

Nxt Mtg: Fri 6:30 Sept 28, at the MCL Cafeteria in Kettering

8/9-2018

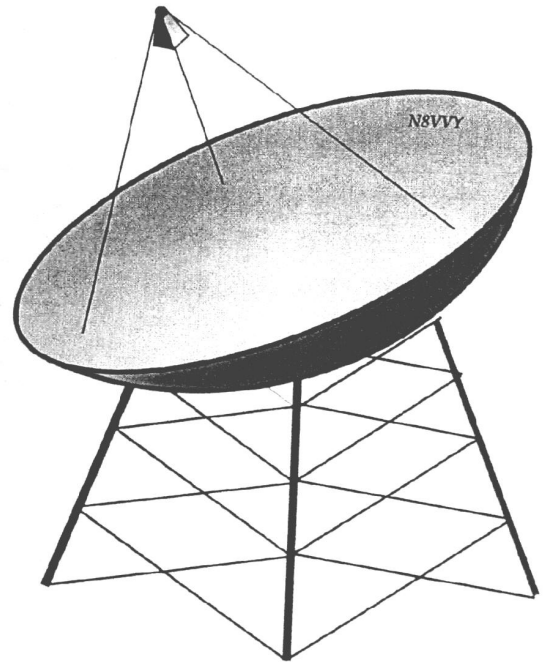
# ANOMALOUS PROPAGATION

Newsletter: *The Midwest VHF/UHF Society*

## Editors:

Gerd Schrick, WB8IFM  
4741 Harlou Drive  
Dayton, OH 454 32  
(937) 253-3993  
[WB8IFM@ARRL.net](mailto:WB8IFM@ARRL.net)

Steve Coy, K8UD  
3350 Maplewood Dr.  
Beavercreek, OH 45434  
(937) 426-6085  
K8UD@ARRL.NET



Material from this publication may be copied  
with due credit to the source

Annual membership is \$ 12.00. For print copy  
add \$ 4.- Checks payable to Joe Muchnij, N8QOD.



Vol. 32 No. 5

[www.mvus.org](http://www.mvus.org)

Aug./Sept. 2018

Beacons: 1296.079 W8KSE EM79ur Dayton, OH---- 2W to Big Wheel at 800' AGL.

Listen for the **K9AYA Beacons** at EM79qk, 2W @ 10,368.000 MHz  
both are copied by K4TO daily. 1W @ 5,760.000 MHz

MVUS Picnic.....	3
This and That.....	4
Propagation in the Sunspot Minimum.....	5
New Chinese Transponders.....	6
2 Icom R-700 Rxs.....	7
Groundrods & Stainless Steel.....	8
Microwave Update, Schedule & Speakers.....	9
More MUD- Data.....	10

### **Coming Up:**

**Microwave Update: October 11,12,13  
In Dayton Oh. Also on pg 9&10**

#### **MVUS Officials:**

Pres. Tom Holmes, N8ZM, Vice Pres. Mike Suhar, W8RKO  
Secretary, Jim Bacher, WB8VSU  
Bulletin Editor, Gerd Schrick, WB8IFM  
Assistant Editor, Steve Coy, K8UD  
Treasurer,Membership: Joe Muchnij, N8QOD  
E-mail: Jim Bacher, WB8VSU

## Annual Picnic of MVUS 8- 25, 2018 at N8ASB

By Gerd, WB8IFM

In recent years, every picnic we've had was a little different from previous years. The weather plays a role but in general we've been quite lucky as it was this time. The weather people had given us a 50/50 chance of rain or no rain. Fortunately, we got much less than that; just a lot of clouds and just a few drops of rain!

From originally going all out to have the best antenna range possible, even using Daun's pond as the ground between the source and the test object, we've stopped making antenna measurements and concentrated on noise figures, then making all kind's of measurements using Daun's or Tom's sophisticated HP analysers. Even that is on the way out. There are still a few specialized requests coming up, but now it's basically a social "get-together" and, of course, a super picnic and election of officers.

All went over as planned, the rain stayed away and we initially congregated on the patio, our preferred place to watch the adjacent airport with its weekend hobby pilot traffic, even one of our members came in that way. I forgot to ask, how he came the rest of the house, he probably just walked over!

When a few drops of rain fell, we moved inside the garage which had been prepared for the meeting and it turned out, to be the ideal solution: there was room for all and we kind of formed a circle, where everybody could see and talk to everybody else!

The picnic was super. Tom, as usual, did a good job of grilling the brats and burgers. There were plenty of salads, fruit, beans and potato salads. I stayed away from the desserts (having a Dr.'s appointment coming up) but just a quick glance confirmed a great variety as usual.

The membership meeting went over smoothly, with all the usual suspects confirmed for another year.

We had 15 members sign in (list below). I get the feeling there were more and some late comers didn't fill out the roster.

### MVUS-Picnic, 25 August, 2018

1) Gary Turner	N8SPY	4928 Tall Oakes 45432
2) Art Townslee	WA8RMC	438 Maple??Dr 43082
3) Daun Yeagley	N8ASB	1353 Guerneville 45177
4) Karen Yeagley	N8CSX	same
5) Steve Coy	K8UD	3350 MKP Lewood 45434
6) Tom Holmes	N8ZM	1055 Widerness Bluff, Tipp City,45371
7) Barbara Holmes	N8EYW	same
8) Michael Schulsinger	N8QHV	1002 Woodlawn ave, Spfld OH, 45504
9) Joe Muchnich	N8QOD	1214 Cottingwood CT. Bellbrook 45305
10) Joe Burke	WA8OGS	9168 Brehm Rd. Cin 4525
11) Greg Jump	K8GKH	6151 Cantata Ct. day 45449
12) Lillian Rudolph	-----	4928 Tall Oaks Dayton 45432
13) Gerd Schrick	WB8IFM	4741 Harlou Dayton 45432
14) Jim Bacher	WB8VSU	Dayton
15) Mike Suhar	W8RKO	1108 Rahn Rd. Dayton 45429

## This and That. 8+9-18

**World view.** The most dangerous world view is the world view of those who have not viewed the world. [Alexander Von Humboldt]

**Daring.** It is often more daring to doubt the “known facts” than to explore the unknown. [ Alexander von Humboldt]

**Amateur.** The word comes from the Latin “amator” meaning “lover.” [L.M. Boyd]

**The Trouble with this world...**is that the stupid are cocksure and the intelligent are full of doubt. [Bertrand Russel]

**Easy Conversion.** I found an odd comparison: the width of a grown human’s hand, including the thumb, measures 10.016 cm. I measured mine and it was pretty close! [Unknown]

**Prisons.** Three out of five prison inmates can’t read or write. [LAM. Boyd]

**GiGo-Effect.** Garbage in, garbage out. [Bonnie, KQ6XA]

**Pry Bar.** A tool used to crumple the metal surrounding clip or bracket you needed to remove in order to replace a 50 cent part... [Unknown]

**Hitting.** “You can’t think and hit at the same time. [Yogi Berra]

**The World.** If the world were perfect , it wouldn’t be! [Yogi Berra]

**Data Explosion.** By the year 2020 Earth’s 8 billion people will generate 50 Trillion Gigabytes of Data per year. If that data was saved on floppy disks that were ubiquitous in the 1990s, you could stack them to the sun and back300 times. [Eric Starkloff]

**Slow Rotation.** The slowest spinning object in the known Univers is our nearest Planet: Venus. A person could walk faster than it rotates. [Old Farmer’s , Almanac 2015]

**Sunspot Cycle.** Mid 19<sup>th</sup> century scientists knew that earthly compasses strangely fluctuate in the same 11 year period. Yet it was years before anyone put the ideas together and realized that the sun intimately affects our world through magnetism. [Old Farmer’s Almanac 2015]

**Tragedy...** is a tool for the living to gain wisdom, not a guide by which to live! [Robert Kennedy]

**The Law.** Whenever men take the law into their own hands, the looser is the law. And when the law looses, freedom languishes. [Robert Kennedy]

**Revolution.** “Those who make peaceful revolution impossible will make violent revolution inevitable.” [John F. Kennedy]

## Propagation Forecast Bulletin 36

ARLP036 Propagation de K7RA, Tad Cook, Seattle, WA Sept 7, 2018

We are right in the sunspot minimum. If you are following the weekly forecasts like this one, you have seen similar reports a number of times recently and the band conditions on 40m are in the basement if not deeper!  
(ED)

Sunspots disappeared again, since August 28. Average daily sunspot number dropped from 17.7 (during the prior week) to 0, (naturally).

Average daily solar flux declined from 70.6 to 67.8. Geomagnetic indicators quieted, with average daily planetary A index changing from 19.9 to 6.3, and mid-latitude A index going from 13.4 to 5.9.

Predicted solar flux is 68 on September 7-14, 75 on September 15-17, 72 on September 18-22, 70 on September 23, 68 on September 24 through October 1, 70 on October 2-6, 72 on October 7, 70 on October 8-9, 75 on October 10-14, 72 on October 15-19, 70 on October 20 and 68 on October 21.

Predicted planetary A index is 12, 10, 5 and 5 on September 7-10, 20, 15 and 12 on September 11-13, 12 on September 13, 10 on September 14-15, then 15 and 10 on September 16-17, 5 on September 18-21, then 12 and 8 on September 22-23, 5 on September 24-29, 8 on September 30, 5 on October 1-3, then 8, 12, and 8, on October 4-6, then 5, 18 and 15 on October 7-9, 12 on October 10-11, then 10, 15 and 10 on October 12-14, 5 on October 15-18, then 12, 8 and 5 on October 19-21.

When might sunspots return? In recent periods such as this when the Sun has been blank for days or weeks, I've referenced predicted solar flux values and assumed that relatively higher flux values may indicate when we may see the return of sunspots. But this has often led to disappointment.

Looking at the latest forecast (from <ftp://ftp.swpc.noaa.gov/pub/forecasts/45DF/>) it would seem that September 15-17 (when predicted solar flux is 75) and October 10-14 (the same) are likely times to see sunspots again, or at least more likely than days with lower solar flux predictions. We'll see.

In each case when an expected sunspot return did not appear, the solar flux forecast changed in advance of the predicted enhanced period.

"OK1HH Geomagnetic activity forecast for the period Sept 7 till Oct. 3, 2018

"Geomagnetic field will be:

Quiet on September 9, 17

Quiet to unsettled on September 10, 18-20, 25-28

Quiet to active on September 8, 13-15, 24, October 2

Unsettled to active on September 7, 12, 16, 21, 29-30, October 1

Active to disturbed on September 11, 22-23

"Solar wind will intensify on September (10-11,) 14-17, (21,) 22-24, (25), October 1

## **Amateur Radio Transponders on Planned Chinese Satellites to Include HF**

Space Bulletin 005 ARLS005 >From ARRL Headquarters Newington, CT May 23, 2018

China's Amateur Radio Satellite organization, CAMSAT, has released some details of three new Amateur Radio satellites that could be launched as early as September. Two of the satellites, CAS-5A and CAS-6, will carry transponders, and one of them will have HF capability.

CAS-5A is a 6U CubeSat. It will have an HF/HF (21/29 MHz) mode linear transponder; an HF/UHF (21/435 MHz) mode linear transponder; an HF CW telemetry beacon; VHF/UHF mode linear transponder; a VHF/UHF mode FM transponder; a UHF CW telemetry beacon, and UHF AX.25 4,000/9,600-baud GMSK Telemetry. Transponders will have 30 kHz passbands, except for the H/U unit, which will be 15 kHz.

The tiny CAS-5B, weighing 1/2 kilogram, will be deployed from CAS-5A in orbit. It will carry a UHF CW beacon on an Amateur Radio frequency. It will be placed into a 539 x 533 kilometer, 97.5-degree orbit.

CAS-5A/B will launch from the Jiuquan Satellite Launch Center.

CAS-6, a 50-kilogram microsat, will include a VHF CW telemetry beacon; a U/V mode 20 kHz linear transponder, and AX.25 4,800-baud GMSK telemetry downlink. It will also carry an atmospheric wind detector and other systems that will operate on non-amateur frequencies.

A launch at sea is planned for CAS-6 from the China Academy of Launch Vehicle Technology. The microsat will be placed into a 579 x 579 kilometer, 45-degree orbit.

CAMSAT has applied to the International Amateur Radio Union (IARU) to coordinate frequencies for all three spacecraft.

## 2 Icom R-700- Receivers

By Mike Suhar,

I have two Icom R7000 receivers. One I purchased new back in the mid 80's. The other I got second hand a few years ago. My unit is suffering from a display problem. This is a known issue and the same type of problem I experienced with my HF Icom IC-745. Electrolytic capacitors go bad on the DC-DC converter that generates voltages for the display. The most likely capacitor suspects are found in documents on the Internet. I pulled the display board and the main DC-DC converter boards from the R7000. I checked all of the electrolytic caps. Not a single one was within specification. For example a 33uF measured at 1.8uF with an ESR of 52. Fortunately all the capacitors are through hole, standard off-the-shelf values, that are available from all the major parts houses. I replaced approximately 18 capacitors. The second R7000 was in a little better shape.

The R7000's are old enough that the memory battery is going dead. This is a standard coin battery with solder tabs. Also available through the same parts suppliers. While you are getting the parts order the little wheat germ lamp that goes into the display. I used a 14V, 80ma., lamp from Digikey. Part number CM2182-ND. You could try to use a white LED but comments online indicate that an LED does not provide sufficient light dispersion to give you a nice illumination of the meter face. I stuck with the incandescent bulb.

### **Now: The Physics of Time (2016)**

Author | Richard A. Muller

A monumental work on the flow of time, from the universe's creation to "now," by the best-selling author of *Physics for Future Presidents*.

"Now" is a simple concept—you're reading this sentence now. Yet a real definition of "now" has eluded even the great Einstein. We know that time stretches and is affected by gravity and velocity. Yet, as eminent physicist Richard A. Muller points out, it is only today that we have all the physics at hand—relativity, entropy, entanglement, antimatter, and the Big Bang—to explain the flow of time. With these building blocks in place, Muller reaches a startling conclusion: our expanding universe is continuously creating not only new space but also new time. The front edge of this new time is what we call "now," and this moment is truly unique—it is the only moment in which we can exercise our free will. Muller's thought-provoking vision is a powerful counter to established theories in science and philosophy, and his arguments will spark major debate about the most fundamental assumptions of our universe. 42 illustrations.

[Courtesy Kurzweil]

## Re: Ground Rods

The recent email discussions on grounding have been timely for me. Thanks to all of those emails and also the discussions at the Geeks lunch on Wednesday. I've got a recently installed roof tower on my garage (see <http://www.w8io.com/rooftower.htm> ) that I'll soon be putting some antennas on.

Yesterday I installed an 8 foot ground rod next to my house foundation for this tower. It took about 10 minutes to get the rod totally below ground level, using a borrowed 1-1/2" Milwaukee Heavy Duty hammer drill. The first 6 feet went real fast, but the last 2 feet went slow with most of my body weight on the drill. Many years ago I drove 8 foot rods in at the base of each leg of my large tower with a sledge hammer, and that was a much harder job.

Today I measured the ground resistance to be about 12.2 ohms for the ground rod. I did this by measuring current with my Fluke multi-meter using the unfused 10 amp jack. I first measured current through a 50 ohm power resistor I had (2.6 amps). I next connected one end of the power resistor to the ground rod, the other resistor end to one Fluke lead, and the other end of the Fluke to the 120 source voltage. The current was 2.06 amps - going through the 50 ohm resistor plus the ground rod.

The procedure I used is shown in this YouTube video: [https://www.youtube.com/watch?v=6q2\\_kzXgtVg&t=277s](https://www.youtube.com/watch?v=6q2_kzXgtVg&t=277s)

So far I'm satisfied with this installation, since I will be connecting this ground rod to the service entrance rod about 20 feet away. I also still have to run wire from the short tower on my garage roof down to the ground rod.

Any comments or suggestions? If anyone else has measure ground resistance, how did you do it? What kind of values did you get?

Joe - WA80GS 3-1-18

## Stainless Steel Gerd, WB8IFM

You see more and more stainless steel used outdoors, especially in public places like in parks. It took a while before Stainless migrated there from the use in knives. I did pickup a large roll of stainless tape, probably at a flea market, a long time ago. It was so cheap, I couldn't resist. Doing the math, there is no reason one should spend a fortune to use copper for the ground rods and the connecting leads. As you know, there are steel rods, with a window dressing smidgen of copper on the outside available in hardware stores. Most of us are using those.

But for the interconnecting straps of the rods I use stainless tape. I personally have ca 1/2 dozen Rods. A good friend of mine has ca 40, of course he's got more ground a tall tower and lots of tall trees and antennas all over the place!

For many years now, I've used stainless steel tape for interconnecting those. A year ago a tree close to the house was hit by lightning and I am planning to add a few more rods on the back of the house, not quite yet a total perimeter protection, but it might suffice.

Now I ran out of stainless steel tape! But with the help of Steve, K8UD, checking the Internet, we found the ideal tape ( 3/4 " wide and .055 thick), however, it comes in a large roll which would make sense, if we cut it in manageable pieces and sold it to our members or other hams at club activities, meetings picnic measurements... What do you think?



## ***Microwave Update 2018: Schedule***

- Thursday, Oct 11, 2018 2-5pm - Optional Tour:  
Voice of America (West Chester, OH)
- Friday, Oct 12, 2018 8-9am Registration  
9am-5:30pm Presentations & Measurements
- Saturday, Oct 13, 2018 8-9am Registration  
9am-5pm Presentations  
6:30-9:30pm Banquet/Speaker/Door Prizes
- Sunday, Oct 14, 2018 10am-2pm - Optional Tour:  
US Air Force Museum (Dayton, OH)

## ***Preliminary Speaker List:***

- Brian Justin, WA1ZMS: *"A Review of mmWave Techniques"*
- John Petrich, W7FU: *"Software for Microwave SDRs" and "Microwave SDR Hardware"*
- Doug Millar, K6JEY: *"Microwave Power Sensor Limitations"*
- Tom Williams, WA1MBA: *"Progress on a Quadrupler With Output 40 to 48 GHz"*
- Skip Macaulay, VE6BGT: *"100W amplifier for 6cm"*
- Paul Wade W1GHZ *"Waveguide Is Just Metal"*
- John Ackermann, N8UR: *"The VHF+ Reverse Beacon Network"*
- Mike Seguin, N1JEZ: *"The LimeSDR Update" and "The LimeMicro LMS8001 Companion Board"*
- Jeff Kruth, WA3ZKR: *"Waveguide Transition Plates and Loss" and "X Band DNS System"*
- Steve Kostro, N2CEI: *"Multiband Transverter"*

**Notes:**

# **MICROWAVE UPDATE 2018**

**OCTOBER 11-14, DAYTON, OHIO**  
**An International ARRL Technical Conference**

---

The focus is on amateur radio on the  
microwave bands, including equipment design,  
construction and operation.

**LOCATION:**  
**Holiday Inn Dayton/Fairborn I-675**

---

Registration & Conference Updates:  
**[www.MicrowaveUpdate.org](http://www.MicrowaveUpdate.org)**  
(check the website periodically for updates)

---

**CONFERENCE INCLUDES:**  
Seminar Presentations • Test & Measurement Lab  
Antenna Gain Measurements • Thursday Tour: Voice of America Museum  
Sunday Tour: US Air Force Museum  
Vendor Demo/Sales Area • Flea Market Area  
Banquet & Door Prizes

---

ARRL publishes the Conference Proceedings.  
For further info contact:  
Tom Holmes, MUD 2018 General Chair at [n8zm@mvus.org](mailto:n8zm@mvus.org)

The Midwest VHF/UHF Society is pleased to host this October 2018 event,  
and is looking forward to welcoming you to Dayton, Ohio for MUD 2018