



THE ROUND TABLE

Monthly Newsletter Of The Denver Radio Club

Since 1917

November 2020

PRESIDENT'S MESSAGE

BY GERRY VILLHAUER, W0GV

Hello DRC Members,

Here we are in month nine, I think, of everything virtual. I hope all of you are still staying well. I have not heard of any of our members being sick; I hope that still holds true. Our meetings, virtual and on the air, are still going well. I encourage you to join in and stay engaged in our wonderful hobby. Please refer to the DRC website for our repeater systems and net listings. The Wednesday night "Learning Net" is especially useful if you have questions about that new radio you purchased or have other related questions. We are here for you.

Other than our virtual meetings and nets, not much club activity. All our repeater systems are up and running; so please enjoy the numerous systems we have.

Thanks to Karen Rucker (KG5GAK) for a very interesting and informative program on antenna design and 3D printing. The program was based on designing and 3D printing antennas in the microwave frequency range. We also learned that 3D printers are available to rent at some of the "Makers" locations. I would be interested in knowing if any of our members have had experience with 3D printing.

Our November program will be a little different in content, but still radio related. We will have Matt Webb, who is not a ham (yet) presenting a program on Motus Wildlife Tracking System. Matt is the coordinator for the Western US Bird Conservancy of the Rockies as an Avian Ecologist. Matt will explain to us, how they use a radio telemetry system for tracking birds. Matt builds these radio systems. Matt holds a Bachelor's and Master's degree in Wildlife Biology and Conservation Leadership. This promises to be a very interesting and informative program. Mark your calendar for November 18...Don't miss this program!

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



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:

Augustus Moore	Vincent Del Giudice - WB2KQG
Michael Cassano - KF0BPM	Bill Shenkin
Toan Ngo	Michael Biere - AE0KV
Edward Cox - KF0CBL	

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 for the Tech Committee.

DRC/TSA Aurora Site.

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

Status: This project shelved until Covid-19 is over.

Internet Failure Procedure at Station 4.

Goal: Develop a procedure for troubleshooting Internet failures.

Status: COMPLETED by W6OAV

Replace 220 Repeater Antennas

Goal: Improve coverage for the repeater.

Status: WW0LF is constructing the coax harness. Once completed, a work party will be scheduled.

Resolve the 220 Repeater Lockup issues.

Goal: Obtain a response from BridgeCom for troubleshooting assistance.

Status: COMPLETED by W0GV and W0N

Station 4 Remote Power Control.

Goal: Configure the Power Control to allow remote power control for various systems.

Status: COMPLETED by W0N

Install a Remote 6 Meter Receiver

Goal: Investigate the possibility a remote receiver to resolve the high noise level at Station 4.

Status: W0N and W0GV will check out conditions at a possible site.

Repair the Echolink Server

Goal: Repair or rebuild the server

Status: COMPLETED By N0OBA and K0HTX

WIRES-X Repeater Tech Support

Goal: Create and educate a tech support team for maintaining and troubleshooting.

Status: COMPLETED by W6OAV

LEARNING NET REPORT

BY FRED HART, AA0JK

Our amateur radio learning net purpose: We are here to help introduce, and promote, a variety of topics of interest to all amateur radio operators.

Our intent is to help participants get more active, involved, and engaged in amateur radio.

Topics of interest we encourage:

Personal Communications

- Getting started in the various modes, of communications.

Emergency communications

- Participation in public service.
- Training in emergency communication for volunteers.

Radio electronics, and technology

- Kit building, understanding signal propagation. and building antennas.

We strive to put experienced members-volunteers, at the forefront, as a regular source of knowledge-sharing in the Denver Radio Club. We hope members participating in the DRC learning net will find it rewarding to share experiences, and learning, that will motivate more of our amateur radio community toward lifelong journeys as Hams.

If you have experience in, and have a passion for, any amateur radio related topics, please consider providing the DRC with presentations that will motivate other Hams to share your interests.

October Topics we have discussed:

- Ham Radio Jargon: The Hidden Meaning Of Ham Radio Jargon PT 1 | K6UDA RADIO:
https://youtu.be/dA2N367qt_A
- Ham Radio Codes Deciphered - The Hidden Meaning Of Ham Radio Jargon PT 2 K6UDA RADIO:
https://youtu.be/OsVFONtI_VM
- Comet HFJ-350M 9-Band Telescopic Antenna, HF Portable: <https://youtu.be/4ewjEeuuHmk>
- Vanity Calls: <http://www.arrl.org/vanity-call-signs>
- Perth Outback Antenna: <http://www.outbacker.biz/OUTBACKER/outbacker.html>
- Morse Code learn / practice: <http://www.arrl.org/code-practice-files>
- Hotspots: How to get on the digital voice modes, <https://youtu.be/ek2fhVteH7Q>
- Palomar – Bullet End Fed antennas. 203 Feet (160-6 meters):
<https://palomar-engineers.com/tech-support/tech-topics/best-hf-end-fed-antenna>
- On The Air – ARRL / September/ October issue
- APRS
- RFI

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 at the [W0TX web-site](http://w0tx.org), 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.

Getting that first Technician license? Upgrading to General or Extra? We're here to help. You may also find Dave Casler's Amateur Radio Licensing Guides helpful: <https://dcasler.com/ham-radio/>

We would encourage those who have been Hams for several years to also join us. Your experience and input is welcomed.

Finding your place in the amateur radio community - -> Are you looking to be more involved, learn new skills, find a mentor or friends to share your amateur radio interest? Check out your local Denver Radio Club, and start making the most of your amateur radio license.



<http://www.arrl.org/public-service>

Use your communication skills to help keep your community safe!



<https://www.weather.gov/marine/ham>

During severe weather events, amateur radio operators bring significant resources to storm spotting, including an established communications system that can function in an emergency. They provide real-time information to partners like emergency management and forecasters at the national weather service. The data received from hams helps issue weather watches, warnings, and advisories.



<http://www.warrenares.org/home/skywarn-weather-spotting>

What topics would you like to discuss? Join us Wednesday nights, 7:30 PM, 145.490, 100 Hz PL tone & linked to 448.625, 100Hz PL tone.

73,

Fred
AA0JK

GOOD AMATEUR RADIO PRACTICES - BASICS WHEN COMMUNICATING WITH OTHER HAMS

BY FRED HART, AA0JK



“Attention !!, Standard Phonetics, Please !!”

The standardization of the phonetic alphabet allows every Ham operator to communicate, and understand each other's call sign. When different words are substituted for the phonetic alphabet, by the time it clicks into one's brain that an individual is using a different word, we have completely missed your call sign.

After once establishing your call sign with standardized phonetics, then one can add memory aid phrases.

Thanks and 73,

Fred
AA0JK

MAKING REPEATER CONTACTS - OR NOT?

BY MARSHALL SPILLER, KF0UV

Do you usually get a response when you seek a contact on a repeater, or just silence? Possibly you were heard, but you didn't make it easy enough for someone to respond to you. How so? There are repeater challenges that are the result of one basic issue. What is your call sign, and which repeater (output frequency) are you using.

If you give your call sign only once, people may have heard you, but couldn't process what you said. Therefore, don't be One and Done. Give it another try. The first try was an attention getter, but the second will probably have a better chance of being heard and understood.

Another situation you will run into is that a lot of ham shacks have two, three or more radios going at the same time, or are scanning multiple frequencies on a transceiver or a scanning monitor. How are they going to know which radio, or frequency you were on, if they weren't close enough to see which had its signal strength meter move? Therefore, not only should you be giving your call sign, but also the output frequency of the repeater you are using. This also applies to simplex calls you might make.

Also, sound like you really do want a QSO. If you're One and Done, with just your call sign, how convincing is that? Add a little more to it like "Is anyone around?"

So, a more effective can be, for instance: Kx0xxx on 449.775 C4FM, is anyone around? Then you can give your call again, but with ITU phonetics. Then, if you don't get a response, do it over again. Just don't be One and Done.

NOVEMBER MEETING ANNOUNCEMENT

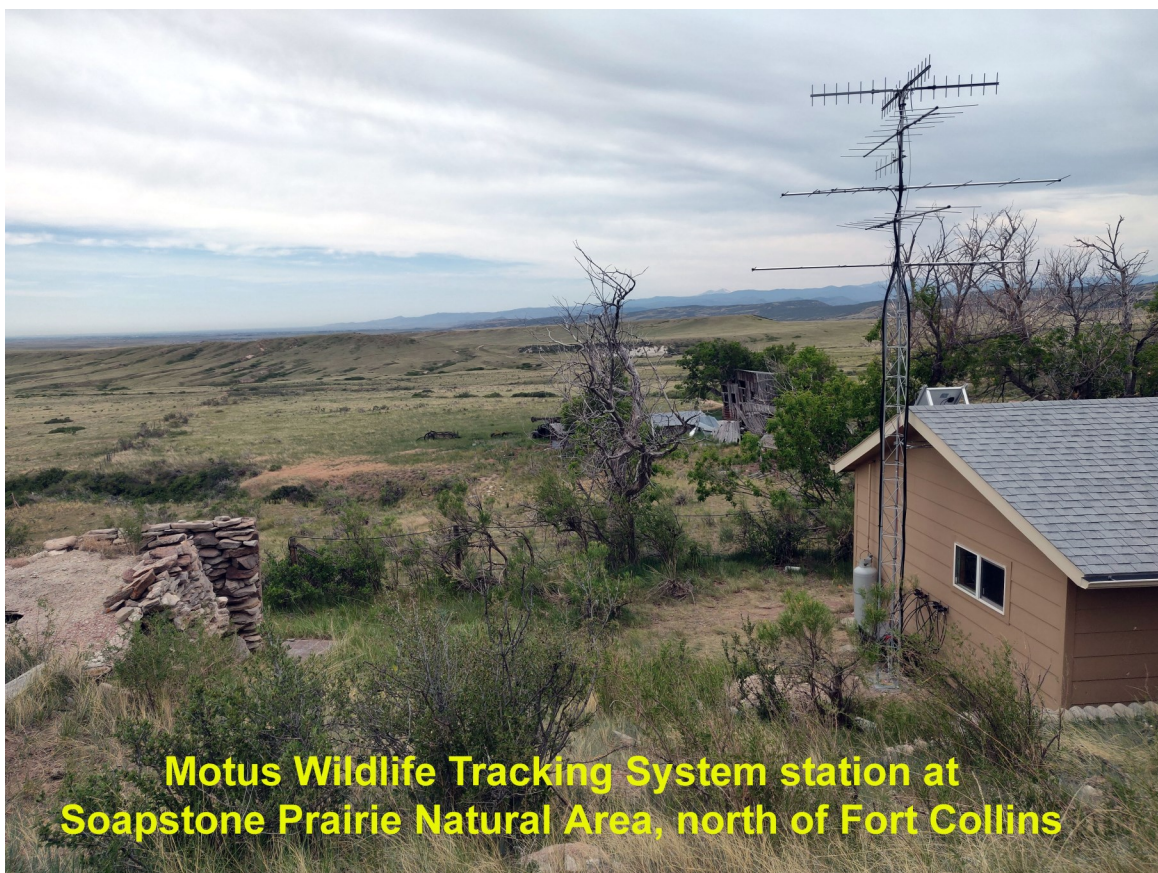
BY MATT WEBB

Program Overview:

My program will be titled: "Expanding the Motus Wildlife Tracking System into the Great Plains and Chihuahuan Desert". I'll be talking about how researchers are using the Motus Wildlife Tracking System, a continent wide automated radio telemetry network to study the movement behavior of birds and other migratory wildlife. I'll also discuss Bird Conservancy of the Rockies' plans to expand this network into the Great Plains and Chihuahuan Desert to help better understand how grassland birds use the region, and ultimately to be able to better work towards the conservation of grassland birds.

Bio:

Matt Webb works for Bird Conservancy of the Rockies as an Avian Ecologist and is the Western US Coordinator for the Motus Wildlife Tracking System. Matt was born and raised in Salida, CO. Around age 10, at odds with his preferences, his family moved to the 'dull' plains of Northern Colorado. To Matt's surprise, he fell in love with the endless roll and incredible diversity of the shortgrass prairies. He later spent nearly a decade in Pittsburgh, PA, working at the Carnegie Museum of Natural History, the American Bird Conservancy, and the Smithsonian Migratory Bird Center. He holds a Bachelor's Degree in Wildlife Biology and a Master's in Conservation Leadership, both received from Colorado State University. When not building automated radio telemetry stations, Matt enjoys mothing, photographing beetles, riding and fixing bicycles, turning over stones, and dragging his family outside at night to watch the International Space Station go by.



HAM RADIO INTERNET AUDIO AND VIDEO PODCASTS

BY BILL RINKER, W6OAV

The Internet contains a wealth of audio and video programs dedicated to ham radio. This article provides links to many of audio and video websites dedicated to ham radio. However, the list of links is not all inclusive!

Podcasts

There are many ham radio audio podcast websites on the Internet. What is a Podcast? The definition is: "a digital audio file made available on the Internet for downloading to a computer or mobile device, typically available as a series, new installments of which can be received by subscribers automatically."

The term Podcast is actually a word blending of iPod and Broadcast. An example of a podcast website can be found at <https://www.hamradioworkbench.com/>.

There is a nice list of 38 ham radio podcast websites at:

<https://www.google.com/search?q=Ham+radio+podcasts&oq=Ham+radio+podcasts>

Ham Radio Videos

There are many general information video websites and "video podcast" websites on the Internet. General information websites produce one or two videos on a particular subject. "Video podcast" websites produce individual videos on a regular schedule. Viewers can sign up for automatic notification of each new video.

General Information Videos

A list of over 70 YouTube general information ham radio videos can be found at: <https://www.youtube.com/playlist?list=PL046E2C0744559E5B>

Many other websites can be viewed by accessing YouTube and typing your subject of interest in the search field, such as "hf antennas for small spaces".

"Video Podcasts"

Some of the most popular "video podcast" websites are shown below:

Ham Nation <https://twit.tv/shows/ham-nation>

Ham Radio Now <https://www.hamradionow.tv/home>

TX Factor <http://www.txfactor.co.uk/>

Amateur Logic <http://www.amateurlogic.com/blog/>

Ham Radio Answers <https://www.youtube.com/user/davecasler>

Amateur Round Table <https://www.youtube.com/user/w5kub>

The Old Tech Guy https://www.youtube.com/results?search_query=The+Old+Tech+Guy

Ham Radio 2.0 https://www.youtube.com/results?search_query=ham+radio+2.0



THE MEMORY EFFECT MYTH

By Rick, K8RIC

(SUBMITTED BY BILL, W6OAV. SOURCE: MASSILLON AMATEUR RADIO CLUB'S [FEEDBACK](#))

Possibly the biggest myth that exists particularly for NiCd cells is the "memory effect". Almost every one quotes it as the reason that cells have to be completely flattened - otherwise they develop some sort of memory, and can only hold a partial charge from there on. Like all good stories, this one has a grain of truth in it! The myth originated from the early days of satellites when they were using solar cells to charge batteries and because of the orbiting of the craft around the earth, the batteries were subjected to precise charge/ discharge cycles many hundreds of times. The effect disappears when the battery cycle is suddenly varied, and it is extremely difficult to reproduce this effect even in a laboratory. So the "memory effect" is not a significant problem in home usage.

What I can tell you is while it may be OK to discharge individual cells to 0V, it is certainly not recommended to discharge an entire battery of cells. The reason is simple. When the battery is discharged below 0.8V per cell, one of the cells is inevitably weaker than the others, and goes to zero first. If the battery is further flattened this battery becomes charged in reverse, which again makes it still weaker. This creates a more common but less commonly known effect called "voltage depression". Eventually the battery's performance drops off quite suddenly which ironically is the very thing that the user is trying to prevent. Most users know where the battery's "knee" occurs; it is when the original equipment first starts to show signs that the battery performance (and hence voltage) is suddenly dropping, and it is a good idea to place it straight on charge at this point. Usually there is less than 5% of C remaining anyway.

One other thing, batteries don't like getting too hot or cold; they do not take a full charge and they actually discharge (even under no load) much faster when over 40 degrees or below 0 degrees. They can build up internal heat when working and this can cause temperatures inside to increase also. Particularly avoid leaving cordless tools inside a hot car for this reason. They also should be left to cool down for a while after discharge before placing them on charge. NiCd/NiMH batteries do self-discharge too, as a rule of thumb a battery will hold a full charge (with no load) for about a month or two, although when they get old or hot, they might only last a day.

So what can you learn from this?

- a.. You don't have to flatten your battery before you recharge it,
- b.. Don't flatten your battery below 0.8V per cell,
- c.. Don't overcharge your battery beyond 100% of C,
- d.. NiCd/NiMH don't like to get too hot, or too cold (0 to 40 degrees C is usually best).



DRC's 2020 HOLIDAY PARTY CANCELLED

The DRC Holiday Party scheduled for December 16, 2020 has been cancelled due to the ongoing COVID situation and occupancy restrictions imposed by the City of Denver. Besides the city restrictions, the DRC Board of Directors feels it is the responsible thing to do for the wellbeing of our members.

From The Lincoln Log. Submitted by Bill Rinker, W6OAV



Roger Ghormley, W0KK

Highlights of RTTY History

Radio Teletype

It started soon after World War II. Hams obtained teletype machines no longer required by the military and commercial operators. Ham literature gave info on how to adapt the machine's DC operation to the Ham transceiver. Two-way Ham QSOs via teletype date from 1946. What one Ham typed on his teletype machine was printed on paper by the other Ham's machine.



Interest grew and techniques improved. The FCC modified some regulations to allow frequency shift operation, which was superior to make and break. The number of Hams with RTTY increased rapidly.

The first RTTY contest was sponsored by the RTTY Society of Southern California. Held in October, 1953, the contest had 29 entrants! Interest in the new mode spread beyond the USA. In June 1959 the British Amateur Radio Teletype Group, BARTG (now known as the British Amateur Radio Teledata Group) was formed. Similar RTTY groups were organized in other countries. Weekend contesting via RTTY drew hundreds of entrants. Then along came personal computers.

In the 1980s Ham programmers soon developed computer applications that did all the work previously done by the teletype machine. Except for a few "purists," teletype machines started disappearing from the Ham ranks. RTTY programs provided for automatic logging and macros.

A Ham could enter a weekend contest and via the mouse never have to touch the keyboard. Up through the 80s and 90s the Baudot code—start bit, 5 code bits, stop bit—was the preferred

code used for RTTY. Changing between Mark and Space was by **shifting the frequency** between two values, typically 170 Hz difference. Then along came a British Ham.

PSK31: A New Radio-Teletype Mode

In December 1998 and January 1999 the journal *RadCom*, of the Radio Society of Great Britain, contained an article written by Peter Martinez, G3PLX. The article, "PSK31: A New Radio-Teletype Mode," described a completely new way of coding for RTTY – "Varicode." Details of Varicode are beyond the scope of this "History" (as well as the ability of this writer); but a few features are worth noting: Mark and Space are formed by a **shift in phase**. In text, characters are separated by "00," so no character includes a 00. The length of a character's code – 2 to 10 bits – is roughly inverse to how often the character is used in the English language. The space between words occurs most often and the code is 1. For example, "*at the zoo*" is 1011 00 101 1 101 00 101011 00 11 1 111010101 00 111 00 111 1. The space-between-words code, 1, also means "end of character"; so no further need for the 00.

Ham programmers soon developed applications using PSK31. Hams found the new mode able to copy weak signals that were lost to the old Baudot mode. It is getting hard to find a Baudot signal. RTTY has come a long way in the last 80 years. Where will it go from here? If this writer were two score years younger and one score IQ smarter, he might try his hand at, say, "Voice Control of RTTY." That's likely better left to someone else.



—Roger Ghormley, W0KK

[Roger is 95 and received his license in 1935.]

PAST ROUND TABLE PAGES

PROVIDED BY WOODY LINWOOD, W0UI

A page from the September 1956 multi-page edition. It is the second oldest known remaining Round Table.

-3-

METEOR SHOOT

The Denver Astronomical Society wishes to take this opportunity to express their deep appreciation for the fine cooperation they received from the mobile hams during the star shoot last month. The prevailing weather conditions at the time of the shoot were such that photography was impossible. However, they feel that the splendid cooperation given to them by the mobile hams would have made the shoot a one hundred percent success had the skies been clear.

WHO WANTS A PUPPY?

Walt Nettles, W0AJL, has three puppies he would like to give to someone who would give them a good home. Walt says they are a dog and a half each, being part boxer, part cocker and part collie. They should grow up to be about a 60 lb. dog. Anyone interested should get in touch with Walt at Radio Products.

JACK SHRADER

Jack, K0BEM, has his new

DX-35 on the air, and for an inhaler he is using a new RME 4300. Jack has gotten nearly all his states for WAS now, so is working on a linear amplifier to increase his power so he can get some of this choice DX that has been rolling in lately. Jack says, "With my present equipment, I can sure hear 'em, but I just ain't got the power to reach 'em."

WANTED

Someone to write a Novice Corner for the paper. It is the concensus of opinion that if we can find someone to get the names and equipment used by the new novices in this area, it will stimulate interest in bringing new members into the Club. Anyone who would like to take on this little chore, please call your editor and we will set up the preliminary details for you.

NEXT MEETING

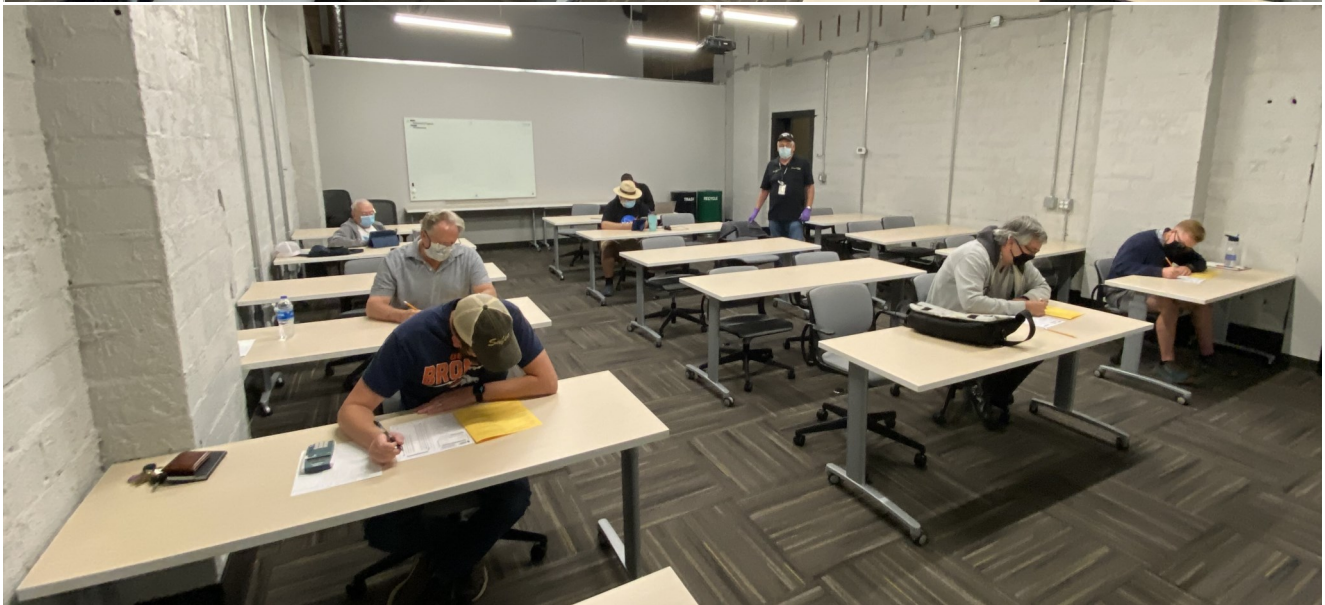
Remember, next club meeting will be at Clayton College, 32nd and Colorado Blvd., on September 19, at 7:30 p.m. The officers that you

DRC VE TEAM REPORT

BY TOM KOICIALSKI, KC2CAG

A skeleton crew (OK Halloween is upon us) of DRC VE Team members conducted a test session for four candidates on Saturday, October 10th. All four candidates, Simon Gott, Doug Harrison, Ed Cox, and Mike Biere successfully passed the Tech exam. In addition, Mike used the Tech exam and his expired General license to qualify for the General license. Mike then almost aced (missed only one!) the Extra exam so he's back into Amateur Radio big time.

The session was hosted by Troy Lerner, KF0AFQ, a soon-to-be-but-not-yet VE. Troy was able to secure the Training Room at the "Industry" shared work spaces on Brighton Boulevard, an awesome location for a test session. The skeleton VE's were Bill Rogers (WZ0S), Blake Huber (AD0OZ) and yours truly.



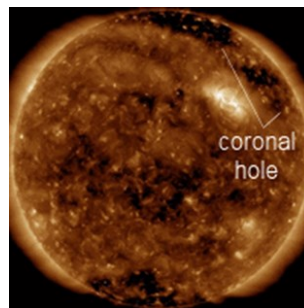
SOLAR GEOPHYSICAL ACTIVITY REPORT

PROVIDED BY FRED HART, AA0JK



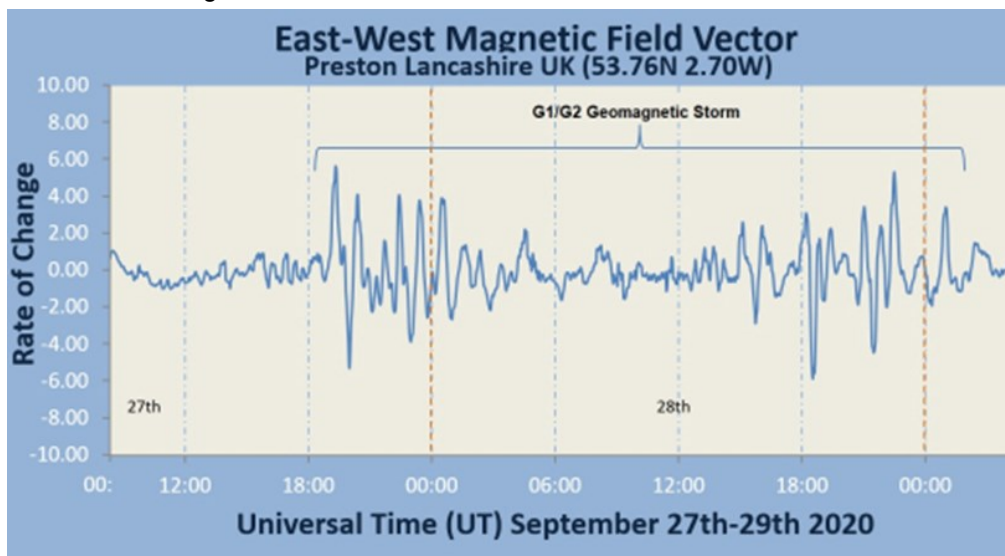
ESA's Solar Orbiter

October 1st - Earth was exiting a stream of solar wind flowing from a large northern coronal hole in the Sun's atmosphere. As a result, the chance of geomagnetic storms had subsided. First contact with the stream was on September 27th, and sparked a moderately strong G2-class geomagnetic storm. Minor G1-class storms were expected as Earth began to exit the stream.



Credit: SDO/AIA

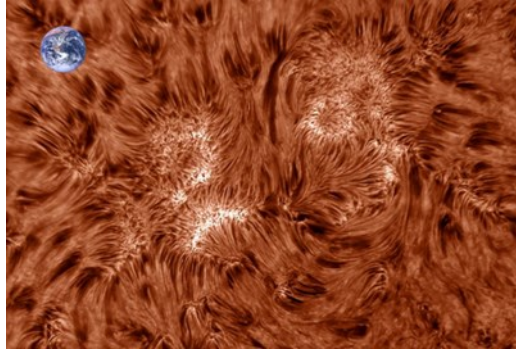
Solar wind was rattling Earth's magnetic field: There's more to a geomagnetic storm than auroras. Note here the squiggles on Stuart Greens magnetometer in Preston, Lancashire, UK:



"Earth's magnetic field had been unsettled for days," reported Stuart Green. The squiggles in his chart represented changes in the local magnetic field caused by the buffeting of solar wind high overhead. They are the magnetic manifestation of auroras dancing at the same time around the Arctic Circle.

Note the sudden onset of unrest during the late hours of September 27th. That's when a solar wind stream hit Earth's magnetic field, sparking G2-class geomagnetic storms.

No sunspots, all froth: There were no sunspots on the Sun the first days of October, but there was a lot of magnetic froth.



(Earth insert shown for size comparison)

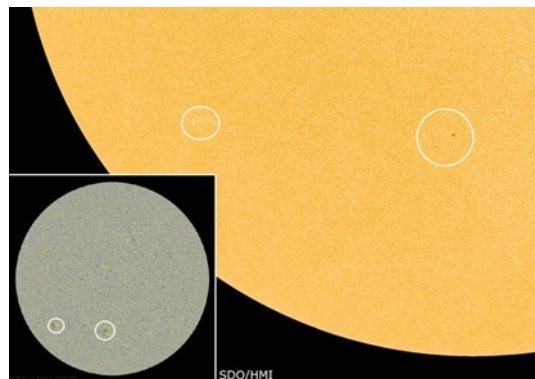
The frothy sea of magnetism shown in this Tosi's photo, is called "plage"--French for beach. Bright plage often surrounds large sunspot groups. There was a sunspot at this location, but it abruptly decayed after unleashing a C1-class solar flare. Only the froth remained.

October 3rd - The strange spotlessness of the Sun: On September 15th, NOAA and NASA announced that new solar cycle 25 had begun. Since then, the Sun has been blank, totally spotless, almost 90% of the time. This sustained lack of sunspots shows that Solar Minimum is not over, Solar Cycle 25 is still too weak to break its icy grip on current solar activity.

October 6th - The Sun was blank, no sunspots. The current Stretch: 10 days. There were no significant coronal holes on the Earth-side of the Sun. Planetary K-index was: Kp1, quiet, SFI was at 71. A slight up-tick in HF propagation.

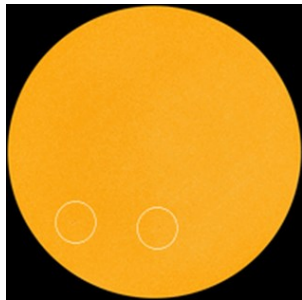
October 8th - New sunspot alert: Breaking a string of 12 spotless days, a new sunspot was emerging in the Sun's southern hemisphere. Its magnetic polarity marked it as a member of new Solar Cycle 25. Solar Physicist Predicts a Slightly Better Solar Cycle 25: <http://www.arri.org/news/solar-physicist-predicts-a-slightly-better-solar-cycle-25>

October 9th - Active regions 2774 and 2775, in the southern hemisphere, would officially break the spotless streak. Both remained small, and were not considered a threat of noteworthy solar flares.

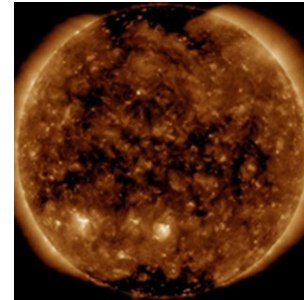


Imagery by SDO/HMI.

Two new sunspots were emerging at the circled locations. They had not yet received official Active Regions numbers.

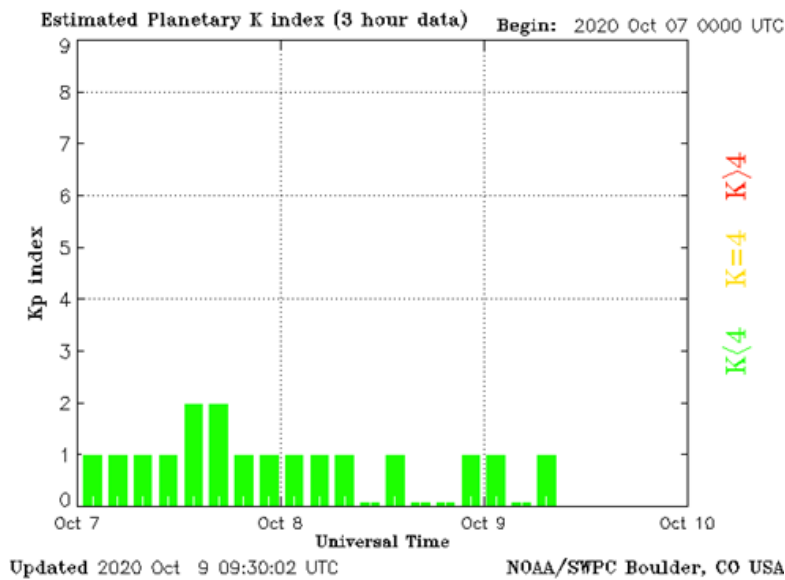


Credit: SDO/HMI



Coronal Holes October 9th, Credit: SDO/AIA

There were no significant coronal holes on the Earth-side of the Sun.



Band Conditions were at: - SFI-72, Kp-1

Solar-Terrestrial Data - http://www.n0nbh.com			
09 Oct 2020 1122 GMT		VHF Conditions	
SFI 72	SN 0	Item	Status
A 3	K 1 / Plntry	Aurora	Band Closed
X-Ray <A1.0		6n EsEU	Band Closed
304A 95.0 @ SEM		4n EsEU	Band Closed
Ptn Flx 74		2n EsEU	Band Closed
Elc Flx 918		2n EsNA	Band Closed
Aurora 1/n=1.99		EME Deg	Fair
Aur Lat 67.5°		MUF	ES - SEASON BREAK
Bz 1.6 SW 312.3		MS	0 MIN 6 12 18 UTC MAX
		HF Conditions	
		Band	Day Night
		80n-40n	Fair Good
		30n-20n	Fair Fair
		17n-15n	Poor Poor
		12n-10n	Poor Poor
		Geomag Field	VR QUIET
		Sig Noise Lvl	S0-S1
		MUF US Boulder	9.60
		Solar Flare Prb	24%
(C) Paul L Herrman 2013			

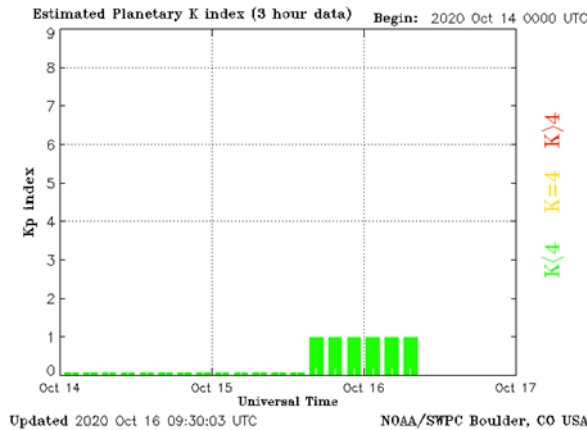
<https://qrznow.com/real-time-band-conditions/>

A very quiet Sun: Despite the emergence of two new active regions, (AR2774 and AR2775, containing 26 reported sunspots), solar activity remained very low. The Sun's X-ray output was flat, (not good for propagation), and the chance of solar flares were no more than 1%.

Almost a year after it began, Solar Cycle 25 has not yet broken the doldrums of Solar Minimum
 Credit: SDO/HMI

Regions AR2774 and AR2775 belonged to new Solar Cycle 25, but they were small, and posed no threat for strong solar flares.

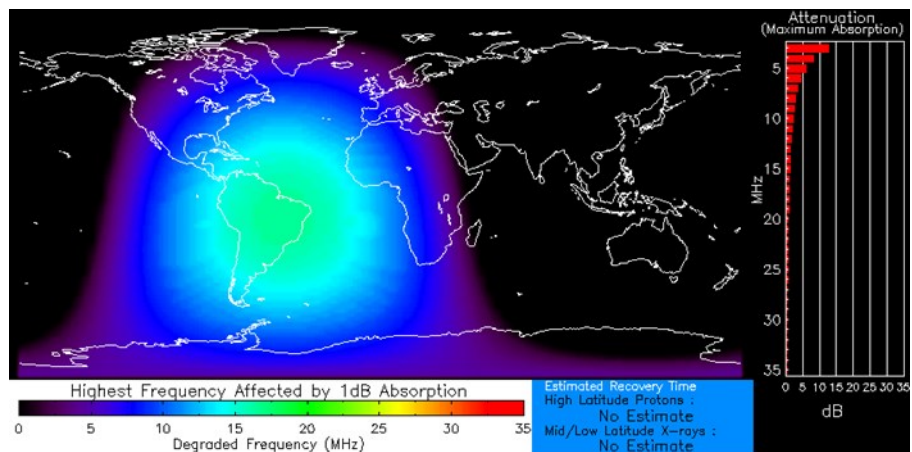
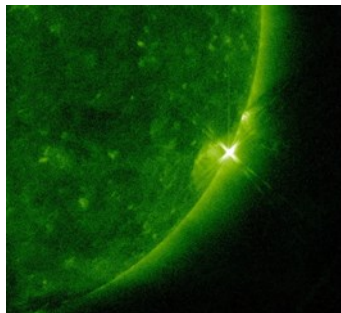
Week Two: New sunspot alert: A new active region was emerging near the Sun's southeastern limb, AR2776. It's magnetic polarity marked it as a member of new Solar Cycle 25. Minor B-class solar flares were expected in the following hours.



October 14th and 15th, Kp indices flat-lined.

October 16th - Growing sunspot: New-cycle active region, AR2776, had quadrupled in size since it first appeared on October 14th. It was not yet large enough to pose a threat for strong solar flares.

October 17th - The Sun wakes up, and fires an impressive solar flare for solar Cycle 25. As a bright region rotated out of view, it launched a couple of occluded flares, which meant, the Sun partially blocked them from view. They arrived as C-class at Earth, but were thought to be larger.

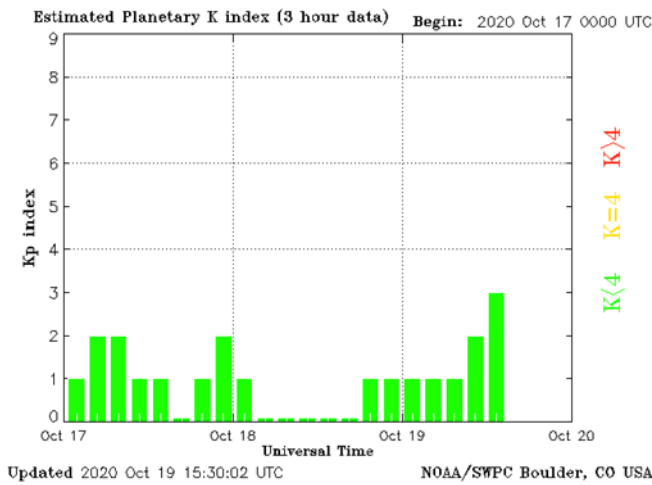


Elevated X-ray flux
 Product Valid At : 2020-10-16 15:12 UTC

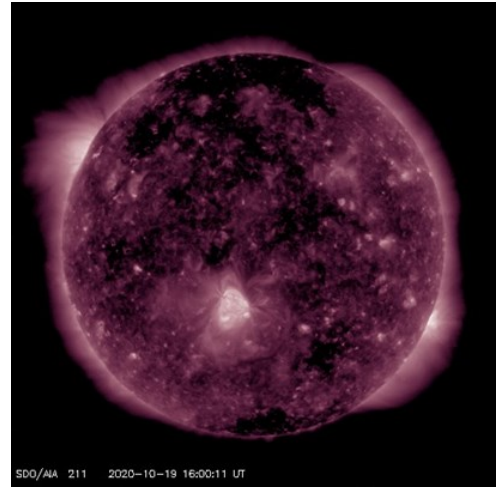
Normal Proton Background
 NOAA/SWPC Boulder, CO USA

Solar flare activity showed a second active region, AR2775, unleashing a pair of C-class solar flares. The strongest propelled a cloud of plasma into space. It would not hit Earth, but the UV radiation from the flares briefly ionized the top of Earth's atmosphere, causing a minor shortwave radio brownout over South America. (15:11 UTC).

Week Three: The Sun is definitely waking up.



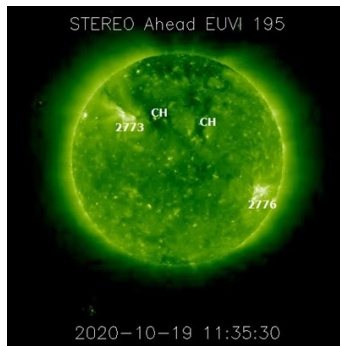
SFI - 76, SSN - 28



SDO/AIA

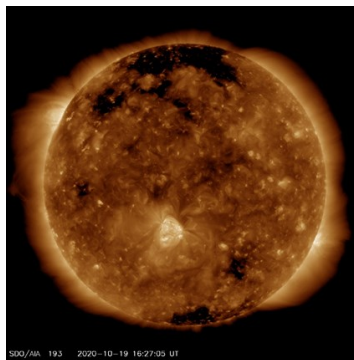
We have gone from a spotless Sun just in week two, too multiple bright regions on the Earth-facing disk, with two large active regions. These active regions had boosted the solar flux into the mid-70's. They were also firing off B and C- class solar flares.

One of these flares, a C5 level flare, occurred just slightly behind the Sun's west limb, resulted in a very spectacular fire plume, like we have not seen before in this new cycle.



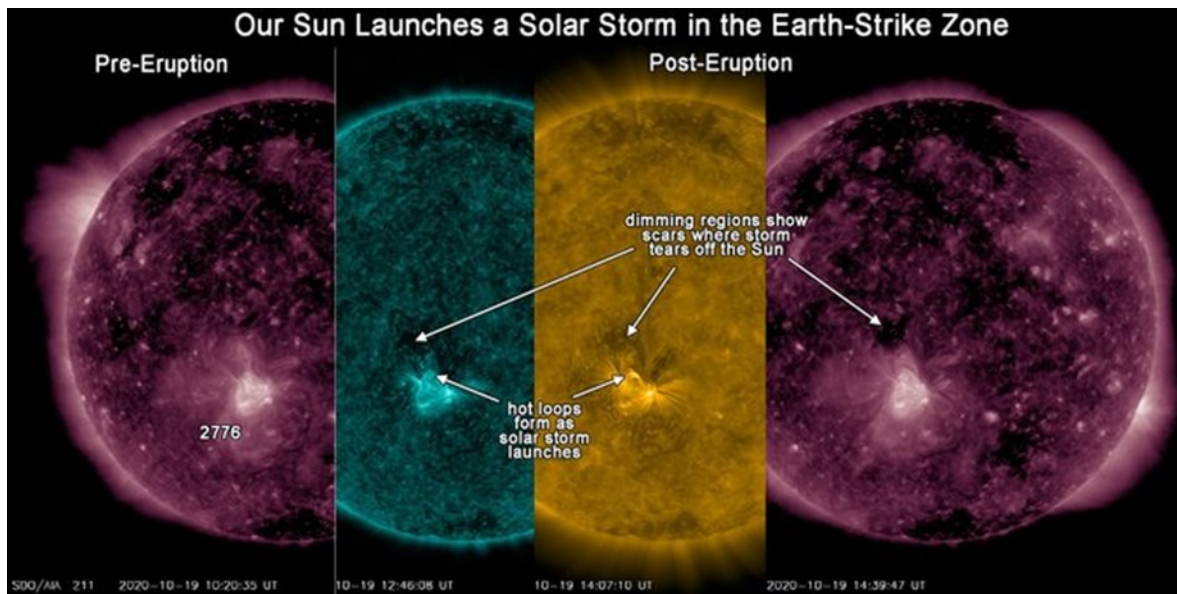
STEREO Ahead EUVI 195

We had a coronal hole that would rotate into the Earth-strike zone later in the week. This would begin an extended period of fast solar wind from several coronal holes, including a polar coronal hole we have seen before.



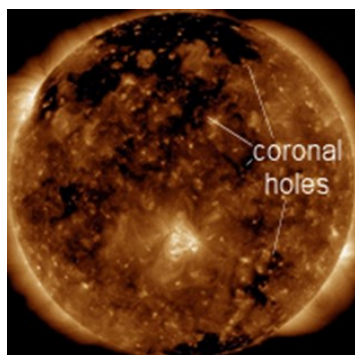
SDO/AIA

Last month the fast solar wind from these coronal holes brought us up to G2-storm levels. We will see if this will be a repeat performance. If so, we expect the peak of the storm to be sometime around October 25th. Finally, the far-side of the Sun was almost as dazzling as the front side. We had a stunning filament bridge dangling over a big bright region on the Sun's east limb in STEREO's view. It was hard to tell if this filament could hang on until it rotated into Earth view. We would have to wait and see how all these active regions were to impact radio propagation.

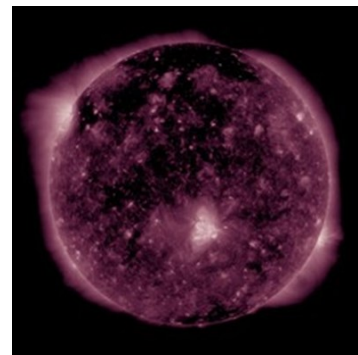


We had a new launch in the Earth-strike-zone. Hot loops and scar like dimming regions, were clearly visible near region AR2776, which was evidence of the launch. Earth expected impact was around October 23rd.

The finger like extent of the north coronal hole had clearly changed. The shape of the hole has much to do with how quickly the wind speed ramps up, which translates into how "hard" the fast solar wind impacts Earth.



Credit: SDO/AIA



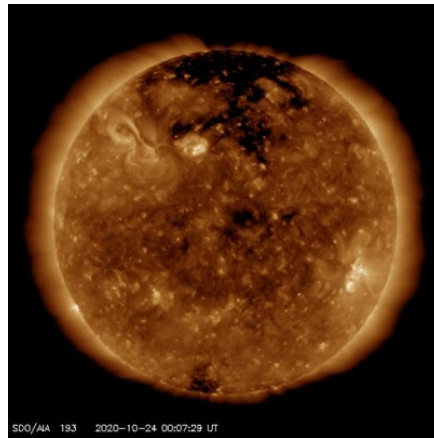
Credit: SDO/HMI

Solar wind flowing from this network of coronal holes would buffet Earth's magnetic field from October 21st through the 25th. New-cycle sunspot AR2776 was crackling with minor B-class solar flares (upper left image).

We had a familiar coronal hole that was facing our planet, and based on what it managed to do during the previous rotation, we could again expect multiple days with geomagnetic storm conditions during the second half of this week (upper middle image).

October 25th - As we entered week four, we saw the formation of several tornado like filaments erupting on the north east limb. Increased activity on the Sun was really ramping up. These eruptions shows the importance of tracking these CME clouds of plasma through space. They may have been North on the Sun, heading away from

earth at 60°, but these eruptions could have been a direct hit if they had occurred two or three days later.



Solar-Terrestrial Data - http://www.n0nbh.com													
25 Oct 2020 0521 GMT		VHF Conditions			HF Conditions			Condition		K-In	A-In		
SFI	72	SN	11	Item	Status	Band	Day	Night	Quiet	0-2	0-7		
A	17	K	3	Aurora	Band Closed	80n-40n	Poor	Fair	Unsettled	3	8-15		
X-Ray	<A1.0	6n EsEU			Band Closed	30n-20n	Fair	Fair	Active	4	16-29		
304A	97.5	@ SEM	4n EsEU			Band Closed	17n-15n	Poor	Poor	Minor storm	5	30-49	
Ptn Flx	NoRpt	2n EsEU			Band Closed	12n-10n	Poor	Poor	Major storm	6	50-99		
Elc Flx	0	2n EsNA			Band Closed	Geomag Field UNSETTLD			Severe storm	7-9	>100		
Aurora	1/n=1.99	EME Deg			Fair	Sig Noise Lvl	S2-S3			SFI A-In	K-In	Prop Opng	
Aur Lat	67.5°	MUF	ES - SEASON BREAK			MUF US Boulder	7.81			>180 <8	<3	E-W open	
Bz	1.9	Sw	580.6	MS	Solar Flare Prb			10%			>180 <8	>3	N-S open
										>250 >30	>3	Aurora	

Propagation - HF Band Conditions

Forecast Prepared by the U.S. Department of Commerce, NOAA, Space Weather Prediction Center
 Issued: 2020 October 25, 0030 UTC

The greatest observed 3 hr Kp over the past 24 hours was 4. The greatest expected 3 hr Kp for Oct 25-Oct 27 2020 was 5 (NOAA Scale G1).

G1 (Minor) geomagnetic storm levels were likely on October 26th, due to CH HSS activity.

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](#)



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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

RANDOM SITE OF THE MONTH
[Kiva Micro Lending](#)

THE ROUND TABLE ARCHIVE

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

THE ROUND TABLE ARTICLE INDEX

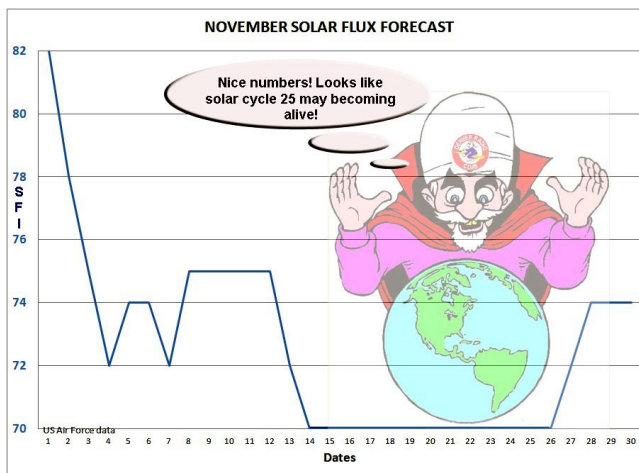
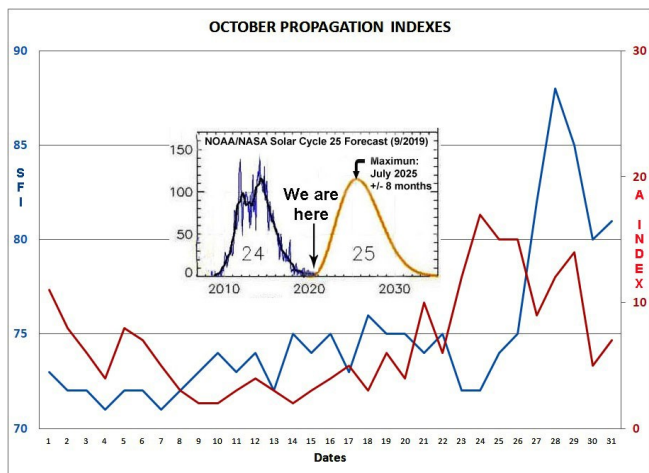
Go to: <http://www.w0tx.org/RoundtableArchive/-RoundTables-Index.pdf>

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 *Round Table* 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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All cancelled.

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
California	10/03/2020	10/04/2020	California QSO Party	
Nevada	10/09/2020	10/11/2020	Sierra Nevada Amateur Radio Society	
Arizona	10/10/2020	10/11/2020	Arizona QSO Party	
Pennsylvania	10/10/2020	10/11/2020	The PA QSO Party Association	
South Dakota	10/10/2020	10/11/2020	South Dakota QSO Party	
New York	10/17/2020	10/18/2020	Rochester DX Association	
Illinois	10/18/2020	10/19/2020	Western Illinois Amateur Radio Club	

ATTENTION

SUPPORT THE DRC FROM YOUR AMAZON PURCHASES

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DRC's Trading Post

Speaking of purchasing don't forget you can find **locally-sourced, ham-grown** merchandise at:
<https://www.w0tx.org/trade.htm>

DRC REPEATERS

BAND	Freq / Shift / PL Tone	Additional Information
6m	53.090MHz (-1MHz) 107.2Hz PL	
Packet	145.05MHz<>14.105MHz	2m / 20m gateway. Useable by Technicians on 2m.
2m	145.490MHz (-) 100Hz PL	Linked to 70cm / 448.625MHz. Primary frequency during emergency net.
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 2m / 145.490MHz. 1° disaster net freq.
70cm	449.350MHz (-) 100Hz PL	Wide area coverage with Echolink, node # 4140. Secondary frequency during emergency net.
70cm	449.775 MHz (-)	Yaesu digital, C4FM, Wires-X, DN, VW & Data. No analog FM. W0TX Room 40931.
70cm	446.7875MHz (-)	BrandMeister Repeater: Slot 1 – Wide Area Traffic, Slot 2 – Local Talk Group 310804



HRO 12 STORE BUYING POWER WORKS FOR YOU!!

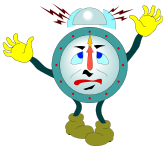







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e-mail: denver@hamradio.com

NOVEMBER 2020							<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 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	5	6	7 November Sweepstakes - CW Starts 2100 UTC	
8 November Sweepstakes - CW continued  Last Quarter	9 November Sweepstakes - CW Ends 0259 UTC	10	11 Learning Net 7:30 p.m. 145.490 / 448.6 (No PL) 	12	13	14  Full Moon	
15	16	17	18 DRC Online Meeting Elmer 6 p.m. Meeting 7 p.m.	19	20  New Moon	21 November Sweepstakes - Phone Starts 2100 UTC  First Quarter	
22 November Sweepstakes - Phone continued	23 November Sweepstakes - Phone Ends 0259 UTC	24	25 Learning Net 7:30 p.m. 145.490 / 448.625 (No PL)	26 	27	28 EME Contest 50 - 1296 MHz - Starts 0000 UTC	
29 EME Contest - Ends 2359 UTC	30  Full Moon						

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Please Let Us Know

Over the years we occasionally hear from hams who have read the Round Table 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 Round Table Round World.

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 25th of the Month. ~ Editor