

CQ Chatter

JANUARY 2021

VOLUME B20 •ISSUE 11

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

Minutes

WCARC Meeting

December 14, 2020

Bob-WB8NQW, presiding

Present: KC8PFP-Rex, KD8NJW-Jim, WB8ZHU-Thom, WD8JWJ-Bill, N1RB-Bob, WE8TOM-Tom, WB8NQW-Bob, KG8FH-Jeff

Meeting called to order: at 7:30 with Pledge of Allegiance (Woodland Mall).

Minutes: of October business meeting as published in November CQ Chatter were approved (NJW/FH).

Treasurer Report: Jim (NJW) reported on the balance in Club account and also mentioned that it is time to remit 2021

dues- a check made out to WCARC and sent to P. O. Box 534, Bowling Green, OH 43402 will do the trick.

Old Business:

- Bob (RB) updated everybody on the status of the Fusion/Wires-X repeater. The original computer bit the dust after 3 years of operation, and was replaced in late November by a “new” (refurb) machine. The system has been in operation since Nov. 29th, but a few tweaks were required, and were carried out on Dec. 6th. The K8TIH Room has infinite Time-Out, so will stay connected to the repeater (K8TIH Node) permanently unless another Room is used. All users are asked to return the machine to the K8TIH Room

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Net Check Ins

Dec 8 **Traffic: 0**

KD8NJW (NCS)
WD8JWJ
KD8RNO
K8BBK
KE8CVA
WD8ICP
KG8FH
WD8LEI
WB8NQW
N1RB
K8DLF (11)

Dec 15 **Traffic: 0**

WB8NQW (NCS)
WD8JWJ
WD8LEI
KD8NJW
N1RB
KE8CVA
K8DLF
WE8TOM
KD8RNO
KE8DSE (10)

BRAIN TEASERS

1. What are the advantages of a non-resonant rhombic antenna ?
 - a.) wide frequency range, high gain and high front to back ratio
 - b.) high front to back ratio, compact size and high gain
 - c.) unidirectional radiation pattern, high gain and compact size
 - d.) bidirectional radiation pattern, high gain and wide frequency range
2. Why is the resistance of a conductor different for RF current than for direct current?
 - a.) because insulation conducts current at high frequencies
 - b.) because of the Heisenberg Effect
 - c.) because of the Skin Effect
 - d.) because conductors are non-linear devices
3. Which of the following frequency ranges is reserved by "gentlemen's agreement" for DX contacts during international 6 meter contests?
 - a.) 50.000 to 50.025 MHz
 - b.) 50.050 to 50.075 MHz
 - c.) 50.075 to 50.100 MHz
 - d.) 50.100 to 50.125 MHz

January Contests

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

Jan 2	1800 to 2359 Z	80 m to UHF
ARRL Kids' Day		Phone
Jan 2-3	1800 to 2359 Z	80 m to 10 m
ARRL RTTY Roundup		Digital
Jan 9	0000 to 2359 Z	80 m to 10 m
YB (Indonesia) DX 'test		SSB
Jan 9-10	1200 to 1200 Z	80 m to 10 m
UBA (Belgium) PSK63 'test		Digital
Jan 9-10	1800 to 0559 Z	160 m to 10 m
North American QSO Party		CW
Jan 16-17	1200 to 1159 Z	160 m to 10 m
HA (Hungary) DX 'test		CW/SSB
Jan 16-17	1800 to 0559 Z	160 m to 10 m
North American QSO Party		SSB
Jan 16-18	1900 to 0359 Z	6 m and up
ARRL January VHF 'test		all modes
Jan 30-31	0600 to 1800 Z	80 m to 10 m
REF (France) DX 'test		CW
Jan 30-31	1300 to 1300 Z	80 m to 10 m
UBA (Belgium) DX 'test		SSB

Net Check Ins

Dec 22

**N1RB
KA8VNG
WD8JWJ
WB8NQW
WD8LEI
KD8NJW
KE8CVA
K8DLF
WD8ICP
KE8GJY
WD8PIC
KD8RNO**

**Traffic: 0
(NCS)**

(12)

Dec 29

**KG8FH
KE8CUZ
KC8EKT
KE8CVA
KB8QEW
WD8JWJ
WD8LEI
KD8NJW
WB8NQW
N8MIK
KA8VNG
KD8RNO
N1RB
KE8NEC
WE8TOM**

**Traffic: 0
(NCS)**

(15)

Maverick Astrophysicist — Unusually Intense Solar Cycle

by [Matthew Cappucci](#)

ed note: maverick and astrophysicist are two words I have never heard used before in the same sentence—

When the chips are down and a big storm is brewing on Earth, odds are that forecasters are predicting close to the same thing. But when it comes to space weather and storms that flare up on the surface of the Sun, that's not always the case. The Sun has begun a new 11-year cycle, and scientists have very different ideas on just how much energy will be available to fuel its eruptions.

The consensus view of an international panel of 12 scientists calls for the new cycle, Solar Cycle 25, to be small to average, much like its predecessor, Solar Cycle 24.

But a prominent astrophysicist at the National Center for Atmospheric Research, Scott McIntosh, foresees the Sun going gangbusters. The cycle is already off to a fast start, coinciding with the recent publication of McIntosh's paper in *Solar Physics*. The study, with contributions from several of his colleagues, forecasts the nascent sunspot cycle to become one of the strongest ever recorded.

The weather on the Sun matters because solar outbursts can unleash radiation into the Earth's atmosphere that is dangerous for air travelers; interfere with spacecraft and satellites; and, in a worst-case scenario, inflict significant damage on Earth's power grids.

The forecasts for the new solar cycle, which are so divergent, regard the number of sunspots that the Sun will cook up over the coming 11 years. Sunspots are like bruises on the surface of the Sun, cooler discolorations that throb and pulsate.

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WCARC Weekly Net

Tuesdays at 2100 all year

147.18 MHz 67 Hz PL

Net Control Roster

<i>Dec 29</i>	<i>KG8FH</i>
<i>Jan 5</i>	<i>KD8VWU</i>
<i>Jan 12</i>	<i>KD8NJW</i>
<i>Jan 19</i>	<i>WB8NQW</i>
<i>Jan 26</i>	<i>N1RB</i>
<i>Feb 2</i>	<i>KG8FH</i>

NEXT MEETING

Business Meeting

Monday

January 11

TIME: 7:30 PM/7:00 EB

PLACE:

**Woodland Mall Food Ct.
1234 N. Main St.
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 analog

Informal net

minutes—*from p. 1*

when finished with other Rooms. The reason for this is so that a user who is not local can enter the K8TIH Room and be directly connected to the repeater Node in order to make local contacts. All users are asked to report any glitches or bugs to N1RB.

New Business:

- Bob (NQW) moved that Dan Dickey, KN4LEH, who is a native of Wood County, but now resides in Florida, be granted a Life Membership in WCARC using the dues option listed in the Bylaws. The motion was seconded (NJW/FH) and approved unanimously.
- Bob announced that a complete slate of Officers for 2021 has been nominated as follows:
President: KG8FH/W8PSK
Vice President: KE8CVA
Secretary: N1RB
Treasurer: KD8NJW
The election will take place at the January, 2021 meeting.
- Bob has determined that holding the annual Kick-off Banquet in January is not going to be possible, so instead there will be a regular Business Meeting on Monday, January 11, 2021, at 7:30 PM. A banquet will be planned once the Pandemic is under control—stay tuned.

- Bob reminded the group about the scheduled King Midget get-together on August 12 to 14. WCARC has been invited to participate using a special event callsign, K8M. Bob will provide more details when they appear.

Adjournment: moved and seconded (FH/JWJ) at 7:45 PM ■

Sunspots—*from p. 4*

Forecasting sunspots is important, since “coronal mass ejections” that originate from them can send disruptive bursts of magnetic energy toward the Earth.

Sunspots in the new solar cycle

In September, NASA [announced](#) that solar cycle 24 ended in December 2019, and that solar cycle 25 had begun.

The number of sunspots crowding the solar disk at one time varies significantly over the course of the solar cycle. During solar minimum — which we’re emerging from right now — weeks can pass without a single sunspot. In fact, 206 days in 2020 (or 58 percent of the year) haven’t featured any Earth-facing sunspots.

But at the peak of a solar cycle, the average monthly sunspot number ranges from 140 to 220.

Solar cycle 24’s sunspot activity proved underwhelming — with the

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Sunspots— from p. 6

sunspot number averaging 110 at its peak.

An international panel co-chaired by scientists from NOAA and NASA, which featured six U.S. solar scientists and half a dozen from abroad, is anticipating a similarly quiet cycle 25.

Scientists predict a new solar cycle is about to begin and that it might be stronger than the last one

They're calling for that peak to occur in July 2025, give or take about eight months.

But McIntosh, who is now NCAR's deputy director and previously directed its High Altitude Observatory, estimates a sunspot number more than double what the joint panel is predicting.

The panel's prediction: A quiet cycle

The scientists on the Solar Cycle 25 Prediction Panel produced their outlook by reviewing and vetting a number of predictions across the solar science and astrophysics community. Among them is Doug Biesecker, the panel's co-chair and a scientist at NOAA's Space Weather Prediction Center.

Among the diverse panel, different ideas were discussed and debated. Disagreements often stemmed from the state of the science, Biesecker explained, and how poorly understood the underlying physics of the sun are.

"We concluded it would be similar in strength to the cycle that's just died,"

said Gordon Petrie, a scientist at the National Solar Observatory. "This is a comparatively weak number. [Cycle 23] was about 50 percent stronger than [cycle 24], and going back to the 1950s, the cycles were much stronger [still.]"

The lone wolf with a shocking forecast

In stark contrast to the panel's forecast are the prophecies of McIntosh, who anticipates that the upcoming solar cycle could be the most active in half a century. He has developed a prediction technique he says foreshadows a coming period of solar volatility.

"If the relationship, [which] was developed off 24 cycles, holds, the number [of sunspots] coming out is double what the consensus prediction was from the various panel members was," McIntosh said.

His group pinned their forecast at "233 [sunspots] with error bars" during the peak of Solar Cycle 25.

"And those error bars are not huge," McIntosh added. "The data just smacks you in the face."

Why the forecasts matter

Predicting discolorations on the surface of a star 93 million miles away might seem like an abstract art, but it's actually a vital exercise. That's because the Earth is susceptible to "space weather," or the effects of "storms" launched from the Sun. The storms hurl

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Sunspots—[from p. 7](#)

high-energy particles toward the Earth, along with intense spurts of magnetic energy.

That can have a pretty visible manifestation in the form of the aurora borealis and australis, but other impacts can be much more severe.

“Big [solar] cycles cause things to fall out of low Earth orbit more quickly,” explained Biesecker. That can be problematic for satellites, which are integral for global economies and commerce. “[Energy from solar storms can] heat up the [thermosphere, or upper atmosphere], and that heating basically results in increased density at satellite orbit altitudes.” That, in turn, slows down the satellites, sometimes to the point of knocking some out of orbit.

This can be problematic too, because decades’ worth of satellite launches have cluttered the extreme outer atmosphere with defunct leftovers and space junk. Without drag to scour out the extraterrestrial rubbish, the risk of an operable satellite being damaged by a collision climbs.

The solar storms can disrupt or destroy the electronics onboard satellites if precautions aren’t taken. A big storm, and “you’ll literally see satellites frying,” warned McIntosh. “They cut corners on shielding.”

And the biggest events have even knocked out electrical grids on the ground before — though episodes of that magnitude are rare. On March 12, 1989, a solar storm brought [the northern lights](#)

[as far south as Cuba and Florida](#), while knocking out power to a large swath of Quebec.

The episode paled in comparison to the infamous Carrington Event, which brought the planet’s biggest geomagnetic storm on record in early September, 1859. Telegraph wires fried, while the northern lights could be seen across the entire Lower 48.

In 2013, researchers in the United Kingdom [published a paper estimating](#) that a similar storm today could cost the U.S. trillions of dollars, slashing the country’s GDP by up to 15 percent. Some even speculate that a solar storm of that magnitude would bring the world’s economy to a screeching halt, with electrical service restoration [taking months](#).

Solar storms can also [boost how much solar radiation passengers](#) and crew onboard commercial flights near the poles are exposed to, at times reaching dangerous levels. Airlines sometimes reroute their flights if they have advance notice.

Using magnetism to make predictions

By understanding the current magnetic structure and field strength of the sun, it’s possible for solar physicists to make forward-looking predictions of sunspot number. The science is still in its early stages at best, with a few main techniques for estimation.

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Sunspots— from p. 8

“It’s not a mature branch of science, I have to say,” Petrie said. “We have set of calculations that guide us.”

Scientists have found a link between how much magnetic energy pours out of the Sun at solar minimum and the number of sunspots that form later in the cycle.

Another method of prediction focuses on observed motion and visible signatures on the sun’s surface. “It is based on what we see on the [illuminated surface], and tries to project ... what we’ll see on the surface based on what we’ve already seen,” Petrie said.

A novel approach leads a wildly different prediction

McIntosh has taken an entirely different approach in his strategy. And he thinks it could be revolutionary.

“Up until a couple years ago, I was watching the slow decline of solar activity over the last 30 years, and kind of jumped on the bandwagon that year that’s going to continue,” McIntosh said. “But then we did some work about 18 months ago.”

McIntosh has set about trying to figure out how the Sun’s “internal magnetic machine” works. He deduced that there are as many as four main magnetic bands that encircle the Sun at any one time. Sunspots, he argues, are the result of interference and overlap between those bands.

McIntosh postulates that there may not be just one cycle that accounts for sunspot

activity but, in fact, several, connected to one of those four main magnetic bands. He thinks they all overlap in different ways, their peaks slightly misaligned. The frequency of sunspots we see is the product of how those sub-cycles interact.

McIntosh enlisted the help of plasma fusion scientists to review past data and come up with the math to predict what sunspot patterns may arise in the years ahead.

What does it mean when the sun is spotless and serene? Only time will tell if McIntosh’s predictions for an active Solar Cycle 25 are borne out. He says “the proof is in the pudding.”

For now, the panel has remained quiet about his research, but McIntosh says that, if his predictions are realized, the field will have a lot of work to do. ■

Kick-off Banquet Postponed to Later Date

On account of the continuing corona virus pandemic, the customary Kick-off Banquet that the Club holds in January is postponed until further notice. Instead, a Business Meeting will be held on the usual date, the second Monday in the month, January 11, at the usual time 7:30 PM. It is assumed that the location will be the Food Court in Woodland Mall, but please stay tuned as that may also change ■

Time to Renew

WCARC 2021 membership dues are

payable to:

WCARC Treasurer, P. O. Box 534

Bowling Green, OH 43402

WOOD COUNTY ARC
P.O.BOX 534
BOWLING GREEN, OH
43402

