



# RCA AMATEUR RADIO CLUB

MONTHLY NEWSLETTER  
DECEMBER 2019

THE NEXT MEETING OF THE RCA AMATEUR RADIO CLUB WILL BE  
TUESDAY, DECEMBER 10th 6:30 PM  
KNIGHTS OF COLUMBUS, GAME ROOM, 2100 EAST 71<sup>ST</sup> STREET, INDIANAPOLIS, IN

## RCA ARC NEWS

**November Meeting** – At the November meeting, solving the problem of intermod in the '88 repeater's west side receive site was discussed. Also, after that fix was put in, there is a problem with the west site timeout circuit not resetting properly.... The fun goes on. The good news is that 6 meter beacon at the same site is working properly! The Indy United ARC finished second in class 3A Field Day as announced in the digital edition of QST. Remember, the Fort Wayne hamfest is next weekend, Nov. 16-17. Upcoming contests include the SS, 160m CW, and Jan. VHF.

## AMATEUR RADIO LICENSE TEST SESSION

**Time:** Saturday, December 14, 2019, 12:00 pm (Walk-ins allowed)  
**Location:** Salvation Army EDS Training Facility, 4020 Georgetown Rd  
Indianapolis, IN 46254-2407  
**Contact:** Jim Rinehart, [k9ru@arrl.net](mailto:k9ru@arrl.net), 317 721-1458

## HAMFESTS, OPERATING EVENTS, VOLUNTEER OPPORTUNITIES

Dec 6-10	ARRL 160M CW <a href="http://www.arrl.org/160-meter">http://www.arrl.org/160-meter</a>
Dec 7-8	FT Roundup <a href="https://www.rttycontesting.com/ft8-roundup/rules/">https://www.rttycontesting.com/ft8-roundup/rules/</a>
Jan 1	ARRL Straight Key Night <a href="http://www.arrl.org/straight-key-night">http://www.arrl.org/straight-key-night</a>
Jan 4-5	ARRL RTTY Roundup <a href="http://www.arrl.org/rtty-roundup">http://www.arrl.org/rtty-roundup</a>
Jan 18-20	ARRL VHF Contest <a href="http://www.arrl.org/january-vhf">http://www.arrl.org/january-vhf</a>
Jan 25-26	Winter Field Day <a href="https://www.winterfieldday.com/rules/">https://www.winterfieldday.com/rules/</a>
Jan 24-26	CQWW 160M CW Contest <a href="https://cq160.com/">https://cq160.com/</a>

## FIELD DAY RESULTS: W9SU + W9RCA FINISHED 2<sup>nd</sup> IN THE 3A CLASS

ARRL Contest Program Manager Paul Bourque, N1SFE, reports that nearly 1.1 million contacts were made during the 2019 ARRL Field Day — the most popular operating event in North America. Bourque reported the 2019 ARRL Field Day results, which are available starting on page 64 of the digital edition of the December 2019 issue of QST. Bourque says in his article that more than 36,000 radio amateurs took part in ARRL Field Day 2019 across all 83 ARRL/Radio

Amateurs of Canada sections, up slightly from the 35,250 reported last year. The total number of contacts was down by about 7% from 2018's 1.18 million contacts.

"This year, 3,113 entries were received from local clubs and emergency operations centers (EOCs), as well as individual portable, mobile, and home stations," Bourque wrote in *QST*. Most entries were in Class A — club or non-club groups of three or more.

Of the nearly 1.1 million contacts, approximately 46% were made on phone, and 456,000 (42%) of contacts were made on CW. The remaining 138,000+ (12%) of the contacts were made on digital modes, such as FT8 and RTTY.

"This is a substantial increase compared to 2018, when total QSOs on the digital modes numbered just over 56,000," Bourque reported. "With the last 2018 release of *WSJT-X* (which now supports Field Day exchanges), many participants made use of FT8's ability to communicate when band conditions weren't being cooperative."

Top 10 scores ranged between W3AO's Class 14A entry from Maryland-DC, with 32,356 points, to W1NVT's 14,876-point Class 2A entry from Vermont.

**The Indy United ARC made up of the RCA ARC plus others, finished second in the 3A classification with 3091 QSOs yielding 12,530 points. Top dog in the 3A class was the Rochester NY DX Assoc. with 13,546 points.**

## ARRL TO OPPOSE PROPOSAL TO ELIMINATE 3.3 – 3.5 GHZ AMATEUR ALLOCATION

At its December 12 open meeting, the FCC will consider adopting a *Notice of Proposed Rulemaking (NPRM)* that proposes to remove the amateur radio 9-centimeter allocation at 3.3 – 3.5 GHz. ARRL plans to comment in opposition to the proposed action. According to an FCC ["Fact Sheet,"](#) the proceeding WT Docket 19-348, "Facilitating Shared Use in the 3.1 – 3.55 GHz Band," is a follow-on from the MOBILE NOW Act, approved by the 115th Congress, which requires the FCC and the US Department of Commerce to make available new spectrum for mobile and fixed wireless broadband use.

It also requires the FCC to work with the National Telecommunications and Information Administration ([NTIA](#)) to evaluate whether commercial wireless services and federal incumbents could share spectrum between 3.1 and 3.55 GHz. NTIA manages spectrum allocated to federal government users.

"This *Notice of Proposed Rulemaking* would propose to remove the existing non-federal allocations in the 3.3 – 3.55 GHz band as a step towards potential future shared use between federal incumbents and commercial users," the FCC Fact Sheet explains. "By taking the initial step needed to clear the band of allocations for non-federal incumbents, the Commission furthers its continued efforts to make more mid-band spectrum potentially available to support next generation wireless networks — consistent with the mandate of the MOBILE NOW [Making Opportunities for Broadband Investment and Limiting Excessive and Needless Obstacles to Wireless] Act."

The *NPRM* proposes to clear the 3.3 – 3.55 GHz band of existing non-federal users by removing *non-federal secondary radiolocation and amateur allocations* [emphasis added] in the 3.3 – 3.55 GHz band and to relocate incumbent non-federal users out of the band. The FCC would seek comment on relocation options and "transition mechanisms" for incumbent non-federal users, either to the 3.1 – 3.3 GHz band or to other frequencies, and on how to ensure that non-federal secondary operations in the 3.1 – 3.3 GHz band will continue to protect federal radar systems.

Regarding the Amateur and Amateur-Satellite Service allocations, the FCC *NPRM* asks whether existing amateur spectrum in other bands might support operations currently conducted in the 3.3 – 3.5 GHz band. The 3.40 – 3.41 GHz segment is designated for amateur satellite communication. “We seek comment on the extent to which the band is used for this purpose, whether existing satellites can operate on other amateur satellite bands, and on an appropriate timeframe for terminating these operations in this band,” the FCC *NPRM* says.

Also at its December 12 meeting, the FCC will consider another *NPRM* in WT Docket 19-138 that would “take a fresh and comprehensive look” at the rules for the 5.9 GHz band and propose, among other things, to make the lower 45 MHz of the band available for unlicensed operations and to permit “Cellular Vehicle-to-Everything” (C-V2X) operations in the upper 20 MHz of the band.

The FCC is *not* proposing to delete or otherwise amend the amateur allocation, and it would continue as a secondary allocation, but the primary allocation for 5.850 – 5.925 GHz would change.

The amateur radio 5-centimeter allocation is 5650.0 – 5925.0 MHz, and the *NPRM*, if approved, would address the top 75 MHz of that amateur secondary band. While no changes are proposed to the amateur allocation, anticipated more intensive use by primary users could restrict secondary amateur use.

The band 5.850 – 5.925 GHz has been reserved for use by dedicated short-range communications (DSRC), a service in the intelligent transportation system (ITS) designed to enable vehicle-related communications, the FCC said in a Fact Sheet in WT Docket 19-138. “The Commission initiates this *Notice of Proposed Rulemaking* to take a fresh and comprehensive look at the 5.9 GHz band rules and propose appropriate changes to ensure the spectrum supports its highest and best use.” ARRL also will file comments opposing any changes affecting the 5-centimeter amateur allocation.

Both draft FCC proposals are subject to change prior to a vote at the December 12 FCC meeting, and there will be opportunity to file comments and reply comments on the final proposals after they are released.

## ARRL LEGISLATIVE ADVOCACY COMMITTEE DRAFTING NEW BILL ADDRESSING ANTENNA RESTRICTIONS

The ARRL Board of Directors Legislative Advocacy Committee is in the process of drafting a new bill to address the issue of private land-use restrictions on amateur radio antennas. The proposed legislation would be the successor to the Amateur Radio Parity Act. The Legislative Advocacy Committee, chaired by Pacific Division Director Jim Tiemstra, K6JAT, will report to the Board soon, once plans are fleshed out. Tiemstra told the ARRL Executive Committee (EC) on October 12 in Aurora, Colorado, that Advocacy Committee members have traveled to Washington to meet on multiple occasions with members of Congress and their staffs to inform them of the committee's plans.

ARRL Washington Counsel Dave Siddall, K3ZJ, told the EC last month that he understands the conditional exemption of amateur radio licensees from the RF exposure measurement requirements in the FCC's Part 97 Amateur Service rules is proposed to be removed. A *Report and Order* in FCC Docket WT 13-84 is making the rounds that, if adopted, would make amateur licensees subject to the same requirements as all other FCC licensees. The *Report and Order* is expected to be released before year's end.

Siddall also reported to the EC that the FCC is poised to address the 60-meter band amateur allocation adopted at World Radiocommunication Conference 2015 (WRC-15). The National Telecommunications and Information Administration (NTIA), on behalf of US government primary users of the band, has insisted that the maximum permitted power for radio amateurs must not exceed that agreed to at WRC-15 -- 15 W effective isotropic radiated power (EIRP) or 9.1 W ERP -- despite the fact that Canada has authorized its amateur licensees to use 100 W, and eliminate the current discrete channels, which ARRL's petition proposed to retain. NTIA oversees federal government frequency allocations and users.

[Minutes](#) of the October 12 Executive Committee meeting were posted this week on the ARRL website.

## WRC-19 DELEGATES REACH AGREEMENT ON 6-METER BAND IN ITU REGION 1

World Radiocommunication Conference 2019 ([WRC-19](#)) has approved a 6-meter allocation for International Telecommunication Region 1 (Europe, Africa, the Middle East). The decision came after more than 2 weeks of strenuous negotiations to reconcile widely disparate views of Region 1 administrations.

"The result is a dramatic improvement in the international Radio Regulations for amateurs in Region 1," the International Amateur Radio Union (IARU) said in announcing the agreement.

When the *Final Acts* take effect, 44 countries in Region 1 will have a primary allocation of at least 500 kHz, including 26 countries with a primary allocation of the 50 - 54 MHz. The entire region will have an amateur secondary allocation of 50 - 52 MHz, except in Russia, whose administration opted for only 50.080 - 50.280 MHz on a secondary basis.

Provisions will be in place to protect other existing services using the band in Region 1 and in neighboring countries in Region 3. The existing primary allocation of 50 - 54 MHz in Regions 2 and 3 is unaffected.

The decision on WRC-19 agenda item 1.1 is the culmination of years of effort by the IARU and its member-societies.

Delegates this week faced a daunting workload as they tried to reach consensus on several remaining issues, including the agenda for the next WRC. The final session of the conference plenary to approve texts for inclusion in the *Final Acts* of the conference was set to wrap up on November 21.

As of the end of last week, no choices had been made as to which of more than three dozen proposed topics will end up on the agenda for World Radiocommunication Conference 2023. Each proposed agenda item would require studies to be conducted between 2020 and 2023, but International Telecommunication Union ([ITU](#)) resources will not accommodate more than about half of the proposals. Some face strong opposition, while others remain ill-defined even at this late stage of the conference.

- Short Duration Satellites:** No agreement has been reached on how to protect existing services and uses of the uplink frequency band proposed for telemetry, tracking, and command of these "simple" satellites.

- 5725 - 5850 MHz:** This part of the amateur secondary allocation, which includes an amateur-satellite downlink at 5830 - 5850 MHz, is the subject of an unresolved conflict over parameters for wireless access systems, including radio local area networks.

- Frequencies above 275 GHz:** This upper frequency range is not allocated, but several bands are identified for passive (receive-only) use, and administrations are encouraged to protect them from harmful interference. With that in mind, WRC-19 has identified other bands above

275 GHz for the implementation of land mobile and fixed service applications. The use of these bands for applications in other services, including amateur experimentation, is not precluded.

With the 50 MHz issue settled, the IARU team devoted most of its energy to explaining why the proposed Radionavigation Satellite Service (RNSS) agenda item for 1240 - 1300 MHz is unnecessary and undesirable. At issue is compatibility between radio amateurs, who are secondary on 1240 - 1300 MHz, with Galileo RNSS (GPS) system receivers. The amateur community has advocated that this matter be dealt with through existing ITU processes rather than the 4 years of study that an agenda item would entail. Read [more](#).

## IARU AND AMATEUR RADIO ARE REACHING “AN INFLECTION POINT”

Participants at the 45th meeting of the International Amateur Radio Union (IARU) Administrative Council (AC) in late September discussed the organization's role in advancing amateur radio going forward. The IARU released a [summary record](#) of the meeting this week. IARU President Tim Ellam, VE6SH/G4HUA, who chaired the AC meeting in Lima, Peru, observed that the IARU and amateur radio are reaching what he called “an inflection point.” He asserted that amateur radio is changing, but the IARU and its member-societies are not.

Ellam's remarks prefaced a wide-ranging discussion of the challenges to be overcome if the IARU and amateur radio itself are to remain relevant. After several hours of discussion, AC participants agreed on four top-level headings to identify the challenges that must be faced:

- What is amateur radio?
- The roles of IARU and its member-societies
- Recruitment into amateur radio
- IARU finances

The AC also agreed that it is essential to involve younger people from outside the Council in determining how to address these challenges, and the three IARU regions were asked to identify individuals who “could take ownership of these topics.”

A small working group was named, consisting of IARU Region 2 Vice President Ramón Santoyo, XE1KK; Region 2 Area A Director George Gorsline, VE3YV, and IARU Region 1 President Don Beattie, G3BJ. Using topics discussed to develop a starting point, the panel will aim to have a draft version of a plan by mid-December to address the challenges that would serve as a basis for further discussion.

IARU Region 1 (Europe, Africa, and the Mideast) has been a leader in marshalling interest among next-generation radio amateurs, sponsoring Youngsters On The Air (YOTA), and other youth-related activities, including a summer camp each year attended by young radio amateurs from around Region 1. IARU Region 3 noted at the Council meeting that it plans a Youth on the Air activity in Thailand next October and expressed the hope that Regions 1 and 2 can participate.

In other matters, based on a suggestion from Fred Matos, W3ICM — a National Telecommunications and Information Administration (NTIA) spectrum manager — the AC agreed to change the objective of the IARU HF World Championship contest to read as follows: “To support amateur self-training in radiocommunications, including improving amateur operating skills, conducting technical investigations, and intercommunicating with other amateurs around the world, especially IARU member-society headquarters stations, using the 160, 80, 40, 20, 15, and 10 meter bands.”

According to an AC meeting document, Matos' rationale is that the objective of an IARU-sponsored activity should tie directly to the ITU *Radio Regulations*.

In a related matter, the Council agreed to indicate to ARRL, which administers the competition, that it would favor relaxing rules for multioperator, single transmitter, mixed-mode entries — which the AC views as more restrictive and punitive than those that apply to most other contests — without affecting scoring and adjudication. Under current rules, multioperator, single transmitter, mixed-mode entries must remain on a band and mode for at least 10 minutes before changing bands or modes, and violating the band change rules will reclassify the entry as a check log. The IARU event is held each July.

To keep informed on IARU happenings, subscribe to the **ARRL-IARU** online group, moderated by IARU Secretary Dave Sumner, K1ZZ.

## ACCESS TO 60 METERS CONTINUES TO EXPAND

According to the latest edition of *The 5 MHz Newsletter*, regulatory agencies in an expanding list of countries have granted amateur radio access to a 60-meter band.

A secondary allocation of 5.351.5 – 5.366.5 MHz was released to radio amateurs in Kuwait, where they will adhere to the World Radiocommunication Conference 2015 (WRC-15) allocation, permitting a maximum power of 15 W EIRP. Indonesian and Greek hams recently gained access to the same allocation.

Meanwhile, Israel has extended authorization of 5 MHz amateur permits to the end of December and added a Channel 0 to the existing eight channels, where hams may run 100 W PEP on several modes, depending upon the channel.

Still under discussion is ham radio access to a 5 MHz secondary band in Australia, where the band is used by some emergency services and law enforcement. Nearly 80 countries offer some level of amateur access to the 5 MHz band.

In the US, ARRL petitioned the FCC shortly after WRC-15 to allocate a secondary 60-meter band and to permit 100 W PEP, as already authorized on the existing channels there.

## MARSRADIO IS KEEPING THE PHONE PATCH ALIVE

A military plane over the North Atlantic suddenly experiences rapid decompression. A call goes out to MARSRADIO, explaining the emergency and requesting a phone patch to the aircraft's command post. Over the next few hours, a MARSRADIO volunteer handles many phone patches to help resolve the situation. An adjunct within the Air Force Military Auxiliary Radio System (MARS), MARSRADIO is reminiscent of an era when MARS facilitated hundreds of troop morale phone patches each night between soldiers deployed in Vietnam and their families and loved ones back home.

Today, MARS is more oriented to official Department of Defense (DoD) communication, but the venerable phone patch remains viable within MARSRADIO, a special MARS operations group that provides primary service and a backup system that handles requests for official and morale phone patches, weather forecasts, informal messages, selective calling tests, and radio checks. Membership in MARSRADIO is open to both Army and Air Force MARS members, and it is seeking additional volunteers.

MARSRADIO members have advanced station capabilities, put in many hours of participation, and operate under more stringent requirements than the standard MARS program does. These include the ability to monitor two frequencies simultaneously; an amplifier; a directional antenna (i.e., Yagi) for operation above 13 MHz; dipoles for use below 13 MHz; internet access; at least 36 hours of participation per quarter, and no digital requirement, if MARSRADIO is the station's primary assignment.

"MARSRADIO" is the net call sign for the 11th Air Force MARS MARSRADIO Squadron (11AFMS) under the 1st AFMARS Special Operations Group (1AFMSOG). MARSRADIO net members guard frequencies as much as possible, and the net is authorized 24/7/365. MARSRADIO serves as a backup to US Defense Department communication, including the US Air Force Global System, handling an average of 2,500 requests each year for assistance -- from providing estimated times of arrival to communications involving medical or mechanical emergencies.

MARSRADIO has evolved into a DoD asset that's noteworthy for its volunteer support, and interest is rising as HF regains importance. Volunteers handle communication for all branches of the military and for other US government users. All types of DoD aircraft and ground units may request support to complete their missions, and the net is open to US allies.

MARSRADIO is not for every ham or every MARS member, but those interested in service would be working with real-time traffic on a daily basis. A fast-track program is in place to bring well-qualified operators directly into MARSRADIO. While today's MARS is highly digital and encrypted, the phone patch is a totally different animal. Members of MARSRADIO do not need digital capability. They don't even need a landline. A Voice over Internet Protocol (VoIP) connection via the internet will provide the phone line needed to run a patch.

[More information](#) on MARSRADIO is available.

## W1AW TO COMMEMORATE 98TH ANNIVERSARY OF FIRST AMATEUR RADIO SIGNALS TO SPAN THE ATLANTIC

December 11 marks the 98th anniversary of the success of ARRL's [Transatlantic Tests](#) in 1921, organized to see if low-power amateur radio stations could be heard across the Atlantic using shortwave frequencies (i.e., above 200 meters). On that day, a message transmitted by a group of Radio Club of America members at 1BCG in Greenwich, Connecticut, was copied by Paul Godley, 2ZE, in Scotland.

While the first two-way contact would not take place until 1923, the 1921 transatlantic success marked the beginning of what would become routine communication between US radio amateurs and those in other parts of the world -- the birth of DX.

To commemorate this amateur radio milestone, Maxim Memorial Station W1AW will be on the air through the day on December 11 with volunteer operators. The goal is to encourage contacts between radio amateurs in the US and Europe while showcasing the significance of the transmissions that pioneered global communication and laid the groundwork for technology widely used today.

The event will run from 1300 until 0000 UTC. Some details are still being worked out, but operation will focus on 40 and 20 meters (SSB).

## AMSAT SAYS HUSKYSAT-1 PAVING THE WAY FOR FURTHER COOPERATION

AMSAT says it had to maneuver some regulatory challenges in establishing its partnership with the University of Washington to share the just-launched HuskySat-1. The satellite went into space on November 2 aboard a Cygnus cargo vessel, which docked to the International Space Station. HuskySat-1 will be boosted into a higher orbit and deployed in January, and once it completes its primary mission, it will be turned over to AMSAT for operation of its linear transponder sometime in the second quarter of 2020. AMSAT Vice President-Engineering Jerry Buxton, N0JY, explained this week that the AMSAT-UW partnership presented some regulatory challenges, but has paved the way for similar partnerships in the future.

“The [FCC] Part 97 license that AMSAT will operate under does not include or allow the use of any of the experiments on board,” Buxton explained. “As those experiments were not able to conform to Part 97’s so-called ‘educational exemption,’ including the K-band radio, two licenses were required.” UW obtained a Part 5 Experimental license to cover the telemetry downlink of the AMSAT transponder module, but the transponder must remain off during that operation. The AMSAT transponder module will operate under an FCC Part 97 Amateur Service license.

“This was the first partnership with an educational institution where an AMSAT radio was flown on a non-AMSAT (UW in this case) CubeSat,” Buxton said. “In the process of working with the FCC and NASA to obtain a single Part 97 license that was not complicated or restricted by ‘pecuniary interest,’ the experience developed an understanding with FCC as to how a mission such as HuskySat-1 could be fully licensed under Part 97.”

Buxton said delays and difficulties encountered in executing all of the requirements to qualify under Part 97 ultimately bumped up against the mission deadline to have a license in hand, so the CubeSat could be integrated on the launch vessel. “The only way forward at that time, in order for UW to make the launch, was to do the separate licensing,” Buxton said.

“It was lots of work and some good frustration along the way. I thank and commend our partners at University of Washington as well as the FCC for their work to make it happen, and our friends at NASA for giving us the opportunity to push for a path to amateur radio licensing for more of the CubeSat launches they sponsor,” Buxton remarked. “I believe that it has resulted in a known path toward fully Part 97-licensed educational (e.g., university) CubeSats. That should in turn offer more opportunities for AMSAT radios to fly as the communications package for a mission as well as an operating amateur radio satellite, in the same way as the CubeSats we produce.”

After deployment, HuskySat-1’s 1,200 bps BPSK beacon on 435.800 MHz should be active and decodable with the latest release of *FoxTelem*. HuskySat-1 is expected to run its primary mission for 30 days — testing a pulsed plasma thruster and experimental 24 GHz data transmitter — before being turned over to AMSAT for amateur radio operation. HuskySat-1 will feature a 30 kHz wide, 145 to 435 MHz linear transponder for SSB/CW. — *Thanks to AMSAT News Service*

## RUSSIAN OTH RADAR NOW REPORTED TO BE “EVERYWHERE”

The latest International Amateur Radio Union Region 1 Monitoring System (IARUMS) [newsletter](#) reports the Russian “Contayner” over-the-horizon radar (OTHR) has been active in the 7, 10, 14, and 18 MHz amateur radio allocations (amateur radio is primary on 40, 20, and 17 meters). The OTHR transmissions have been 40 sweeps/second, FM on pulse, and 12 kHz wide.

Additionally, IARUMS reports a significant increase in Russian military traffic using F1B, PSK, and orthogonal frequency division multiplex (OFDM) on 40, 30, 20, and 15 meters.



IARUMS on November 13 reported an OTHR in northern Iran on 6.078 – 7.022 MHz, AM on pulse, 81 sweeps/second, 44 kHz wide.

## RF-SEISMOGRAPH GETS TRACTION IN HACKADAY

[Alex Schwarz, VE7DXW](#), has theorized for some time now that his [RF-Seismograph](#), initially aimed at indicating band openings, seemed to also act as a real seismograph of sorts, with effects of earthquakes affecting HF noise levels and -- going out on a limb -- actually briefly *enhancing* HF propagation. Schwarz has some support from Professor Kosuke Heki of Hokkaido University in Japan, who has been researching whether changes occur in the ionosphere as a result of an earthquake.

The work of both citizen scientist Schwarz and space geodesy expert Heki caught the attention of *Hackaday*, the online publication with a stated goal of promoting "the free and open exchange of ideas and information." A November 12 *Hackaday* [article](#), "HF Propagation and Earthquakes," outlines the observations of both men. According to the article, Heki "knew that changes in the ionosphere can affect GPS and GNSS receivers on the ground, and with Japan's vast network of receivers to keep track of the smallest of movements of the Earth's crust, he was able to spot [an anomalous buildup of electrons](#) directly above the devastating 2011 Tohoku-Oki earthquake that preceded the earthquake by 40 minutes."

Heki's theory is along these lines: Chemical bonds in the rock -- specifically peroxy bonds between two oxygen atoms -- are broken by microfractures, leaving one side of the peroxy bond with excess electrons and the other with a positive hole. "These holes tend to migrate from high stress to unstressed areas of the rock, which leads them to eventually reach the surface, leaving it with a net positive charge," the *Hackaday* piece says. "As stress in the rock below increases, the number of positive holes reaching the surface rapidly multiplies, drawing electrons from the atmosphere to balance the charge. The moving charges generate an enormous electromagnetic field that can reach all the way up to the ionosphere, creating just the kind of anomalies that Professor Heki observed."

This week, Schwarz reported that the US Geological Survey recorded nine "significant earthquakes" on November 11, eight of which also were recorded by his RF-Seismograph. According to Schwarz, several small quakes early in the morning "opened the 40-meter band slightly, but the precursor of the quake [in Neiafu, Tonga] created a disturbance starting 4 hours prior to the quake and a total radio blackout between 0330 UTC and 0550 UTC. The quakes in late morning did not have a great effect on the local propagation. The one from Vanuatu created 80-meter propagation for 10 minutes only. At 2340 UTC, another quake from Indonesia opened the 30-meter band again," Schwarz said.

The *Hackaday* article concludes, "Clearly, the RF-Seismograph is not yet ready to claim to have a solid predictive ability for earthquakes. For that matter, Dr. Heki's space-based observations aren't ready to stake that claim either. But it certainly looks like ionospheric changes can be correlated to earthquakes, both in time and space..."

## SHORTS

**YOUNGSTERS ON THE AIR (YOTA) MONTH IN REGION 1** – The IARU Region 1 (Europe, Africa, and the Mideast) Youth Working Group has announced that its December [YOTA](#) Month take place again this year.

"We would like to invite you to take part with a call sign with 'YOTA' in the suffix," the YOTA announcement said. "The idea for this is to show Amateur Radio to young people and to encourage youngsters to be active on the amateur bands."

YOTA said December YOTA Month offers an opportunity to demonstrate ham radio to the world and to invite newcomers. Participants earn certificates by working the various YOTA-suffix stations on the air throughout December. Not a contest, the event is aimed at getting as many youngsters on air from as many countries as possible. The event will take place from 0000 UTC on December 1 until 2359 UTC on December 31. — *Thanks to YOTA*

**YOTA (YOUNGSTERS ON THE AIR), [COMES TO REGION 2!](#)** The former broadcasting site of the Voice of American in Cincinnati, Ohio will play host to what amounts to "Radio Camp" for interested youth (ages 15-25) in the summer of 2020. [The ARRL Letter](#) and [ARRL website](#) coverage notes that it is the first time this event will be held in the Americas, and that "Campers will attend workshops and activities in multiple STEM-related subjects, such as radio contesting, electronic kit building, D-STAR, APRS, satellite communication, antenna building, and radio direction finding and orienteering." According to the [YOTA website](#), "Youngsters on The Air is a highly motivated group of people of all ages and from all over the world working together tightly to make sure that there will still be somebody to answer your CQ call in the future. We ensure that there is a next generation of amateur radio enthusiasts which bring new energy into the hobby. "

**THE [FT ROUNDUP](#) IS LAST YEAR'S FT8 ROUNDUP**, renamed to reflect the inclusion of the new FT4 mode and potential follow-on FT modes in the future. This year, the contest happens the weekend of December 7, 2019. The contest sponsors are suggesting specific frequencies for particular modes - see the rules. While stations can use any legal power level, any power level OVER 100 watts qualifies as a CHECKLOG. See the rules for particular details, such as the use of multiple streams, and country-specific segments.

**[VERSION V2.1.2 OF WSJT-X HAS JUST BEEN RELEASED](#)** that addresses several regressions in version v2.1.0, and supercedes released-for-a-day v2.1.1. A list of program changes since WSJT-X 2.1.0 can be found in the cumulative [Release Notes](#).

A **[CHART OF WHERE FT8 AND FT4 COMMUNICATIONS ARE HAPPENING](#)** compiled by Rich, N1IXF. These are the conventional frequencies, and DXpeditions usually publish special frequencies where they will be operating.

**OH2BH TO BE ON THE AIR FROM MYANMAR** - The government in Myanmar has given limited amateur operating privileges to Martti Laine, OH2BH. He will use XZ2D. Laine reports that authorities in the Southeast Asian nation have only permitted him to operate on 15 meters and higher, but he is hoping to obtain permission to operate on a spot frequency on 20 meters. "Getting 14.065 kHz temporarily for the duration of 48 hours would be magic," Laine said. Members of the world-wide amateur community wrote the Myanmar government to support Laine. "As Radio Arcala, OH8X remains at their Climate Park with more than 110,000 [mangroves planted](#)," he continued. "[O]ur dream remains to activate the Union of Myanmar from our own site from the noise-free Ayeyarwady Region of Myanmar." The XZ2D license is valid until April 17. Laine said he has been setting up his station and should be on the air on November 21. According to Club Log's DXCC Most Wanted list, Myanmar is #48.

**ROVERS AND SOME MULTIOP VHF/UHF CONTEST STATIONS WILL BE INTERESTED IN THE FUTURE [DOWN EAST MICROWAVE DEM V/U XVERTER](#)**. This device covers ALL OF THE AMATEUR BANDS between 144 MHz and 1.2 GHz. According to the preliminary information from the manufacturer: "All frequencies convert to/from 28 MHz. The transmit output level is approximately 1 watt and will exhibit a 2 dB noise figure with greater than 15 dB gain on all bands. The Transverter will also contain an AUX RF port that will be configured as an additional 2M port for connection to a higher frequency transverter such as our future DEM MICRO-VERTER containing 4 additional higher bands of operation." (Pete, N6ZE, via PNWVHFS)

[THE DAILY DX](#) AND A NUMBER OF OTHER SOURCES MENTIONED JIM'S, K1IR, [PRESENTATION ON TOWER SAFETY](#) originally given to Billerica, Massachusetts ARS. It has also spurred an active discussion on a number of different email reflectors. This is not about technique, it's about tower safety, what the rate of "failures" in performing tower work on amateur radio towers tells us, and some suggestions on what practices need improvement to increase tower safety

**HAPPY 45TH BIRTHDAY, AMSAT-OSCAR 7!** -The world's longest-lived satellite, AO-7, turned 45 years old this month. It was [launched](#) on November 15, 1974, from Vandenberg Air Force Base in California. After nearly 7 years of service, AO-7 was thought to have reached the end of its life in June 1981 due to battery failure, and a [premature obituary](#) appeared in the *AMSAT Satellite Report*. In an interesting footnote, although AO-7 was thought to be nonfunctional after 1981, [it's been reported](#) that the Polish Solidarity movement used AO-7 to pass messages in 1982, while Poland was under martial law. Twenty years later, on June 21, 2002, G3IOR reported hearing "an old-style CW beacon" from an unknown OSCAR near 145.970 MHz. It didn't take long to identify the satellite as AO-7, which remains operational and well-used while it's in sunlight. -- *Thanks to AMSAT News Service*

**FRANK, W3LPL, POSTED THIS ABOUT FT8 TO THE [TOPBAND EMAIL REFLECTOR](#):** "Topband was fairly quiet tonight with the usual dozen or so European stations. I decided to try FT8 for the first time on Topband. I've used it for several years on 6 meters mostly during the Transatlantic sporadic-E season but never on Topband. Much to my surprise after just one CQ, I put a string of nearly one hundred European QSOs in my log in just a few hours. This is how 160 meter CW used to be 30 years ago. Almost all of these were first time QSOs for me, and nearly half were Russians. UN1L, UA9MA and R8CA were decoded but not worked.

**HAMVENTION ® AWARD NOMINATIONS OPEN** - Nominations are being accepted until February 15 for Dayton's annual Amateur of the Year, Special Achievement, Technical Achievement and Club of the Year awards.

**USING AI TO PREDICT WHERE AND WHEN LIGHTNING WILL STRIKE** - Researchers have developed a novel way of predicting lightning strikes to the nearest 10 to 30 minutes and within a radius of 30 kilometers. The system uses a combination of standard data from weather stations and artificial intelligence. <https://www.sciencedaily.com/releases/2019/11/191108074854>

**["CONVERT RADIO WAVES TO ALERTS USING SDR, AWS LAMBDA AND AMAZON TRANSCRIBE"](#)** The first two words of the article are "Ham Radio", and then go on to describe a way to capture audio from an SDR dongle running *ham2mon* on a Linux computer, pipe the received audio through a voice recognition process running in the Amazon cloud which looks for a particular phrase, and then generates an alert event in another computer system. While the particular application may not be something you're looking for, it's great to know about the building blocks, some of which might be useful in a quest to develop an SSB Skimmer.

***THANKS FOR READING ! Have a Merry Christmas !***

THE RCA ARC MONTHLY NEWSLETTER IS COMPILED AND EDITED BY JIM RINEHART, K9RU AND JIM KEETH, AF9A. ALL MATERIAL CONTAINED HEREIN IS OBTAINED FROM THE SOURCES CREDITED AND EDITED FOR THIS NEWSLETTER. EMAIL TO mail to:WebMaster@w9rca.org. Check our web site at <http://www.w9rca.org>

---