Overview of weather conditions and water availability

By Ursula Human

In February this year, Cooperative Governance and Traditional Affairs reclassified the drought in the Western Cape, Eastern Cape and Northern Cape from provincial disasters to a national disaster. This article gives an overview of the current prospects for weather conditions in the summer and winter rainfall areas of South Africa. Information concerning water availability and restrictions is also discussed.

It is believed that farmers in the summer rainfall areas of South Africa can look forward to continuing positive weather and rainfall conditions in the new year.

“Following the 2015/16 drought across most of South Africa, above-normal rainfall during 2016/17 brought welcome relief for the summer rainfall region. The current summer therefore began on a much more positive note than 2016/17, which started with reservoirs over the summer rainfall region at low levels and extreme drought conditions over the Lowveld,” says Dr Johan Malherbe, senior researcher at the Council for Scientific and Industrial Research (CSIR).

Dam levels over this region increased on average by 12% compared to the levels for the same time last year. Only dams in the Western Cape are at lower levels than a year ago.

“For the time being, it seems as though the positive climate conditions over the summer rainfall region is set to continue in broad terms. Coupled global climate models, used for seasonal prediction, have recently trended more favourably in their outlook for summer rain over Southern Africa,” says Dr Malherbe.

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A possible La Niña summer

This recent positive outlook for a reasonable summer over much of the interior, is based on the reaction of climate models to the changing sea surface temperature anomalies (SSTAs) found mostly in the equatorial Pacific Ocean.

Over the central to eastern Pacific, the negative SSTAs have recently crept downward across the so-called La Niña threshold. Persistently stronger than normal easterly trade winds across large sections of the equatorial Pacific during the 2017 winter – and continuing to this day – have resulted in a very late developing La Niña, a global ocean-atmosphere state that is associated with above-normal rainfall over the summer rainfall region. “If these anomalies persist for another two months, this year will be counted as a La Niña summer.”

According to Neel Rust, chief operating officer at Laeveld Agrochem, it is encouraging to see that the forecast points to a continuation of good rains in the second half of the summer rainfall area.

“This is good news to especially producers in the western parts of the Free State and the North West, seeing that plantings happen later – which has been the case the past four years. The last few seasons’ good rains, an essential component before planting can commence, moved on by approximately six weeks.”

“However, late plantings carry a greater risk as the summer row-crops are still in
their growth stage when early frost occurs. Under normal conditions producers would welcome early frost as it helps in reducing the summer row-crops’ moisture content.

According to the non-profit organisation Green Cape, agricultural users have already reduced water usage from 60 to 85%.

but with late plantings there is a risk that the plant may be damaged, since it is still in its growth phase.”

The effects of strong easterly winds
Dr Malherbe says that anomalous SSTs over the equatorial Pacific Ocean will not necessarily force weather anomalies across South Africa, although there exists a strong statistical correlation between the SST anomalies and rainfall over South Africa.

This correlation may also simply mean that both rainfall over the subcontinent and the SSTs across the equatorial Pacific Ocean are influenced by the same factor, namely the strength of easterly winds at a global scale. That is, the strength of the easterly winds throughout large parts of the world may drive both the SSTAs and rainfall across the summer rainfall area.

“As the trade winds across much of the equatorial Pacific are stronger from the east than normal, it can be an indication that the forcing associated with the La Niña event during the coming summer may be sufficient to result in wet conditions over large parts of the summer rainfall region,” Dr Malherbe says.

These effects might already be benefiting soya bean crops. According to Wandile Sihlobo, head of economic and agribusiness intelligence at Agbiz, several regions of the eastern Free State and Mpumalanga received light showers of between 10 and 45 millimetres in early February. This rained well for soya bean crops that were already in a fair condition. The weather forecast for the next three months is favourable in this region, with prospects of good rainfall.

Western Cape water restrictions
The south-western winter rainfall regions are unlikely to see relief from the crippling drought this summer (normally a dry period) and will have to wait until the winter of 2018 to learn their fate. There is also little hope that irrigation will be of any help, with the Western Cape water usage being under a level 6b restriction. In February, day zero was moved to June 2018 due to measures taken to limit water usage.

With agriculture currently consuming >40% of shared dam resources in the province, they will not be receiving any further water releases this summer. In response to continued high water consumption, a recent gazetted notice

Water usage from large dams comprising the Western Cape water supply system (WCWSS).
(12 January 2018) instructed the Western Cape provincial head to cease any further releases from the system dams once an agricultural bulk water user association, irrigation board and/or individual water users had depleted their curtailed seasonal bulk volumes.

With agriculture in the Western Cape not receiving any further water releases this summer, it will have a significant impact on that sector, with downstream impacts on the local economy. R40 million in agricultural workers’ wages had already been lost in October 2017.

According to information supplied by the non-profit organisation Green Cape, agricultural users have already reduced water usage from 60 to 85%. Irrigation access to the Berg River for producers in the Berg River area has been cut off. Irrigation users must implement monitoring devices on pumps to keep record of all the data obtained from the water measuring device. Many farmers have redirected water from less profitable to more profitable blocks. This drastically reduces the quantity of crops produced.

**Reduced agricultural production**

In a press statement in February, Agri Western Cape CEO, Carl Opperman, stated that due to the limited water allocation, agriculture had to make serious financial decisions, such as taking out vines and orchards, not planting vegetables in certain regions and using the limited available water for higher value crops that are earning the country a massive amount of foreign income. Due to the limited water, 50 000+ seasonal workers couldn’t be accommodated this year.”

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As for predicting winter rainfall in the southern parts of the Western Cape, according to Dr Peter Johnston, a climate scientist at the University of Cape Town who specialises in agriculture and water related activities, there is no forecast that can predict winter rain in this region, especially during a neutral El Niño-Southern Oscillation (ENSO) year.

**Plan according to scenarios**

“Statistically there is a higher chance of a wetter year occurring after a prolonged drought, but stats can be wrong,” says Dr Johnston. “Keeping in mind the status of the soil due to the current drought, it would be useful to create scenarios of possible rainfall outcomes and plan accordingly.”

He gives the following as an example:

- What if there is no/reduced rain during May and June?
- What if the rainfall comes early (May, June) and then stops?
- What if the rainfall is normally distributed (May to Sept)?
- What if the rain is heavier than normal?

“The industry would then allocate the risks and responses for each scenario and monitor the season, choosing management strategies that would best ensure the maximum possible yield and quality. Of course, there are also many other unknowns, such as wind and temperature,” he concludes.