



ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917

January 2018

PRESIDENT'S MESSAGE

BY GERRY VILLHAUER, W0GV

Hello DRC Members,

I hope you all had a very Merry Christmas and enjoyable holiday season. Winter weather finally got here. Fortunately, our annual Holiday Party missed the cold and snow by only one day. The party came off very well by all reports in spite of a last minute disaster. When Cathy called to order the food, as previously planned with Boston Market, they refused to take the order. They stated they were "at capacity" although we had talked to them and had our profile put in their computer three days earlier and were assured the date we picked to order would be no problem. After the shock of "Oh my God, what are we going to do!" Cathy and I said we will have to do it ourselves. We set out for Costco, Sam's Club, King Soopers and a couple other places and had most of what we thought we needed by about 3 p.m. on Sunday. Oh Yeah! How about the meatloaf for 50 people? I contacted my long time friend Ernie Edwards of Edwards Meats at 44th and Youngfield. His crew made up the bulk meatloaf and Ernie said he would come to Highlands on Wednesday, bring the meatloaf and cut up the chickens for us. So with Ernie, Cathy, my daughter Marcy and granddaughter Kaylea, and our Jobs Daughters crew, we did it!

A big thank you to Jeff Irvin (KBOCHT) for his presentation at our Christmas/Holiday Party on the new Jefferson County Communications and 911 Center, JEFFCOM. This was very interesting and valuable information, especially if you live in Jefferson County. I believe Jeff will offer us a tour of the new facility when it is up and running and ready for visitors. We will be looking forward to that.

Our January program will be presented by Paul Deeth (WA2YZT). Paul is the Transmitter Maintenance Supervisor for KCNC-TV Channel 4. Previously Paul hosted us on a visit to the transmitter site on Lookout Mountain, which was super interesting. Paul's presentation is titled "Every day in TV production is Field Day". He will have behind the scenes pictures of how much wiring and equipment setup goes in to getting news back to the studio and to your home for viewing. Mark your calendar for January 17th so you don't miss it.

Thanks to our new members for making the DRC "Your Club". Please come to meetings and other events and stay active. Your name and call will be listed in this issue of the Round Table.

Finally, Thanks to everyone who attended the Christmas/Holiday party. It is very gratifying to the organizers knowing that we provided an enjoyable and successful event.

73 for now,
Gerry (W0GV)
President



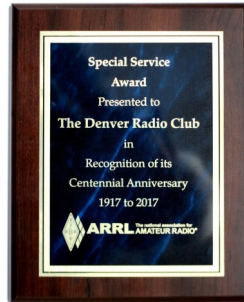
INSIDE THIS ISSUE			
December Meeting - What'd I Miss?	2	Radio Horizon	12
Who's New In The DRC?	3	Roundtable Feedback Request	12
Technical Committee Report	3	Stealth Antennas	13
DRC's 100th Anniversary Pins	3	Looking Back	17
January Presentation	4	Past & Future Propagation Conditions	19
Learning Net Report	4	DRC Calendar	22
Solar Report	5	DRC Board & Staff	23

DECEMBER MEETING – WHAT’D I MISS?

By BRENNAN PATE, ADOUZ

The hall was full with over 100 people attending the annual holiday party. This year Gerry (W0GV) was able to arrange the club’s use of the Highlands Lodge. The building is 90 years old and was a fitting venue for the 100th year celebration of the DRC.

Gerry greeted everyone and had Jack Ciaccia (WM0G, ARRL Rocky Mountain Section Manager) and Jeff Ryan (K0RM, Vice Director of ARRL Rocky Mountain Division) come up and they presented a plaque to the club that honors the 100th year anniversary. They read through an official motion from the ARRL, recognizing the club and it’s long history. The DRC was established 3 years after the ARRL.



Next, Jeff Irvin (KB0CHT), the Jefferson County Emergency Communications Authority Executive Director, started his presentation regarding local emergency services. He started off by giving some history of emergency services and the 911 system. Some interesting tidbits were that the 911 system started in 1967. By 1987 only 50% of the population was served by the 9-1-1 system. By 2000 96% of the geographic U.S. was covered. The 9-1-1 varieties include basic 9-1-1, enhanced 9-1-1 and next generation 9-1-1.

Jeff’s job has of late been to get several public agencies working together to amalgamate their comm systems. He talked about Motorola’s and Symphony’s consoles in JeffCom and noted there is a lot of potential with P25.

He gave an outline of the new JeffCom facility features and talked about how the various cities are working together to provide more tightly integrated services and communications. He went on to talk about future goals and fielded several questions.

After Jeff spoke Gerry started the prize drawings. There were several “universal gift cards,” a couple antennas, miscellaneous parts, books and the grand prize of an HT.



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.

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:

- Bob Rosenstein - K9IV
- Mark Cary - KE0NUG
- Paul Rezac - W0DPD
- Ryan Rezac - KE0PDY
- James Oleson - KB0OIJ
- Gary Staiger - KE0NRN
- William Greene - W0GVT
- William Stewart - KE0PNZ

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. There was no December meeting.:

DRC/TSA Aurora Site

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

Status: WW0LF sent a letter to the TSA describing the services that the DRC can provide and recommendations for the communications equipment and antennas. WW0LF will meet with the TSA representative as soon as possible.

Station 4 Remote Power Control

Goal: Install Internet controlled power outlets.

Status: WG0N has installed an Internet controlled outlet power strip at Station 4. KE0HFH will configure the system as soon as possible.

Centennial Cone Remote Power Control

Goal: Document equipment to be controlled by the Internet controlled power outlets. Install the outlets.

Status: One the remote power control is operational at Station 4; the same system will be installed at Centennial Cone.

Fusion Repeater Move

Goal: Discuss the feasibility of moving the Fusion repeater to a better coverage location.

Status: Feasibility study is in progress.

Fusion Repeater Wires Interface

Goal: Get the Wires Interface on line.

Status: A local ham knowledgeable about Wires will meet several tech committee members at the site to program the interface.

Fusion Repeater Wires Interface

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

Status: Once the Wires Interface is functioning, a group training session will be scheduled.

DRC's 100TH ANNIVERSARY PINS

By W0TX STORE

If you would like to commemorate the 100th year of the Denver Radio Club then ask about getting your very own commemorative pin. The cost is \$3 for one or two for \$5. They are available at the monthly face-to-face. Please talk to Gerry, W0GV. They are about 1" tall and 0.75" wide.



JANUARY MEETING PRESENTATION

By BILL RINKER, W6OAV

Be sure to attend the January meeting presentation. Paul Deeth, WA2YZT, will be the presenter. His past presentations have always been very interesting. Paul's presentation is titled "Every day in TV production is Field Day". He will have lots of behind the scenes pictures of how much wiring and equipment setup goes in getting news back to the studio and the viewers at home. Figure 1 shows an electric power distribution box for portable generator power to live and satellite trucks on a big news story in Denver.

Paul's Bio follows.

I have worked in TV for 45 years; the last 20 at the CBS owned station KCNC-TV as the Transmitter Mainte-

nance Supervisor. I have a 1st class radiotelephone license that was needed to work in Radio and TV in the 70's and 80's. Winner of 5 Heartland Chapter Emmy awards for Television Engineering Excellence for the engineering work on the Boulder Bolder race remote broadcast.

I have been a HAM since 1973 with a General class license. Am owner of the TRBO UHF repeater at Lookout Mt with interconnection to the RM Ham Radio statewide system. I have been working with RM Ham Radio for several years on the State DMR system installing microwave dishes and antennas at sites. I host the D-STAR system at Lookout Mt.

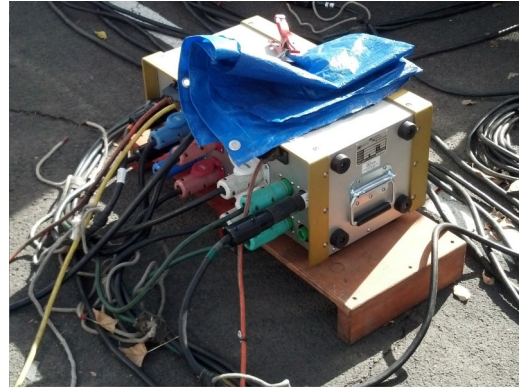


Figure 1 - Electric power distribution box

LEARNING NET REPORT

BY FRED HART, AA0JK

Thanks goes out to our net controllers: Larry (K0LAI), Alex (KS0E). The following topics were discussed this past month:

Antenna analyzers:

Build Your Own Antenna Analyzer for under \$50

hamstack.com/hs_projects/k6bez_antenna_analyzer.pdf

Powerpoles Power Distribution Blocks

Powerpoles Supply Voltage monitors

ANDERSON POWERPOLE Connectors

MFJ 1116 Power Distribution Block with voltage meter, switch, fuses

Backpack go kit field radios

https://youtu.be/yjZVBKND_II

Ham-O-Can Redux: The Operator G1 by Hardened Power Systems

<https://youtu.be/HhgWj8h12wo>

<https://youtu.be/viC7qyfXPmM>

Maldol HVU-8 compact HF/VHF/UHF vertical

<http://www.eham.net/reviews/detail/4310>

Comet Window Feed-Thru Jumpers

<https://www.dxengineering.com/search/product-line/comet-window-feed-thru-jumpers/cable-connector-end-2/uhf-female-so-239>

HT programming preferences / Setting up priority frequencies.

Denver CERT Emergency Communications Module on January 13, 2018

Presented by the Office of Emergency Management and Homeland Security

Learn about:

- The role of CERT in emergency communications How to use a communications plan
- Communications modes and technologies, including different phone and radio types
- An overview of basic two-way radios and how to use them

ELMER SESSION START TIME

The Elmer Session Starts at 6 p.m. before the regular 3rd Wednesday DRC Meeting! All are welcome. Meet in Hearing Room # 2.

Come join in on the sharing of information.

- How a CERT member participates in Net Operations?
- Radio discipline techniques to encourage effective communication
- How to use tactical call signs
- How to make a call on a radio
- Proper radio use techniques

Start Time: 8:00 a.m.

End Time: 1:00 p.m.

Location: Denver Police District 1, 1311 W 46th Ave, Denver, CO 80211

For more information or questions, please contact: Carolyn H Bluhm, MPCP @ 303-725-3084

<http://www.ci.denver.co.us/content/denvergov/en/office-of-emergency-management.html>

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. 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 Coordinators: Mike Vespoli (KE0HFH) or Brennan Pate (AD0UZ), at emcomm@w0tx.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.

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 / 448.625.

(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

November was leaving us with minor geomagnetic enhanced storming. A relatively weak coronal mass ejection (CME), was expected to deliver a glancing blow, triggering isolated minor (G1) geomagnetic storming at higher latitudes.

As of 01:37 UTC November 30th , the solar wind speed was at near 470 km/s and the Bz component of the interplanetary magnetic field was pointing south (-8nT).

Space Weather Prediction Center – December 1st, 12:30 UTC. Prepared jointly by the U.S. Dept. of Commerce, NOAA.

Solar activity was forecast to be very low over the following three days.

Note: Unlike your local weather forecasts for five days, solar forecasts are limited to three days.

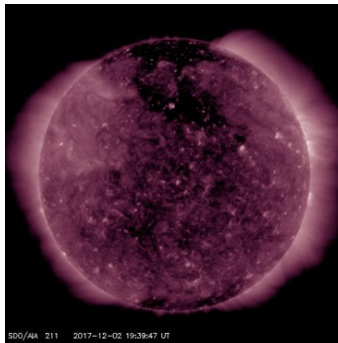


Space Weather Prediction Center, December 1st, 2017 @ 1230 UTC:

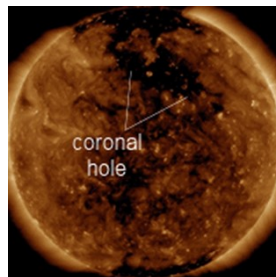
24 hr Summary: Solar activity was very low. Region AR2689 (N13W85, Axx/alpha), the only active region on the visible disk, was stable throughout the day. No Earth-directed CME's were observed in available satellite imagery.

Forecast: Solar activity was expected to persist at very low levels over the following three days (1st - 3rd Dec.).

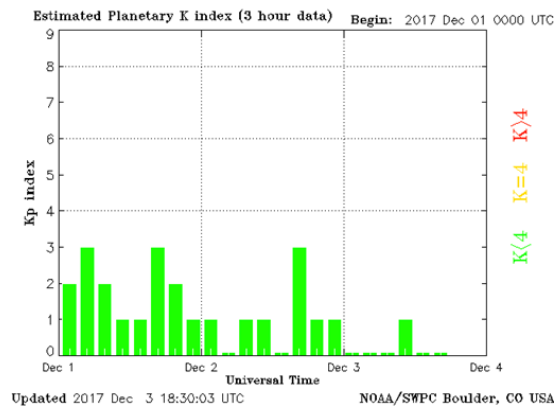
December 2nd - Geomagnetic Storm Watch Began December 4th. Coronal Hole #45 was beginning to face our planet. A high speed solar wind stream flowing from this zone was expected to reach Earth beginning December 4th and was expecting to lead to minor (G1) geomagnetic storming at higher latitudes. An isolated period of Moderate (G2) storming also was possible. Image below courtesy of SDO/AIA.



Sunday, December 3rd - The Sun was blank; no sunspots. Solar wind flowing from the indicated coronal hole was expected to reach Earth on December 4th or 5th. Credit: SDO/AIA

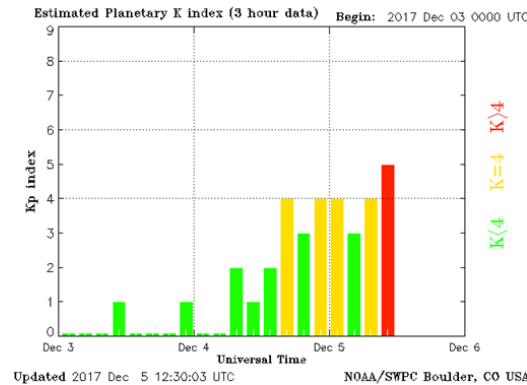


GEOMAGNETIC STORMS WERE PREDICTED (G2-CLASS): A high-speed stream of solar wind was approaching Earth, and NOAA forecasters said there was a 75% chance of polar geomagnetic storming when it arrived on December 4th or 5th.

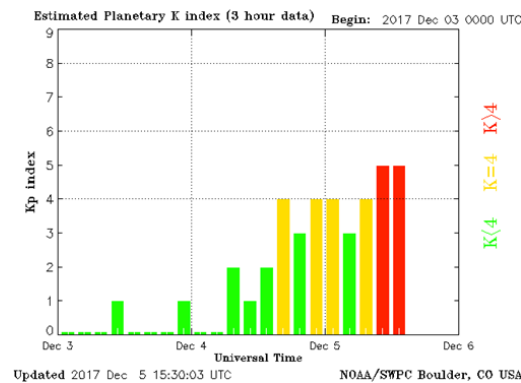


December 4th - Two Weeks in the Life of a Sunspot: <https://youtu.be/SungFXUsqgw>

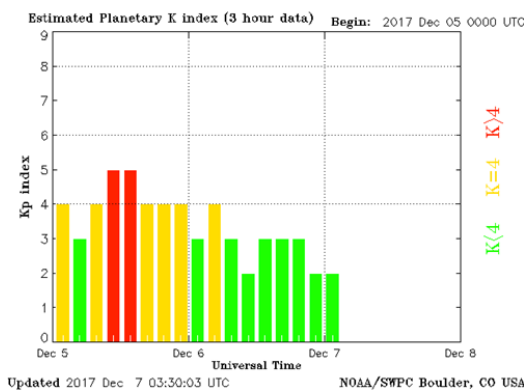
December 5th - A stream of solar wind was beginning to move past Earth. Enhanced geomagnetic activity (Kp 4) was being observed at higher latitudes. A Minor (G-1) to Moderate (G-2) geomagnetic storm watch was in effect as the stream continued to disrupt Earth's geomagnetic field.



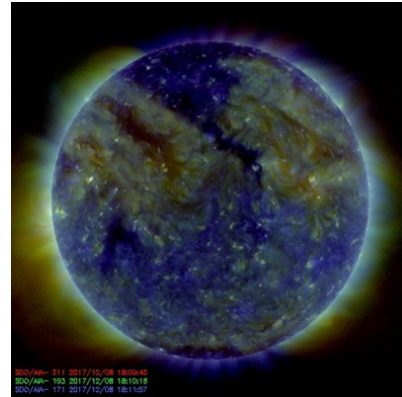
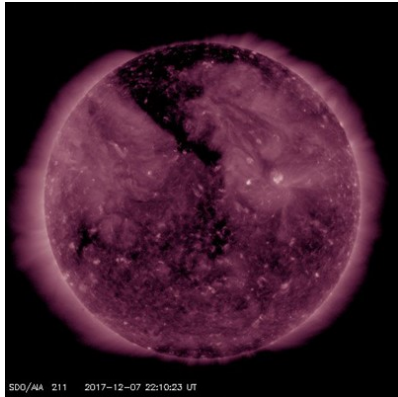
Minor G1 geomagnetic storm (Kp5) Threshold Reached: 10:17 UTC. The solar wind speed was moderately high (535 km/sec.)



Wednesday, December 6th, 2017 - GEOMAGNETIC STORM UPDATE: Minor G1-class geomagnetic storms were underway on December 5th as a fast-moving stream of solar wind passed around our planet. Predictions of stronger G2-class storms were not being fulfilled.



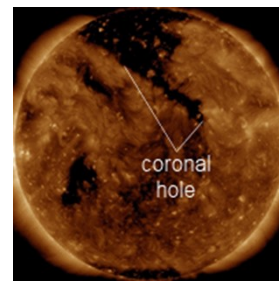
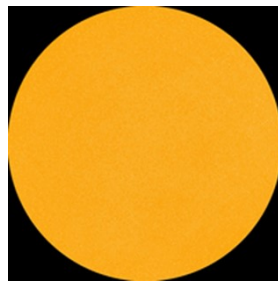
December 7th - We were coming down from fast solar winds that gave us minor solar storming, that was weaker than expected. Conditions were only expected to stay quiet for a few days before getting hit with another small pocket of fast solar wind that was expected to bump us back up to storm levels. Amateur radio operators had been suffering through poor conditions due to no active regions in Earth view. Except for region AR2690, that was emerging slowly, a larger, brighter region was returning to Earth view in four days. This was expected to boost the solar flux and radio propagation.



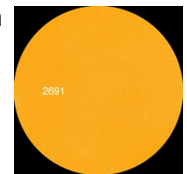
Credit: SDO. Solar images as viewed through different filters.

Week Two

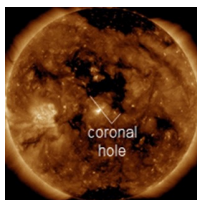
Sunday, December 10th - The sun was blank--no sunspots. Credit: SDO/HMI and SDO/AIA.



Solar wind flowing from the indicated coronal hole was expected to reach Earth on December 11th or 12th. Gaseous material was flowing from a canyon-like hole in the Sun's atmosphere. Minor geomagnetic storms were expected as the fast-moving, ~1.1 million mph, solar wind stream reached Earth. Credit: SDO/HMI



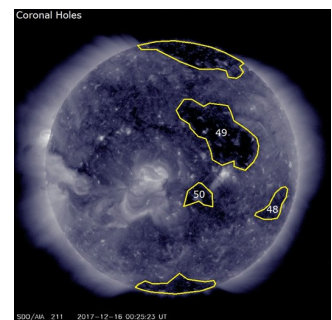
New sunspot AR2691 was tiny and posed no threat of strong solar flares. December 11th, @ 16:45 UTC, an elevated solar wind stream was beginning to move past Earth. Enhanced geomagnetic activity was expected at higher latitudes.



Thursday, December 14th - Solar wind flowing from the indicated coronal hole was expected to reach Earth on December 16-17. Credit: SDO/AIA

Dr. Tamitha Skov: <https://youtu.be/KY0I83t1VL0>. During week two, we had entered a period of increased solar activity that was expected to last through the end of the year. A pair of coronal holes were bringing us intermittent fast moving solar wind. This meant that we were expecting a boost in radio propagation. A nice holiday gift for amateur radio operators.

December 16th - A fairly large coronal hole (49) was facing our planet. A high speed solar wind stream flowing from this zone was expected to reach Earth by December 17th. Enhanced geomagnetic activity, possibly reaching Minor (G1) geomagnetic storm levels were expected for locations at higher latitudes. Image courtesy of SDO/ AIA.



Summation of week two: The sunspot group AR2691, emerged on December 10th with one spot that increased to three over the following two days, only to disappear by the 13th.

Sunspot and solar flux numbers were low enough that coverage of local 75 and 80 meter bands were unable to reflect high angle radiation at 3.5-4 Mhz. Propagation de K7RA: <http://mydxe.blogspot.com/2017/12/arrl-propagation-bulletin.html>

Reports from the weekend's ARRL 10-Meter Contest indicated terrible conditions. Local operators on Saturday were hearing nothing but local area CW signals, no phone.

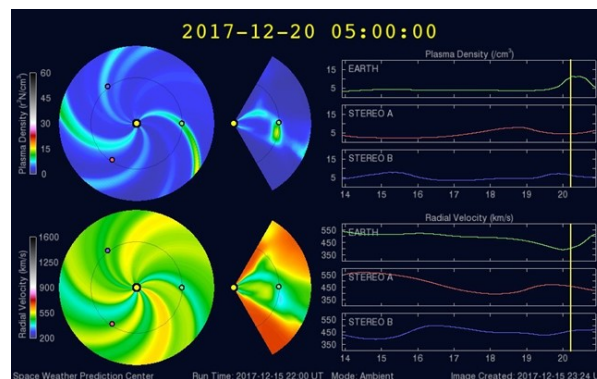
JT8 (the latest mode from K1JT) seems to have taken the amateur radio service by storm in recent months, with an amazing rate of acceptance due to its weak signal capabilities and easy implementation.

But check out this blog post from NW7US regarding the Olivia mode, which facilitates actual conversations via weak signals: <http://bit.ly/2kuX7aS>

For more information concerning radio propagation, see the ARRL Technical Information Service at <http://www.arrl.org/w1aw-bulletins-archive/ARLP036/2017>. For an explanation of numbers used in this bulletin, see https://www.ngdc.noaa.gov/stp/geomag/kp_ap.html.

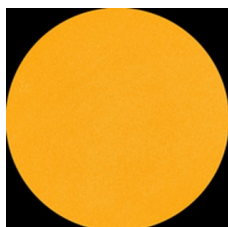
Week Three

Sunday, December 17th - The Forecast For Solar Wind Arrival: A stream of solar wind flowing from a hole in the sun's atmosphere was blowing around Earth faster than 600 km/s. NOAA forecasters estimate a 55% chance of G1-class storms on December 18th as Earth moved deeper into the stream.



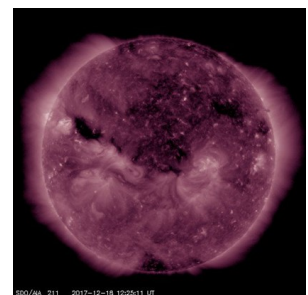
December 18th - A trans-equatorial coronal hole was facing Earth. Enhanced solar wind was expected to arrive within ~3 days. Credit: SDO/AIA.

How do solar flares impact Earth? <https://youtu.be/Ayn58bJCK-Y>



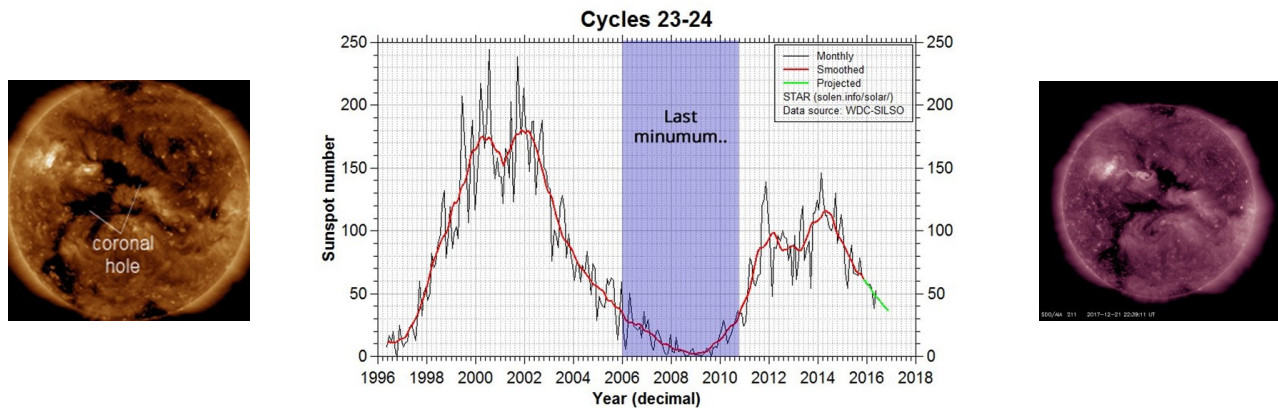
As of December 18th, the sun was without spots for 100 days . The last time the sun crossed this threshold was in 2009 (260 spotless days) when the solar cycle was just beginning to rebound from a century-class Solar Minimum. This time we are entering a new Solar Minimum. In 2018 we can expect at least twice as many spotless days (200+) as blank suns once again become the norm.

The sun was blank; no sunspots. Credit: SDO/HMI.



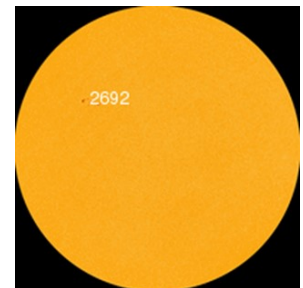
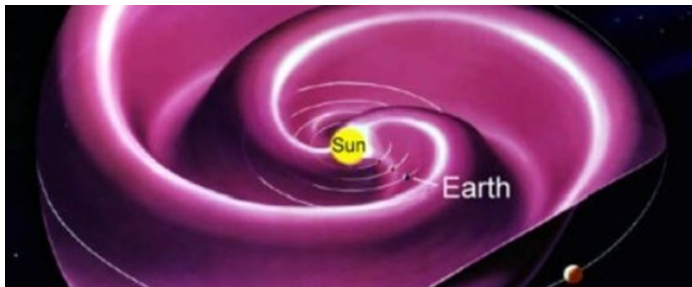
December 21st - NORTHERN WINTER BEGINS: December 21st , was the shortest day of 2017 for anyone living north of the equator. It's the December solstice, when the sun reaches its lowest point on the celestial sphere.

Solar Cycle 24 as it progresses towards solar minimum.

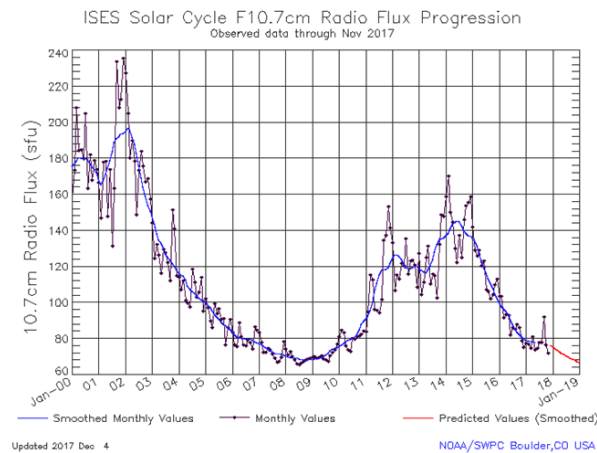


Solar wind flowing from the indicated coronal hole was expected to reach Earth as early as December 24 - 25. Credit: SDO/AIA.

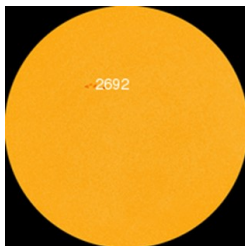
Sunspot region AR2692, the first visible numbered region in about a week. There only appeared to be a small chance for minor C-Class solar flares. Sunspot AR2692 was crackling with minor B-class solar flares. Credit: SDO/HMI.



SOLAR SECTOR BOUNDARY CROSSING: On December 22nd, Earth crossed into a fold of the heliosphere current sheet. A vast wavy structure in interplanetary space separating regions of opposite magnetic polarity. This is called a "solar sector boundary crossing," and it can disrupt the HF bands as it triggers geomagnetic activity around Earth's magnetic poles.



Current Radio Flux Progression as we dip down into solar minimum.



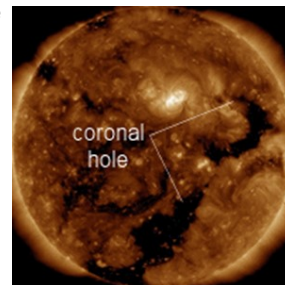
December 23rd - Sunspot AR2692 is growing rapidly and crackling with B-class solar flares. Credit: SDO/HMI.

Tamitha Skov Solar Report: *The Sun Gives Gifts for the Holidays: Solar Storm Forecast*, <https://youtu.be/YJnQvu0FZ-E>. By TamithaSkov, published on December 23.

Week Four

December 24th - Earth entered a high-speed stream of solar wind that was causing some disruption to the HF bands. The stream was flowing from a sprawling hole in the sun's atmosphere. The Earth was expected to remain inside the gaseous stream for at least 24 hours.

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



December 26th - On Tuesday, Earth was exiting a fast-moving solar wind stream. As the gaseous stream subsided, NOAA forecasters had reduced the odds of any polar geomagnetic storms.

Geophysical Activity Summary 25/2100Z to 26/2100Z: The geomagnetic field was at quiet to unsettled levels for the 24 hour period. Solar wind speeds reached a peak of 484 km/s at 26/1945Z. Total IMF reached 8 nT at 25/2105Z. The maximum southward component of Bz reached -5 nT at 25/2146Z. Electrons greater than 2 MeV at geosynchronous orbit reached a peak level of 704 pfu.

Forecast: (Prepared by the U.S. Department of Commerce, NOAA, Space Weather Prediction Center.)

- A.) NOAA Geomagnetic Activity: The greatest expected 3 hr Kp index for December 26th - 28th was at level 3
- B.) NOAA Solar Radiation Activity: Solar radiation, as observed by NOAA GOES-15. No S1 (Minor) or greater solar radiation storms were expected.
- C.) NOAA Radio Blackout Activity and Forecast: No R1 (Minor) or greater radio blackouts were expected. No significant active region flare activity was forecast.

Note: Popular Science, "The Sun will knock out the grid", by Sarah Scoles/Dec 25, 2017: "GPS is extremely susceptible, and just blindly trusting it is nuts." <https://flipboard.com/@flipboard/-in-all-likelihood-someday-the-sun-will-/f-82f5296939%2Fpopsci.com>. This article was originally published in the January/February 2018 Power Issue of Popular Science.

73,

AA0JK
Fred

ATTENTION

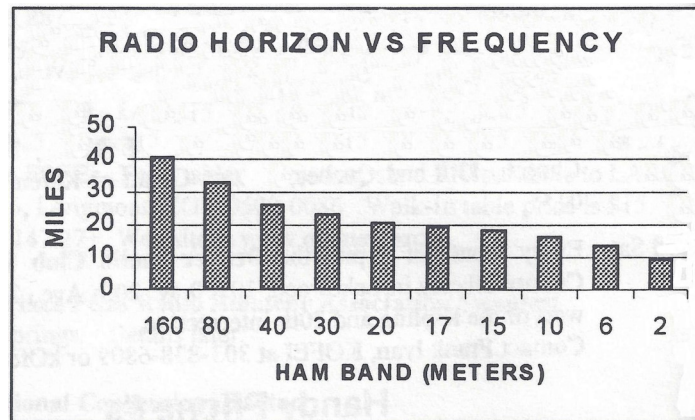
The DRC Board of Directors meetings are held on the 4th Wednesday of the month and are open to any member. Due to scheduling of meeting space, the board does not always meet at the same location and on occasion meetings are held via Skype. Anyone wishing to attend, please contact a board member prior to meeting night for specific information.

The Radio Horizon

By BILL RINKER, W6OAV

Radio waves propagating through space (sky wave) travel in a straight line. However, radio waves propagating along the surface of the earth (ground wave) tend to hug the earth's surface. They are "bent" over the horizon to a certain extent before going out into space. Consequently, the radio horizon is further than the optical horizon. The degree of "bending" is dependent upon the frequency and the ground conductivity. The lower the frequency the greater the "bending". This fact explains why stations on the lower frequencies can communicate further via ground wave than stations on the higher frequencies.

The chart shows the average radio horizons in miles for the various ham bands. The data was derived from a ground wave program written by G4FGQ. The output of the program pretty much agrees with what I have experienced over the years.



ROUNDTABLE FEEDBACK REQUEST

By ANONYMOUS, AD0UZ

As we head into 2018, we'd like to get some feedback from Roundtable readers about the newsletter. You can find a short survey at the following site: <https://www.surveymonkey.com/r/QW5JC5H>. So far we've had 4 responses. As we are nearing 145,398.5 people on the distribution list (Ok, just kidding, but it is a few hundred.) we'd appreciate a few more responses to get a better data sampling so that our margin of error is reduced down from +/- 83%, to something more reasonable.

Please go there and give your honest, anonymous feedback. We want to have a good, informative, entertaining newsletter, and need your assistance in reaching those goals. If you run into any problems with the survey please email drc.editor@gmail.com.

Thanks!

~ GET PUBLISHED ~

We welcome and encourage all members to share their experiences and stories so that we can all learn from one another. It can be long or short. If we can't fit it into one newsletter, we can split it across multiple issues. Not a writer? We have volunteers that will listen to your story and put it into an article, and of course you will have the opportunity to review and approve prior to publication. Your contribution to the club is welcomed and appreciated. ~Editor

GOING STEALTH

BY FRED HART, AA0JK

Going Stealth - There seems to be no limit to ones creativity. Here we see the stealth antenna movement in action.



Those aren't coconuts in that tree folks.



Hum??? is that a mono-bander vertical? Wonder if the elements topside rotate :)



Stealth antennas; "What's in your back Yard"?

73,
AA0JK
Fred

Understanding Engineers!

FROM THE SIGNALS ROCKWELL COLLINS ARC NEWSLETTER, JUNE 2016

[HTTP://WWW.W5ROK.US](http://www.w5rok.us)

Understanding Engineers #1

To the optimist, the glass is half-full. To the pessimist, the glass is half-empty. To the engineer, the glass is twice as big as it needs to be.

Understanding Engineers #2

A priest, a doctor, and an engineer were waiting one morning for a particularly slow group of golfers.

The engineer fumed, "What's with those guys? We must have been waiting for fifteen minutes!"

The doctor chimed in, "I don't know, but I've never seen such inept golf!"

The priest said, "Here comes the greens-keeper. Let's have a word with him." He said, "Hello George, What's wrong with that group ahead of us? They're rather slow, aren't they?"

The greens-keeper replied, "Oh, yes. That's a group of blind firemen. They lost their sight saving our clubhouse from a fire last year, so we always let them play for free anytime!"

The group fell silent for a moment. The priest said, "That's so sad. I think I will say a special prayer for them tonight" The doctor said, "Good idea. I'm going to contact my ophthalmologist colleague and see if here's anything she can do for them."

The engineer said, "Why can't they make them play at night?"

Understanding Engineers #3

What is the difference between mechanical engineers and civil engineers? Mechanical engineers build weapons. Civil engineers build targets.

Understanding Engineers #4

The graduate with a science degree asks, "Why does it work?"

The graduate with an engineering degree asks, "How does it work?"

The graduate with an accounting degree asks, "How much will it cost?"

The graduate with an arts degree asks, "Do you want fries with that?"

Understanding Engineers #5

Three engineering students were gathered together discussing who must have designed the human body.

One said, "It was a mechanical engineer. Just look at all the joints."

Another said, "No, it was an electrical engineer. The nervous system has many thousands of electrical connections."

The last one said, "No, actually it had to have been a civil engineer. Who else would run a toxic waste pipeline through a recreational area?"

Understanding Engineers #6

Normal people believe that if it ain't broke, don't fix it.

Engineers believe that if it ain't broke, it doesn't have enough features yet.

Understanding Engineers #7

An engineer was crossing a road one day, when a frog called out to him and said, "If you kiss me, I'll turn into a beautiful princess."

He bent over, picked up the frog, and put it in his pocket. The frog spoke up again and said, "If you kiss me, I'll turn back into a beautiful princess and stay with you for one week."

The engineer took the frog out of his pocket, smiled at it and returned it to the pocket.

The frog then cried out, "If you kiss me and turn me back into a princess, I'll stay with you for one week and do anything you want."

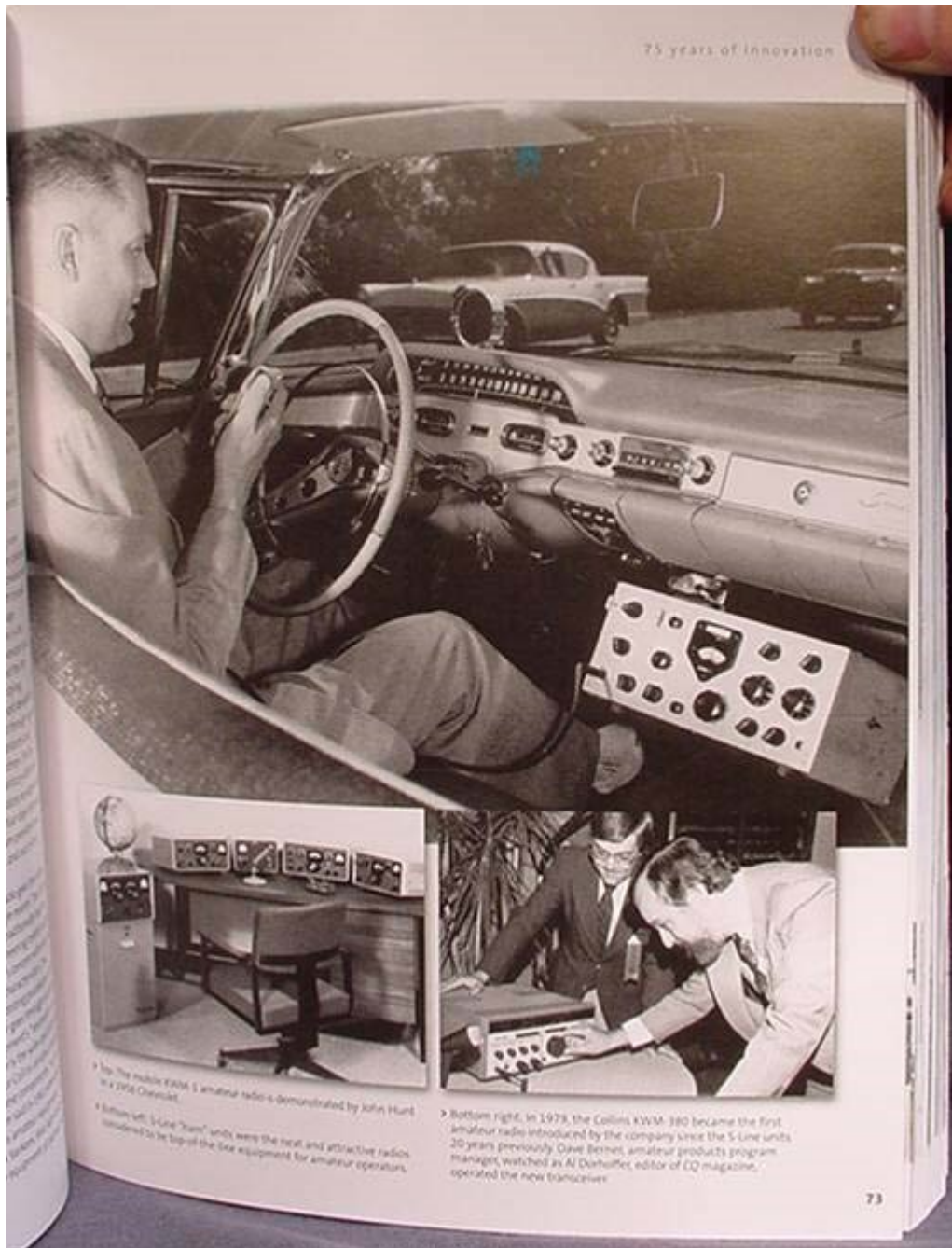
Again, the engineer took the frog out, smiled at it and put it back into his pocket.

Finally, the frog asked, "What is the matter? I've told you I'm a beautiful princess and that I'll stay with you for one week and do anything you want. Why won't you kiss me?" The engineer said, "Look, I'm an engineer. I don't have time for a girlfriend. But a talking frog - now that's cool!"

And finally...

Two engineers were standing at the base of a flagpole, looking at its top.

A woman walked by and asked what they were doing.
 "We're supposed to find the height of this flagpole," said Sven, "but we don't have a ladder."
 The woman took a wrench from her purse, loosened a couple of bolts, and laid the pole down on the ground.
 Then she took a tape measure from her pocketbook, took a measurement, then announced, "Twenty one feet, six inches," and walked away.
 One engineer shook his head and laughed, "A lot of good that does us. We ask for the height and she gives us the length!"



> Top: The mobile KAM-5 amateur radio is demonstrated by John Hunt in a 1956 Chevrolet.

> Bottom left: S-Line "beam" units were the real and attractive radios considered to be top-of-the-line equipment for amateur operators.

> Bottom right: In 1979, the Collins KWM-380 became the first amateur radio introduced by the company since the S-Line units 20 years previously. Oive Berner, amateur products program manager, watched as Al Dorchester, editor of EQ magazine, operated the new transceiver.

Image courtesy of Collins Book Shop @ <http://collinsbook.com/collins-photos/collins-radio-books/>

LOOKING BACK AT THE DRC, PROVIDED BY WOODY LINWOOD (W0UI)

December 1960 - "6 Meters and Up" report and "Did you know?" facts.

SIX METERS AND UP

By **GLENN, WØIJR**

The fourth annual Mile Hi Hi-Banders Banquet seems to be in shape. We are at this writing hoping for FB weather (with tongue in cheek, I regret one thing, by the time you read this, the banquet will be history. We have a copy deadline to meet.)

Large crowds are expected to drool over the fabulous prizes from Rapsco, Fistells, McGrath's of Boulder and Johancen Printing also of Boulder. Other possible donors are still in the mill.

Number of band openings during October and November were more than expected. The F-2 (dx) skip has been delinquent this fall. As yet no prospect is in sight.

We welcome eight new calls to the six-meter group. Dick, KØHWA; Dave, KØWFT; Art, KØZQR; Lan, K7BEX/Ø; Birt, K8BEX/Ø; Chuck, KØSJM; Rog, KØDNW; Welcome back to Dick, WØZGR who is attending Regis College from Missouri. Milo, KØVXN, checked into the net activity while passing through Denver.

KØRHW of Boulder is no longer a fixed station after difficulty with a wind storm. He is now restricted to mobile activity.

Rog McGrath, KØDNW of McGrath Electronics in Boulder (one of our newest members) is attempting to convert over to strictly ham equipment.

Gil, KØJSQ of La Porte, Colorado, was finally worked from Denver on six. Probably due to more power and antenna changes.

Skeds with WØIJR and others have been set up for the 55-mile ground wave. We are hoping to someday work stations in Colorado Springs.

New net frequency is 50.55 Mc. and will go into effect during January 1961. Anyone still wishing crystals please contact KØMOH at SK 6-2409.

Ø—Ø—Ø

DECALS . . .

(Continued from Page One)

has been received for renewal. If your call is listed below and you are still in Denver County and want call letter plates reissued, you should get in touch with the Motor Vehicle Dept., City and County Bldg.

WØIND, WØNCH, WØYAW, WØAZT, WØDDF, WØFFL, WØGDM, WØGPX, WØHHE, WØJHI, WØKUB, WØLBA, WØLGF, WØOHL, WØOJS, WØREQ, WØSOB, WØSYA, WØWLE, WØWTW, and WØWSK. KØEHG, KØPTD, KØARM, KØBBY, KØBUV, KØGQC, KØJAL, KØLLO, KØMOH, KØOKO, KØOKP, KØPMH, KØPSV, and KØRRS.

Did U Know . . .

That Mars has two moons. One of them Phobos—circles the planet every seven hours and 39 minutes.

—Ø—

That Soviet exports of oil drilling equipment to capitalist countries reached a record high this year.

—Ø—

That the Denver area will soon have an OBS station on the air. Watch for announcement and sked in *The Round Table*.

—Ø—

That Don, KØCEQ, has his beam up on a new crank-up tower. Can you compete with a Ranger now, Don?

—Ø—

Deadline for **The Round Table** is the day preceding the first Thursday of each month. All advertising and copy must be in by that time.

Ø—Ø—Ø

"Buy-Sell-Swap" ads are available free to members of the Denver Radio Club at the rate of two ads per membership year. More than two ads per year or ads to non-members will be charged at the rate of \$3.50 per ad of reasonable length.

Ø—Ø—Ø


DRC meetings held third Wednesday of every month.

Place—Sabin Hall, Colorado General Hospital.

Time—7:30 p.m.

Visitors always welcome.

QSLs
JOHN COX - PRINTER
West 4-4739



Crossword Puzzle

By Chris Codella, W2PA (The solution is on the next page.)

Across

- 1. Cluster cmd
- 4. Tribander part
- 8. *10MHz, with 30-down
- 14. Grammy category
- 15. Sushi fish (some may generate RF noise)
- 16. Especially comfortable place for a DXpedition, say
- 17. Words of understanding
- 18. Radiation from a "cloud burner"
- 19. EP city
- 20. Early radio construction material
- 22. Part of IARU (abbr.)
- 24. 5Z
- 25. Contender, e.g., for ARRL director
- 27. Copies
- 29. 160m luminary Perry
- 30. Polar explorer, early radio user
- 31. Early radio noise maker
- 34. WAS item
- 36. Charge opposite?
- 37. Spectrum Defense _____
- 38. With 40-across, a hint to solving the clues indicated with a *
- 39. Paddle
- 40. See 38-across
- 41. Sky hooks, briefly
- 42. Some HV paths
- 43. Young's accounting partner
- 44. Relative of cap. and ind.
- 45. Bumpkin
- 46. Wire, from 44-across, say
- 47. Simple
- 48. Conclusion
- 51. Monastery head

- 54. RF effect
 - 56. Fly high
 - 57. Flying high
 - 59. Used to stabilize a crystal
 - 61. Owed
 - 62. VHF antenna measurers?
 - 63. 59-across product
 - 64. Before, in verse
 - 65. *7MHz, with 30-down
 - 66. Some service hams
 - 67. Band condition influencer
- Down**
- 1. *21MHz, with 50-down
 - 2. Internet cry?
 - 3. What's needed after barefoot tower climbing?
 - 4. Doubled, it's a "net"
 - 5. "Recent Equipment"
 - 6. 50's Collins
 - 7. "Hey ... over here!"
 - 8. Crumb
 - 9. Stank
 - 10. Blown resistor remnants
 - 11. Norse goddess of fate
 - 12. *3.5MHz, with 30-down
 - 13. I-land island peak
 - 21. Mimeographs
 - 23. E, F and others
 - 26. ___-do-well
 - 28. Prefix with -selector
 - 30. *
 - 31. Microwave parts
 - 32. Some gates
 - 33. W6 summer time
 - 34. Kind of tissue
 - 35. Nearly always 9

- 36. Electromagnetic, and others
- 37. Coulombs per volt
- 40. "It's ___ real!"
- 42. Ether
- 45. Prefix with -geneous
- 46. Amplifier type
- 47. Place to stay at the Hamvention, possibly
- 48. Libya
- 49. C2
- 50. *See 1-down
- 51. Ethereal
- 52. *5.4MHz, with 30-down
- 53. Kind of joint
- 55. One V per mA
- 58. UA 73
- 60. Tfc. org.

1	2	3		4	5	6	7		8	9	10	11	12	13
14				15					16					
17				18					19					
20			21		22			23		24				
25				26			27	28						
		29					30					31	32	33
34	35						36					37		
38							39				40			
41					42					43				
44				45					46					
			47					48					49	50
51	52	53					54	55				56		
57						58		59			60		61	
62								63					64	
65								66					67	

FACT OF THE DAY

Guy Insulator Capacitance

It is well known that antenna tower metallic guy cables should be separated into non-resonant lengths by means of insulators to avoid antenna radiation pattern distortion, frequency detuning, symmetry imbalance, feed impedance change, and other problems that resonant conductors near an antenna can cause. However, the effect of guy insulator capacitance is often overlooked. A long conductor that is separated into sections by insulators is only truly separated at radio frequencies if the insulators have no capacitance. All insulators have capacitance. Therefore, a long metallic guy cable that appears to be broken into sections by insulators is in reality a long conductor with series loading capacitors. Series loading capacitors raise the resonant frequency of a long conductor by an amount that depends on their number, spacing, and individual capacitive reactances. The resultant resonant frequency is not the resonant frequency of the individual sections as is usually assumed. ©2005 Martek International All rights reserved

B	Y	E		T	R	A	P		O	R	A	N	G	E	
R	A	P		E	E	L	S		R	E	S	O	R	T	
O	H	S		N	V	I	S		T	E	H	R	A	N	
W	O	O	D		I	N	T	L		K	E	N	Y	A	
N	O	M	I	N	E	E		A	P	E	S				
		S	T	E	W		B	Y	R	D		G	A	P	
S	T	A	T	E		F	L	E	E		F	U	N	D	
C	O	L	O	R		O	A	R		B	A	N	D	S	
A	N	T	S		A	R	C	S		E	R	N	S	T	
R	E	S		H	I	C	K		L	E	A	D			
				M	E	R	E		F	I	N	D	I	N	G
A	B	B	O	T		S	K	I	N		S	O	A	R	
E	L	A	T	E	D		O	V	E	N		D	U	E	
R	U	L	E	R	S		H	E	A	T		E	R	E	
Y	E	L	L	O	W		M	A	R	S		S	U	N	

HAM SITE OF THE MONTH
[Diamond Antennas](#)

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

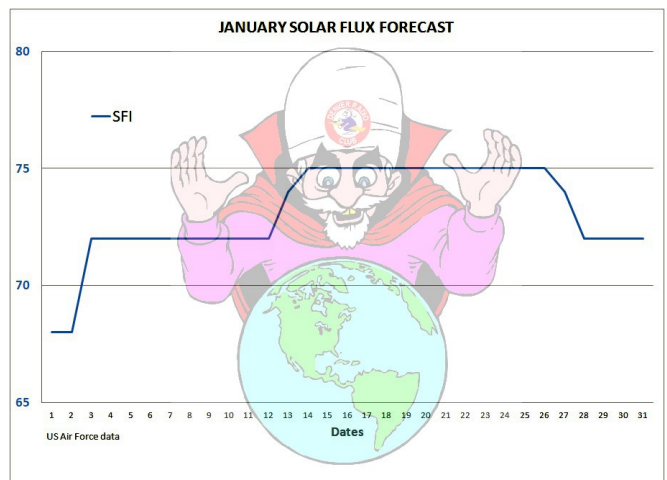
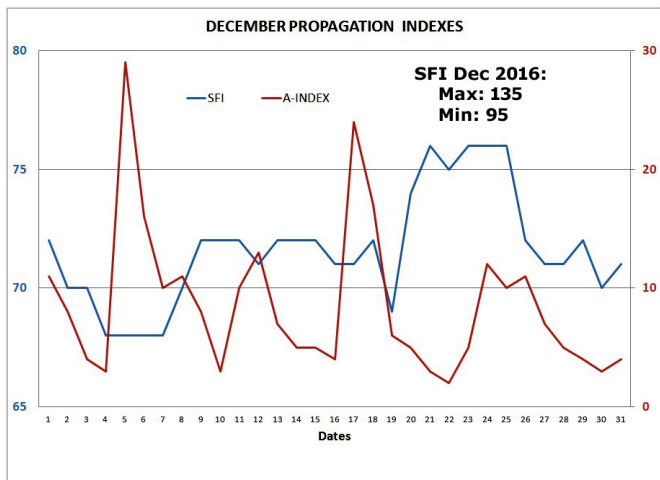
THE ROUNDTABLE ARTICLE INDEX
Go to: <http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf>

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. Issues of the *RoundTable* are 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
Winter Hamfest 2018	01/20/18	Larimer County Fairgrounds - Thomas McKee 4H Building	Northern CO ARC

UPCOMING ARRL CONTESTS & EVENTS [ARRL CONTEST CALENDAR](#)

Contest	Start Date	Start Time	End Date	Stop Time	Notes
Kids Day	01/06/18	1800 UTC	01/06/18	2359 UTC	
RTTY Roundup	01/06/18	1800 UTC	01/07/18	2400 UTC	
January VHF	01/20/18	1900 UTC	01/22/18	0359 UTC	

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
Montana	01/27/2018	01/28/2018	Flathead Valley Amateur Radio Club	Based on 2017 date.
British Columbia	02/03/2018	02/04/2018	Orca DX and Contest Club	
Vermont	02/03/2018	02/04/2018	Radio Amateurs of Northern Vermont	Based on 2017 date.
Minnesota	02/03/2018	02/03/2018	Minnesota Wireless Association	
South Carolina	02/24/2018	02/25/2018	Columbia Amateur Radio Club	
North Carolina	02/25/2018	02/26/2018	Raleigh Amateur Radio Society	Based on 2017 date.
Idaho	03/10/2018	03/11/2018	Idaho QSO Party	

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



HRO 12 STORE BUYING POWER WORKS FOR YOU!!

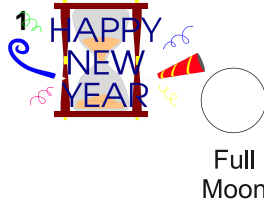




www.hamradio.com

8400 E. Iliff Ave #9, Denver, CO 80231

303-745-7373 800-444-9476

24 HOUR FAX 303-745-7394

e-mail: denver@hamradio.com

JANUARY 2018		DRC Net Sundays at 8:30 p.m. on 145.490 / 448.625 (no PL)				
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1  Full Moon	2	3 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	4	5	6 Kids Day - Begins 1800 UTC, ends 2359 UTC RTTY Roundup - Begins 1800 UTC
7 RTTY Roundup - Ends 2400 UTC	8  Last Quarter	9	10 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	11	12	13
14	15 	16  New Moon	17 DRC Meeting Elmer 6 PM General 7 PM	18	19	20 January VHF - Begins 1900 UTC
21	22 January VHF - Ends 0359 UTC	23	24 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)  First Quarter	25	26	27
28	29	30	31 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)			

DRC BOARD OF DIRECTORS

President	W0GV	Gerry Villhauer	303-467-0223	w0gv@hotmail.com
Vice-President	K0HTX	Dave Gillespie	303-795-8225	k0htx@comcast.net
Secretary	WW0LF	Orlen Wolf	303-279-6264	owolf@mines.edu
Treasurer	K0TOR	Jim Beall	303-798-2351	k0tor@arrl.net
Board Member	WY0J	Jan Alan Dickover	303-697-0725	jad.wy0j@gmail.com
Board Member	AD0GX	Kevin Schmidt	720-641-5920	ad0gx@arrl.net
Board Member	WG0N	Dave Baysinger	303-987-0246	wg0n@arrl.net
Board Member	K0WSU	Paul Olson	303-885-7275	66cadillac@wispertel.net

DRC STAFF AND VOLUNTEERS

Benevolent		Carolyn Wolf	303-330-0721	Contact owolf@mines.edu
Club Librarian	WG0N	Dave Baysinger	303-987-0246	wg0n@arrl.net
Education	AA0JK	Fred Hart	303-420-3536	elmer@w0tx.org
EmComm Coordinator	KE0HFH	Michael Vespoli	303-215-8862	emcomm@w0tx.org
EmComm Coordinator	AD0UZ	Brennan Pate	303-578-6283	emcomm@w0tx.org
Field Day	AC0UA	Jason Smallwood	<i>Check Roster</i>	sjason67@msn.com
Membership	KC0CZ	Bob Willson	303-659-0517	rwillso2@centurylink.net
Net Control	K0TOR	Jim Beall	303-798-2351	k0tor@arrl.net
Public Relations	N0USN	James Fariello	303-659-3319	jamesfariello@gmail.com
RT Managing Editor	AD0UZ	Brennan Pate	303-578-6283	drc.editor@gmail.com
RT Associate Editor	W6OAV	Bill Rinker	<i>Check Roster</i>	<i>Check Roster</i>
Hamfest Manager	N0CRZ	Cathy Villhauer	303-467-0223	drcfest@w0tx.org
Tech. Committee Chair	W6OAV	Bill Rinker	<i>Check Roster</i>	<i>Check Roster</i>
Trustee	WW0LF	Orlen Wolf	303-279-6264	owolf@mines.edu
TSA Coordinator	KA0BBQ	Barry Wilson	<i>Check Roster</i>	ka0bbq@arrl.net
VE Team	KC2CAG	Tom Kocialski	720-284-1911	kc2cag@arrl.net
Web Master	N0LAJ	Bill Hester	<i>Check Roster</i>	<i>Check Roster</i>

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...

EDITOR'S NOTE © 2018 Denver Radio Club. Articles in the RT may be reprinted with permission for non-commercial or educational use only.

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