

Drought Status in South African Citrus Industry



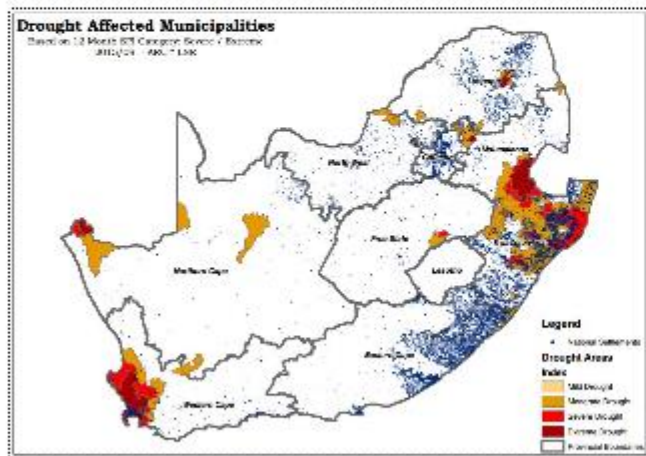
**Compiled by John Edmonds and Thembeke Meyiwa
August 2016**

Photo: Dr Graham Barry (Sept. 2016)

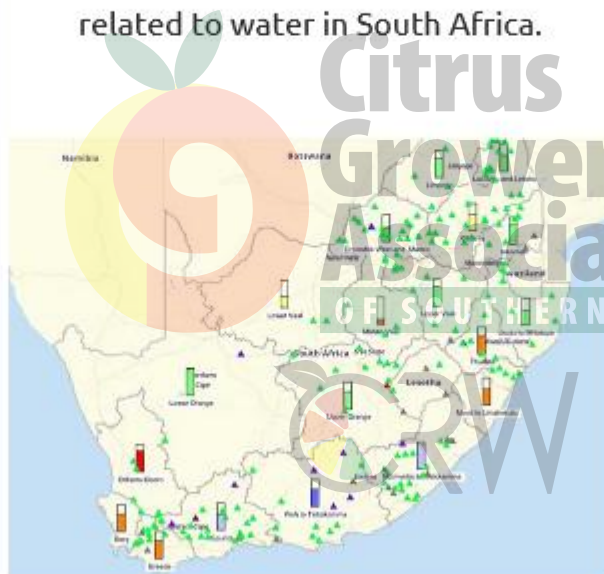
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Drought Resources

NIWIS Drought Status and Management: This page from DWS provides resources from the NIWIS dashboard about the drought status, including dam levels, rainfall, interventions, and status reports.



DWS NIWIS dashboard: The DWS National Integrated Water System contains numerous informative data-sets related to water in South Africa.



African Flood and Drought Monitor: Developed at Princeton University and provides interactive maps for monitoring various drought- and flood-related parameters updated by African officials.



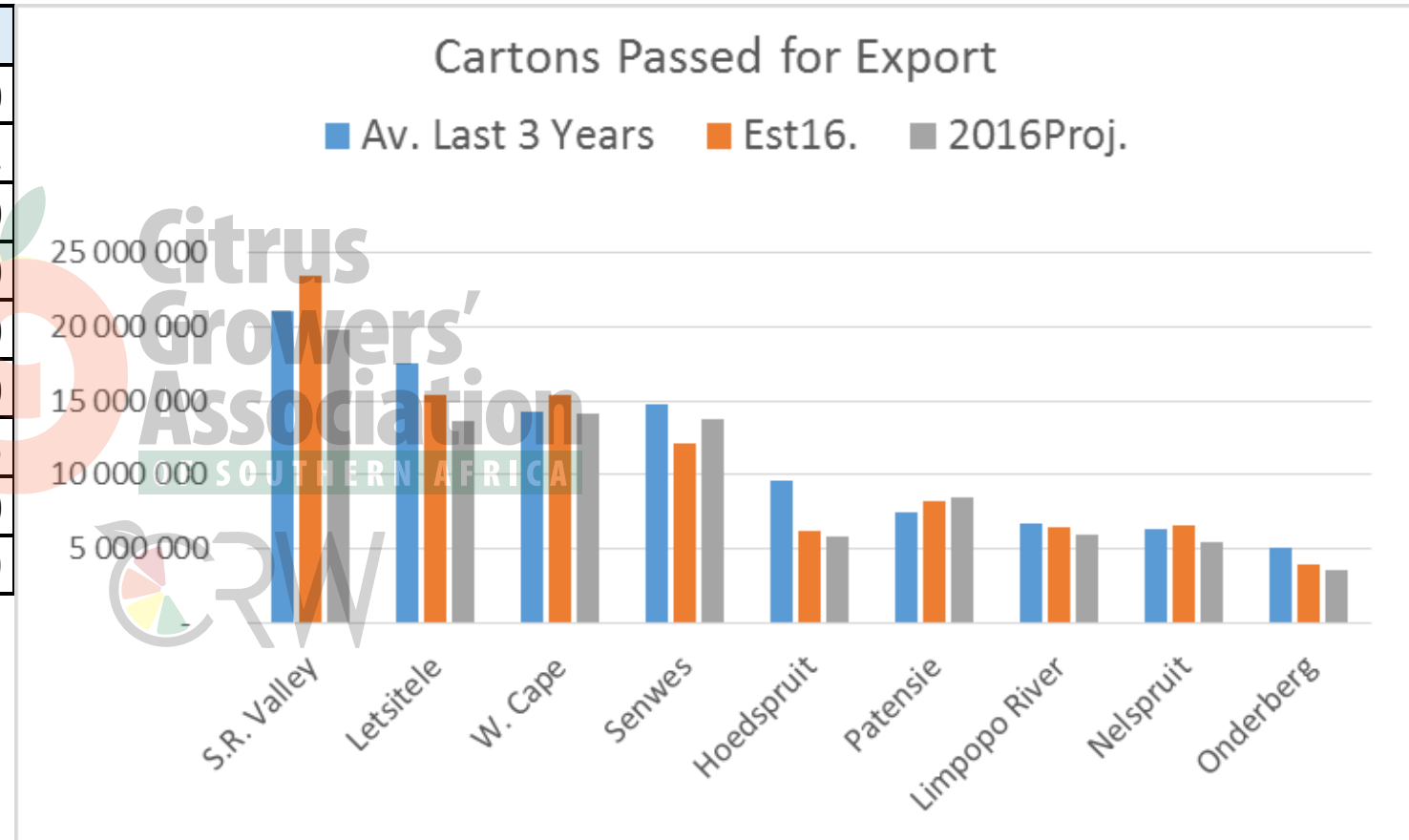
<http://www.droughtsa.org.za/links-downloads/links.html>

<http://www.droughtsa.org.za/>

<http://niwis.dwa.gov.za/niwis2/DroughtStatus>

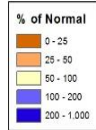
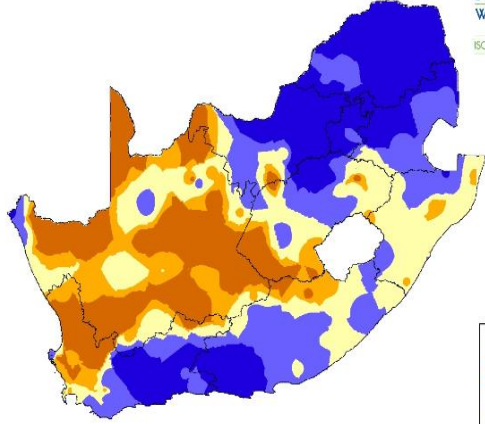
Cartons passed for Export main CGA Regions

Region	Av. Last 3 Years	Est16.	2016Proj.
S.R. Valley	21 016 948	23 505 000	19 838 000
Letsitele	17 524 724	15 423 000	13 671 061
W. Cape	14 218 432	15 355 820	14 130 000
Senwes	14 760 053	12 114 899	13 786 910
Hoedspruit	9 588 242	6 199 800	5 865 000
Patensie	7 393 252	8 253 122	8 428 000
Limpopo River	6 678 316	6 396 867	5 999 525
Nelspruit	6 302 352	6 549 046	5 404 000
Onderberg	5 026 451	3 877 516	3 491 929

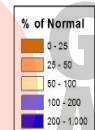
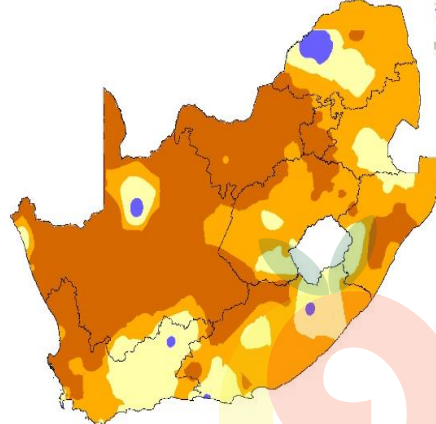


South Africa Rainfall Sep to Dec 2015

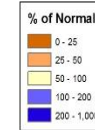
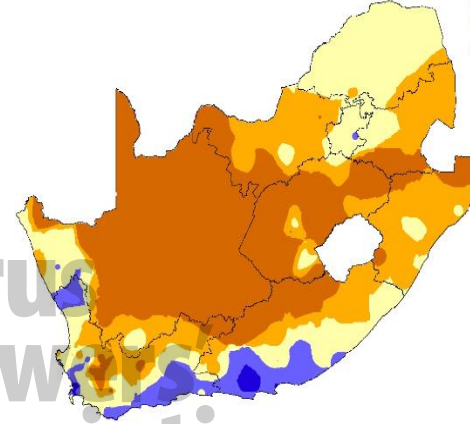
Percentage of Normal Rainfall for September 2015
(Based on preliminary data. Normal period 1981-2010)



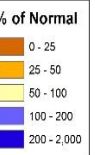
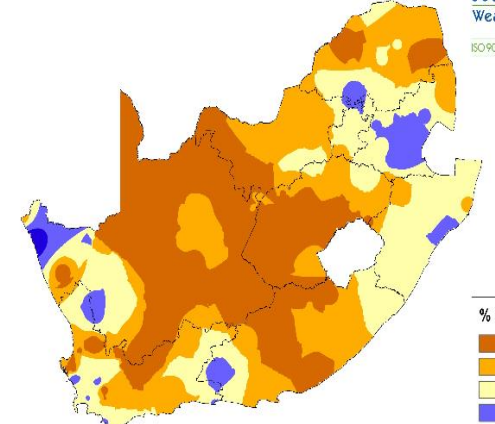
Percentage of Normal Rainfall for October 2015
(Based on preliminary data. Normal period 1981-2010)



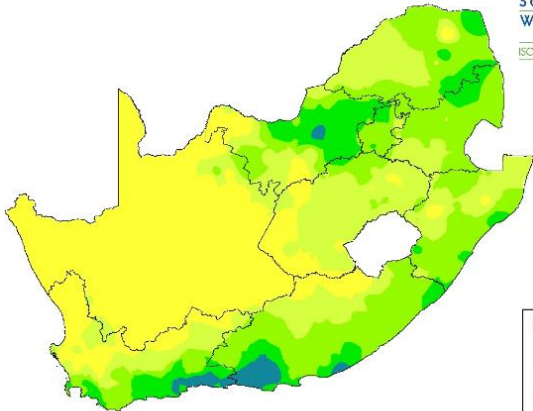
Percentage of Normal Rainfall for November 2015
(Based on preliminary data. Normal period 1981-2010)



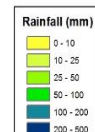
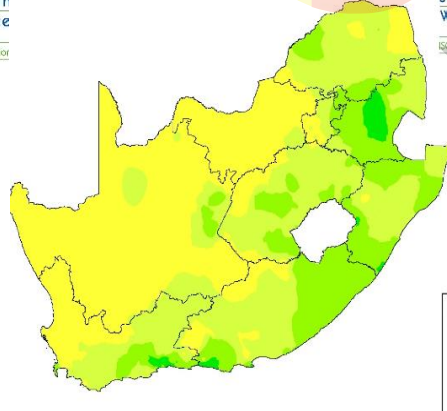
Percentage of Normal Rainfall for December 2015
(Based on preliminary data. Normal period 1981-2010)



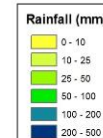
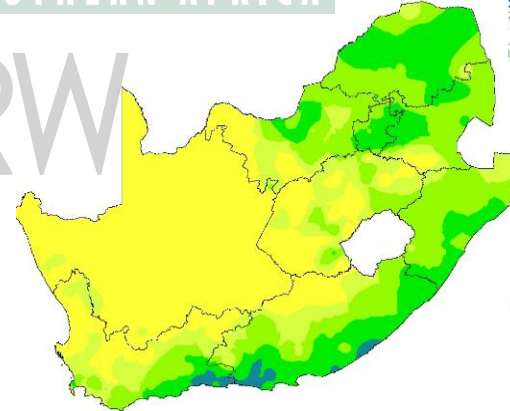
Rainfall (mm) for September 2015
(Based on preliminary data)



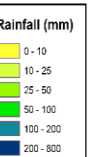
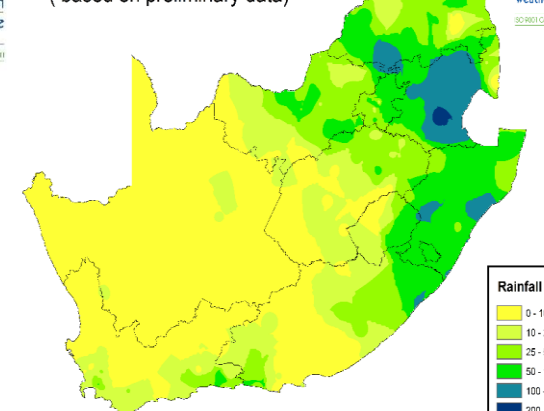
Rainfall (mm) for October 2015
(Based on preliminary data)



Rainfall (mm) for November 2015
(Based on preliminary data)



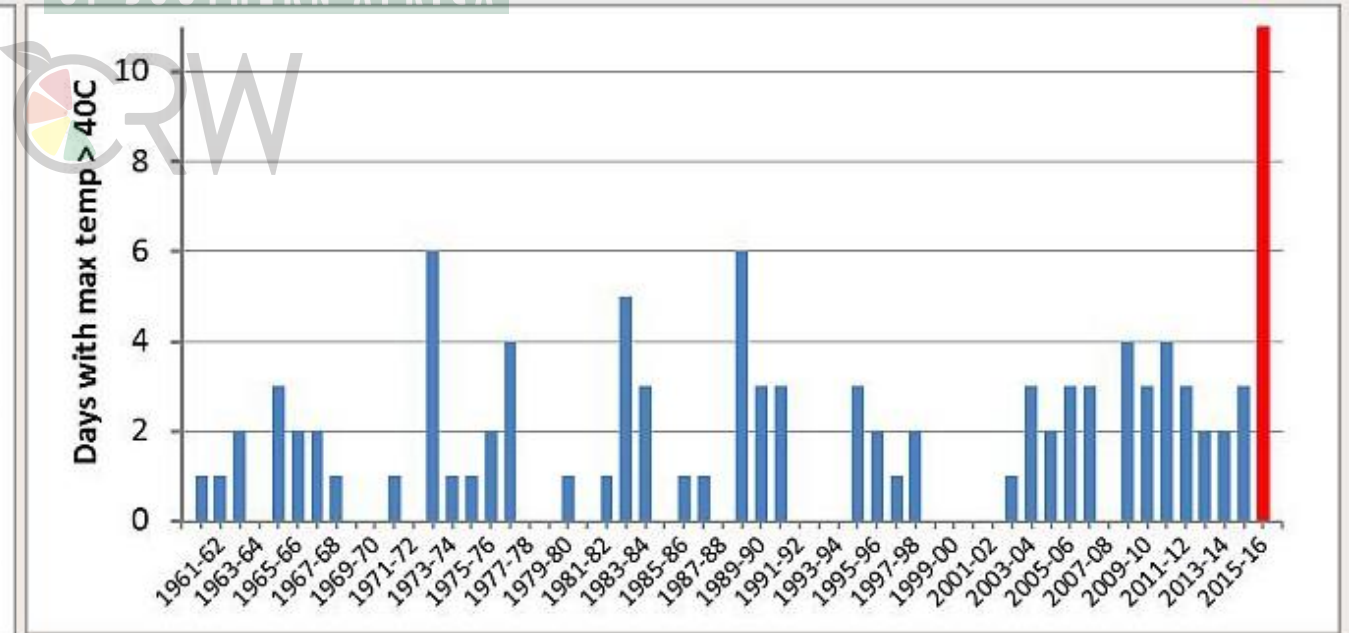
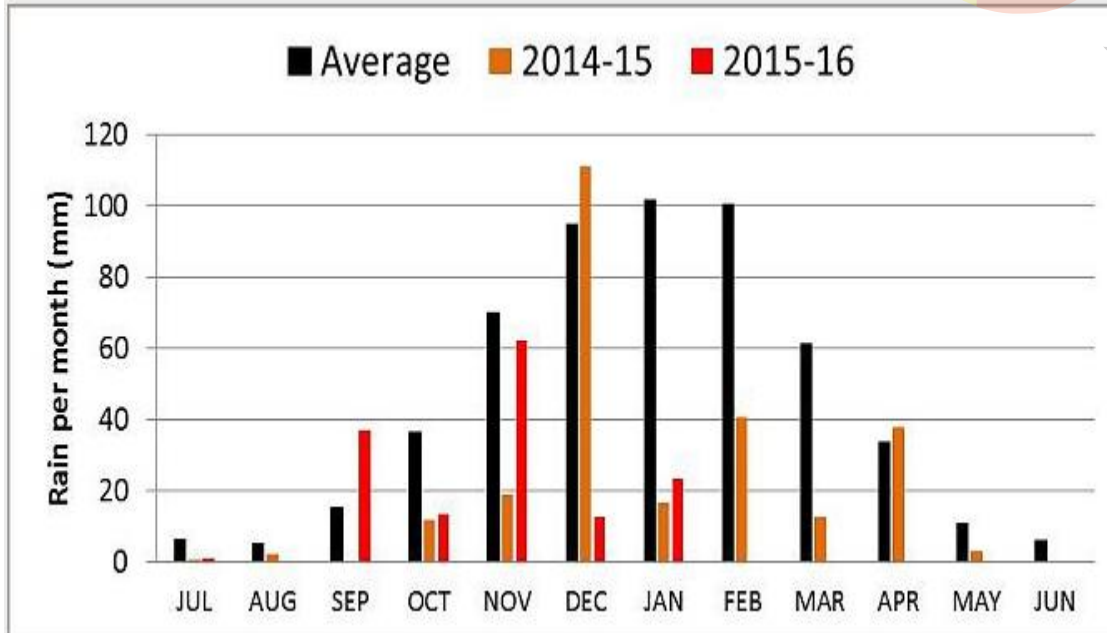
Rainfall (mm) for December 2015
(based on preliminary data)



Narrative on Northern Regions

Climatological data for Phalaborwa provides an example of the severity of the current drought. The **2014-15 rainfall year was one of the driest on record**, with just **255 mm** of rain recorded compared to the long-term average of **533 mm**. So far, the 2015-16 summer is turning out to be even drier, with all months except one receiving below-average rainfall. Over the past 12 months, only two have received average or above-average rainfall. Two consecutive years of such low rainfall is extremely rare in the highly erratic rainfall history of Phalaborwa. The last time this occurred was in the severe drought of 1982 to 1984. The combined rainfall for those two years was 602 mm, while the current two-year total is just 404 mm. Given that the long-range forecasts are for continued below-average rainfall for the next few months, it is unlikely that the current two-year total will catch up to the 662 mm of 1982-1984, meaning that **this drought will go down as the most severe in Phalaborwa since record keeping began in 1954**. Extreme heat is also contributing to the severity of the drought, with an **unusually large number of very hot days that result in greater evaporation** of the little rain that has fallen. The graph below shows the number of days that maximum temperatures have exceeded 40 degrees C for each summer since 1960-61.

(Source: <http://www.saeon.ac.za/enewsletter/archives/2016/february2016/doc02>)



Current State of Important Dams for South African Citrus

Provincial State of Dams

Hydrological data from Department of Water and Sanitation:

19 August 2016

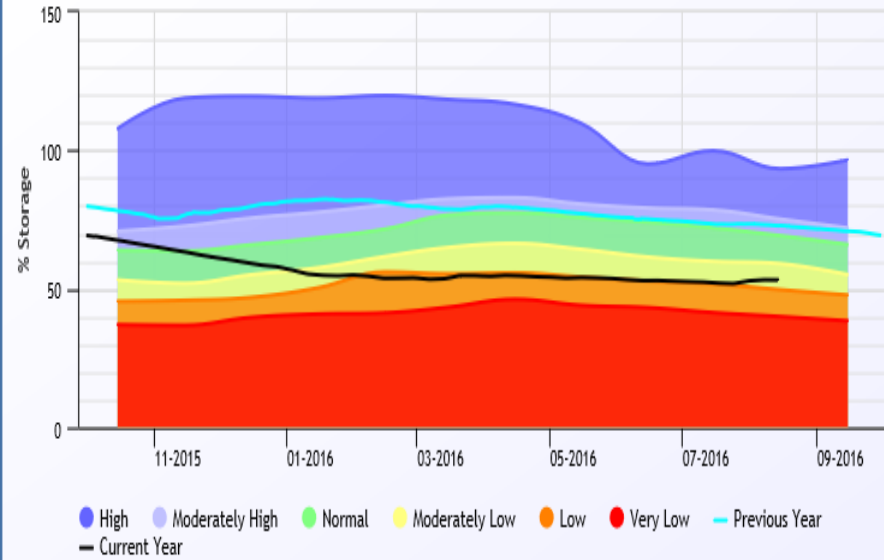
Dam	River	FSC	This Week	Last Week	Last Year	Province	CGA Reg
Binfield Dam	Tyume River	36.9	94.1	94.2	100	E.Cape	E. Cape Midlands
Katrivier Dam	Kat River	24.7	98.2	100.7	100.3	E.Cape	E. Cape Midlands
Kouga Dam	Kouga River	126	67.1	67.1	100.2	E.Cape	Patensie
Waterdown Dam	Klipplaat River	37.5	100.1	100.3	100.4	E.Cape	E. Cape Midlands
Flag Boshielo Dam	Olifants River	185.2	24.3	25	74.3	Limpopo	Hoedspruit
Nzhelele Dam	Nzhelele River	51.3	22.5	23.2	64.3	Limpopo	LimpopoRiver
Tzaneen Dam	Groot-Letaba River	156.6	26.2	27.3	61	Limpopo	Letsitele
Blyderivierpoort Dam	Blyde River	54.4	58	59.6	89.2	Mpumalanga	Hoedspruit
Kwena Dam	Krokodil River	158.9	33.8	34.7	89.9	Mpumalanga	Nelspruit
Loskop Dam	Olifants River	361.6	54.1	54.8	86	Mpumalanga	Senwes
Gariep Dam	Orange River	5196.1	54.6	53.1	70.1	OFS	Sunday's River
Berg River Dam	Berg River	127.1	63.7	61.3	84.5	Western Cape	Boland
Brandvlei Dam	Lower Brandvlei River	286.1	46.8	44.7	52.3	Western Cape	Boland
Buffeljags Dam	Buffeljags River	4.6	100.8	101.4	101	Western Cape	Boland
Clanwilliam Dam	Olifants River	122.5	97	99.4	78.6	Western Cape	Western Cape

Means latest available data

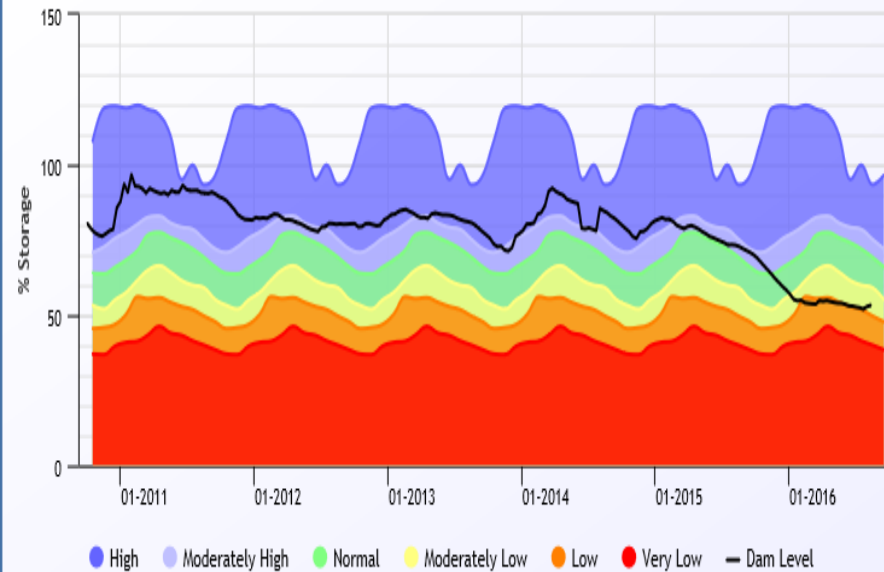
FSC is full storage capacity in million cubic meters

South Africa

Surface Water Storage (National)

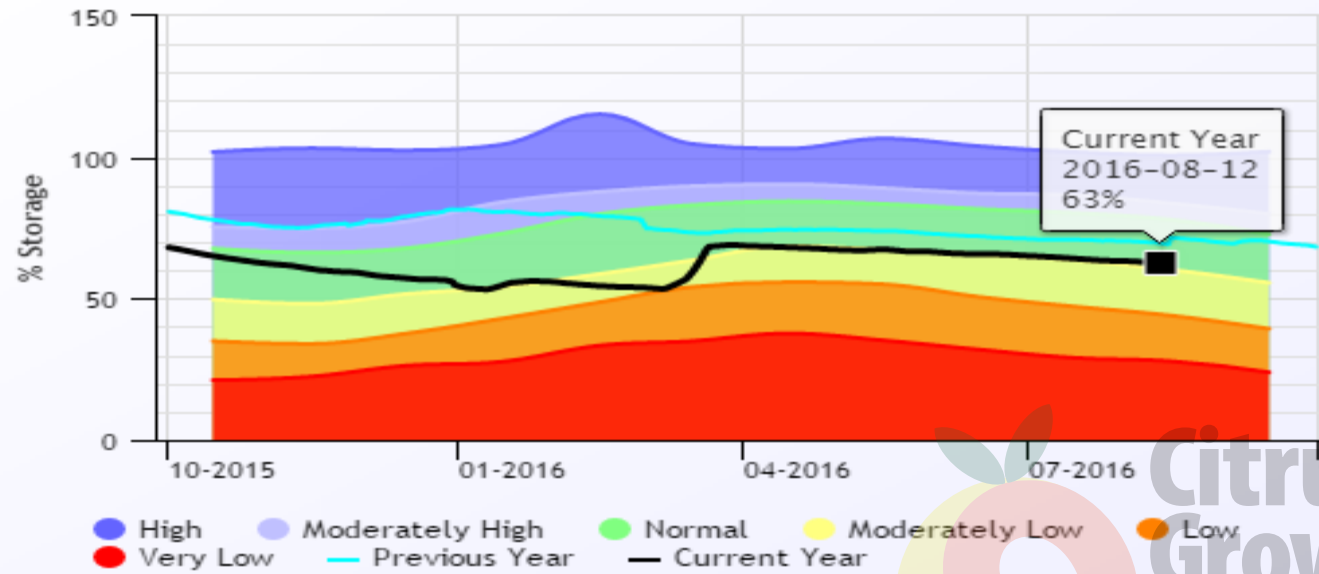


Surface Water Storage (National)

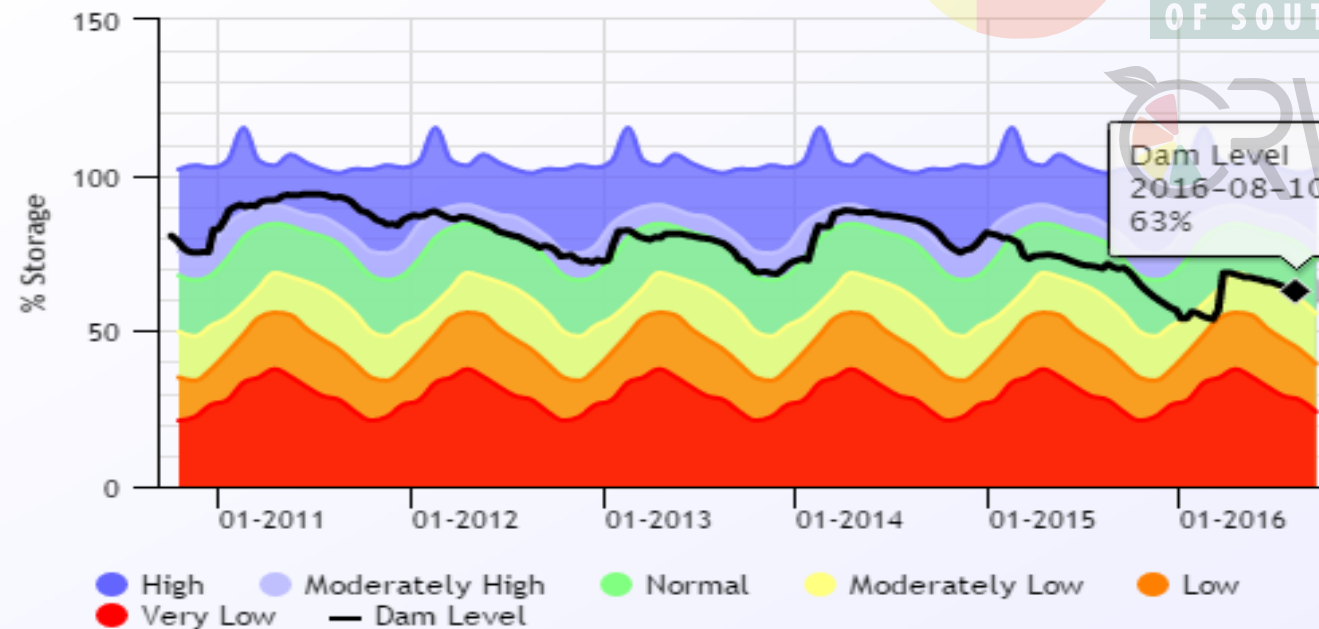


Limpopo Province

Surface Water Storage (Limpopo)



Surface Water Storage (Limpopo)



Reservoir	Date	FSC (Mm3)	Water in Dam (Mm3)	% FSC
Limpopo (32 Dams)				
Nzhelele Dam	2016-08-14	51.2	11.5	23%

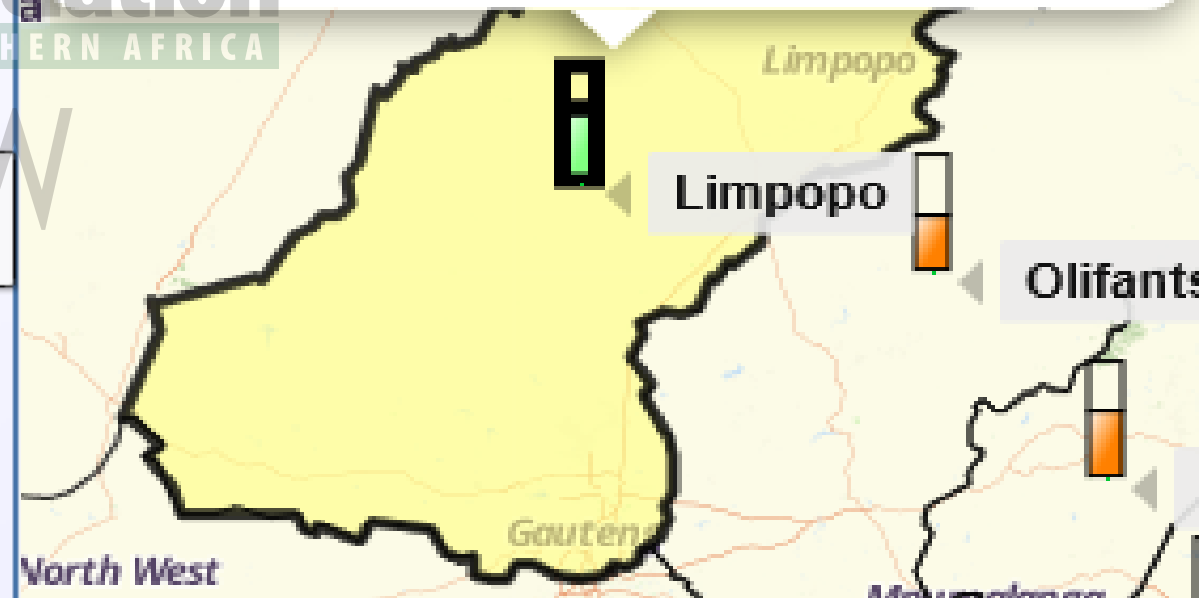
Limpopo

% Full Supply Capacity: 63%

Total Full Supply Capacity: 1295.87 Mm3

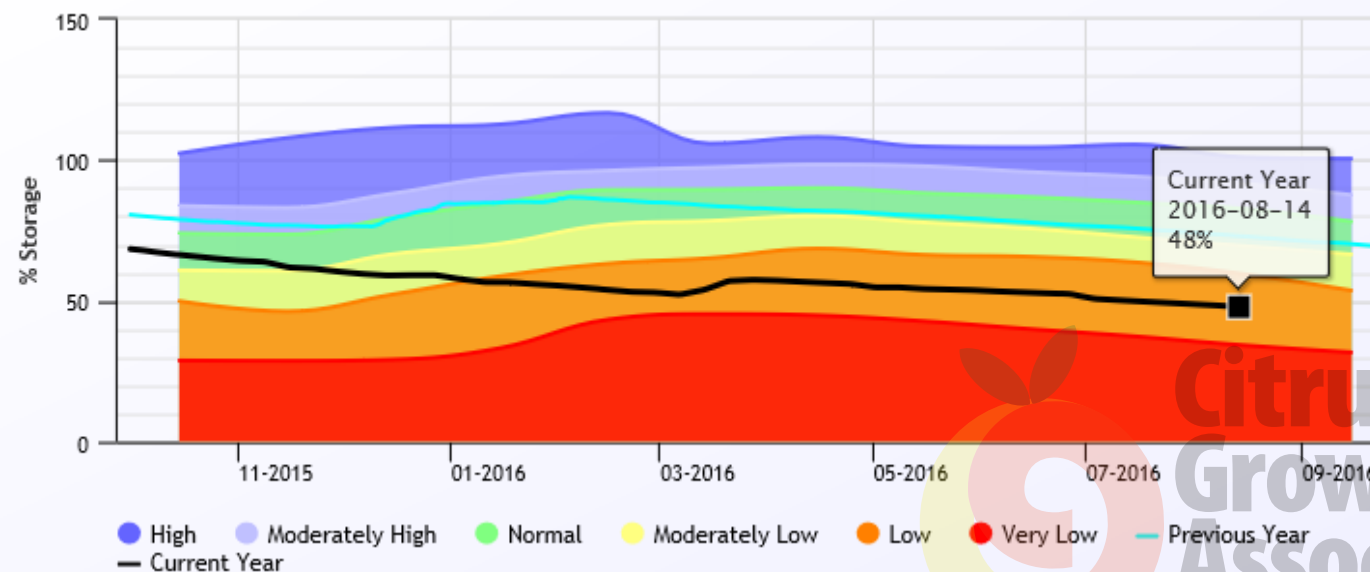
Water in Dams: 810.42 Mm3

Status: Normal (for this time of the year)

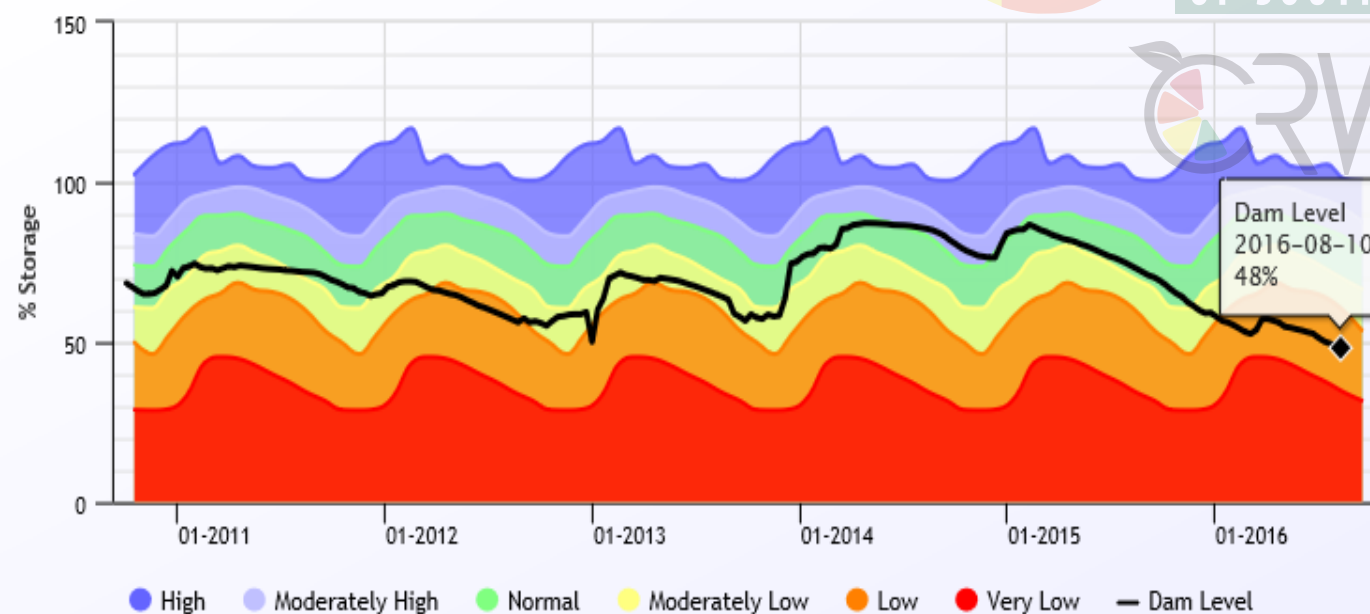


Limpopo/Mpumalanga Province - Olifants

Surface Water Storage (Olifants)



Surface Water Storage (Olifants)



Reservoir	Date	FSC (Mm3)	Water in Dam (Mm3)	% FSC
Olifants (23 Dams)				
Blyderivierpoort Dam	2016-08-14	54.4	31.6	58%
Flag Boshielo Dam	2016-08-14	185.1	45.0	24%
Loskop Dam	2016-08-14	361.5	195.9	54%
Tzaneen Dam	2016-08-14	156.5	41.2	26%

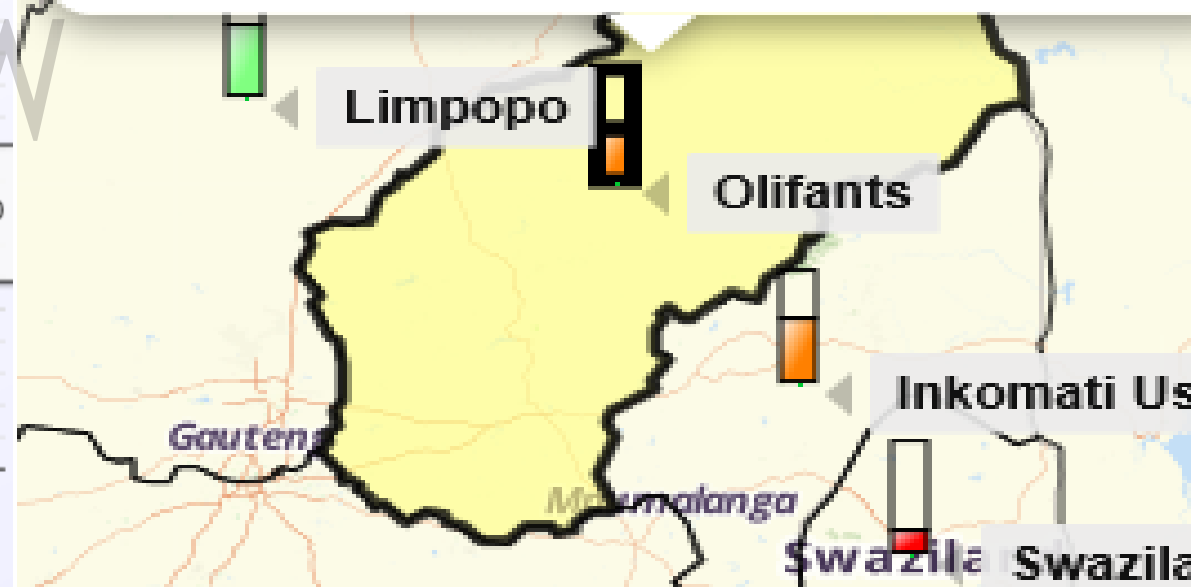
Olifants

% Full Supply Capacity: 48%

Total Full Supply Capacity: 1850.29 Mm3

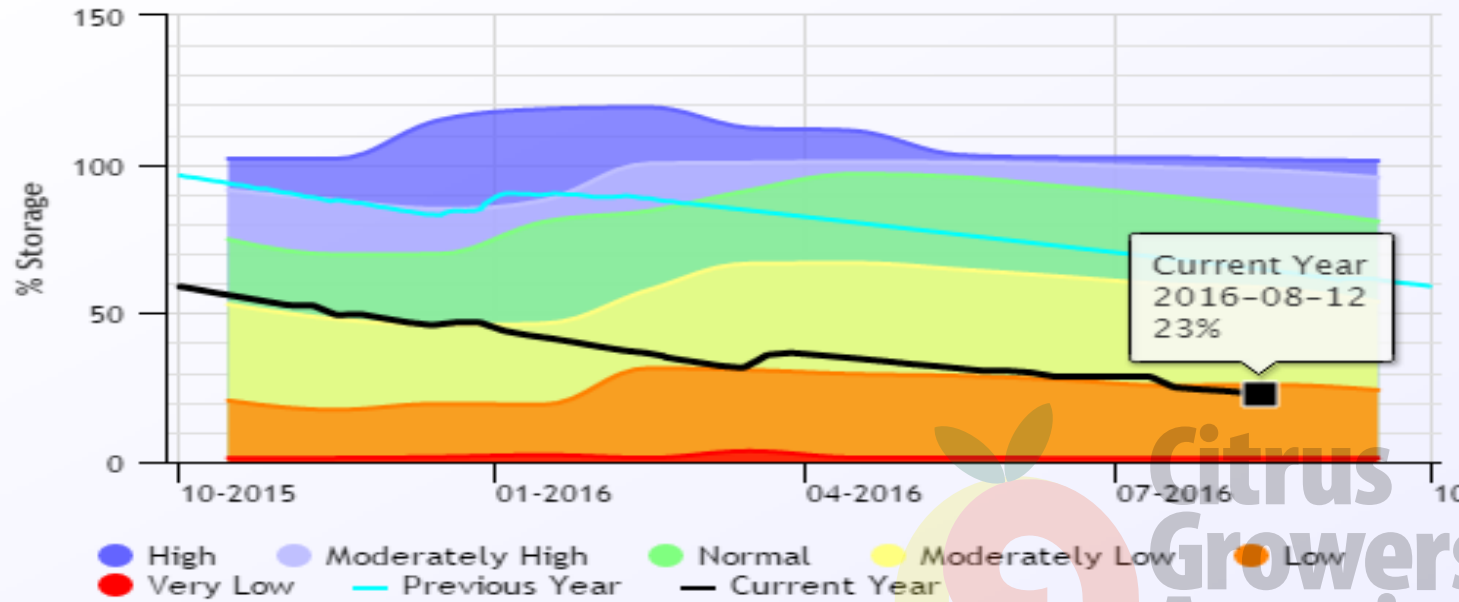
Water in Dams: 886.64 Mm3

Status: Low (for this time of the year)



CGA: Limpopo River

Surface Water Storage (Nzhelele Dam)



Nzhelele Dam

% Full Supply Capacity: 23%

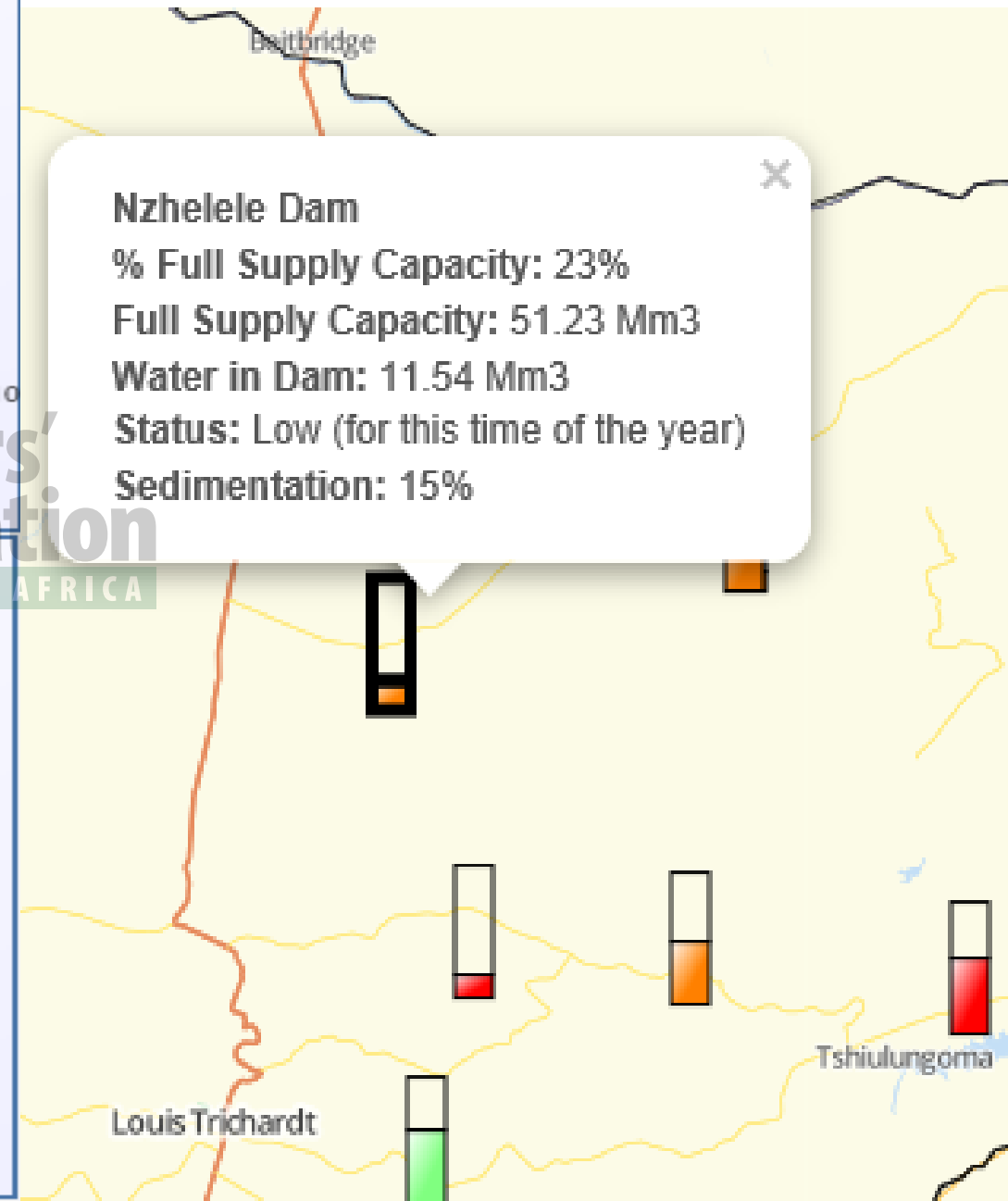
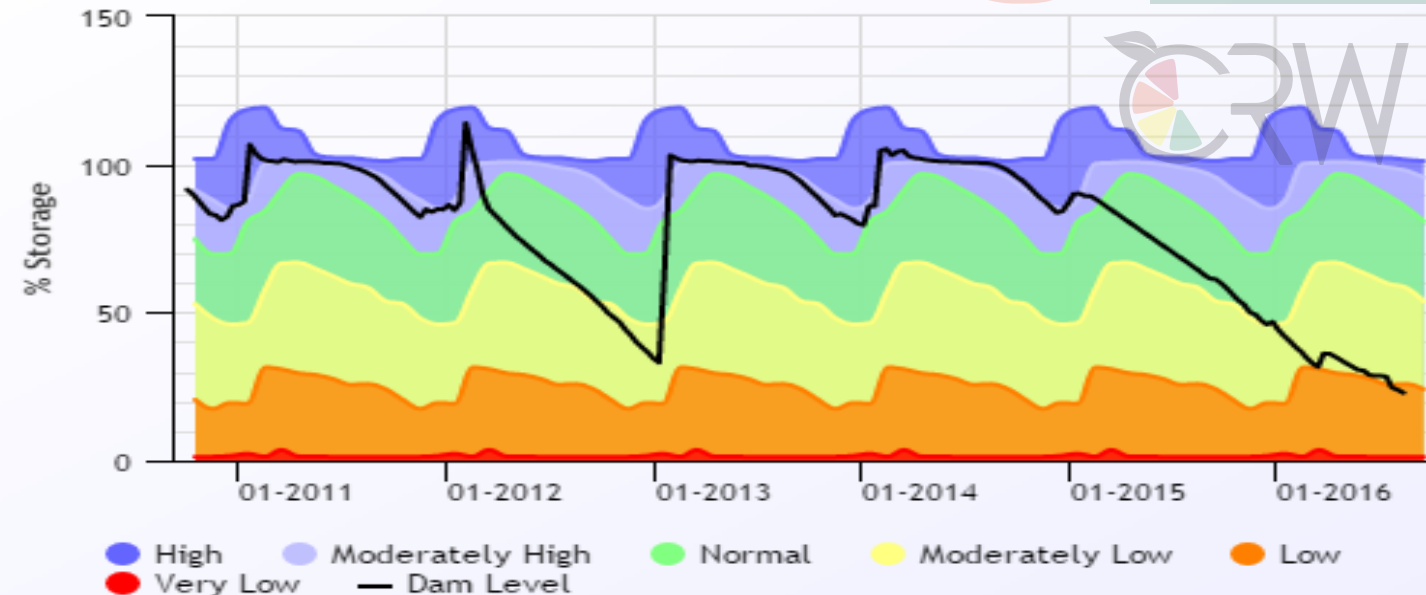
Full Supply Capacity: 51.23 Mm³

Water in Dam: 11.54 Mm³

Status: Low (for this time of the year)

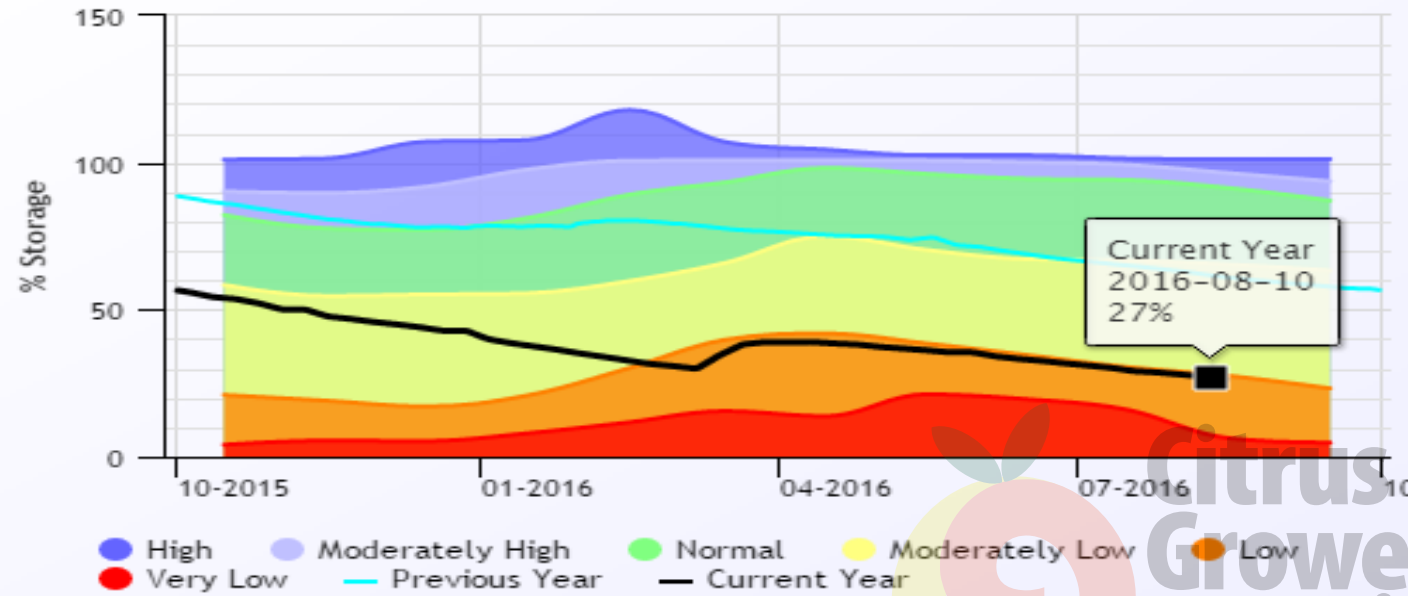
Sedimentation: 15%

Surface Water Storage (Nzhelele Dam)

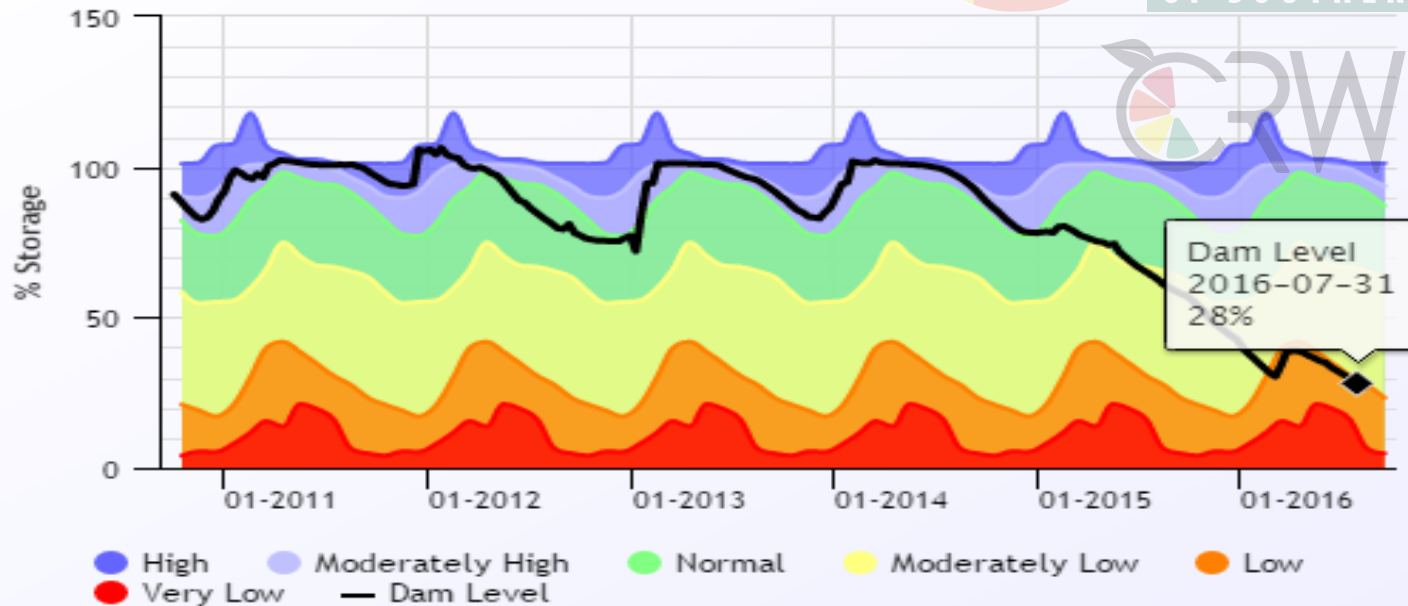


CGA: Letsitele

Surface Water Storage (Tzaneen Dam)



Surface Water Storage (Tzaneen Dam)



Tzaneen Dam

% Full Supply Capacity: 26%

Full Supply Capacity: 156.53 Mm3

Water in Dam: 41.19 Mm3

Status: Low (for this time of the year)

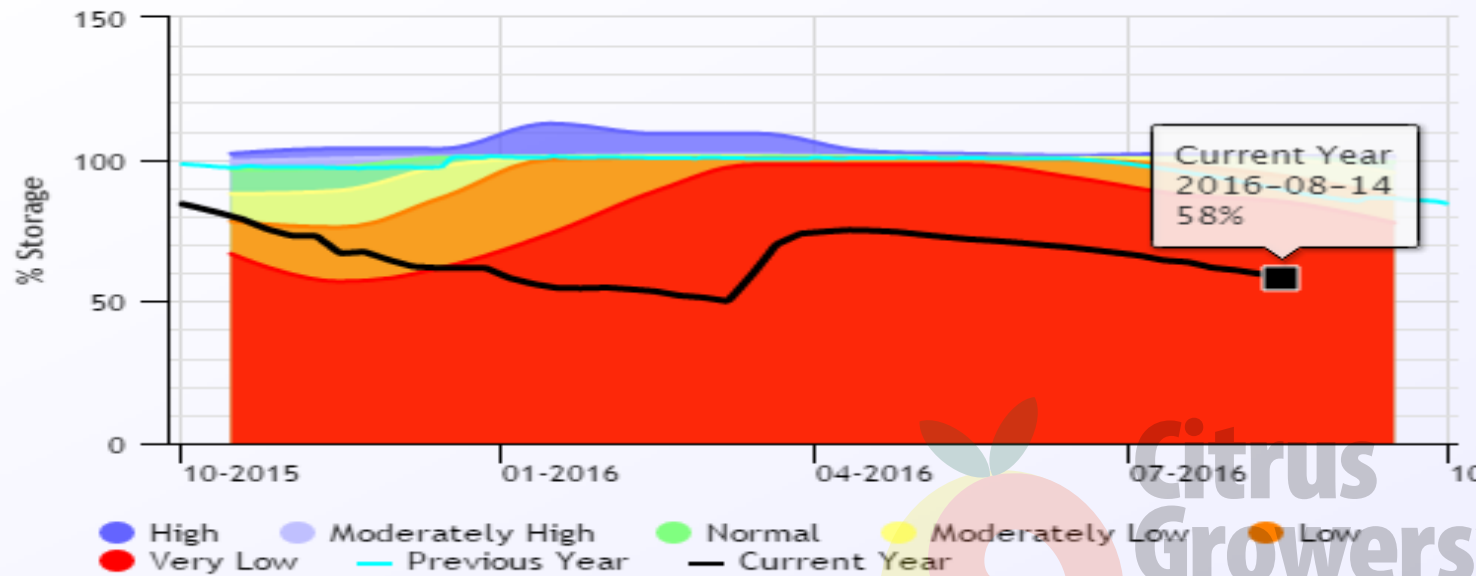
Sedimentation: 1%

Tzaneen

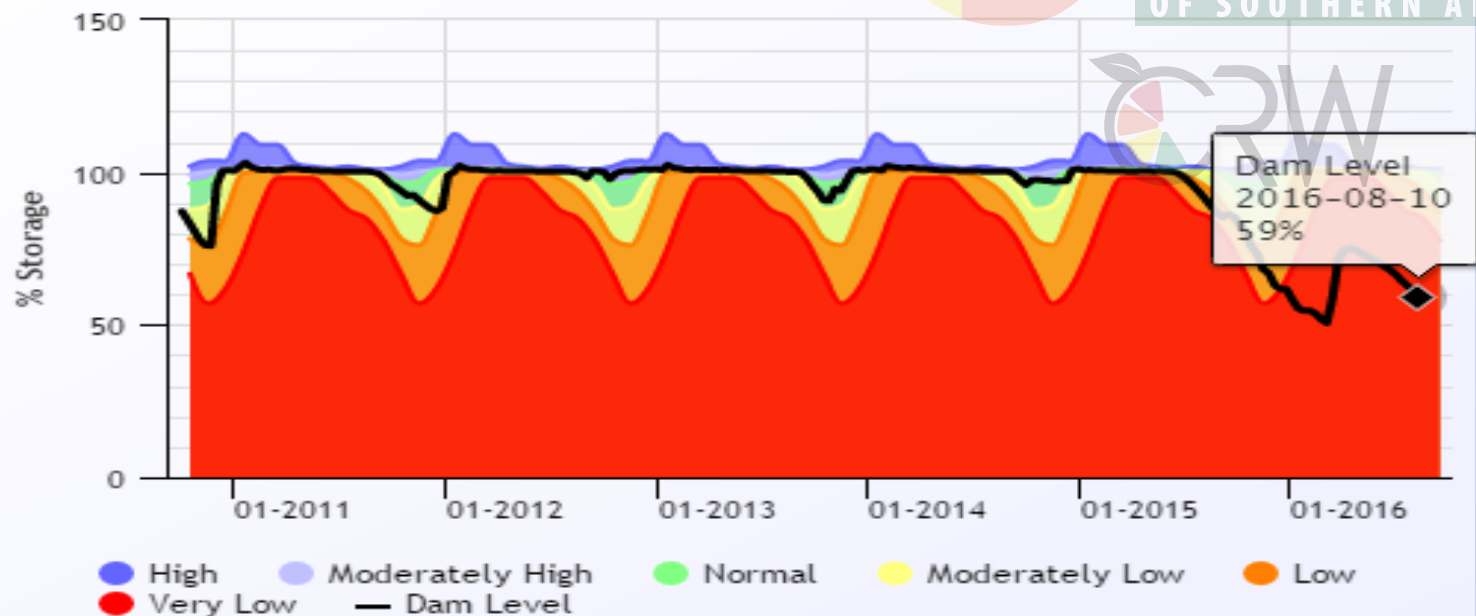
Letsitele

CGA: Hoedspruit

Surface Water Storage (Blyderivierpoort Dam)



Surface Water Storage (Blyderivierpoort Dam)



Blyderivierpoort Dam

% Full Supply Capacity: 58%

Full Supply Capacity: 54.37 Mm3

Water in Dam: 31.59 Mm3

Status: Very Low (for this time of the year)

Sedimentation: 2%

Apara

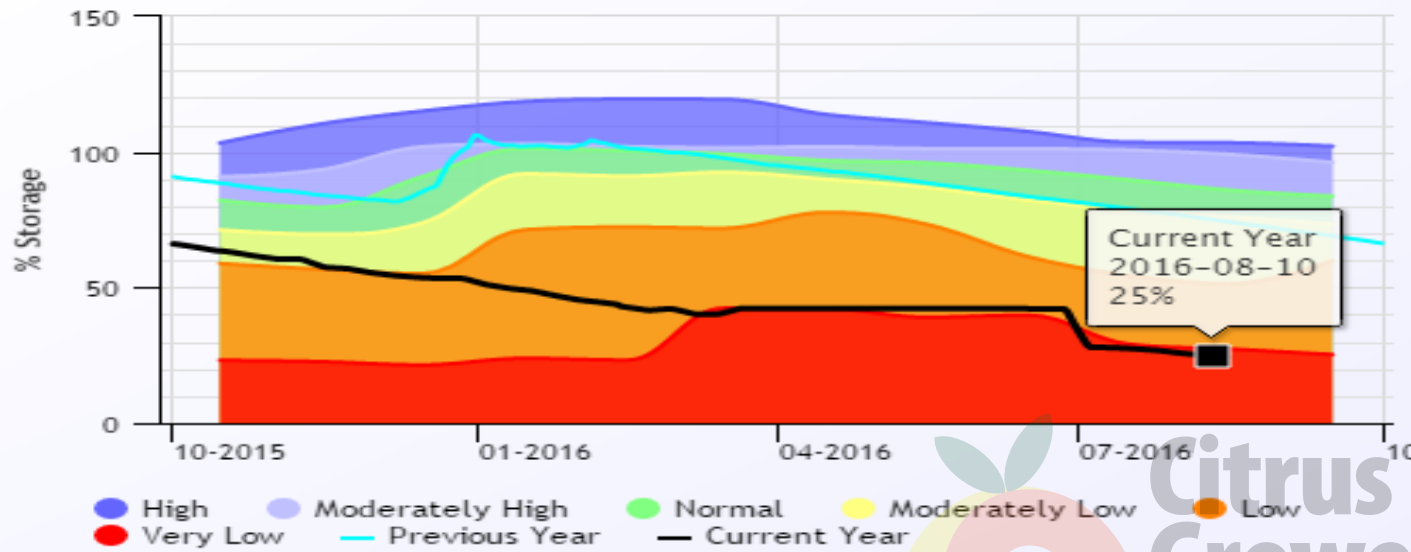
Mashelelang

Tshirelang

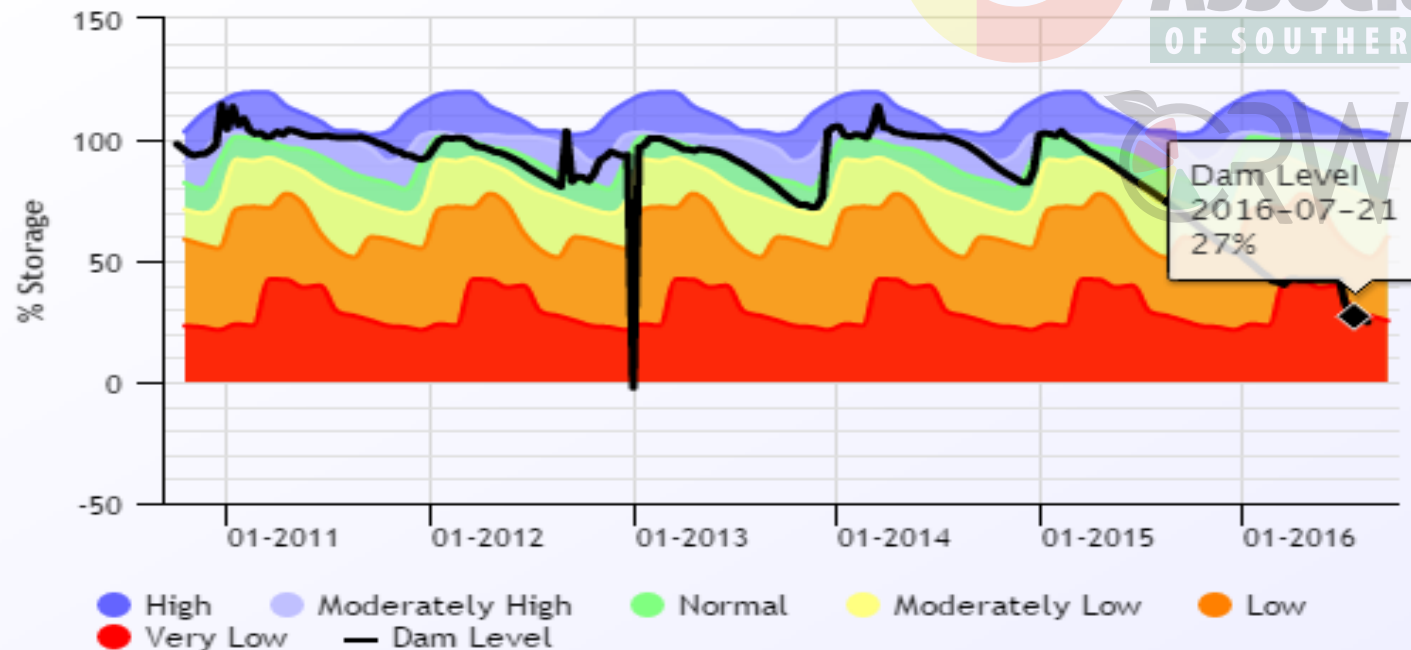
Ga-Boelang

CGA: Hoedspruit

Surface Water Storage (Flag Boshielo Dam)



Surface Water Storage (Flag Boshielo Dam)



Flag Boshielo Dam

% Full Supply Capacity: 24%

Full Supply Capacity: 185.13 Mm3

Water in Dam: 45.05 Mm3

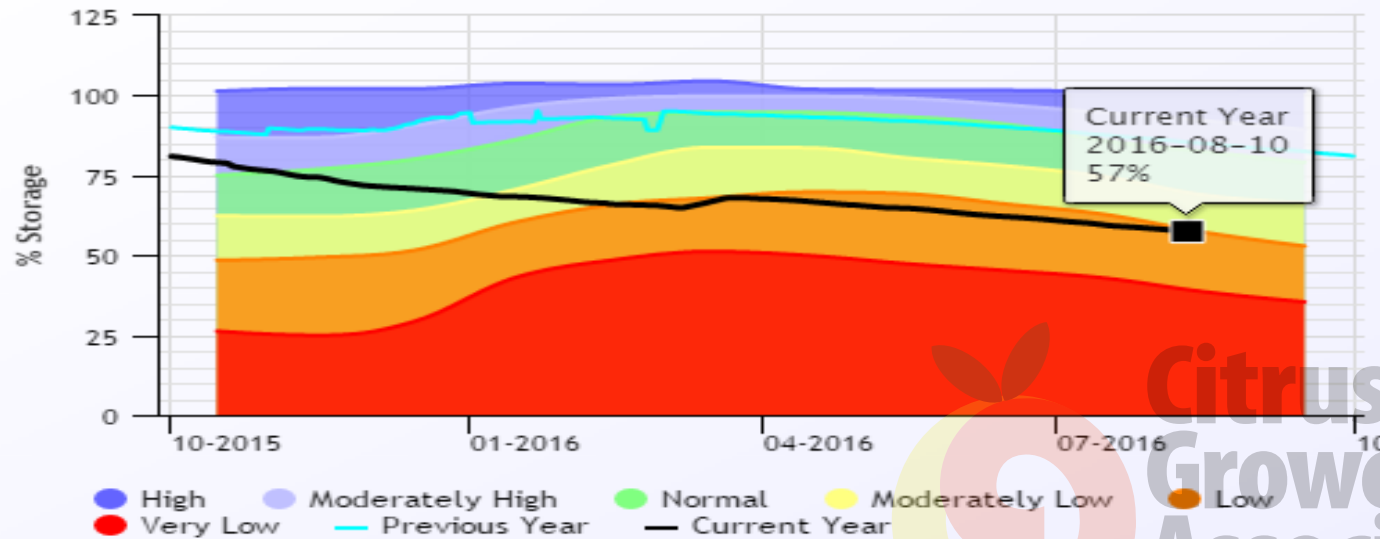
Status: Very Low (for this time of the year)

Sedimentation: 0%

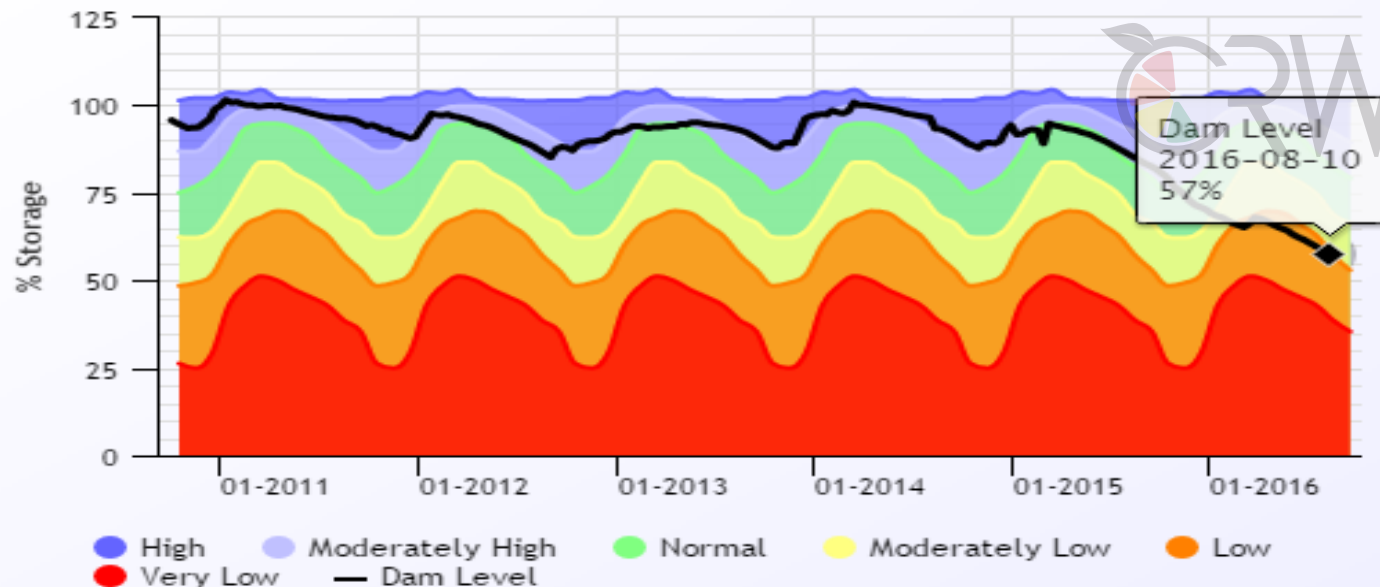
Mogalatsana

Mpumalanga Province

Surface Water Storage (Inkomati Usuthu)



Surface Water Storage (Inkomati Usuthu)



Reservoir	Date	FSC (Mm3)	Water in Dam (Mm3)	% FSC
Inkomati Usuthu (14 Dams)				
Kwena Dam	2016-08-14	158.9	53.8	34%

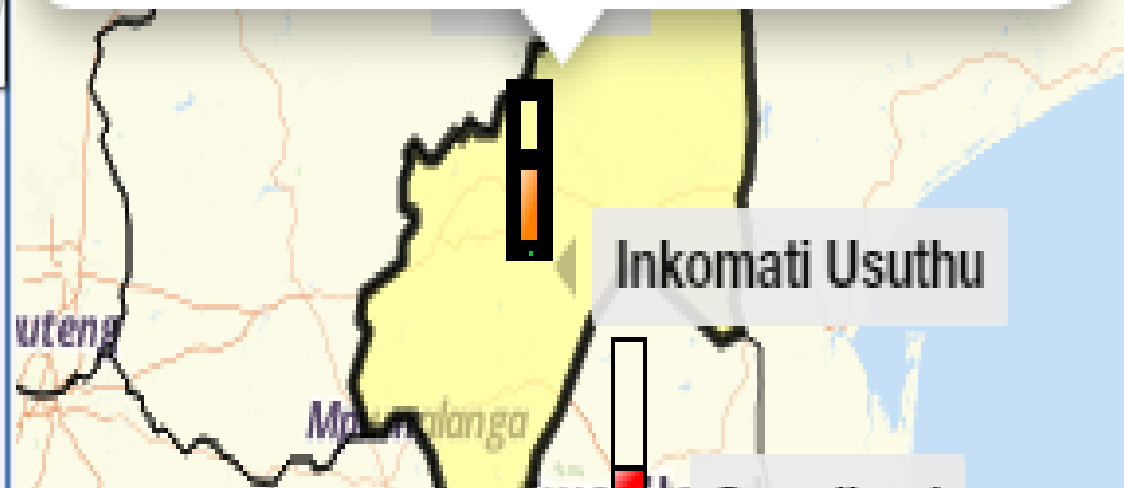
Inkomati Usuthu

% Full Supply Capacity: 57%

Total Full Supply Capacity: 1398.05 Mm3

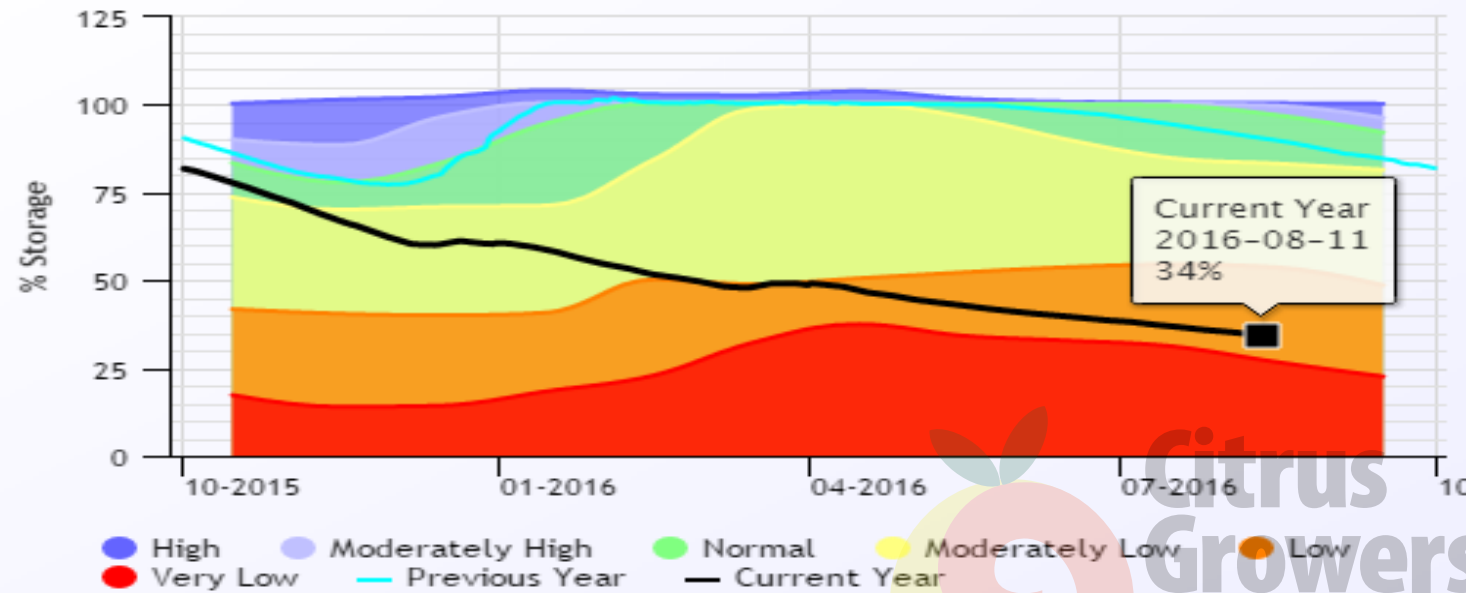
Water in Dams: 798.06 Mm3

Status: Low (for this time of the year)

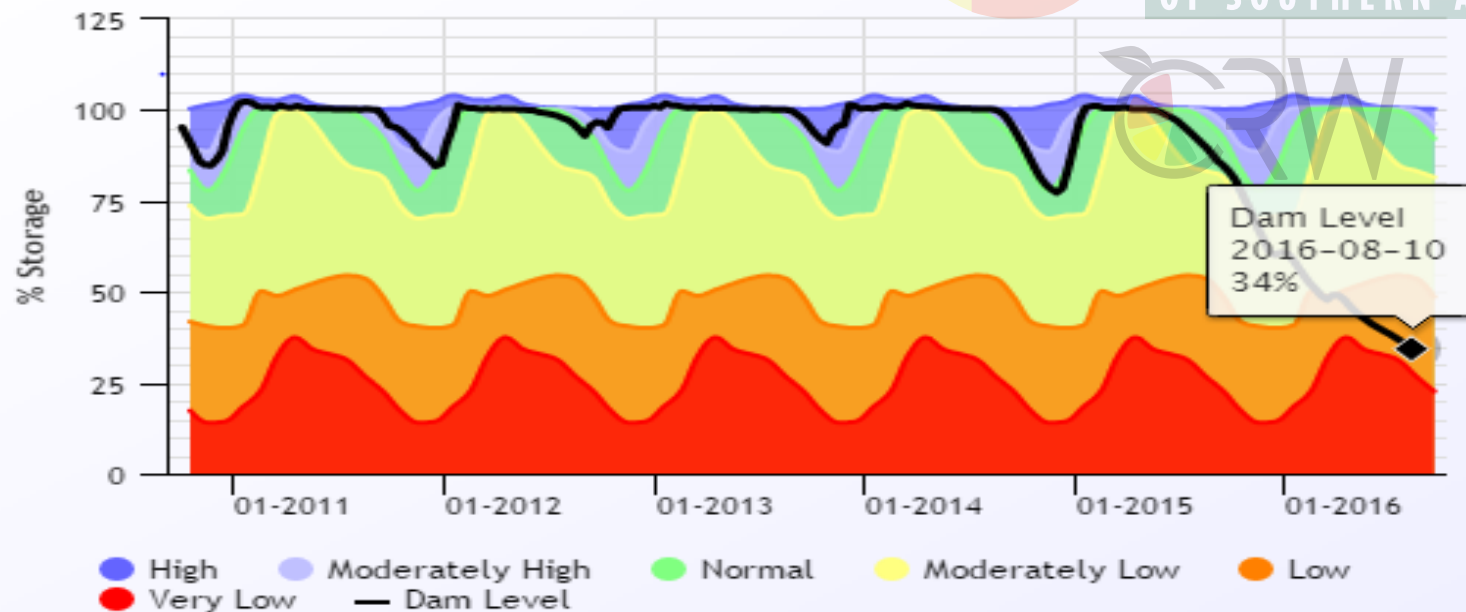


CGA: Nelspruit

Surface Water Storage (Kwena Dam)



Surface Water Storage (Kwena Dam)



Kwena Dam

% Full Supply Capacity: 34%

Full Supply Capacity: 158.89 Mm³

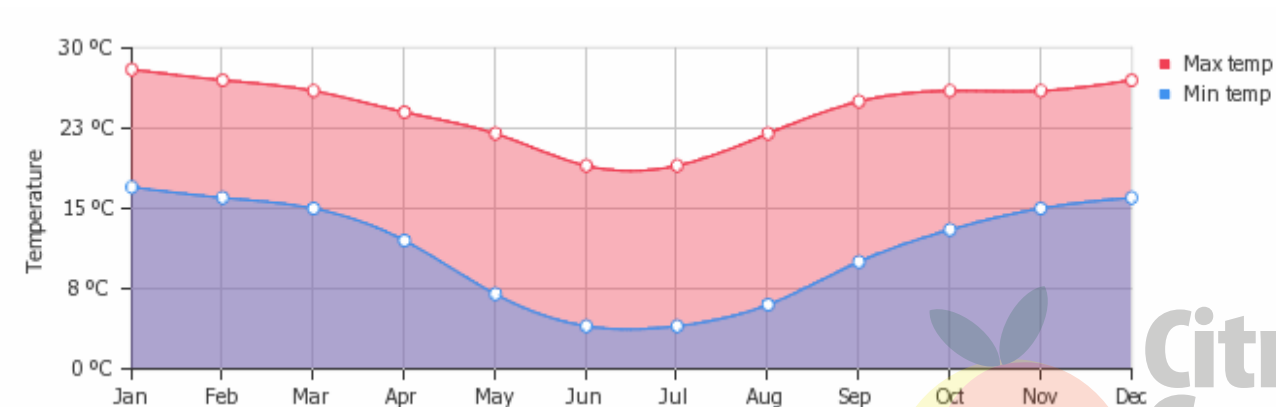
Water in Dam: 53.76 Mm³

Status: Low (for this time of the year)

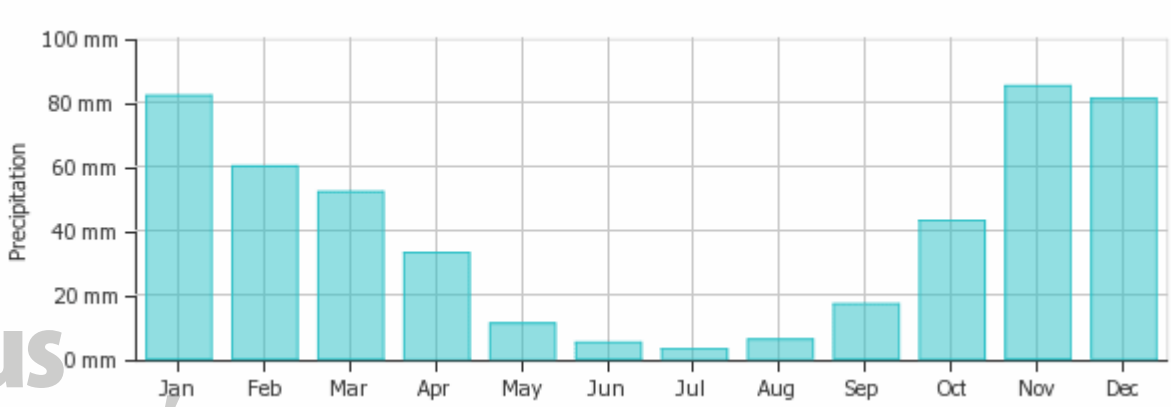
Sedimentation: 3%

NELSPRUIT

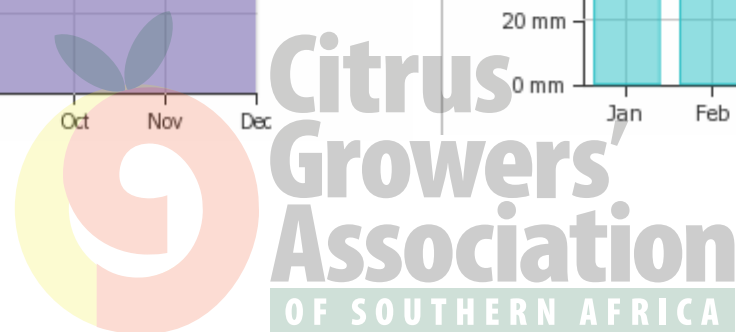
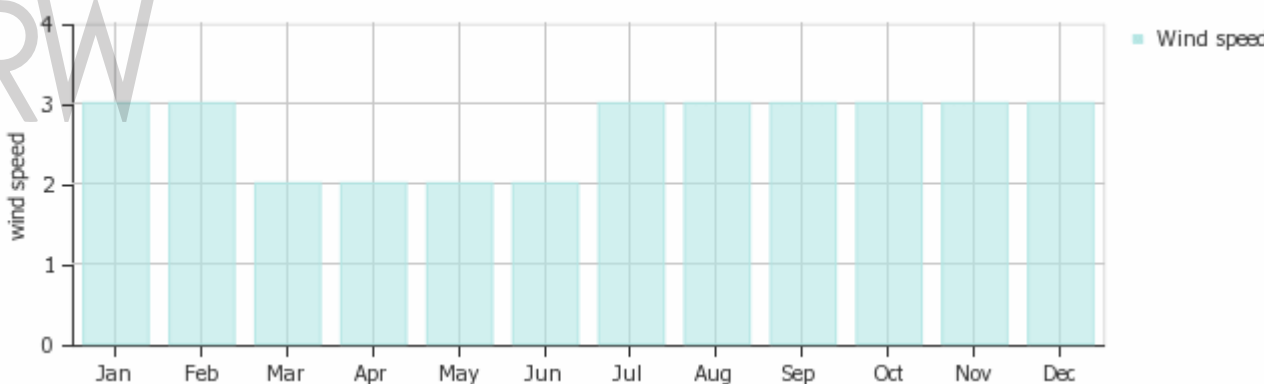
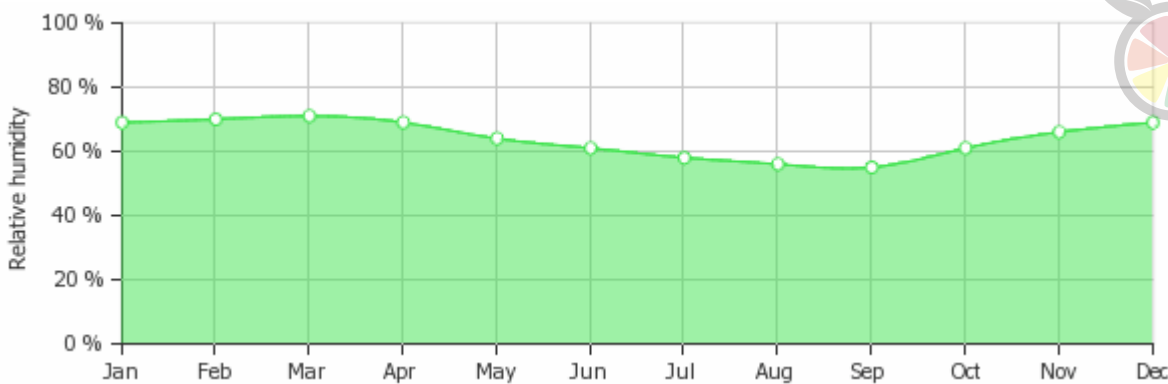
Average minimum and maximum temperature over the year



Average monthly hours of sunshine over the year

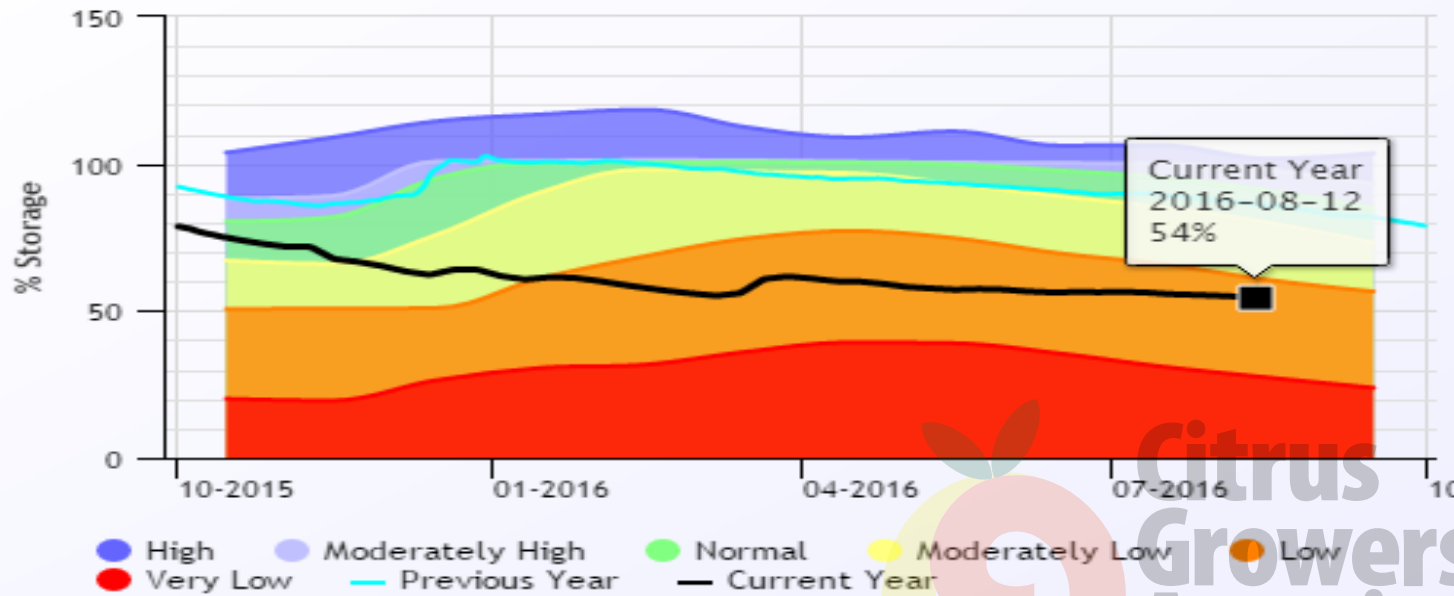


Average humidity over the year



CGA: Senwes

Surface Water Storage (Loskop Dam)



Loskop Dam

% Full Supply Capacity: 54%

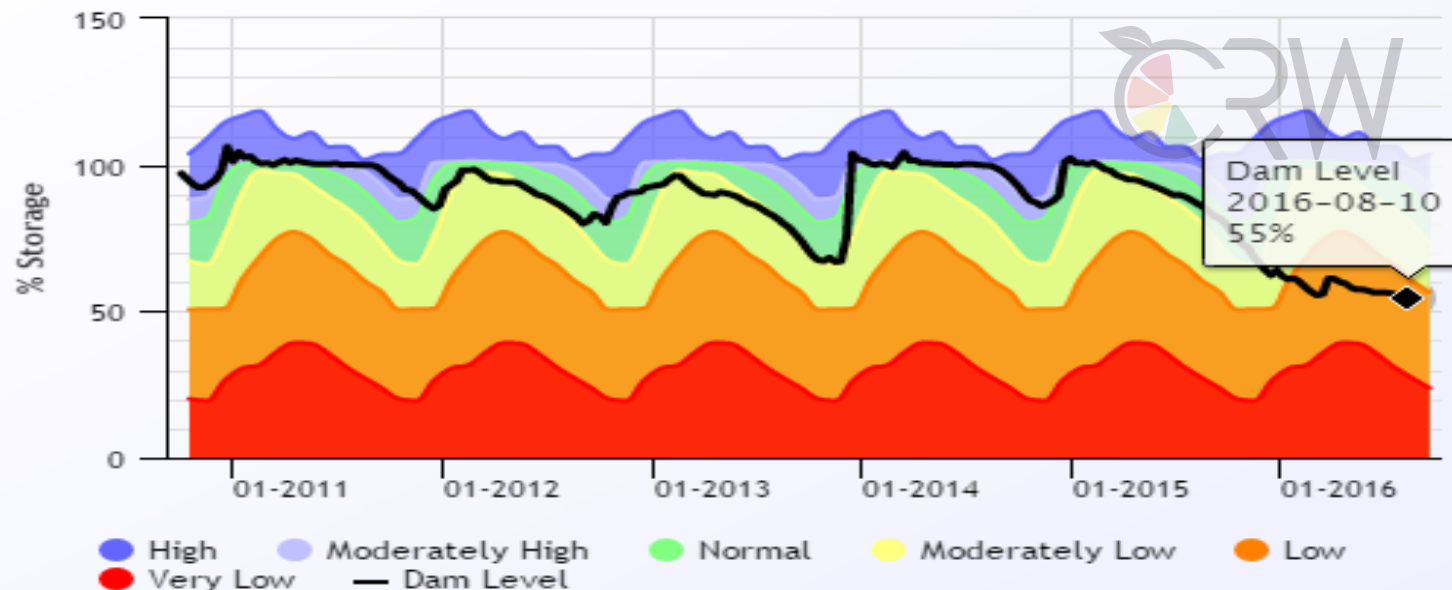
Full Supply Capacity: 361.51 Mm3

Water in Dam: 195.86 Mm3

Status: Low (for this time of the year)

Sedimentation: 3%

Surface Water Storage (Loskop Dam)

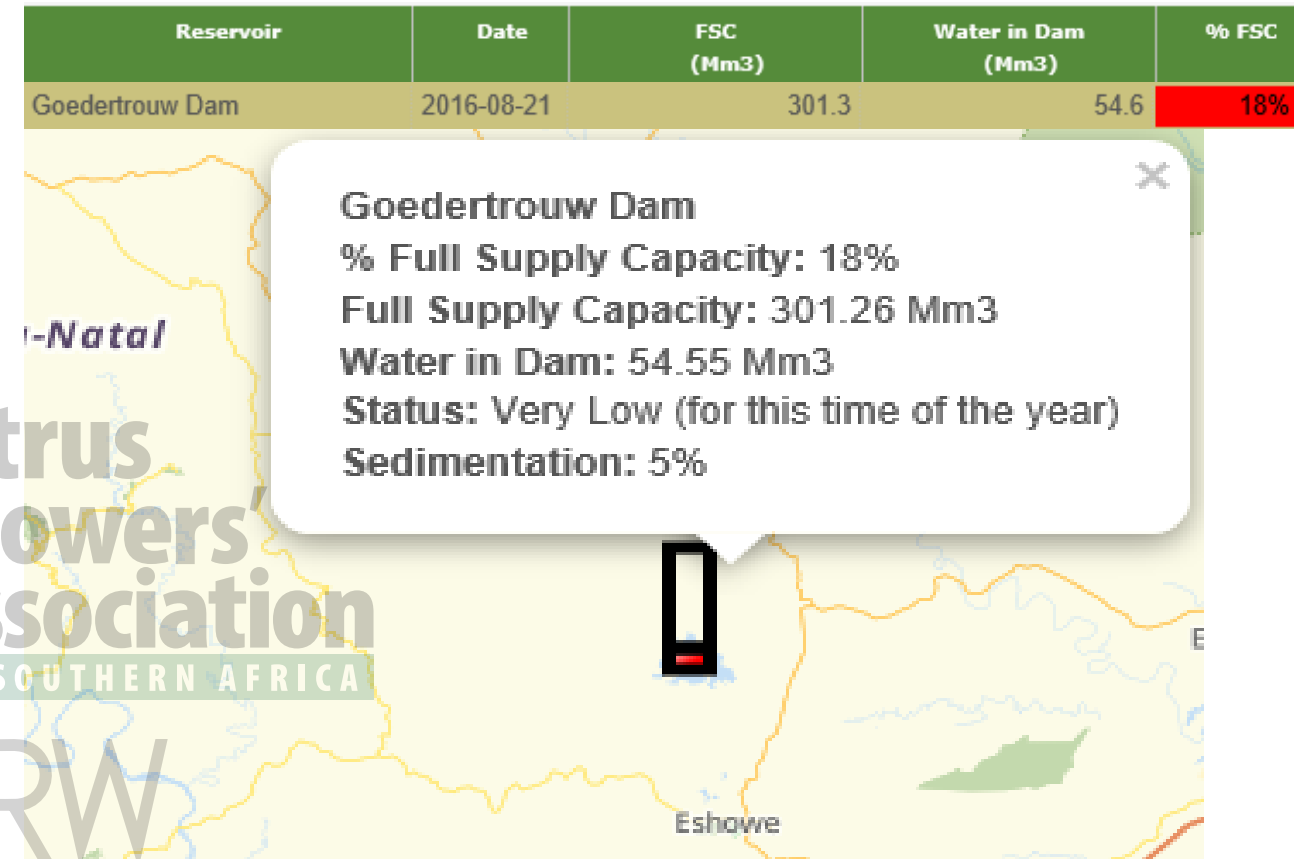
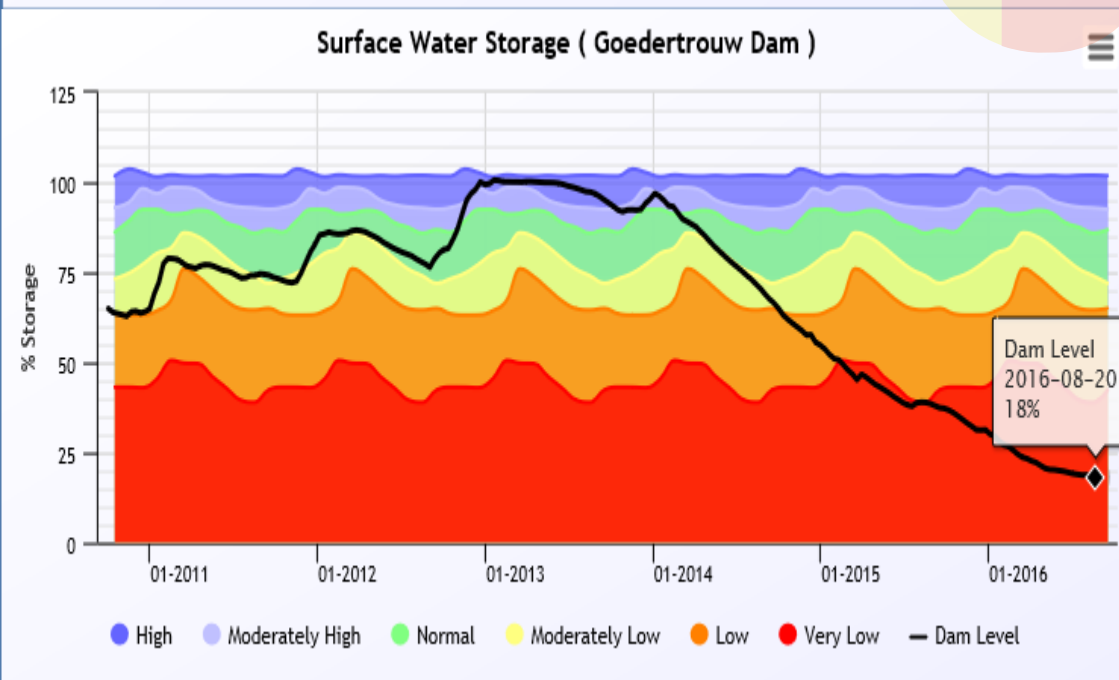
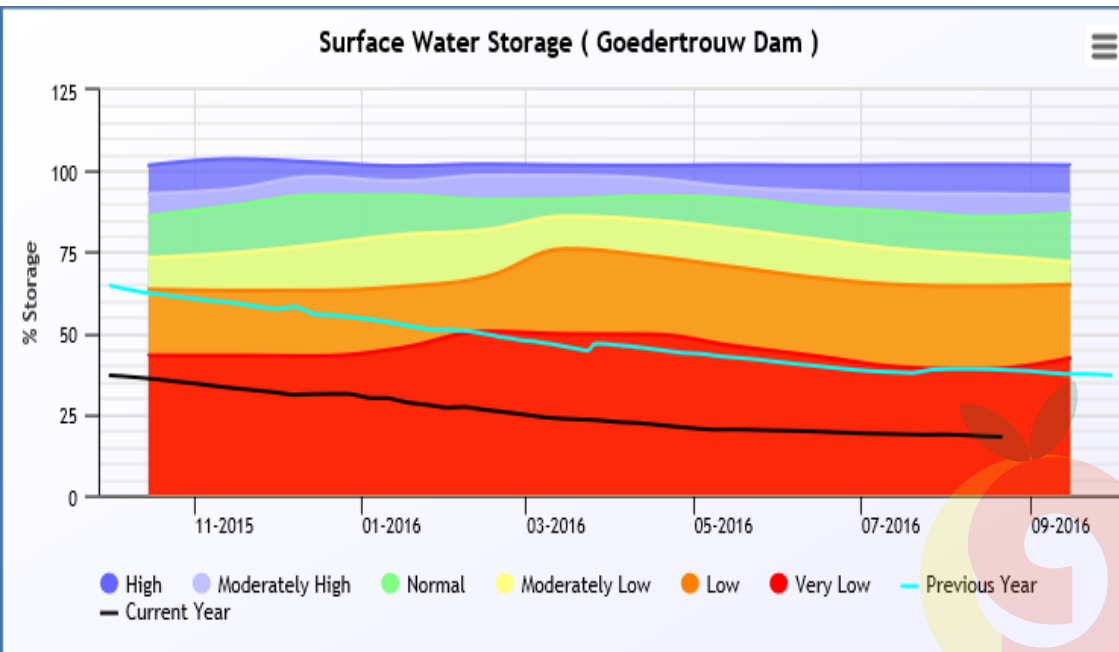


The Loskop dam water level stands at 54% with a 70% water allocation that is pretty good if you look at the rest of the summer rainfall areas allocations!

The problem is that if we don't get sufficient rain this coming summer !

Our main catchment areas dams ,Witbank dam and Middelburg dam are also under pressure and need to fill up before we can get our share !

CGA: Nkwalini



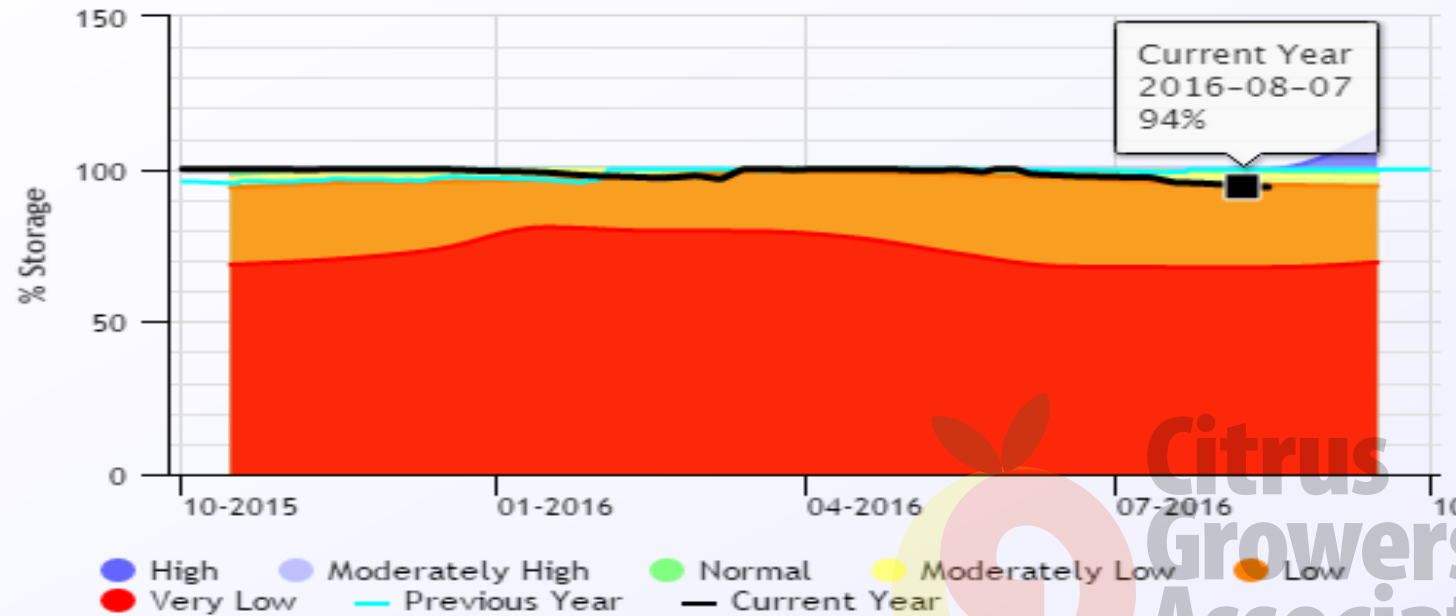
Irrigation has managed to give us a crop in 2016 but dam is now at only 18%. **Irrigation is expected to last until November** unless we get substantial rain! We only managed to keep trees going at the expense of sugar cane which is down by 50%!

We have a lighter crop this year with larger than normal size and wind blemish.

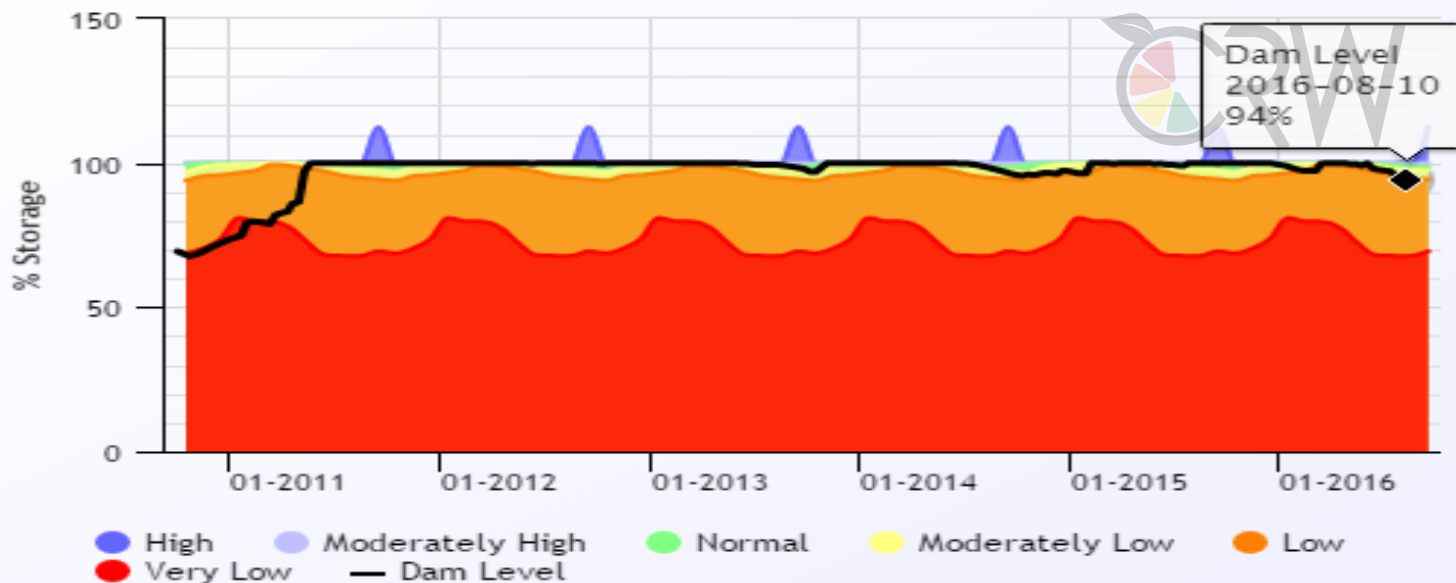
This has been countered by a increase in demand for cat2 and 3 fruit. If El Nino is over we should see a heavy set with spring rains. This will **mean smaller fruit** but with no rain who knows?

CGA: E.Cape Midlands

Surface Water Storage (Binfield Dam)



Surface Water Storage (Binfield Dam)



Binfield Dam

% Full Supply Capacity: 94%

Full Supply Capacity: 36.85 Mm3

Water in Dam: 34.66 Mm3

Status: Low (for this time of the year)

Sedimentation: 0%

Eastern Cape

Zindenge

Fort Beaufort

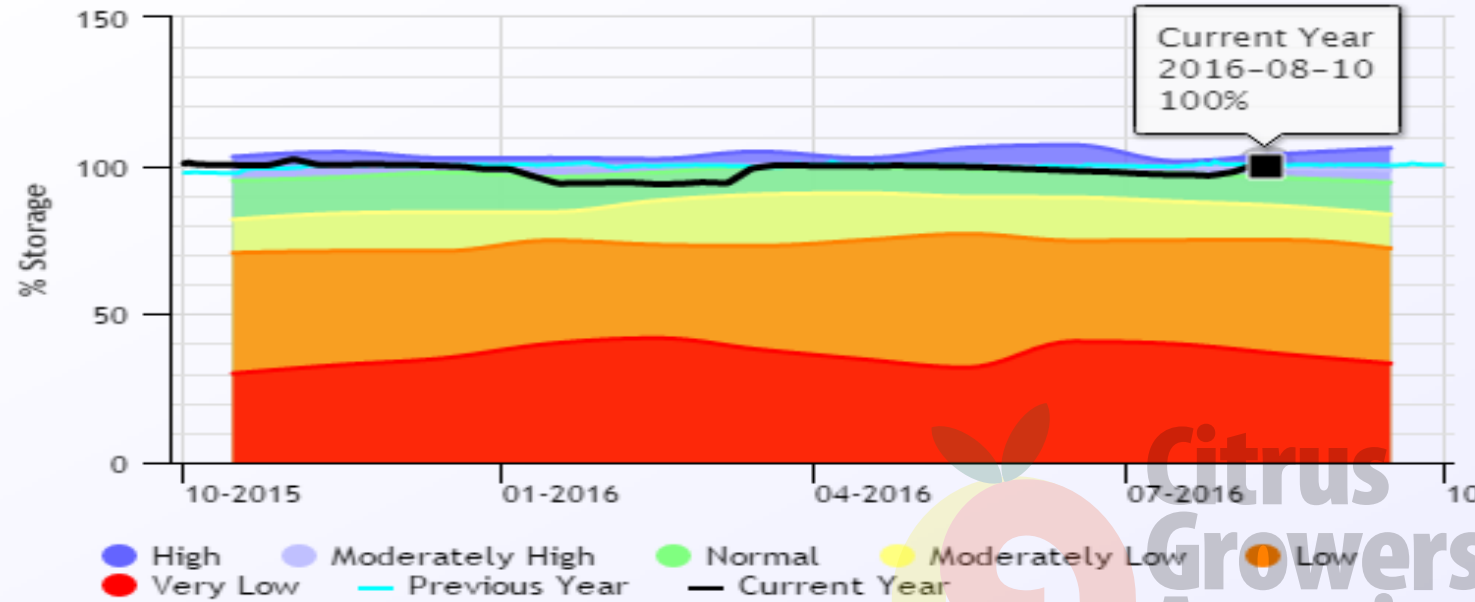
Alice

Dimbaza

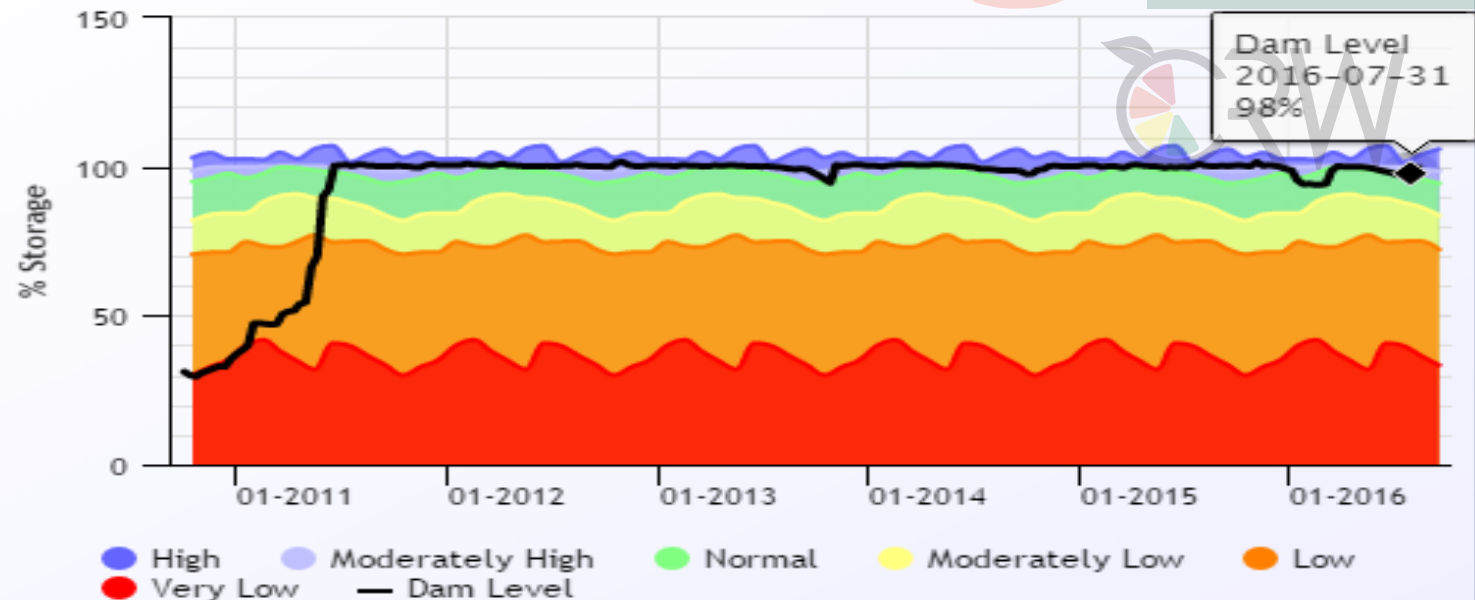
Nofelito

CGA: E.Cape Midlands

Surface Water Storage (Katrivier Dam)



Surface Water Storage (Katrivier Dam)



Katrivier Dam

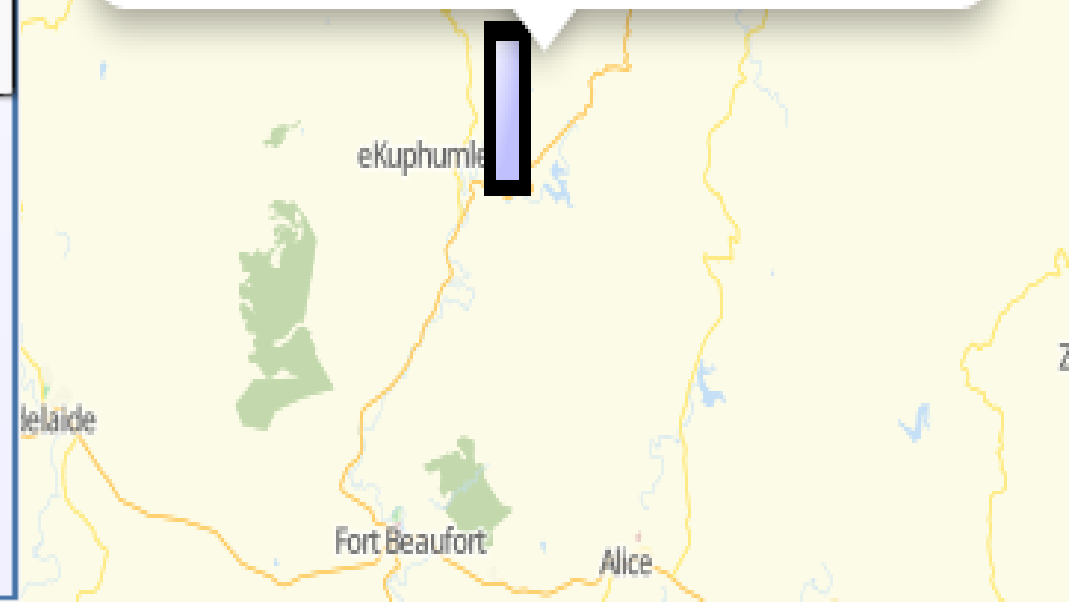
% Full Supply Capacity: 98%

Full Supply Capacity: 24.68 Mm3

Water in Dam: 24.28 Mm3

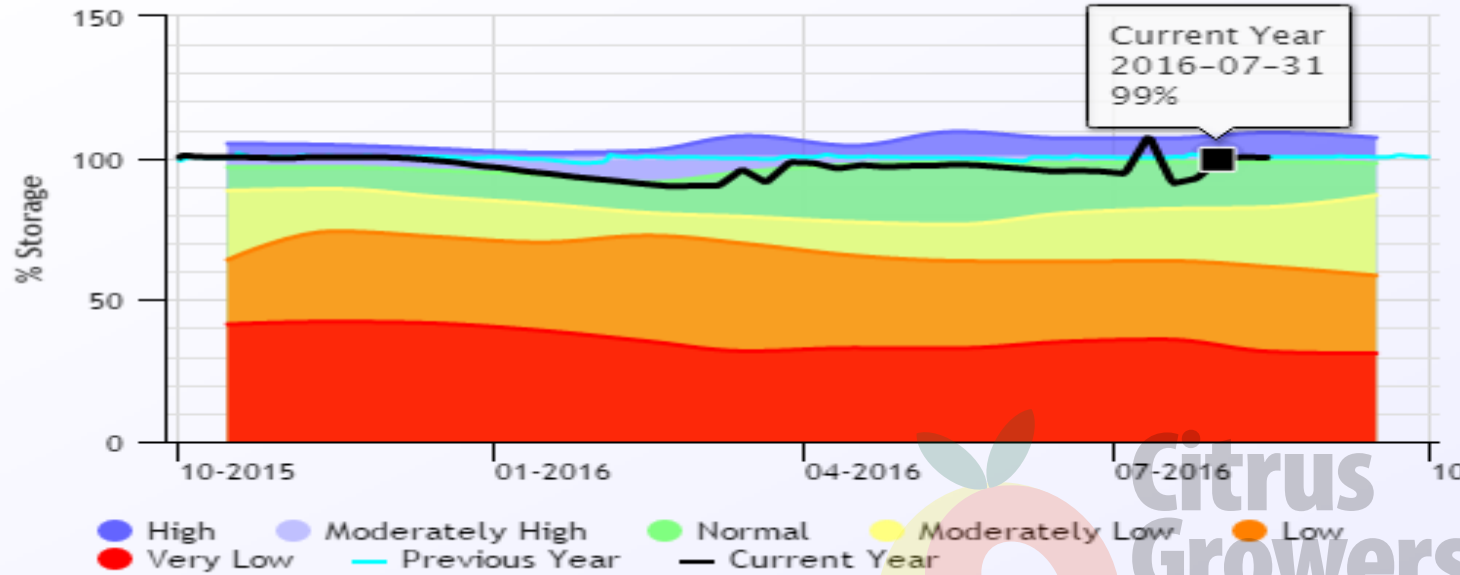
Status: Moderately High (for this time of the year)

Sedimentation: 8%

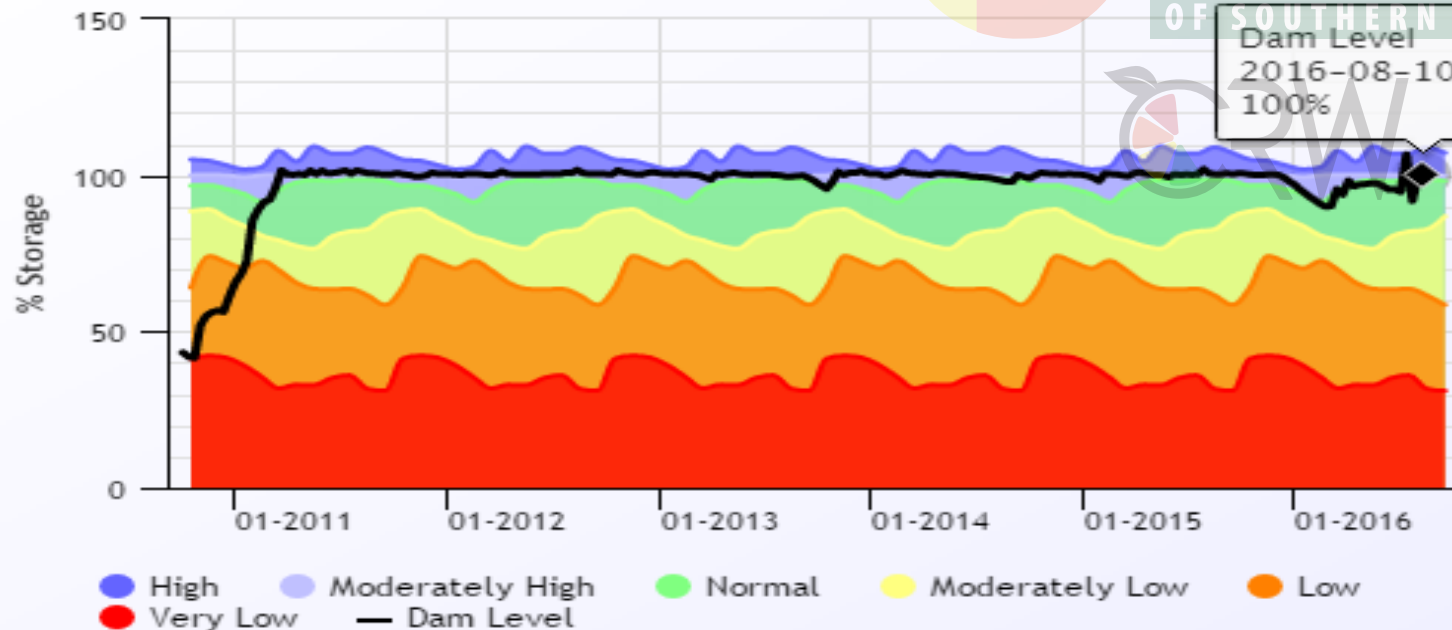


CGA: E.Cape Midlands

Surface Water Storage (Waterdown Dam)



Surface Water Storage (Waterdown Dam)



Waterdown Dam

% Full Supply Capacity: 100%

Full Supply Capacity: 37.44 Mm3

Water in Dam: 37.50 Mm3

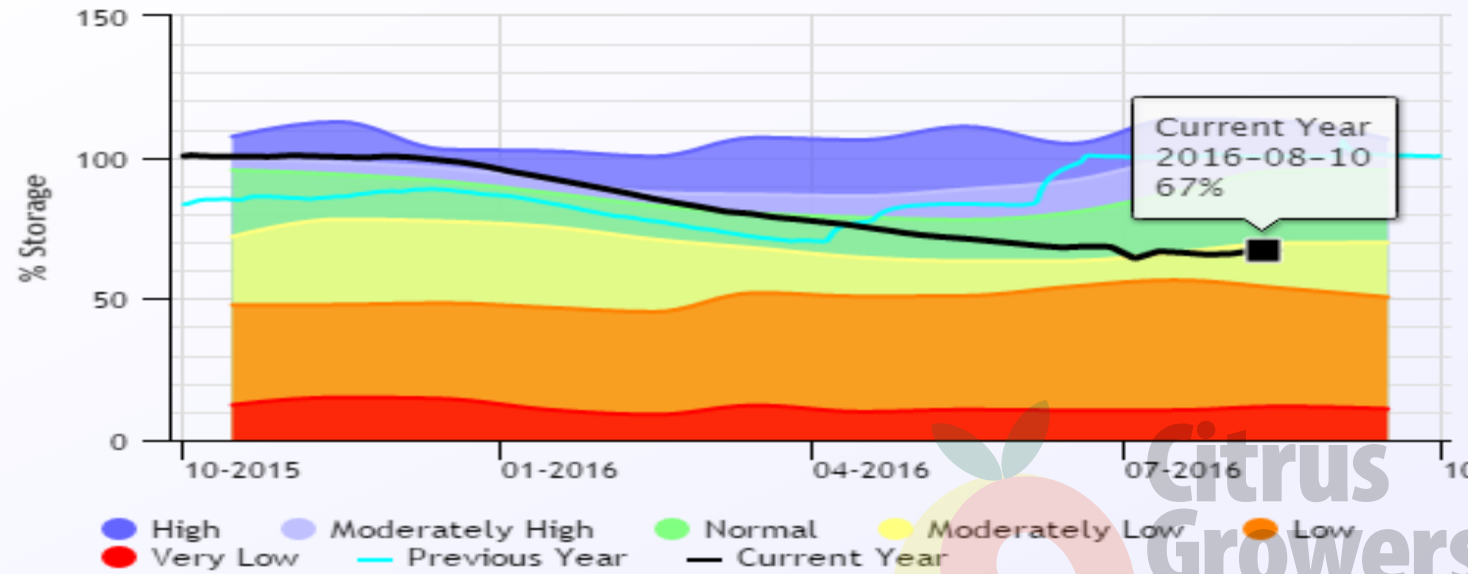
Status: High (for this time of the year)

Sedimentation: 0%

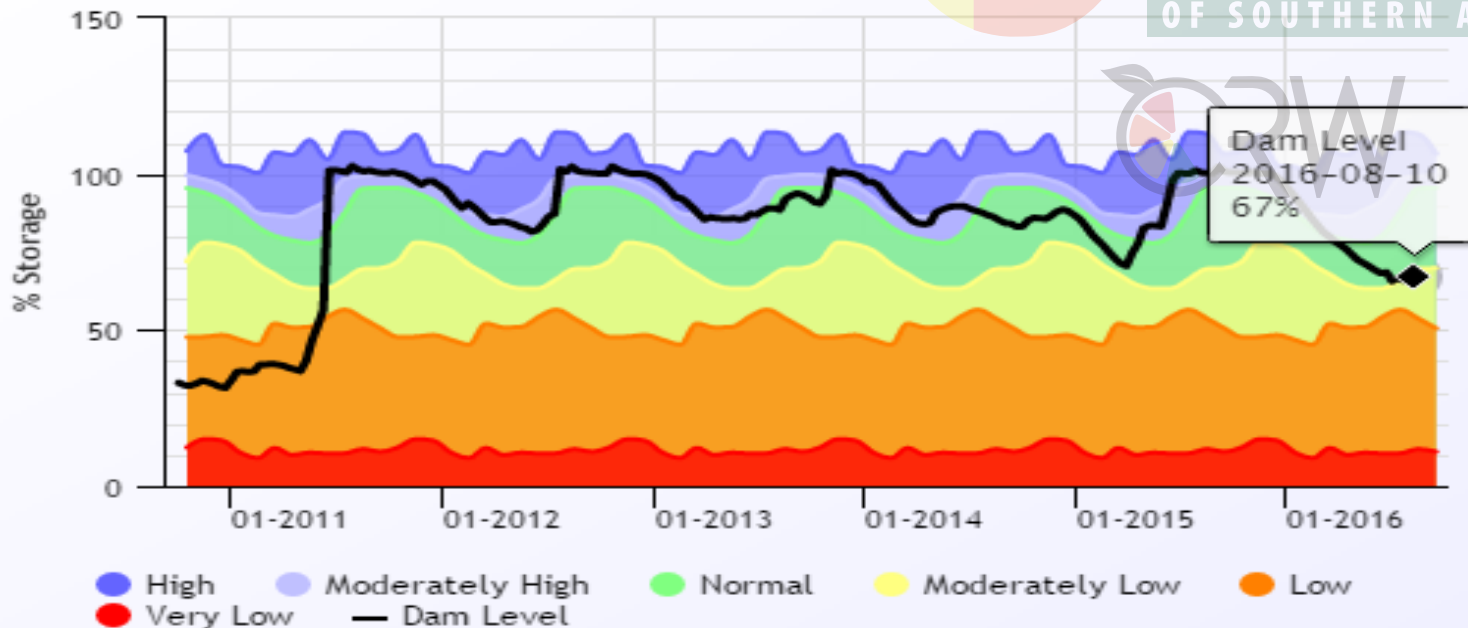
Eastern Cape

CGA: Patensie

Surface Water Storage (Kouga Dam)



Surface Water Storage (Kouga Dam)



Kouga Dam

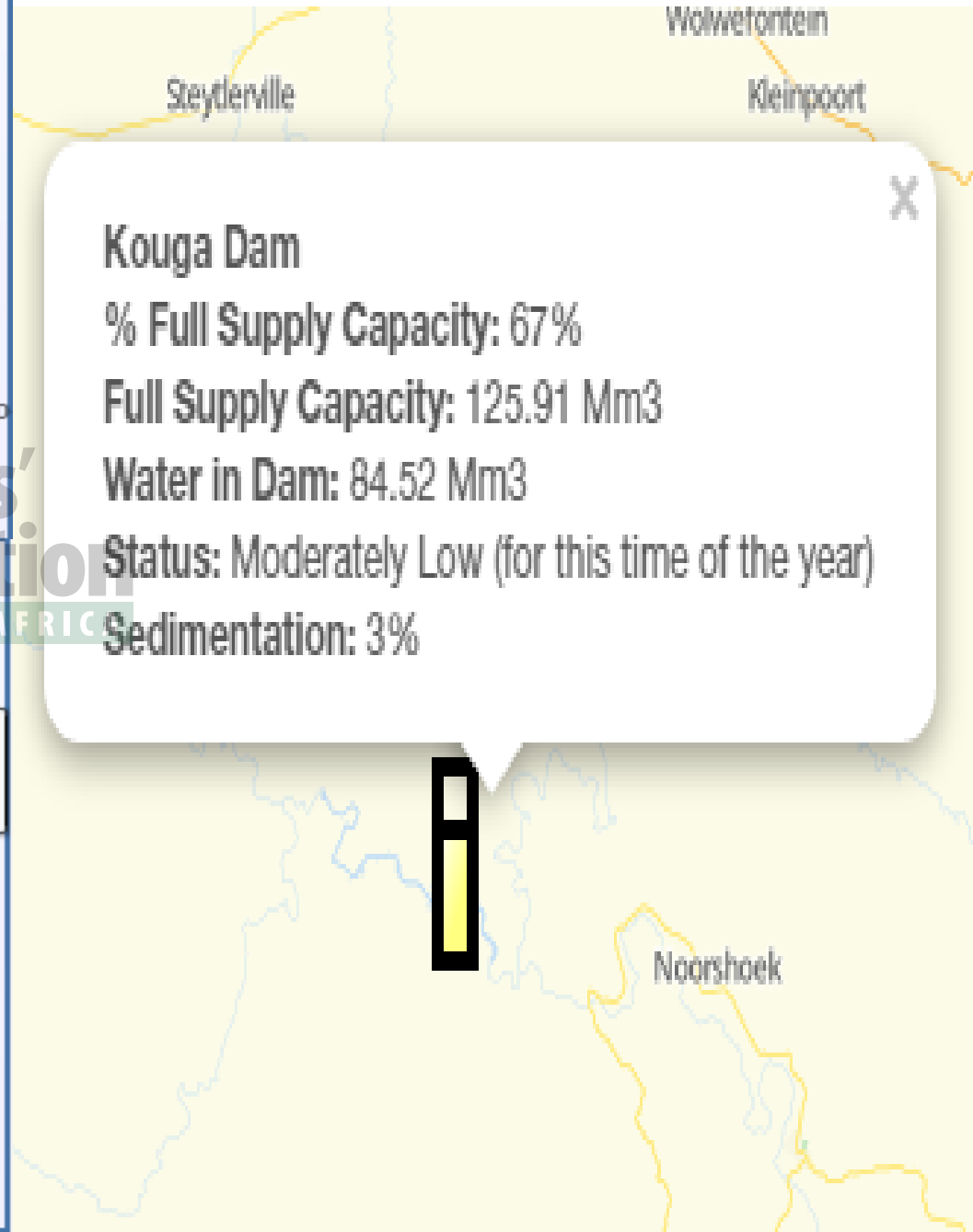
% Full Supply Capacity: 67%

Full Supply Capacity: 125.91 Mm3

Water in Dam: 84.52 Mm3

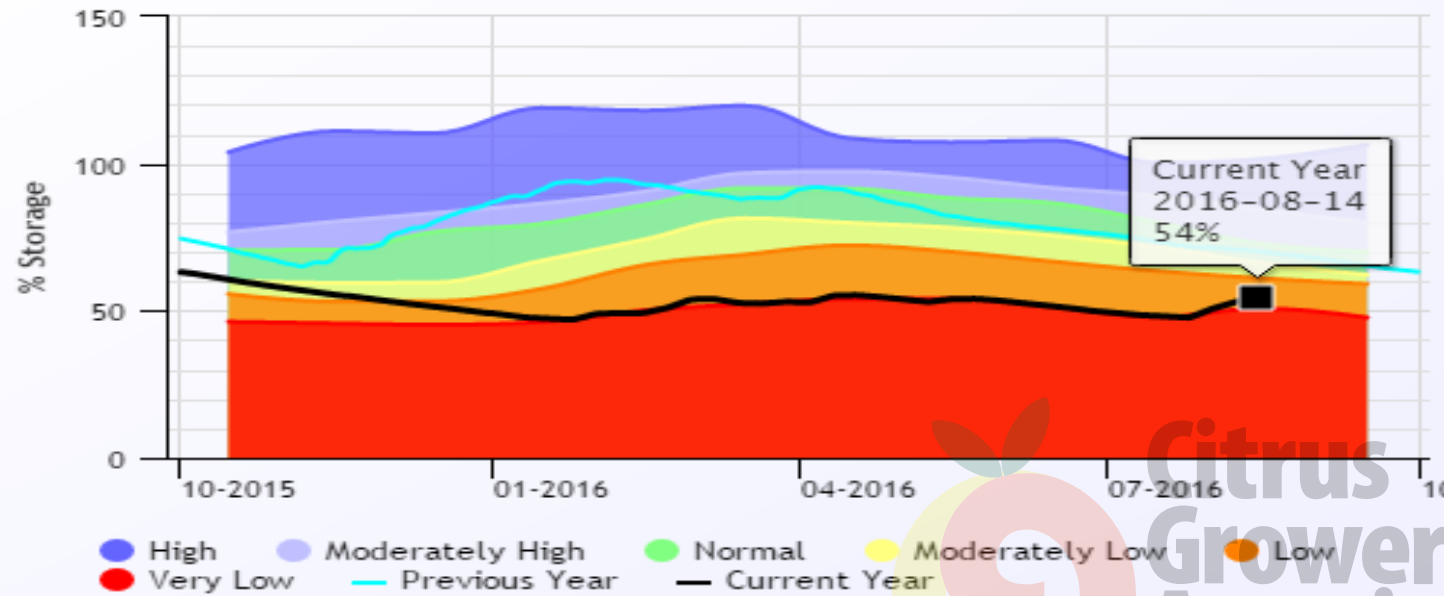
Status: Moderately Low (for this time of the year)

Sedimentation: 3%

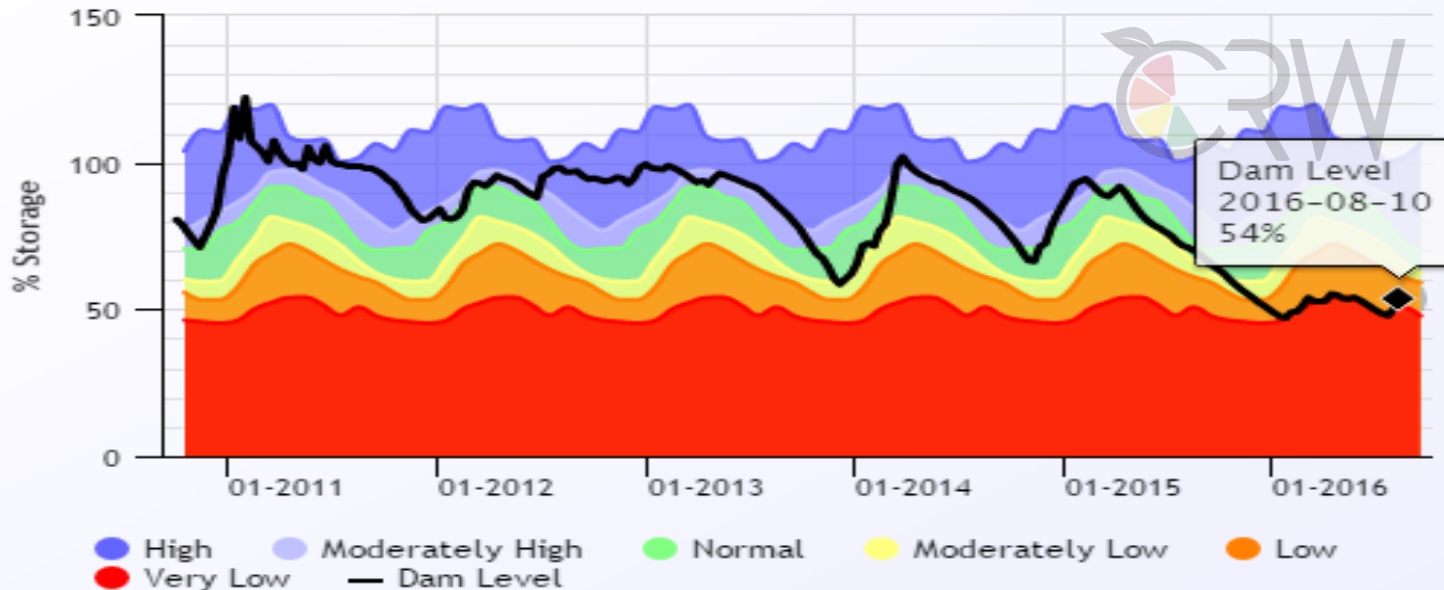


CGA: Oranje Rivier

Surface Water Storage (Gariep Dam)



Surface Water Storage (Gariep Dam)



Gariep Dam

% Full Supply Capacity: 54%

Full Supply Capacity: 5196.04 Mm3

Water in Dam: 2831.16 Mm3

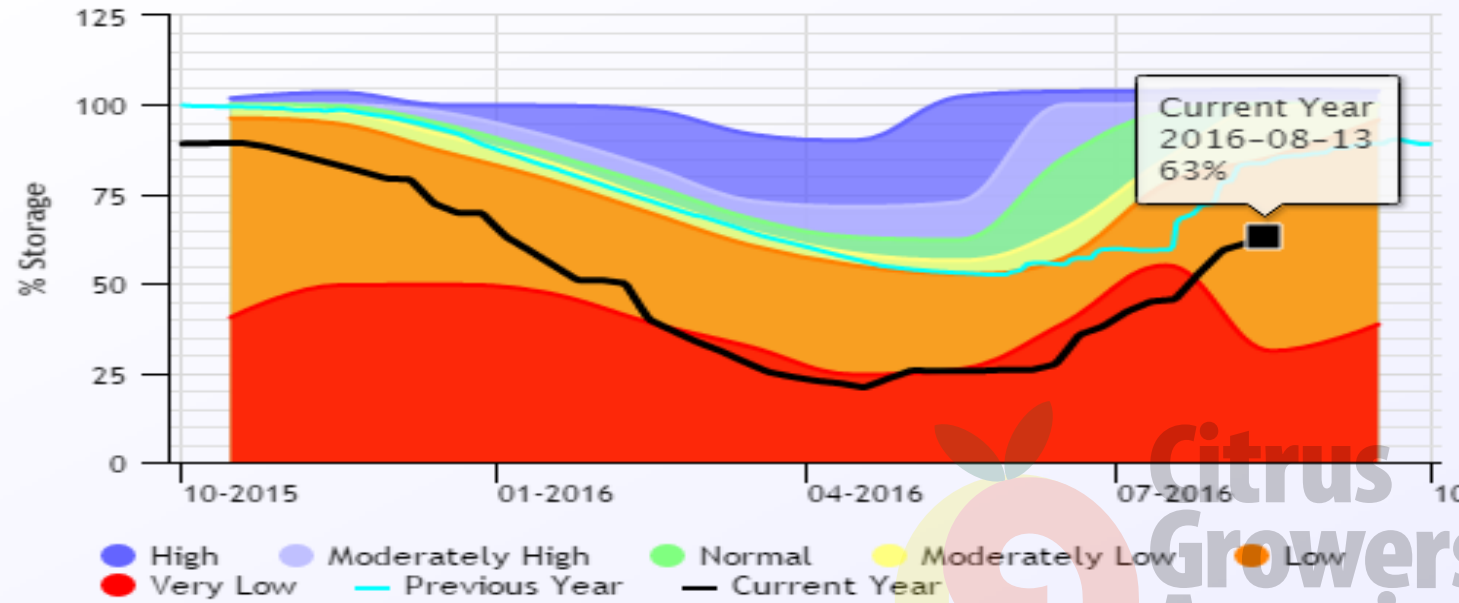
Status: Low (for this time of the year)

Sedimentation: 12%

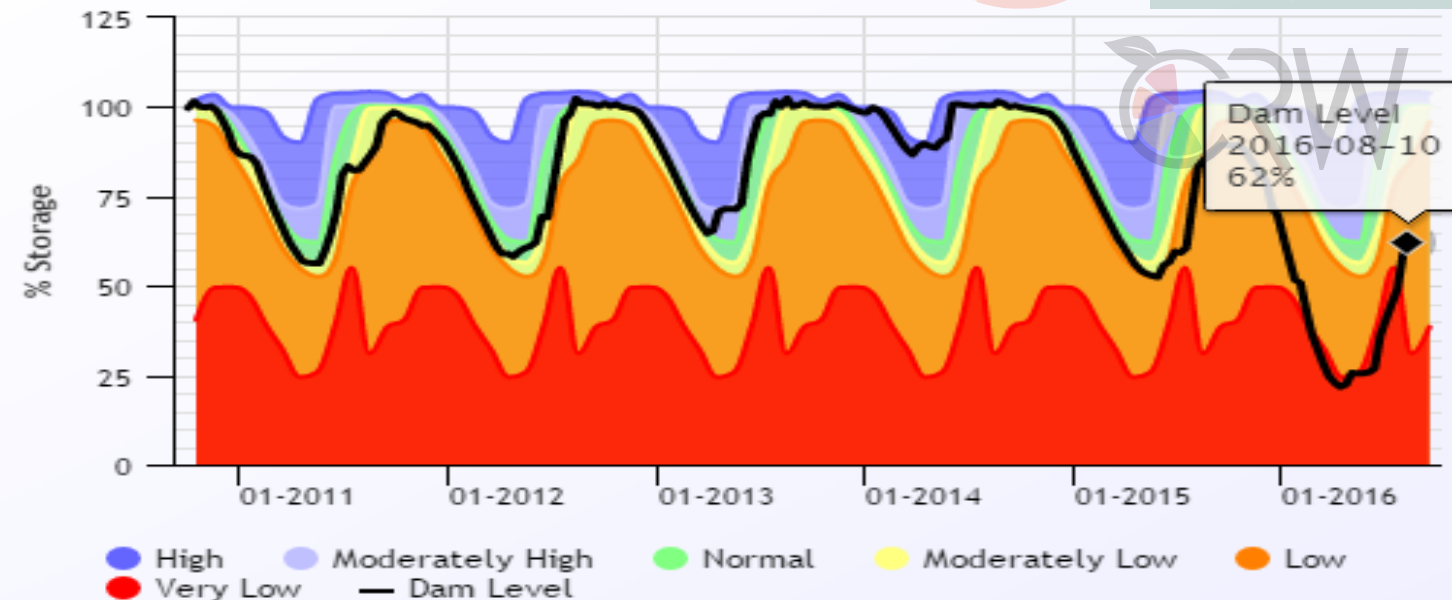


CGA: Boland

Surface Water Storage (Berg River Dam)



Surface Water Storage (Berg River Dam)



Berg River Dam

% Full Supply Capacity: 63%

Full Supply Capacity: 127.05 Mm3

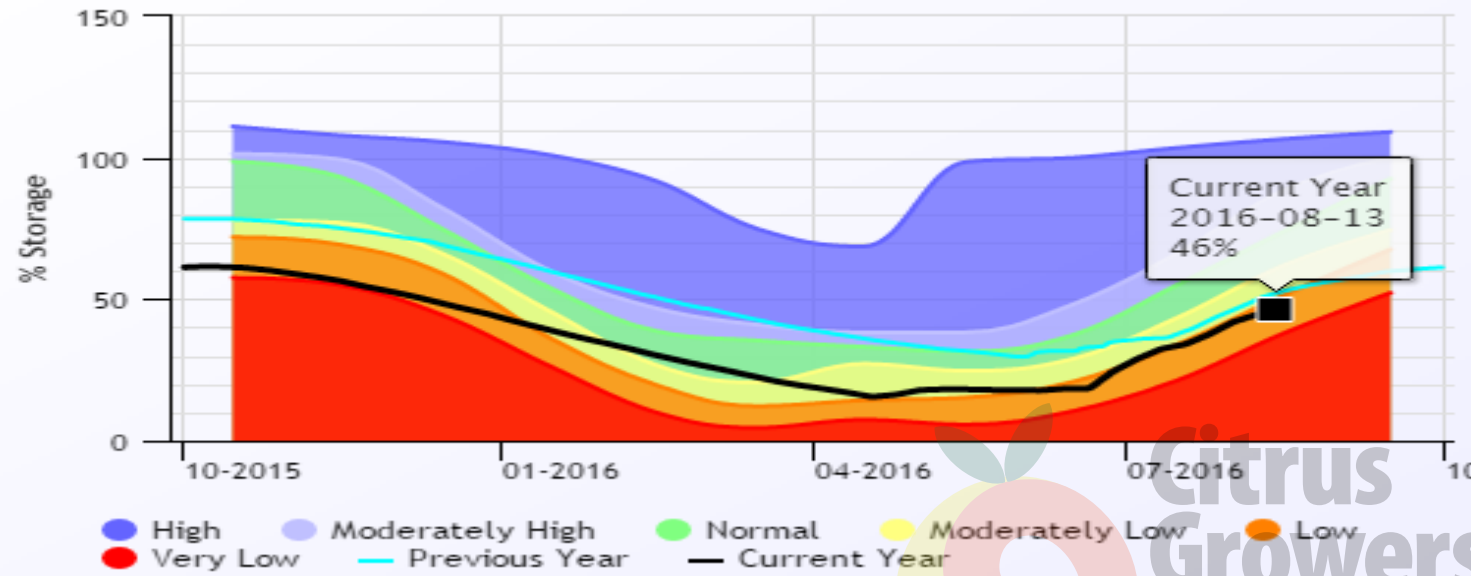
Water in Dam: 80.65 Mm3

Status: Low (for this time of the year)

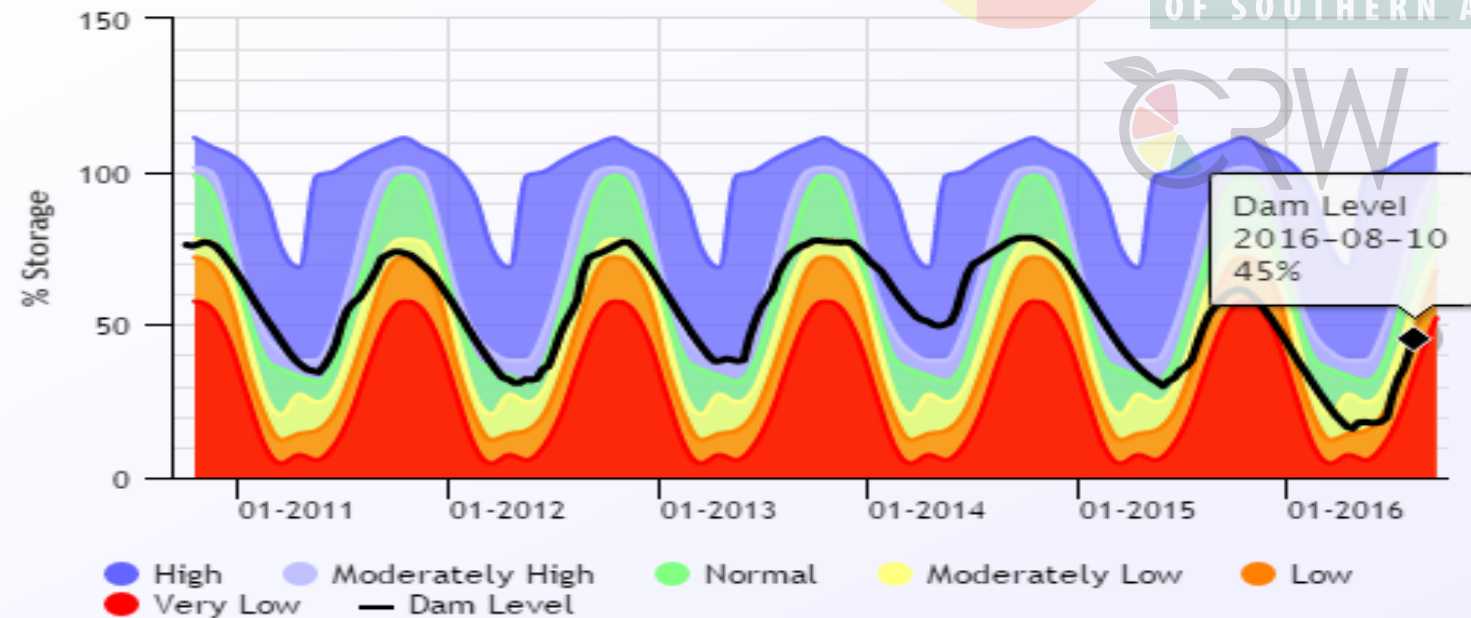
Sedimentation: 0%

CGA: Boland

Surface Water Storage (Brandvlei Dam)



Surface Water Storage (Brandvlei Dam)



Brandvlei Dam

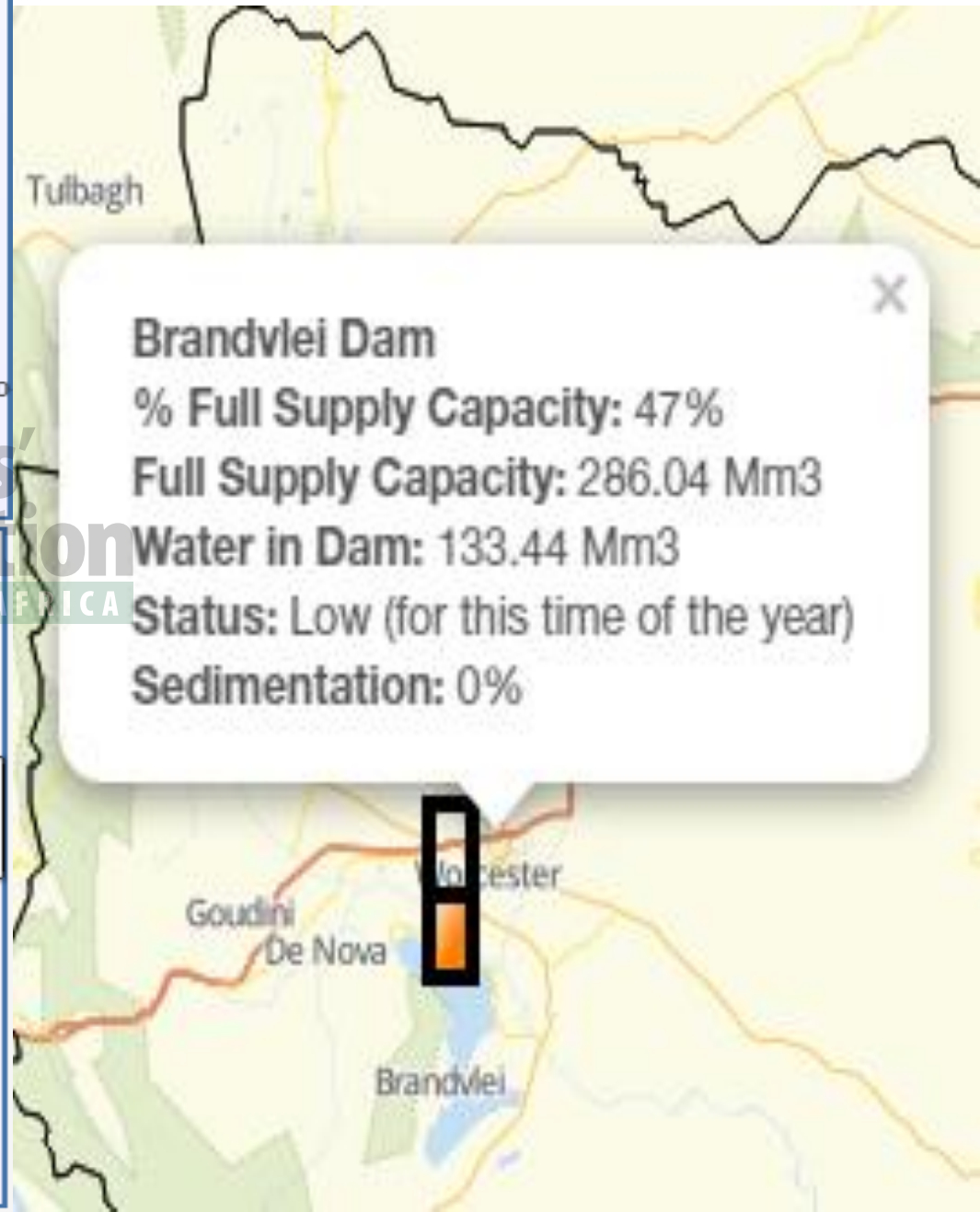
% Full Supply Capacity: 47%

Full Supply Capacity: 286.04 Mm3

Water in Dam: 133.44 Mm3

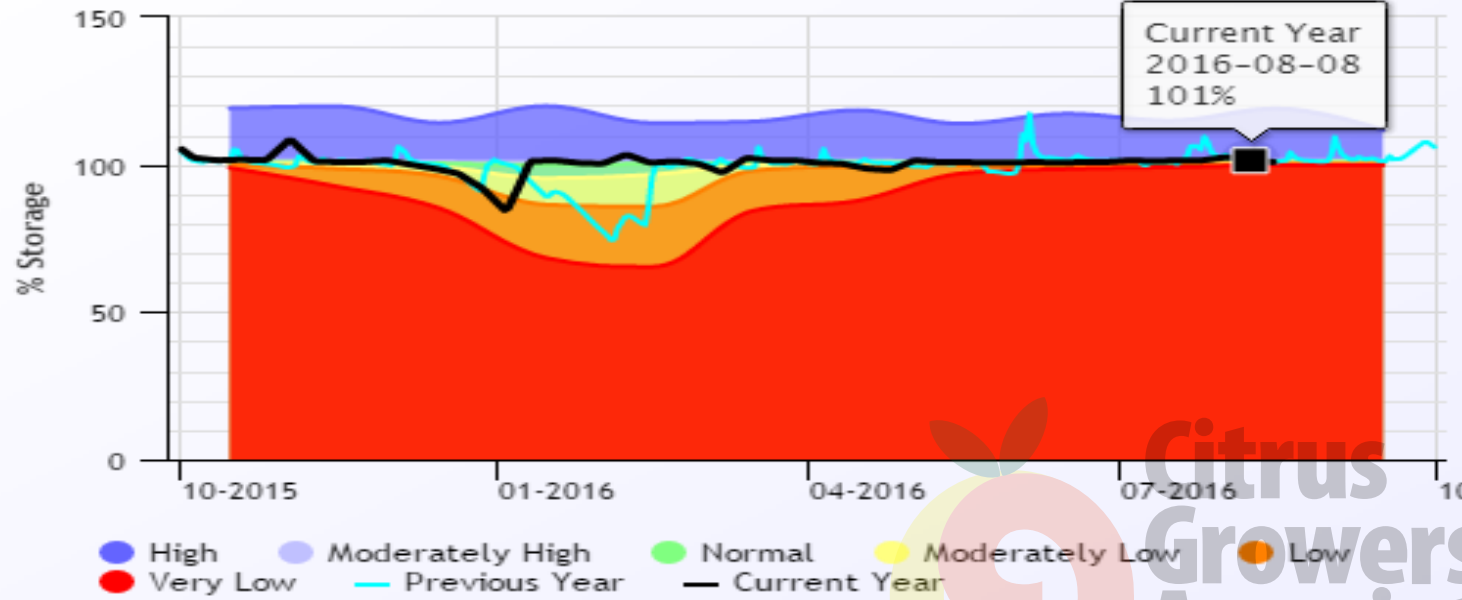
Status: Low (for this time of the year)

Sedimentation: 0%

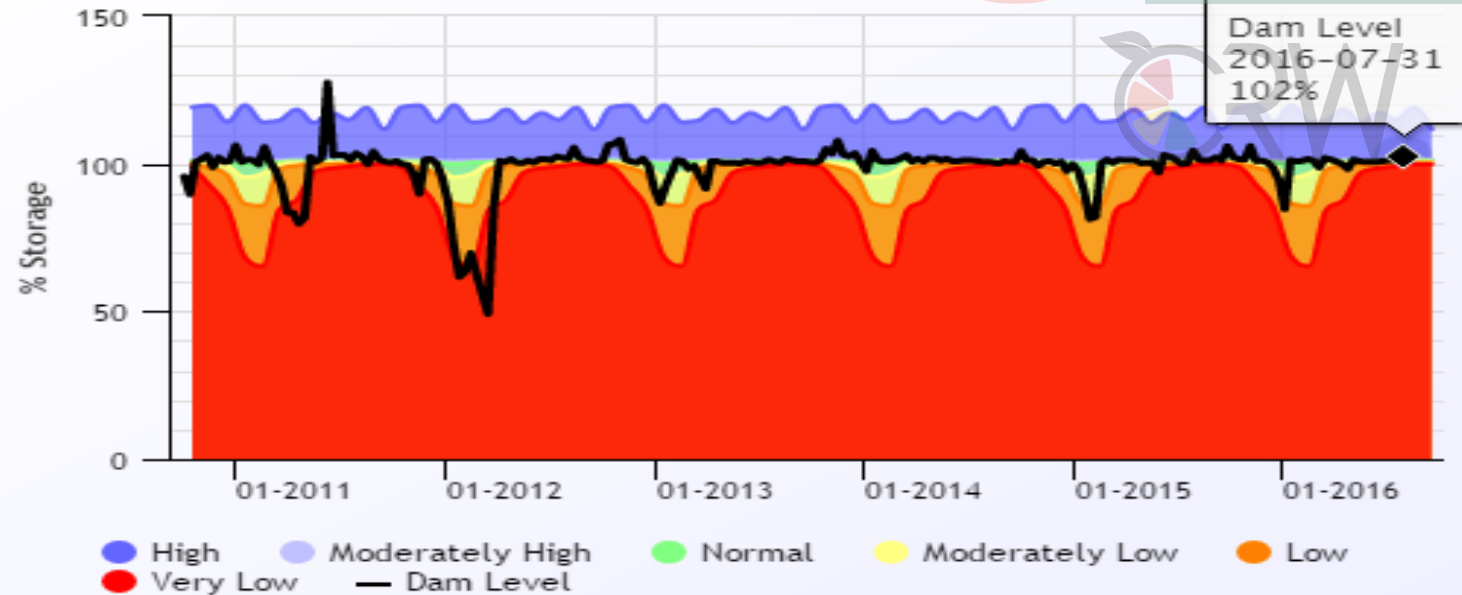


CGA: Boland

Surface Water Storage (Buffeljags Dam)



Surface Water Storage (Buffeljags Dam)



Buffeljags Dam

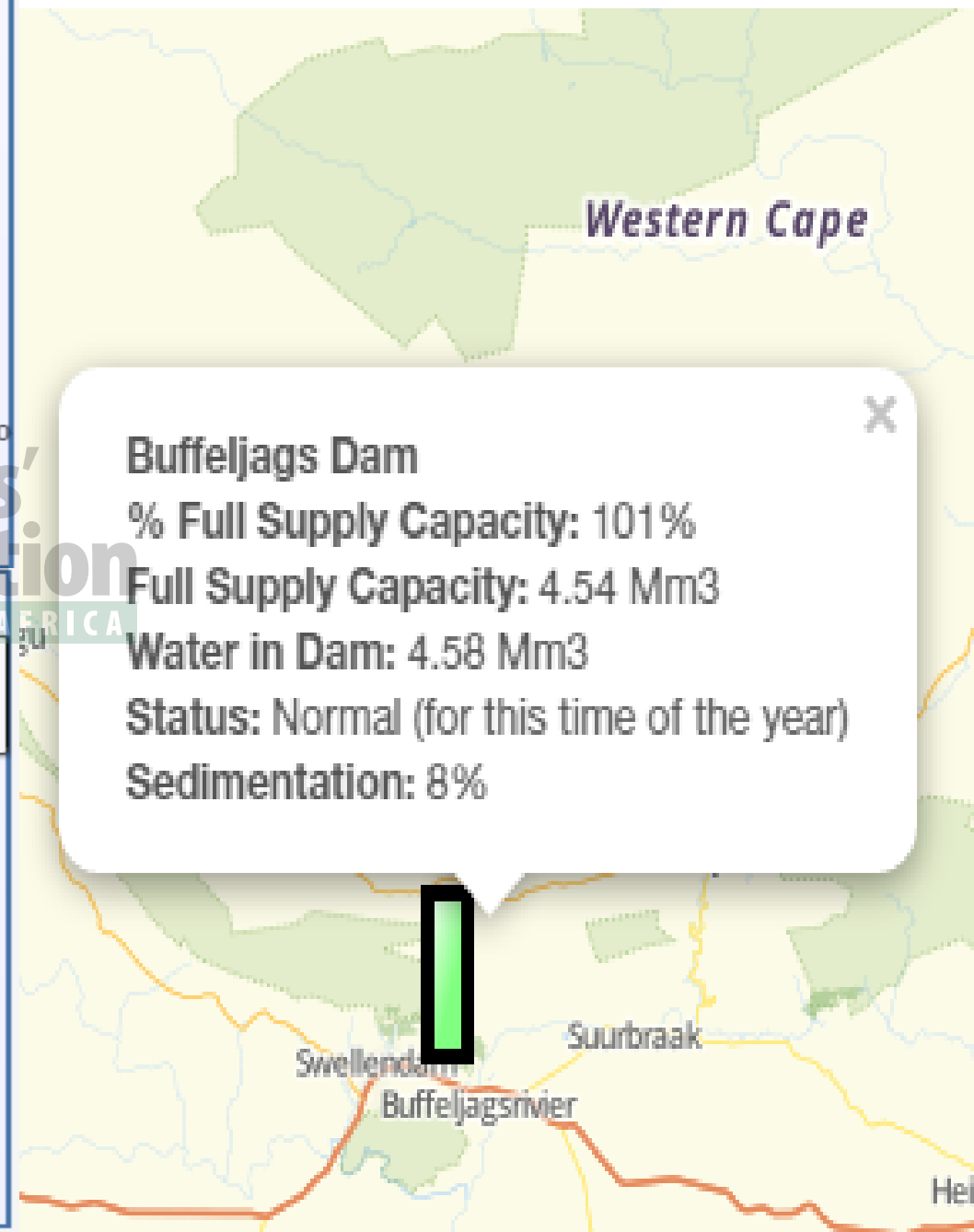
% Full Supply Capacity: 101%

Full Supply Capacity: 4.54 Mm³

Water in Dam: 4.58 Mm³

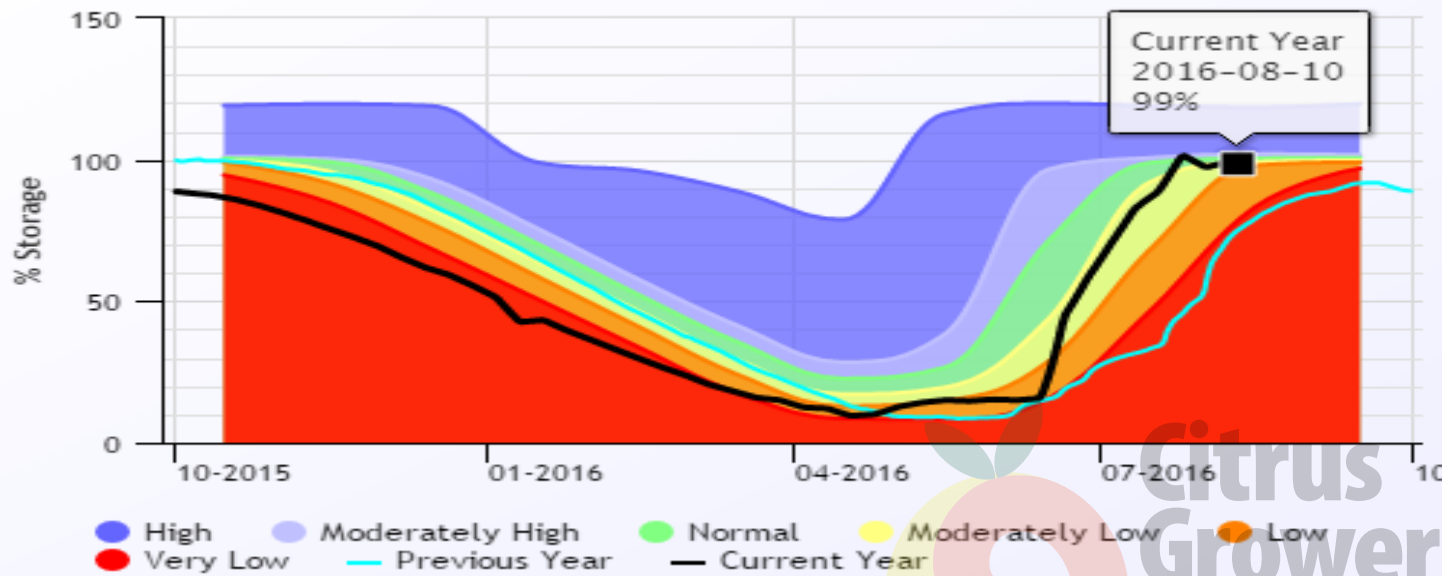
Status: Normal (for this time of the year)

Sedimentation: 8%

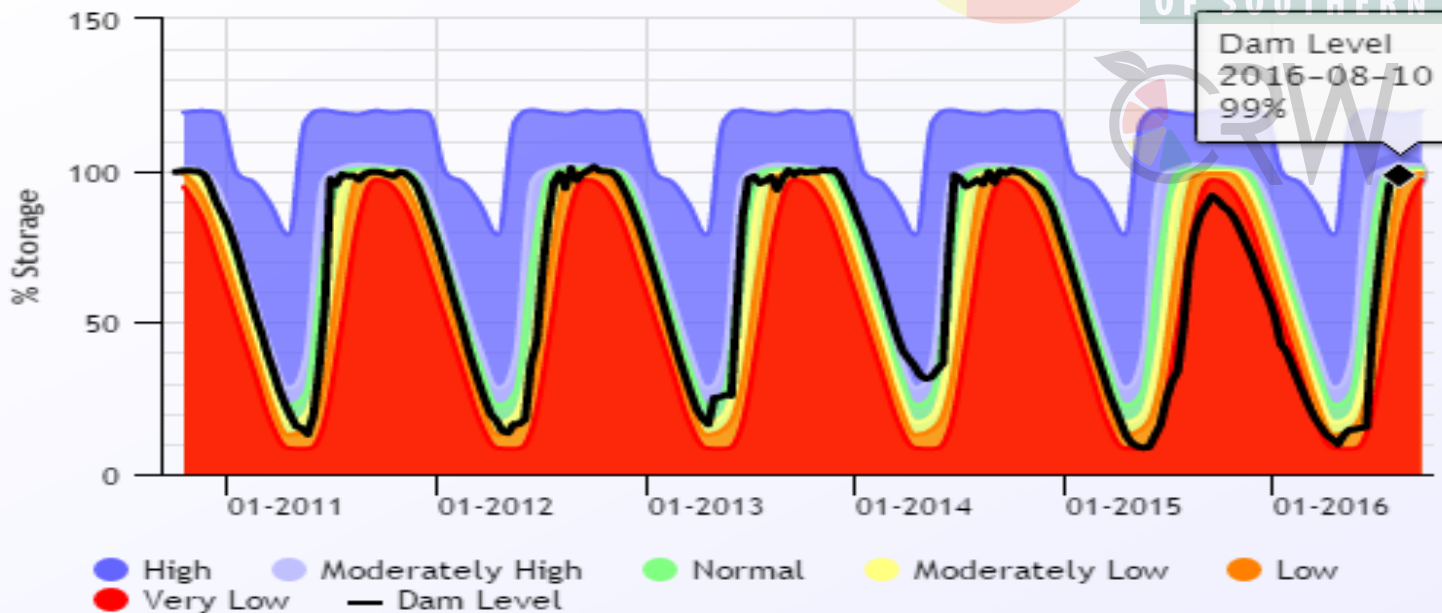


CGA: Western Cape

Surface Water Storage (Clanwilliam Dam)



Surface Water Storage (Clanwilliam Dam)



Clanwilliam Dam

% Full Supply Capacity: 97%

Full Supply Capacity: 122.48 Mm3

Water in Dam: 119.01 Mm3

Status: Low (for this time of the year)

Sedimentation: 0%

Graafwater

Clanwilliam

