

Consecutive years of record below-average rainfall affecting crops in Zimbabwe

Updated February 20, 2020

Highlights

- The 2019 October to December (OND) rainy season in Zimbabwe was one of the worst on record and rainfall deficits remain across much of the country (Figure 1).
- Three of the past five OND seasons have been among the worst rainfall on record since 1981¹ (the worst year on record was 2015/2016). This has reduced farmer resilience and impacted their access to inputs and seed.
- In the south and west of Zimbabwe, planted area is critically low and over areas that did plant, germination is poor and permanent crop wilting resulted in some areas.
- Rainfall improved in mid-January, primarily in the main producing areas including Mashonaland provinces, reducing accumulated rainfall deficits. This was followed by a large rainfall system in the first week of February, which brought heavy rains across the country and resulted in flooding in some areas.
- Recent rains will improve rainfall deficits and replenish water supplies, notably in the main producing north. However, the rains came too late and are insufficient to offset the rainfall deficits and recovery is unlikely due to below-average planted area and cumulative impacts of seasonal rainfall deficits.

Seasonal Rainfall Accumulation Anomaly by pentad
2019-2020 season Oct - May
(Oct pentad 1 2019 thru Feb pentad 2 2020) - Average (1981-2010)

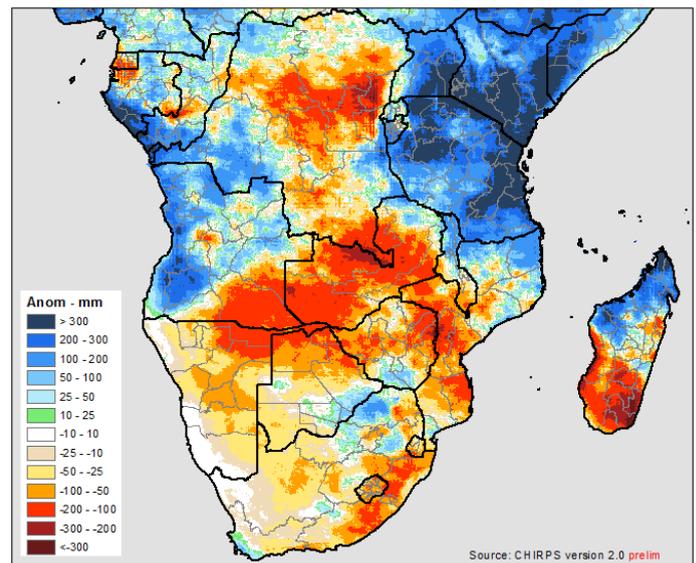


Figure 1. Seasonal rainfall accumulation anomaly from October 1 through February 10 compared to the long-term average from 1981-2010. Source: USGS/EROS

Overview

In Zimbabwe, record below-average October to December (OND) rainfall has severely impacted crop prospects as a result of below-normal planted area, permanent and near-permanent crop losses, persistent water and pasture challenges, and livestock losses. A main driver of this season's below-average rainfall was the October to December 2019 Indian Ocean Dipole which was recorded as the strongest of the 20th and early 21st century and long-lasting, causing abnormal sea surface temperatures and driving the suppressed rains in Southern Africa and enhanced rains in East Africa².

Matebeleland South province has been the worst affected by low planted areas with reports indicating that in some parts of the province up to 70 percent of households did not plant. This reduction in planted areas can be seen from satellite imagery where even compared to last year's 2018/2019 poor season, active vegetation is significantly reduced (Figure 2; Figure 3). Planted area in Masvingo and Matebeleland North provinces is also estimated to have declined. This is also the case (although to a lesser extent) across Southern Midlands and Manicaland. When considering all provinces, planted area is reported to be below the five-year average and less than the previous 2018/2019 season. Fall Armyworm is being reported across most of the country with African Armyworm incidences reported in parts of the Midlands Province.

^{1,2} <http://blog.chc.ucsb.edu/?p=695>

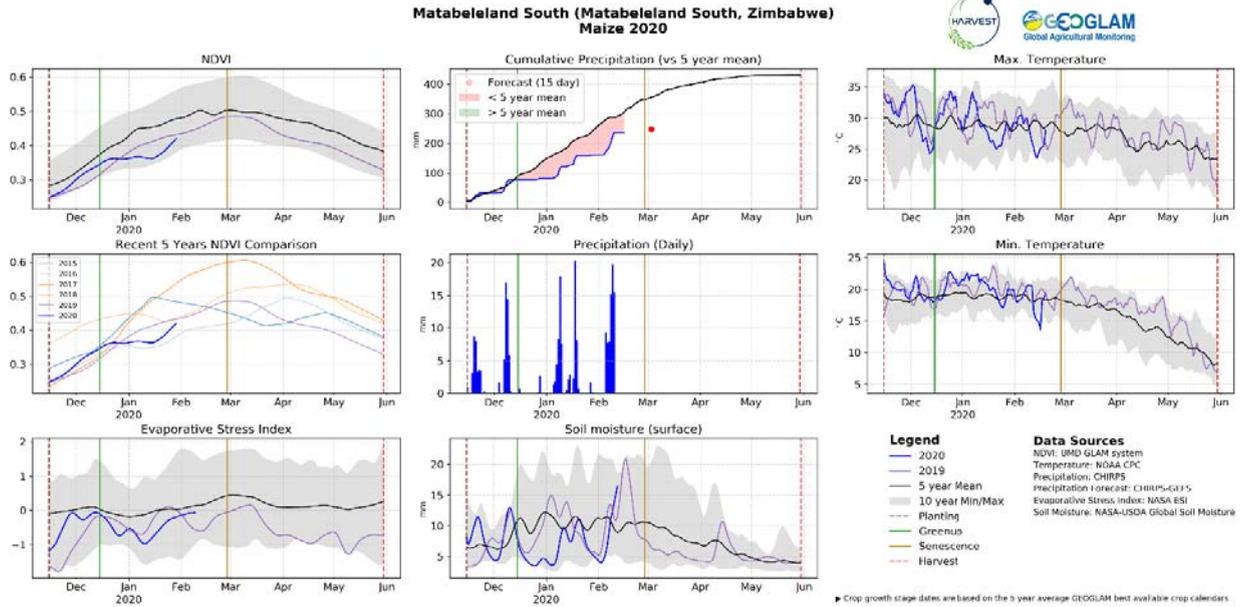


Figure 2. Agro-climatic indicators over the current 2020 main maize season Matabeleland South Province, Zimbabwe (source: NASA Harvest)

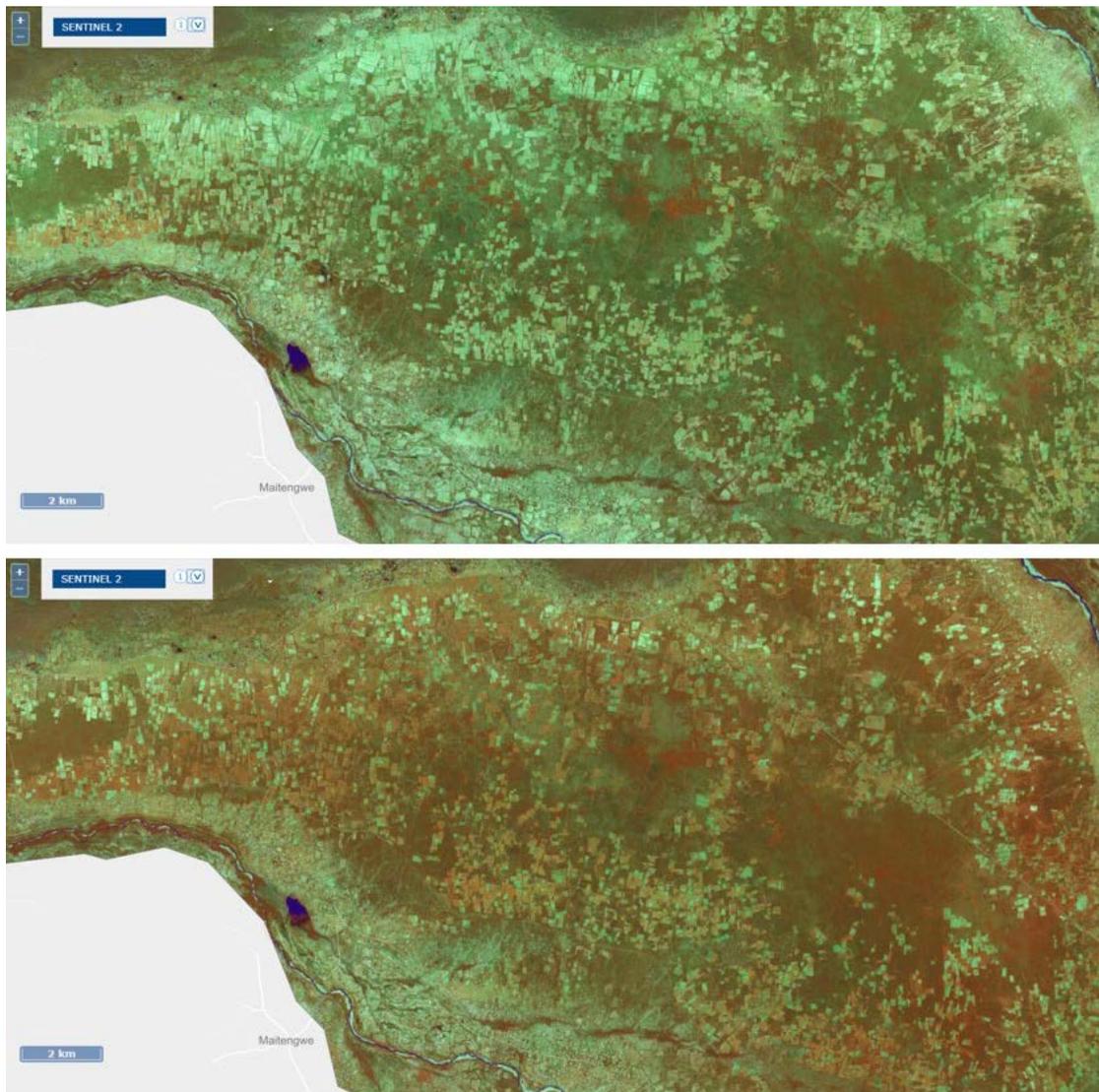


Figure 3. Sentinel-2 Imagery showing crop areas in Matabeleland South region, in Zimbabwe, for the period 19 January – 18 February 2020 (top) and for the same period for 2019 (bottom) (source: [ASAP High-Resolution Viewer](#)). As visible in the figure, many agricultural areas are bare (greenish color) in 2020, in contrast with active vegetation (red color) that was present in the previous agricultural season (that was a below-average season for the southern province).

After prolonged dry spells, a short burst of rainfall in mid-January across the high-producing Mashonaland provinces improved crop and pasture conditions in some areas; however, the dry spells resulted in poor germination and high moisture stress, likely reducing crop yields. Following this, a heavy rainfall system came in the first week of February across the country, reducing rainfall deficits and resulting in flooding across parts of Matabeleland North. Despite rainfall improvements, cumulative rainfall still remains below-average across the country and even among the high producing provinces of Mashonaland West, Mashonaland Central, and Manicaland (Figure 4). In Mashonaland West, reduced planted area can be seen from satellite imagery where active vegetation is considerably reduced in comparison to the previous two seasons (Figure 5).

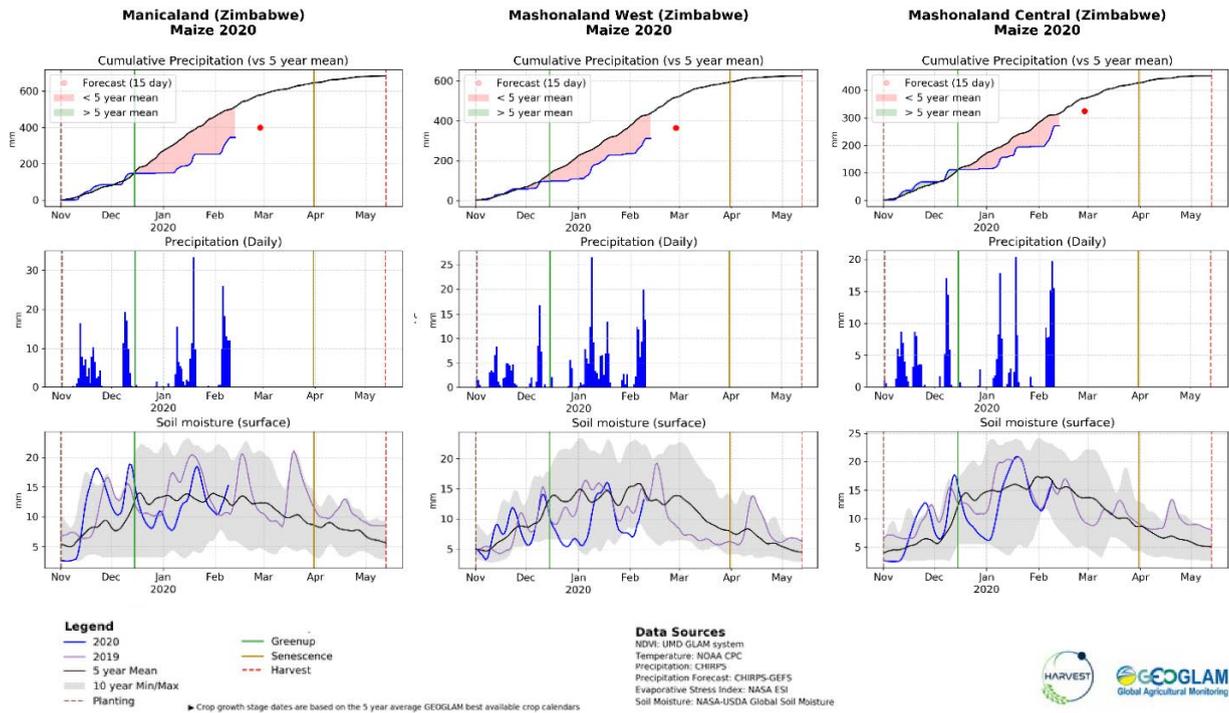


Figure 4. Agro-climatic indicators over the current 2020 main maize season in Manicaland, Mashonaland West, and Mashonaland Central Provinces, Zimbabwe (source: NASA Harvest)

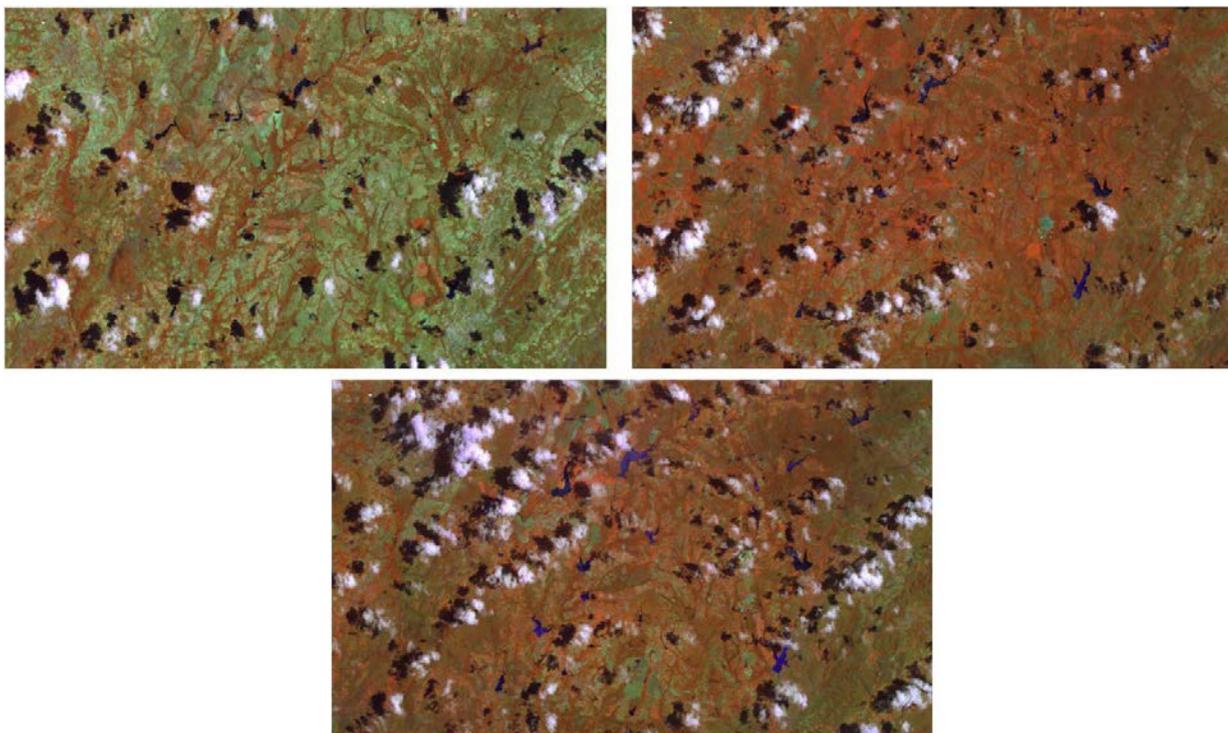


Figure 5. Sentinel-2 Imagery showing crop areas in Mashonaland West region, in Zimbabwe, for the period 19 January – 18 February 2020 (top-left) and for the same period for 2019 (top-right) and 2018 (bottom) (source: [ASAP High-Resolution Viewer](#)). As visible in the figure, many agricultural areas are bare (greenish color) in 2020, in contrast with active vegetation (red color) that was present in the previous agricultural seasons.

February and March Rainfall Outlook

There is an increased chance of drier than average conditions over the next two weeks in southern, central, and eastern Zimbabwe, while northern areas may see average or above-average amounts, according to a short term forecast released on February 19th (Figure 6-left and middle). This follows a wet period across much of the country with heavy rains received from early to mid-February.

Some longer term outlooks for March indicate suppressed rainfall in eastern Zimbabwe (Figure 6-right). There is considerable uncertainty due to a range of conditions forecast by models for the next 30 days. However, some confidence in the NMME forecast for March is based on agreement amongst that suite of models, which forecast a similar region-wide rainfall pattern that has been observed this season. This pattern is likely linked to abnormal sea surface temperatures in the equatorial and southern Indian Ocean.

The Indian Ocean Dipole was in a very strong positive mode from October to December 2019 and the Southern Indian Ocean Dipole has been in a negative mode since October 2019. This combination appears responsible for earlier enhanced rains in East Africa and northeastern Southern Africa and damaging dry spells in Zimbabwe and other parts of central and south Southern Africa.

GEFS Forecast for Feb 20 - Feb 26 and Feb 27 - Mar 4, 2020 NMME Forecast for March 2020

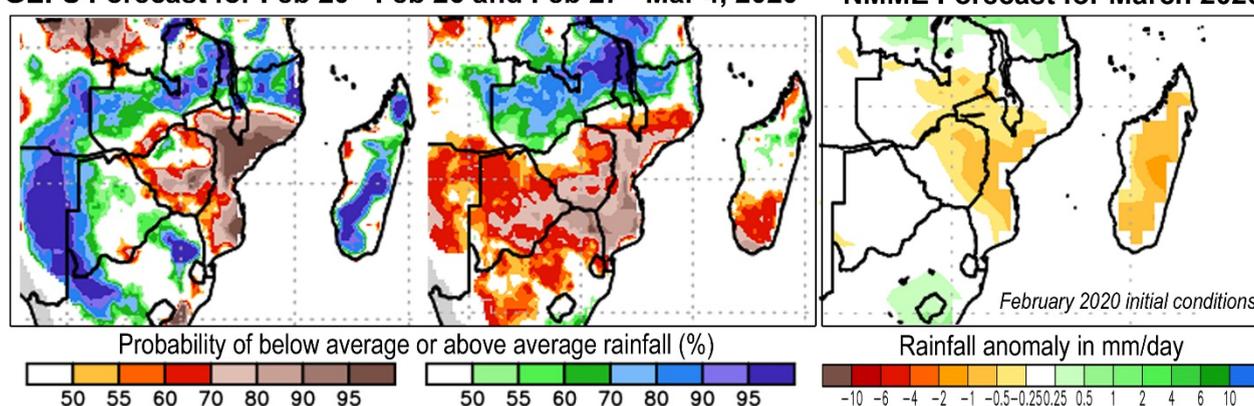


Figure 6. Rainfall forecasts for late February 2020 and March 2020. The left and middle maps show a forecast for the chance of rainfall in the next two weeks being below-average (< 80% of average) or above-average (> 120% of average). From the NCEP Global Ensemble Forecast System (GEFS). The right-hand map shows the North American Multimodel Ensemble (NMME) multi-model mean rainfall anomaly forecast for March 2020 based on February 2020 initial conditions. The majority of NMME models show this drier than average signal. Original images are available at <https://www.cpc.ncep.noaa.gov/products/international/africa/africa.shtml>.

Potential Outcomes

Despite improved rains in January, followed by heavy rains in February across parts of the country, little to no improvement in cereal crop conditions is expected in southern and western parts of Zimbabwe. At this point in the season, it is unlikely that farmers will replant cereal crops as typically the rainy season ends in April and there is not enough time for cereal crops to reach maturity. Three of the worst OND rainfall periods since 1981 occurred in the last five years which has reduced farmer's resilience and impacted their access to inputs and seed. In addition, low water levels resulting from multiple years of drought have reduced irrigation capacity which has been exacerbated by extensive and repeated power blackouts.

In the main producing north, where rains improved in January and February, crops may benefit from recent rains but yields are expected to remain below-average due to effects from earlier rainfall deficits and high temperatures.

Following last year's poor maize harvest, national maize grain supplies are critically low. In addition, the poor macroeconomic environment continues to drive food insecurity, due to poor access to food, and food security is of increasing concern.

The GEOGLAM Crop Monitor team is monitoring the situation. Further information will be provided in the next *Crop Monitor for Early Warning* monthly bulletin, which will be released on March 5th.

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Thanks, The GEOGLAM Crop Monitor team

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**EC contribution is provided by the Joint Research Centre of the European Commission.*



Prepared by members of the GEOGLAM Community of Practice
Coordinated by the University of Maryland with funding from NASA Harvest
The Crop Monitor is a part of GEOGLAM, a GEO global initiative.

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