



The Wave Bender



June 2020



AWARD WINNING NEWSLETTER

FROM OUR VP

Hello, Everyone. I hope you and all of your families are well. Here we are quickly coming up on another month and the start of summer. Unfortunately, things are still unsettled with the coronavirus pandemic. I am writing this on May 18 and I will give you what I know right now.

As we all have seen lately, some things are beginning to open up, but it is still unclear how soon we can return to in person meetings. Our general meeting venue, Davidsons Restaurant, is reopening for indoor dining on May 21, but with many restrictions in place. I recently spoke with Mr. Davidson and he is very willing to work with us as much as he is able to do in our structuring of future in person meetings. He did let me know that he is following all the state guidelines for indoor dining completely to the full extent of the requirements. This means that there can be no more than ten people in any group coming in for the foreseeable future. When and if this number increases will depend on the state virus related numbers for new cases, hospitalizations, deaths, and R0 (R naught- the ratio of how each positive infected person transmits it to others) which needs to stay at 1:1 or below. If there is a great spike in these numbers things could be rolled back and closures could happen again. If the trends show improvement, eventually the amount allowed in any group could possibly go up. It is unknown in what time frame that might happen (or not), but it may not be in June.



First up, our group requirements for social distancing will be that our group as a whole must be at least 6 ft. away from any other group that comes in. He said that as far as the 6 ft. social distancing among our own group, which can be no more than ten, is basically up to us as a cohesive group. He said that even though we are all not from the same family or households, if we are comfortable enough with each other (as in we are not strangers to each other and trust enough) we could sit closer together in a room, less than 6 ft. apart. It is totally up to each person to make that choice as to what they wish to do. This is a virus spread by close contact and by exhaled droplets. It boils down to each of us and our individual choices and we take on all the risks and responsibilities ourselves for our choices. As a club, we must respect each member's choice of what to do, whether to attend at all or how to distance. He said that he is still putting this all together himself and does not yet know if he can give us a different room where we can spread out more. It depends on how things go with the general public - how many return to indoor dining and how they are following the rules while they are there. He has many unknowns still for his business. We did not yet establish whether masks will be required when we are not eating, but that may be so as it is a recommendation by the governor's office but not a mandate from them. However, any business can require that on their own. Non-compliance could result in your being asked to not enter the restaurant or other business if they choose to require them. That will be established on the next contact. I proposed a system of where we might have indoor attendance coupled with the use of their Wi-Fi to do a virtual meeting at the same time for those who would prefer to stay home and join in that way, but did not yet get an OK for that. Virtual meetings have some limitations too. That next contact with him will be on or about June 5.

Our June scheduled meeting night would be June 16. That is a tight time frame between speaking again with Mr. Davidson again and that date. We also need to work in a board meeting to structure how this can be done. It takes the input of each board member to set this in motion. We will likely have a board meeting this weekend. Remember that this is an unprecedented occurrence so there are many unknowns Chris, WF8U, *Continued page 3*

IN THIS ISSUE

Incoming Treasurer's Report	03
NASA CubeSat Array	04
ARES Information	06
From the Secretary KC8UNR, Mike	06
Patron Saint of Hams	07
From the FIELD DAY Desk	07
Field Day 2020 –what's it look like	08
ARRL Seeks Clarification	09
The Great Geomagnetic Storm	10
Madison County ARC Press Release	12
Register for Webinars	13
Maybe This is You	14
I get Emails	14
Calendar	15
From Our VP	01



2020 Officers:

- President:** Chris Monske, WF8U wf8u@wrarc.net
- VP:** Maureen Stein, KD8NXS kd8nxs@wrarc.net
- Secretary:** Mike Cibella, KC8UNR kc8unr@wrarc.net
- Treasurer:** Bob Kramer, KE8HHH ke8hhh@wrarc.net
- Past President:** Bob Mitzel, N8RCM n8rcm@wrarc.net

Trustees:

- Steve Fabry, KC8SOY kc8soy@wrarc.net
- Darrin Cannon, N8DMC n8dmc@wrarc.net
- 3-year Trustee open

Appointed Positions:

- Social: Maureen Stein, KD8NXS
kd8nxs@wrarc.net
- Repeater & Nets: Steve Fabry, KC8SOY
kc8soy@wrarc.net
- Classes: Chris Monske WF8U
kd8ely@gmail.com
- Testing: Darrin Cannon, N8DMC
n8dmc@wrarc.net
- Newsletter/Web: Jane Avnet K8JAA
k8jaa@wrarc.net
- Historian: Rose Marko, KD8TII
kd8tii@wrarc.net
- Badges: Darrin Cannon, N8DMC
n8dmc@wrarc.net

Officer's Meeting:

June 09 2019, 7:00 P.M. At Eat 'n Park,
Austintown, Eat 'n Park,
5451 Mahoning Ave
All members welcome

Members Meeting:

June 16, Davidson's
3636 Canfield Rd., Cornersburgh

Speaker: None

OTHER IMPORTANT WEB SITES

THE ARRL EXAM SEARCH PAGE

<[HTTP://WWW.ARRL.ORG/FIND-AN-AMATEUR-RADIO-LICENSE-EXAM-SESSION](http://www.arrl.org/find-an-amateur-radio-license-exam-session)>

OHIO SINGLE SIDEBAND NET

<[HTTP://WWW.OSSBN.ORG/INDEX.HTML](http://www.ossbn.org/index.html)>

ANTENNA HEIGHT ABOVE AVERAGE TERRAIN (HAAT) CALCULATOR

[HTTPS://WWW.FCC.GOV/MEDIA/RADIO/HAAT-CALCULATOR](https://www.fcc.gov/media/radio/haat-calculator)



<http://www.wrarc.net/>

VP - CONTINUED FROM PAGE 1

and I have talked about this and for now feel that it would be better not to plan indoor meetings for right now until some of these uncertainties can be cleared up and there can be a general feeling of safety felt by the majority in attending an in person meeting. Also remember when we do begin in person meetings again, each one of us has to evaluate our own personal and other household persons' risks of contracting the virus vs the benefits of attending when we make our individual choices of coming out or not. These risk factors include age. Pre-existing health conditions or other health considerations, and the fact that seemingly well persons around you may be asymptomatic carriers of the virus and will be very contagious, especially if they choose not to take any precautions to protect people they come into contact with. There are many things to consider. We must respect the decisions that our individual members will make on these matters. These same things will be a part of the decision on when to resume the every second and fourth Tues. breakfasts at Eat'nPark Austintown as well.. If any of you have any ideas for structuring and holding meetings or any concerns about meeting in person, please send them in an e-mail to me at or to Chris, WF8U, or any board member. We will bring these things up at our board meetings going forward. Thank you for any and all input. When we have it all in place we will let you know by qst e-mail, the club Facebook page, and on the Fri. night nets. There is no perfect solution right now.

Aside from all this, Field Day may still be happening this year at Elser Airport the last full weekend in June. There will be information coming from Steve, KC8SOY, our Field Day chairman about this. Again, as I check the websites of each of our major public service events, I see that they are, for now at least, still on. We'll keep you up to date on these things too. If the Panerathon goes forward on August 30 as scheduled, we'll put out the call for volunteer sign ups in late June or early July. For information on our current health crisis, you can get info from the governor's office on their official website at coronavirus.ohio.gov to see all the mandates and recommendations given out. Stay well. I miss seeing everyone. Hope all the moms out there had a nice Mother's Day in May and hope all the dads have a nice Father's Day in June. Stay safe!

73 Maureen, KD8NXS
WRARC/VP



INCOMING TREASURER'S REPORT

First of all, I would like to thank Rose Marko, KD8TII, for extending her tenure as club treasurer these past few months. One of the challenges of life in academia is your work schedule tends to change about every 15 weeks or so; to further complicate things, you don't always know exactly how the schedule changes until the last minute. Such was my case this January, when I picked up an additional course to teach about three days before the start of the semester, which prevented me from attending both board and club meetings.



Now that the semester is finally over, I'm able to assume the treasurer's duties. I'll be working with Rose to make sure I'm up to speed and able to take care of the club's financial matters as quickly as possible.

I should have a more informative report in June once Rose and I have met. Until then, be well and hope to see all of you soon!

73, Bob K. --- KE8HHH
WRARC/Treasurer

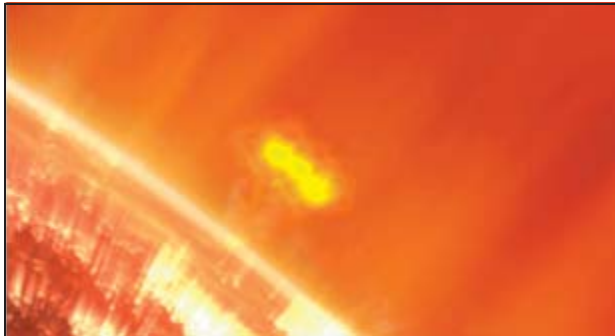
We should NOT be "Social Distancing." We SHOULD be "Physical Distancing." Socially, we should be staying connected. There are so many ways to do this - talking on the phone, talking on the radio, Facebook, Skype, Zoom, etc.
pr@reflector.arrl.org

NASA CUBE SAT ARRAY

NASA CubeSat Array to Study Causes of Giant Solar Particle Storms

A new NASA mission making use of a half-dozen CubeSats will study how the sun generates and releases giant space weather storms -- known as solar particle storms -- into planetary space.

"Not only will such information improve understanding of how our solar system works, but it ultimately can help protect astronauts traveling to the moon and Mars by providing better information on how the sun's radiation affects the space environment they must travel through," NASA said of the new Sun Radio Interferometer Space Experiment



NASA's SunRISE mission will study what drives solar particle storms. [NASA, image]

(SunRISE) project. The mission will involve an array of six CubeSats operating as one very large radio telescope. NASA has awarded \$62.6 million to design, build, and launch SunRISE as early as mid-2023.

NASA chose SunRISE in August 2017 as one of two Mission of Opportunity proposals to conduct an 11-month mission concept study. In February 2019, the agency approved a continued formulation study of the mission for an additional year. SunRISE is led by Justin Kasper at the University of Michigan in Ann Arbor and managed by NASA's Jet Propulsion Laboratory (JPL) in Pasadena, California.

"We are so pleased to add a new mission to our fleet of spacecraft that help us better understand the sun, as well as how our star influences the space environment between planets," said Nicola Fox, director of NASA's Heliophysics Division . <https://www.nasa.gov/mission_pages/sunearth/index.html> "The more we know about how the Sun erupts with space weather events, the more we can mitigate their effects on spacecraft and astronauts."

The six solar-powered CubeSats will simultaneously observe radio images of low-frequency emissions (0.1 - 25 MHz) from solar activity and share them via NASA's Deep Space Network. The constellation of CubeSats would fly within 6 miles of each other. The CubeSats will create 3D maps to pinpoint where giant particle bursts originate on the Sun and how they evolve as they expand outward into space. This, in turn, will help determine what initiates and accelerates these giant jets of radiation. The six individual spacecraft will also work together to map -- for the first time -- the pattern of magnetic field lines reaching from the sun out into interplanetary space.

NASA's Missions of Opportunity pair new, relatively inexpensive missions with previously approved host launches.

The ARRL Letter for May 7, 2020



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CONTACT WRARC ELMERS WITH YOUR QUESTIONS - QUESTIONS@WRARC.NET

Fabry, Steve KC8SOY
Haren, Roy KD8IJF
Williams, Russ NR8W

Yaesu FT8900, FT8800, Mobile
???
Electrician, tele-data, Amateur
Extra

kc8soy@yahoo.com
harens@juno.com
rwiliams@neo.rr.com

Articles from members for the Wave Bender are encouraged. They must be received by the editor by the 20th each month. Please send your articles to: k8jaa@arrl.net, and put WRARC on the subject line of your email.

Join us for the WRARC Friday night Net 9:00 P.M.
KD8DWV - 145.270, PL -110.9
Upcoming Net Control Operators

June NCO - This could be you
Please Volunteer

If your name has never been on this list
Contact Steve, KC8SOY to take a turn at Net Control
330-774-6346

WRARC Simplex Frequency 146.565



Mahoning County ARES® Nets
1st Monday 8.40 PM ET W8QLY Repeater - 146.745 (PL 110.9)
&
3rd Monday 8.40 PM ET W8QLY Repeater - 146.745 (PL 110.9)
ARES thanks MVARA for the use of their repeater



W8SGT is facilitating The Ohio HF net every Tuesday - 7:00 PM
The net is run from the State of Ohio EOC on the
Ohio ARES Admin frequency 3875 kHz LSB
moves to 7240 Khz after 20-min.
All are welcome to check in.

The Ohio ARES/OES Digital Emergency Net held every Tuesday at 8:00PM.
held on 3585 kHz USB.

Please note all digital communications are Upper Side Band.
<http://www.http://ohden.org/> for net details. Net Manager Gary NJ8BB





I hope everyone finds themselves and families safe and healthy. No new received communications for the club from me. I am sure everyone is tired of hearing all the stuff that no one knows if any of it is true regarding the virus. Just a few thoughts for those of us who are ARRL members have you been on their website lately, lots of good info. While the weather, and being inside mostly, you could build a multiband wire antenna, or anything ham radio related. I have been watching lots of youtube videos on new radios, and odd ball ham radio stuff I never thought of or knew. Hopefully things will return to semi-normal soon. Hope to see everyone soon,

73 Mike, KC8UNR
 WRARC/Secretary

ARES INFORMATION

First, a big "Thank You" to all of the ARES volunteers in the area. According to Scott Yonally, N8SY, Mahoning County was ranked third in the number of volunteer hours recorded in April. We were behind only Greene County (Xenia) and Licking County (Newark).

Second, Scott gives away a current ARRL handbook each month. To register for the giveaway, go to [www.arrl.org](#) and click the link in the left sidebar. You do not need to be a member of ARRL or ARES to enter.

Third, our eastern ARES neighbors are holding a daily net during the pandemic. The net is on the K3ACS repeater, 444.175MHz, + offset, PL 131.8. The net meets each evening at 5:00 P.M., and all amateur operators are encouraged to check to report how they're doing and any bits of news they may have.

Finally, ARES is always looking for additional volunteers and for current volunteers to continue with their training whenever possible. For additional information, you can visit the Mahoning County ARES page at <http://mahoning-ares.org/> , the Ohio ARES page at <http://arrl-ohio.org/SEC/default.html> .



73, Bob K. --- KE8HHH
 WRARC/ARES Rep.



**Semi-Monthly
 Ham Community
 Breakfast
 Second and Fourth
 Tuesdays
 9:00 A.M.
 (we hope)
 Eat 'n Park Restaurant
 in Austintown
 Join Us!**

FROM THE FIELD DAY DESK

Field Day 2020 Weekend June 26-27-28



This year's Field Day (FD) will be at Youngstown Elser Metro Airport, 10800 Sharrott Road, in North Lima Ohio. As in the past years, we always have fun at this location. I hope we will have a good turn out this year.

If you are coming out with your radios and/or antenna, please bring your own power cords, ground rod, and plug strip for your station. If you have a portable generator, check with me to see if we could use it, prior to FD weekend.

The Club is accepting donations for food for the operators/participants at Field Day.

If you have a camper, van or tent and wish to camp at FD, Check with me or Darrin, N8DMC, so that we can set a spot for you. There is no charge to come camping at FD. The club will have an HF radio station for your use at the FD site, as-well as my radio in my camper.

Every year at FD, priority one is safety - if you see something say something to me or Darrin, and we will take care of it. You may call me at 330-774-6346. .



73, KC8SOY
Steve Fabry
WRARC/Field Day Captain
<kc8soy@yahoo.com>

Ham Radio Operator's....Experts in Social Distancing for more than 100 Years

PATRON SAINT OF HAMS



This may be of limited interest and is not my own article. But did you know there was a patron saint of Amateur Radio Operators? I got the attached article from <http://www.saintmaxnet.org/> .

Maximillian Kolbe is the only canonized saint to have a radio license.

73 Paul, AD0YL

From QSL:

- SP3RN
- Saint Maximilian Maria Kolbe, Patron for All Hams
- SP7PGK Lodz Poland OT15
- SP7PL Skierniewice Poland OT15
- Poland

QSL: SP7PGK, SP7PL OT15
Email: sp7pgk@pgk.net.pl

Also see <http://www.saintmaxnet.org/Really-a-Ham.pdf>



FIELD DAY 2020 –WHAT’S IT LOOK LIKE?

(from Stan, N8BHL)

I don't have to tell you about 2020 so far. Regardless of our own conclusions the government-enforced shutdown of life-in-general has caused numerous events to go away. On the bright side, being restricted to our homes has had the benefit of allowing time to re-focus on the really important factors of our lives.



Since the first Field Day took place in 1933, hams have practiced the rapid deployment of radio stations in emergency or remote conditions. Think: hams step up in wake of cataclysmic end-of-the-world disaster to save humanity with our ability to create a working station from two bales of straw, masking tape and a bolt of string. OK, not quite that but you get the idea. And the ARRL had the idea back in 1933 as hams literally took to the fields. It was nothing like today—they operated out of tents, on wooden crates, or from cars using large tube-type radios and a variety of power sources. It was a test of survival as well as communication. Over the years, as we've become more "first world" in our approach to the out-

doors our Field Days have evolved: miniature radios and computers with battery or solar power operated from a comfortable RV with large gatherings of club members. Oh, and real bathrooms.

Regardless of how much fun we have at our club gatherings and our well-regulated operations, are we truly carrying out the spirit of those old hams and their original intent? Actually, I would say yes, we are indeed! Our capabilities have expanded with technology and our services could just as easily "save humanity" as back in the day.

Just like the development of technology, the "family" aspect of ham radio has blossomed as well. Look, I get it. Our club traditionally has a giant hog roast and a pot-luck dinner on that Saturday night for 100 club members and family. It's more about the gathering than the radios, and that's very pleasant. At the same time the "score-card" aspect has increased the competitive nature as well. For many clubs, groups, and individuals Field Day is a highlight of the ham radio year.

And then came 2020. Over the years we've put together a complex multi-piece puzzle and our younger sibling just came along and dashed it all to the floor. After suitably dealing with the sibling (sometimes spankings are worth it!) we then come to grips with the pile on the floor-and realize this isn't what we'd imagined.

So, it is with 2020. We're finding that just as broad-brushed restrictions don't apply equally across the nation or even a state, broad-brushed rules can become inequitable when parts of the playing fields have been blocked off. While some states are wide open, others are under soft Marshall Law... and the competition thus becomes wholly unequal.



Can we take this year's gift of re-focusing our priorities, to return to the original Field Days and the real purpose? All the rest is fun and surely important, but we need to be able to set up a working radio station under "emergency" conditions to serve our communities. An emergency won't play out the way we expect. This is the challenge of 2020. Can we get back to basics and perform? Scores are not important when it comes to getting through with a message. Big dinners and parties are not critical when it comes to sending critical messages. Can you string together a working antenna? Can you pull a battery and make your HF radio work? Can you accurately record information from other stations under poor conditions? Can you sit for hours fighting noise, mosquitoes, and distraction to make this all work? Can you recognize that this isn't "ARES's problem", this is ham radio's duty? 2020 gives us that challenge. Are we up for it?



Get on the Air

ARRL SEEKS CLARIFICATION OF AMENDED AMATEUR SERVICE RF SAFETY RULES

05/13/2020 - ARRL has filed a addressing two issues arising from amended FCC RF safety rules that go into effect on June 1 for the Amateur Service and other FCC-regulated services. Licensees will have 2 years to determine if an RF safety evaluation is now required under the new rules and to perform an evaluation and implement any needed mitigation measures. Current rules already require amateur stations to meet RF exposure limits, but more radio amateurs will have to evaluate their stations under the new rules. The revised , adopted last November, appeared in the April 1 edition of The Federal Register.

“For applicants and licensees in the Amateur Radio Service, we substitute our general exemption criteria for the specific exemption from routine evaluation based on power alone in §97.13(c)(1) and specify the use of occupational/controlled limits for amateurs where appropriate,” the FCC said. While radio amateurs have always had to comply with RF exposure limits, certain stations have been exempted from having to conduct evaluations based upon power and frequency.

On May 8, ARRL asked the FCC to clarify that using maximum permissible exposure (MPE) limits be permitted in the Amateur Service for required RF safety evaluations of 2200-meter operations, just as they are elsewhere in the amateur spectrum. Removal of the exemption for amateurs resulted in a requirement to use specific absorption rate (SAR) limits for amateur frequencies between 100 and 300 kHz.

“SAR evaluations are very complex to directly measure and, we believe, generally exceed the capability of most individual amateur operators,” ARRL argued in its petition, asserting that MPE limits correspond to conservative estimates of SAR.

“Near-field calculation of a uniform field applied to a transmitter and antenna operating at 1 W EIRP on 2200 meters would result in a very conservative estimate of specific absorption rate (SAR) and is a valid measurement for determining safety of operation,” ARRL told the FCC. “We request clarification that the rules do not intend to preclude the use of MPE as a surrogate for SAR to evaluate amateur operations in the 2200-meter band.”

ARRL also wants the FCC to clarify that its amended rules permit the use of near-field regression rates, using the MPE table to compare against the maximum field strength that may occur from a handheld portable device, instead of using the SAR. In its filing, ARRL maintained that SAR data is not available for amateur equipment as it is for equipment used in other services. Before the rules were amended, mobile and portable transmitters generally were exempt from the requirement to perform routine environmental evaluations.

Under §97.13(c)(1) as amended, effective on June 1, amateur licensees must ensure compliance with FCC RF exposure requirements spelled out in sections 1.1307(b), 2.1091, and 2.1093 of the FCC rules, where applicable. “In lieu of evaluation with the general population/uncontrolled exposure limits, amateur licensees may evaluate their operation with respect to members of his or her immediate household using the occupational/controlled exposure limits in §1.1310, provided appropriate training and information has been accessed by the amateur licensee and members of his/her household.”

“RF exposure of other nearby persons who are not members of the amateur licensee’s household must be evaluated with respect to the general population/uncontrolled exposure limits.” The rule directs radio amateurs to OET Bulletin 65 <https://transition.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet65/oet65.pdf> , Supplement B for methodologies and guidance to evaluate amateur radio operation. The FCC has provided 2 years — until May 31, 2022 — for licensees to determine if evaluations are now required, to perform such evaluations where necessary, and to implement any needed mitigation measures.

“The amended rules are intended to provide more efficient, practical, and consistent RF exposure evaluation procedures and mitigation measures to help ensure compliance with the existing RF exposure limits,” the FCC said. “The amended rules replace the various inconsistent service-specific criteria for exempting parties from performing an evaluation to demonstrate compliance with the RF exposure limits with new, streamlined criteria. The amended rules also allow the use of any valid computational method to determine potential RF exposure levels. The FCC did not amend the actual RF exposure limits that were adopted in 1996.

THE GREAT GEOMAGNETIC STORM

THE GREAT GEOMAGNETIC STORM OF MAY 1921: 99 years ago, people around the world woke up to some unusual headlines.

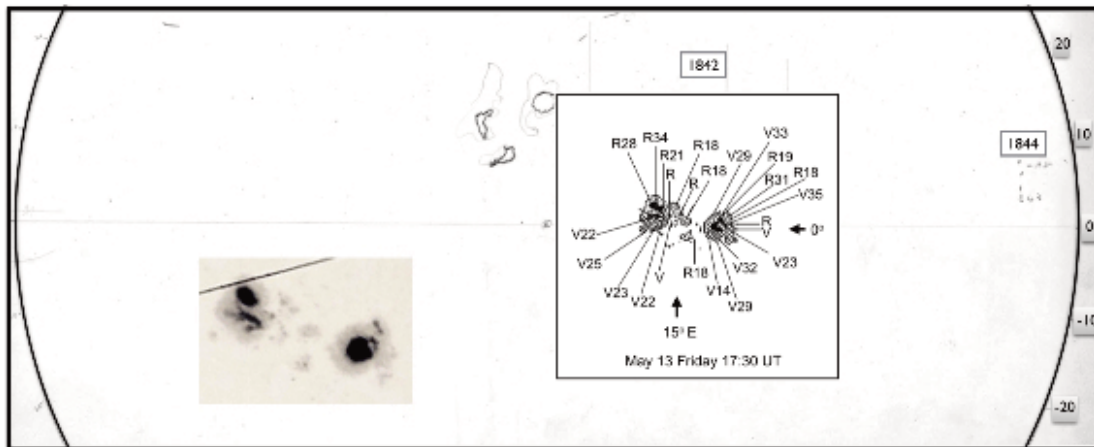
"Telegraph Service Prostrated, Comet Not to Blame" — declared the Los Angeles Times on May 15, 1921. "Electrical Disturbance is 'Worst Ever Known'" — reported the Chicago Daily Tribune. "Sunspot credited with Rail Tie-up" — deadpanned the New York Times.

They didn't know it at the time, but the newspapers were covering the biggest solar storm of the 20th Century. Nothing quite like it has happened since.

It began on May 12, 1921 when giant sunspot AR1842, crossing the sun during the declining phase of Solar Cycle 15, began to flare. One explosion after another hurled coronal mass ejections (CMEs) directly toward Earth. For the next 3 days, CMEs rocked Earth's magnetic field. Scientists around the world were surprised when their magnetometers suddenly went offscale, pens in strip chart recorders pegged uselessly to the top of the paper.

Then the fires began. Around 02:00 GMT on May 15th, a telegraph exchange in Sweden burst into flames. About an hour later, the same thing happened across the Atlantic in the village of Brewster, New York. Flames engulfed the switch-board at the Brewster station of the Central New England Railroad and quickly spread to destroy the whole building. That fire, along with another one about the same time in a railroad control tower near New York City's Grand Central Station, is why the event is sometimes referred to as the "New York Railroad Super-storm."

What caused the fires? Electrical currents induced by geomagnetic activity surged through telephone and telegraph lines, heating them to the point of combustion. Strong currents disrupted telegraph systems in Australia, Brazil, Denmark, France, Japan, New Zealand, Norway, Sweden, the UK and USA. The Ottawa Journal reported that many long-distance telephone lines in New Brunswick were burned out by the storm. On some telegraph lines in the USA voltages spiked as high as 1000 V.



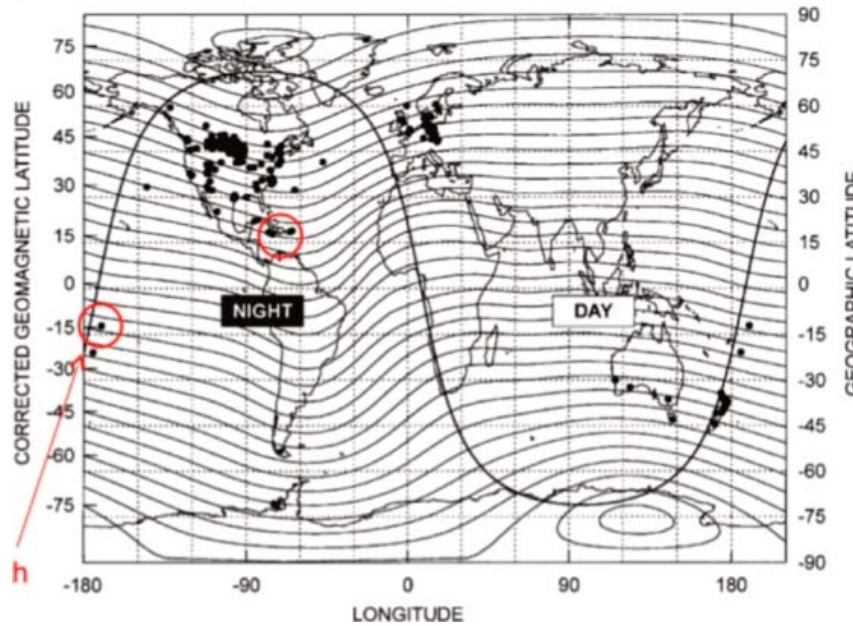
During the storm's peak on May 15th, southern cities like Los Angeles and Atlanta felt like Fairbanks, with Northern Lights dancing overhead while telegraph lines crackled with geomagnetic currents. Auroras were seen in the USA as far south as Texas while, in the Pacific, red auroras were sighted from Samoa and Tonga and ships at sea crossing the equator.

What would happen if such a storm occurred today?

Researchers have long grappled with that question—most recently in a pair of in-depth papers published in the journal Space Weather: "The Great Storm of May 1921: An Exemplar of a Dangerous Space Weather Event" by Mike Hapgood (Rutherford Appleton Laboratory, UK) and "Intensity and Impact of the New York Railroad Super-storm of May 1921" by Jeffrey Love (US Geological Survey) and colleagues.

STORM - CONTINUED FROM PAGE 10

The summary, above, is largely a result of Hapgood's work. He painstakingly searched historical records including scientific journals, newspaper clippings, and other reports to create a moment-by-moment timeline of the storm. Such timelines are invaluable to emergency planners, who can use them to prepare for future storms.



Above: Aurora sightings in May 1921. The leftmost red circle marks Apia, Samoa.

Jeffrey Love and colleagues also looked into the past and—jackpot!—they found some old magnetic chart recordings that did not go offscale when the May 1921 CMEs hit. Using the data, they calculated "Dst" (disturbance storm time index), a measure of geomagnetic activity favored by many space weather researchers.

"The storm attained an estimated maximum -Dst on 15 May of 907 ± 132 nT, an intensity comparable to that of the Carrington Event of 1859," they wrote in their paper.

This dry-sounding result upends conventional wisdom. Students of space weather have long been taught that the Carrington Event (-Dst = 900 nT) was the strongest solar storm in recorded history. Now we know that the May 1921 storm was about equally intense.

If the May 1921 storm hit today, "I'd expect it to lead to most, if not all, of the impacts outlined in the 2013 Royal Academy of Engineering report led by Paul Cannon," says Hapgood. "This could include regional power outages, profound changes to satellite orbits, and loss of radio-based technologies such as GPS. The disruption of GPS could significantly impact logistics and emergency services."

It's something to think about on the 99th anniversary of a 100-year storm....



WORD TO THE WISE

KCMIL

An abbreviation of "thousands of circular mils" which is a measurement of wire gauge. A "circular mil" is equal to the area of a circle with a diameter of one mil, or 0.0005067 square millimeters. Kcmil is used for larger diameter wires, while AWG (American Wire Gauge) is used for smaller diameter wires.

MADISON COUNTY AMATEUR RADIO CLUB PRESS RELEASE

(by Nick Pittner, N8NAP)

While many of us spend our Stay-At-Home time glued to the tv, reading, or playing board games, the members of the Madison County Amateur Radio Club have been actively honing their communications skills. The radio club, made up of federally licensed amateur radio operators (hams) in Madison and central Ohio counties have used their communications capabilities to reach out to area ham operators, offering a nightly mix of entertainment, fun and technical programs to help put the time to good use.





For years, the club has conducted a weekly Tuesday evening net using its amateur radio repeater system. The net involves over-the-air discussions with each ham transmitting from his or her home station moderated by a designated net control station. After the invasion of Covid-19 and the Governor's Stay-At-Home order, the weekly net became a near nightly "Cabin Fever" net, meeting at 8:00 p.m. most evenings and often joined by 20 or more area hams in Madison and area counties. Presentations have been made on a wide variety of topics, including substantive issues such as the use of ham radio software, meteor scatter communication, storage battery technology and antenna law in Ohio as well as a variety of just-for-fun trivia contests.

Another regular feature of the net relates to Amateur Radio Emergency Service (ARES) preparedness for providing radio communication services in the event of an emergency. Coordinating with statewide and national ARES activities, the Madison County ARES can provide a wide range of communications services to agencies such as the county and State Emergency Management Authority (EMA), the Red Cross, area hospitals and other service agencies. In the past these communications services have provided life-saving resources to many disaster victims, including Hurricane Katrina and the 911 Disasters. The club members understand the importance of preparedness for such events.


The club's repeater system can be heard at 147.285 MHz, FM, and it permits hams even with low-power handheld radios to reach a distance of 30-45 miles from the transmitter site in the county. The club's weekly net can be heard at 8:00 p.m. on Tuesday evenings. Hams who are properly licensed and who have the necessary radio equipment are welcome to join and participate in any of the nets; club membership is not necessary. Listeners are always welcome whether licensed or not. The Cabin Fever net operates on the same frequencies, and at the same time. To learn more about amateur radio and consider becoming licensed, see <http://www.arrl.org/what-is-ham-radio> .







Nancy Brett, KD8QNY
Al Avnet, AB8AA



Amateur Radio Operator "Amateur means we're simply professional volunteers" ARRL reflector

REGISTER FOR WEBINARS

Register for Webinars on Proposed Changes to Watch/Warning/Advisory System

By Kevin M. Smith, Meteorologist, NWS Pocatello, ID

Over the past 6 years, the NWS Hazard Simplification (Haz Simp) Project has engaged with forecasters, core partners, and other stakeholders to explore possible improvements to the NWS Watch, Warning, and Advisory (WWA) system. This research found that users believe there were too many WWA products, message formats were inconsistent, and WWA headlines could be confusing. In particular, the “Advisory” headline was found to be widely misunderstood and confused with “Watch.”



was found to be widely misunderstood and confused with “Watch.”

Based on these results, the Haz Simp Team is excited to share our proposal to streamline and simplify the WWA system. All NWS partners (including but not limited to emergency managers, media and other private sector partners, first responders, DOT personnel, water managers, and other federal, state, and local government and tribal officials) are invited to attend Partner Webinars to learn about the proposed changes and offer feedback. There are five opportunities to attend the webinar, each with the same presentation:

- 2 PM EDT, Wednesday, June 3, 2020: Register Now
<<https://register.gotowebinar.com/register/7470303407718075147>>
- 12 PM EDT, Thursday, June 4, 2020: Register Now
<<https://register.gotowebinar.com/register/5763166470061493517>>
- 1 PM EDT, Wednesday, June 17, 2020: Register Now
<<https://register.gotowebinar.com/register/8322712991291493901>>
- 11 AM EDT, Thursday, July 9, 2020 Register Now
<<https://register.gotowebinar.com/register/4963693973319545869>>
- 12 PM EDT, Thursday, July 23, 2020: Register Now
<<https://register.gotowebinar.com/register/2408615867344992013>>



The proposed changes have not been finalized. Our decision will be heavily based on user feedback, which makes your participation so important. To learn more now, you can download a 1 page handout about the proposed changes. Make your voice heard and attend a webinar!

For more information on the Haz Simp Project, please visit the Haz Simp website <<https://www.weather.gov/hazardsimplification/>> . Send questions, concerns, and other feedback to hazsimp@noaa.gov.



The official mascot of 2020.
Washes his hands insensately.
Always wears a mask.
Rearrange the the letters in
racooin it spells CORONA!

I GET EMAILS

Hi Jane:

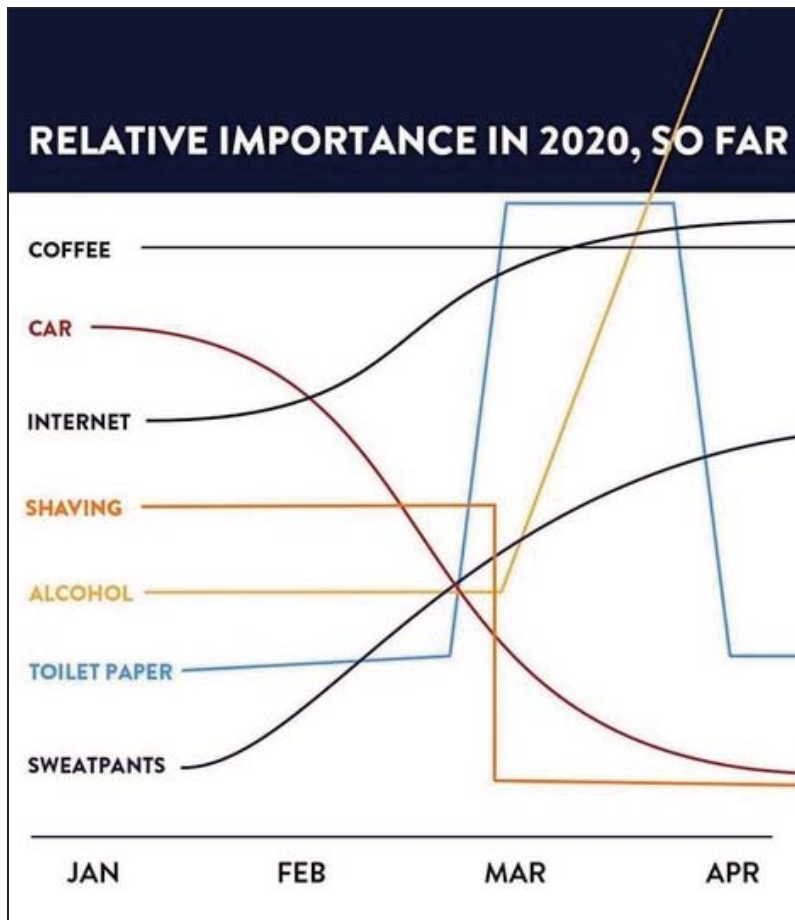
I came across this article about radio comms for public safety and thought that maybe it might warrant some mention in an upcoming newsletter publication. Not sure if it fits the bill but it does seem interesting. <https://tan-gotango.net/> .

Cheersm

David Hosking (KE0VDS)

This came to my inbox this morning, if this is might be of interest for field Day.
ARRL handouts <http://www.arrl.org/shop/Brochures-Handouts-and-Exhibit-Supplies>

This link seems to be broken. www.arrl.org/shop/Brochures Handouts and Exhibit Supplies



MAYBE THIS IS YOU?

Could YOU be the one I'm looking for? This is the editor of YOUR Newsletter. We have plenty of room for YOUR article(s)! If something is of interest to you, odds are that we all will enjoy your thoughts and activities! Have a favorite radio? Have some reminiscing to do? Maybe you have a question for one of our Elmers. OR, a Tip or Trick you learned that would help one of YOUR WRARC friends. You are warmly invited to contribute! Don't worry about writing or formality - we can help you with that. Your article could go in this spot, or one bigger, next month!!



June, 2020

PREPAREDNESS LEADS TO READINESS - MATT W8DEC



Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 ARES Net 8:30 PM 146.745 PL 110.9	2	3	4 Hug Your Cat Day	5 WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	6 D-Day, WWII
7 National Chocolate Ice Cream Day	8	9 Ham Breakfast Eat'n Park Austintown 8:30 A.M. Board Meeting Eat'n Park Austintown 7:00 P.M.	10	11	12 WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	13
14 Flag Day 	15 ARES Net 8:30 PM 146.745 PL 110.9	16 WRARC Meeting 7:00 P.M.	17	18 Go Fishing Day & International Panic Day	19 WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	20 Last Day For WaveBender Articles 
21 	22	23 Ham Breakfast Eat'n Park Austintown 8:30 A.M.	24	25	26 WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	27 
28 	29	30	NOTE: All dates are tentative.		WRARC Net 9:00PM 145.270 Swap n' Shop Ask the Elmers	