The LongPath

November 2023 — Volume 47 Issue 11 A North Alabama DX Club Publication

Contents:

Contributors:
AC4G
AG4W
G3ZIL
N4BCD
N4NM
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WA4HR

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From the President

By Bruce Smith, AC4G

I want to begin this month's article by reminding our NADXC members that the sixty meter (60m) amateur band is under consideration for modification by the FCC. The FCC is considering dropping the power requirement from 100 watts ERP to 15 watts EIRP meaning that communication may be greatly impeded with this power reduction. I have been active on the 60m band for about a year and have confirmed contacts with about 120 DXCC countries. One might ask themselves, "who cares about 60m, since is does not count for a DXCC award?" One day there might be an award. It is like the WARC bands. One day there was not an award, but later the ARRL created awards for the WARC bands. But this is not about awards. To me this is about potentially losing one of our bands. If we lose one, could we continue to lose other bands? On October 22, I filed comments to the FCC regarding Docket 23-120 stating that I am opposed to these changes and provided a couple of reasons why. I suggested the potential to prevent communications to other amateurs and also emergency communications. I also suggested the FCC provide hams with a similar 60m band plan that Canada has adopted adding 15kHz of continuous spectrum and allowing 100 watts ERP. I hope that every member stands by the league in matters such as this. Let your voice be known when required.

If you have not been active on the bands lately, you are missing out. On the 22nd of October, we had one of the best openings to the Pacific area that I have ever experienced on six meters (6m). Fortunately, some of our NADXC members shared in the excitement with me working some new DXCC countries on the "magic band". When I got in my shack Sunday evening and after powering up my equipment, I went to 6m. I immediately decoded FK8CP calling "CQ AF" on FT8. I had already made QSOs on SSB and CW in the past, so I did not attempt to make another QSO with him, especially with him calling CQ Africa. However, as time went by, I worked VK4HJ and VK4UH. A short while later, I decoded VK4QG, VK4WTN, VK4KSY, VK4FNQ, and VK4KEE. In a short while, 3D2AG came barreling in with signals as high as plus 27. I copied 3D2AG from 0008Z until he faded about 0221Z a span of more than two (2) hours. Typically, we would get a short window and any station is gone on 6m - not this day. I also copied FK8HA, but had already worked him earlier in the year. The two I needed were E51WL and E51BQ. I tried, but

From the President (continued)

never was successful in working them. I announced many of these stations on the club's repeater. If you heard our chatter on 2m repeater, this should have brought you running to make some new QSOs, especially on 6m.

There are DXpeditions galore on the HF bands. The CQWW Phone Contest is running as I write this article. There are many DXpeditions on the calendar. A very good way to work new DXCC countries is to participate in the amateur radio contests. I am looking forward to working Steve Werner, AG4W from Cameroon in November. By the time this article is printed, Steve will be on his way there. We wish him safe travels and look forward to seeing him on the air as well as each of you in the "TJ9MD" pileups. These days the 10m and 12m bands are better than "hot". If you want to work some new DXCC entities, try these bands. Don't forget the low band season is upon us if you like working DX on 40, 80, and 160m. (Reference my article this month regarding two NADXC members working Swains Islands at almost the same time on 160m.)

I know some of you are continuing to work antenna and tower projects just as I am. I finally got my rebar cage completed, the forms in place and am ready for concrete on another tower to hold some monoband Yagi antennas (30m, 20m, and 10m) that I have collected over the years and stored in my garage or currently on a tower low to the ground. I have contacted every concrete place within 40 miles and am still awaiting to line up some concrete vendor to bring me some concrete to pour my pad. Fortunately, N4BCD, Mark brown is doing the same thing and has his pad poured and ready for antenna installation once his pad cures. As I write this article, the temperatures this next week are expected to plummet down to a low in the high-20's. This will put a damper on my pad pouring for a few days until the temperatures reach a daily high in the mid-60's. I trust everyone has either completed their outdoor projects or are nearing completion.

The NADXC constitution calls for the NADXC to hold officer elections at the November meeting. Our nominating committee has been working to seek individual members desiring a couple of offices this next year. You will not want to miss this meeting to vote on the new slate of officers that will be presented by our nomination committee to serve our club in 2024.

Another order of business that we will discuss and cast votes for is the "DX'er of the Year". This position honors the single member who has fulfilled this position by many, subtle criteria such as their activity on the bands working DX, promoting DX, helping other members setup stations to work DX, participated in a DXpedition as a team member, volunteering at the hamfest & other activities for the NADXC, and other qualities that are deserving for the one NADXC member. During this meeting, we will cast votes for "DX'er of the Year" and present this award during our Holiday Party in December.

Speaking of our NADXC annual Holiday Party, it will be held on December 12 at 6:30 p.m. at the Amerigo Italian Restaurant on South Parkway, Huntsville, AL. A menu has been selected where each attendee can order food and drink. The price for a meal will be approximately $48 per person. During this gathering, we will install newly elected club officers and also present the "DX'er of the Year". We would like all members to participate for this annual event as we wind down the 2023 year. A special thanks to Barry Johnson, W4WB, and especially Bob DePierre, K8KI for making the arrangements with Amerigo for our

From the President (continued)

venue this year.

Our next club meeting will be held on Tuesday, November 14 at 6:30 P.M. at the Signals Museum of Information Explosion, 1806 University Drive, Huntsville, Alabama. I look forward to seeing all of our members in person. I am looking forward to hearing Barry Johnson, W4WB discuss and demo three or more loop antennas. You do not want to miss this program. As a reminder, I also look forward to seeing everyone at the Amerigo Italian Restaurant for our annual Holiday Party on December 12.

HamDesk 4.0

By Mark Brown, N4BCD

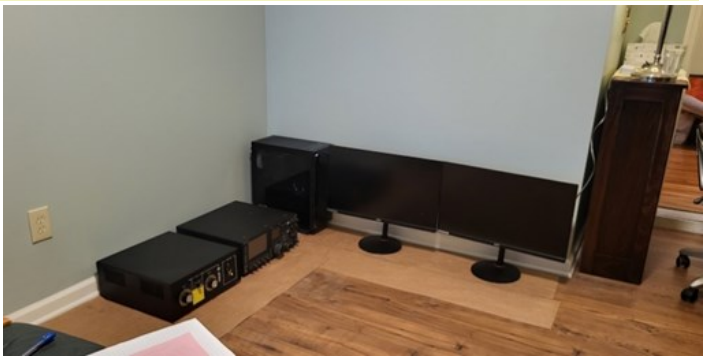
Introduction

My first HF station (ver 1.0) was in the garage on wire shelving. It was functional, but not ergonomic and uncomfortable in the summer and winter. HamDesk 2.0 found me using a corner desk from an office supply store in a spare bedroom. It was deeper than most desks, and the ergonomics of a corner proved practical, but it was crowded. When we moved into a new home, I continued using the corner unit but built wall shelves to hold more stuff, so I'll call this HamDesk 3.0. The shelves were unfinished plywood but strong enough to hold a linear amplifier. Over time the store-bought corner unit showed it's age by sagging under the strain of heavy equipment.

A few months ago, we moved into our forever home – a restored 1921 farmhouse where I have a dedicated man-cave. It wasn't until I spent time in the room that I could envision what I wanted. I knew I'd be scratch building something strong enough and big enough to meet my needs.

Planning for HamDesk 4.0

Using my Serta office chair as a guide I set the bottom of the desk height to 29". It allows the chair arms to fit underneath. Next, I used some left-over construction paper (that roll of stuff you put down on new flooring to prevent damage) and laid out an area in a corner with my radios and equipment on it. I wanted the desk deep enough to hold the equipment but to not overwhelm the room.



N4BCD used his equipment to help plan the desk's dimensions.

After numerous folds and cuts on the paper I settled on the dimensions of the L: the main side for radios is 80" x 29", and the computer side would be 66 ½" x 20 ½".

The shelves above the desk would be somewhat smaller to give a cleaner appearance: 48" x 19" above the radios, and 58" x 14" above the computer.

I thought about a movable desk & shelves on wheels but it would complicate the design for questionable benefit.

Oak plywood, strong and attractive, would

HamDesk 4.0 (continued)

be used. Unlike version 3.0, I would finish the edges with mitered oak corner molding so it would match the plywood when stained.

Since the entire span of the L would be anchored to the wall, a wiring path would be created with 2" holes and plastic wire cups as seen on office desks were identified.

Double track shelf hangers would be screwed to studs for the strength.

Sourcing

Living in Mulberry, TN necessitates strategic sourcing. Big box stores are at least an hour away so I bought the plywood in Madison, AL and had them make a few dimensional cuts so it would fit in the car.

Oak corner molding was purchased via the Home Depot website with free shipping. I ended up with different trims on the desk and the shelves when the first one went out of stock. Lesson: calculate the entire material BOM and order once.

Most stores have the double track shelf brackets but they carry only white. It took a few evenings of internet searching to find that the South Huntsville Home Depot carried them in black.

Miscellaneous material such as screws, bolts, brackets, and stain were available in Fayetteville Lumber.

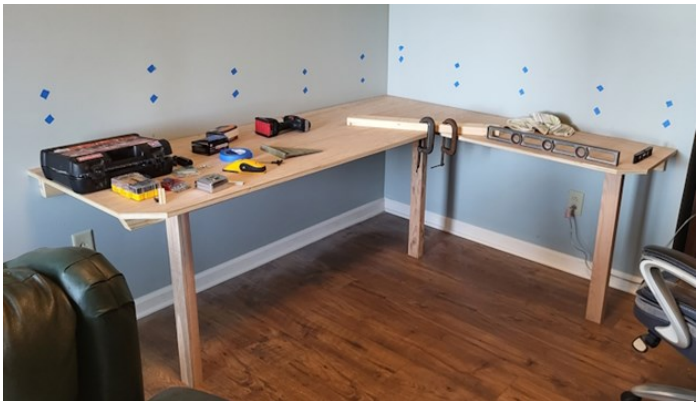
The basic materials were secured from multiple sources.

Building

Construction was pretty straightforward using a stud finder to lag bolt a prime (straight) 2 x 4 to the wall to anchor the desktop. I used planed and sanded 2 x 4" oak boards (a barn find) for the front legs. Another 2 x 4 was used as a stiffening beam set back from the front of the plywood. From experience I knew most of the weight would be toward the back of the desk.

Studs were used to anchor the desk to the wall.

Joining the two sides of the L was critical to making it look good so careful measurements were taken and a seamless joint was the result.



Leg placement was carefully planned.

HamDesk 4.0 (continued)

The desk legs were set back from the front to preclude ankle banging and anchored to the 2 x 4 stiffeners with steel L brackets.

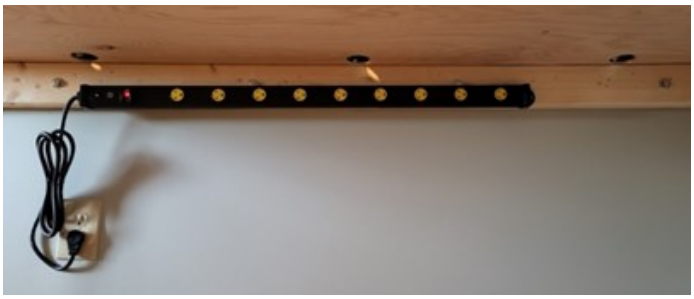
The mitered molding was done piece by piece, requiring back and forth trips to the miter saw in the garage and the mancave. It was tedious but necessary to ensure the precise fit on the 90- and 45-degree corners.

The desk was carefully sanded and finished.

The completed desktop and molding were sanded, stained, and finished with 2 coats of wipe-on polyurethane.

Double track hangers were screwed to the studs and the shelf boards were built in the garage.

Shelving was added and anchored into studs.

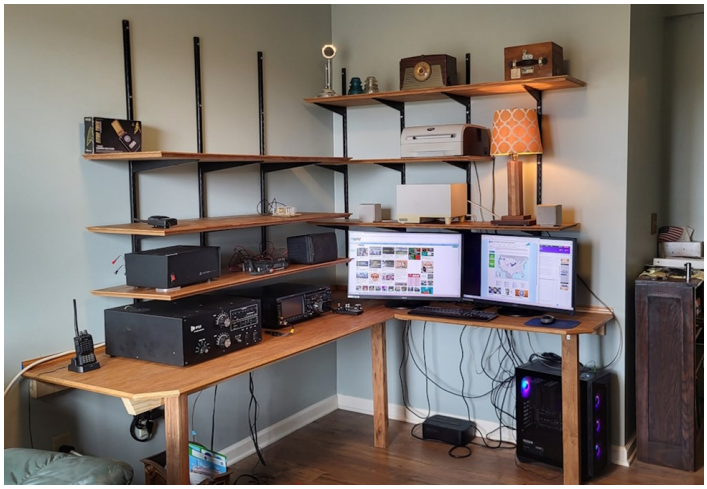


Power strips were installed under the desk.

GE Outlet strips were installed on both sides for convenience.

Completion

The desktop is now being filled with radio equipment being pulled from boxes that have been in storage for too long. Wiring will come later.



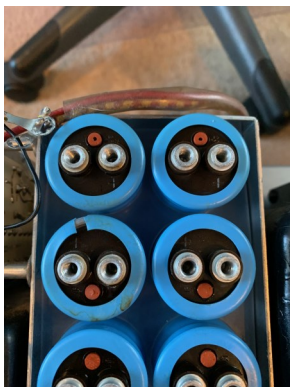
Next...

With HamDesk 4.0 completed, the focus shifted outside to take advantage of cooler weather to get the hole dug for a tower. That topic will be covered in Chapter 2.

A Marathon Month at a Sprint Pace

By Steve Werner, AG4W

It has been a busy month with so many projects in progress. I am currently sitting on a plane to Paris that should have left an hour ago on the way to Cameroon. I hope the pilot can make up the time. I just got my Cameroon Visa yesterday after resorting to a 24-hour expedited service. This was required due to the late arrival of our TJ9MD radio license from Cameroon. I managed to get a few more donations from DX clubs in the US. The van with all the radios and antennas is ready to go.



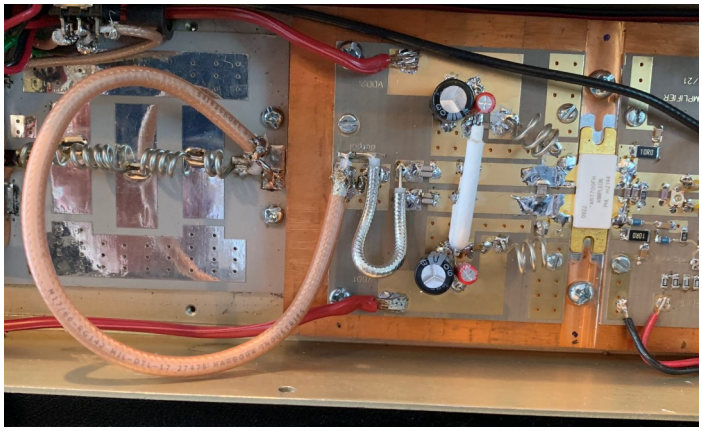
Two of the capacitors in AG4W's 6-meter amp failed.

Each of us will have two 50-pound bags with a 25 pound carry on. It was a tight connection in Paris, but I made it. I sure enjoyed meeting everyone at the radio club in Italy for pasta. They enjoyed the bottle of Apple Crown Royal I brought them as a gift after dinner.

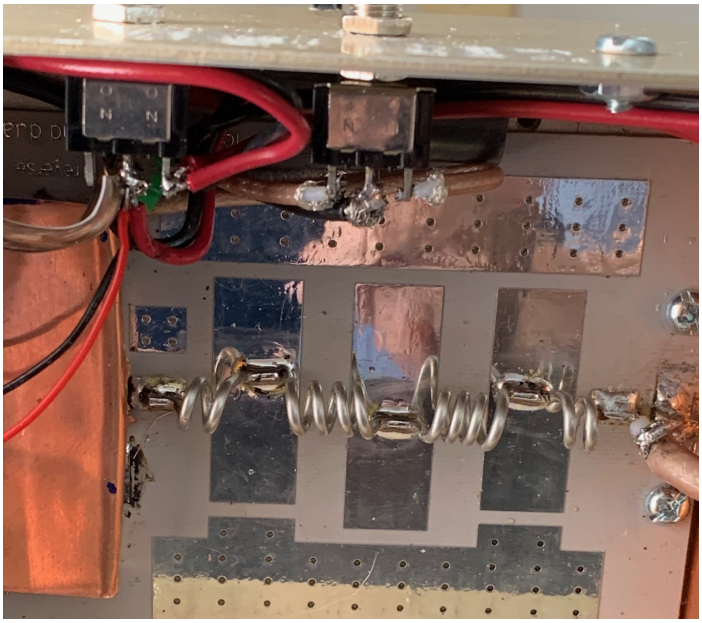
AG4W cleaned the I/O relay contacts while he was inside the amp.

This month my converted 6-meter SB-220 blew up in the middle of a great opening to FK. Two of the capacitors released a large volume of gas into the shack. The power electrolytic capacitors had been replaced before. The amplifier is almost 50 years old. When the pressure builds up a rubber plug pushes out and a small hole appears to let the gas out. The new capacitors are half the size. I hope they are as reliable.

I also used the opportunity to clean the I/O relay contacts. These are marginal for use on 6 meters. They also have had a hard life. In the future I will replace them with vacuum relays like I did with my AL-1200.



AG4W's homebrew 432 MHz 500-watt amp and low pass filter



Closeup view of AG4W's low pass filter kit from W6PQL

I have been very busy establishing a 432 MHz EME station. My homebrew 500-watt amplifier is working. I have plans to add some features

A Marathon Month at a Sprint Pace (continued)

to it. The chassis was an old Henry amplifier. The amplifier and low pass filter were kits that I purchased from W6PQL. These surface mount kits are not for inexperienced kit builders. They require precision positioning of small surface mount parts and attention to detail. With any of the new LDMOS amplifiers you should also plan on purchasing a copper heat spreader and plan on soldering the part to it. The LDMOS parts are very cost effective compared to high power tubes. Their output can take a lot of abuse, but care must be taken not to overpower the input. I ended up purchasing a new sensor for my Wavenode power meter. The Bird slug I had was reading about 29 percent low on power output.

I have been enjoying working DX and new grid squares on the Greencube IO-117 satellite. The same antennas and amplifier for EME is great for Greencube. I started with a single 14 element yagi and 75 watts. Now I have two 14 element yagis. The gain of the KLM antenna is not optimal because it is a log periodic yagi. I plan to optimize it, add elements and use hardline. The hardline project has been delayed due to the very dry ground since we have had little rain. Bruce, AC4G and I purchased some nice hardline at the Huntsville Hamfest. You should always purchase hardline and coax relays surplus because new from dealers they are very expensive. Always make sure you can buy the hardline adapters for PL259 or N connectors. They can be very hard to find.

AG4W is using a pair of 14-element KLM antennas.

I did make 17 EME contacts during the first weekend of the ARRL EME contest. One of them was my first 432 MHz EME contact. The rest were on 2 meters. I still get very excited with each contact.

When we arrived at our hotel in Cameroon it was dark and raining extremely hard with lightning. After the rain stopped, we set up 2 temporary verticals and began operating on CW.

Early in the morning we began installation of the 4 Spiderbeams and the 80-meter vertical. We conserve power so no air conditioning is used so we can run the amplifiers. It is very hot in the sun.

Included in TJ9MD's temporary antenna farm are four spiderbeam antennas.

I have had some enormous pileups and dead periods. On Sunday night there was a major solar event. That was one of the slow periods. When conditions are good, runs of 3-4 a minute are made. I have operated many hours with good conditions.

We had 40 QSOs on EME the first moon pass which is an amazing accomplishment.

As of Monday morning we have made over 20,000 contacts and Bruce AC4G had 12 of them. I enjoyed working him on one of those. We

A Marathon Month at a Sprint Pace (continued)

prepped the 160-meter antenna for installation today. I hope to see you all in the TJ9MD log.

Left: TJ9MD has installed a 160m antenna.

Right: TJ9MD operating station on location in Cameroon.

Two NADXC Members Near Simultaneous Swains Island 160m QSOs

By Bruce Smith, AC4G

An international team of amateur radio operators planned to operate for almost two weeks on Swains Island located in the South Pacific beginning in early October 2023 activating a rare DXCC country using the callsign W8S. Their transportation was delayed which reduced their operating time once landing on the uninhabited island owned by the Jennings family who gave them permission to land and operate. Knowing they had about seven (7) to nine (9) days or there abouts of operating time, this meant I needed to get on-the-air to make some QSOs since their operating time was to be cut short and not extended.

I hope all NADXC members had an opportunity to make some QSOs with the Swains Island DXpedition. This article is about three NADXC members needing Swains Island for a new band country on 160m as follows: Steve Werner, AG4W, Lile Bickley, K4NA, and myself (AC4G). I also needed them on 12m and needed a digital QSO for my DXCC. In order to work DX on 160m, one must be dedicated and persistent at either our sunset and sunrise following the greyline or anytime in between in total darkness in the middle of our night. Knowing this, I knew we were going to spend lots of time in the operating position waiting for a top band opening.

For several mornings, AG4W and I were trying very hard to copy their signal on 160m CW without any luck. We then knew that FT8 might be our saving grace. W8S began exclusively using FT8 since their QSO rate was slim to none. Steve

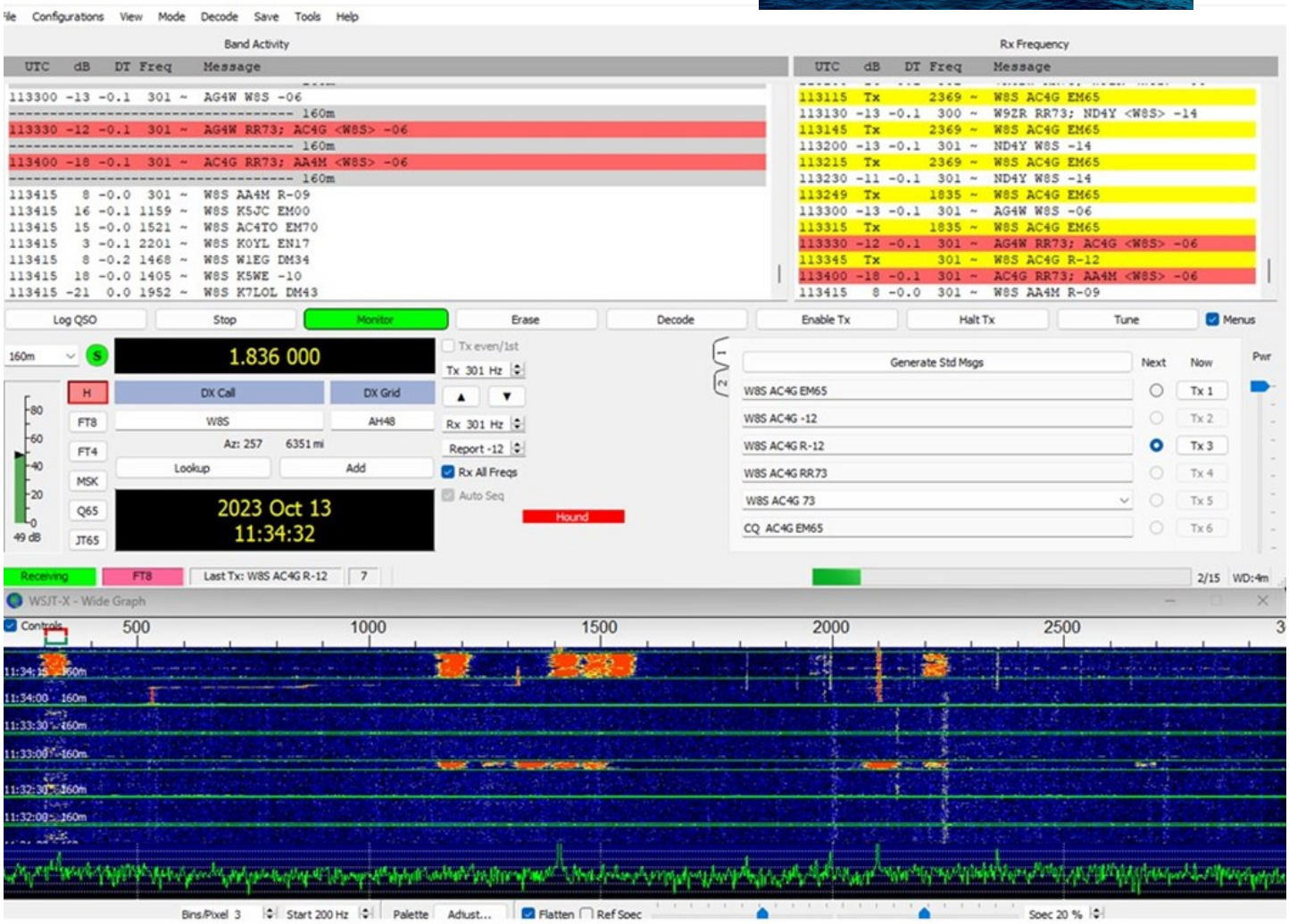
Two NADXC Members Near Simultaneous Swains Island 160m QSOs (continued)

and I talked back and forth on the club's 2-meter repeater (147.93/147.30 MHz) comparing signals reports and FT8 traces or at least the bits & pieces of the FT8 trace we believed to be that of W8S that we were seeing. Eventually, K4NA joined in needing to make a 160m QSO like us both to add another DXCC country to our 160m DXCC total. Lile did not talk a lot on the repeater because sometimes our chatter was distracting, so he used headphones a lot of the time to better concentrate on the W8S marginal traces that he was receiving. Lile had to leave on the following Saturday, which gave him about three mornings to make a 160m QSO. He was as serious as we were about making that single coveted QSO to add another country to his 160m band total.

Every morning after reading the news reports that the W8S team had erected their 160m antennas up, you could find Steve, Lile, and I in our shacks waiting for a 160m opening to occur at odd times of our early mornings past midnight. Steve was in his shack sometimes as early as 3:00 a.m. local time. Lile was also in their early, one morning at 2:00 a.m. I made it as early as 4:30 a.m. most mornings waiting past our sunrise which was about 11:46Z (6:46 a.m. local time) to see if their signals would come up for a sunrise enhancement event to occur. One morning, the W8S signals peaked from 1130Z until 11:42Z before our sunrise. Another morning, the W8S 160m signal peak that I saw occurred from 11:10Z to 11:25Z (6:10 a.m. – 6:25 a.m. local) before they faded, never to be heard again that morning. Typically, we would get an enhanced signal a few minutes prior to our sunrise until as many as ten minutes past sunrise. This just did not seem to be happening. I am not sure if it is because the current solar cycle at the present time favors the higher bands and takes away from the low bands, but the low bands just do not seem as hot as the higher bands (10m, 12m, and 15m) these days; however, it is early in the low band season for good propagation to occur.

One morning, the morning of October 13, AG4W and I got a break. We did not hear K4NA on the 2m repeater, but later found out he was there monitoring the 160m band and the local DX repeater. Again, we were discussing whether we copied their signal. All of a sudden, I began receiving the W8S FT8 RTI trace at 1125Z (5:25 a.m.) and relayed this to Steve. He said he did not see anything on his screen. The signal I received was not stable, but in and out, not good enough to call. This went on for about ten minutes when the W8S signal suddenly was very strong. Steve reported seeing their strong signal as well. We both decided to call. In less than a minute, Steve won out and received a -06-signal report. I couldn't believe it, but AG4W sent the -12-report back to W8S, but worried if he would be able to receive the "RR73". On the next W8S transmission and at the same time that he received the "RR73", I received my signal report. I likewise received a -06-signal report. I also sent a -12-report and thankfully, received my "RR73" during the next W8S transmission. We could not believe we both were logged at nearly the same time (11:33Z/11:34Z) both receiving (-06) and sending (-12) the same signal reports. We were both exhilarated. The W8S signals did peak, but before sunrise again with their signals lasting longer this morning. See screenshots (Screenshot 1 and Screenshot 2) of AG4W and AC4G screens showing both AG4W's and AC4G's top band QSOs with W8S on the same W8S transmission(s).

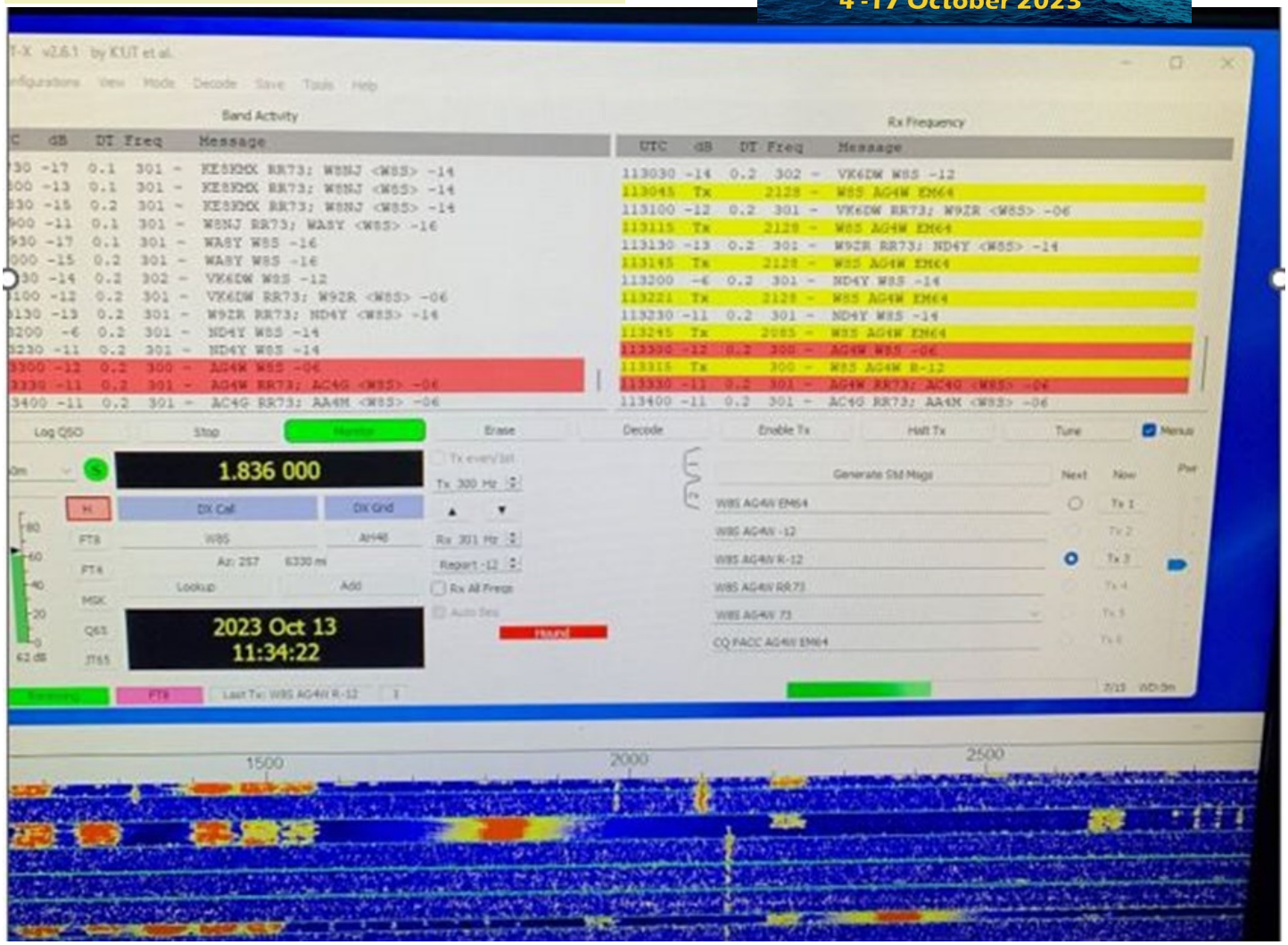
Two NADXC Members Near Simultaneous Swains Island 160m QSOs (continued)



Screenshot 1: AC4G Screen Perspective for W8S FT8 QSO on 160m

Lile, K4NA told me later on the telephone that he saw us sending a report but could never receive the W8S signals to see if we made a QSO. Lile had gotten up around 2:00 a.m. a few days earlier, was in his shack, and saw their FT8 signal trace, but could not work them at that time as their signal was not strong and steady enough to make a QSO. Believing he had an issue with his receiving array, he installed and checked out a Beverage-on-the-Ground (BOG) receiving antenna pointed directly West. He was ready for one more day, but unfortunately, W8S did not operate the next morning on 160m. They were on another band, so K4NA missed out that morning. Unfortunately, time ran out and Lile was not able to make the 160m QSO before having to go on travel. Hopefully, he will get another chance in a few years and be able to make a 160m QSO during the next DXpedition to Swains Island. However, I listened on Sunday morning, the day he was traveling to experience similar marginal weak, unstable conditions that lasted only for a few minutes

Two NADXC Members Near Simultaneous Swains Island 160m QSOs (continued)



Screenshot 2: AG4W Screen Perspective for W8S FT8 QSO on 160m

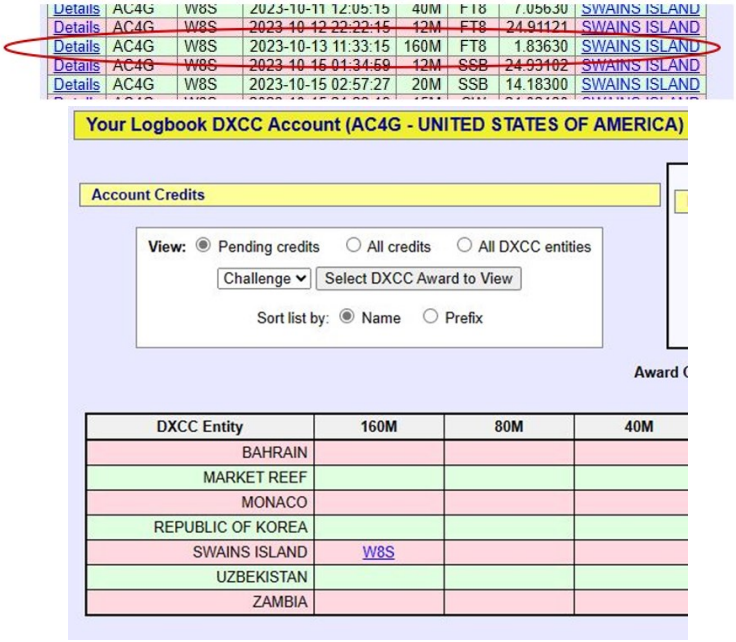
before the W8S top band signals faded away. Lile most likely did not miss anything.

I just wanted to share this brief experience with you because I have never seen two NADXC members on the same FT8 RTI stream at the same time receiving the same signal report. To do it on "Top Band", 160m is highly unlikely and may never happen again for such a rare DX entity. I want to add that I have my LOTW confirmation in-hand (See Screenshot 3). The time spent discussing it on the club's 2m repeater with a fellow DXer made it more enjoyable and a memory that I will always cherish. I will never forget sharing this experience with Steve, AG4W and Lile, K4NA on the repeater. It was indeed special due to the circumstances. I encourage every NADXC member to use the NADXC 2m repeater to at least share DX spots with other members as well as hear exotic DX being announced by other NADXC members. You never know, you might experience a new country or rememberable times on the repeater like I have for this QSO and for past QSOs with other regular

Two NADXC Members Near Simultaneous Swains Island 160m QSOs (continued)

NADXC users such as N4NM, N4KH, and KR4F.

In summary, on Saturday evening, October 21, 2023, I announced a spot on the NADXC repeater regarding the three ZL's (ZL1RS, ZL1AWK, and ZL1SG) that I had just worked on the six (6) meter "Magic" band. Before too long, I noticed a few members attempting to make QSOs with these stations. I never did follow-up to see if they made a QSO, but I had a good feeling helping other NADXC members try to work a new band country. I have only heard five ZL's in my lifetime of 6m and new if I could help someone work a new country, both of us would be excited. That's why I see the importance of using the club's repeater. Especially on the 6m band and 160m band, rare DX entity openings do not come that often.



Details	AC4G	W8S	2023-10-11 12:05:15	40M	FT8	7.05630	SWAINS ISLAND
Details	AC4G	W8S	2023-10-12 22:22:15	12M	FT8	24.91121	SWAINS ISLAND
Details	AC4G	W8S	2023-10-13 11:33:15	160M	FT8	1.83630	SWAINS ISLAND
Details	AC4G	W8S	2023-10-15 01:34:59	12M	SSB	24.93102	SWAINS ISLAND
Details	AC4G	W8S	2023-10-15 02:57:27	20M	SSB	14.18300	SWAINS ISLAND

Screenshot 3: AC4G 160m Swains Island QSO Confirmation

Annular Eclipse Propagation Anomalies at HF

Introduction by R. Barry Johnson, W4WB; Article by Gwyn Griffiths, G3ZIL

An annular eclipse occurred on 14 October 2023, and a group of researchers including scientists, engineers, and a variety of amateur radio operators worked together to improve our understanding of sun-ionosphere-earth relationships through radio propagation experiments. This group is known as HamSci, the Ham Radio Science Citizen Investigation (https://hamsci.org/). HamSCI serves as a means for fostering collaborations between professional researchers and amateur radio operators. A number of universities participate in HamSCI, including the University of Alabama.

One of the lead researchers for this experiment was Gwyn Griffiths, G3ZIL. He has concisely documented the experiment and observations in five parts, viz., Introduction, Anomalies from D region absorption changes, Effects of reduction in the F2 layer critical frequency (foF2), Frequency spread - Indicator of change in propagation mode, and Doppler shift - Measuring the rate of change of one-hop path lengths. Gwyn has given his permission to reprint his papers in the *Longpath*. I found them informative and interesting. The equipment used by one researcher, Clint Turner (KA7OEI), in a detailed (30 pages) document that describes his adventure in preparing for the 14 October 2023, annular eclipse propagation anomalies at HF investigation. If you like hardware design and fabrication, I expect you will enjoy reading Clint's paper. It can be viewed at http://www.ka7oei.com/eclipse/eclipse_gear_1b.pdf. Some researchers used WSPR, but FST4W was the prime signal used.

October 2023 Annular Eclipse Propagation Anomalies at HF: Preview of FST4W Observations

Part 0: Introduction

Gwyn Griffiths G3ZIL gwyn@autonomousanalytics.com

Introduction

HamSci, the Ham Radio Science Citizen Investigation [1], is a platform with objectives to "*advance scientific research and understanding through amateur radio activities*" and to encourage development and up-take on new supporting technologies. A premier HamSci activity for 2023-24 is the Festival of Eclipse Ionospheric Science [1]. Targeting the 14 October 2023 annular and 8 April 2024 total eclipses over North America multiple events have been organised to improve our understanding of sun-ionosphere-earth relationships through radio propagation experiments. There is much still to learn. For example, observations from the 2017 eclipse over N. America were the first to show ionospheric bow waves (as with a ship) that had been predicted by theory.

An informal group of radio amateurs with shared interests in the technology and applications of WSJT-X weak signal modes have used innovative receiver and transmitter hardware, software, and the under-appreciated FST4W mode, to contribute to HamSci objectives. We used FST4W because it measures the frequency spread, which can be used to identify propagation modes [2]. These notes are their story.

Transmitters and receivers

Figure 1 shows locations of participating FST4W transmitters (red) and receivers (yellow) in the region with at least 60% occultation during the 14 October 2023 eclipse. Some closely located stations are hidden. To arrive at this favourable geometry, covering one- and two-hop along- and across-eclipse paths, several stations hosted purpose-built Turn Island Systems [3] multiband transmitters (K6RFT, KV6X, TI4JWC WB6CXC at CM88 and CN88, WO7I). Figure 2 shows the transmitter at TI4JWC, with the multiband Hy-Gain AV680 in Figure 3. KA7OEI used a portable custom multi-mode, multiband transmitter [4] that also transmitted precision carrier frequencies for Doppler shift measurements. Other FST4W transmitters used QRP Labs' QDX. In all cases, master oscillators were GPSDOs or, at KA7OEI, a rubidium standard. These measures assured frequency spread and absolute accuracy of better than 5 mHz from the transmitters.

Receive sites used multiband KiwiSDRs and RX888 SDRs, the latter running 'KA9Q radio' [5] within the WsprDaemon reporting package [6]. Figure 4 shows the AI6VN portable station at an annular eclipse site near Winnemucca, Nevada.

All the FST4W data gathered by these stations is open access. A Guide is available [5], with an Annex on access methods. Alternatively, sites wspr.rocks and wspr.live provide access and graphical outputs. Please acknowledge Rob Robinett AI6VN and individual data contributors in any output.

Previews of eclipse effects on propagation

We'll issue topic-specific one-page previews [7], beginning with:

- Anomalies from D region absorption changes.
- Effects of reduction in the F2 layer critical frequency.

Others will include: effects on frequency spread, mean Doppler shift, multiband operations and propagating disturbances.

From top: Figure 1. Map of the annular eclipse in cyan with the white lines either side at 80% and 60% occultation. Map pins show locations of transmitters (red) and receivers (yellow) described in these initial previews. Credit: Google Earth and NASA GSFC F.Espenak. Figure 2. Turn Island Systems BeaconBlaster-6 multiband FST4W transmitter at TI4JWC. Figure 3. Hy-Gain AV680 vertical antenna at TI4JWC operable on all bands 6–80 m except 60 m. Figures 2 and 3 credit John Clark. Figure 4. AI6VN portable receiver station at Winnemucca, Nevada with an RX888 multiband receiver using KA9Q radio and WsprDaemon recording software. Just visible to the left is the 40 m Beverage antenna. Pictured are Gary Crum KK7DV, Tom Bunch WO7I and Rob Robinett AI6VN. Image credit Gary Crum

References

1. https://hamsci.org and https://hamsci.org/eclipse
2. http://wsprdaemon.org/Griffiths_FST4W_2023_HamSCI.pdf
3. https://turnislandsystems.com/
4. http://ka7oei.blogspot.com/
5. https://github.com/ka9q/ka9q-radio
6. http://wsprdaemon.org - and see guide on the Timescale page.
7. For updates see posts at https://groups.io/g/wsprdaemon

V2. 31 Oct 2023

October 2023 Annular Eclipse Propagation Anomalies at HF: Preview of FST4W Observations

Part 1: Anomalies from D region absorption changes

Gwyn Griffiths G3ZIL gwyn@autonomousanalytics.com

Noise level at 7.04MHz

WsprDaemon [1] software enables noise measurement at the same time and frequency as the acquisition of WSPR and FST4W spots [1]. Sites KFS (CM87tj) and KPH (CM88mc), coastal Northern California, have particularly low local noise. Propagated-in noise dominates when bands are open. On 7 MHz there is a consistent diurnal pattern. Propagated-in noise is at a minimum around local noon due to the diurnal maximum in D region absorption, Figure 1a. The weakening of D region ionisation during the eclipse, reducing absorption, resulted in a rise in propagated-in noise, Figure 1b, 1c. While there were differences in detail, the triangular form of the noise anomaly was the same at KFS and KPH. The maximum anomaly was at 16:08 UTC at both sites (given 2 minute intervals): and the levels were similar +8.8 dB at KFS and +10.2 dB at KPH.

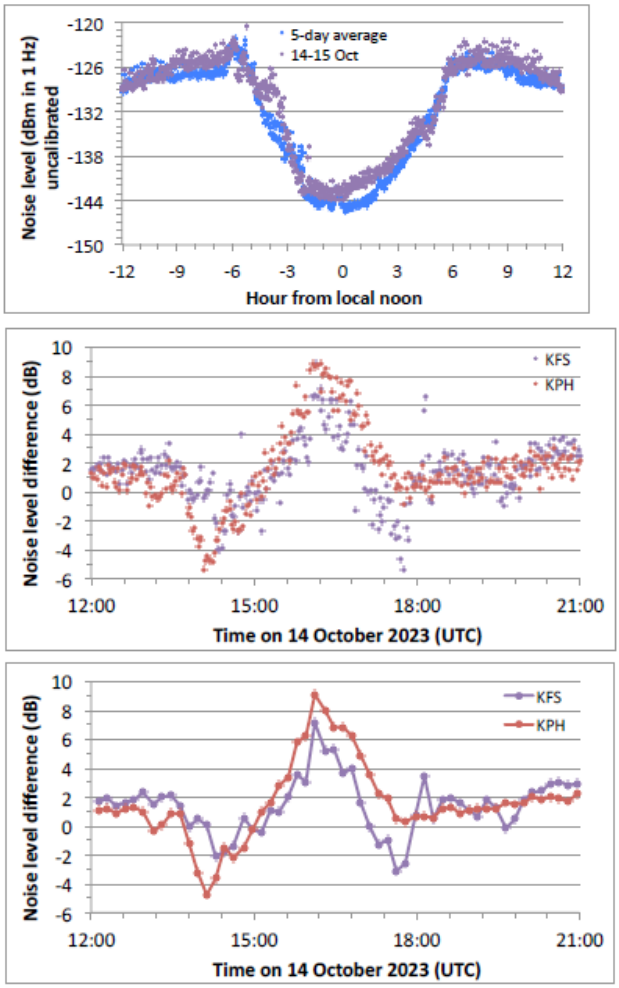


Figure 1. a. (top) Time series of noise on 7.040 MHz recorded at KFS (omnidirectional antenna TCI530). The magenta dots span 08:00 UTC 14 October to 08:00 UTC 15 October, where 0 is local noon i.e. 20:00 UTC. The blue dots are the average for the previous five days. b. (middle) Noise anomaly, the difference between noise on 14 October and the average at the same time over the previous five days for KFS and KPH. c. (bottom) As (b) but averaged over 10 minutes (5 measurements) with the maximum at 16:08 UTC at the centre of an interval.

Signal level at 3.57 MHz

At 7 MHz and below reduced D region absorption may lead to an increase in signal level on paths that are normally open. As changes in D region absorption also affect noise SNR may not be a reliable proxy for signal level; because WsprDaemon measures noise we can extract true signal level. The 14 October 2023 eclipse occurred during the morning on a 466 km path from WO7I (DN10cw, Nevada, 89% obscured) to KA7OEI-1 (DN31uo, N. Utah, 85% obscured). At 3.57 MHz on non-eclipse days, e.g. 15-18 October, Figure 2a, there was an essentially monotonic decrease in signal level prior to and during the eclipse's time frame as the band closed. In contrast, there was a rise, plateau, and fall for the enhanced signal level during the eclipse. This is clear in the +12 to +15 dB signal level anomaly in Figure 2b: the difference from a least squares fit to 15-18 October signal levels. After a step rise, at 15:58 UTC the anomaly was +13.9 dB, this being 22 minutes before annularity commenced at WO7I.

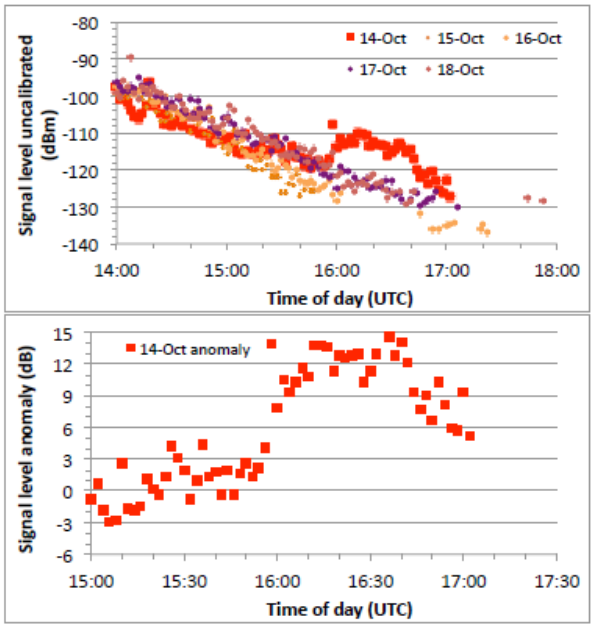


Figure 2a. (top) Signal levels on 14-18 October 2023 at KA7OEI-1 for FST4W transmissions from WO7I on 3.57 MHz. b. (bottom) Signal level anomaly for 14 October as the difference from a least squares fit to signal level on 15-18 October.

Data availability

The data shown here is part of an extensive dataset gathered by WsprDaemon. All data is open access. A Guide is available [1], with an Annex on access methods. Sites wspr.rocks and wspr.live also provide access and graphical outputs. Please acknowledge Rob Robinett AI6VN and individual data contributors in any output as below.

References

1. http://wsprdaemon.org - see guide on the Timescale page.

2. Griffiths, G., Robinett, R. and Elmore, G., 2020. *Estimating LF-HF band noise while acquiring WSPR spots*. QEX, Sep.-Oct. 2020.

Acknowledgment

Data acquisition for this preview was only possible through the efforts of Rob Robinett AI6VN, Clint Turner KA7OEI, Tom Bunch WO7I, the Maritime Radio Historical Society (KPH); Craig McCartney W6DRZ, Globe Wireless Radio Services and KFS Radio Club (KFS), Paul Elliot WB6CXC, Bret Anderson KG7RDR and Gary Crum KK7DV.

October 2023 Annular Eclipse Propagation Anomalies at HF: Preview of FST4W Observations

Part 2: Effects of reduction in the F2 layer critical frequency (foF2)

Gwyn Griffiths G3ZIL gwyn@autonomousanalytics.com

Across the path: Annular eclipse

Ionosonde charts from Pt. Arguello CA, Boulder CO and Austin TX showed a pronounced temporary dip in the F2 layer critical frequency (foF2) coinciding with the passage of the eclipse [1]. At Boulder the dip at 16:45 UTC was to ~8.5 MHz from the ~11 MHz average for the previous five days.

Figure 1 shows time series of SNR (2.5 kHz bandwidth) for FST4W transmissions on 14 MHz and 21 MHz from WB6CXC (CM88, CA, 84% obscured) to N6GN (DN70ll, CO, 83% obscured). The eclipse was annular at the mid point.

During the eclipse 14 MHz remained open, but 21 MHz closed between 16:20–17:40 UTC. The reduced foF2 was unable to support propagation on the higher frequency on this 1560 km path. The first missed spot on 21 MHz was four minutes before maximum occultation at the mid point. The first post-eclipse spot was 76 minutes later.

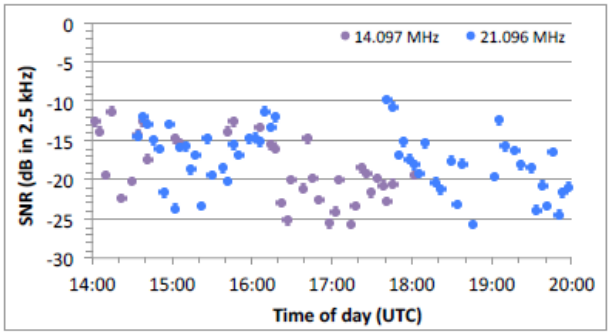


Figure 1. Time series of SNR at N6GN for FST4W transmissions from WB6CXC showing spots received on 14 MHz and 21 MHz during the eclipse.

Across the path: Partial eclipse

Band closure was not restricted to paths spanning the annular eclipse. The 1813 km path from K6RFT (EM47bg, MO, 69% obscured) to KA7OEI-1 (DN31uo, UT, 85% obscured) was entirely to the east of the track. Figure 2 shows that the gaps where no 14.097 MHz FST4W transmissions were received varied between the three antennas at KA7OEI-1. The number of sporadic spots within the gaps also varied:

- TCI530 Omnidirectional: 16:30–17:14 UTC with 1 spot in 23 transmission intervals.
- LP-1002 Log periodic heading 10° CCW of the path from K6RFT: 16:30–17:06 with 8 spots in 19 intervals.
- KLM 10-30-7 Log periodic heading 14° from 'back of the beam': 16:26–17:14 with 3 spots in 25 intervals.

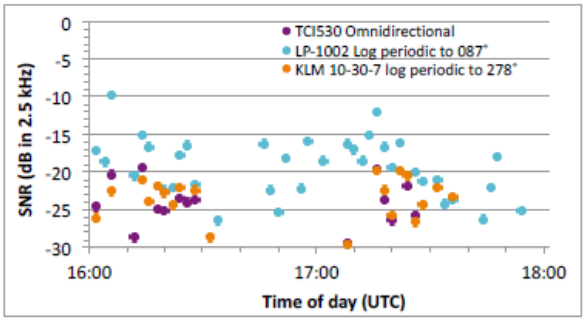


Figure 2. Time series of SNR at KA7OEI-1 on three different antennas for 14 MHz FST4W transmissions from K6RFT showing antenna-dependent gaps.

Along the path of the eclipse

TI4JWC, Costa Rica (EK70wb, 93% obscured), located just to the west of the greatest eclipse point, transmitted FST4W signals every 2 minutes on six bands simultaneously. From the resulting rich data set Figure 3 shows when spots were received at four stations close in on both sides of the track of annularity on 28.126 MHz: KPH (CM88mc, CA), KFS (CM87tj, CA), KA7OEI-1 (DN10cw, UT) and ND7M (DM16xf, NV). The bottom graph shows that the inter-hop skip zone on this two-hop path must have been at less than 4300 km prior to and after the eclipse, increasing to between 4500 km and 4850 km during the eclipse. However, while the band did not close beyond 4850 km the circuit reliability during the eclipse, top graph, was reduced at KFS and KPH, both with the same form.

The reappearance of spots at ~18:00 UTC at KA7OEI-1 and ND7M is tentatively explained as follows: As the eclipse travels southeast it first affects the ionosphere at the second hop. Later, when over the ground reflection, and its effect has diminished, spots return. Next, the first hop is affected: the gap returns. Ray trace experiments will be made to test this hypothesis.

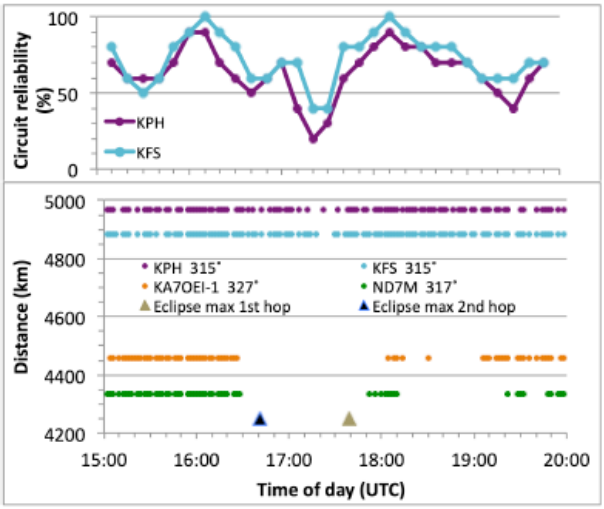


Figure 3. Top: Circuit reliability for the paths from TI4JWC to KPH and KFS as % of transmissions every 2 minutes received in 20-minute intervals. Bottom: Spots denote time of FST4W transmissions received from TI4JWC with range on 28 MHz, and path heading noted. The eclipse track from TI4JWC was ~321°. Also shown are the times of maximum eclipse at the locations of the first and second hops.

Data availability

The data shown here is part of an extensive dataset gathered by WsprDaemon. All data is open access. A Guide is available [2], with an Annex on access methods. Sites wspr.rocks and wspr.live also provide access and graphical outputs. Please acknowledge Rob Robinett AI6VN and individual data contributors in any output as below.

References

1. e.g. see https://sites.google.com/view/eclipse2023charts

2. http://wsprdaemon.org - see guide on the Timescale page.

Acknowledgment

Data acquisition for this preview was only possible through the efforts of Rob Robinett AI6VN, Paul Elliot WB6CXC, Glenn Elmore N6GN, Peter Freeman K6RFT, Clint Turner (for KA7OEI-1), John Clark TI4JWC, the Maritime Radio Historical Society and Craig McCartney W6DRZ (for KPH), Globe Wireless Radio Services and KFS Radio Club (for KFS) and Dennis Benischek ND7M.

October 2023 Annular Eclipse Propagation Anomalies at HF: Preview of FST4W Observations

Part 3: Frequency spread - Indicator of change in propagation mode

Gwyn Griffiths G3ZIL gwyn@autonomousanalytics.com

Two-hop becomes one-hop during the eclipse

Previous work [1] has shown that frequency spread, as measured in WSJT-X's FST4W protocol, is useful for discriminating between propagation modes. For surface wave propagation spread for the 120 s variant, given GPSDOs at receiver and transmitter, is 4–6 mHz. Single hop F2 layer frequency spread at 14 MHz (quiet geomagnetic conditions, mid latitudes) is <50 mHz. Two-hop propagating alone has a typical median of ~260 mHz with a median absolute deviation of 60-80 mHz. Against these values we can examine frequency spread on eclipse-affected paths.

In this example the 14 MHz transmitter at W7WKR (CN97uj, WA, 84% obscured) was a QRP Labs QDX with a 25 MHz GPSDO from N6GN. The receiver at KV6X (DM75aq, NM, annular at 16:36 UTC) was an RX888 SDR running 'KA9Q radio' [2] within the WsprDaemon reporting package [3] for multimode, multiband simultaneous spot acquisition. The path was 1808 km at 133° from transmitter to receiver.

Figure 1 (top) shows circuit reliability for 14 October at KV6X for 14.097035 MHz FST4W transmissions from W7WKR. Here, circuit reliability (CR) is the number of transmissions, sent every 2 minutes, received in 20-minute intervals expressed as a percentage. The band opened at about 15:00 UTC. It did not close completely during the eclipse: but there were short gaps.

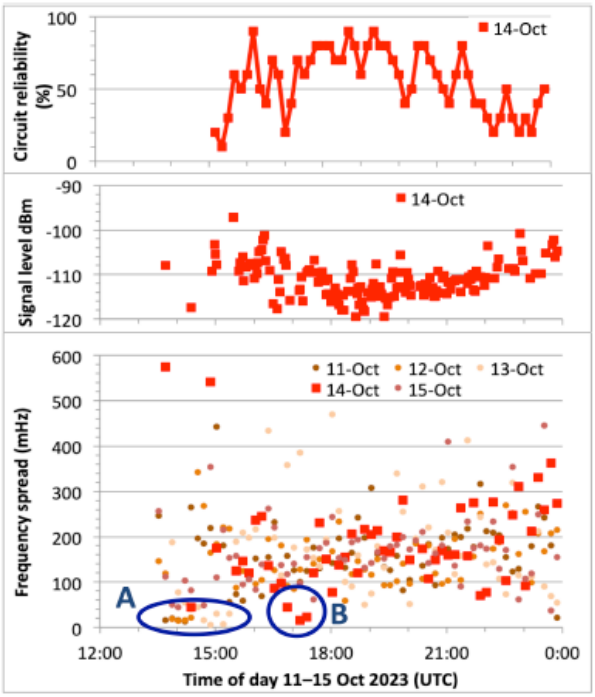


Figure 1. Top: Circuit reliability in 20-minute intervals for FST4W transmissions every 2 minutes at 14.097035 MHz from W7WKR to KV6X, a 1808 km path, for 14 October 2023. Middle: Signal level computed from SNR and noise level,showing diurnal variation due to absorption with lower signal levels near the time of the eclipse. Bottom: Frequency spread on 14 October 2023 and for four non-eclipse days. Cluster 'A' shows low values of frequency spread (<50 mHz) associated with one-hop propagation as the band opened. At other times the propagation was a mix of one- and two-hops. Cluster B, only observed during the eclipse, shows the path to have reverted to one-hop as the F2 layer critical frequency fell.

The first CR dip, to 40%, was at 16:30 UTC with a second dip to 20% at 17:00 UTC. The signal level computed from SNR and noise level, Figure 1 (middle), shows a diurnal pattern due to absorption in the lower ionosphere. Either side of 17:00 UTC the fewer spots (lower CR) had lower signal levels than previous or later spots.

Figure 1 (bottom) shows the frequency spread for each day 11–15 October identified by colour. These are 10-minute averages. Cluster 'A' shows spots with low spread, <50 mHz, each day as 14 MHz opened. This is interpreted as indicating one-hop propagation exclusively. Each day, as the F2 layer critical frequency (foF2) increased, the frequency spread changed: it increased and became more variable as both one-hop and two-hop propagation modes were supported. Their coexistence at a range of 1808 km is seen in the PyLap [4] ray-trace in Figure 2.

Cluster 'B' including an average spread minimum of 16 mHz at 17:12 UTC was, with certainty, pure one-hop propagation. The implication was that foF2 had dropped sufficiently to lengthen the skip zone for two-hop propagation from the ~1550 km in Figure 2 to over 1808 km. At least two questions remain for the spots in cluster 'B':

1. Was the one-hop path during the eclipse a single simple refraction, or was it, due to the dip in foF2 along the path, a more complex ionosphere-to-ionosphere mode such as a Pedersen or chordal hop ray?
2. Reducing the effective smoothed sunspot number (SSNe) from 125 [5] to 75 in PyLap caused the two-hop skip distance to increase to ~1875 km. Was the electron density reduction during the eclipse compatible with the empirically reduced SSNe?

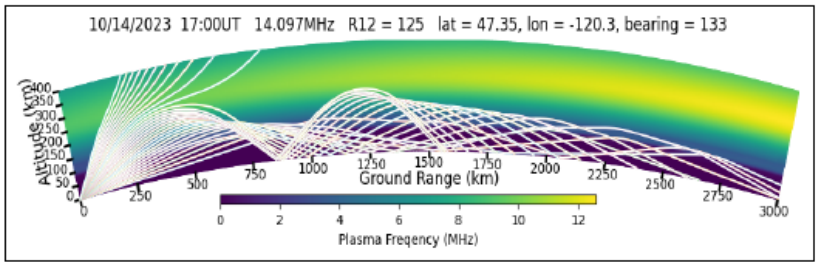


Figure 2. Ray trace for 17:00 UTC on 14 October 2023 for the path W7WKR to KV6X with SSNe of 125 [5] showing co-propagating one- and two-hop paths at 1808 km. An empirical reduction in SSNe to 75 in the model would give a two-hop skip zone of ~1875 km leaving one-hop propagating alone to KV6X.

Data availability

All data is open access. A Guide is available [3], with an Annex on access methods. Sites wspr.rocks and wspr.live also provide access and graphical outputs. Please acknowledge Rob Robinett AI6VN and individual data contributors in any output as below.

References

1. http://wsprdaemon.org/Griffiths_FST4W_2023_HamSCI.pdf
2. https://github.com/ka9q/ka9q-radio
3. http://wsprdaemon.org - see guide on the Timescale page.
4.https://github.com/HamSCI/PyLap
5. https://spawx.nwra.com/spawx/comp.html

Acknowledgment

Data acquisition for this preview was only possible through the efforts of Rob Robinett AI6VN, Phil Karn, KA9Q, Dick Bingham W7WKR, and Dan Beugelmans KV6X.

V1. 5 Nov. 2023

October 2023 Annular Eclipse Propagation Anomalies at HF: Preview of FST4W Observations

Part 4: Doppler shift - Measuring the rate of change of one-hop path lengths

Gwyn Griffiths G3ZIL gwyn@autonomousanalytics.com

Doppler shift to rate of change of path length

With GPS disciplined master oscillators at each end the difference between a precisely known transmitter frequency (to better that 10 mHz at 10 MHz) and the frequency as calculated by FST4W at the receiver is an estimate of the Doppler shift induced by a changes in the ionosphere. It is straightforward to convert Doppler shift Δf to the rate of change of path length:

$$dP/dt = -\Delta f.c/f \quad (1)$$

where P is path length, c speed of light and f transmission frequency. That is as far as we go in this note. Subsequent processing to arrive at ionosphere height changes [1] requires assumptions on initial height too detailed for a one-page preview. Quantization error from 0.1 Hz frequency resolution in FST4W sets the limit for this work at present.

Multi-frequency measurements on a 545 km path

Our example is the path from WO7I (DN10cw, NV, 89% obscured) to ND7M (DM16xf, NV, 87% obscured, KiwiSDR). The transmitter at WO7I was a WB6CXC BB-6 [2] with simultaneous transmissions on 3.570045, 7.040045 and 10.140145 MHz giving useful Doppler data every 2 minutes, Figure 1. Higher frequencies were within the skip zone.

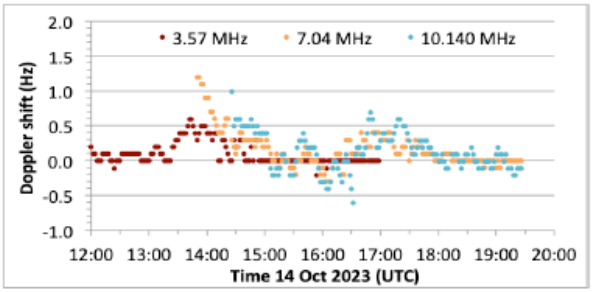


Figure 1. Doppler shift at three frequencies from simultaneous transmissions from WO7I to ND7M. 3.5 MHz was open during the night, 7 MHz, then 10 MHz, opened as the F2 layer critical frequency rose after dawn.

3.5 MHz was open during the night, hence we did see the very start of the descent of the peak in F layer ionisation at ~13:22 UTC (05:34 Local Solar Time) as an increasingly positive Doppler shift. Doppler shift plateaued before reducing to zero, *implying* the ionisation had reached its daytime height as the F2 layer. The critical frequency was too low for 7 MHz to show the start of the ionisation peak descent. We caught it from 13:50 UTC. 10 MHz opened even later, at 14:26 UTC, even so, the Doppler shift was still positive: the ionisation peak was still descending. Doppler shifts at 7 MHz and 10 MHz after about 14:12 UTC were in stark contrast with mostly zero Doppler at 3.5 MHz. A working hypothesis is that after 14:40 UTC 3.5 MHz propagation was not F2 but via the E layer. Between 14:12 and 14:40 UTC the path on 3.5 MHz was likely flipping between E and F2; hence interspersed zero and non-zero Doppler shifts. The implication, yet to be checked for feasibility, is that the E layer was not changing height.

Rate of change of path length

Next, we apply eqn. (1) to the Doppler shifts, resulting in the rate of change of path length estimates in Figure 2. It is encouraging that the path velocity estimates from the three frequencies (when 3.5 MHz was via F2) overlie each other. Frequency spread measurements showed all were one-hop.

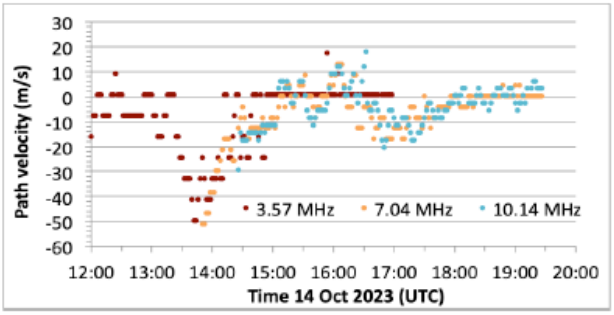


Figure 2. Path velocity, that is, rate of change of path length, derived from the Doppler shift at three frequencies and eqn. (1). The measurements are consistent across the three frequencies until, we hypothesize, the 3.5 MHz refraction was from the E layer after 14:40 UTC

Rate of change of path length during the eclipse

Focusing in around the time of the eclipse, Figure 3 shows path velocity averaged over 10 minutes every 5 minutes. The maximum positive path velocity at both 7.04 and 10.14 MHz was at 16:05 UTC at 10.3 m/s and 10.4 m/s respectively - essentially the same. That is, both frequencies showed a lengthening path - the height of maximum ionisation was rising. This was 19 minutes *before* the maximum eclipse at 16:24 UTC at the path mid-point (38.56°N 116.9°W, deep partial at 91%). While the two frequencies showed very similar path velocities at and before 16:05 UTC from then until 16:50 UTC the 10 MHz values were more positive. Perhaps this was due to different refracting heights for the two frequencies within a dynamic F2 region.

This is a fascinating data set and the variations need to be compared with days prior to and after the eclipse. Also, ionosphere height changes will be determined.

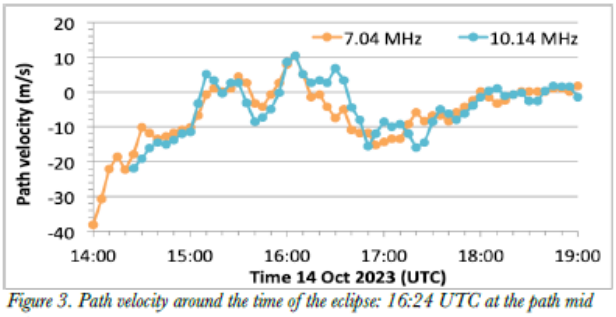


Figure 3. Path velocity around the time of the eclipse: 16:24 UTC at the path mid point.

Data availability

All data is open access. A Guide is available [3], with an Annex on access methods. Sites wspr.rocks and wspr.live also provide access and graphical outputs. Please acknowledge Rob Robinett AI6VN and individual data contributors in any output as below.

References

1. Collins, K. et al., 2022. Methods for Estimation of Ionospheric Layer.... *EGUsphere*, *2022*, pp.1-24.

2. https://turnislandsystems.com/

3. http://wsprdaemon.org - see guide on the Timescale page.

Acknowledgment

Data acquisition for this preview was only possible through the efforts of Rob Robinett AI6VN, Paul Elliot WB6CXC, Tom Bunch WO7I and Dennis Benischek ND7M. V1. 31 Oct 2023

Club Business and Announcements

October 2023 Meeting Minutes and Financial Report

by Barry Barton, WA4HR

October 2023 Meeting Minutes

- Club President Bruce Smith, AC4G called the meeting to order at 6:30pm
- Minutes from August were approved. The club picnic was held in September in lieu of a monthly meeting.
- Bruce spoke about the various DX club members worked.
- Barry, WA4HR gave the monthly treasury report for August and September.
- Steve, AG4W gave an update about his upcoming 3rd to the 14th of November DXpedition to TJ9MD Cameroon.
- Election Committee will be formed. This committee will be responsible for deciding who wants to run for the upcoming November election.
- Bruce asked members to please continue writing articles for the Longpath.
- Bruce also gave a recap of this year's programs that were presented to the club. He also commented on the DX banquet and the Huntsville Hamfest, on how smooth they went.
- Next meeting will take place on November 14th.
- Meeting was adjourned at 7:05pm
- Following the meeting the club watched an excellent video on comm ports presented by Bob, N6TV via YouTube.

The following members attended the meeting:

Rob Suggs NN4NT, Bruce Smith AC4G, Mick Bell N8AU, Sandy Bell KB0DLS, Bob DePierre K8KI, Mike Rozar, N4CNZ, Barry Barton WA4HR, Billy Gold KM4BGF, Art Davis N4UC, Mike Werner KF4BOG, Steve Werner AG4W, John Stensby N5DF, Jack Hemby W5WQQ, Rodney Durrett AK4PR, Fred Kepner K3FRK, Kevin Hibbs KG4TEI, and Mark Brown N4BCD

Upcoming NADXC meeting

Tuesday, November 14th, 2023

5:45 PM Doors Open / 6:30 PM Meeting

Location: Signals Museum of Information Explosion, 1806 University Drive NW, Huntsville, AL 35801 and via Zoom

2023 NADXC Officers and Directors

President	Bruce Smith, AC4G
Vice-President	Mick Bell, N8AU
Sec./Treasurer	Barry Barton, WA4HR
Directors:	Fred Kepner, K3FRK
	Bob De Pierre, K8KI
	(Ex-Officio)

How to Join

Come to a club meeting or send in an application by mail (form on www.NADXC.org)

Monthly Meetings

Meetings are held at the Museum of Information Explosion at 6:30pm on the 2nd Tuesday of each month. Participants can also join the meeting virtually via Zoom.

This edition of The LongPath published by: Fred Kepner, K3FRK

2023 NADXC Financial Status		10/31/23	September
Budget Category	Targets	Year Totals	Subtotal
Year Start	8,365.65	8,365.65	9,767.51
Dues In	1,000	1,143.87	
Huntsville Hamfest Donation		500.00	
Recurring Exp	-683.00		
repeater elect	-160	-160	
web hosting/domain service	-73	-16.88	
repeater maintenance	-100		
to HARC for Zoom	-50		
use of museum	-300	-300	
Bank checks		-22.5	
Donation of equipment to sell		1,535.00	
Dxpeditions	-1,000	-1,109.99	-50.00
Picnic	-160	-140.05	-140.05
DX Banquet	380.00		
venue	-600	*-600.00*	
food	*-2,350*	*-2,305.97*	
speaker	*-400*	*-400.00*	
tickets	*3,800*	*3,559.41*	
raffle	*700*	*270.00*	
grand prize	*-390*	*-400.00*	
beer/wine	*-250*	*-157.39*	
soft dirinks/glasses		*-78.69*	
insurance	*-130*	*-105.00*	
EOY Bank Delta	-463		
Year End Bank Balance	7,903	9,577.46	9,577.46

NO DECEMBER MEETING

NADXC Christmas Dinner

Tuesday, December 12th, 2023

6:30PM

Amerigo Restaurant

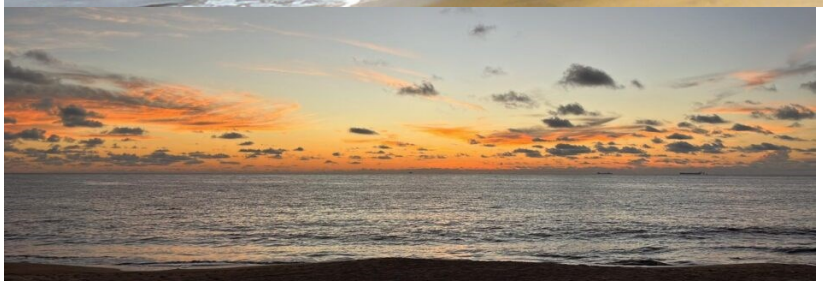
9020 Memorial Pkwy SW

2024 Nomination of Officers and Directors

The Nominations Committee will present the below nominations at the November 14th meeting.

President	Bruce Smith, AC4G
Vice-President	Fred Kepner, K3FRK
Sec./Treasurer	Barry Barton, WA4HR
Directors:	Mick Bell, N8AU
	Bob De Pierre, K8KI (Ex-Officio)

NADXC Member QRV in Cameroon



Steve, AG4W is currently QRV in Cameroon as part of the TJ9MD DXpedition. The group will go QRT around November 14th. Work them while you can! More info can be found at the DXpedition website.

Upcoming DX Contests

By Chuck Lewis, N4NM

Banggai DX Contest

YB Banggai DX Contest, (SSB), 40 & 10 meters
Nov. 4, 0000Z to 2359Z
Exchange: RS, operator age; YLs use 00
See page 82, Nov. QST and banggaidxcontest.com

IPARC Contest, (CW), 80-10 meters
Nov. 4, 0600Z to 1900Z
Exchange: RST, Serial #, State
See page 82, Nov. QST and www.iparc.de

IPARC Contest, (SSB), 80-10 meters
Nov. 5, 0600Z to 1900Z
Exchange: RS, Serial #, State
See page 82, Nov. QST and www.iparc.de

WAE DX Contest (RTTY), 80-10 meters
Nov. 11, 0000Z to Nov. 12, 2359Z
Exchange: RST plus serial number (see rules for QTC)
See page 82, Nov. QST and www.darc.de

Japan Int'l DX Contest, (SSB), 80-10 meters
Nov. 11, 0700Z to Nov. 12, 1300Z (48 hours)
Exchange: RS plus CQ zone; JAs send prefecture
See page 82, Nov. QST and www.jidx.org/jidxrule-e.html

OK/OM DX Contest, CW, 160-10 meters
Nov. 11, 1200Z to Nov. 12, 1200Z
Exchange: RST plus serial number or OK/OM district
See page 82, Nov. QST and www.okomdx.crk.cz

DARC FT4 Contest, (FT4), 80 Meters
Nov. 14, 1900Z to Nov. 14 200Z
Exchange: RST, grid square
See page 82, Nov. QST and www.darc.de

LZ DX Contest, (CW/SSB), 80-10 meters
Nov. 18, 1200Z to Nov. 19, 1200Z
Exchange: RS(T) plus ITU zone or LZ district
See page 82, Nov. QST and http://lzdx.bfra.bg/rulesen.html

All Austria 160 Meter Contest, (CW), 160 meters
Nov. 18, 1600Z to Nov. 18, 2359Z
Exchange: RST plus Serial Nr. (OEs send district)
See: page 77, Nov. QST and www.oevsv.at

South America Integration Contest, (CW), 80, 40, 15, 10 Meters

Nov. 18, 1800Z to Nov. 19, 2100Z
Exchange: RST, ITU zone, see rules for SA ops
See page 82, Nov. QST and sacw.cwsp.com.br

REF 160 Meter Contest, (CW), 160 Meters

Nov. 18, 1700Z to Nov. 18, 2359Z
Exchange: RST, Serial, Department code
See: Page 82, Nov. QST and concours.r-e-f.org

ARRL EME Contest, (CW/SSB/DIG), 50 to 1295 MHz.

Nov. 12, 0000Z to Nov. 13, 2359Z
Exchange: Signal Report
See: Page 82, Nov. QST and www.arrl.org/eme-contest

CQ Worldwide CW, (CW), 160-10 meters

Nov. 25, 0000Z to Nov. 26, 2359Z
Exchange: RST plus CQ zone
See page 82, Nov. QST and www.cqww.com/rules.html

ARRL 160 Meter Contest, (CW), 160 meters

Dec. 1, 2200Z to Dec. 3, 1559Z
Exchange: RST plus Section
See: www.arrl.org/160-meter

OTHERS:
ARRL 10-Meter Contest
0000Z, Dec 9 to 2359Z, Dec 10

Dates & times often change or are misprinted in the journals; beware. Also, check the cluster: "sh/contest". Have fun!

Big Gigaparts News

On October 17th, 2023, Gigaparts announced a new 55,000 sq. ft. store to open during the first quarter of 2024. Additional information is included in the official media release and video announcement.

NEW Products

Astronomy | General Aviation | Photography | Electronic Components | Treasure Hunting | Plus More Coming Soon!

DXpeditions in November 2023

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2023 Nov02	2023 Nov15	Cameroon	TJ9MD	(IK2VUC B/d)	By IZ8CCW IZ2GNQ F6IRA OK2WX AG4W DL8JJ IZ4COW IU3PMA HB9DHG HB9TOC ON7RN IK5BOH IZ4UEZ fm Kribi; 160-6m; CW SSB RTTY FT8; 4 or more stations
2023 Nov03	2023 Nov10	American Samoa	KH8	LoTW	By AA7JV as KH8/AA7JV fm Olosega I (IOTA OC-077); 160 80m 10 12 15m during daylight; CW FT
2023 Nov03	2023 Nov10	Niue	E6AJ	DF8AN (B/d)	By DF8AN; 80-6m,incl 60m; CW FT4 FT8 RTTY, perhaps PSK31; 100w; longwires, verticals; holiday style operation
2023 Nov03	2023 Nov16	Yemen	7O	LoTW	By LA7GIA as 7O8AD and HA5DDX as 7O8AE fm Socotra I (LK72cq); 160-10m; CW SSB FT8; QSL via M0OXO
2023 Nov04	2023 Nov19	Marquesas	TX7L	LoTW	By F6BCW F6EEQ F6FMC F6HBI F5VHQ F5JRX F5LRL F4ISZ F1MNQ fm Hiva Oa I; 160-6m CW SSB FT8 FT4 RTTY; 4 stations; QSL via EA5GL (B/d) or Club Log OQRS
2023 Nov05	2023 Nov10	Bahamas	C6A	LoTW	By WA1JAY as WA1JAY/C6A; 40-10m; SSB FT8 FT4; QRP
2023 Nov06	2023 Nov26	Timor Leste	4W8X	LoTW	By 20 op team; HF; CW SSB RTTY FT4 FT8; QRV for CQWW DX RTTY and CQWW DX CW contests; QSL via Club Log OQRS
2023 Nov08	2023 Dec08	Tanzania	5H3MB	LoTW	By IK2GZU; HF; SSB CW RTTY FT8; dipoles, ground plane; spare time operation; QSL via Club Log OQRS or IK2GZU (B/d)
2023 Nov11	2023 Nov11	Br Virgin Is	VP2V	LoTW	By W1DED as VP2V/W1WED fm Virgin Gorda (IOTA NA-023); HF; QSL via W1DED
2023 Nov11	2023 Nov22	Chatham Is	ZL7A	LoTW	By JF1OCQ JA1SVP JE1SYN; 160-10m; SSB CW FT8 FT4; 3 stations; amps; verticals, yagis; QSL via JF1OCQ
2023 Nov14	2023 Nov14	Monaco	3A	I1UWF (B/d)	By I1UWF as 3A/I1UWF; 40-10m; SSB, perhaps RTTY
2023 Nov14	2023 Nov27	Christmas I	VK9XY	LoTW	By YL2GM EA5EL fm IOTA OC-002; 160-10m; CW SSB FT8; see Web page for QSL details

2023 Nov15	2023 Nov29	Solomon Is	H44WA	M0URX	By WA7CPA, N7QT N7JP N9ADG NU7J WC7Q fm Guadacanal I (IOTA OC-047); 160-10m; CW SSB FT8
2023 Nov16	2023 Nov19	Trindade & Martim Vaz	PT0T	LoTW	By PY6RT PY1ZV PT2IC + others fm Trindade I; HF; CW SSB FT8; QSL via M0OXO
2023 Nov16	2023 Nov27	Laos	XW4DX	LoTW	By F4BKV F4HAU F2DX F5PTM F8AVK; 160 40 20 17 15 12 10m; CW SSB + digital; QSL via Club Log OQRS (preferred) or F4BKV direct
2023 Nov16	2023 Nov30	Namibia	V51WH	DK2WH	By DK2WH fm nr Omaruru; 160-10m, incl. 60m; V55Y in contests; operation to continue until Apr 2024
2023 Nov18	2023 Nov25	Panama	HP1	LoTW	By NK0S as HP1/NK0S; 6m when open, 20-10m; FT8
2023 Nov21	2023 Nov28	Honduras	HR9	LoTW	By K6VHF as HR9/K6VHF; 40-6m; CW SSB FT8 FT4
2023 Nov23	2023 Dec06	Sierre Leone	9L5M	LoTW	By M0KRI; 80-6m; FT8 CW SSB; QSL via Club Log OQRS or G3SVK
2023 Nov24	2023 Dec05	Tanzania	5H3FM	LoTW	By HB0DSP; HF; SSB FM FT8; 100w; QSL via HB9DSP (B/d)
2023 Nov24	2023 Dec05	Sierra Leone	9L5M	LoTW	By M0KRI fm Freetown; 80-6m; FT8 CW SSB; QSL via Club Log OQRS or G3SVK
2023 Nov26	2023 Dec08	St Martin	TO9W	LoTW	By K9NU N9EP FS4WBS W9AP K9EL; 160-6m; CW SSB FT8 FT4 RTTY; QSL via Club Log OQRS
2023 Nov29	2023 Dec07	Cocos (Keeling) I	VK9XY	LoTW	By YL2GM EA5EL fm IOTA OC-003; 160-10m; CW SSB FT8; see Web page for QSL details
2023 Nov30	2023 Dec09	Vietnam	3W9C	LoTW	By SP5APW fm Con Son I (IOTA AS-130); 20 17 15 10 6m; SSB FT8, some CW; FT8 on 6m; tx 53.313 or 53.323, rx 50.313 or 50.323; 100w