



# Di-Dah-Dit

Official Newsletter of the Parkersburg Radio Klub  
1722 20th. St. Parkersburg, WV 26101

## NASA's THEMIS Mission Investigates Aurora Mysteries

According to a NASA report, a special type of aurora, draped east-to-west across the night sky like a glowing pearl necklace, is helping scientists to better understand the science of auroras. Known as auroral beads, these lights often show up just before large auroral displays, which are caused by electrical storms in space called substorms. Previously, scientists weren't sure if auroral beads were somehow connected to other auroral displays as a phenomenon in space that precedes substorms, or if they are caused by disturbances closer to Earth's atmosphere.



But powerful new computer models combined with observations from NASA's Time History of Events and Macroscale Interactions during Substorms -- THEMIS -- mis-

sion have provided the first strong evidence of the events in space that lead to the appearance of these beads, and demonstrated the important role they play in our near space environment.

"Now we know for certain that the formation of these beads is part of a process that precedes the triggering of a substorm in space," said Vassilis Angelopoulos, principal investigator of THEMIS at UCLA. "This is an important new piece of the puzzle."



THEMIS Spacecraft.

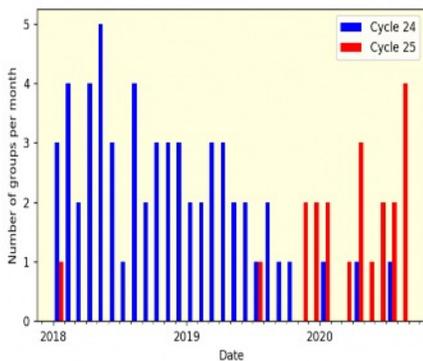
By providing a broader picture than can be seen with the three THEMIS spacecraft or ground observations alone, the new models have shown that auroral beads are caused by turbulence in the plasma -- a fourth

state of matter, made up of gaseous and highly conductive charged particles -- surrounding Earth. The results, recently published in *Geophysical Research Letters* and *Journal of Geophysical Research: Space Physics*, will ultimately help scientists better understand the full range of swirling structures seen in the auroras.

"THEMIS observations have now revealed turbulences in space that cause flows seen lighting up the sky as of single pearls in the glowing auroral necklace," said Evgeny Panov, lead author on one of the new papers and THEMIS scientist at the Space Research Institute of the Austrian Academy of Sciences. "These turbulences in space are initially caused by lighter and more agile electrons, moving with the weight of particles 2,000 times heavier, and which theoretically may develop to full-scale auroral substorms."

## Solar Minimum Most Likely Occurred in December 2019

Sunspot Index and Long Term Solar Observations (SILSO) in Belgium said this month that the minimum between Solar Cycles 24 and 25 "most probably" took place last December. SILSO, a part of the Royal Observatory of Belgium and formerly known as SIDC, cited as evidence the January 2020 increase in the 13-month smoothed sunspot number -- the first upswing since the Cycle 24 maximum in April 2014.



"[F]or now, this latest smoothed value in January 2020 is the very first point indicating a rise of the activity. So, the date of the minimum still needs a full confirmation over the coming months," SILSO said on its website. "For now, preliminary smoothed values, limited to less than 13 months, hint at increasing values over coming months.

If the rising trend indeed continues, this [December 2019] date will become fully definitive."

SILSO said another indication of the transition between the two solar cycles can be drawn from counting individual sunspot groups that belong to either the old or new solar cycle. "While most sunspot groups belonged to the last solar cycle [Cycle 24] until September 2019, the dominance switched to groups of the new cycle in November 2019," SILSO said.

SILSO said that in terms of the number of active regions, the minimum between Cycle 24 and Cycle 25 falls in October 2019. "This is close to December 2019," SILSO said. It attributes the difference to three factors:

The sunspot number also takes into account the total number of spots, and the size of the emerging active regions.

The time of the minimum depends on the respective trends of the declining phase of the past cycle, and of the rising phase of the new cy-

cle, over the 12 months surrounding the minimum.

The date of the minimum has a significant uncertainty range. Near minimum, activity hardly varies and is close to minimum for a few months. "The date of the minimum is thus always less sharply defined than the date of the maximum of the cycles, which are more sharply peaked," SILSO explained.



SILSO noted "a steady stream" of small, active regions since last December, but that activity stagnated at a constant low level. "However, since July -- and even more in the course of August 2020 -- the activity seems to truly take off, with at least one sunspot group visible on almost all days. Such a level of activity had not been reached since early 2019."

"This late-breaking upward trend is now expected to accelerate over the coming months," SILSO predicted. "So be prepared for a more eruptive and interesting sun!"

## FCC Proposes to Institute Amateur Radio Application Fees

Amateur radio licensees would pay a \$50 fee for each amateur radio license application if the FCC adopts rules it proposed last week. Included in the FCC's fee proposal are applications for new licenses, renewal and upgrades to existing licenses, and vanity call sign requests. Excluded are applications for administrative updates, such as changes of address, and annual regulatory fees.

The FCC proposal is contained in a Notice of Proposed Rule-making (NPRM) in MD Docket 20-270, which was adopted to implement portions of the "Repack Airwaves Yielding Better Access for Users of Modern Services Act" of 2018 -- the so-called "Ray Baum's Act."

The Act requires that the FCC switch from a Congressionally-mandated fee structure to a cost-based system of assessment. In its NPRM, the FCC proposed application fees for a broad range of services that use the FCC's Universal Licensing System (ULS), including the Amateur Radio Service that had been excluded by an earlier statute. The new statute excludes the Amateur Service from annual regulatory fees, but not from application fees.

"[A]pplications for personal licenses are mostly automated and do not have individualized staff costs for data input or review," the FCC said in its NPRM. "For these automated processes -- new/major modifications, renewal, and minor modifications -- we propose a nominal application fee of \$50 due to automating the processes, routine ULS maintenance, and limited instances where staff input is required."

The same \$50 fee would apply to all Amateur Service applications, including those for vanity call signs. "Although there is currently no fee for vanity call signs in the Amateur Radio Service, we find that such applications impose similar costs in aggregate on Commission resources as new applications and therefore propose a \$50 fee," the FCC said.

The FCC is not proposing to charge for administrative updates such as mailing address changes, and amateur radio will remain exempt from annu-

al regulatory fees. "For administrative updates [and] modifications, which also are highly automated, we find that it is in the public interest to encourage licensees to update their [own] information without a charge," the FCC said.

The FCC also proposes to assess a \$50 fee for individuals who want a printed copy of their license. "The Commission has proposed to eliminate these services -- but to the extent the Commission does not do so, we propose a fee of \$50 to cover the costs of these services," the FCC said.

The FCC dropped assessment of fees for vanity call signs several years ago, but the Ray Baum's Act does not exempt filing fees in the Amateur Radio Service.

ARRL is reviewing the matter and intends to file comments in opposition.

Deadlines for comments and reply comments will be determined once the NPRM appears in the Federal Register. File comments by using the FCC's Electronic Comment Filing System (ECFS), posting to MD Docket No. 20-270. This docket is already open for accepting comments, even though deadlines have not yet been set.



## Ham Radio Wireless Network Camera Detects Washington Wildfire

Nigel Vander Houwen, K7NVH, reported on September 8 that some HamWAN users in the Puget Sound region of Washington, who were viewing the network's camera feeds, 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.



A frame from video via a HamWAN camera of an air tanker dropping water on the fire.

(<https://www.youtube.com/watch?v=MJ1X4VvRFWY>)

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.

# KLUB Minutes

## PARK Minutes June 8, 2020

In consideration of the physical distancing requirements due to the Covid-19 pandemic, the Parkersburg Amateur Radio Klub met on the N8NBL repeater (146.97) for the June meeting.

The meeting was called to order at 6:31 pm by president Jerry KA8NJW.

Checkins were made by 8 operators.

Minutes of the May meeting were read by John W8IDW - approved as read.

Treasurers report was delivered by Jane N8MOW.

No 50-50 drawing was conducted.

### **UNFINISHED BUSINESS:**

Future meetings – Western Sizzlin management was contacted to discuss return of Park KLUB in person meetings. The next meeting will be on July 13, and the manager agreed to book the entire meeting room (occupancy 50) for our group to comply with personal distancing. Service will be limited to menu items only ie, no salad bar, potato bar or ice cream machine. The overhead projector has been removed as it ceased to function. Earl KB8HGR may have an operable projector for use.

Projection screen availability is unknown at this time.

The Klub will not hold a traditional field day this year. Members can work the event individually and list our Klub but will not have scores tallied as such. Members who normally work CW have indicated they will work individually from home this year.

The Volcano Days special event will be conducted – possibly by Jerry KA8NJW from home if

necessary as the event has been published in QST.

The tabled issue of KLUB T-shirts was continued.

### **NEW BUSINESS:**

Randall Lynch KE8OJI was voted into Klub membership, there being no objection.

### **MISC:**

Earl KB8HRG invited members to bring a breakfast on Saturday to his residence on Broad Street and enjoy and impromptu outside get-together in place of the previous gathering at the north end Hardees. The motion was made by Curt K8UC to adjourn the meeting at 7:02 pm.

Minutes by John W8IDW, secretary  
List of attendees recorded

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## **PARK meeting 7.13. 2020. At Western Sizzlin.**

Call to order by President Jerry Wharton at 6:30 With 9 members in attendance.

Minutes from last meeting were read by Mary Wharton in the absence of the secretary, Were approved as read.

Treasures report by Jane N8MOW, balance was the same plus \$72 in dues collected.

New business

Time for the election of Officers, any volunteers?

Several club members participated in field day from their homes,

David White, Jerry Wharton Bill made several contacts.

Discussion was had about islands on the air and activating Blennerhassett Island as a club activity. I have since learned that islands in rivers are not eligible. Ka8njw

Old business

None

Bob moved to adjourn the meeting at 6:50.

Mary W. Acting secretary.

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August meeting was not held due to lack of quorum.

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## **Minutes 9/14/2020**

Meeting was called to order by President Jerry Wharton at 6:35 at Western Sizzlen.

There were 27 members and guests in attendance.

The minutes for the last two meetings were read by Mary W. (in the absence of John) and approved.

The Treasures report was given by Jane N8MOW, 6691.07 unchanged from last month.

The 50/50 raffle was won by Curt, K8UC for \$23.00. He won even though the ticket was all wet!

OLD BUSINESS

Volcano Days special event station was canceled because of COVID 19. W thought about doing the station anyway but there was a snafu,

My fault, KA8NJW, so it did not get done. We will try again next year.

Tee Shirts. We talked about getting KLLLULB shirts way back in the spring, but it got sidetracked with all that is going on. Lynn P N8IIM is going to look into it and get back to us at the next meeting .

#### NEW BUSINESS.

The only new business on the agenda was the election of officers:

Blane served as the nominating committee. (thanks Blane) He recommended the following officers:

President - Mike Richards  
Vice-President 1 – David Wright  
Vice-President 2 – Conard Richardson  
Vice-President 3 - Earl Hulce  
Secretary – John Pitner  
Treasurer – Jane Hulce  
Newsletter - Jerry Wharton

The slate of officers were approved by unanimous consent.

Yes you read that right, Jerry W. Is stepping down as president after about a 10 year term. He will still be involved with the Klub.

Motion to adjourn was made by Bob, KB8EFB and seconded by Mile R. at about 7:05.

Minutes recorded by Mary W. acting secretary.