

A.R.A.T.S

Coherer

The official Newsletter of The Amateur Radio Association of The Tonawandas, Inc. - since 1954

March 2021

Volume 3 Issue 3

EDITOR'S MESSAGE

Hello Members, a lot has changed in a year. Last year I was reporting that there was no toilet paper on the shelves at the grocery stores and no paper towels, that has changed as there are both on the shelves and the price has gone up with fewer rolls in each package. We are not having any meetings at City Hall, as the City of Tonawanda Mayor has closed City Hall after work programs and special happenings which we fall under. We are using Virtual meetings. Stay safe and healthy.

Here are some locations you can take a VE Exam in place of ARATS.

Lancaster ARC: John H. Maxwell

(716) 404-9256 or

maxwell@acsu.buffalo.edu

South Towns AMS (WB2ELW)

Robert A. Koster (716)649-7272

Rkoster53@roadrunner.com

Lockport Amt. Radio Assoc.



Remember NO meeting's the 3rd. Wednesday at City Hall, City of Tonawanda 200 Niagara Street, Tonawanda, NY.

As far as Covid-19, I have both shots and no problems with either of them as I was told to make sure I hydrate the week of my shot and I did and maybe that helped. Also, I have heard that the older you are the less side effects there are if any at all which was alright with me. So, I hope everyone is getting their shots and finding appointments which seems to be the problem. Also, its time to send in your DUES if you forgot because of other things on your mind we forgive you, but you need to send them now or this will be your last copy of the Coherer.

This month extra is from the Space weather Prediction Center , NOAA and if you want to read more go to www.swpc.noaa.gov

President's Message

Hello ARATS members.

This has been an interesting and challenging year for everyone, we are just now starting to see things returning back to the way they were before covid, and hopefully we can get back to holding some sort of normal activities.

This month we were giving permission to have are ARATS board meetings back at my fire company (Adams) hall 2, Our first meeting is on Saturday March 20th at 1pm, as far as going back for general meetings I am still waiting for conformation from city hall

I am looking into the possibly of holding our annual field day this year at Adams Fire Company hall 1 out back in the open field.

As soon as I get conformation on any of these events, I will pass this information along to the membership so you can start making plans.

I haven't heard anything from either North Tonawanda or the City of Tonawanda on any opening dates.

Thank you to those members who sent in their membership renewals for 2021.

I have updated rosters with members information, this way I am able to keep our everyone informed on any news.

Thank you to Joe N2ZDU, Bill N2WUT and Bob K2LED for keeping the ARATS on the air, GOOD JOB GUYS!

I am looking for ideas on a design for a banner for ARATS with our new call sign W2VCI, I would like to have a banner made by the end of May so we can display it for field day weekend.

Bob K2MNC is ordering new name tags with W2VCI if you what one you need to contact him for one.

I have old photos, paperwork and meeting minute's and I am putting everything into albums and once we start meeting again, I will have these for members to see are some of ARATS past history.

I am updating the ARATS web page with information to keep you up to date on any current events, you can access ARATS page either from the Facebook site or just going directly to www.w2vci.com

ARATS Facebook page has info with our weekly nets, members birthdays, ARRL news and other things happening in the amateur radio world.

Jim N2UJH holds a 10-meter net on Tuesday Night at 8pm 28.330, & our ARATS Net is on Thursday Night at 8:30pm.

Stay Safe, Stay Healthy and we will be together soon,

Keep on Playing Radio,

73's Your President.

Bob Fleischauer

S O S ver Mayday

The amateur distress call , QRRR, grew from the purpose of the first organized amateur emergency nets. They were set up in cities along Pennsylvania Railroad to aid the "Pennsy" (and later other railroads) with train communications in the event of failure of the railroad telegraph landlines - - which were frequent. The signal QRR came to be used to indicate that the calling station had railroad traffic related to some emergency. ARRL eventually adopted this call for use by any amateur who had distress traffic and later the call was changed to QRRR because of a conflict in definitions with the international Q signal QRR.

One of the first distress calls was CQD, coined by the Marconi Company about 1904 from the "general call" CQ and the letter "D" for "distress." The main problem with CQD was that it was supposed to be used only by ships which subscribed to the Marconi radio system and ships of one system were discouraged from communicating with ships or shore stations of other , competing, companies. The problem got so bad that it was taken up in the international radio conference in 1906 where a new universal distress call was proposed.

The American delegation suggested the letters NC which were already recognized in the International Signal Code for Visual Signaling. The German delegation proposed its own SOE which was already in use on German ships as a general inquiry signal similar to CQ (which was then used only by the Marconi System). The British delegation, of course, wanted to stick to the Marconi signal CQD.

The convention found SOE acceptable except that the final E could easily be lost in QRN, so the letter S was substituted, making it SOS. The convention decided that SOS should be sent as a single code character with a sound unlike any other character, thus arresting the attention of anyone hearing it. So was officially adopted, but CQD remained in use for some years, particularly aboard British ships.

It was not until 1912, after the Titanic disaster, that SOS became universal and the use of CQD gradually disappeared. Titanic radio operator Jack Phillips sent both CQD and SOS to be sure that there could not possibly be any misunderstanding.

Incidentally, another distress call is used by aircraft in trouble throughout the world. We have all heard the term "mayday" at some time. This , of course, has nothing to do with the first day in May. As it turns out, in French, the word "m'aidez " means "help me". Is it possible that American aviators in World War I picked this up from their French comrades and mispronounced it as the easily recognized "mayday , mayday"? Now days the Fire service uses "mayday , mayday" also.



Search

CURRENT SPACE WEATHER CONDITIONS on NOAA Scales

R	S	G	
none	none	none	

HF RADIO COMMUNICATIONS



HF RADIO COMMUNICATIONS

Space weather impacts radio communication in a number of ways. At frequencies in the 1 to 30 mega Hertz range (known as “High Frequency” or HF radio), the changes in ionospheric density and structure modify the transmission path and even block transmission of HF radio signals completely. These frequencies are used by amateur (ham) radio operators and many industries such as commercial airlines. They are also used by a number of government agencies such as the Federal Emergency Management Agency and the Department of Defense.

There are several types of space weather that can impact HF radio communication. In a typical sequence of space weather storms, the first impacts are felt during the solar flare itself. The solar x-rays from the sun penetrate to the bottom of the ionosphere (to around 80 km). There the x-ray photons ionize the atmosphere and create an enhancement of the D layer of the ionosphere. This enhanced D-layer acts both as a reflector of radio waves at some frequencies and an absorber of waves at other frequencies. The Radio Blackout associated with solar flares occurs on the dayside region of Earth and is most intense when the sun is directly overhead.

Another type of space weather, the Radiation Storm caused by energetic solar protons, can also disrupt HF radio communication. The protons are guided by Earth’s magnetic field such that they collide with the upper atmosphere near the north and south poles. The fast-moving protons have an affect similar to the x-ray photons and create an enhanced D-Layer thus blocking HF radio communication at high latitudes. During auroral displays, the precipitating electrons can enhance other layers of the ionosphere and have similar disrupting and blocking effects on radio communication. This occurs mostly on the night side of the polar regions of Earth where the aurora is most intense and most frequent.

More information on solar activity from an amateur radio operator’s perspective is available at <https://www.qrparci.org/resource/FDIM81.pdf>

Phenomena:

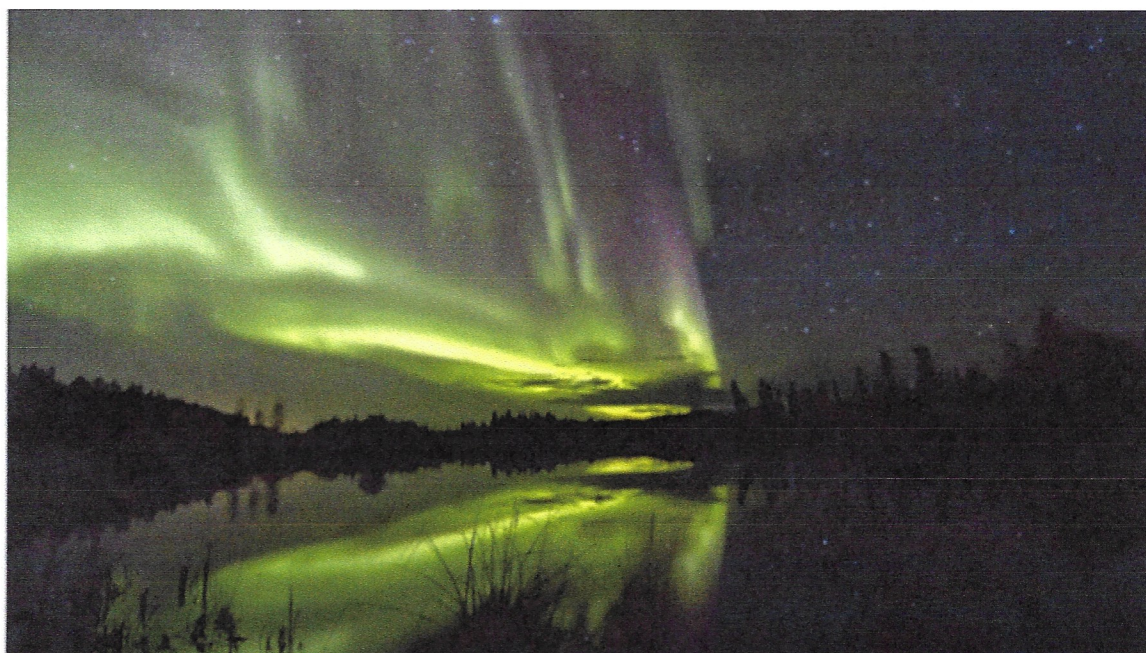
[Geomagnetic Storms](#)



CURRENT SPACE WEATHER CONDITIONS on [NOAA Scales](#)

R **S** **G** 
none none none

GEOMAGNETIC STORMS



GEOMAGNETIC STORMS

A geomagnetic storm is a major disturbance of Earth's magnetosphere that occurs when there is a very efficient exchange of energy from the solar wind into the space environment surrounding Earth. These storms result from variations in the solar wind that produces major changes in the currents, plasmas, and fields in Earth's magnetosphere. The solar wind conditions that are effective for creating geomagnetic storms are sustained (for several to many hours) periods of high-speed solar wind, and most importantly, a southward directed solar wind magnetic field (opposite the direction of Earth's field) at the dayside of the magnetosphere. This condition is effective for transferring energy from the solar wind into Earth's magnetosphere.

The largest storms that result from these conditions are associated with solar coronal mass ejections (CMEs) where a billion tons or so of plasma from the sun, with its embedded magnetic field, arrives at Earth. CMEs typically take several days to arrive at Earth, but have been observed, for some of the most intense storms, to arrive in as short as 18 hours. Another solar wind disturbance that creates conditions favorable to geomagnetic storms is a high-speed solar wind stream (HSS). HSSs plow into the slower solar wind in front and create co-rotating interaction regions, or CIRs. These regions are often related to geomagnetic storms that while less intense than CME storms, often can deposit more energy in Earth's magnetosphere over a longer interval.

Storms also result in intense currents in the magnetosphere, changes in the radiation belts, and changes in the ionosphere, including heating the ionosphere and upper atmosphere region called the thermosphere. In space, a ring of westward current around Earth produces magnetic disturbances on the ground. A measure of this current, the disturbance storm time (Dst) index, has been used historically to characterize the size of a geomagnetic storm. In addition, there are currents produced in the magnetosphere that follow the magnetic field, called field-aligned currents, and these connect to intense currents in the auroral ionosphere. These auroral currents, called the auroral electrojets, also produce large magnetic disturbances. Together, all of these currents, and the magnetic deviations they produce on the ground, are used to generate a planetary geomagnetic disturbance index called Kp. This index is the basis for one of the three NOAA Space Weather Scales, the Geomagnetic Storm, or G-Scale, that is used to describe space weather that can disrupt systems on Earth.



Search

CURRENT SPACE WEATHER CONDITIONS on NOAA Scales

R S G none none none

SPACE WEATHER AND GPS SYSTEMS



SPACE WEATHER AND GPS SYSTEMS

The use of single and dual frequency satellite radio navigation systems, like the Global Positioning System (GPS), has grown dramatically in the last decade. GPS receivers are now in nearly every cell phone and in many automobiles, trucks, and any equipment that moves and needs precision location measurements. High precision dual frequency GPS systems are used for farming, construction, exploration, surveying, snow removal and many other applications critical to a functional society. Other satellite navigation systems in orbit include the European Galileo system and the Russian GLONASS system.

There are several ways in which space weather impacts GPS function. GPS radio signals travel from the satellite to the receiver on the ground, passing through the Earth's ionosphere. The charged plasma of the ionosphere bends the path of the GPS radio signal similar to the way a lens bends the path of light. In the absence of space weather, GPS systems compensate for the "average" or "quiet" ionosphere, using a model to calculate its effect on the accuracy of the positioning information. But when the ionosphere is disturbed by a space weather event, the models are no longer accurate and the receivers are unable to calculate an accurate position based on the satellites overhead.

In calm conditions, single frequency GPS systems can provide position information with an accuracy of a meter or less. During a severe space weather storm, these errors can increase to tens of meters or more. Dual frequency GPS systems can provide position information accurate to a few centimeters. In this case the two different GPS signals are used to better characterize the ionosphere and remove its impact on the position calculation. But when the ionosphere becomes highly disturbed, the GPS receiver cannot lock on the satellite signal and position information becomes inaccurate.

Geomagnetic storms create large disturbances in the ionosphere. The currents and energy introduced by a geomagnetic storm enhance the ionosphere and increase the total height-integrated number of ionospheric electrons, or the Total Electron Count (TEC). GPS systems cannot correctly model this dynamic enhancement and errors are introduced into the position calculations. This usually occurs at high latitudes, though major storms can produce large TEC enhancements at mid-latitudes as well.

REMINDERS

Membership is open to anyone interested in Amateur Radio. Regular dues are \$20 a year. An additional one-time fee of \$8 exists for new membership, which includes an ARATS name badge. Other rates are also available. Applications are available at any ARATS Meeting. For more information, please contact any ARATS member.

As of right now the ARATS website is up and running at w2vci.com

ARATS WEEKLY

NETS

2Meter Net Every Thursday at 8:30 pm
146.955Mhz - offset PL 151.4
Net Controllers many

6Meter Net Every Monday at 8 pm
50.200 MHz
Net Controller K2LEH

10Meter Net Every Tuesday at 8pm
28.330 MHz
Net Controller N2UHJ

Bulletins 2m Saturday 9pm

The 6 meter is not an ARATS Net.

The Amateur's Code

The Radio Amateur is:

Considerate: Never knowingly operating in such a way as to lessen the pleasure of others.

Loyal: Offering loyalty, encouragement and support to other amateurs, local club and the American Radio Relay league, through which Amateur Radio in the United States is represented nationally and internationally.

Progressive: With knowledge abreast of Science, a well built and efficient station and operation beyond reproach.

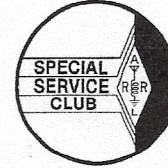
Friendly: With slow and patient operation when requested friendly advice and counsel to the beginner, kindly assistance co-operation and consideration for the interests of others. These are the hallmarks of the amateur spirit.

Balanced: Radio is an avocation, never interfering with duties owed to family, job, school or community.

Patriotic: With station and skilled always ready for service to country and community.



ARATS Membership Application



Amateur Radio Association of the Tonawandas
P.O. Box 430, North Tonawanda, New York 14120-0430

As a paid member, you will receive an electronic copy of the ARATS Coherer Newsletter

Dues are payable at the time of application. The following dues schedule applies:

- New Member:** \$20.00 per year, plus \$8 new member fee which includes ARATS ID badge.
- Renewal Member:** \$20 per year (Dues paid in Nov. or Dec. will carry through the next calendar year).
- Family Membership:** \$2 per year per person. (Immediate family members living at the same address).
- Out of Town Membership:** (Perm., 75+ miles from North Tonawanda, voting privileges by mail)
- Student Membership:** \$10 per year. (full time students up 12th grade. Includes new membership fee. If applicable).
- Special membership:** Varies (Only for qualifying memberships, i.e.VE session new hams, life members, others)

Personal Information

Name on Badge: _____ DOB: _____
 Name: _____ Call: _____
 Street Address: _____
 City: _____ State: _____ ZIP: _____
 Email _____ Phone: () _____
 Other: () _____

Application Type

- New \$20*
- Renewal \$20*
- Family \$2*
- Out of Town \$12 (no fee if new)
- Student \$10*
- Change of Information*
- Special** (Circle) VE, Life, Other

License Class

- Novice
- Technician
- General
- Advanced
- Extra
- None (New Ham)*
- None (Non Ham)

Other

- ARRL Member
- ARES/RACES Member
- Contesting
- Volunteer Examiner
- Other

* Please add \$8 New Member Fee if new member or requesting a new ARATS badge. If new ham, we'll hold your badge until you get your call
 ** Special applications cannot be submitted online.

Additional:

Would you consider assisting ARATS in any of the following:

<input type="checkbox"/> Holiday Party Committee	<input type="checkbox"/> Program Committee
<input type="checkbox"/> Picnic Committee	<input type="checkbox"/> Field Day Committee

Amount Enclosed

Dues-Jan 1, ____ Through Dec.31, _____	\$ _____
New Member Fee (\$8-one time)	\$ _____
Maintenance Donation	\$ _____
(Your donation will assist maintaining and upgrading club equipment)	
Total	\$ _____

New Members Only:

Sponsor _____
 Co-Sponsor _____

Official Use Only

App Review Date	_____
Status	_____
VE Session	_____
Notes	_____

