WATTS

11-2015
Year 85 + 11m

Monthly Newsletter of the Pretoria Amateur Radio Club
Maandelikse Nuusbrief van die Pretoria Amateur Radio Klub

PARC, PO Box 73696, Lynnwood Ridge 0040, RSA
http://www.parc.org.za @ zs6pta@zs6pta.org.za

Bulletins : 145.725 MHz on Sundays / Sondae at 08:45
Relays: 1.840, 3.700, 7.066, 10.135, 14.235, 51.400, 438.825, 1297 MHz
Activated frequencies are announced prior to bulletins
Swopshop : 2m and 7.066 MHz live on-air after bulletins
Bulletin repeats on Mondays / herhalings op Maandae : 2m 19:45

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Next Events

Club Social Meeting :

Saturday 7th of November from 11:00AM at the SAM Clubhouse

First Meeting of the new Committee :

Thursday 19th of November from 19:00PM at the SAM Clubhouse

Pretoria Amateur Radio Club
Flea-market (from 07h00) and
Annual General Meeting (from 11h00)
Saturday 31st of October 2015

PARC Committee Members / Komiteelede : 2014 – 2015

Chairman, Social & Rallies	Johan de Bruyn	ZS6JHB	zs6jhb@gmail.com	012-803-7385	079-333-4107
Vice Chairman	Jan Pienaar	ZS6OB	pienaarja@gmail.com		082-447-7823
SARL liason	Fritz Sutherland	ZS6SF	fritzs@icon.co.za	012-811-3875	083-304-0028
Treasurer	Andre van Tonder	ZS6BRC	andreh.vtonder@absamail.co.za	361-3292	082-467-0287
Web co-ordination	Graham Reid	ZR6GJR	greid@wol.co.za		083-701-0511
Bulletin co-ordinator	Vincent Harrison	ZS6BTY	zs6bty@telkomsa.net	012-998-8165	083-754-0115
Contests	Pierre Holtzhausen	ZS6PJH	zs6pjh@telkomsa.net	012-655-0726	082-575-5799
Repeaters	Craig Symington	ZS6RH	zs6rh@hotmail.co.za		081-334-6817
Fleamarket	Alméro Dupisani	ZS6LDP	almero.dupisani@up.ac.za		083-938-8955
Clubhouse	Pieter Fourie	ZS6CN	pieterzs6cn@gmail.com	012-804-7417	083-573-7048
Photographer, Technical	Theo Bresler	ZS6TVB	theo@bresler.co.za		082-698-1742
Auditor	Tony Crowder	ZS6CRO	tcrowder@telkomsa.net	011-672-3311	
Historian, Archives, Awards	Tjerk Lammers	ZS6P	zs6p@iafrica.com	012-809-0006	
Secretary, WATTS newsletter	Louis de Wet	ZS6SK	louis.zs6sk@gmail.com	012-349-1044	072-140-9893
RAE Coordinator	Etienne Naude	ZS6EFN	etienne@afrigrid.com		082-553-0542

Birthdays – November / Verjaarsdae – November

06 Salomon Conradie ZS6SV
12 Fritz Sutherland ZS6SF
16 Vlasta Jancuskova

Please Note : If your Club fees are not paid up to date, birthday details cannot be displayed in Watts

Spouse's Birthdays – November / November

11 Peggy, spouse of Edmar Willers ZS6UT

Anniversaries / Herdenkings – November / November

14 Tjerk ZS6P en Sylvia Lammers

Lief en Leed / Joys and Sorrows

Marita, the sw of Roy Alexander ZS6MI underwent an operation. We wish her a speedy recovery.
The sw of Martinho dos Santos ZS6BQP underwent an operation. PARC also wishes her a speedy recovery.

Contests and Diary of Events – November 2015 / Kompetisies en Dagboek van Gebeure – November 2015 (UTC Times)	
07	RaDAR Challenge
07 - 08	Ukranian DX Contest : 12h00 – 12h00
08	DARC 10-Meter Digital Contest : 11h00 – 17h00
08	PEARS HF Contest
14	Antique Wireless Association of South Africa : AGM and Flea Market (see page 4)
14 – 15	WAE DX Contest, RTTY : 00h00 – 23h59
14 - 15	OK/OM DX Contest, CW : 12h00 – 12h00
21 - 22	**SARL Field Day Contest : 10h00 – 10h00**
21 – 22	RSGB 2nd 1.8 Mhz Contest, CW : 21h00 – 01h00
28 – 29	ARRL EME Contest : 00h00 – 23h59
28 - 29	CQ Worldwide DX Contest, CW 00h00 – 24h00

PARC SUBS / LEDEGELD FROM / VAN 30-06-2014

Bank	First National Bank
Branch Code	25 20 45
Account No	546 000 426 73

Ordinary Members / Gewone Lede : R150
Spouses / Pensioners : R50

Your call sign must appear as statement text!

Please remit your subs in time to our Treasurer, or pay per transfer into the PARC account
Betaal asb. u ledegelde betyds aan ons Tesourier, of betaal per oorplasing in die PARC rekening

Congratulations to the following candidates who have passed the October RAE

Christopher Coetzee : ZU6CC (son of Jaco Cronje ZR6CMG)
Stephanis de Kock : ZS6FDK
George Ellis : ZS6GWE
Jacques le Roux : ZS6JLR
Gideon van den Merwe : ZS6GJV

Welcome to the world of Amateur Radio! Our sincere thanks to Etienne ZS6EFN, Vincent ZS6BTY, Fritz ZS6SF, Pierre ZS6PJH and Louis ZS6SK for presenting the RAE classes.

PARC Annual General Meeting : 31 October 2015

The Annual General Meeting of the Pretoria Amateur Radio Club will take place on the 31st of October 2015, at the Pretoria Motor Club, Keuning Street, Silverton. This Meeting will take place from 11h00 after the flea market which is from 7h00 to 11h00. Proxy and nomination forms can be found in previous issues of Watts. This form is also availabe in pdf format on the PARC website. **The AGM will be followed by a bring and braai. PARC will supply the fire and salads.** For any queries, please do contact the Secretary, Louis de Wet at 072-140-9893 or louis.zs6sk@gmail.com

The Agenda of the AGM will consist of the following points:

1 Welcome and Attendance / Verwelkoming en Teenwoordigheid
2 Opening by/deur Fritz Sutherland ZS6SF : SARL President
3 Chaiman's Report / Voorsitter Verslag : Johan de Bruyn ZS6JHB : PARC Chairman/Voorsitter
4 *Discussion of Motions / Bespreking van Mosies
5 **Election of Committee / Verkiesing van Komitee
6 General Matters / Algemene Sake
7 Presentation of Awards / Toekenning van Pryse
8 Guest Speaker / Gasspreker : Etienne Naude ZS6EFN
9 Lunch / Middagete

*The following motion (below) has been submitted by Mr. Tjerk Lammers ZS6P, and seconded by Mr. Hans Kappetijn ZS6KR. This motion will be discussed during this AGM.
**A list of candidates nominated for Committee election will be displayed before and during the AGM. Nominations will be accepted before the AGM commences, and will be added to this list.

Mosie ter voorlegging by die 2015 AJV

Mosie

1. **Dat die voorsitter deur die komitee verkies word.**
2. **Dat die voorsitter nie langer as vir 'n aanlopende termyn van twee jaar mag dien nie maar wel weer na 'n onderbreking van minstens een jaar.**
3. **Dat die rëels van die konstitusie sodaning aangepas word.**

Motivering

1. **Die komitee moet die persoon aanstel wat die leiding moet neem, met wie hulle moet saamwerk en in wie hulle vetroue het. Die komitee lede is in 'n beter posisie om die korrekte keuse te maak as die klublede daarbuite.**
2. **'n Ewigdurende voorsitter ondermyn vernuwing.**

Voorsteller:

Tjerk Lammers ZS6P

Tjerk Lammers ZS6P
Pretoria 2015-08-14

Sekondant:

Hans Kappetijn ZS6KR
Pretoria 2015-08-14

In Remembrance of Molly Peer ZR6MOL : 1950/08/15 – 2015/10/05

It was with great sadness that the passing of Molly Peer was announced on the 5th of October 2015. The Pretoria Amateur Radio Club hereby wishes to convey it's condolences to Richard, Hilary and Edwin.

When the children Edwin (ZR6ESP) and Hilary (ZR6HAP) wrote the RAE, Molly did it as well. She managed on the first try in May 1995, keeping the invigilators up till the last minute and received the call ZR6MOL. She joined the League and the Club in July 1995 and for a time was on the social committee. She went along on many of the motor rallies with the Club. She assited regulary with the cool drinks when the flea market was held on the UP grounds. Molly will sincerely be missed by everyone, but fond memories of her will last forever.

In the end, it's not going to matter how many breaths you took, but how many moments took your breath away.

When life gives you a hundred reasons to cry, show life that you have a thousand reasons to smile.

When one door closes, another opens; but we often look so long and so regretfully upon the closed door that we do not see the one that has opened for us.

Never tell your problems to anyone...20% don't care and the other 80% are glad you have them.

The Shocking Truth about Electricity : By Keith Waterhouse

A student of current affairs reveals all

You learn something new every day. For example I was just reading that story of James Thurber's in which he recalls his grandmother's belief that electricity leaks out of an empty light socket if the switch has been left on. From this I gather – judging by the general context and the fact that Thurber was a humorist – that it doesn't.

I was never taught electricity at school, nor was it often a topic of dinner-table conversation between my parents. But, what with reading Thurber here and having to change a light bulb or tune in a transistor radio there, I have picked up a pretty sound working knowledge of electrical matters.
It's not comprehensive, God knows – I still can't understand why you can't boil an egg on an electric guitar – but when I jot down a summary of what I have learnt, I marvel that I have never been asked to write for the Electrical Journal. For instance:

Most electricity is manufactured in power stations, where it is fed into wires which are then wound around large drums.
Some electricity, however, does not need to go along wires. That used in lightning for example and in portable radios. This kind of electricity is not generated, but is just lying about in the air, loose.
Electricity makes a low humming noise. This noise may be pitched at different levels for use in doorbells, telephones and electric organs.
Electricity has to be earthed. That is to say, it has to be connected to the ground before it can function, except in the case of aero-planes, which have separate arrangements.
Although electricity does not leak out of an empty light socket, that light socket is nevertheless live if you happen to shove your finger in it when the switch is on. So if it is not leaking, what else is it doing?
Electricity is made up of two ingredients, negative and positive. One ingredient travels along a wire covered with red plastic and other along a wire covered with black plastic. When these two wires meet together in what we call a plug, the different ingredients are mixed together to form electricity.
Electricity may be stored in batteries. Big batteries do not necessarily hold more electricity than small batteries. In big batteries the electricity is just shoveled in, while in small batteries (transistors) it is packed flat.
Incurious people are content to take all this for granted. They press a switch and the light comes on - and that is all they know about the miracle in their homes. This has never been enough for me. I have to know how things work; and if I cannot find out from some technical handbook, then I combine such information as I already have with simple logic.
Thus it is easy to deduce that the light switch controls a small clamp or vice which grips the wires very hard, so that the electricity cannot get through. When the switch is flicked on, the vice is relaxed and the electricity travels to the light bulb where a bit of wire, called the element, is left bare.
Here, for the first time, we can actually *see* the electricity in the form of a spark. This spark is enlarged many hundreds of times by the curved bulb, which is made of magnifying glass.
Why, is our next question, do these light bulbs have a limited life? As any schoolboy knows, heat converts oxygen into moisture. When all the oxygen in the light bulbs becomes liquefied in this manner it naturally quenches the electric spark.
I have not yet touched on fuse wire. It has always amazed me that an industry which is so enterprising in most respects – the invention of color electricity for use in traffic lights and the harnessing of negative electricity for refrigeration are two examples that comes to mind – should still, 200 years after James Watt invented the electric kettle, be manufacturing fuse wire too thin.
I pass on a hint for what it is worth. There is available from hardware shops a sturdy wire used mostly for making chicken runs, and this is far more durable than the stuff sold by electricians (who must, I appreciate, make a living). By using chicken wire I now have a fuse box which – even when the spin-drier burst into flames because of too much electricity having been fed into it – has for six months been as impregnable as the Bank of England.
But why use fuse wire at all? I completely understand that the fuse box is the junction at which the wires leading from the power station join or fuse with the wires belonging to the house, and that the two sets of wires have got to be connected somehow. But what is wrong with a simple knot?
In some respects, I reiterate, my knowledge is imperfect. I have not yet explored the field of neon signs – how do they make the electricity move about. And the pop-up toaster – how does it know when the toast is ready?
What is the difference between electricity and electronics? Is electronics just the smart word to use now? How can an English computer speak French, which requires a different voltage?
Logic would answer these questions too, and many of a more technical nature, but the light over my desk has just gone out. A valve blown somewhere, I expect.

Thanks to Fritz ZS6SF for this article

The Sun and Space Weather : by Johann

The Sun is a variable star. Beginning with the invention of the telescope more than 400 years ago, it has been found that the Sun shows quasi-periodic behaviour in sunspot occurrence, and that the Earth is susceptible to solar variability. The solar activity cycle, linked to sunspots, is approximately 11 years long. Dramatic and rapid changes in space weather that can affect humans and technology anywhere in the inner heliosphere are associated with solar particle events. Recent space weather research has shown that, in a worst-case scenario, unprotected astronauts who are suddenly exposed to solar particle radiation in space can reach their permissible exposure limits within hours of the onset of an event. Such events are a direct effect of the rapid release of stored magnetic energy at active regions on the Sun. Accurately predicting when safe intervals will occur, or the exact times of sudden releases of radiation at the Sun, poses major challenges to the system science of heliophysics. The time scales involved span several orders of magnitude: minutes and hours are associated with high-energy particle propagation from the Sun to the Earth, days are associated with arrival of solar wind plasma, and months to years for the full development of the heliospheric consequences of solar explosive events.

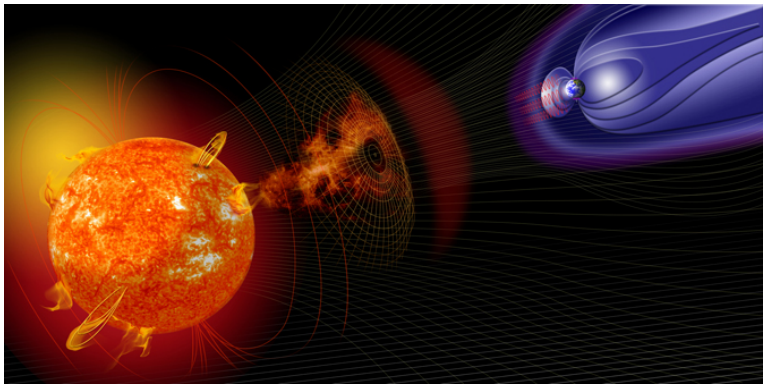
Space weather refers to violent transfers of matter and energy from the sun to the Earth. Space weather describes the conditions on the Sun and in the solar wind, as well as the effects on Earth's magnetosphere, ionosphere, and thermosphere that can influence the performance and reliability of space-borne and ground-based technological systems and that can affect human life and health (definition used by the United States National Space Weather Plan).

It begins with an eruption such as a huge burst of light and radiation called a solar flare or a gigantic cloud of solar material called a coronal mass ejection. However, the effects of those eruptions happen at Earth, or at least near-Earth space. Our modern hi-tech society has become increasingly vulnerable to disturbances from outside the Earth system, in particular to those initiated by explosive events on the Sun.

Scientists monitor several kinds of space "weather" events namely, geomagnetic storms, solar radiation storms, and radio blackouts, all caused by these immense explosions on the sun. While some effects are influenced neither by the properties of nor the processes within the Earth's magnetosphere, others are critically dependent on the interaction of the impinging solar wind with the terrestrial magnetic field and plasma environment.

The economic consequences of these effects are enormous. That's one reason why space weather and its predictability have recently attained major attention, not only with the involved scientists but also with the general public. Another reason is the new quality of observational data that have been obtained over the last decade from a new generation of space-based instruments. A huge fleet of spacecraft (ULYSSES, SOHO, YOKHOH, WIND, ACE, TRACE, RHESSI, Hinode, SDO) has allowed scientists to advance their understanding of the processes involved near the Sun, in interplanetary space and in the near-Earth environment, so as to renew the picture of the Sun, the heliosphere, and the solar-terrestrial relationships.

By its variability the solar wind constantly moulds and remodels the magnetosphere. Finally, the solar wind is the medium through which disturbances from the Sun have to propagate. Once a disturbance has reached the outer boundaries of the Earth system, a whole new series of processes will be triggered that are controlled by the Earth's magnetic field, its ionosphere and atmosphere.



The observation of the Sun and various phenomena which are visible on its surface, and which moves through interplanetary space, helps scientists understand the causes and subsequent evolution of solar activity that affects Earth's space climate and environment. The climate and space environment of Earth are significantly determined by the impact of plasma, particle, and radiative outputs from the Sun.

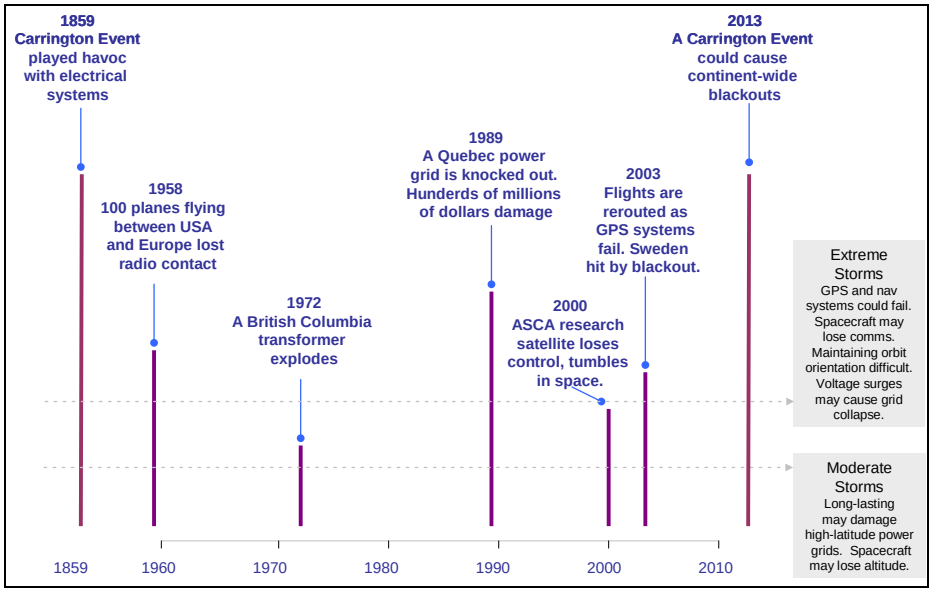
Therefore, it is essential to understand the Sun, determine how predictable solar activity truly is, and develop the capability to forecast solar activity and the evolution of disturbances as they propagate to Earth. The Figure above illustrates the current thinking of how solar events are changing the conditions in near-earth space.

In 1859, there was a solar event so extreme that witnesses reported seeing brilliant lights, electrical flashes, red glows and other aurora events, even in the South. It was the lead story on Sept. 3 of that year in the Memphis Daily, according to a copy preserved by the Library of Congress. The Memphis Daily reported: "On Thursday night last, about 12 o'clock, the heavens were suddenly lit up as with a half dozen moons. The cry of fire was heard on every street, and the fire bells of the city were rung, arousing our whole population. When the truth revealed itself it appears that Old Nature had only lit up its own chandelier in order, as it might be, to reveal the wickedness going on at the dead hour of night". It was more than a light show. Telegraph systems malfunctioned, sparked and scrambled messages. The possibility that these events were connected to activity on the Sun was suggested by British astronomer, Richard Carrington, who observed intensely bright and white light from a group of sunspots. The flare Carrington observed heralded a solar superstorm. This enormous electromagnetic outburst sent billions of tons of charged particles hurtling toward Earth. When the invisible wave collided with Earth's magnetic field it caused electrical currents to surge through telegraph lines. The blast knocked out several stations. No storm as powerful as the 1859 event has occurred since.

Major optical flares occur only rarely, depending on the phase of the activity cycle, and they last only a few minutes. Therefore, it was by pure luck that Mr. R.C. Carrington on September 1, 1859 at 11:18 GMT, while doing routine sunspot observations, could witness such a unique event for the first time. The brilliancy of the flash equalled that of direct Sunlight, and at first he attributed it to a failure of his telescope. Within the 60 seconds it took him to call a witness, the flash had already much changed and enfeebled. Fortunately enough, Mr. R. Hodgson, another observer at a different location, had also seen the flash and confirmed its existence. Carrington, in his report to the Royal Society, mentioned the potential connection of this strange solar event with the strong geomagnetic storm that occurred only 17 hours and 40 minutes later. This discovery can be considered not only as a landmark in modern solar astronomy but also the beginning of space weather research.

Although no one can say for sure how current trends are going to play themselves out in the next 5-10 years, the evidence for how civilisation have already been affected in the past is well documented. It all comes down to the simple fact that the sun is not the well-behaved neighbour people would like to imagine it to be. It pummels earth every few days or weeks with dramatic storms launched from the surface at millions of kilometres per hour. Between the solar surface and the earth's surface, all of human technology and human activity plays itself out in a hostile environment. In most cases, it is not possible to tell when the next major space weather event is going to happen. Nevertheless, there is no great mystery about what is going on. The human race has had a long history, spanning a century, of calamities spawned by solar disturbances. It is from this record that we can begin to see what problems may be lurking just around the corner.

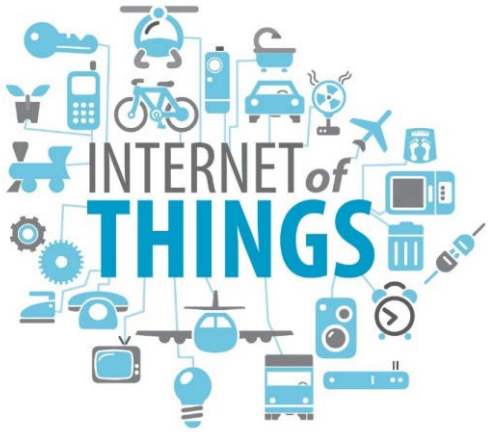
As the sun continues to cycle up and down some 23 times since the 1800's, the confluence of technological innovation and human commercial necessity now finds civilisation at greater risk for trouble during this, the 24th Solar Cycle, than in many previous ones. What has changed is the level of reliance upon sophisticated technology and its widespread infiltration into every niche of modern society. What has not changed is the human's possibly misplaced sense of confidence that this too will pass with no real and lasting hardship. The issue is not who is responsible for today's suite of vulnerabilities, but what they are preparing to do about them from this moment onwards.



Space weather has a long history because it spans the life of the sun and earth and all the significant changes that have occurred between these bodies over the course of billions of years. A convenient timeline of the key events in this history can be found at http://www.solarstorms.org.

The Figure left depicts the major events and the accompanied effects related to extreme solar activity recorded in the recent space age.

IoT : The Internet of Things : By Hans van de Groenendaal ZS6AKV



The Internet of Things (IoT), also called Internet of Everything is the network of physical objects or "things" embedded with electronics, software, sensors, and connectivity to enable objects to exchange data with the production, operator and/or other connected devices based on the infrastructure of International Telecommunication Union's Global Standards Initiative.

The Internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration between the physical world and computer-based systems, and resulting in improved efficiency, accuracy and economic benefit. Each thing is uniquely identifiable through its embedded computing system but is able to interoperate within the existing Internet infrastructure.

The first question you may want to ask is “what does it have to do with Amateur Radio? Ironically the same questions were asked when Single Side Band was developed “What does it have to do with Amateur Radio we use AM?” And when the Internet came about “Why should Radio Amateurs be interested – we have packet radio.”

Surely the answer to these question can be found in the Amateur Code published many years ago by the ARRL and accepted by most Amateur Radio organisation in the world, including the SARL: ”Radio Amateurs are progressive - He/She keeps his/her station up to date. It is well-built and efficient. His/ Her operating practice is above reproach.” We are now so progressive that even the code was rewritten to take care of gender equality!

So we were the first to change AM to SSB, because it was more efficient and when the internet came about we were quick to start making use of it by interlink repeaters via the internet, to provide VoIP links for a computing device to a remote repeater, the Amateur Radio world named it Echo link. We changed packet radio as the distribution channel for news bulletin with the internet. Radio Amateurs developed APRS for quick messaging and a location system combining radio with the internet.

So why should IoT not find its way into Amateur Radio. I can think of many applications where IoT would be very useful.

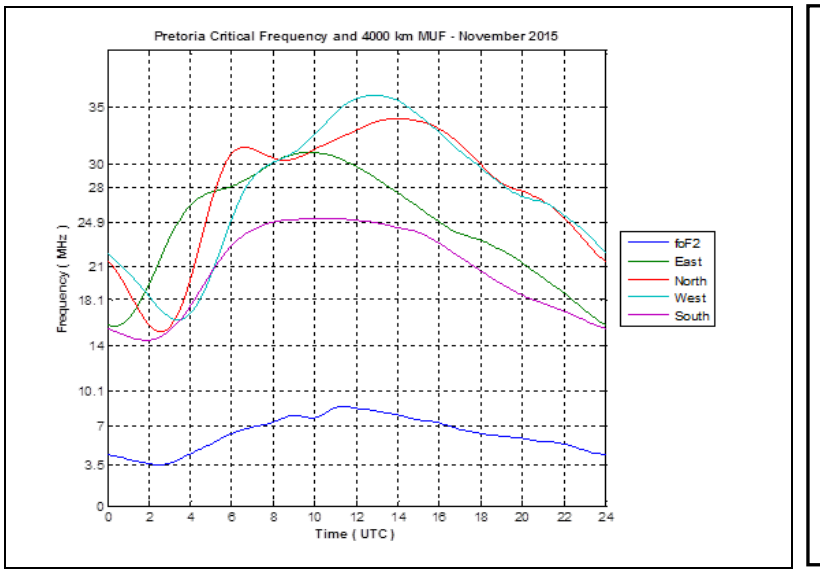
A number of sensors could be built into a repeater and report the condition of the system via the internet connection used for interlinking. These sensors could report on temperature in various parts of the circuitry, report on the standing wave ratio, the output power, the mains voltage and many more. This would alert the club repeater manager of things that could possibly go wrong before it actually does and cause damage. Maintenance can be planned and catastrophic failures prevented resulting in a reduction in unplanned visits to the site.

In the DX-ing sensors can detect when a person is in the radio room and the radio is on, so some one wanting to call is alerted that the person is there and that the receiver is on and which frequency it is tuned to.

Sensors can be installed on HF beacons and send out alerts via the internet when a propagation path is open, enhancing the service that is currently offered by the NCDXF/IARU Beacon Network.

The message that I am really trying to impart is that we should embrace all new technologies even if we may think at this point in time that it has no use in Amateur Radio. Before long you could well be proved wrong. I am convinced the IoT will find its way into amateur radio sooner than later.

Radio Amateurs must embrace the future to remain relevant to society.



Long Term HF Propagation for November 2015

DX Operating

The graph shows the 4000 km maximum useable frequency (MUF) to the East, North, West and South from Pretoria for the first hop using the F2 layer.

Local Operating

The F2 critical frequency (foF2) is the maximum F-layer frequency for short range communications.

See also the Propagation tab at http://www.parc.org.za/

Courtesy Vincent ZS6BTY