ROUNDTABLE

The Denver Radio Club Newsletter

Since 1917 **April 2019**

President's Message

By Gerry Villhauer, W0GV

Hello DRC Members,

Will this be the last snow for the season? Maybe, maybe not, who knows here in Colorado. One good thing, the temperatures will be much higher once we get into April.

I want to say Congratulations and Welcome to Jeff Irvin (KB0CHT) our newly elected board member. Jeff is a welcome addition to our board of directors and brings a world of knowledge with him.

Thanks to Peter (KC0DGM) for his presentation and demonstration of WWII era radios used by the German Luftwaffe, Royal Air Force and the American Air Corps. Peter's program generated lots of questions from the audience and I have received many comments how much our members enjoyed the presentation. Great Job Peter!

We have another very interesting program in store for April. Are you interested in learning all about WWVB, WWV, and WWVH? If so, plan to attend the April 17th DRC meeting. Matt (N0RGT) will cover the history of WWVB, WWV and WWVH. He will give an overview of the stations, the creation of the timing signal and its path through the transmitters and out to the antennas. Matt will talk a little about propagation and touch on some uses of the signal. And he will be answering your questions about the stations. This is a program you will not want to miss. Mark your calendar for Wednesday April 17th.

There is still a remote possibility of bad weather in April. Please be aware that should any situation arise that would cause us to cancel the meeting, we will put out that information on the 145.49/448.625 and 449.250 repeaters as early as possible. Also, should any local emergency situation arise, that would cause us to look for radio operators, the same holds true, listen to the repeaters for information and requests.

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 Roundtable.

73 for now,

Gerry
W0GV
President

The DRC needs you!

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

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:

Michael Carrington - WA5ZTE	Matthew Keleher - W0MDK	Kelly Sobanski - KB8OGP
Edward Dauer - KN1CBR	Pete Sobanski - AB8WN	Harold Hallikainen - W6IWI
James Hollabaugh - W6TMU	-	John Craig - KE0VCW

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 and corresponding with the TSA relative to the installation of wiring and coax runs.

Station 4 Remote Power Control
Goal: Install Internet controlled power outlets.
Status: WG0N has installed an Internet controlled outlet power strip at Station 4. WG0N and KE0HFH will reconfigure the equipment and test the system ASAP.

6 Meter Repeater
Goal: Troubleshoot audio and "buzz" issues.
Status: WG0N and N0ETV will organize a work party (weather permitting) to troubleshoot the issues and to routine the systems.

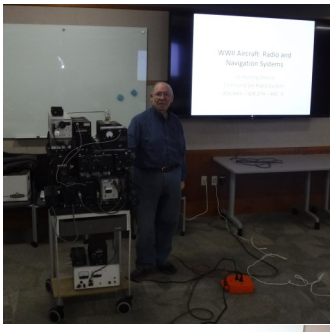
Develop Fusion Repeater Tech Support
Goal: Train several tech committee members to assist with programming and maintaining the Fusion Wires-X repeater system.
Status: K0SVT has volunteered to do the training after he finishes moving in March.

Generate DRC Membership Interest in Fusion
Goal: Educate the membership about Fusion and the DRC Fusion repeater.
Status: AE2L is scheduled to present his comprehensive Fusion PowerPoint at the June meeting.
https://parkerradio.files.wordpress.com/2018/02/parker-radio-association-fusion-wires-x-presentation.pdf

Move the Fusion repeater to Centennial Cone
Goal: Provide better coverage.
Status: The board has approved the move. A request has been issued to the Frequency Coordinators.

March Meeting - What'd I Miss?

By Brennan Pate, AD0UZ



The March meeting had about 56 people in attendance. Gerry (W0GV) went over some announcements regarding the Fusion repeater's move to Centennial Cone. They are currently waiting on the Coordinator for approval. It should provide better coverage. Jeff Irvin (KB0CHT) was elected to replace Paul Olsen's position on the DRC's board. He's the director of the Jeffco Emergency Communications Authority.

Next, Peter (KC0DGM) gave a presentation on WWII aircraft radio and navigation systems. Peter grew up in Germany and has long had an interest in radio communications. He has acquired the parts for a full bomber's radio station / position over the years, and had an SCR 274 on display.

The display consisted three receivers, two transmitters, selective box for VHF, station transmitter, receiver control panel, antenna relay and other items. One of the more interesting aspects was the beeswax capacitor. The system used AM and CW and a wire antenna of undetermined length.

He went over several slides the provide a history of the development and equipment used by radiomen and the German counterparts. He also explained navigation procedures and techniques and provided the history on US and German military radios and frequencies.

Peter then fielded some questions, several of which were quite technical in content.

Learning Net Report

By Fred Hart, AA0JK

Thanks go out to our Net Controllers: Doron (K1DBC).

The following topics were discussed this past month:

- The dual band (144-148 MHz and 440-450 MHz) model DBJ-1 JPOLE Antenna
- PSK31 FT8 and digital-mode set-up.
- Satellite tracking and antenna use in communications via satellites.
  https://heavens-above.com/main.aspx and http://arrowantennas.com/

- K7AGE https://youtu.be/6A9ZrHNkG9E and https://youtu.be/1HfvmU_utI8
- New Ham's – Programming their new radios.
- Software and cable: https://www.rtsystemsinc.com/
- RTS Tutorials https://www.rtsystemsinc.com/Articles.asp?ID=439
- RF Faraday Shield
- RV Prepper Faraday Shield https://youtu.be/jWz3OLt8dC4

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. Elmer Session: 6 PM, Main Meeting: 7 PM. See the W0TX web site for additional information.)

73,

Fred
AA0JK

April Meeting Presentation

By Bill Rinker, W6OAV

Interested in learning all about WWVB, WWV, and WWVH? If so, plan to attend the April 17th DRC meeting. Matt, N0RGT, will cover the history of WWVB, WWV, & WWVH. He will give an overview of the stations, the creation of the timing signal and its path through the transmitters and out to the antennas. Matt will talk a little about propagation and touch on some uses of the signal. Also, he'll be glad to answer any questions about the stations.

Original WWV - Washington, DC

EmComm Note

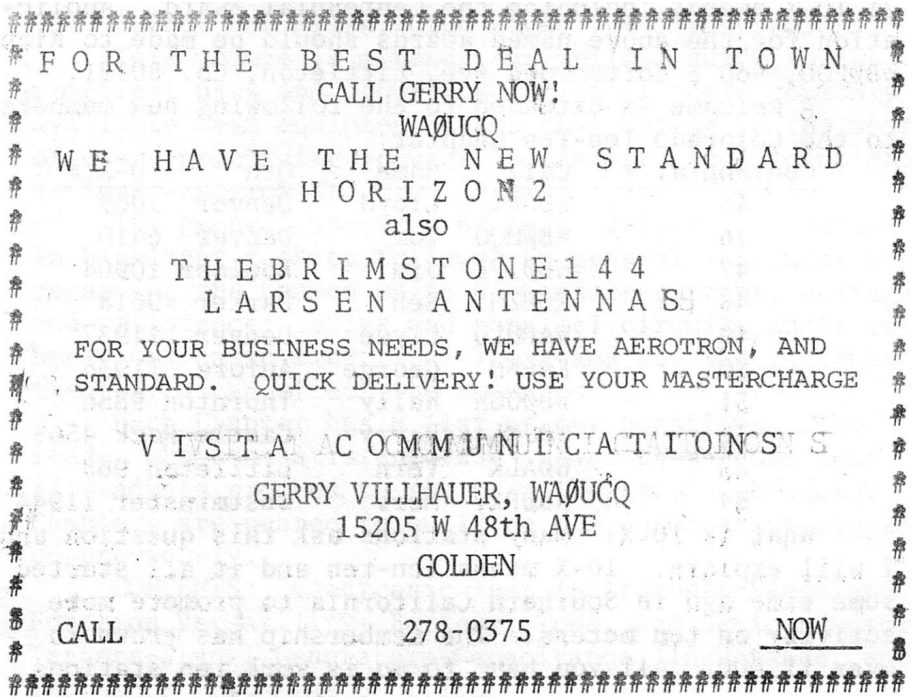
By Brennan Pate, AD0UZ

Please note that should disastrous weather events occur, the DRC will spin up a net on the club's repeaters. Primary: 145.490/448.625. Secondary: 449.350. The DRC's members may be called to help its served agencies or assist other groups with their efforts, and the net will be DRC's primary way of contacting everyone.

December 1975 Roundtable Advertisement

Provided By Orlen Wolf, WW0LF

Editor's Note: Different call, same person.



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HF Ground Wave Propagation Losses

By Bill Rinker, W6OAV

When working local HF stations, have you ever wondered what happens to your HF Ground Wave signal after it leaves your antenna? This article will provide a feel for the propagation losses that the signal experiences as it propagates along the earth's surface. The charts included with this article show the losses caused by different terrains between two quarter wave HF verticals above a system of radials and located15 miles apart. (Figure 1).The transmitter is running 10 watts. The total dB loss between antennas is the sum terrain loss and that of the basic spreading loss along the path. The S Meter levels in the charts are based on the receiver having an S meter calibrated with S9 defined as -73dBm (50 microvolts) across 50 ohms and each S unit being 6dB. These numbers were derived from the G4FGQ (SK) program "GRNDWAV.EXE".

The accuracy of these charts depends upon many variables, such as trees, hills, building, etc. The charts show that as the frequency increases the terrain losses increase and the radio horizon, where signals are basically zero, decreases. The charts also show how the different types of terrains affect

signals. Note how salt water propagation is almost as good as that of perfect ground, which of course doesn't exist. Also, note the difference between salt water and non salt water (Lake).

Beams and/or higher power will increase the readings. However, they won't do much to increase the distance to the radio horizon.

Freq = 4 MHZ Radio Horizon = 50 Miles		
Terrain	**Path Loss (dB)**	**S Meter**
Perfect Ground	68.6	S9+46
Salt Water	68.8	S9+46
Lake	94.3	S9+21
Average Ground	102.9	S9 +12
Suburban	112.8	S9 +2
City	117.1	8.6

Freq = 14 MHZ Radio Horizon = 20 Miles		
Terrain	**Path Loss (dB)**	**S Meter**
Perfect Ground	79.5	S9+33
Salt Water	82.7	S9+30
Lake	117.4	8.1
Average Ground	132.1	5.9
Suburban	136.2	5.1
City	140.1	4.5

Freq = 7 MHZ Radio Horizon = 26 Miles		
Terrain	**Path Loss (dB)**	**S Meter**
Perfect Ground	74.4	S9+39
Salt Water	74.9	S9+38
Lake	105.4	S9+7
Average Ground	117.4	8.3
Suburban	124.1	7.2
City	128.1	6.5

Freq = 28 MHZ Radio Horizon = 16 Miles		
Terrain	**Path Loss (dB)**	**S Meter**
Perfect Ground	86.6	S9+27
Salt Water	95.8	S9+17
Lake	130.1	6.1
Average Ground	144.9	3.7
Suburban	148.5	3.1
City	152.4	2.5

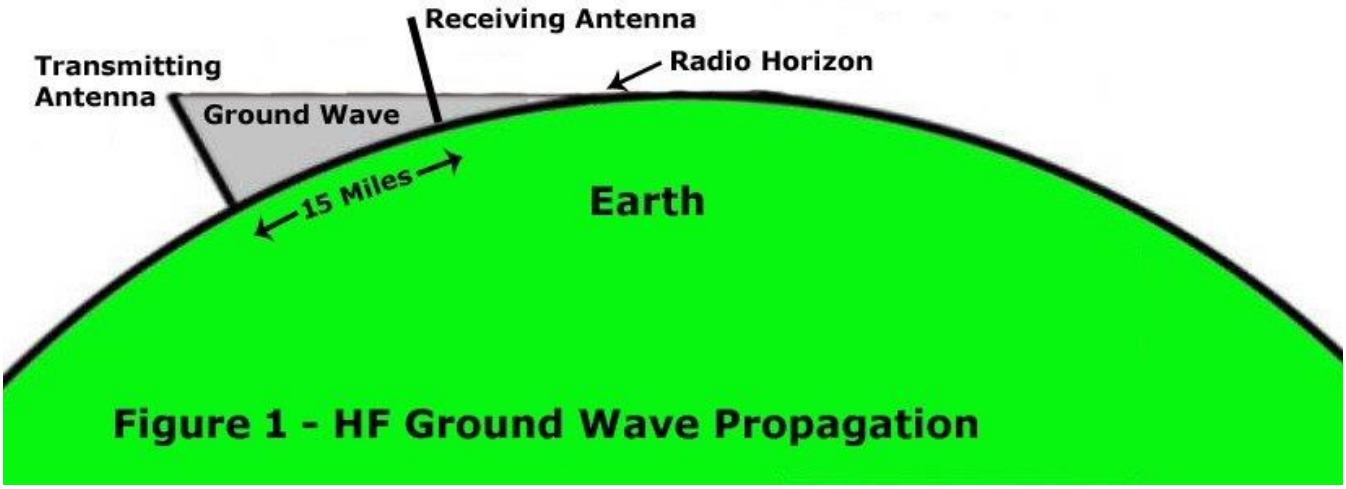


Figure 1 - HF Ground Wave Propagation

A DMR/BrandMeister Primer

By Bill Rinker, W6OAV

Our DMR/BrandMeister repeater is getting busier every day. DMR/BrandMeister is a very interesting digital protocol that allows one to "work the world" with just an HT. If you are not familiar with DMR/ BrandMeister, visit the YouTube site at https://www.youtube.com/watch?v=eDmjwh0RGoo. KC5HWB has an in depth presentation which will provide all you need to know. His presentation will help you decide whether to get into the protocol and if so, how to understand and use it.

If you want to monitor the most popular DMR/BrandMeister talk groups (equivalent to channels) on your computer, go to one of the following links:

Worldwide: https://hose.brandmeister.network/group/91/
USA: https://hose.brandmeister.network/group/3100/
General Chat: https://hose.brandmeister.network/group/310/
W0TX Local Chat: https://hose.brandmeister.network/group/310804/

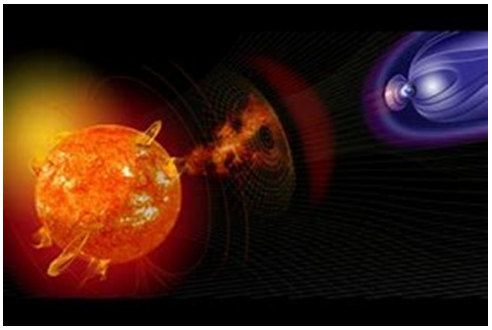
As of this writing (3/30/2019), there are a total of 1,274 official talk groups. There are also many additional unofficial talk groups.

Solar Update

Provided By Fred Hart, AA0JK

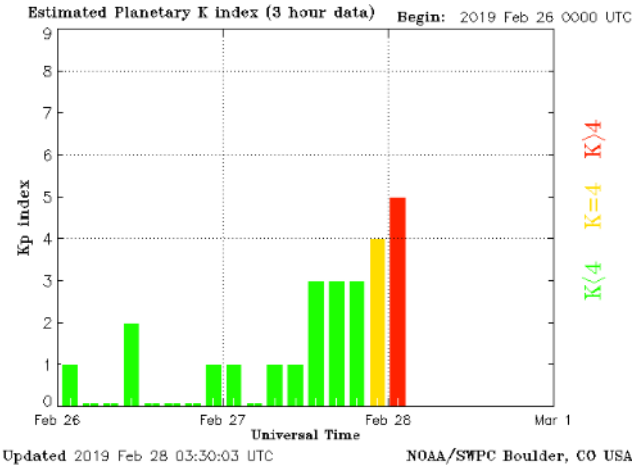
A MONTH WITHOUT SUNSPOTS

There are 28 days in February. This year, all 28 of them were spotless.

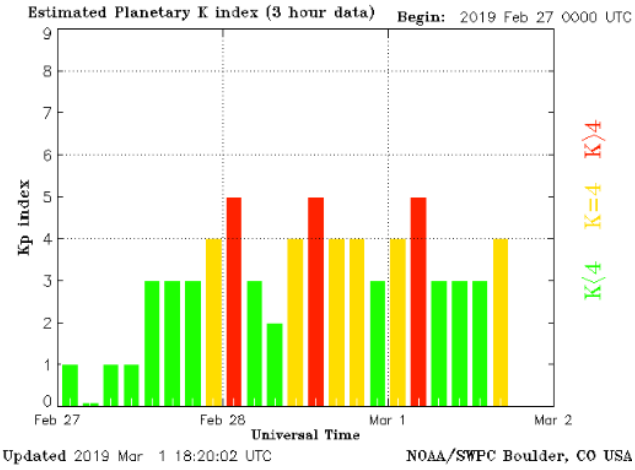


The last time a full calendar month passed without a sunspot was August 2008. At the time, the Sun was in the deepest Solar Minimum of the Space Age. Now a new Solar Minimum is in progress and it is shaping up to be similarly deep. So far this year, the Sun has been blank 73% of the time--the same as 2008.

A solar wind storm was in progress: The solar wind around Earth was blowing faster than 550 km/s (1.2 million mph) as our planet entered a stream of plasma flowing from a wide hole in the Sun's atmosphere.

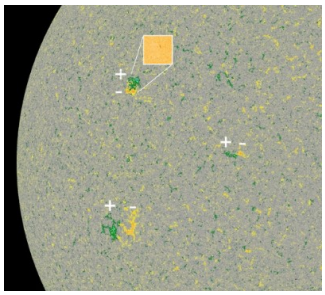


Our planet was dipping in and out of a patchy network of solar wind streams.



The Earth was under the influence of strongly elevated solar wind speeds associated with a coronal hole. A period of significant southward Bz component was producing an isolated Minor Storm. The Bz component refers to the interplanetary magnetic field. See: https://bit.ly/1S6H68D

Spotless Days - Current Stretch on this date: 33 days.



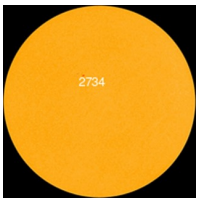
March 6th - We have a Sunspot!!

What kind of sunspot is this? A tiny sunspot was struggling to form in the Sun's northern hemisphere. It was so small, it had not yet been numbered, and it was expected to fade away before the day was done, leaving the sunspot number technically zero. Even if it vanished, this funny little sunspot was worth mentioning because of its tilted magnetic field.

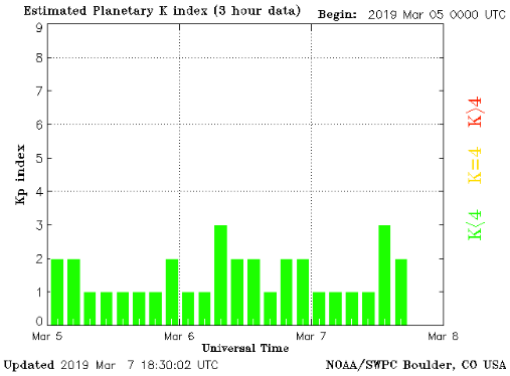
This is a magnetogram (magnetic map) of the Sun obtained on March 5th by NASA's Solar Dynamics Observatory. The sunspot is inset. Note how its magnetic field is almost orthogonal to other patches of magnetism elsewhere on the solar disk.

Sunspots are islands of magnetism floating on the surface of the Sun. Like all magnets, they have two poles, plus (+) and minus (-). Usually these poles are aligned almost parallel to the Sun's equator. This sunspot was almost perpendicular.

Could this be a sunspot from our next solar cycle? Right now, Solar Cycle 24 is decaying into a deep Solar Minimum. Solar Cycle 25 is still in the offing. According to Hale's Law, sunspot magnetic fields reverse polarity between solar cycles. If this sunspot continues to grow—and if its magnetic axis tilts a bit to the right--Hale's Law would tag it as a member of Solar Cycle 25.

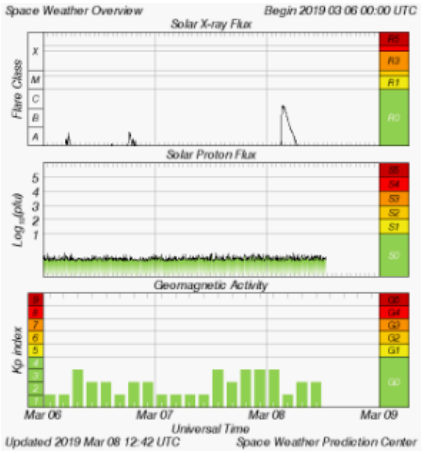


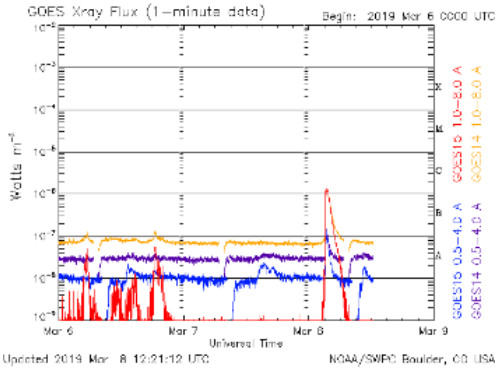
March 7th - Sunspot AR2734 was quiet and it had a stable magnetic field that posed no threat for strong flares. In this respect, it was typical of a Solar Minimum sunspot. Credit: SDO/HMI



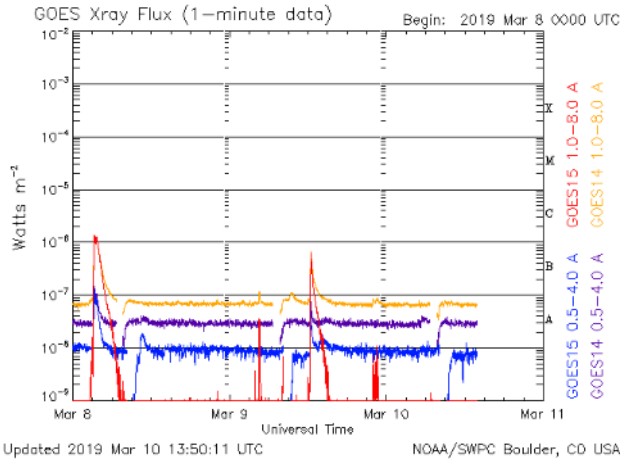
Kp Index [0-3] Green - Stable/Calm Magnetosphere. [4] Yellow - Unstable Magnetosphere. [5+] Red - Geomagnetic Storm Conditions.

March 8th - An Earth-directed solar flare: March 8th at 03:00 UTC, the magnetic field of sunspot AR2734 became unstable and exploded. The result was a C1-class solar flare aimed directly at Earth. A shadowy shock wave billowing away from the blast site was like a ripple in a giant pond. This was a sign that the blast may have hurled a Coronal Mass Ejection (CME) into space, possibly toward Earth. Radio emissions from the shock wave suggested an expansion velocity of more than 600 km/s (1.3 million mph).





A Hot-Spot Turned Sunspot - We were enjoying an unusual increase in activity over the previous week. First, the Sun launched a solar storm that grazed Earth. Nice to see our solar minimum Sun could still launch storms every now and again! This solar storm enhanced a relatively weak period of fast solar wind and caused aurora to drop down to mid-latitudes, lasting for nearly two days. We haven't seen a storm like this since 2018! As if that wasn't enough fun, two new hot spots had emerged on the Earth view alongside a third bright region that was already visible. Three active regions on the Earth-facing Sun? We haven't seen that since 2017! Additionally, the biggest and brightest of these hot-spots had now grown into a "rogue" sunspot. This clearly shows an influence of the coming solar cycle 25! Although we cannot officially designate this region, numbered AR2734, as a sunspot from the new cycle, its magnetic signature was very peculiar. As the above picture shows, its magnetic poles sit one on top of the other (blue-green color above the yellow-red color) instead of the colors being side by side. This is unusual and point to the region being a bit confused as to which cycle it belongs. Solar flux was expected to remain in the low to mid 70's due to the new active regions. This was giving radio propagation a nice boost on the Earths day side.

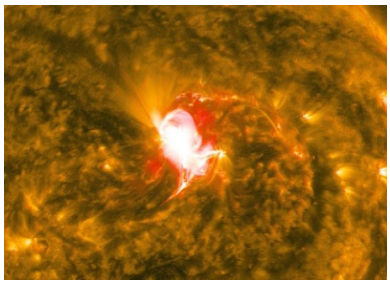


March 11th - Another explosion in sunspot AR2734: For such a small sunspot, AR2734 was surprisingly active.

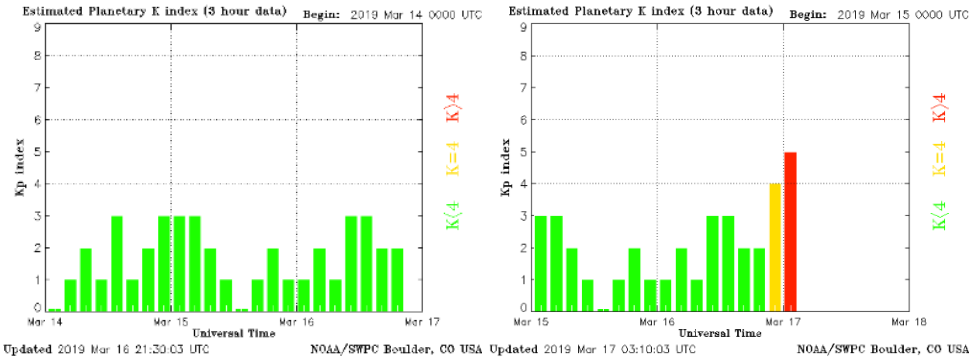
A southern hemisphere coronal hole was facing Earth. Enhanced solar wind was expected to arrive in ~3 days.

March 12th - Solar storm misses Earth. A pair of CME's, were expected to graze Earth's magnetic field on March 11th, but did not. Either they were approaching much more slowly than expected, or more likely, they missed. The solar storm clouds were not hurled directly toward Earth, and they appeared to have sailed wide of our planet.

The solar-storm had waned, and region AR2734 was rotating to the Sun's backside so solar flux dropped. This meant amateur radio propagation had tanked.



March 13th - Probability of catastrophic geomagnetic storm lower than estimated.



Active geomagnetic conditions (Kp4) Threshold Reached: 22:28 UTC.

Minor G1 geomagnetic storm (Kp5) Threshold Reached: 02:45 UTC.

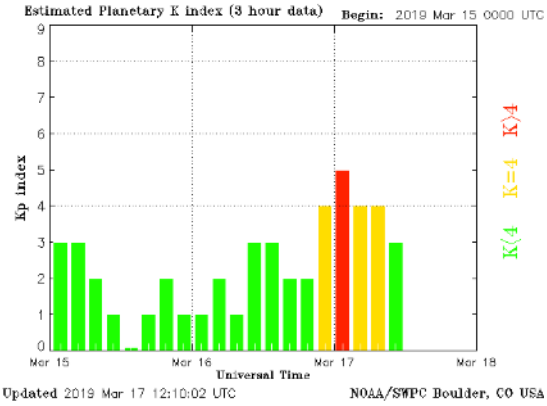
March 17th - A small coronal hole was facing Earth and a minor geomagnetic disturbance was possible as an elevated solar wind stream was to reach our planet.

Geomagnetic Storms Were Underway: A crack had opened in Earth's magnetic field, not a big one, but big enough to cause a G1-class geomagnetic storm.

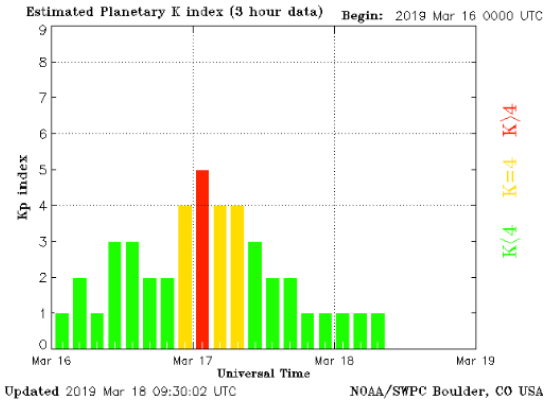
This storm had not been predicted, yet it came as no surprise. The vernal equinox was only a few days away, and at this time of year cracks often form in Earth's magnetic field. Solar wind can pour through these gaps.

This is called the " Russell – McPherron effect ", named after the researchers who first explained it. The cracks are opened by the solar wind itself, south-pointing magnetic fields inside the solar wind, oppose Earth's north-pointing magnetic field. The two, N vs. S, partially cancel one another, weakening our planet's magnetic defenses. This

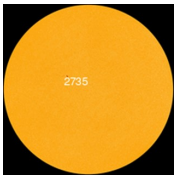
cancellation can happen at any time of year, but it happens with greatest effect around the equinoxes. Indeed, a 75-year study, shows that March is the most geomagnetically active month of the year, followed closely by September-October–a direct result of "equinox cracks."



March 17th 10:30 UTC - One of the coronal hole streams pushed solar wind to a higher intensity overnight. While it was not major, it did produce a small-scale geomagnetic storm.

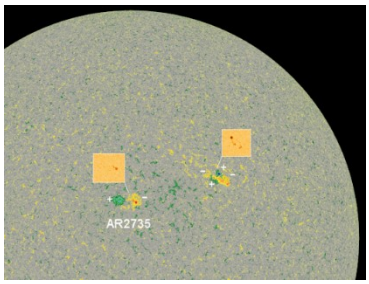


March 19th - Sunspot AR2735 was a remnant member of old Solar Cycle 24. Credit: SDO/HMI



March 20th - First Day of Spring. The Vernal Equinox.

10:26 UTC - Another new sunspot group had formed and was producing small flares. The expected solar wind intensification occurred but was weak.

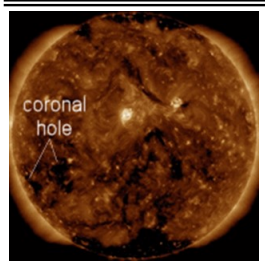


Two sunspot groups were emerging on the Earth-facing side of the Sun. They are inset in this magnetic map of the Sun from NASA's Solar Dynamics Observatory:

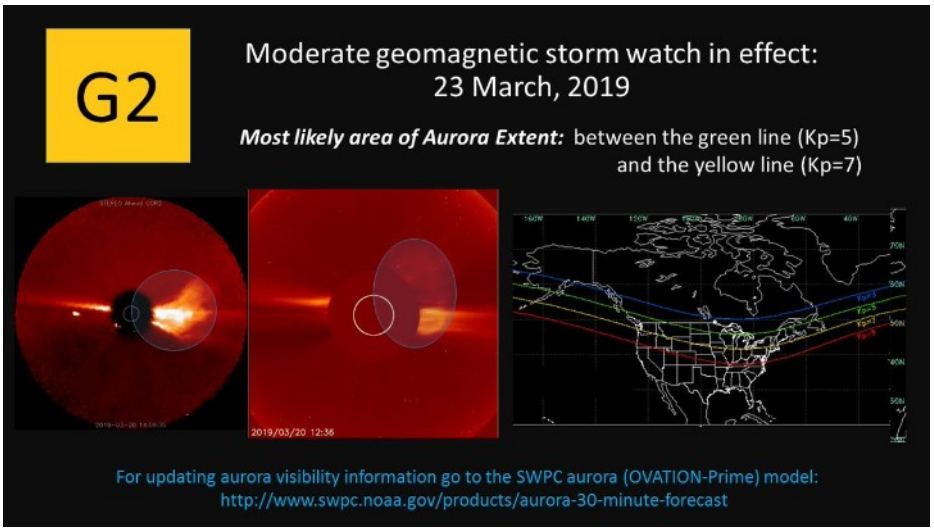
Sunspots are islands of magnetism floating on the surface of the Sun. Like all magnets they have poles, + and -. Sunspot AR2735 had a simple bipolar magnetic structure that identified it as a member of old Solar Cycle 24.

The other sunspot, as yet unnumbered, had a more complicated structure with multiple magnetic poles. It is probably a member of old Solar Cycle 24 as well. However, the mixture of magnetic polarities makes it worth watching. Mixed-polarity magnetic fields can criss cross, and explode,--a process known as " magnetic re-connection" underlying solar flares.

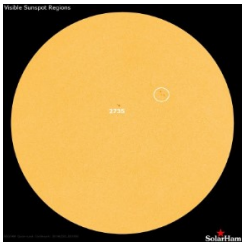
A C4 flare occurred on, 20 March at 11:18 UTC. The flare erupted from an emerging sunspot group (Region AR2736). Although SWPC forecasters were awaiting observations from the SOHO/LASCO coronagraph, early indications from other satellite platforms, to include STEREO-A coronagraph imagery, suggested a Coronal Mass Ejection (CME) was likely associated with the C4 flare.



Solar wind flowing from this coronal hole was expected to reach Earth on March 26th. Credit: SDO/AIA



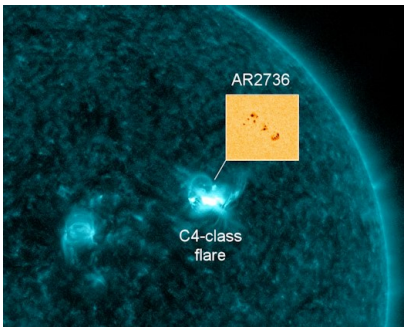
NOAA Space Weather @NWSSWPC: A G2 (Moderate) geomagnetic storm watch was in effect for the 23rd , March, 20:19 UTC, due to anticipated CME arrival. The CME was associated with a C4 flare on 20th of March, 2019 at 11:18 UTC.

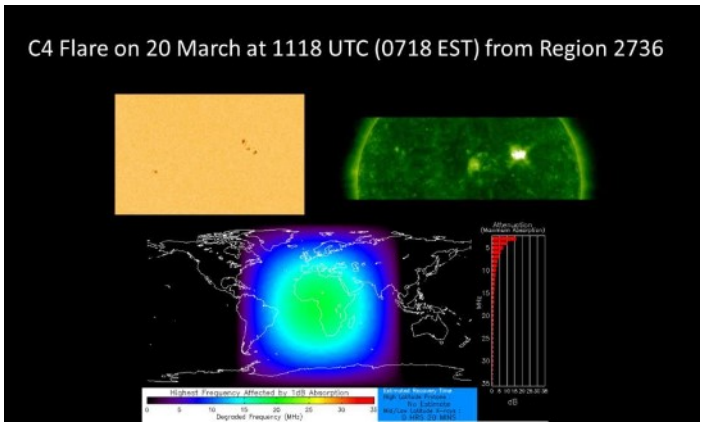


Emergence, and evolution of two solar sunspot regions, AR12735 and AR12736. The latter seemed to be more complex. Both of them were in the western hemisphere.

Earth-Directed Solar Flare. Northern, first day of spring, began with a bang! On March 20th, at 11:18 UTC, a new sunspot, AR2736, exploded, producing a C4- class solar flare that lasted for more than an hour.

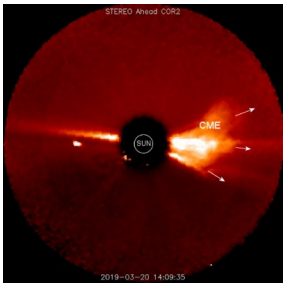
The explosion sent minor waves of ionization rippling through Earth's upper atmosphere and caused a HF radio "Blow-Out" over southern parts of Europe and all of Africa. Anomalies in radio propagation at frequencies below 20 MHz might have been noticed by mariners and Ham Radio operators.





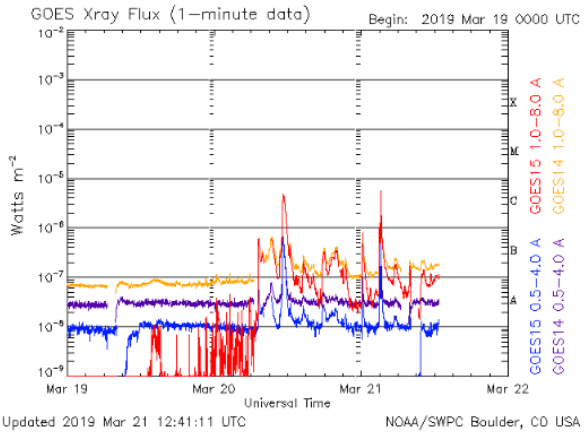
Note: Radio Blackout over Europe and Africa.

The explosion also hurled a coronal mass ejection (CME) into space. NASA's STEREO-A spacecraft saw the cloud racing away from the Sun:



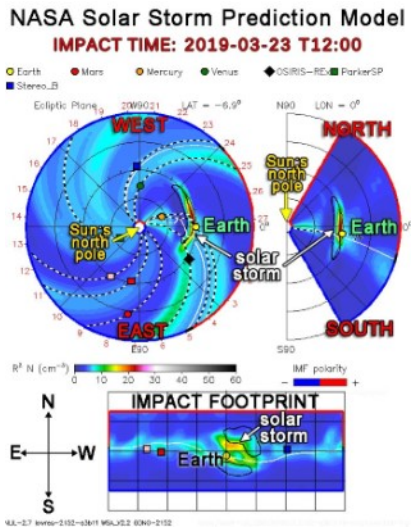
Additional images from the Solar and Heliospheric Observatory (SOHO) confirm that the CME was heading for Earth. While the bulk of the cloud appeared set to miss our planet, the flanks of the CME were expected to deliver a glancing blow. Estimated time of arrival, was late on March 22nd or March 23rd . NOAA forecasters favored the March 23rd estimate. Either way, moderate G2-class geomagnetic storms were possible when the CME arrived.

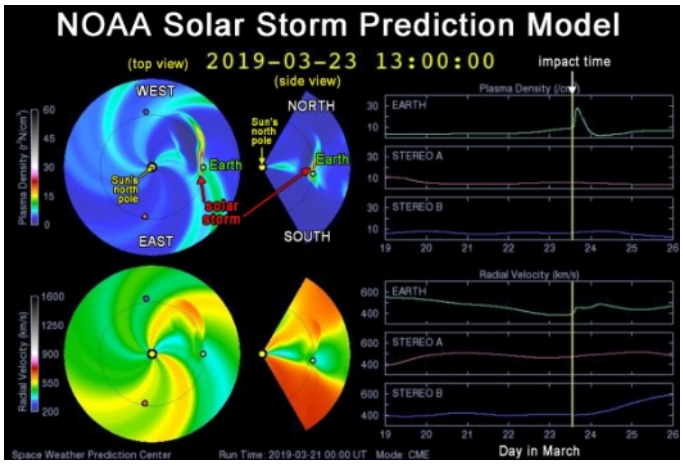
March 21st, 10:14 UTC: Two C-class solar flares erupted from the newest sunspot group. One of them released a CME that was expected to impact Earth on Saturday.



C-class solar flares are not considered to be major events. However, these explosions are noteworthy now because the Sun has recently been so quiet. Solar Minimum is underway. In context, C-flares represent a real uptick in solar activity. They can ionize the top of Earth's atmosphere, disturbing HF-radio communications, and even hurl CMEs toward Earth.

Direct Hit! Both NOAA and NASA prediction models agreed, we had an Earth-directed solarstorm that was expected to impact Earth around 12pm March 23rd ! This one was dense, and strong, so its potential would pack a decent punch! Expected Ham Radio and GPS disruptions were forecast for the Earth's night-side.





Summary (Prepared jointly by the U.S. Dept. of Commerce, NOAA, Space Weather Prediction Center. UPDATED 2019 March 23rd 12:30 UTC): Solar activity has been at low levels. Region AR2735 decayed to plage and Region AR2736 decreased in magnetic complexity. Consolidation was observed in the leader spot of Region AR2736 while the intermediate and trailer spots were in decay. No Earth-directed CMEs were observed in available coronagraph imagery.

Forecast: Solar activity was expected to continue at low levels. Region AR2736 remained an active spot group. C-flares were likely for the following three days with a slight chance of M-flares. (R1-R2 Minor-Moderate radio blackouts).

73,

Fred
AA0JK

DRC's Emergency Responses

In the event of a disaster in the metro area, please monitor our repeaters on 145.490/448.625 (primary) and 449.350 (secondary).

The emergency Net Control Operator will provide information and/or requests to members for assistance.

W0TX Repeater Directory

amazonsmile
You shop. Amazon gives.
Search for Denver Radio Club @ smile.amazon.com

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

Ham Site Of The Month

Ham Talk Live

The RoundTable Archive

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

The RoundTable Article Index

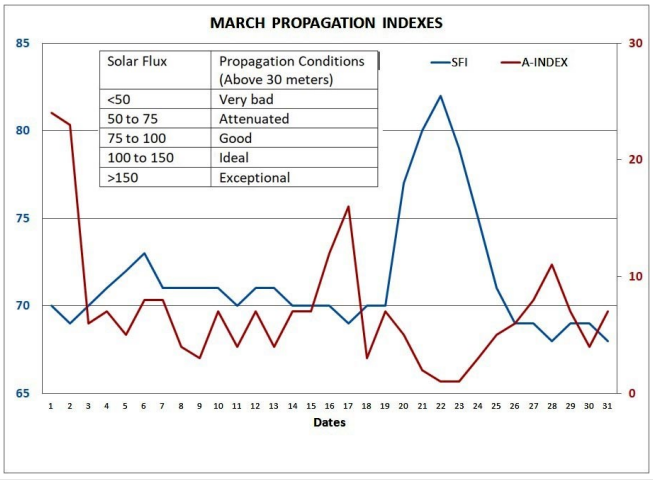
Go to: http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf

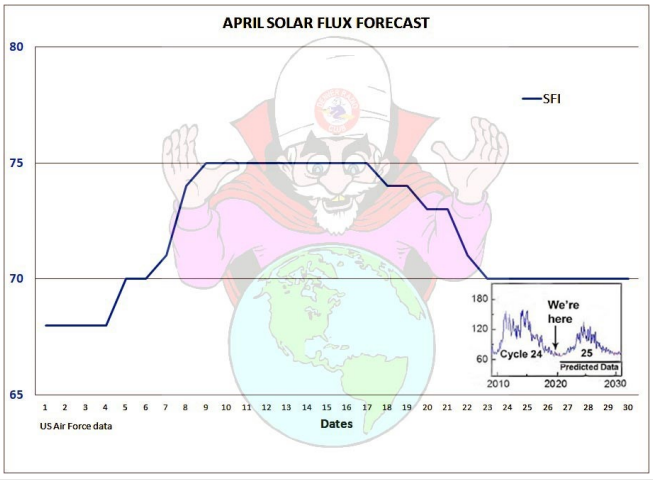
Past & Future Propagation Conditions

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, which is available at: http://www.w0tx.org/RoundtableArchive/2010-RoundTables/RT201009(SEP).pdf





Upcoming Events

Hamfests & Conventions

Event	Date	Location	Sponsor Website
LARCFest 2019	04/06/19	Boulder County Fairgrounds	Longmont ARC

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
Mississippi	04/06/2019	04/07/2019	ARRL Mississippi Section	
Missouri	04/06/2019	04/07/2019	Boeing Employees' Amateur Radio Society – St. Louis	
Georgia	04/13/2019	04/14/2019	Georgia QSO Party	
New Mexico	04/13/2019	04/14/2019	Valencia County Amateur Radio Association	
North Dakota	04/13/2019	04/14/2019	North Dakota	
Michigan	04/20/2019	04/21/2019	Michigan QSO Party	
Nebraska	04/20/2019	04/21/2019	QCWA Nebraska Chapter 25	
Ontario	04/20/2019	04/21/2019	Contest Club Ontario	
Florida	04/27/2019	04/28/2019	Florida QSO Party	

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is an ARRL Special Service Club

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http://www.arrl.org/

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**

APRIL 2019

DRC Net Sundays at 8:30 p.m. on 145.490 / 448.625 (no PL)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	**2**	**3** **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)	**4**	**5**  New Moon	**6**
7	**8**	**9**	**10** **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)	**11**	**12**  First Quarter	**13**
14 **Rookie Roundup - SSB** 1800 - 2359 UTC	**15**	**16**	**17** **DRC Meeting** Elmer 6 p.m. General 7 p.m.	**18**	**19**  Full Moon	**20**
21	**22**	**23**	**24** **Learning Net** 7:30 p.m. 145.490 / 448.625 (No PL)	**25**	**26**  Last Quarter	**27**
28	**29**	**30**				

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Club Librarian	WG0N	Dave Baysinger	303-987-0246	wg0n@arrl.net
Education Coordinator	AA0JK	Fred Hart	303-420-3536	elmer@w0tx.org
EmComm Coordinator	KE0HFH	Michael Vespoli	303-215-8862	emcomm@w0tx.org
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Field Day Chairman	K0HTX	Dave Gillespie	303-795-8225	k0htx@comcast.net
Membership	KC0CZ	Bob Willson	303-659-0517	rwillso2@centurylink.net
Net Control	K0TOR	Jim Beall	303-798-2351	k0tor@arrl.net
Public Relations	K0AXP	Dave Verlinde	*248-515-2371*	w0tx@w0tx.org
RT Managing Editor	AD0UZ	Brennan Pate	303-578-6283	drc.editor@gmail.com
RT Associate Editor	W6OAV	Bill Rinker	*Check Roster*	*Check Roster*
Hamfest Manager	N0CRZ	Cathy Villhauer	303-467-0223	drcfest@w0tx.org
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VE Team	KC2CAG	Tom Kocialski	720-284-1911	kc2cag@arrl.net
Website & YouTube	N0LAJ	Bill Hester	*Check Roster*	w0tx@w0tx.org

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

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