

THE PLATTSMOUTH AMATEUR RADIO CLUB

Communicator

September 2016

Irregular heartbeat of the Sun driven by double dynamo

(RAS 7/9/16) A new model of the Sun's solar cycle is producing unprecedentedly accurate predictions of irregularities within the Sun's 11-year heartbeat. The model draws on dynamo effects in two layers of the Sun, one close to the surface and one deep within its convection zone. Predictions from the model suggest that solar activity will fall by 60 per cent during the 2030s to conditions last seen during the 'mini ice age' that began in 1645. Results will be presented today by Prof Valentina Zharkova at the National Astronomy Meeting in Llandudno.

It is 172 years since a scientist first spotted that the Sun's activity varies over a cycle lasting around 10 to 12

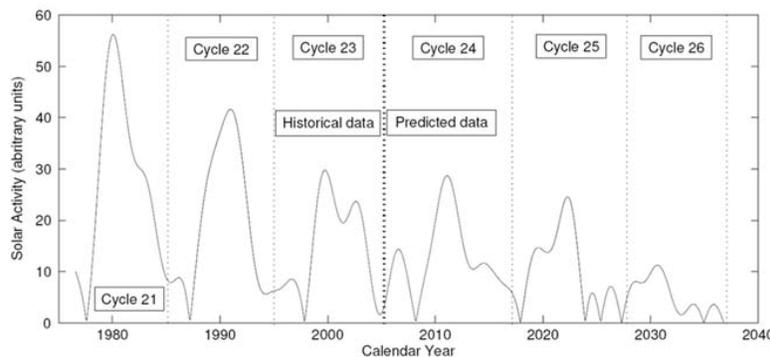
years. But every cycle is a little different and none of the models of causes to date have fully explained fluctuations. Many solar physicists have put the cause of the solar cycle down to a dynamo caused by convecting fluid deep within the Sun. Now, Zharkova and her colleagues have found that adding a second dynamo, close to the surface, completes the picture with surprising accuracy.

"We found magnetic wave components appearing in pairs, originating in two different layers in the Sun's interior. They both have a frequency of approximately 11 years, although this frequency is slightly different, and they are offset in time. Over the cycle, the waves fluctuate between the northern and southern hemispheres of the Sun. Combining both waves together and comparing to real data for the current solar cycle, we found that our predictions showed an accuracy of 97%," said Zharkova.

Zharkova and her colleagues derived their model using a technique called 'principal component analysis' of the magnetic field observations from the Wilcox Solar Observatory in California. They examined three solar cycles-worth of magnetic field activity, covering the period from 1976-2008. In addition, they compared their predictions to average sunspot numbers, another strong marker of solar activity. All the predictions and observations were closely matched.

Looking ahead to the next solar cycles, the model predicts

that the pair of waves become increasingly offset during Cycle 25, which peaks in 2022. During Cycle 26, which covers the decade from 2030-2040, the two waves will become exactly out of synch and this will cause a significant reduction in solar activity.



"In cycle 26, the two waves exactly mirror each other – peaking at the same time but in opposite hemispheres of the Sun. Their interaction will be disruptive, or they will nearly cancel each other. We predict that this will lead to the properties of a 'Maunder minimum'," said Zharkova. "Effectively, when the waves are approximately in phase,

they can show strong interaction, or resonance, and we have strong solar activity. When they are out of phase, we have solar minimums. When there is full phase separation, we have the conditions last seen during the Maunder minimum, 370 years ago."

<https://www.ras.org.uk/news-and-press/2680-irregular-heartbeat-of-the-sun-driven-by-double-dynamo>

https://www.researchgate.net/publication/283862631_Heartbeat_of_the_Sun_from_Principal_Component_Analysis_and_prediction_of_solar_activity_on_a_millennium_timescale

Meeting Calendar

8am, August 27, 2016

8am, September 24, 2016

8am, October 29, 2016

at Mom's Café

**2016
PAID MEMBERSHIP**

- AGØLSteve Loyd [E]
- AIØN..... Chuck Engberg* [E]
- K3CRF.....Dave Smith [E]
- K5LBS Jerry Gault [E]
- KBØFSI Pat McCollum [T]
- KBØOGORoger Behrns* [E]
- KBØSJB.....Tom Katalenich [G]
- KCØHYD John Titsworth [G]
- KCØHYE.....Shirley Titsworth [T]
- KDØNMD.....Dudley Allen [G]
- KDØBXB..... Kim Allen [T]
- KEØXQ.....Bill McCollum [E]
- KGØKR Beth Engberg* [E]
- KIØPY Kevin Faris [E]
- N5SEZ..... Ray McNally[E]
- WØDBW..... Derek Winterstien [G]
- WØZY Dave McLaughlin[E]
- WØZYD..... Debbie McLaughlin[G]

**Charter Members #New Ham*

Note: Thanks to all who have paid their dues and many who have given additional donations. All donations are greatly appreciated. Please let me know of any corrections.

Meetings are 8am the last Saturday of most months at Mom's Café in Plattsmouth.

Tuesday night get-togethers at Plattsmouth Burger King at 7 PM



P.A.R.C. Officers

President
KBØOGORoger Behrns
rb55930@windstream.net

Vice President
KCØHYDJohn Titsworth

Secretary
N5SEZ.....Ray McNally

Treasurer
KIØPY Kevin Faris

Newsletter Editor
KBØOGORoger Behrns
rb55930@windstream.net
513 Vine St.
Louisville, NE 68037
(402) 234-6775

Repeaters:

443.45⁺ is located in downtown Omaha

443.225⁺ is located in Murray.

147.48 Simplex is also in Murray.

*Contents copyright ©PARC 2016
 Some contents may be copyrighted by the referenced source or author. Unsigned articles may be used for noncommercial use with notification and attribution.*



The July 30, 2016 meeting was called to order at 8:30 am at Mom's Café by President Roger Behrns.

Those in attendance were Roger (KBØOGO), Kevin (KIØPY), Derek (WØDBW), and John (KCØHYD).

The treasurer reported \$260 in the repeater fund and \$752.85 in the general fund for an ending balance of \$1012.85. \$600 was received from Spiral for use of the Murray shelter, 40 in dues and donation and an uncashed memorial check was added back in to the account. John moved to accept the treasurer's report and Derek Seconded. Passed.

John moved that we donate \$50 to the Village of Murray in appreciation for the use of the park for Field Day. Kevin seconded and the motion passed.

The meeting adjourned at 8:53 with a motion by John and second by Derek.

AMSAT-UK Space Colloquium Videos are Available

(ARRL 08/16/2016) Thanks to the efforts of British Amateur Television Club (BATC) and AMSAT-UK volunteers, videos of presentations at the 2016 International Space Colloquium July 29-31 in Guildford, England, are now available on YouTube.

AMSAT-UK members operated a satellite ground station during the event, using the call sign G0AUK. Contacts were made via SO-50, AO-85, and FO-29 satellites.

The 2016 Colloquium presentations, as well as those from previous years, can be found on the AMSAT-UK YouTube channel. Video presentations may be downloaded.

<http://www.arrl.org/news/amsat-uk-space-colloquium-videos-are-available>
<https://www.youtube.com/user/AMSATUK/playlists>

PLATTSMOUTH ARC MEMBERSHIP REGISTRATION FORM

Name		Call Sign		Class	
Address		City		State	
E-Mail		Phone #			
Spouse Name		Call Sign		Class	
Membership Type <input type="checkbox"/> Primary(\$15) <input type="checkbox"/> Spouse (\$5) <input type="checkbox"/> Student (\$5) <input type="checkbox"/> New Ham		● Additional donations are gratefully accepted. ● New Hams are free during the year they receive their first license. ● Please give this form and dues to the club treasurer or any club officer.		Donation for: <input type="checkbox"/> Repeater fund <input type="checkbox"/> Insurance <input type="checkbox"/> Other _____ <input type="checkbox"/> General	
Any additional e-mail or cell phone #s?		Amount: <input type="checkbox"/> I prefer my donation to be anonymous.			

FCC Levies \$25,000 Fine for Deliberate Interference

(ARRL 08/03/2016) The FCC has imposed a \$25,000 fine on William F. Crowell, W6WBJ (ex-N6AYJ), of Diamond Spring, California, for intentionally interfering with the transmissions of other radio amateurs and transmitting prohibited communications, including music. The penalty represents the full amount proposed in a December 2015 Notice of Apparent Liability for Forfeiture (NAL), and, the FCC said in a lengthy August 2 Forfeiture Order (FO), “is based on the full base forfeiture amount as well as an upward adjustment reflecting Mr Crowell’s decision to continue his misconduct after being warned that his actions violated the Communications Act and the Commission’s rules.”

“Mr Crowell does not deny that he made the transmissions that prompted the NAL in this proceeding, but argues, in large part, that those transmissions were protected by the First Amendment of the Constitution,” the Forfeiture Order said. In his responses to the NAL, Crowell not only argued that the enforcement action was directed at the content of his transmissions, which were protected by the Constitution, but were justified on the basis of other operators’ actions. “Alternatively, Mr Crowell maintains that someone else caused the interference or transmitted prohibited communications at issue in this proceeding,” the FCC said.

The FCC demurred. “It is well-established that regulation of radio in general does not violate the First Amendment or [the Communications Act],” the Commission’s Forfeiture Order said, “and courts have made clear that this conclusion applies to the Amateur Service as well.”

Prompting the December 2015 NAL were complaints by members of the Western Amateur Radio Friendship Association (WARFA), which conducts nets three times a week on 75 meters. Crowell had argued that the WARFA Net monopolized the frequency and refused to let him check in.

The Enforcement Bureau recounted that its agents and the High Frequency Direction Finding (HFDF) Center monitored Crowell’s transmissions during the WARFA Net on 3908 kHz on August 25 and August 27, 2015. The agents and the HFDF Center observed Crowell’s Amateur Radio station “intentionally interfering with other amateur licensees by transmitting on top of other amateurs, and repeatedly interrupting amateurs using noises on the WARFA net, recordings and music, so as to not allow them to transmit on 3908 kHz,” the Forfeiture Order said.

“Specifically, between 7:45 PM and 9:45 PM PDT, on both August 25 and August 27,” the FO continued, “the Agents and the HFDF Center observed at least a dozen instances, lasting from 30 seconds to at least 4 minutes each, of Mr Crowell intentionally transmitting on top of and repeatedly interrupting amateurs on the WARFA net.”

The Enforcement Bureau concluded that Crowell “willfully and repeatedly” violated the Communications Act and FCC rules “by intentionally causing interference to other Amateur Radio operators and transmitting prohibited communications, including music.” The Bureau said that after reviewing Crowell’s arguments, it found no reason to cancel, withdraw, or reduce the penalty it had proposed last December.

Crowell has a long-standing relationship with the FCC Enforcement Bureau. In 2008 the FCC designated his license renewal application for hearing, alleging that he had caused intentional interference, interrupted others’ communications,

GPS Buoys Intruding on 10 Meters

(ARRL 08/18/2016) Radio amateurs in Portugal have intensified the search for GPS buoys that are illegally operating and intruding on 10 meters. A recent International Amateur Radio Union Region 1 Monitoring System (IARUMS-R1) report indicated that one such buoy was operating 24/7 on 28.100 MHz, using F1B mode (RTTY), 51 baud, 270 Hz shift. IARUMS-R1 also has posted a lengthy and growing list of intruding driftnet fisheries buoys, transmitting CW in various parts of 10 meters. A group of Portuguese radio amateurs has volunteered to identify the location of GPS buoy clusters that have been transmitting “for years” on 10 meters, an exclusive Amateur Radio allocation.

“So far, we have had some success in determining the location of the few that we can receive when propagation allows,” said Paulo Teixeira, CT2IWW, the team spokesperson. “The data suggest that these clusters are located in the Atlantic, alongside the coasts of Africa and Europe, but it’s possible that they are present elsewhere.”

The F1B transmissions consist of 3 second RTTY bursts. Individual transmissions are 10 seconds apart, and the cycle repeats every 5 minutes. Frequencies are between 28.000 and 28.120 MHz, at 5 kHz intervals.

“So far we detected them on 28,010, 28,025, 28,035, 28,050, 28,065, 28,075, and 28,101 kHz,” Teixeira said, “but we believe that other frequency ranges are possible.”

The group has asked radio amateurs living along the Atlantic coast, to look for these transmissions and record them. Teixeira said poor propagation is making it difficult to obtain additional samples.

“More recordings are needed in order to get greater consistency of the decoded data and, possibly, work on a automated or semi-automated decoding solution,” he said. He stressed the importance of indicating date, time (UTC), frequency, and mode. Recordings should be at least 10 to 20 minutes long. E-mail results to CT2IWW via his QRZ.com address.

Meanwhile, Jose Francisco de Almeida, CT4AN, reported that agents from Portugal’s telecoms regulator ANACOM and maritime police inspected 30 fishing, maritime tourism, and passenger vessels in Madeira, Douro, and Cascais, for illegal radio gear. According to IARUMS-R1, the two agencies have undertaken several enforcement actions in commercial fishing ports and marinas. Violations detected included the use of inadequate equipment or radio equipment operating outside the maritime mobile service bands. Twelve ANACOM and 14 maritime police took part in the operations, which were reported to have resulted in a decrease in offenses.

Illegal buoys of all types — fisheries, driftnet, GPS, and Datalink “Waverider” wave measurement buoys — remain very active on 10 meters, according to Wolf Hadel, DK2OM, the IARUMS-R1 coordinator. The July IARUMS newsletter included more than three dozen reports.

<http://www.arrl.org/news/search-is-on-for-gps-buoys-intruding-on-10-meters>

transmitted music, and made one-way transmissions, including some containing “indecent language,” the FCC said. His license, which expired in 2007, has not been renewed, but Crowell may continue to operate while his application is pending.

<http://www.arrl.org/news/fcc-levies-25-000-fine-on-california-radio-amateur-for-deliberate-interference>