

Seasonal Climate Watch

November 2015 to March 2016

Date: Oct 26, 2015

1. Advisory

Most models are showing the strengthening of an El-Niño episode towards the summer season with the expectation to continue throughout the autumn season. The forecasting system is confidently showing that going towards the mid- and late-summer season, the likelihood of the continuation of dry conditions over most parts of the country is high. However, conditions over the Indian Ocean adjacent to South Africa may promote chances of rainfall activities for the north-eastern South Africa including some part of KwaZulu-Natal for late spring and early summer season. The likelihood of extreme warmer temperatures over most of South Africa is predicted to be high throughout the summer season. Other international forecasting systems also similarly indicate a tendency of drier and warmer conditions for South Africa.

2. Recommendation

There is some evidence that the likelihood of the country experiencing consistently dry and hot conditions toward the summer season remains high. The condition over the north-eastern part of the country for the start of the summer season may not be strong enough to change the status quo. This persisting dry condition may promote a regional or localized drought depending on the state of the existing water stress. It is highly recommended that medium- and shorter-range weather forecasts be monitored for the development of conditions that may alter or strengthen the expectation of the current forecast.

3. State of Climate Drivers

Observations show that ENSO is currently in the strong El-Niño situation. The atmosphere is also responding to this strong SST (sea surface temperature) warming over the equatorial Pacific including the weakening of the trade winds and other typical patterns. Most of the forecast model's predictions indicate the strengthening of [El Niño](#) condition through the start of the austral summer and is expected to continue towards late summer and early autumn seasons. The Indian Ocean Dipole ([IOD](#)) shows a tendency of positive phase for late spring with the expectation of returning to a neutral state toward the summer season. Depending on how long the warming of the Indian Ocean adjacent South Africa persists, as it stands now may counteract against the adverse impact of the current strong El-Niño condition on our climate system particular in favour of rainfall activities over north-eastern South Africa as noted earlier. The Southern Annular Mode ([SAM](#)) shows a tendency of a positive phase since the beginning of 2015 and is expected to remain in the same state with a tendency of erratically changing states around the mean for the coming few weeks.

Despite that the state of the SAM and current conditions over the Indian Ocean may promote chances of rainfall activities over the eastern and north-eastern parts of South Africa, with the dominance of the tropical system over southern Africa region starting toward the summer season, grows the expectation of climate conditions ranging from drier to extreme dry conditions over the country. It is known that ENSO has a noticeable impact on the climate of our region during the austral summer season and the IOD is found to influence rainfall activity in our region particularly during spring. Furthermore, the SAM is found to affect South African climate conditions by regulating the south/north ward positioning of the mid-latitude Jet stream and transport of associated air masses from the southern Atlantic Ocean and its impact is pronounced in winter.

4. Climate forecast Details

4.1 Rainfall

The forecasting system indicates significant probabilities of above-normal rainfall for parts of north-eastern South Africa at the start of summer and below-normal for parts of the southern parts of South Africa for the same period. High probabilities of below-normal rainfall for the mid- and late- summer season is predicted by the forecasting system countrywide (Figure1).

For improved confidence in a probabilistic prediction use is made of skill scores most notably the Relative Operating Characteristic (ROC) which indicates the relative performance of the prediction system. Areas of ROC scores above 0.5 may be considered as areas of added confidence for the prediction (Figure A1).

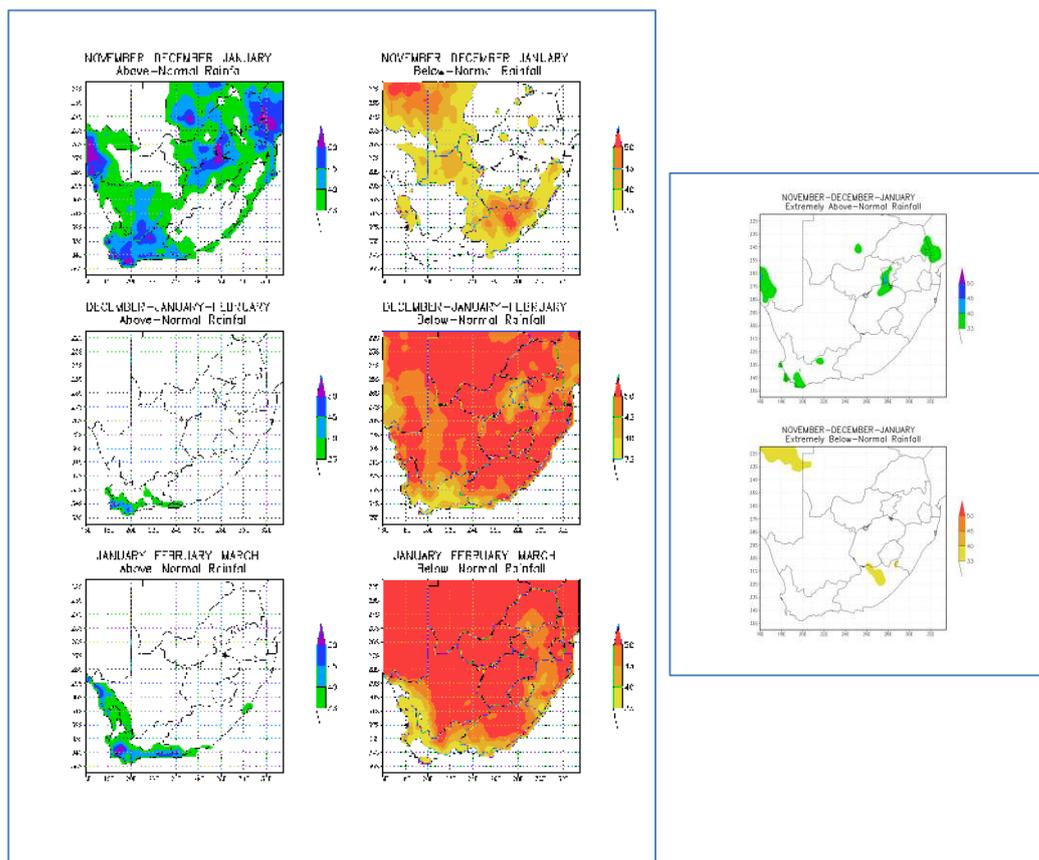


Figure 1: Rainfall forecasts for the three overlapping seasons valid for the period of November 2015 to March 2016 and extreme forecasts for November to January 2016 season (right panel).

4.2 Minimum and Maximum Temperatures

The forecasting system indicates generally above-normal temperatures across the country through early summer towards mid-summer, with an exception of below-normal minimum temperatures for the southern parts of South Africa (Figure 2).

For improved confidence in a probabilistic prediction use is made of skill scores most notably the Relative Operating Characteristic (ROC) which indicates the ability of the forecasting system to distinguish events from non-events. As noted earlier, areas of ROC scores above 0.5 may be considered as areas of added confidence for the prediction (Figure A2).

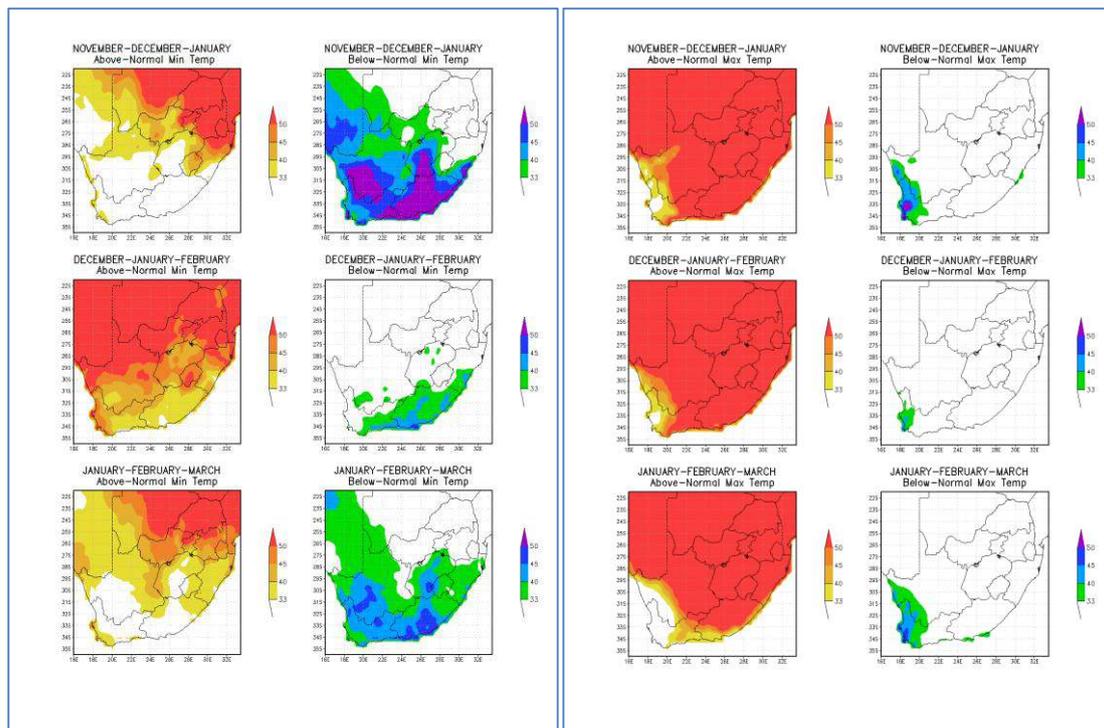


Figure 2: Probabilistic minimum (left panel) and maximum (right panel) temperature forecasts for the three overlapping seasons valid for the period of November 2015 to March 2016.

Contributing institutions

All the forecasts are a result of an objective multi-model prediction system developed at the South African Weather Service. This system comprises of long-range forecasts produced by the following institutions:



5. Appendix

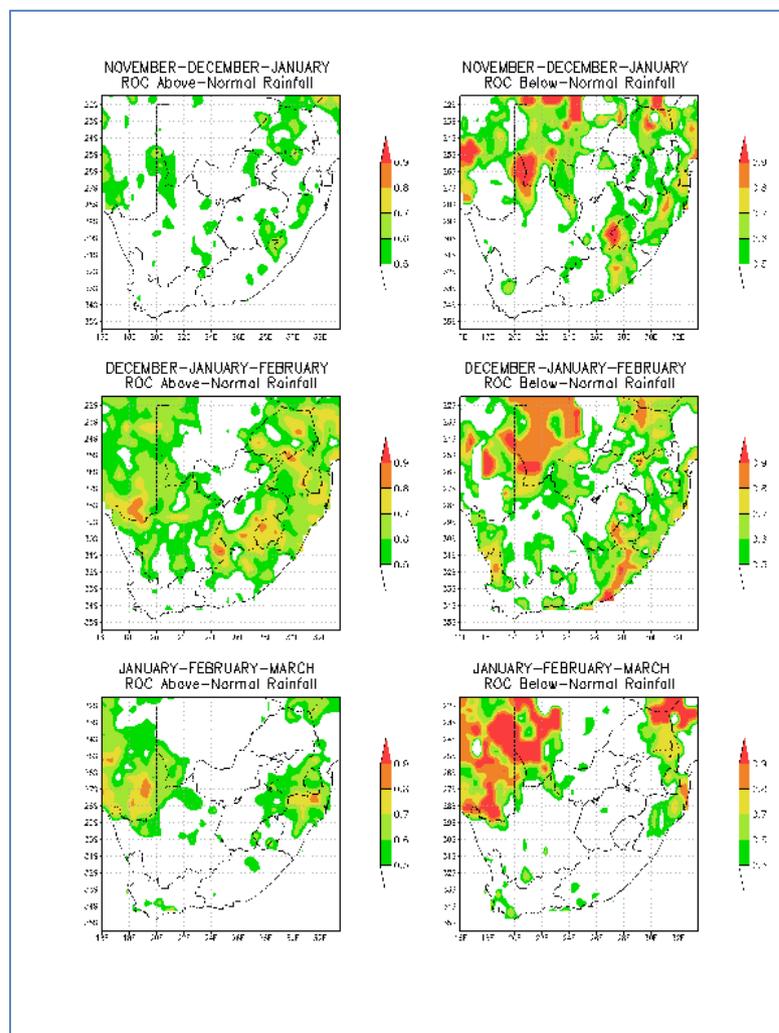


Figure A1: The skill of the forecasting system in discriminating wet or dry events during the forecasting period as shown in the caption of each plot. Those regions with no shades imply that the forecasts are not better than chance.

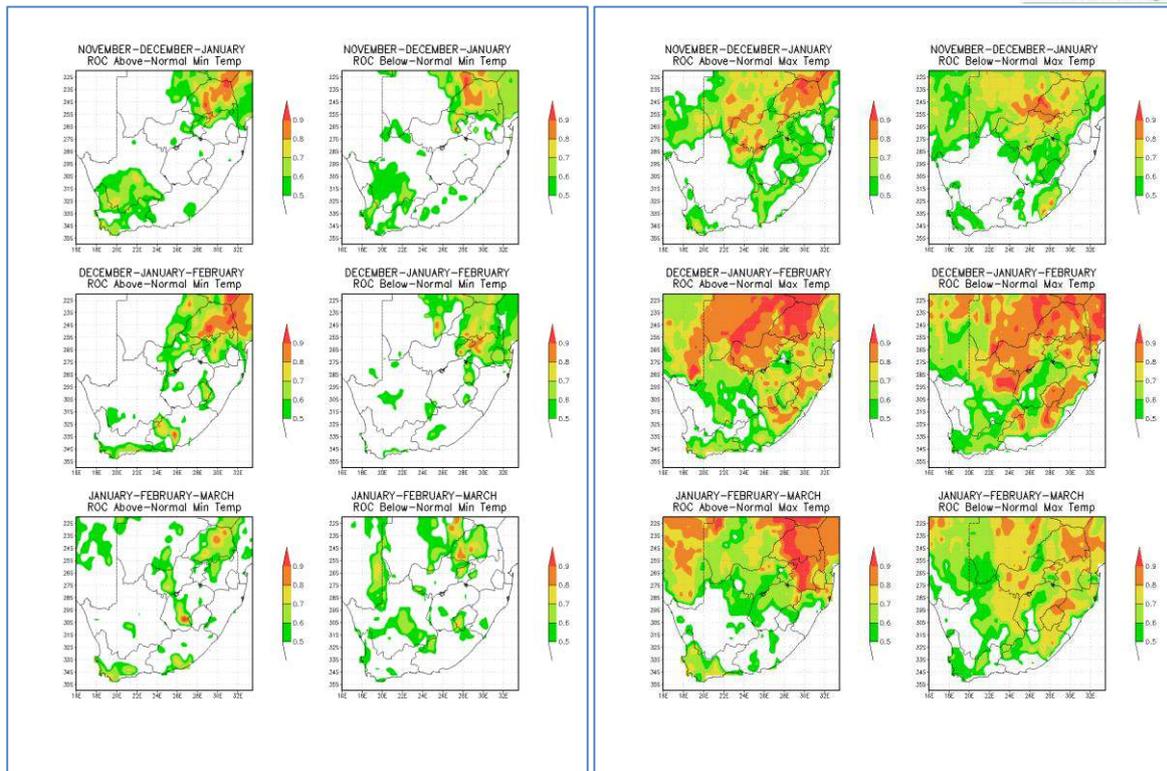


Figure A2: The skill of the forecasting system in discriminating hot or cold events during the forecasting period as shown in the caption of each plot. Those regions with no shades imply that the forecasts are not better than chance.