World Food Programme

SAVING LIVES
CHANGING LIVES

Southern Africa: Seasonal Overview and Drought Hotspot Analysis (2019/2020)

Johannesburg Regional Bureau | April 2020

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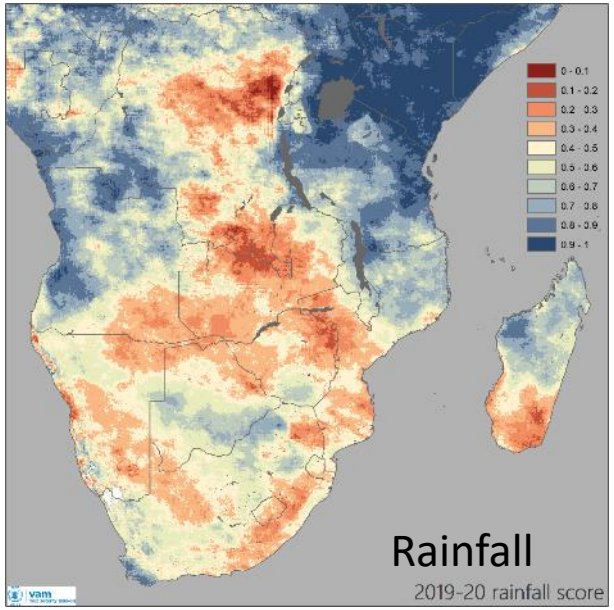
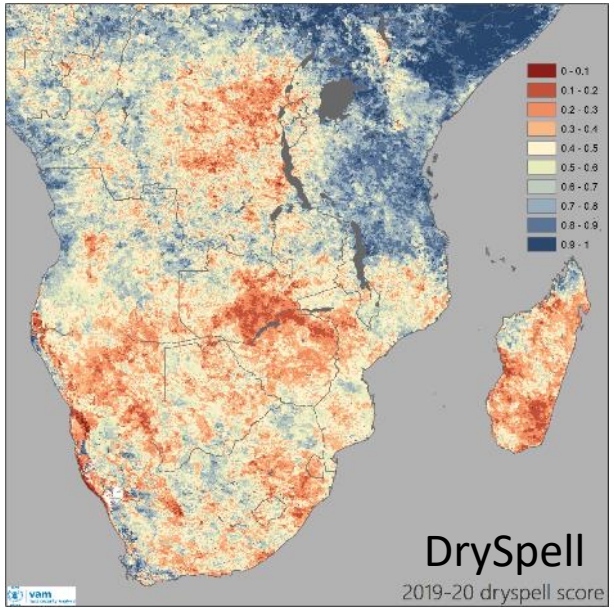
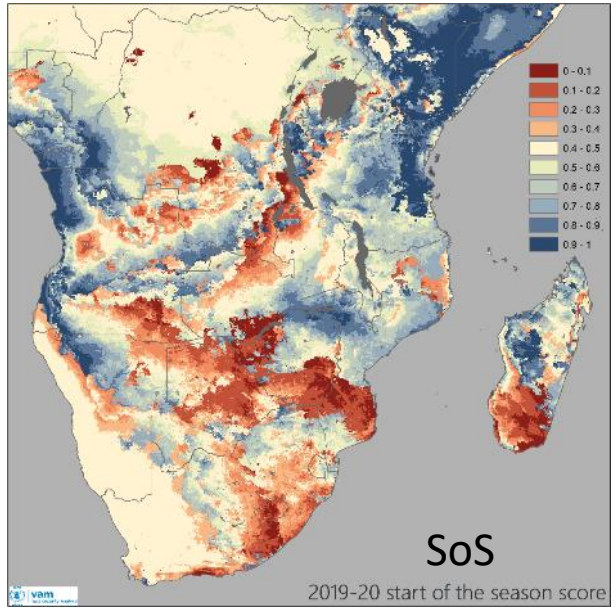
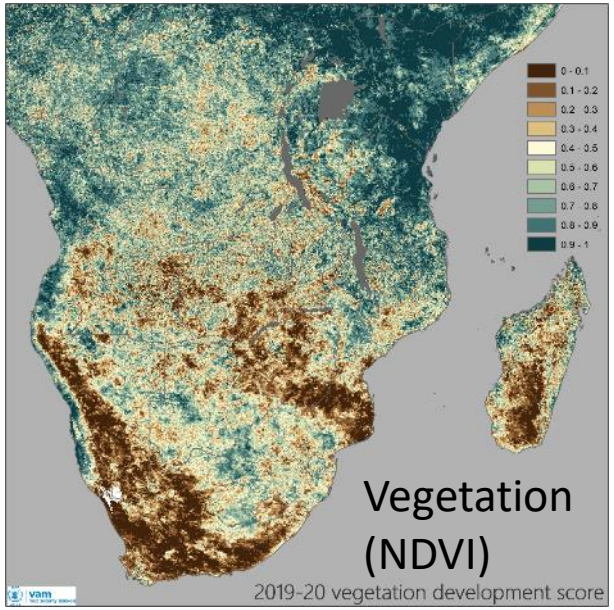
vam
food security analysis

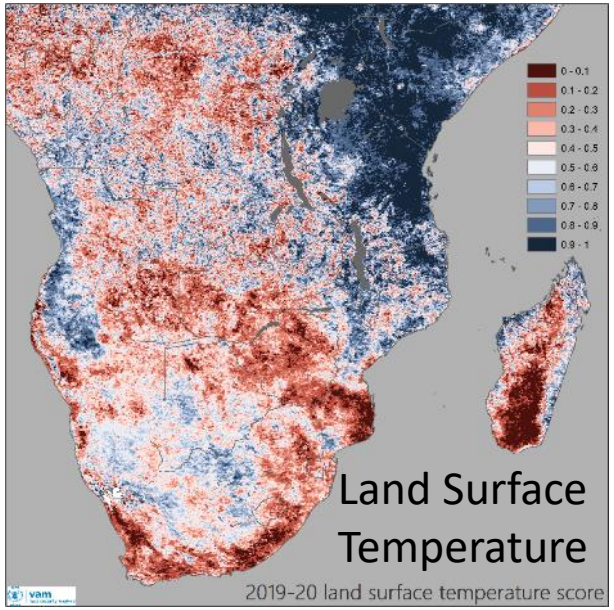
Data Inputs for Hotspot Analysis

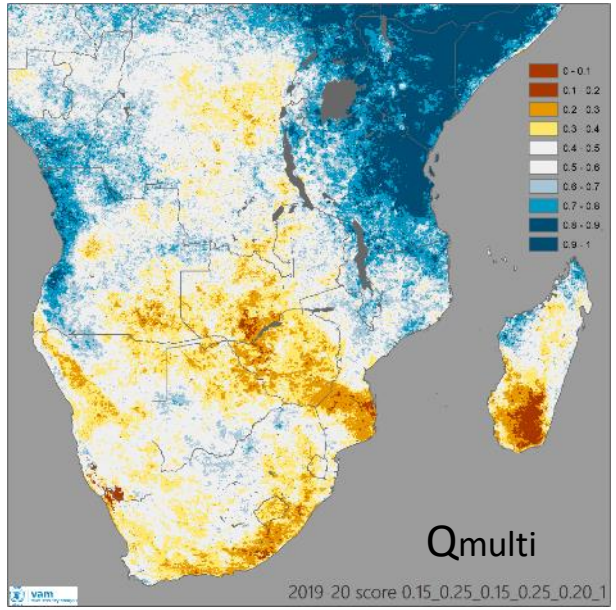












Formulation

The index is derived with a monthly time step. The selected variables are as follows:

- Monthly rainfall, R1H
- Maximum dry spell in the month, DLX
- Date of Start of the Growing Season (SoS)
- NDVI (monthly average)
- LST, Land Surface Temperature (monthly average)

Note that SoS is actually a fixed, rather than monthly variable, i.e. there is a single value for the whole season. We represent the index by:

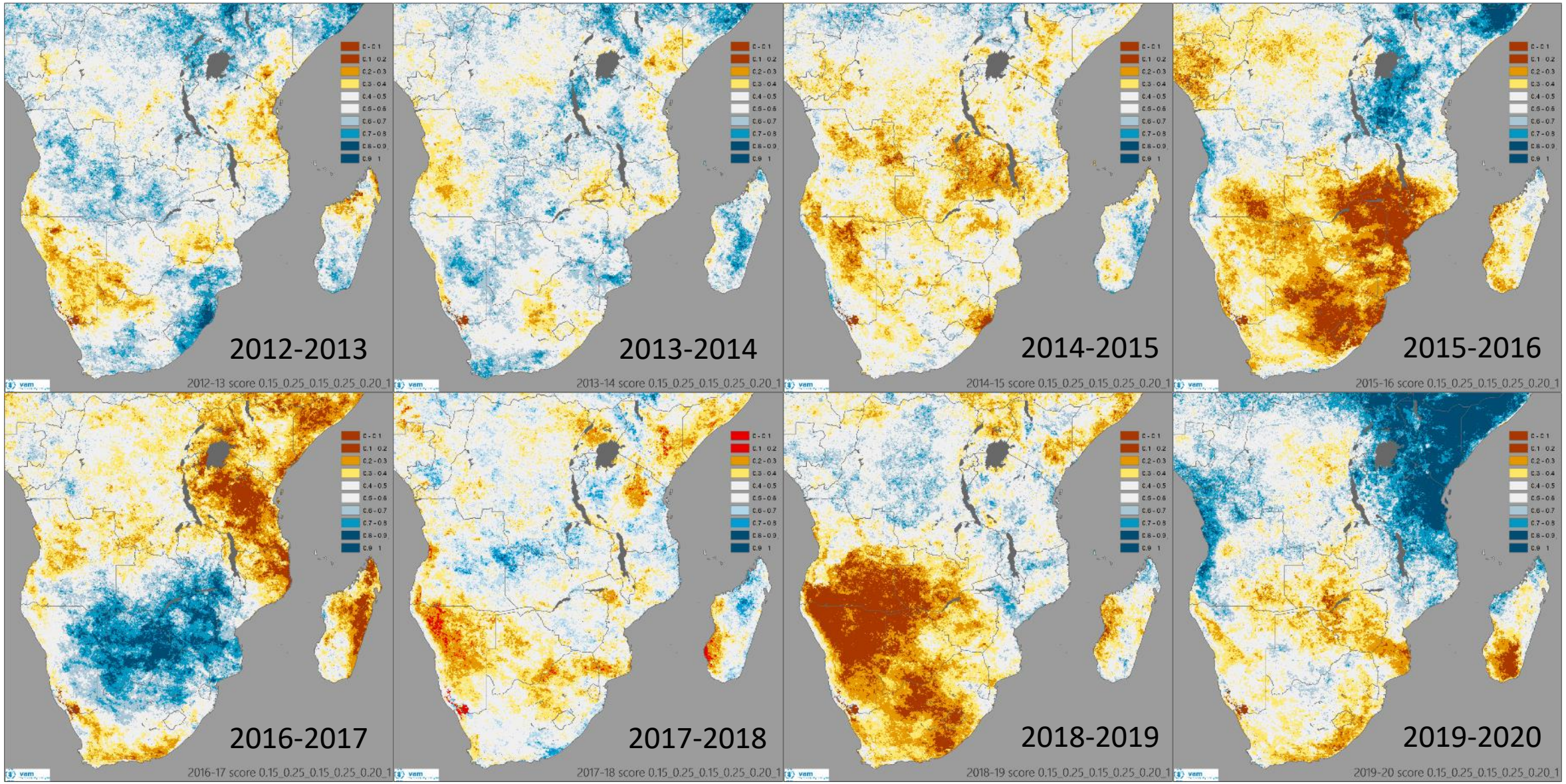
$$Q_{multi} = f(Q_{rainfall}, Q_{dry\ spell}, Q_{startofseason}, Q_{NDVI}, Q_{LST})$$

Where Q is some form of anomaly of the standardized variable, i.e. a measure of how far from the "usual" is a given value. Or more generally, where this given value sits in the historical distribution of values.

Weights used for index aggregation: Rainfall: 0.15, Dry Spell: 0.25, SoS: 0.20, NDVI: 0.15, LST: 0.25

Monthly weights are applied to reflect the contribution of each month to the growing season (*Further methodological details are available on the transformation and aggregation from RBJ VAM*)

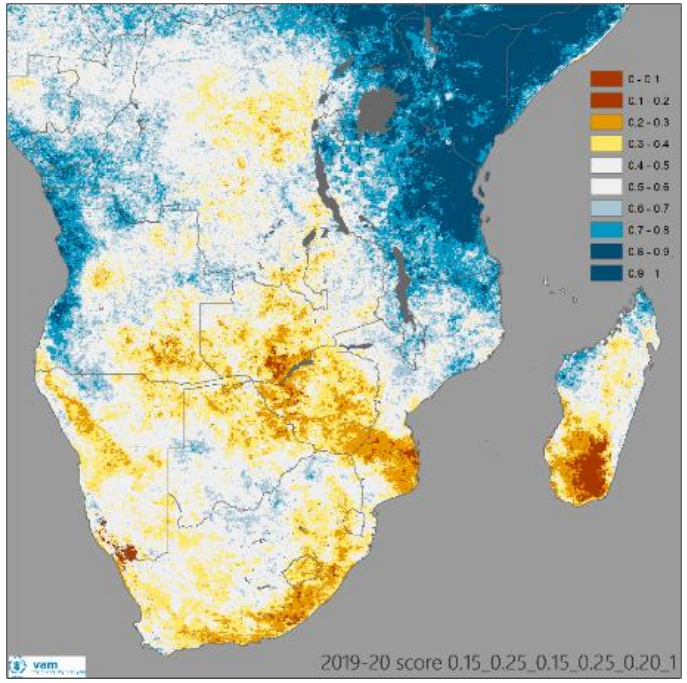
Trends of Seasonal Performance: Qmulti_2012-2020*



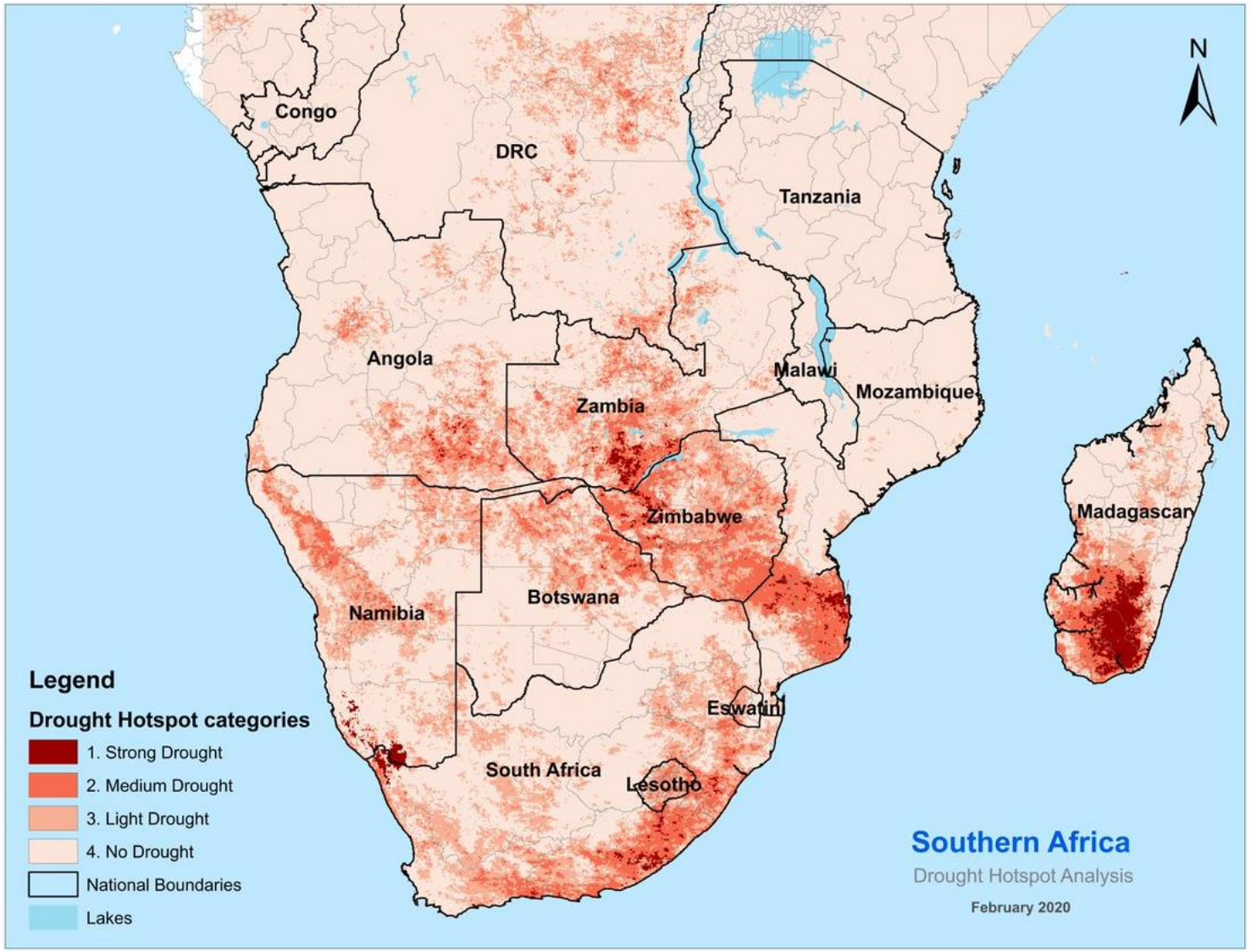
**Brown areas showing higher intensity of dry conditions*

Southern Africa: 2019/20 Drought Hotspots

Q_Multi (2019/2020)

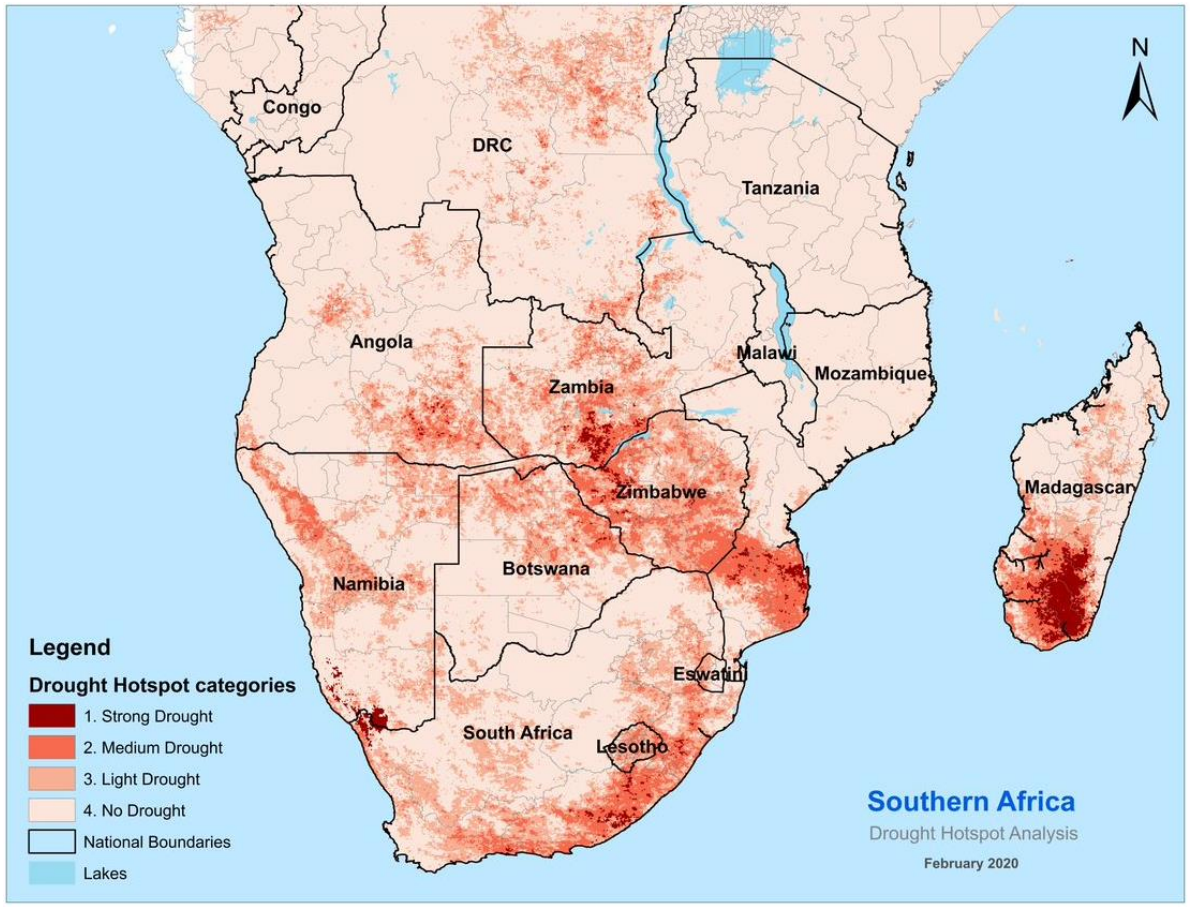


Reclassification



Southern Africa: Extraction of Population Exposed to Drought

2019/2020 Hotspots



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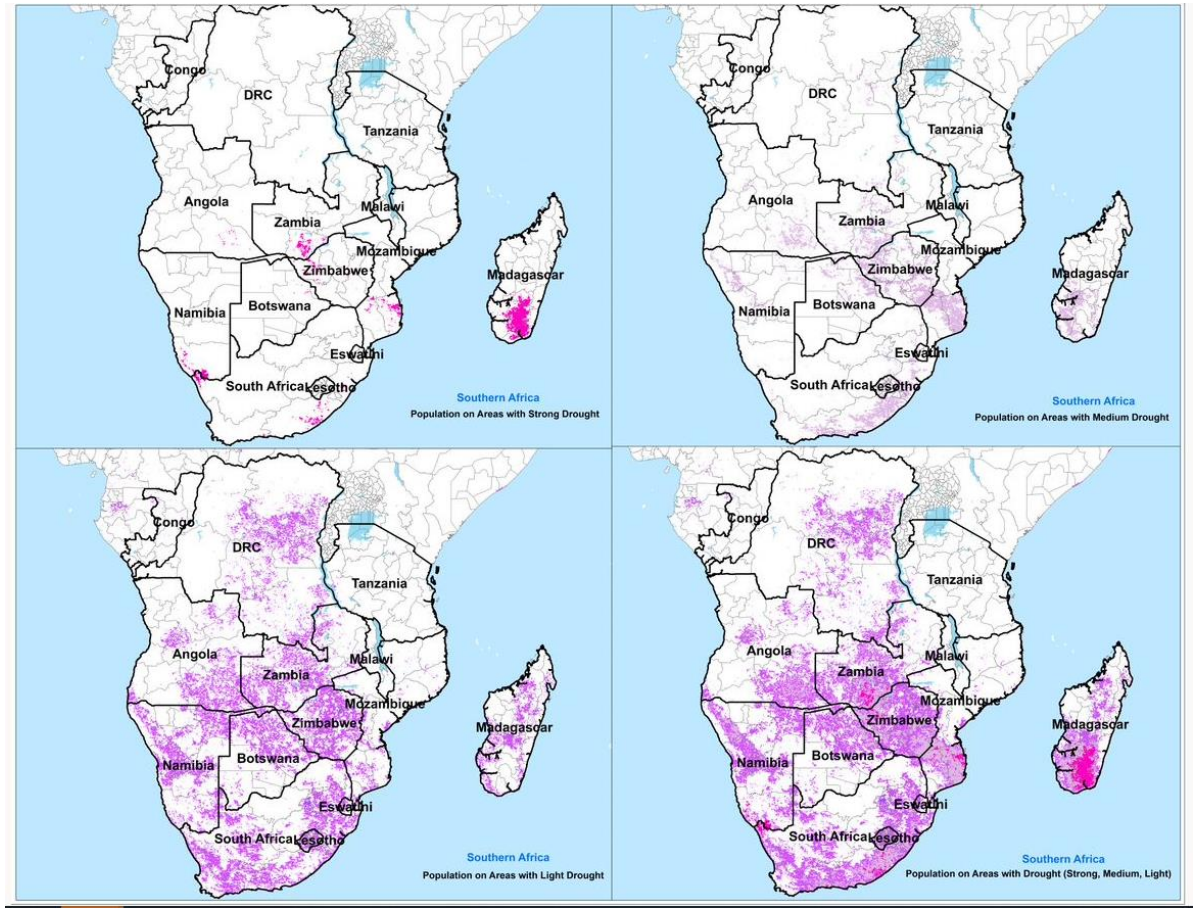
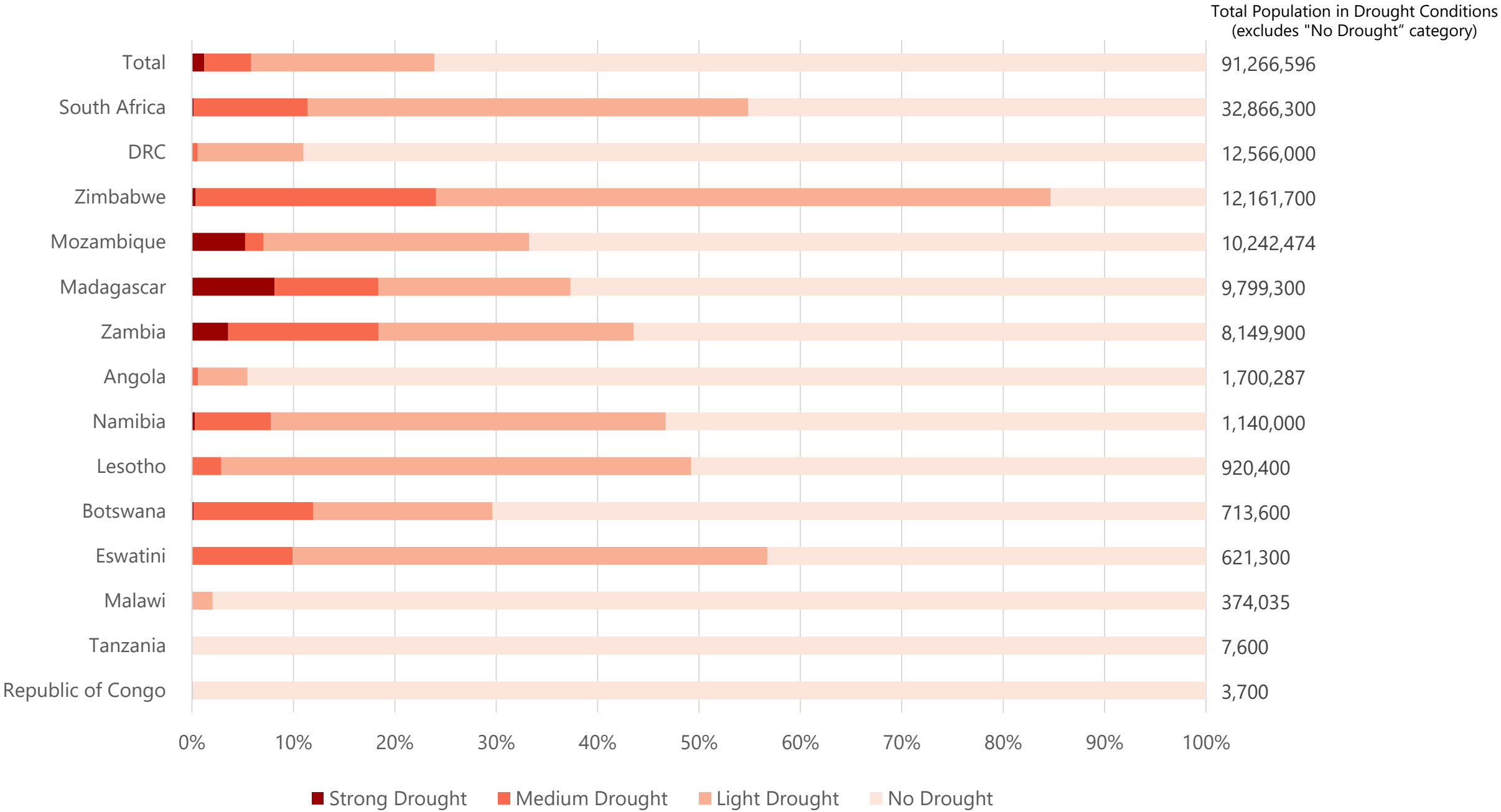
Population dataset



Source: World Population 2017

Southern Africa: Estimated Population Exposed to Drought (2019/20)



Southern Africa: Estimated Population affected by drought (2019/2020)

Country	Strong Drought	Medium Drought	Light Drought	No Drought	Population Exposed to Drought	Drought Affected *(Total Exposed to Drought x MPI*)*
Republic of Congo	-	-	3,760	3,999,156	3,700	1,600
Tanzania	-	-	7,587	56,137,634	7,600	3,600
Malawi	-	-	374,035	17,925,419	374,035	178,200
Eswatini	-	108,551	512,702	473,928	621,300	147,400
Botswana**	4,203	283,393	426,020	1,694,468	713,600	116,317
Lesotho	-	53,701	866,727	949,094	920,400	323,100
Namibia	6,760	182,994	950,247	1,300,659	1,140,000	317,600
Angola	-	181,229	1,519,058	29,427,387	1,700,287	1,051,800
Zambia	667,909	2,777,048	4,704,952	10,550,483	8,149,900	3,443,800
Madagascar	2,138,357	2,684,991	4,975,969	16,451,992	9,799,300	7,221,200
Mozambique***	1,610,980	564,323	8,067,171	20,542,215	10,242,474	5,520,100
Zimbabwe	52,778	3,404,432	8,704,456	2,198,909	12,161,700	4,147,600
DRC	1,121	650,266	11,914,599	101,751,761	12,566,000	8,008,300
South Africa**	102,531	6,742,736	26,021,075	27,029,412	32,866,300	8,282,308
Total	**4,584,639**	**17,633,664**	**69,048,358**	**290,432,519**	**91,266,596**	**38,762,924**

91 Million

Pop exposed to Drought

39 Million

Pop affected by Drought

*MPI = Multidimensional Poverty Index, composed of three dimensions (health, education, and living standards) and 10 indicators.

** National Poverty headcount used for Botswana and South Africa

***Drought analysis for Mozambique runs to end March 2020 (for all other countries up to end February 2020).

Next step is to estimate the population vulnerable to food insecurity including non-drought factors and COVID effects

Next Steps

- ❑ Estimate the population vulnerable to food and nutrition insecurity, including non-drought factors and COVID.
- ❑ Refine the hotspot analysis including automation of analytical processes to improve turnaround.
- ❑ Downscale the analysis to the country level to allow for more inclusion of country-specific information including overlay of livelihood information.
- ❑ Assess the inter-seasonal transmission of drought effects to vulnerability.
- ❑ Assess alignment with IPC, drought indices such WRSI and crop assessment data such as cereal sufficiency ratio.