

Wavelengths

June 2017

Xenia Weather Amateur Radio Net XWARN (W8XRN)

147.1650+ (123.0) (Analog Only)

443.1000+ (123.0) (Analog + System Fusion)

Meetings: 2nd Monday, 7:30PM,

Greene Memorial Hospital ([1141 N Monroe Dr, Xenia, OH](#))

Herman Menapace Auditorium

Online Newsletter: <https://sway.com/8hCfEjdh9iHr5KCh>



Wall cloud by Jeffersonville on the evening of May 24

President's Message

Per the vote at the last meeting, Jason Bowman filed with the State of Ohio the Articles of Incorporation for XWARN, and we are now a "Domestic Nonprofit Corporation". An obvious next step is to pursue registration with the IRS to become a 501(c)(3) organization. This would make the club tax exempt for most of our dealings. Pending discussion at the June meeting, expect that a motion and vote will occur at the July meeting to continue the process.

Hamvention 2017 is history. I hope all of you had a chance to partake. I would like to extend a special thank you to all of the members who came out to support our annual t-shirt sale. The very successful sale was led by Steve Mackey (N8ILR) and the club owes him special recognition for an outstanding effort.

We are entering a slow period as far as public service events are concerned, but I am recruiting volunteers to support the Little Miami Triathlon on Sunday, June 4. Please email me at [callsign]@arrl.net to volunteer or to get more information.

The big event for XWARN in June is Field Day on June 24-25. It will be held at the same [location](#) as the past several years: Beaver Creek Township Fire Department Station 61 (2195 Dayton-Xenia Rd, Beaver Creek 45434). XWARN has again invited DARA to join us in this activity. Setup will begin at 9:00 AM and we can use a lot of help. Radio activities begin at 2:00 PM local time. Of course, we will have our usual Saturday evening picnic. We will provide grilled meat sandwiches, a beverage, paper plates, and utensils. Please bring a dish to share (with serving utensils, identified with owner name) and a chair. Plan to eat at 5:30 PM. Don't forget to bring a chair!

73, Bob Baker N8ADO

Hurricane Forecast

Citing a weakened to non-existent El Nino, NOAA's Climate Prediction Center [expects](https://goo.gl/z27Yov) (https://goo.gl/z27Yov) to have an above average number of tropical storms and hurricanes for 2017. El Nino tends to favor shear in the atmosphere, which prevents storms from organizing or strengthening once formed. They also mention the lightning payload on the new GOES-16 satellite will give them another mechanism to identify when tropical storms and hurricanes are intensifying.

Did you know that Amateur Radio runs a [Hurricane Watch Net](https://goo.gl/4kECm8) (https://goo.gl/4kECm8)? The net runs on 14.325.00 MHz and may shift to 40m as needed. Just like local weather nets, there is an amateur radio station, WX4NHC, at the National Hurricane Center in Miami. My understanding is that they always welcome net control volunteers in states far away from the coasts for obvious reasons. Here's your chance to volunteer, Ohio!

Club Contacts

- President, Bob Baker , N8ADO
President@xwarn.net
- Vice President, Brett Boggs, NV8I
Vicepresident@xwarn.net
- Secretary, Open
secretary@xwarn.net
- Treasurer, Steve Mackey, N8ILR
Treasurer@xwarn.net
- Repeater Guru, Jim Simpson, WB8QZZ
Technical@xwarn.net
- Web Master John Seitz, N8ACU
webpresence@xwarn.net
- Membership, Phil Verret, KA8ZKR
membership@xwarn.net
- XWARN Trailer / Public Service,
Mike Crawford, KC8GLE
trailer@xwarn.net or
publicservice@xwarn.net
- Newsletter, Jason Bowman, WG8B
newsletter@xwarn.net

XWARN and Severe Weather May 24

As many of you are aware, the evening of May 24 was a busy one for the severe weather spotters and XWARN net controllers in Greene County. Based on both radio and reports on [Facebook](https://www.facebook.com/) (<https://goo.gl/8cLc2c>), there may have been a small and brief funnel cloud or tornado followed by an impressive wall cloud out by Jeffersonville and our own Bret Boggs. Radio reports also indicated a possible tornado or conditions favoring a tornado starting in the Beavercreek area and continuing through Fairborn and up to Park Layne and Medway just north of I-70 where NWS Wilmington [confirmed](https://www.wilmingtonnc.gov/newsroom/2015/05/24/confirmed-tornado) (<https://goo.gl/WQI9pp>) an EF1 tornado.

I was monitoring the net but not participating as I live in Bellbrook, and all we got was a little bit of rain. But I did want to discuss a deficiency with the radio net and offer a way to add capability. The main problem I saw was that there were at least 2-3 spotters out there who just weren't hitting the repeater very well. The second problem, which wasn't that bad at all as far as I could tell, was that the radio net gets very busy when all heck is breaking loose. Net controllers are doing everything to keep up.

One possible way to add capability and modernize weather net operations is to include smart phone technology. There are a variety of apps and services that that can be used to report weather. Probably the most basic is SMS/MMS texting. Then comes Twitter. Weather spotters could simply tag XWARN when they post to Twitter so that we can quickly gather all of the reports. NWS Wilmington could also follow our tags on Twitter to get information directly. Twitter also allows pictures, which is a side benefit. The more complex and secure techniques involve chat and collaboration apps such as Google Hangouts, Facebook Messenger, and WhatsApp.

The benefit of these modern net mechanisms is that they are asynchronous whereas analog radio and even most of the digital modulations out there available to amateurs are synchronous. In layman's terms, while radio usually gets through (except for the stations noted above), you can only have one conversation or make one report at a time, which is a problem when multiple events are occurring simultaneously. With asynchronous technologies, multiple simultaneous reports can be made without stepping on one another (DMR supports two time slots, by the way). Because some stations may not have access to the internet (bad location, storm damage, etc), you want to maintain the radio net as well.

If XWARN wants to explore this, I would be willing to help experiment to figure out the best approach. Just let me know!

Jason (WG8B)

Calendar of Events

- 6/4/2017 Sun 9–3. Little Miami Triathlon Ft Ancient St Park area. 18 mile bike course. Needs lots of help. [N8ADO]
- June 12, Monday, 7:30 PM, XWARN Monthly Meeting, [Greene Memorial Hospital Auditorium](https://goo.gl/maps/bE2zCag4Krz) (https://goo.gl/maps/bE2zCag4Krz)
- 6/24,25/2017 0900 Sat—1600 Sun. ARRL Field Day Beaver-creek Fire Station 61 (D-X rd & Orchard Ln) Set-up—operate radios—tear down' potluck picnic Sat PM ALL Invited [N8ADO]
- 7/15,16/2017 Sat Sun All day. Young's Dairy Charity Bike Ride From Young's (Yellow Springs) to Ohio Northern University, Ada & back. Big bike event, lots of territory, overnite is fun [KC8GLE]
- 7/27–30/2017 ThFrSaSu. Pan Ohio Hope Ride. Big bike event Cinci to Cleveland. They mostly provide the SAGs and spotters, we provide DARA Truck and support [N8ADO]
- 8/5,6/2017 Sat,Sun Maker Faire Carillon Park Display DARA Truck, demos
- 8/13/2017 Sun 11–3. DARA Picnic. Thomas Cloud Park Huber Heights
- 8/26,27/2017 Sat 7--7, Sun 7–N. Abi Khan Horse Challenge Caesar Creek Lake area. Keep log of horses on course, exercise in comms across uneven terrain [N8ADO]

Editor's Note: I was provided with a long list of events in the Miami Valley area. In the interest of space, I've removed events starting in September or later. As time passes and past events get deleted, I will add the future events back.

XWARN Mission

The mission of the Xenia Weather Amateur Radio Net (XWARN) amateur radio club is to conduct weather spotting nets during severe weather and other communication services for the City Of Xenia and all other Greene County communities.

In this capacity, we are set up to provide communication services as required to the Greene County Ohio Public Service Agencies and other local government entities. The communications services provided to the supported agencies may be for emergency purposes or to simply enhance their communications abilities. On an as needed basis XWARN provides similar services to various government entities of our surrounding counties.

Additionally, XWARN provides communications support to various community organizations in support of marathons, 5K runs, 10K runs, bicycle events, etc. to provide health and safety assistance to the participants and sponsors of said events.

In support of these goals, XWARN operates and maintains amateur radio repeaters and other equipment in Greene County.

Minutes from May 8, 2017

President Bob Baker opened the meeting with the Pledge of Allegiance

Cracker Barrel

- Bill reports he has provided as much publicity for Hamvention as possible to all his contacts. Jason suggested that in future DARA and everyone use Facebook as a way to reach more people
- Henry Ruminsky forwarded an Email from a foreign ham asking for a t-shirt to be mailed to him. Discussion was that this might start a can of worms for future but this request would be forwarded to John Seitz for consideration.
- The Minutes from last month were approved as published in newsletter. (Jim Simpson/John King)
- The Treasure report was approved. (John King/Dick Bray)

Committee Report

- *Public Service.* Bob announced the Founder's 5K Run, Trebein Elem May 13th and Little Miami Triathlon on June 4th
- *Trailer.* Bob announced a new power adapter has been fabricated in time for use at Hamvention
- *Repeater.* Jim Simpson reported the repeater is working
- *Membership.* Reports 48 (44 plus 4 Lifers) Phil also requested a list of Charter members
- *Newsletter.* Jason always is looking for news or articles to include in newsletter
- *Old Business.* The most important item of business was the balloting of the proposed incorporating as a not-for-profit corporation in Ohio. The proposal was presented last month and so this month the membership present voted by written ballot to continue with the process. Jason volunteer to proceed with the application

New Business

Steve Mackey asked for volunteers to sell t-shirts at Hamvention. All members are strongly encouraged to participate in our major fundraiser. Also anyone who wanted to place items on the table for use to sell will need to fill out a form also available on the table (or see Steve)

Field Day. June 24-25, 2017 is fast approaching. 9AM Saturday is set up and 5:30PM is the potluck supper (meat is provided and plates,napkins,utensils)

General Notes

Next meeting is June 12th and neither of the Bakers will be present so Steve will preside and Jason will probably be secretary.

Motion to adjourn (Dick/Jason)

Submitted by Karen Baker

XWARN is Now Incorporated in the State of Ohio



During lunch on Tuesday, May 23, I filed the Articles of Incorporation for XWARN via the online process that the State of Ohio uses. Less than 3 hours later, I received the certificate from the state effective Friday, May 26. If I had known it would only take 3 hours, I would have specified an earlier date. Oh well.

What was filed exactly? The online process asks for a corporation name (Xenia Weather Amateur Radio Net), the initial Incorporators (the current officers), the Statutory Agent (Jason Bowman), and the Purpose.

The Purpose that was filed was a small subset of the Articles voted on - basically the two paragraphs that say we provide weather and emcomm support, education,

support public service events, etc. This may cause problems when filing with the IRS for non-profit status since the State of Ohio requires much less than the IRS. I will attempt to contact someone at the state to discuss this. Ultimately we may need to amend the Purpose filed with the State to include the full Articles that was voted on or simply provide another document with the fuller Articles (I think they allowed multiple documents). The website that runs the online process just wasn't that helpful in this respect. The club need not worry about this. I will handle it as the Statutory Agent. I just wanted to be 100% open with the club about where we stand.

Now for non-profit status. I'd like to discuss the process and costs again before publishing a voting notice in the newsletter. I'm assuming we'll need another written vote due to the substantial nature as prescribed in the Bylaws. If the June meeting is not taken up by other matters such as Field Day, I would like to discuss this then, and we can propose a vote at the July meeting. If we have to slip discussion until July, we slip the vote until August. Given that the next big fundraising opportunity isn't until the next Hamvention, I really don't see a need to rush. But I also don't want this to drag on :-)

Jason (WG8B)

Joint CERT Exercise & Radio Communications



On May 13, Beaver Creek CERT (Community Emergency Response Team) joined with German Twp CERT and the Ohio Military Reserve (OHMR) in Twin Creek Metro Park to conduct an annual search and rescue exercise. The exercise tested the CERT and OHMR teams' ability to work together to search difficult wooded terrain over extended periods of time and then deal properly with the victims once found.

During last year's exercise, it was debriefed that we needed a better communications plan. Apparently there was a better plan this year, but the person who put it together couldn't make it to the exercise and he didn't bother to let anyone know what the plan was ahead of time. Whatever it was, I'm sure it was going to use the radios on hand - Motorola FRS/GMRS walkie-talkies set to channels 1 and 2 (FRS frequencies according to Motorola's numbering scheme). One of the groups generally had their radios set to channel 9, which I believe is an overlapping FRS/GMRS frequency on the Motorolas.

For those who don't know, FRS or Family Radio Service is what most people think about when they say walkie-talkie. By FCC regulation, the antennas have to be a part of the radio and power is limited to 1/2 Watt (Soon to be 2W. See the last paragraph in this article). Because the FCC currently does not prevent it, manufacturers also add GMRS or General Mobile Radio Service capabilities to those radios and sell them as "bubble packs". The problem is that GMRS requires a license whereas FRS doesn't. And GMRS is allowed much higher power settings up to 50W, although most bubble pack radios are sold with 2W or less power. Most people throw the fine print away that says you need a license to operate on the GMRS channels.

At least German Twp CERT had their radios set to FRS channels, and therein lies the problem. 1/2W does not get you very far in simplex operations even in flat open terrain, especially with a stubby fixed antenna, much less in heavily wooded areas with ravines, valleys, and ridges. During one exercise, I couldn't communicate with command, who probably wasn't more than a 1/4 mile away.

We were able to make contact using "alternative" methods, and I discovered the reason for an annoying problem I had encountered earlier - German Twp CERT radios had a "privacy code" set (we amateurs radio operators would say "tone"), and they didn't even know what a privacy code or tone is. Thank God all of the radios were set to the same privacy code, probably set that way at the factory.

To avoid potentially bad things from occurring to me or others, I won't go into what "alternative" means or what my annoying problem was, at least in writing :-). The good news is that I did test out hitting various amateur repeaters in the area using just an HT with a whip antenna and 5W. I think the

(Continued on page 7)

(Continued from page 6)

only repeater I had trouble hitting was BARC's and maybe XWARN's, but that was probably when I was in a ravine and because Twin Creek is over on the southwest side of Dayton near Carlisle.

So here we are again wanting better communications for next year. It would be nice to get enough amateur radio operators to have at least one per team and one at command so that we could use higher power settings and VHF frequencies for woodland penetration (FRS/GMRS is UHF only), but participating does require hiking. I did recommend that German Twp CERT look into buying a GMRS repeater and offer to pay the license fee (\$65 + \$5) for individuals since many members are not licensed amateur radio operators.

Finally, when there is a good opening for a monthly program, I'd like to present a topic on Part 95 Personal Radio Services, which includes FRS and GMRS. GMRS, and to a lesser extent FRS, offers another communications path allowing for more nets for normal operations or in an actual emergency. I'd also like to throw in some discussion on Multi-Use Radio Service (MURS), also a Part 95 radio service. I have the briefing mostly done, but I was waiting for the FCC's final Part 95 [Report and Order](https://goo.gl/xIsDtm) (https://goo.gl/xIsDtm) to be published first, and it was just released. There are some exciting things happening with FRS and GMRS in this Part 95 update.

Jason

WG8B (Amateur Radio Service) // WQZF899 (General Mobile Radio Service)

Boston Marathon

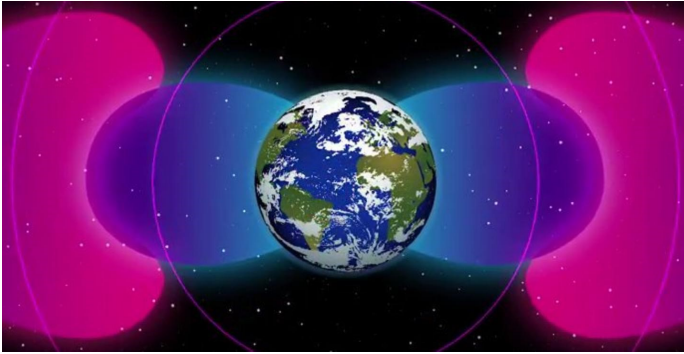
This month's ARES e-Letter is light on its typical material because it's focused on forums at Hamvention. However, they did link to an [article](https://goo.gl/MZHpAx) (https://goo.gl/MZHpAx) on how amateur radio supported the Boston Marathon. The short story is that amateur radio setup and operated the logistics net, and approximately 280 amateur radio operators participated.

"Radio operations included relaying medical resupply requests, picking up runners via medical sweep buses, conveying medical statistics as required by the Red Cross and Massachusetts Department of Public Health, and providing situational awareness as needed along the entire 26-mile route. Amateur Radio also backed up EMS communications, and the team relayed several ambulance requests along the route."

Event officials were impressed at how well the logistics and backup nets were run and able to contribute to the overall success of the Boston Marathon. Amateur radio operators were also able to involve students in net operations and expose them to amateur radio and radio operations in general:

(Continued on page 8)

Humans Accidentally Made a Space Cocoon



Have you been wondering why HF propagation has changed over the past 50 years? Me, too! Ok, not really. And I'm exaggerating. But you might need your tin foil hats for this one!

There is a newly discovered phenomenon involving the impact of Very Low Frequency (VLF) waves (3-30kHz) on space weather, the Van Allen radiation belts in particular.

Motherboard [reports](https://goo.gl/WGUIRP) (<https://goo.gl/WGUIRP>) that VLF use, especially for communications with submerged submarines, has an impact on the electromagnetic weather around the earth essentially forming a protective bubble against charged particles (ionizing radiation). Without having read the entire paper, my guess is that it's enhancing existing protection not creating new protection. But you can read the [paper](https://goo.gl/OdLXkd) (<https://goo.gl/OdLXkd>) for yourself if interested. NASA also has an [animation](https://youtu.be/cFYoYUBGw4s) (<https://youtu.be/cFYoYUBGw4s>). The abstract of the paper also notes an impact of VLF energy on ionosphere heating.

Jason (WG8B)

Boston Marathon

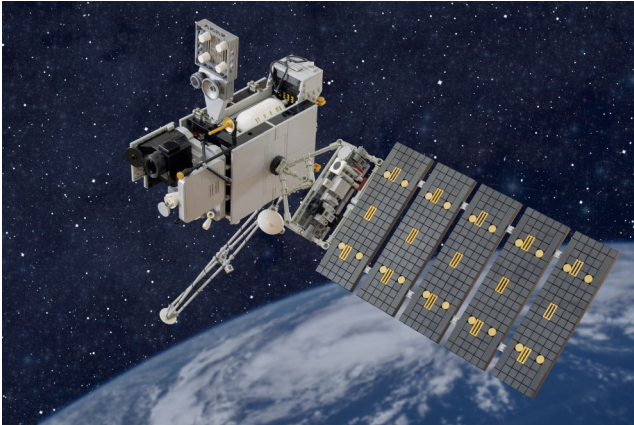
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"Students from Dexter-Southfield School provided support to net control operators during the event. Numerous nets cover the Marathon course, and all are run from this single location. Students regularly updated status boards, informing both local net control operators and the other net control operations centers of each ham radio volunteer's location. Veteran net control operators dedicated some time to work with the students to teach them how marathon nets operate, providing a robust ham radio learning experience in an educational setting."

Although I only have one USAF Marathon under my belt, I noticed the need for additional nets. In my opinion, some of the amateur radio operators and even net control can be very chatty :-). It doesn't matter if radio always gets through (compared to overloaded cell networks at large events) if the number of radio nets effectively limits the whole operation to 1 or 2 simultaneously conversations at best. That makes it difficult to pass information for both the half and full marathon on the same net. One solution to the perennial problem of finding enough operators and more frequencies is to take advantage of GMRS. Because GMRS licenses cover your close family, it is theoretically possible to quickly draft additional radio operators for these large events and add more nets if necessary. I hope to address this in a monthly program as part of the Part 95 discussion I mentioned earlier.

Jason (WG8B)

GOES-16



On November 19, 2016, NASA launched the GOES-16 (geosynchronous environmental satellite) satellite, the first of a new generation of weather satellites. From the [Wikipedia page](https://goo.gl/tnyTF0) (<https://goo.gl/tnyTF0>), the newest generation of GOES is capable of "three times more spectral information, four times greater spatial resolution, five times faster coverage, real-time mapping of total lightning activity, increased thunderstorm and tornado warning lead time, improved hurricane track and intensity forecasts, improved monitoring of solar x-ray flux, im-

proved monitoring of solar flares and coronal mass ejections, and improved geomagnetic storm forecasting."

GOES-16 also carries a Search and Rescue Satellite Aided Tracking (SARSAT) radio receiver to detect 406MHz emergency beacons as part of the [COSPAS-SARSAT](https://goo.gl/2oxMSy) (<https://goo.gl/2oxMSy>) program. The beacons go by the name EPIRB (boats), Personal Locator Beacon (individuals), and Emergency Locator Transmitter (aircraft).

GOES-16 continues to have the Emergency Managers Weather Information Network broadcast transmitter payload. This payload broadcasts a data stream containing current weather warnings, watches, images, advisories, and forecasts issued by the National Weather Service. As noted [here](https://goo.gl/Mkt4Za) (<https://goo.gl/Mkt4Za>),

"there are three methods to receive EMWIN data. You can obtain it directly from the GOES weather satellites with a satellite receiver. If the EMWIN signal is being broadcasted on a VHF or UHF frequency in your area, you can receive it using a low cost scanner and decoder. It is also available through an internet connection."

This particular capability seems like something that should be part of a plan to support served agencies and for emergency communications in general since it does not rely on the internet to work. I believe the ubiquitous RTL-SDR dongles are able to receive this broadcast and decode it with freely available software.

Finally, you can view some of the weather products at the [GOES-16](https://goo.gl/C72Pqy) (<https://goo.gl/C72Pqy>) page. Some of the videos and animations are amazing.

Jason (WG8B)

Club Call: W8XRN

XWARN
P.O. Box 562
Xenia, Ohio 45385

Email: info@xwarn.net
Website: XWARN.NET

«FNAME» «LNAME» - «CALL»
«ADDRESS»
«CITY» , «STATE» «ZIP»

Wavelengths

Wavelengths is published monthly by the Xenia Weather Amateur Radio Net. Our meetings are currently held on the 2nd Monday of each month at **7:30 pm** at the Greene Memorial Hospital Auditorium. You can find additional information about our organization at www.xwarn.net. We welcome new and experienced Amateur operators and those interest in becoming an Amateur operator to attend our meetings.