website
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The Swapfest	02/17/19	Adams County Fairgrounds	Aurora Repeater Assoc.
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UPCOMING QSO PARTIES

The following are the Contests not sponsored by the ARRL. Please submit additions for future issues.

State/Province	Start Date	End Date	Sponsor Website	Notes
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Vermont	02/02/2019	02/03/2019	Radio Amateurs of Northern Vermont	
Minnesota	02/02/2019	02/02/2019	Minnesota Wireless Association	
British Columbia	02/02/2019	02/03/2019	Orca DX and Contest Club	
South Carolina	02/23/2019	02/24/2019	Columbia Amateur Radio Club	
North Carolina	02/24/2019	02/25/2019	Raleigh Amateur Radio Society	
Oklahoma	03/09/2019	03/10/2019	Oklahoma DX Association	
Idaho	03/09/2019	03/10/2019	Idaho QSO Party	
Wisconsin	03/10/2019	03/11/2019	West Allis Radio Amateur Club	
Louisiana	03/16/2019	03/17/2019	Louisiana Contest Club	



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ATTENTION

SUPPORT THE DRC FROM YOUR AMAZON PURCHASES

You can now support your Denver Radio Club when you make purchases from Amazon.com. Amazon Smile donates 0.5% of your purchase to the non-profit (501.c.3) organization of your choice. This is at no additional cost to you. To support the DRC just visit smileamazon.com. Select Denver Radio Club, Inc. as the organization you want to support and proceed with your order as usual. Amazon Smile will credit the DRC automatically. Thank you for your support.

DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090MHz (-1MHz) 107.2Hz PL	
Packet	145.05MHz<>14.105MHz	2 meter / 20 meter gateway. Useable by Technicians on 2 meters. See January 2015 RT.
2m	145.490MHz (-) 100Hz PL	Linked to the 70cm / 448.625MHz machine.
2m	147.330MHz (+) 100Hz PL	Local area. Has voting receivers. Does not TX a PL.
2m	147.330MHz (+) 131.8Hz PL	Test mode operation. Send signal reports to Tech Committee.
1.25m	224.380MHz (-) 100Hz PL	
70cm	447.825MHz (-) DCS~073; NB 12.5; +/- 2.5	Saint Anthony's. Note: This is a narrow band repeater requiring DCS.
70cm	448.625MHz (-) 100Hz PL	Linked to the 2m / 145.490MHz machine.
70cm	449.350MHz (-) 100Hz PL	Wide area coverage with Echolink, node # 4140.
70cm	449.775 MHz (-) 100Hz PL	Yaesu Fusion Digital, Wires-X and analog. 100 Hz tone required for analog.
70cm	446.7875MHz (-)	BrandMeister Repeater: Slot 1 – Wide Area Traffic, Slot 2 – Local Talk Group 310804



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

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FEBRUARY 2019		<i>DRC Net Sundays at 8:30 p.m. on 145.490 / 448.625 (no PL)</i>				
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2 
3	4  New Moon	5	6 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	7	8	9
10	11 School Club Round-up - Starts 1300 UTC	12 School Club Cont.  First Quarter	13 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL) School Club Cont.	14 School Club Cont. 	15 School Club Roundup - ends 2359	16 ARRL DX - CW Begins 0000 UTC
17 ARRL DX - CW Ends 2359 UTC	18 	19  Full Moon	20 DRC Meeting Elmer 6 p.m. General 7 p.m.	21	22	23
24	25	26  Last Quarter	27 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	28		

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Please Let Us Know

Over the years we occasionally hear from hams who have read the RoundTable in other states and countries around the world. We appreciate the comments and we would like to know where you are located. So if you live outside the Front Range or Denver Metro Area and read the newsletter either online, email or hard copy please send a short note via email with your *City, State or City, Country*.

We will publish it at a later date in our new regular feature called RoundTable RoundWorld.

To respond to this request send your information to drc.editor@gmail.com.

Subject: I'm located in...

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DRC members - this is your newsletter. Please email your club or amateur radio related suggestions to the editor. Members are the heart of The Denver Radio Club, so if you have an expertise or an interest in a particular segment of ham radio that you'd like to write about, you may email your submissions to drc.editor@gmail.com. The submission deadline is the 20th of the Month. ~ Editor