



# WATTS 2022-01

Year 92 + 01m

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

✉ PARC, PO Box 73696, Lynnwood Ridge 0040, RSA

🌐 <http://www.parc.org.za> [zs6pta@zs6pta.org.za](mailto:zs6pta@zs6pta.org.za)



**Bulletins : 145.725 MHz : Sundays from 08h45 / Sondae vanaf 08h45**

Relays: 1.840, 3.700, 7.066, 10.135, 14.235, 51.400, 438.825, 1297 MHz  
and Echolink. Activated frequencies are announced prior to bulletins

**Swapshop : 2m and 7.066 MHz live on-air after bulletins**

Bulletin repeats on Mondays / herhalings op Maandae : 2m 19h45

## HAPPY NEW YEAR!

*May joy, peace, and success  
follow you everywhere you go and  
whatever you do. Have a  
wonderful new year with your  
family and friends.*

# 2022



*Birthdaysake24.com*

***The Pretoria Amateur Radio Club hereby wishes all our  
Members, Readers and Bulletin Listeners a Prosperous 2022.  
Die Pretoria Amateur Radioklub wens hiermee aan al ons Lede,  
Lesers en Bulletin Luisteraars 'n Voorspoedige 2022.***

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PARC Committee Meeting /  
PARK Komitee Vergadering

### Club Committee Meeting :

**The next Meeting for the  
2021/2 PARC Committee  
will take place in January  
2022. The date will be  
announced to Members.**

## Birthdays and Anniversaries / Verjaarsdae en Huweliks Herdenkings

### Member's Birthdays January 2022 / Lede Verjaarsdae Januarie 2022

05 Pierre Holtzhausen ZS6PJH  
07 Bertus Viljoen ZS6VIL  
10 Wynand Wessels ZR6WW

12 Gustav Snyman ZS6BWN  
18 DP Du Toit ZR6DP  
21 Albert Screuder ZS6SE

#### Spouse's January 2022 / Gades Januarie 2022

10 Jessica, gade van Ben Greyling ZS6YVC  
15 Moira, gade van Fanus Ferreira ZS6BUH  
18 Zeld, gade van Wynand Wessels ZR6WW  
25 Magriet, gade van Tobie Jansen van Rensburg ZS6ZX

#### Anniversaries January 2022 / Herdenkings Januarie 2022

05 Louise en Alméro Du Pisani ZS6LDP  
11 Judy and Basil Botha ZS6O  
16 Riana en Leon Fouche ZS6LEF  
20 Helga en Hans-Peter Knoepfler ZS6AJS

### Member's Birthdays February 2022 / Lede Verjaarsdae Februarie 2022

02 John Minter ZS6LED  
03 Willie Greyling ZR6WGR  
04 Louis de Wet ZS6SK  
09 Kenny Martin ZS6KMM  
16 De Jager Burger ZS6ZO  
16 Patricia Schneider ZS6XYL

21 Menno Havelaar ZS6AGC  
21 Nickus de Vos ZS6US  
23 Pete Smith-Curren ZS6PJ  
23 Hendri Ehlers ZS6HFE  
28 Basie du Plessis ZR2BA

#### Spouse's February 2022 / Februarie 2022

05 Nicolene, gade van Neels Heydenrich ZS4CFH  
10 Paddy, gade van Kenny Martin ZS6KMM  
23 Erika, gade van Jan (Pine) Pienaar ZS6OB  
24 Adri, gade van Cobus Kruger ZS6TLX  
28 Connie, gade van Jacques Snyman ZS6QS

#### Anniversaries February 2022 / Herdenkings Februarie 2022

03 Heather and Vincent Harrison ZS6BTY  
07 Juanita en Ryan Gibson ZS6GGR  
13 Adri en Cobus Kruger ZS6TLX  
16 Dientie en Pierre Britz ZR6ADZ  
27 Paddy en Kenneth Martin ZS6KMM  
27 Zeld, gade van Wynand Wessels ZR6WW

### PARC Committee Members : 2020 - 2021 / PARK Komiteede : 2021 - 2022

Name & Callsign	Portfolio/s	Email Address	Tel No	Mobile No
Johan de Bruyn ZS6JHB	Chairman, Rallies, Repeaters & Membership	<a href="mailto:zs6jhb@gmail.com">zs6jhb@gmail.com</a>	012-803-9418	079-333-4107
Louis de Wet ZS6SK	Vice Chairman, Watts, SARL & ICASA	<a href="mailto:louis.zs6sk@gmail.com">louis.zs6sk@gmail.com</a>	012-349-1044	072-140-9893
Graham Reid ZS6GJR	Treasurer, Website	<a href="mailto:greid@wol.co.za">greid@wol.co.za</a>	012-667-2720	083-701-0511
Irene Myburgh ZS6IEA	Club Secretary & SARL Bulletins	<a href="mailto:irene.myburgh@outlook.com">irene.myburgh@outlook.com</a>	012-304-5109	082-462-6001

### PARC Co-opted Members : 2019 - 2020 / PARK Ge-koopteerde Lede : 2019 - 2020

Name & Callsign	Portfolio/s	Email Address	Tel No	Mobile No
Alméro Du Pisani ZS6LDP	Flea-markets, SARL Bulletins	<a href="mailto:almero.dupisani@up.ac.za">almero.dupisani@up.ac.za</a>	012-420-3779	083-938-8955
Hans Kappetijn ZS6KR (Hon.)	SARL Bulletins, Swop Shop	<a href="mailto:ORVservices@gmail.com">ORVservices@gmail.com</a>	012-333-2612	072-204-3991
John Minter ZS6LED	RAE Training, Technical	<a href="mailto:john.minter.za@gmail.com">john.minter.za@gmail.com</a>	012-349-0019	083-291-5422
Albert Screuder ZS6SE	Auditor & Taxation	<a href="mailto:albert.screuder.za@gmail.com">albert.screuder.za@gmail.com</a>	012-361-6133	082-562-3825
Pieter Myburgh ZS6PAM	Repeaters	<a href="mailto:wooden@mweb.co.za">wooden@mweb.co.za</a>		076-140-7562

### PARC Membership Fees / PARK Ledegelde

#### PARC SUBS : PARK LEDEGELD : FROM / VANAF : 2021-10-31

Bank	First National Bank	<b>Ordinary Members / Gewone Lede : R160</b> <b>Spouses and Pensioners : R60</b>	<b>Your call sign must appear as statement text!</b>
Branch Code	25 20 45		
Account No	546 000 426 73		

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 oorpasing in die PARC rekening

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

## PARC Sunday Bulletins / PARK Sondag Bulletins

PARC Bulletins are presented on Sunday mornings at approximately 08h45, after the SARL Bulletins in English and Afrikaans, from 08h15. The Bulletin Presenters for the following two months are presented below. Please do contact the applicable presenter beforehand if you wish to make a contribution to the Bulletin. PARC Bulletins are broadcast on the 2-meter repeater on 145.725 MHz, and 70 cm on 438.825 and 439.025 MHz. Relays are done on 7.060 MHz by Hans Kappetijn ZS6KR and on Echolink by Johan Lehman ZS6JPL. A re-broadcast of the Bulletin is done the following Monday evening at 19h45 by Hans ZS6KR.

PARK Bulletins word op Sondagoggende aangebied om 08h45, na die SARL Bulletins in Engels en Afrikaans, vanaf 08h15. The Bulletin aanbieders vir die volgende twee maande word onder aangedui. Kontak gerus die toepaslike Bulletin leser indien u 'n bydrae tot die Bulletin wil maak. PARK Bulletins word uitgesaai op die 2-meter herhaler op 145.725 MHz, en 70cm op 438.825 en 439.025 MHz. Herleidings word gedoen op 7.060 MHz deur Hans Kappetijn ZS6KR, en op Echolink deur Johan Lehman ZS6JPL. 'n Heruitsending van die Bulletin geskied die opvolgende Maandag aand om 19h45, en word behartig deur Hans ZS6KR.

### PARC Bulletin Presenters Schedule / PARK Bulletin Aanbieders Skedule

PARC Bulletin Presenters : January 2022 - March 2022			
Date	Presenter	Date	Presenter
02 January 2022	Alméro Du Pisani ZS6LDP	13 February 2022	Alméro Du Pisani ZS6LDP
09 January 2022	Louis de Wet ZS6SK	20 February 2022	Louis de Wet ZS6SK
16 January 2022	Johan de Bruyn ZS6JHB	27 February 2022	Johan de Bruyn ZS6JHB
23 January 2022	Alméro Du Pisani ZS6LDP	06 March 2022	Alméro Du Pisani ZS6LDP
30 January 2022	Louis de Wet ZS6SK	13 March 2022	Louis de Wet ZS6SK
06 February 2022	Johan de Bruyn ZS6JHB	20 March 2022	Johan de Bruyn ZS6JHB

## **BULLETINS READERS NEEDED**

**PRETORIA AMATEUR RADIO CLUB REQUIRES THE ASSISTANCE OF TWO BULLETIN READERS ON SUNDAY MORNINGS. IF YOU ARE INTERESTED IN BECOMING PART OF THE TEAM PLEASE CONTACT: Louis de Wet: [louis.zs6sk@gmail.com](mailto:louis.zs6sk@gmail.com)**

### PARC Bulletin Listeners Club / PARK Bulletin Luisteraarsklub

Pretoria Amateur Radio Club hereby sincerely thanks all listeners local, provincial and international for their appreciated support during Sunday morning bulletins. We hereby invite all listeners to join the PARC Bulletin Club by sending an email to Louis de Wet at [louis.zs6sk@gmail.com](mailto:louis.zs6sk@gmail.com). If you wish to send a photograph of yourself in your radio shack or a copy of your QSL card, it will be published in Watts. A pdf format certificate of membership will be emailed to you.

## Diary of Contests & Events / Dagboek van Kompetisies en Gebeure

### Contests and Events - January 2022 / Kompetisies en Gebeure - Januarie 2022 (UTC Times)

01	<b>CQ DX Maraton; The SAMOC Straight Key Night</b> <a href="http://www.sarl.org.za">www.sarl.org.za</a>
01	SARTG New Year RTTY Contest: 0800Z - 1100Z
01	AGCW Happy New Year Contest: 0900Z - 1200Z
04	Worldwide Sideband Activity Contest: 0100Z - 0159Z
05	UKEICC 80-Meter Contest: 2000Z - 2100Z
06	NRAU 10-Meter Activity Contest (CW): 1800Z - 1900Z
06	NRAU 10-Meter Activity Contest (SSB): 1900Z - 2000Z
06	NRAU 10-Meter Activity Contest (FM): 2000Z - 2100Z
06	NRAU 10-Meter Activity Contest (Digital): 2100Z - 2200Z
08	RSGB AFS Contest, CW: 1300Z - 1700Z
08	EUCW 160-Meter Contest: 2000Z - 2300Z
09	EUCW 160-Meter Contest: 0400Z - 0700Z
09	DARC 10-Meter Contest: 0900Z - 1059Z
09	NRAU Baltic Contest, CW: 0900Z - 1100Z
10	NRAU Baltic Contest, SSB: 0630Z - 0830Z
11	Worldwide Sideband Activity Contest: 0100Z - 0159Z
14 - 16	<b>PEARS National VHF/UHF Contest:</b> <a href="http://www.sarl.org.za">www.sarl.org.za</a>
15 - 16	Hungarian DX Contest: 1200Z - 1159Z
15 - 16	North American QSO Party, CW: 1800Z - 0559Z
15 - 16	UBA PSK63 Prefix Contest: 1200Z - 1200Z
16	RSGB AFS Contest, Data: 1300Z - 1700Z
18	Worldwide Sideband Activity Contest: 0100Z - 0159Z
20	NAQCC CW Sprint: 0130Z - 0330Z
22 - 23	North American QSO Party, SSB: 1800Z - 0559Z
25	Worldwide Sideband Activity Contest: 0100Z - 0159Z
26	UKEICC 80-Meter Contest: 2000Z - 2100Z
28 - 30	CQ 160-Meter Contest, CW: 2200Z - 2200Z
29 - 30	UBA DX Contest, SSB: 1300Z - 1300Z

### Contests and Events - February 2022 / Kompetisies en Gebeure - Februarie 2022 (UTC Times)

01	Worldwide Sideband Activity Contest: 0100Z - 0159Z <b>(And 08, 15 &amp; 22 Feb)</b>
02	UKEICC 80m Contest: 2000Z - 2100Z
05	<b>SARL VHF/UHF FM Activity Day &amp; Contest:</b> <a href="http://www.sarl.org.za">www.sarl.org.za</a>
06	<b>Antique Wireless Association CW Activity Day:</b> <a href="http://www.awasa.org.za">www.awasa.org.za</a>
05 - 06	10-10 International RTTY Contest: 0001Z - 2359Z
05 - 06	Mexico RTTY International Contest: 1200Z - 2359Z
05 - 06	North American Sprint, CW: 2300Z - 0300Z
07	RSGB 80m Club Championship, SSB: 2000Z - 2130Z
12	RSGB 1.8MHz Contest: 1900Z - 2300Z
13	World Radio Day: <a href="https://en.unesco.org/commemorations/worldradioday">https://en.unesco.org/commemorations/worldradioday</a>
12 - 13	CQ Worldwide RTTY WPX Contest: 0000Z - 2359Z
12 - 13	<b>SARL Field Day Contest: 1000Z - 1000Z</b>
12 - 13	Dutch PACC Contest: 1200Z - 1200Z
12 - 13	<b>AWA Amplitude Modulation QSO Party: 2300Z - 2300Z</b>
13	Balkan HF Contest: 1300Z - 1700Z
16	RSGB 80m Club Championship, Data: 2000Z - 2130Z
t	SARL 40m Club Contest
19 - 20	ARRL International DX Contest, CW: 0000Z - 2400Z
24	RSGB 80m Club Championship, CW: 2000Z - 2130Z
25 - 27	CQ 160-Meter Contest, SSB: 2200Z - 2200Z
26 - 27	REF Contest, SSB: 0600Z - 1800Z

The Pretoria Amateur Radio Club does not accept responsibility for the accuracy of contest details listed above. For verification and more information, please visit the SARL website, [www.sarl.org.za](http://www.sarl.org.za), as well as the WA7BNM international contest calendar at the following website: <http://hornucopia.com>

## Snuffelmark Datums 2022 / Dates of Flea Markets 2022

Flea Market dates for the Pretoria, West-Rand and East-Rand Amateur Radio Clubs for 2022 are listed below. Please contact Alméro Du Pisani ZS6LDP for more information.

### PRETORIA AMATEUR RADIO CLUB

**DATES: 2 April ; 7 May ; 30 July ; 29 October**  
**DATUMS: 2 April ; 7 Mei ; 30 Julie ; 29 Oktober**

CONTACT PERSON: Alméro Du Pisani (T) 083-938-8955 (E) [almero.dupisani@up.ac.za](mailto:almero.dupisani@up.ac.za)



### WEST-RAND AMATEUR RADIO CLUB

**DATES: 19 February ; 28 May ; 27 August ; 19 November**  
**DATUMS: 19 Februarie ; 28 Mei ; 27 Augustus ; 19 November**

CONTACT PERSON: Phillip van Tonder (T) 083-267-3835 (E) [zs6pvt@gmail.com](mailto:zs6pvt@gmail.com)



### EAST-RAND AMATEUR RADIO CLUB

**DATES: 5 February ; 16 June ; 1 October**  
**DATUMS: 5 Februarie ; 16 Junie ; 1 Oktober**

CONTACT PERSON: Judy Pretorius (T) 064-543-7252 (E) [zs6erb@gmail.com](mailto:zs6erb@gmail.com)

## Motor Rallies Dates of Events Tydren Datums



### 2022 S.A National Rally Calendar



Round	Date	Event	Province
1&2	08 - 9 April	Delmas Rally	Mpumalanga
3&4	20 - 21 May	Klipdale Rally	Western Cape
5&6	15 - 16 July	Algoa Rally - Jeffreys Bay	Eastern Cape
7&8	26- 27 August	TBA	TBA
9&10	07 - 08 October	Secunda	Mpumalanga
11&12	17 - 19 November	TBA	TBA

*\* Dates, Event Names and venue's may change due to unforeseen circumstances*



### 2022 African Rally Championship

Round	Date	Event	Country
1	25 - 27 February	COTE De VOIRE - Rally Bandama	Ivory Coast
2	1 - 3 April	Equator Rally	Kenya
3	6 - 8 May	Pearl of Africa Rally	Uganda
4	22 - 24 July	Rally of Tanzania	Tanzania
5	23 - 25 September	Mountain Gorilla Rally	Rwanda
6	21 - 23 October	Zambia International Rally	Zambia
7	17 - 19 November	TBA	-

WRC SAFARI RALLY			
	24 - 26 June	WRC Safari Rally	Kenya

For More Rally information please contact Johan de Bruyn ZS6 JHB at:  
079-333-4107 or [zs6jhb@gmail.com](mailto:zs6jhb@gmail.com)

## The ZS6BVR Island Board: an alternative to the Dirty Board

At the recent PARC AGM a member asked about my alternative to the Dirty Board, so I decided to publish this in Watts. I also wanted to make this relevant for Higher frequencies, so I added a section on how I created Strip Lines for working at microwave frequencies.

The idea of making a board that you can solder your components without printing a PC Board and without drilling holes for the components is not new.

### The Dirty Board

Here you sacrifice a piece of PB Board and cut it into squares and glue them on top of the PC Board so that the PC board becomes the Ground plane and the components are soldered between the Ground plane and the blocks glued to the board.



One of the disadvantages of the Dirty Board is that you have to sacrifice another PC Board to make the blocks you glue onto the board these blocks can break off.

### Another Type of Dirty Board

An evolution of the dirty Board is to cut out the blocks with a Stanley Knife Now you are not sacrificing a board to make blocks.



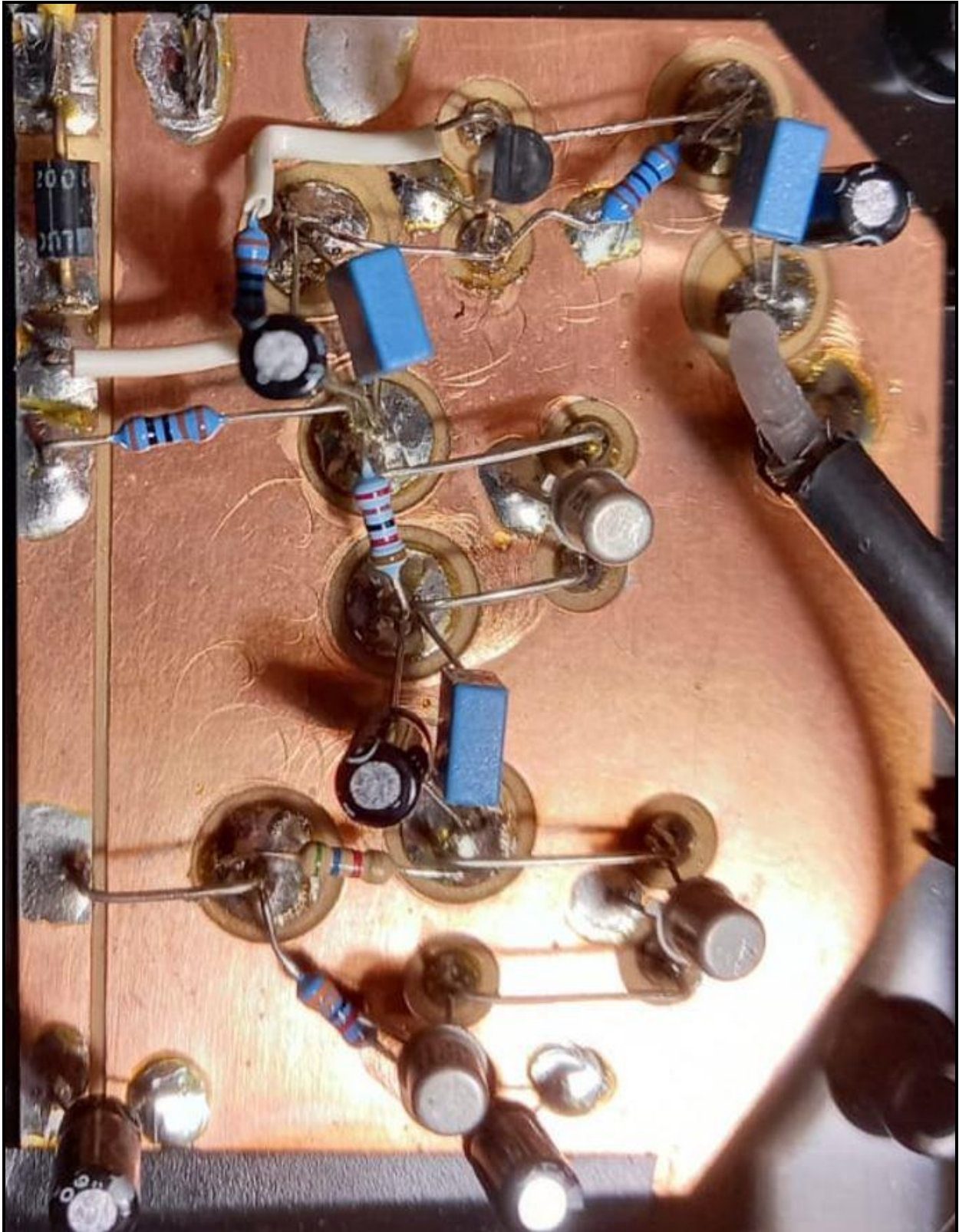
The problem with this approach is the effort it takes to cut the tracks and it does not look good to the eye.

## Introducing the ZS6BVR Island Board

Here we use a range of Diamond Tipped Circular drill bits to cut Islands on the board. These are much neater and if you use a Drill press you can position the holes accurately on the board.

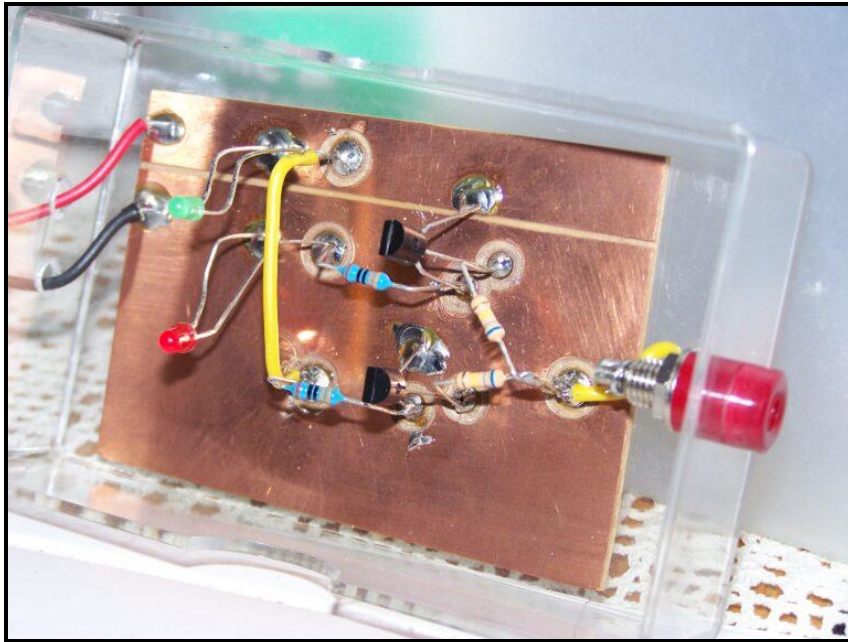
For making prototype boards I use SRBP (synthetic resin bonded paper) PC Boards these are cheap and easy to work with.

The following picture is a closeup showing the Islands.





Examples of project prototype made using the ZS6BVR Island Board



The Logic Probe prototype



The High Frequency Noise Generator

## How to make ZS6BVR Island Boards

You will notice I have used a Hacksaw and placed the PB Board in a miter box to cut a neat horizontal line on the PCB.

This is done to provide a positive power rail with a series diode for polarity protection. The PCB is placed in a Miter Box and then you proceed to saw a straight line on the side of the PCB to provide a power rail. I then also make a gentle cut or drill an island to be able to put a diode in series with the power rail.



I use 6mm, 8mm, and 10mm torque Craft Diamond core Drill Bits  
I did find the 6mm s bit small should replace it with a 12mm drill bit.

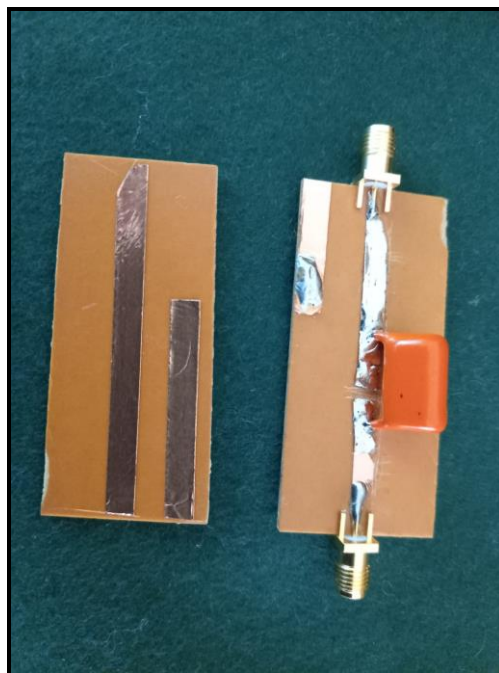


## Microwave Boards

The ZS6BVR Island Board is fine for frequencies up to VHF.

But for Higher frequencies up to 1GHz I started making Strip Line Transmission lines  
I found that for 50 Ohms Impedance you need 3mm Strip Lines.

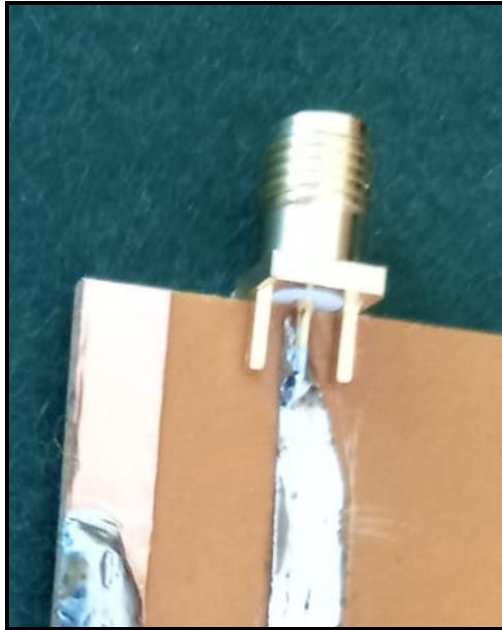
What you do is stick a length of copper tape on the back of the PCB and use a VNA (Vector Network Analyzer) to measure the impedance of the transmission line terminated in a precision 50 Ohm Termination plugged into the SMA Connector.



Unfortunately, I could only get 5mm copper Tape from Communica so I started cutting a few half millimeters till I got a dot in the centre of the Smith Chart or the smallest arc.

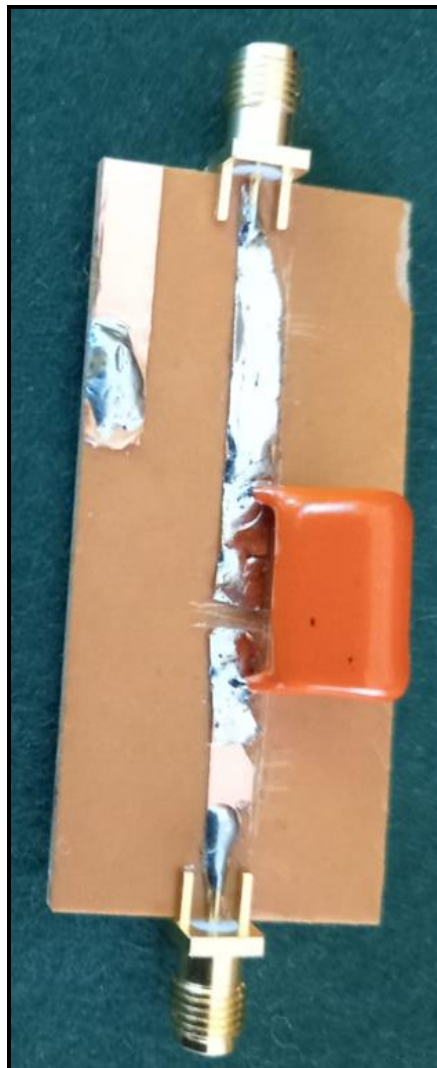
**Tapering the board to get a better impedance match**

I did also taper the as seen below and a VSWR of 1.01 all the way up to 1 GHz

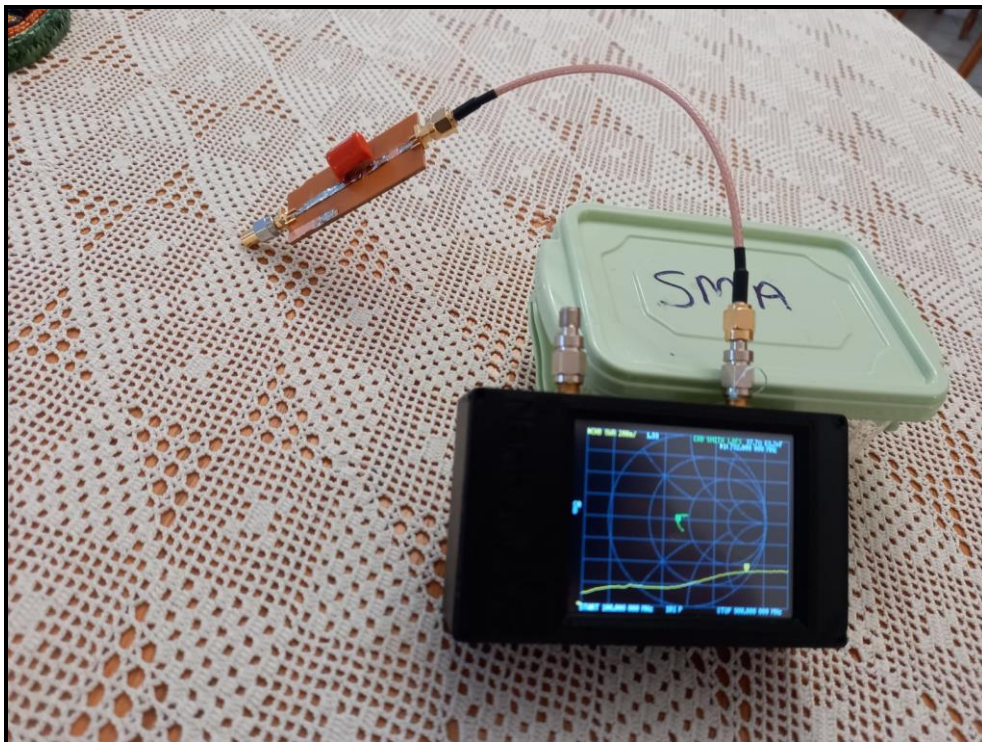
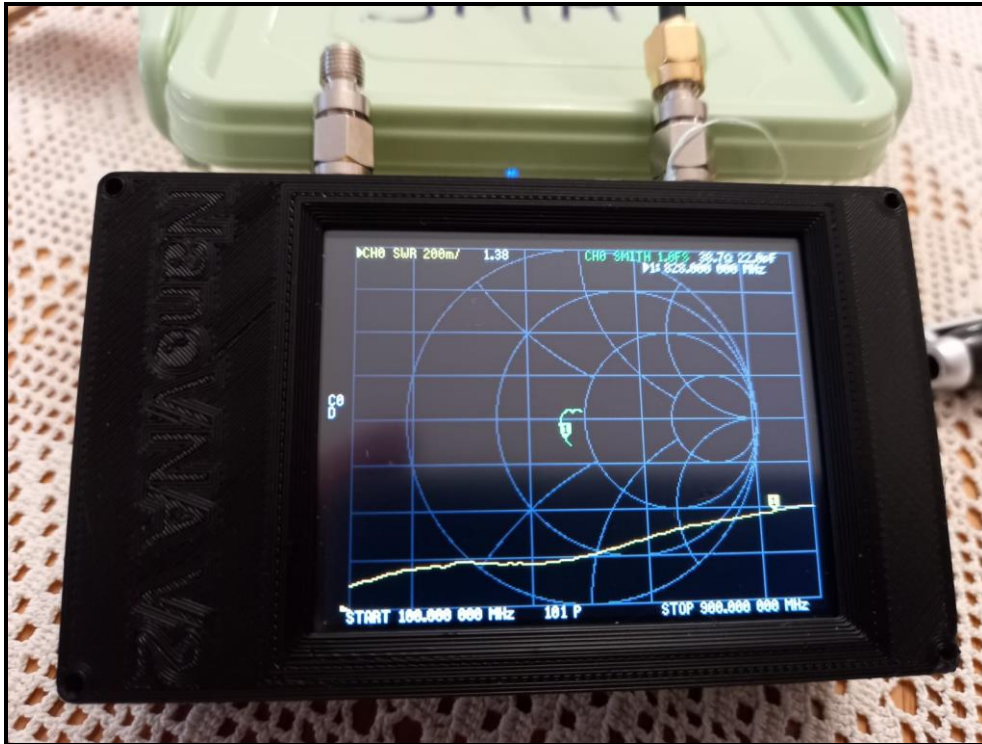


**Making a DC Block for the NANO VNA and the Tiny SA**

Inserting a 100Nano Farad Capacitor in the transmission line



I got a VSWR 1.38 at 828MHz on the yellow line (the component leads start becoming Inductive). This will work from 180M to 70cm



Making this measurement on the Nano VNA

Please Visit the ZS6BVR Web site for more articles like this one

<https://zs6bvr.wordpress.com/>

If someone has 3mm Copper tape I would love to have a meter or that.

73 de Nico

ZS6BVR

## Levels of South African Reservoirs: By Louis de Wet ZS6SK

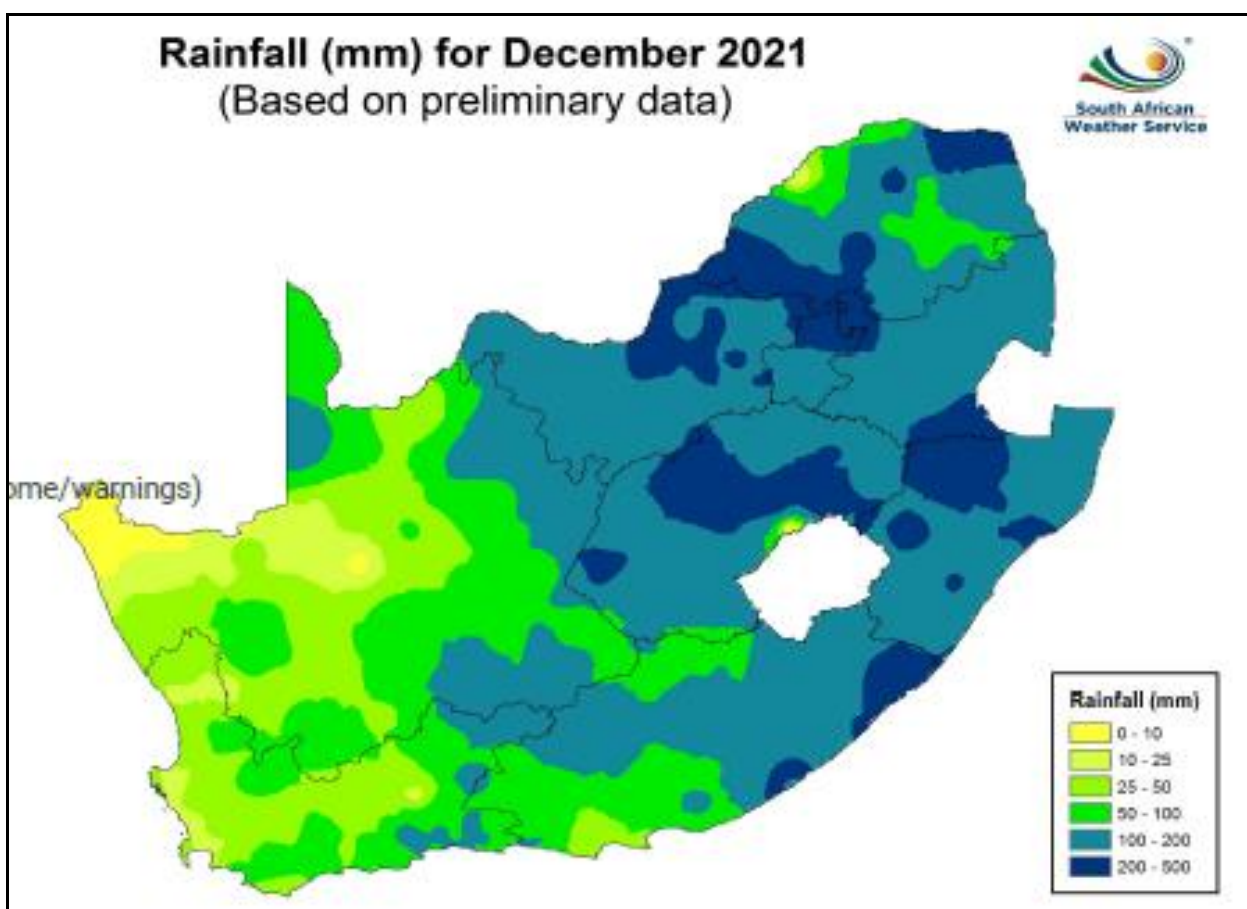
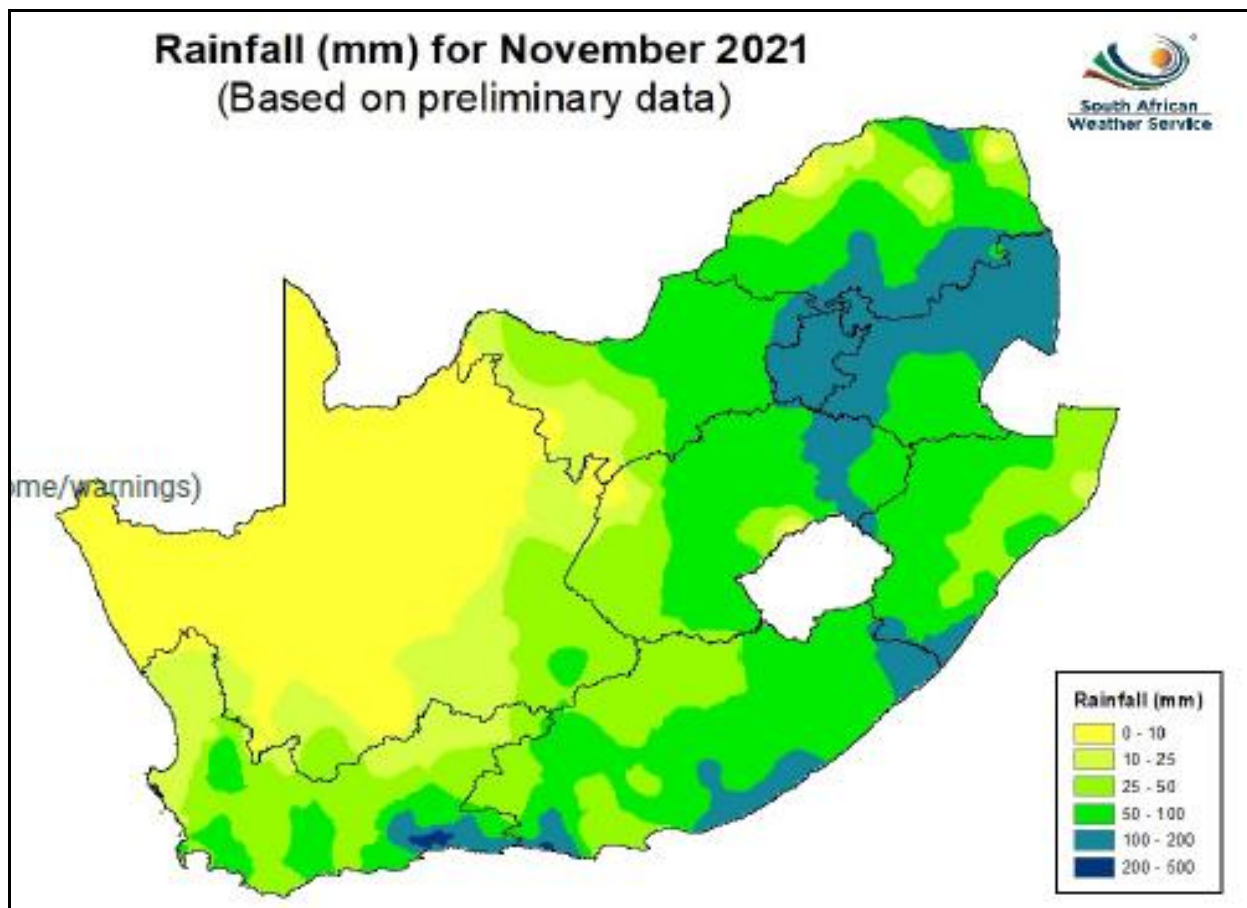
The current summer rainfall season has resulted in exceptional amounts of rain over most part of the country from October 2021 to currently in January 2022. Subsequently the majority of our water storage reservoirs have benefited tremendously and a large number of reservoirs have been overflowing the past month. On the 1<sup>st</sup> of January my wife and I spend the day in Parys having a nice lunch next to the Vaal River which was flowing quite rapidly. We decided to return home via Deneysville and Heidelberg, crossing the road downstream of the Vaal Reservoir dam wall. The sight of two sluices opened and the thundering sound of water released was indeed a pleasant experience.



**Photo taken by the author on the 1<sup>st</sup> of January 2022**

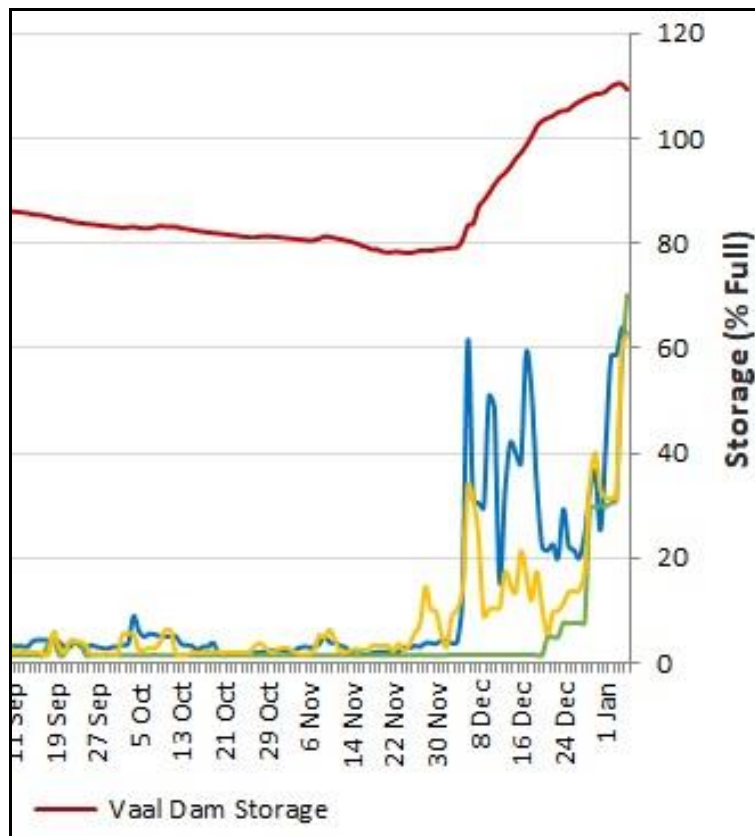
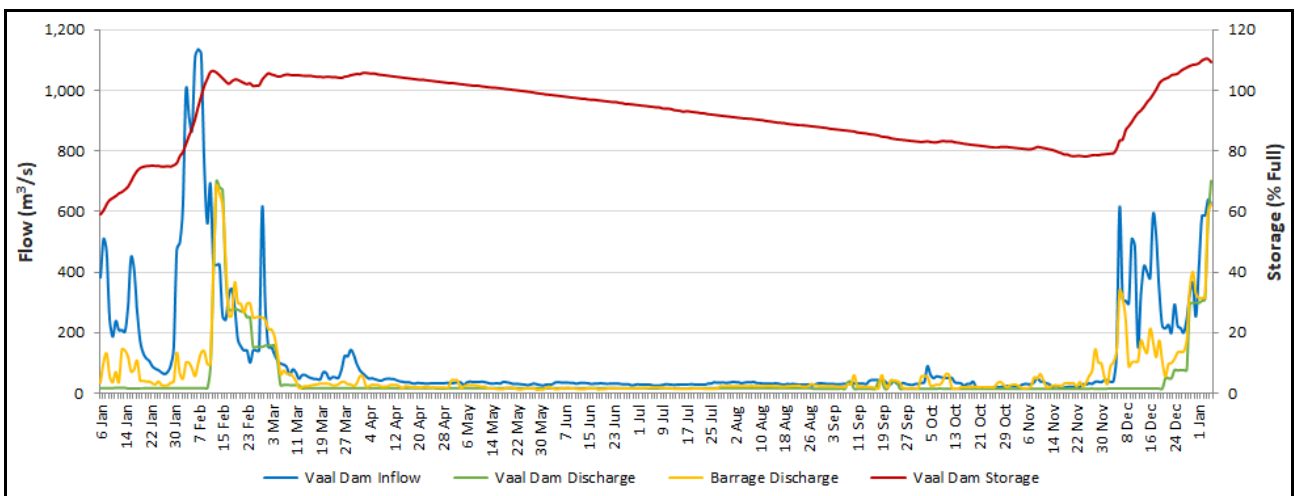
Rainfall data and maps produced by the South African Weather Service show above average rainfall figures during November and December 2021, which is continuing at the same amounts during January 2022. During November 2021 a large part of the country received between 50 - 100 mm of rain (Maps on next page), while the entire Gauteng, parts of Limpopo, Mpumalanga and Kwazulu-Natal received between 100 - 200 mm for that month. A dramatic increase in rainfall was experienced during December 2021, with the central and eastern provinces of South Africa receiving between 100 - 200 mm for the month, and northern Gauteng, parts of the Limpopo, North-West, Free-State and Kwazulu-Natal receiving between 200 and 500 mm of rain.

Source: <https://www.weathersa.co.za/>



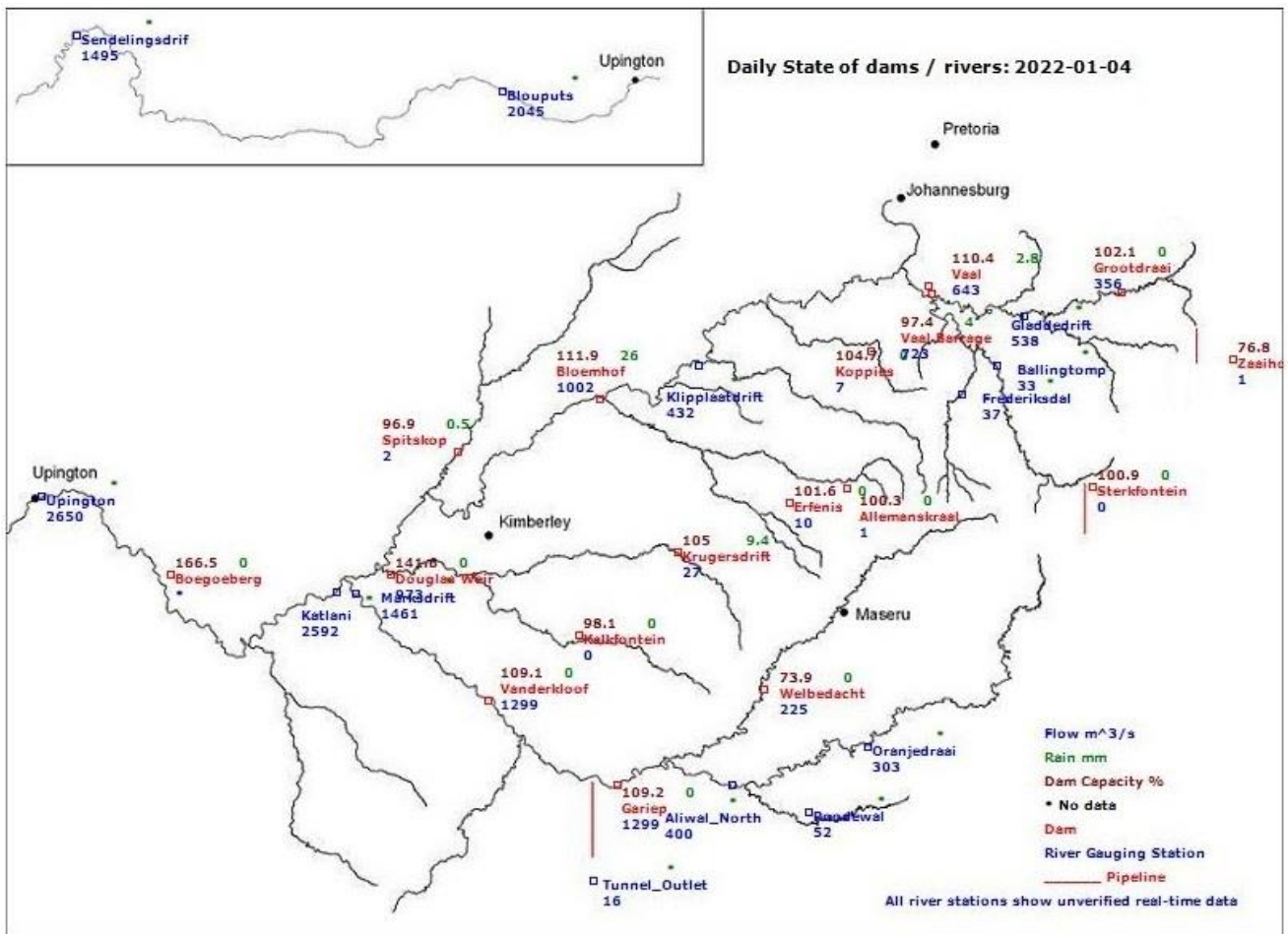
Rainfall maps produced by the South African Weather Service for November and December 2021. Source: <https://www.weathersa.co.za/>

The Reservoir website (<https://www.reservoir.co.za/>), which is a water resource information centre for the catchment forums that operate within the Vaal Barrage and Vaal Dam catchments of the Upper Vaal Water Management Area (WMA), provides daily information on water inflow to and outflow from the Vaal Dam, which is the major source of potable water to Gauteng. During 2021, the storage capacity of this dam was surpassed during February and December, when levels reached higher than 105%. During February 2021, inflow to the Vaal Reservoir reached a peak of approximately 1150 m<sup>3</sup>/s (cubic meters per second), levelling down to a base flow of less than 40m<sup>3</sup>/s during March 2021. The subsequent winter months of 2021 showed the storage level of the Vaal Reservoir to decrease to slightly less than 80%. Subsequent higher rainfall during November and December 2021, resulting in inflow volumes between 202 m<sup>3</sup>/s (2021-12-27) to 640 m<sup>3</sup>/s (2022-01-04) caused the storage volume to reach 110% early in 2022. Currently, four sluices are open at the Vaal Reservoir to release excess amounts of water down the Vaal Barrage.



Data produced by the Department of Water and Sanitation (DWS) reflect the storage capacity levels of reservoirs or dams for all provinces, which can be accessed from their website: <https://www.dws.gov.za/Hydrology/default.aspx>

The map below shows the capacity levels of all major reservoirs from the Grootdraai and Sterkfontein Dams in the east, Gariep Dam in the South, Vaal- and Bloemhof Dams located centrally in the Vaal catchment area, to the Boegoeberg Dam near Upington the west.



According to data from the DWS, the Free State province, which is the major supplier of water to Gauteng, which houses the most inhabitants in South Africa, contains the largest amount of reservoirs (21) and three of the largest reservoirs in South Africa, being the Gariep Dam, with a Full Storage Capacity (FSC) of 4903,5 million cubic meters (4,904 km<sup>3</sup> or cubic kilometers), Sterkfontein Dam (2617,0 Mm<sup>3</sup>), Vaal Dam (2603,5 Mm<sup>3</sup>), and the Vanderkloof Dam (3092,4 Mm<sup>3</sup>) (DWA).

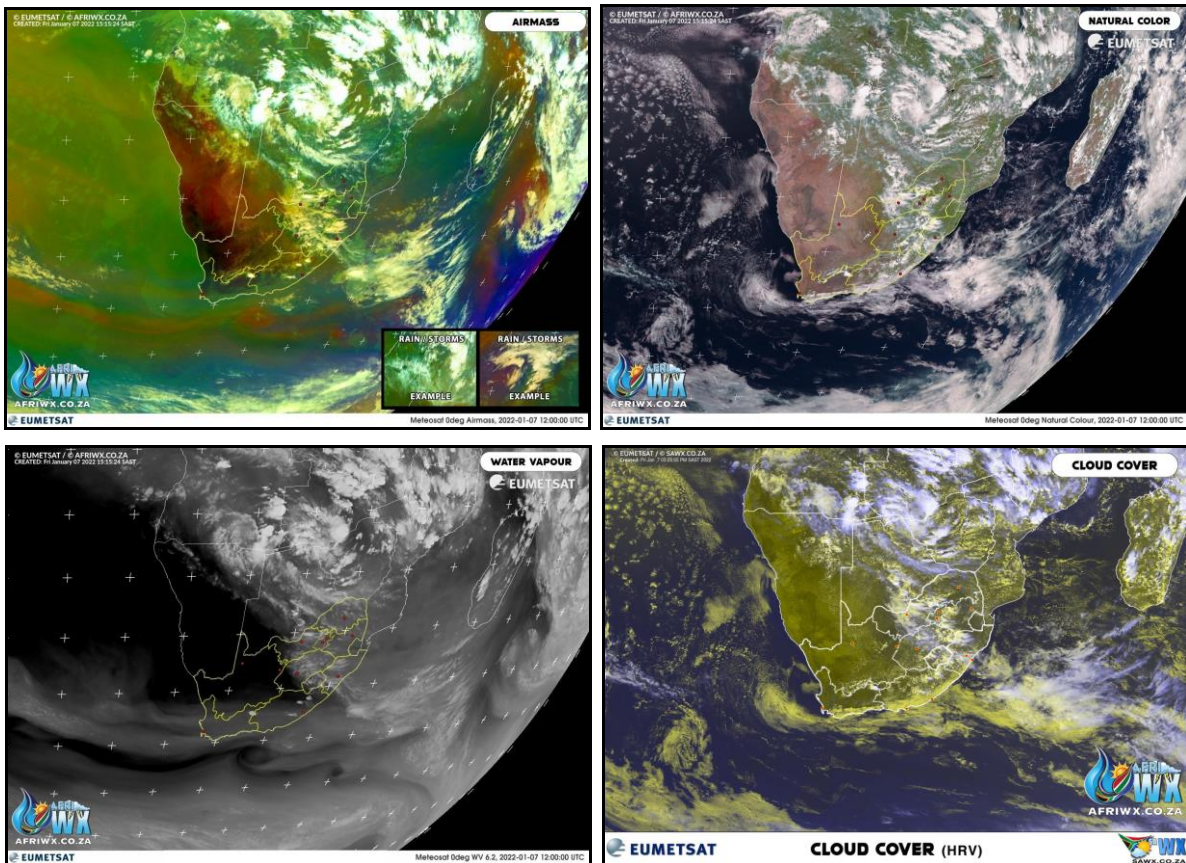
The Table on the next page provides summarized information on the total Full Storage Capacity figures for all reservoirs in each of the provinces. In addition, current (January 2022) capacity levels are compared with the average for 2021. The total FSC for the Free State province for all storage reservoirs is 15 657,4 Mm<sup>3</sup>, followed by Kwazulu-Natal (4912,2 Mm<sup>3</sup>) and Mpumalanga (2538,6 Mm<sup>3</sup>), which are the top three provinces. It is interesting, yet disturbing to note that Gauteng, which houses the largest population in South Africa, only has five storage reservoirs with a total FSC of 128,1 Mm<sup>3</sup>!



Province	Full Supply Capacity (million m <sup>3</sup> )	Average Provincial Levels of Reservoirs (%)	
		January 2022	2021
Limpopo	1486,1	86,8	61,0
Northwest	867,3	73,0	63,8
Gauteng	128,1	101,9	96,8
Mpumalanga	2538,6	90,8	66,5
Northern Cape	147,3	103,9	96,3
Free State	15657,4	108,0	81,4
Kwazulu Natal	4912,2	74,9	59,6
Eastern Cape	1824,4	61,1	50,8
Western Cape	1865,7	86,9	71,3
<b>Total &amp; Averages</b>	<b>29427,1</b>	<b>87,5</b>	<b>71,9</b>

Comparing the average provincial capacity levels for 2021 with January 2022, it is good to note that all provinces have experienced significant increases in reservoir water levels, with three provinces starting 2021 with average levels higher than 100%. However, yearly data is compared with one good month of water levels, and should not be misinterpreted. It only places the country in a good start-off position for winter months which are approaching. It does not give us the ticket to be wasteful with water, and only emphasizes the practice of water conservation, even under current circumstances where our glasses are full.

Another website which provides a large amount of useful weather and reservoir information is the South African Weather Forecast site: <https://sawx.co.za/> . Interesting real-time satellite photographs (below) at different wavelengths (natural light and infrared) are available showing different aspects such as convection and severe storms, precipitation estimates and cloud tops, cloud cover and others.



Source of photographs: <https://sawx.co.za/>

## Long Term HF Propagation for October 2021: Courtesy Vincent Harrison ZS6BTY

The graph below shows the predicted F-layer Maximum Usable Frequency (MUF) for propagation from Pretoria<sup>[1]</sup> using monthly sunspot numbers from SILSO<sup>[2]</sup>.

**Local Propagation (up to 500 km):** The F or F2 critical frequency ( $f_oF_2$ ) is the MUF for short range, near vertical incidence sky-wave (NVIS) propagation.

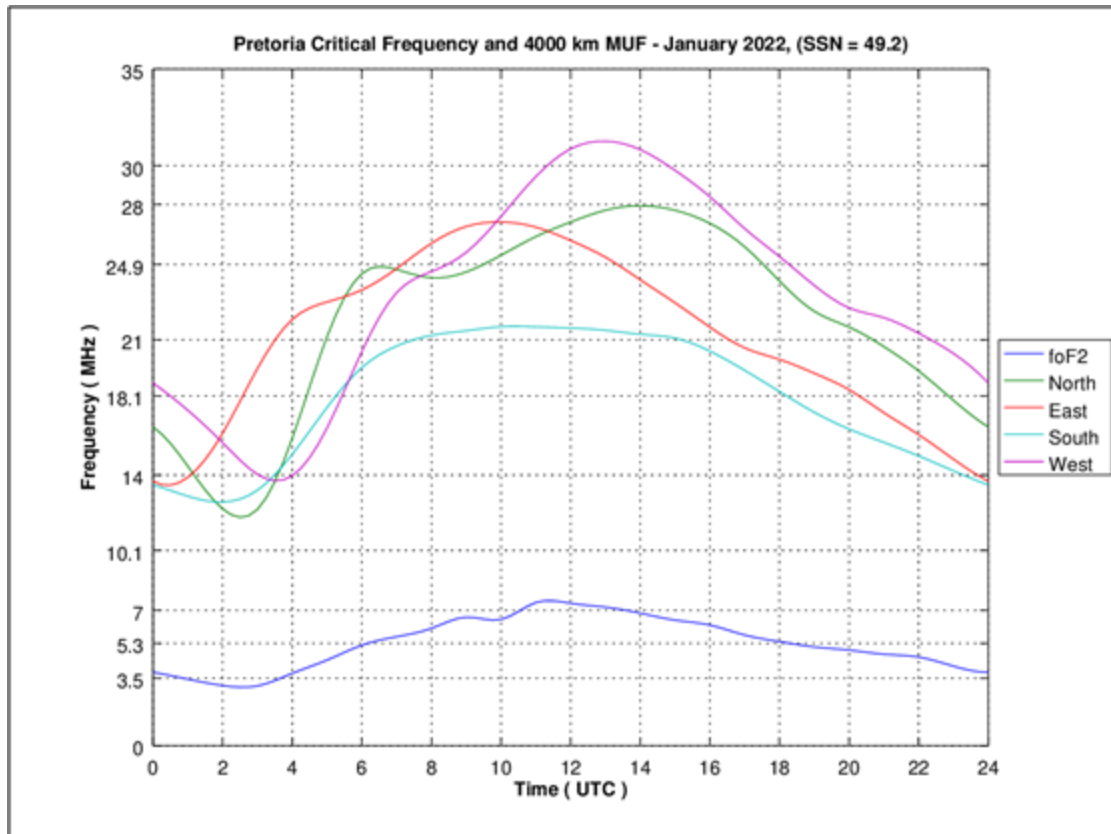
**Long Distance Propagation:** The MUF for a first hop of 4000 km in the cardinal directions is labeled North, East, South and West. They indicate the direction that propagation may be expected.

**Worldwide Propagation Maps:** <http://www.parc.org.za/index.php?page=propagation>

"Prediction is difficult, especially when dealing with the future". . . Danish Proverb. 73 Vincent, ZS6BTY

<sup>[1]</sup>FTZMUF2: A simple method of estimating the ionospheric parameters of  $f_oF_2$  and  $M(3000)$  with the aid of a home computer - Thomas Damboldt and Peter Süßmann, Deutsche Bundespost, December 1988.

<sup>[2]</sup> Silso 12-month forecasts of the monthly sunspot number ( <http://sidc.oma.be/silso/FORECASTS/prediML.txt>)



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