Meet on Zoom

Join in on Saturday, Oct. 10, for the noon BIARC Board meeting, then a membership program at 2 p.m.

Details on BIARC ListServe.

President William Polhemus, NH6ET, discusses the finer points of simplex.

September Zoom session revs up hamsters for big, annual statewide simplex challenge

"Simplex is the most basic mode, and it is intensely useful," said President William Polhemus, NH6ET, as he opened the September session. With Jim Huntley, WH6FQI, and Stan Froseth, AH6KO, also on board, the meeting focus was "all about simplex," and tips and tricks "to up your game."

Jim spoke of the reliability and lower cost of simplex. And one of the basic reasons to use this mode: "with simplex, there's less to go wrong."

Using illustrations showing results of tests done from his office in Hilo, William proved that "gain beats power in any direction." *(See scientific proof in William's graphics on following page.)*

2020 Grid Madness: More ops, more 'firsts'

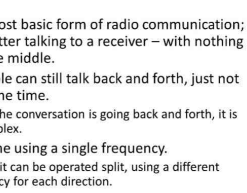
The initial report from the front lines, now that the dust has cleared

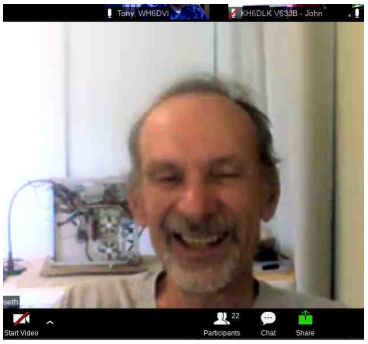
Hawaii amateur radio operators did it again. The seventh running of Grid Madness saw more activity and more surprises.

Event manager Stan AH6KO reports he is still madly sorting data from 63 logs (still coming in -- do we have yours?). The Summary and Results will be posted in late October.

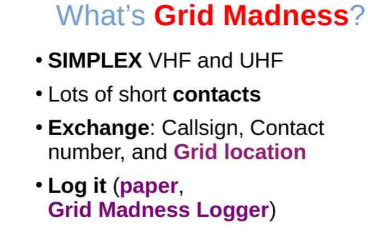
Until then, here's a preview of some of the "firsts:"

<<First Aeronautical Mobile>> Gus NH7J piloted his Cessna 150 around the entire island of Oahu while Steve





Stan Froseth, AH6KO, gives a Grid Madness pep talk on Zoom in September.



KH6WG activated 18 grids. Twenty two lucky hams on Oahu and Maui made contact with the dynamic duo. You had to be quick! Details and video in the Summary.

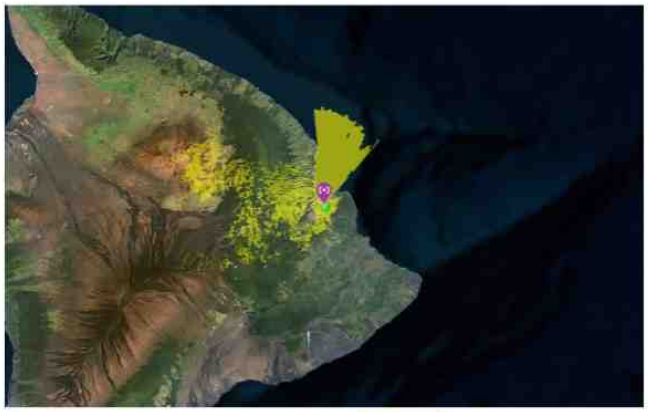
<<First log from Kauai>> Tad NH7YS made history with a log that shows three contacts, all on the Island of Kauai. So we know that at least four hams on the Garden Isle tried Grid Madness this year. No evidence (so far) of the Kauai hams contacting other islands...thanks Tad!

<<First 220 MHz contacts>> William

Continued on next page

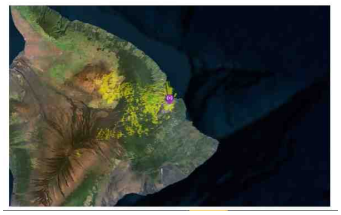
"Gain beats power in any direction."-- NH6ET

2M, at ONLY 5 feet, at ONLY 5 watts



5 feet AGL at 50 Watts 70cm

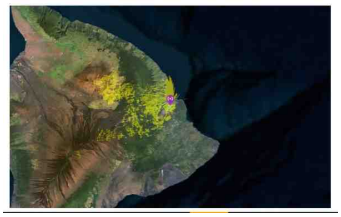
25 Feet AGL at 50W 70cm



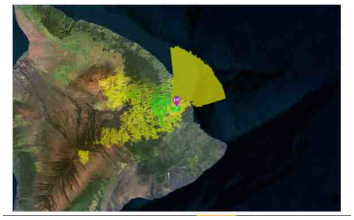
25 Feet AGL at 50W 70cm

If you can't get higher, go lower.

Frequency make a huge difference.



50 Watts 70cm, 10dB of Gain



Putting it all together

- Step outside.
  - No, seriously, an antenna in a house can lose up to 20dB pushing through the wall.
- Use a bit more power, but nothing too crazy.
- Use a higher gain antenna.
- Get the antenna up high.
- Run on as low a band as you can.

Use Cases for Simplex Operation

- Local communications
  - You're not tying up a repeater.
  - You're not using linking resources.
  - You're not bothering the people who monitor these resources, with your ragchew.

Improving Your Simplex Game

- Power.
- Antenna Height.
  - Height Above Average Terrain (HAAT!)
    - Terrain can be used to your advantage. Or, it can shut you down.
- Gain.
- Polarization.
- Frequency.
- Mode.
  - Weak signal work is done on SSB for a reason

What is simplex?

- Webster's defines it as:
  - sim·plex | \ ˈsim-ˌpleks \
    1. SIMPLE, SINGLE.
    2. Allowing telecommunication in only one direction.
- The ITU defines it a:
  - Operating method in which information can be transmitted in either direction, but not simultaneously, between two points.*

*William thinks that this definition is more accurate, and that Webster's should up their game.

From previous page

NH6ET contacted Craig KH6CP and Bernard KH6MOI, both in BL11CH on Oahu. William was on the Big Island in BK29BR -- that's 125 miles across the water! Other ops on the Big Island and Oahu also reported contacts on 220 MHz. *<<First ham radio contact>>* Abraham WH6GKW wrote on his log: "Just got my ticket and managed to make my first qso during the contest!"

Thanks for sharing that, Abraham; you will enjoy ham radio on Maui!

<<Third Puna contact with Maui>> Okay, it's not a "First," but a remarkable 2 meter contact between Tom NH6Y on Haleakala, Maui and Leigh WH6LC in Mountain View on the Big Island. A line drawn between them passes almost over the summit of Mauna Kea, 108 miles. Way back in 2015, Tom made a similar contact with Gary WH6EPS (Puna), and Arch AH6U (Maui) connected with Sean KH6SF (Puna).

Definitely some interesting 2 meter propagation over the mountain!

Photo by KH6WG "Gus NH7J flying, Steve KH6WG on the radio over BL01XJ"

Photo by WH6CPH "Pono WH6CPH made a successful mobile effort, including contacts on 220 MHz"

It was madness, sheer madness

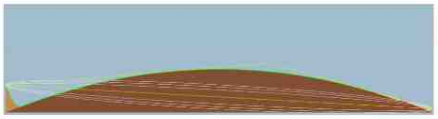
Stan summarizes by saying "Grid Madness is a fun way to spend a Sunday afternoon with friends on the radio. It is also a very challenging exercise in radio communication!"

To be added to the Grid Madness email list, send a note to AH6KO@arrl.net.

And, in the not-so-distant future ...

William's Goal

Big island to Kauai, on 2 Meter simplex



A very real possibility.

Member opportunities

Kulani kokua project

During the September Zoom program, William NH6ET announced that he's planning a work party at Kulani Cone.

BIARC wants to say thank you to the County for being a welcoming new host for our 146.760 repeater.

If you'd like to help, please email William.

BIARC annual election

William also announced that Paul Ducasse, WH7BR, will chair an ad hoc nominating committee for our November annual election. Three terms on the Board of Directors will expire at the end of the year.

SET emcomms exercise

During our September program, Tony Kitchen, WH6DVI, provided an overview of the Oct. 3 SET exercise -- Hurricane Makani Pahili -- and encouraged all hams to participate.

Tony Kitchen, WH6DVI

The goal, Tony explained, is to demonstrate to the American Red Cross that the local amateur radio community has reliable operators willing to stand up in a disaster and provide emcomms for the ARC shelters.

William said the main program for our Oct. 10 monthly Zoom get-together will be a review of the SET, which stands for ARES Simulated Emergency Test.

New VHF repeater near Hilo Airport

Aloha all: We have a new VHF repeater in Hilo on 24 Railroad Ave. (Near the airport) -- 145.470(-) Repeater PL 110.9 NH7GX

This repeater is on the Hawaii Allstar Network 24/7. It replaces the 70cm 442.200(+) Repeater, which will be relocated to the repeater owner's NH7GX residence in Waiakea Uka. -- 73 and aloha, Dave - AH6OD

Let's vote!

Vote early, and vote often!" – Al Capone

Well, maybe not. But it is again election season. BIARC board elections. Why, what were you thinking?

OK, so the BIARC board election doesn't occur until the November General Membership meeting; So, why am I talking about it now?

With the pandemic afoot, this election won't be as easy to facilitate as the previous one. This may be the slowest apocalypse ever, but it sure can foul up well laid plans.

That said, I am so very glad that Paul (WH7BR) has stood up to the plate yet again to facilitate the election.

Thank you Paul!

Of course, before we can have an election, we need to have candidates nominated to fill the vacant offices.

There are three board members whose terms are ending, so we will need at least three members to be nominated.

Here is the point of this article: I very much want you to give serious thought to stepping forward, and filling one of the vacancies.

The status quo sure can be easy. But if we start thinking that the status quo is good enough, well then the Amish win.

Mine is one of the terms which is ending this election cycle; along with Les (K0BAD) and Mel (KH6EKD.) There is nothing stopping the three of us from running again.

Continued on page 5

The President's Corner

William Polhemus, NH6ET

Aloha Chapter of 10-10 International

Local hams active on 10-meters encourage amateur radio licensees at all levels to join in the fun.

[More info on the world of Ten-Ten is available on Facebook and at https://www.ten-ten.org]

BIARC Board Meeting

September 12, 2020

A. Begin Meeting

1. William Polhemus called the meeting to order at 12:03.
2. The following board members were in attendance: James Huntly, Leslie Hittner, Tony Kitchen, Mel Uchida, Bob Schneider, and William Polhemus
3. Visitors in attendance – Jeremy (AH6V), Glen (AH6IO), and Alan (KH6ATU)
4. The Secretary's Minutes for the board meeting of 08/08/2020 were approved as read.
   William **moved** and Tony **seconded** to approved the minutes as published by email. Motion passed.
5. The Treasurer's Report was presented by Tony. He noted that donations to the Repeater Fund have more than accounted for the shortage in budgeted dues revenue.

   Fund totals:

Repeater fund:	$ 911.97
Emergency Reserves:	$1,000.00
General Fund:	$1,837.03
Total Funds:	$3,749.00

   William **moved** and Mel **seconded** to accept the Treasurer's Report subject to audit. Motion **passed** with a unanimous vote.

B. Committee Reports

1. **Digital Systems and Voice Repeaters (Joint meeting):** Huntley & Polhemus (Chairs)

   Items Discussed at the meeting:

Kulani status	Pepeekeo status
Mauna Loa status	Mountain View Status (WH6FYK)
William's science project at Iolehaehae	Linking infrastructure roll out
Extension of coverage to Laupahoehoe	Extension of coverage to Kau
Extension of coverage below the ERZ	Crossband infrastructure
Tactical infrastructure	Fusion system roll out
Kulani digipeater	Mountain View I-gate
County Kulani site cameras	County site maintenance assistance

   The Voice Repeaters Committee is seeking authorization to purchase three Comet diplexers:

   - One so that the DR-2X can be added to Kulani as a C4FM repeater

5. **Public Service Communications:** Kitchen (Chair) Written Report

   There were no action items.

C. New Business: None

D. Old Business: None

E. Other Business:

William **moved** to and Leslie **seconded** to ask Paul Ducasse, as trustee, to chair the Ad Hoc Elections Committee and conduct the election at the November Annual Meeting (to be held by Zoom). Three board member's term will expire at the end of this year (Leslie Hittner, Mel Uchida, William Polhemus). All board officers will be elected during the January 2021 board meeting. There will be a way to determine the quorum at a Zoom meeting and Zoom will constitute the "physical" presence WRT quorum determination is concerned. Motion **passed** by a unanimous vote.

There were additional discussions about Wires-X, the October Program Activity (a SET roundup), and a possible HVCDA job opening. Tony also announced that he has prizes for the Field Day club competition and has heard nothing from Roy about winners. Jim reminded everyone that the Pactor modem donated to the club is in his possession and could be deployed at the Tri-mode Winlink station at Roy (KH6FYK) to expand it into a hybrid Winlink station by adding HF.

Paul Ducasse joined the meeting. He was informed that the Ad Hoc Elections Committee was "his" again this year. William also reviewed Paul on other business conducted earlier in this meeting.

F. Adjourn

There being no further business, William adjourned the meeting at 12:53.

Respectfully Submitted,

Leslie D. Hittner

Leslie Hittner, Secretary

Enc: Written Committee Reports
(Education and Outreach and Digital Systems/Voice Repeater)

Welcome to BIARC's newest member, Levi, WH6GBR, shown here joining in the September Zoomathon. He's one of the club's two current youth members. The other is Angelina, WH6EVK.

Education and Outreach Committee Report

September 12, 2020

1. The Education and Outreach Committee did not meet this month.
2. Leslie Hittner reports that Saturday Monthly Club activity events that are being conducted by Zoom are being recorded. These recordings may be accessed on YouTube and links to those recordings are published on the cub's website.
3. Doug Wilson reports that he is half-way through his first virtual class of seven (7) students and that he has eighteen (18) students signed up for the next class that begins on October 20, 2020.
4. There are still copies of the 2020 Member Information Booklet. Leslie Hittner will print updates to these copies for 2021 at no cost to the club. Updated copies can then be distributed after the January 2021 Board meeting. At that time, the board can determine the method of distribution (In person or USPS).

A message from NH7FY

Aloha, all:

I would like to thank all of our "Ham Family" for all their prayers and concerns during Richard's health problems and passing in mid August.

He was a very special person and I miss him terribly.

I would especially like to thank John KH6DLK, "my adopted son," and Richard WH6FLH for helping clear out all the excess ham radio gear.

I would like suggestions on what to do with three large boxes of QSL cards.

You can contact me on NH7FY@yahoo.com if you have any ideas.

Mahalo,

Barbara Darling, NH7FY

BIARC 2020 Budget & Operating Statement

	2020 Budget	Actual– 1/1/2020 To 9/08/2020	Variance
Income:			
Dues	$1,590.00	$1,458.00	$132.00
Repeater and general donations	$275.00	$481.72	-$206.72
Donations for refreshments	$25.00	$10.64	$14.36
PayPal Adjusted Donation		$1.06 *	
Total Income	**$1,890.00**	**$1,951.42**	-$61.42
Expenses:			
Club Liability Insurance	$320.00	$323.20	-$3.20
Club Equipment Insurance	$185.00	$186.85	-$1.85
Donations (PCC)	$50.00	$0.00	$50.00
Equipment	$500.00	$207.00	$293.00
Field Day	$320.00	$70.50	$249.50
Printing (Membership Booklet)	$175.00	$162.33	$12.67
Annual Build Project	$50.00	$0.00	$50.00
P. O. Box Fee	$176.00	$95.00	$81.00
Monthly Meeting Refreshments	$19.00	$0.00	$19.00
VOAD Dues	$25.00	$25.00	$0.00
Postage/Office Supplies/Misc.	$70.00	$3.50	$66.50
Website Costs	$65.00	$38.04	$26.96
Total Expenses	**$1,955.00**	**$1,111.42**	
Excess (Deficit)		**$840.00**	
Bank of Hawaii Balance	as of: 9/08/2020	**$3,595.62**	
Deposit Pending		$0.00	
Namecheap Balance		$11.96	
Paypal Account Balance		$141.42	
Fund Balances:			
Repeater fund	$911.97		
Emergency Reserves	$1,000.00		
General Fund	$1,837.03		
Total Funds	**$3,749.00**		

*PayPal processing donations received minus PayPal fees charged.

Digital Systems/Voice Repeaters Committee Joint Report
September 2020

Discussed:

Kulani status
Mauna Loa status
William's science project at Iolehaehae
Extension of coverage to Laupahoehoe
Extension of coverage below the ERZ
Tactical infrastructure
Kulani digipeater
County site cameras
Pepeekeo status
Mountain View Status
Linking infrastructure roll out
Extension of coverage to Kau
Crossband infrastructure
Fusion system roll out
Mountain View I-gate
County site maintenance assistance

The Voice Repeaters Committee is seeking authorization to purchase three diplexers:

- One so that the DR-2X can be added to Kulani as a C4FM repeater
- One so that a crossband repeater can be constructed to extend the coverage of the '76 repeater behind the ERZ.
- One so that a tactical crossband repeater can be constructed for events and disaster deployment.

This expense is estimated to be $150, plus tax and shipping.

The Voice Repeaters Committee is seeking authorization to purchase a solar charge controller to replace the failed controller from the old Kau installation, so that the panels can be re-deployed to provide e-power to the Mauna Loa repeater.

This expense is estimated to be less than $50, plus tax and shipping.

The Voice Repeaters Committee is seeking authorization to purchase two URI-X repeater interfaces to build a repeater to be deployed at KH6EKD's QTH, and privately link it back to the '76 repeater.

This expense is estimated to be $200, plus tax and shipping (though I have received a steep discount before, which may bring this down to $120.)

The Digital Systems Committee had a request to purchase batteries for the Mountain View infrastructure at WH6FYK's QTH, but that may be tabled, pending a donation from WH6DVI.

The Digital Systems Committee needs direction from the board about the potential of the club assuming the tri-mode infrastructure at the Mountain View site.

The President's Corner

Continued from page 3

Though, even if one or more of us did run again, it doesn't mean that we would even hold the same offices again next term. The club members elect persons to the board.

The board members then determine the offices each board member will hold that year.

Thank goodness for that! As I have voiced to many of you already, I won't be the BIARC president next year. I might be willing to sit on the board again at some point. Just not as president next year.

You see, I feel that club presidents are like bathwater: they start out all warm and bubbly, but quickly get all cold and stagnant.

The truth is, that I am managing the startup of a local project to help close the technology gap that exists in our underserved communities; specifically seeking to connect underserved children with the resources they need to succeed in this new normal of distance learning.

Don't worry, I'm not going anywhere. I have a long future ahead with BIARC. I just can't devote the time needed to be president for a while. We have a fantastic amateur radio club, and it's only getting better.

I hope you feel the same way. I urge you to answer the calling. Take the torch and run with it. All of us past presidents are here to help you, just as they all were here to help me.

William – NH6ET

Ham wireless network camera detects Washington wildfire

Nigel Vander Houwen, K7NVH, reported on Sept. 8 that some HamWAN users in the Puget Sound region of Washington, who were viewing the network's camera feeds, had spotted a large brush fire.

"They reported it to the DNR [Department of Natural Resources], which thanked them for the first report they'd gotten on the fire, and they've sent a team to try and keep it small and under control," Vander Houwen said. "It's estimated currently at around 50 acres, southeast of Enumclaw, along Highway 410."

The fire was not said to be threatening any homes. State Route 410 was reported closed between Enumclaw and Greenwater, and drivers heading to Mount Rainier National Park were advised to take another route.

HamWAN is a nonprofit organization developing best practices for high-speed amateur radio data networks. It runs the Puget Sound Data Ring.

Video via a HamWAN camera shows an air tanker dropping water on the fire.

HamWAN is a nonprofit organization developing best practices for high-speed amateur radio data networks. It runs the Puget Sound Data Ring.

So far, HamWAN networks have been used for such applications as low-latency repeater linking (including DMR), real-time video feeds, APRS internet gateways (I-gates), providing redundant internet access to emergency operations centers, and more.

Amateur radio licensees in the HamWAN service area can connect directly to the network with a modest investment in equipment and no recurring costs. The HamWAN Puget Sound Data Ring has cells deployed at numerous wide-coverage sites, interconnected with 5 GHz radios. The HamWAN technical team has been installing remotely controllable cameras at HamWAN link sites, and one of these was used for the wildfire report.

Ex-FEMA head Craig Fugate, KK4INZ, encourages mesh networking

Former Federal Emergency Management Administration (FEMA) Administrator Craig Fugate, KK4INZ, recently encouraged the use of mesh networking.

He said mesh networking can empower volunteers during natural disasters, such as hurricanes and wildfires.

Fugate was the keynote speaker for the International Wireless Communications Expo's (IWCE) virtual event.

"By building these types of networks, you can put people back into communication and put people to work where they're needed," he said.

He encouraged public safety agencies to work with local amateur radio groups and commercial providers to create solutions that can build these mesh networks when the main network goes down.

-- Thanks to The ARES Letter

FUGATE

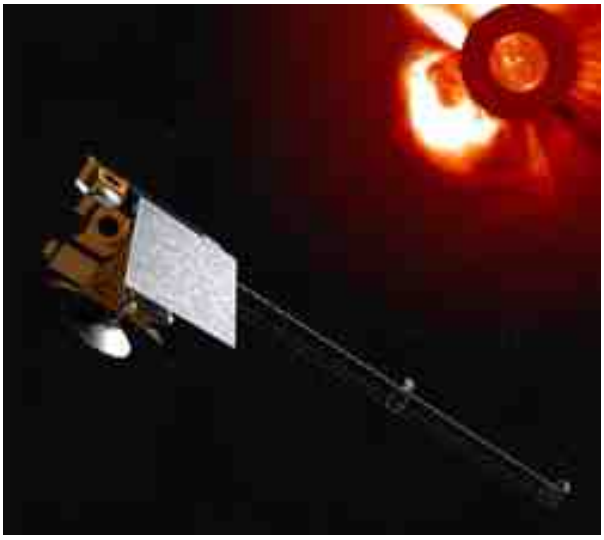
It's now official:

Analysis determines we are in Solar Cycle 25

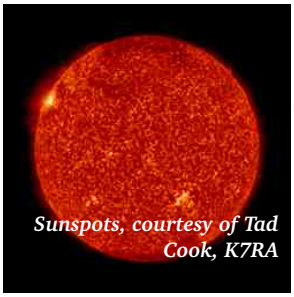
It's now official.

The solar minimum between Solar Cycles 24 and 25 -- the period when the sun is least active -- occurred in December 2019, when the 13-month smoothed sunspot number fell to 1.8.

This is according to the Solar Cycle 25 Prediction Panel, co-chaired by the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA).



An artist's rendering of the Space Weather Follow-On L-1 observatory (SWFO-L1).



Sunspots, courtesy of Tad Cook, K7RA

We are now in Solar Cycle 25, with peak sunspot activity expected in 2025, the panel said. The panel expressed high confidence that Solar Cycle 25 will break the trend of weakening solar activity seen over the past four cycles.

The Solar Cycle 25 Forecast Update.

"We predict the decline in solar cycle amplitude, seen from Cycles 21 through 24, has come to an end," said Lisa Upton, panel co-chair and solar physicist with Space Systems Research Corporation. "There is no indication we are approaching a Maunder-type minimum in solar activity."

At 11 years, Solar Cycle 24 was of average length and had the fourth-smallest intensity since regular record-keeping began in 1755, with what is considered Solar Cycle 1.

It was also the weakest cycle in a century. At solar maximum in April 2014, sunspots peaked at 114 for the cycle, well below the 179 average.

Solar Cycle 24's progression was unusual.

The sun's northern hemisphere led the sunspot cycle, peaking more than 2 years ahead of the southern hemisphere sunspot peak.

This resulted in fewer sunspots at solar maximum than if the two hemispheres were in phase.

For the past 8 months, activity on the sun has steadily increased, indicating that we have transitioned to Solar Cycle 25, forecast to be a fairly weak cycle -- about the same as Solar Cycle 24. Solar Cycle 25 is expected to peak in July 2025, with a predicted 115 sunspots.

"How quickly solar activity rises is an indicator on how strong the solar cycle will be," said Doug Biesecker, the NOAA-NASA panel co-chair and a solar physicist at NOAA's Space Weather Prediction Center (SWPC). "Although we've seen a steady increase in sunspot activity this year, it is slow."

"While we are not predicting a particularly active Solar Cycle 25, violent eruptions from the sun can occur at any time," Biesecker added.

Before Solar Cycle 25 peaks in 2024, NOAA is slated to launch a new spacecraft dedicated to operational space weather forecasting.

The Space Weather Follow-On L-1 observatory (SWFO-L1) will be equipped with instruments that sample the solar wind, provide imagery of coronal mass ejections, and monitor other extreme activity from the sun in finer detail than before.

NOAA's next Geostationary Operational Environmental Satellite (GOES-U) is also scheduled to launch in 2024. GOES-U will carry three solar monitoring instruments, including the first compact coronagraph, which will help detect coronal mass ejections. Enhanced observations of the sun from these satellites will help improve space weather forecasting.

Air Force Research Laboratory tracks sporadic E

The Long Wavelength Array at Sevilleta National Wildlife Refuge is capable of imaging the entire sky at once, allowing AFRL scientists to track and characterize sporadic E. The facility consists of 256 dual-polarization dipoles.

[Ken Obenberger, photo]

Researchers at the Air Force Research Laboratory (AFRL) in New Mexico have discovered a new way to track and characterize sporadic E, which occurs when large structures of dense plasma form naturally in the upper atmosphere.

These plasma structures, which occur at mid-latitude locations around the world, can affect radio wave propagation in both positive and negative ways.

VHF enthusiasts frequently take advantage of sporadic-E propagation (or E-skip) to work stations outside of their local area.

"Previous methods to observe these structures were insufficient for identifying and tracking these structures over large regions," said Ken Obenberger, a research physicist at AFRL. "It would be advantageous to actively identify where these structures are, where they are going, and how dense they are. And we thought we could find a better way."

The new method, developed by Obenberger and collaborators at AFRL and the University of New Mexico, leverages unintentional RF emissions from power lines. Using the broadband radio noise, they can map and track dense sporadic-E structures.

"Since power lines are widespread, we can observe sporadic E over a very large region surrounding our observatory, the Long Wavelength Array (LWA), an asset of our collaborators at the University of New Mexico," Obenberger said.

"This technique could be used anywhere in the world where there is an electrical grid and an instrument similar to the LWA, and we are lucky because there are not many."

Climatology of sporadic E can provide a probability that it will occur, but the actual presence of sporadic E can only be determined through trial-and-error observations.

Chris Fallen, KL3WX, one of Obenberger's collaborators at AFRL, said, "Ken's technique basically provides weather radar for sporadic E, only using radio noise from power lines as the radar transmitter."

Having accurate "now-casting" of sporadic E could prove critical during disaster situations, where hams may play a key role in supporting communication of vital information. -- *Thanks to Joanne Perkins, Air Force Research Laboratory*