

CQ Chatter

FEBRUARY 2020

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WOOD COUNTY AMATEUR RADIO CLUB

President	WB8NQW	Bob Willman
Vice President	KD8VWU	Doug Perez
Secretary	N1RB	Bob Boughton
Treasurer	KD8NJW	Jim Barnhouse
Board Member	KE8CVA	Terry Halliwill

Kick-off Banquet a Success

The WCARC held its annual kick-off banquet on Monday, January 13th. The location was the Country Farmhouse restaurant in Wayne. It is a small place with an entryway that reflects a home-spun atmosphere.

The attendance was a bit over twenty persons, and so was not large enough for buffet service. As a result, everybody was able to order meals à la carte. This may not have been an unfortunate result.

The food selection and preparation were, in the opinion of this writer, excellent, with choices ranging from home style American, to Chinese and Italian dishes. Many of the folks who sat near me were similarly complimentary. The consensus appears to be that this restaurant deserves a return visit for the banquet in future years. ■

Wood County Has a Birthday

The year 2020 marks the bicentennial of Wood County. The County was organized on February 12, 1820, when the Ohio Legislature formed 14 counties from lands purchased from the following tribes: Wyandot, Seneca, Delaware, Shawnee, Potawatomi, Ottawa and Chippewa (you can see where a lot of the county names come from). It was named in honor of Colonel Eleazer D. Wood, of the U.S. Army Corps of Engineers, who planned and supervised the construction of Fort Meigs during the War of 1812.

The County Commissioners are making plans to celebrate the bicentennial with a special event. As yet, no definite dates or ceremonies have been set.

Bob, WB8NQW, will contact County officials to see if it is possible to include a demonstration of amateur radio in some

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Net Check Ins

Dec 31

N1RB

KC8EKT

KE8CVA

KG8FU

KE8NEC

WB8NQW

WD8LEI

KD8NJW

WD8JWJ

K8OVO

KA8VNG

N8MSU

WD8ICP

KG8FH

KD8RNO (15)

Traffic: 0
(NCS)

Jan 7

KD8NJW

K8BBK

KE8CVA

KC8EKT

KG8FH

WD8JWJ

KE8NEC

KE8NDF

WB8NQW

KD8RNO

N1RB

N8VNT (12)

Traffic: 0
(NCS)

BRAIN TEASERS

1. What is normally meant by operating a transceiver in *split* mode?
 - a.) the radio is operating at half power
 - b.) the transceiver is operating from an external power source
 - c.) the transceiver is set to different transmit and receive frequencies
 - d.) the transmitter is emitting an SSB signal, as opposed to DSB operation
2. What is the maximum height above ground to which an antenna structure may be erected without requiring notification to the FAA and registration with the FCC, provided it is not at or near a public use airport?
 - a.) 50 ft
 - b.) 100 ft
 - c.) 200 ft
 - d.) 300 ft
3. In what part of the 13 cm band may an amateur station communicate with non-licensed Wi-Fi stations?
 - a.) anywhere in the band
 - b.) channels 1 through 4
 - c.) channels 42 through 45
 - d.) no part

February Contests

The contest lineup for the month of February is given below. Please note that the WARC bands (60, 30, 17 and 12 m) are never open to contesting.

Feb 1-2	<i>0000 to 2359</i>	160 m to 10 m
Vermont QSO Party		all modes
Feb 1	<i>1400 to 2359 Z</i>	160 m to 10 m
Minnesota QSO Party		all modes
Feb 1-2	<i>1600 to 2359 Z</i>	160 m to 10 m
British Columbia QSO Party		all modes
Feb 8-9	<i>1200 to 1200 Z</i>	160 m to 10 m
PACC (Netherlands) DX 'test		CW/SSB
Feb 10-14	<i>1300 to 2359 Z</i>	160 m to 10 m
ARRL School Club Roundup		CW/SSB
Feb 15-16	<i>0000 to 2359 Z</i>	160 m to 10 m
ARRL Int'l DX 'test		CW
Feb 15-16	<i>1200 to 1159 Z</i>	160 m to 10 m
Russian PSK WW 'test		PSK
Feb 22-23	<i>0600 to 1800 Z</i>	80 m to 10 m
REF (France) DX 'test		SSB
Feb 22-23	<i>1200 to 1200 Z</i>	80 m to 10 m
UK/EI DX 'test		CW
Feb 29-Mar 1	<i>1200 to 1159 Z</i>	160 m to 10 m
Russian WW Multimode 'test		all modes
Feb 29-Mar 1	<i>1300 to 1300 Z</i>	80 m to 10 m
UBA (Belgium) DX 'test		CW
Feb 29-Mar 1	<i>1500 to 0159 Z</i>	160 m to 10 m
South Carolina QSO Party		all modes

The Sun and Radio-

ed note: To mark the arrival of the new sunspot cycle, this is the first of several installments on how the Sun affects radio propagation.

by Paul Harden, NA5N

The Sun–Earth Interconnect

Since the late 1800s, it has been noted that solar activity affects telegraphic lines, and later, radio communications. However, there was no scientific proof of this link. From the 1920s onward, radio amateurs found a clear correlation of HF propagation and the MUF (maximum usable frequency) to the solar cycle. But again, there was no scientific proof. Astronomers and physicists knew there was a Sun–Earth connection, but without direct observational data, it remained an unproven scientific theory.

The scientific proof did not come until quite recently – basically, the space age – when we got our first look at the Sun from outside our protective atmosphere. In the 1970s, the Voyager spacecraft were the first to confirm the existence of the solar wind. It was not until Skylab that increases in radiation and the solar wind were linked to solar flares, and coronal mass ejections (CME) were first detected. The Sun–Earth interconnect finally became a scientific fact.

Since then, numerous satellites and ground-based instruments monitor the Sun and our geomagnetic field in real time. Today, the radio amateur and QRP operator has a wealth of solar information

available via the internet that professional astronomers did not have even a decade ago. This article, in part, describes how to interpret this internet data, and some of the terminology encountered in the daily reports and solar data from NOAA. Much of the solar physics in this article has been developed by astrophysicists in the past 35 years, and is not yet available other than in scientific journals.

Solar Radiation

If the Sun radiated as a thermal source only, the received brightness would vary directly with frequency – ranging from ultraviolet and visible light down into the radio spectrum. This is called Planck's black-body radiation law. Optical observations at different wavelengths do follow the black-body radiation curve, proving that the visible and optical wavelengths from our sun are thermally generated. However, radio energy does not follow the black-body radiation curve, proving that the radio energy from our Sun is being generated by processes other than heating.

Solar Flux

Deep in the core of the Sun is a massive thermonuclear reactor generating very short wavelength rf energy (gamma rays and x-rays). As this energy works its way to the surface of the Sun, the wavelength gets lengthened into the radio wavelength range, manifesting itself as the background radiation from the Sun—called the solar flux (SF). It is measured at several observatories and reported daily by the National Oceanographic and Atmospheric Administration (NOAA) at

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WCARC Weekly Net
Tuesdays at 2100 all year
147.18 MHz 67 Hz PL
Net Control Roster

<i>Feb 4</i>	<i>KD8VWU</i>
<i>Feb 11</i>	<i>KD8NJW</i>
<i>Feb 18</i>	<i>K8OVO</i>
<i>Feb 25</i>	<i>WB8NQW</i>
<i>Mar 3</i>	<i>N1RB</i>
<i>Mar 10</i>	<i>KD8VWU</i>

NEXT MEETING

Business Meeting

Monday, February 10

TIME: 7:30PM/7:00EB

PLACE: Sheriff's

Training Room

S. Dunbridge Rd. &

E. Gypsy Lane Rd.

Bowling Green, OH

10 meter Net
informal group
meets

Sunday

@ 20:30

on 28.335 MHz

Fusion Net

Thursday

@ 19:30

on 442.125 MHz

67 Hz PL on FM

discussion of all

things digital

Net Check Ins

Jan 14

Traffic: 0

(NCS)
K8OVO
WD8LEI
KE8CVA
KG8FH
WB8NQW
KD8RNO
KD8NJW
K8JU
K8BBK (9)

Jan 21

Traffic: 0

(NCS)
WB8NQW
KC8EKT
KE8CVA
KG8FH
WD8JWJ
KE8NEC
KD8RNO
N8MSU
N1RB (9)

Jan 28

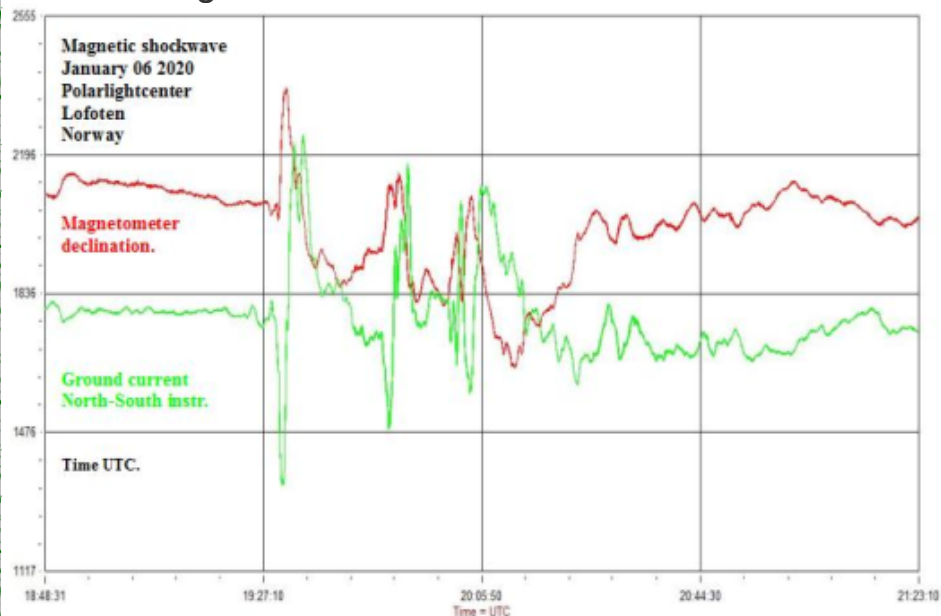
Traffic: 0

(NCS)
N1RB
KC8EKT
KG8FH
WD8LEI
WB8NQW
KE8CVA
KD8NJW
KE8NDF
KD8RNO
KD8VWU
KA8VNG
N8VNT (12)

Electricity Surge in Soil of Northern Norway

from spaceweather.com

On January 6th, something unexpected happened in the soil of northern Norway. "Electrical currents started flowing," reports Rob Stammes, who monitors ground currents at the Polar Light Center Geophysical Observatory in Lofoten. The chart recording below shows the sudden surge around 1930 UT:



Magnetic shock waves observed in Norway due to reversal of near-Earth interplanetary magnetic field

"It seemed to be some kind of shockwave," says Stammes. "My instruments detected a sudden, strong variation in both ground currents and our local magnetic field. It really was a surprise."

NASA's ACE spacecraft [detected something](#) as well. About 15 minutes before the disturbance in Norway, the interplanetary magnetic field (IMF) near Earth abruptly swung around 180 degrees, and the solar wind density jumped more than 5-fold. Earth may have crossed through a fold in the [heliospheric current sheet](#)--a giant, wavy membrane of electrical current rip-

sun—from p. 4

their website: <http://www.swpc.noaa.gov>. The solar flux is low during the quiet Sun (SF <100) and elevated during the active Sun (SF >100). In short, the solar flux is a measure of the ionizing radiation from the Sun, and an indicator of the electron density of our ionosphere. The higher the electron density, the more reflective our ionosphere is to HF signals, and the higher the *maximum usable frequency* (MUF).

The solar flux is measured at 2880 MHz (10 cm), a frequency not generally affected by solar flares, and one where our atmosphere is very transparent. Occasionally, a large solar flare will increase

the 2880 MHz solar flux. NOAA will report this event as a ten-flare, indicating the 10 cm solar flux value has been contaminated by a solar flare. Most people ignore the elevated solar flux from a ten-flare. However, it does indicate the Earth has been exposed to increased ionizing radiation from the solar flare – ionizing our E and F layers above the normal solar flux.

QRP Propagation Hint:

QRPers should check the higher bands for openings for several hours following a solar flare, or a ten-flare event, due to the enhanced E/F layer ionization, possibly temporarily raising the MUF. ■

February Hamfests

Feb 16 Intercity ARC Hamfest. Richland County Fairgrounds, Mansfield, OH.
web: <http://iarc.club>

Feb 23 Livonia ARC Hamfest. Knights of Columbus Hall, Livonia, MI.
web: <http://livoniaarc.com/index.php?page=swapshop>

Mar 1 Northern Ohio ARS Hamfest. Lorain County Community College, Elyria, OH.
web: <http://noars.net>

WHAT SHOULD WCARC DO IN 2020?
As suggested at the last meeting, please bring your ideas for Club goals and activities this year to the meeting on Monday, February 10

Wood county—from p. 1

way. One suggestion is to set up an operating position at or near the Courthouse with a special event station. This would serve the dual purpose of bringing the bicentennial to the attention of our ham colleagues and also to make amateur radio more visible to the public who may be attending the events. If you have any other suggestions, please let any of the Club officers know. ■

State QSO Party Challenge Announced

The [State QSO Party Challenge](#) is a competition comprised of other contests, namely state and provincial QSO parties. As explained on the website, the annual cumulative score program is open to any radio amateur who participates in any approved state QSO parties (SQPs).

Participants just need to submit their QSO party scores to [3830scores.com](#) to enter the challenge. Participants' cumulative scores will be calculated by totaling up the number of reported contacts and multiplying by the number of SQPs entered in the year to date. Periodic standings will be posted to [3830scores.com](#), the [QSOParty Groups.io forum](#), and the [StateQSOParty.com website](#).

"Using the number of QSO parties entered as a multiplier is expected to encourage radio amateurs to enter more state/province QSO parties," the program's organizers said. "The first SQPs in 2020 are the Vermont, Minnesota, and British Columbia QSO Parties on the first weekend of February." ■

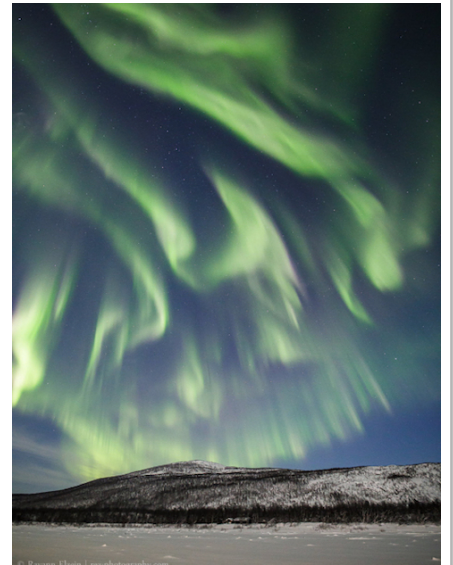
norway—from p. 6

pling through the solar system. Such crossings can cause these kind of effects.

While currents flowed through the ground, auroras filled the sky. Rayann Elzein photographed the corresponding outburst of lights from Utsjoki, Finland:

"What a surprise!" Said Elzein. "The auroras were sudden and dynamic, with fast-moving green needles and several purple fringes!"

The auroras and ground currents were caused by the same thing: rapidly changing magnetic



Aurora in Finland

fields. High above the Earth's surface, magnetic field variation shook loose energetic particles, which rained down upon the upper atmosphere, creating auroras where they struck. Just below the Earth's surface, magnetic vibrations [caused currents to flow](#), triggering Rob Stammes' ground sensors.

"We couldn't see the auroras in northern Norway because of cloud cover," says Stammes, a little ruefully. "We had to be satisfied with the electricity underfoot." ■

Entrants must make at least two contacts in a QSO party for it to count as a multiplier. [Full details](#) are available on the State QSO Party Challenge website. ■

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