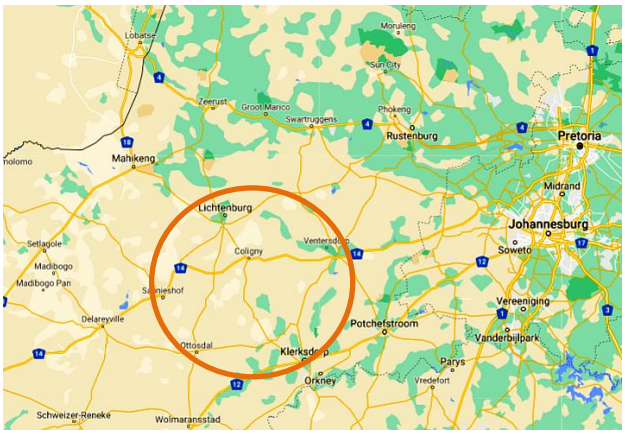
BUILDING CLIMATE RISK RESILIENCE FOR MAIZE FARMING – FACT SHEET

North West – Lichtenburg region



Characteristics: Mixed farming region with mostly rainfed cropping. Common crops are maize, sunflowers, white beans, and vegetables. Livestock in the form of cattle, sheep are very common with goats and pigs also kept.

Planting dates for maize vary between October to late-December. If the rainfall onset is after the end of December, then maize is not planted; instead, sunflowers, oats, beans or teff for forage, is planted. Average **maize yields** vary between 2 – 4 t/ha, but more recently has increased to between 4 – 5 t/ha.

Existing climatic threats include: Late-onset of rain; early frost (in April); hail occurring later in the season; very hot days during planting and subsequent weeks, with larger daytime range; mid-season drought extending; late season rain causing heat unit shortage, excessive wind and rain.

Rainfall averages around 550mm per annum (more or less elsewhere in the region), with a slight increasing trend detectable over the last 30 years. Variability is moderate with a minimum annual rainfall of below 300mm not uncommon (1998/99 had only 185mm) and a maximum of 790mm (1999/2000) per annum. Rainfall occurs between September and April, with over 70% of annual rainfall being recorded between October and March.

Temperatures are generally mild, varying between average maxima of 18 degrees in Jun (winter), and 28 degrees in January. Very hot days (over 32 degrees) are not common (2-4 days per month in summer).

Existing rainfall averages of selected stations in the region

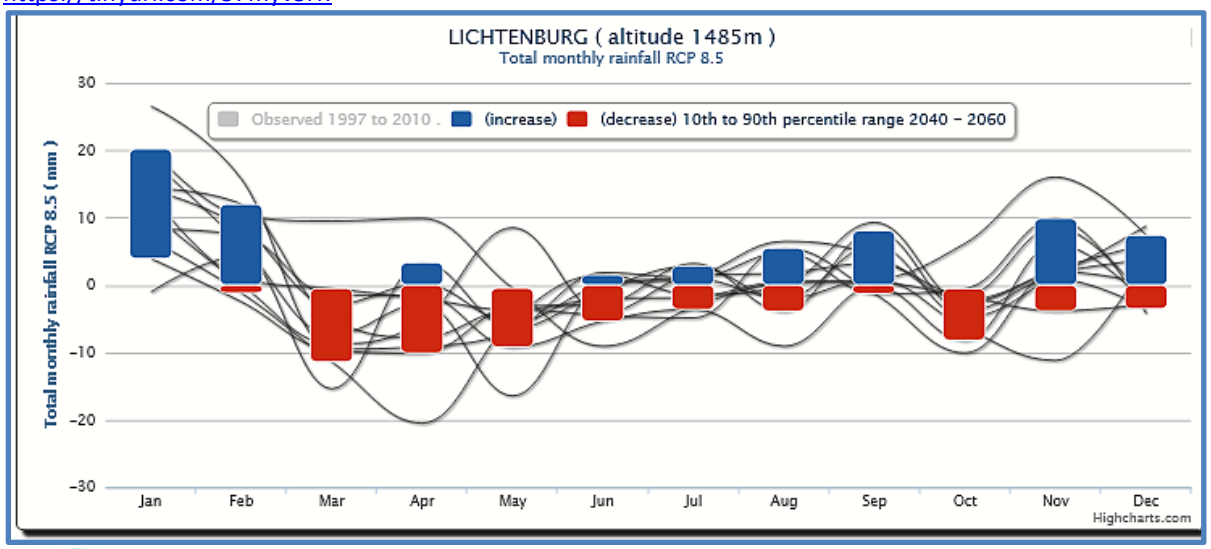
Lichtenburg RAINFALL	
Month	Average
Jan	83
Feb	85
Mar	83
Apr	44
May	21
Jun	6
Jul	2
Aug	5
Sep	14
Oct	57
Nov	56
Dec	93
Total	549

Ventersdorp RAINFALL	
Month	Average
Jan	98
Feb	97
Mar	80
Apr	35
May	14
Jun	7
Jul	2
Aug	7
Sep	17
Oct	61
Nov	76
Dec	101
Total	595

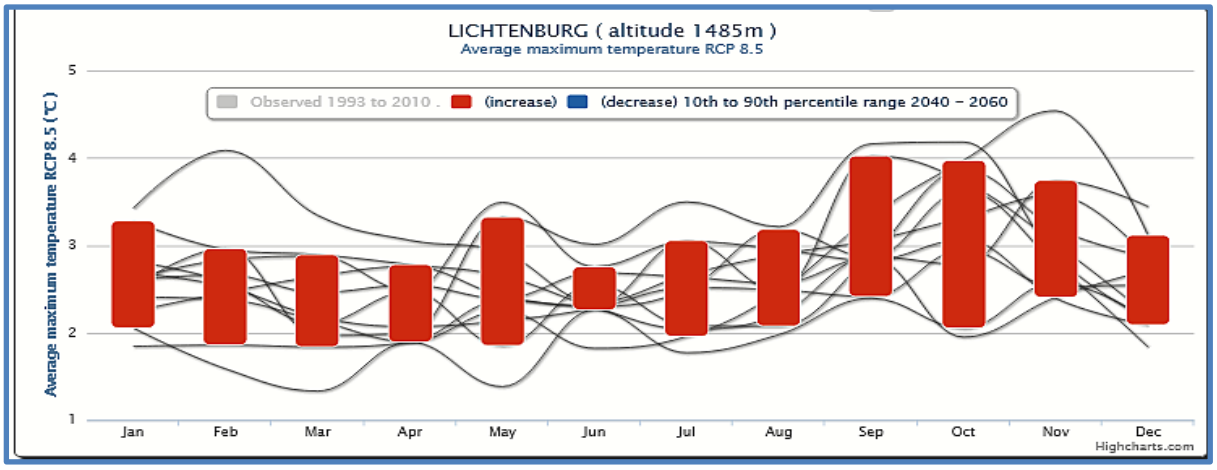
Ottosdal RAINFALL	
Month	Average
Jan	121
Feb	80
Mar	81
Apr	40
May	13
Jun	2
Jul	1
Aug	14
Sep	24
Oct	56
Nov	61
Dec	74
Total	567

Expected Future Conditions:

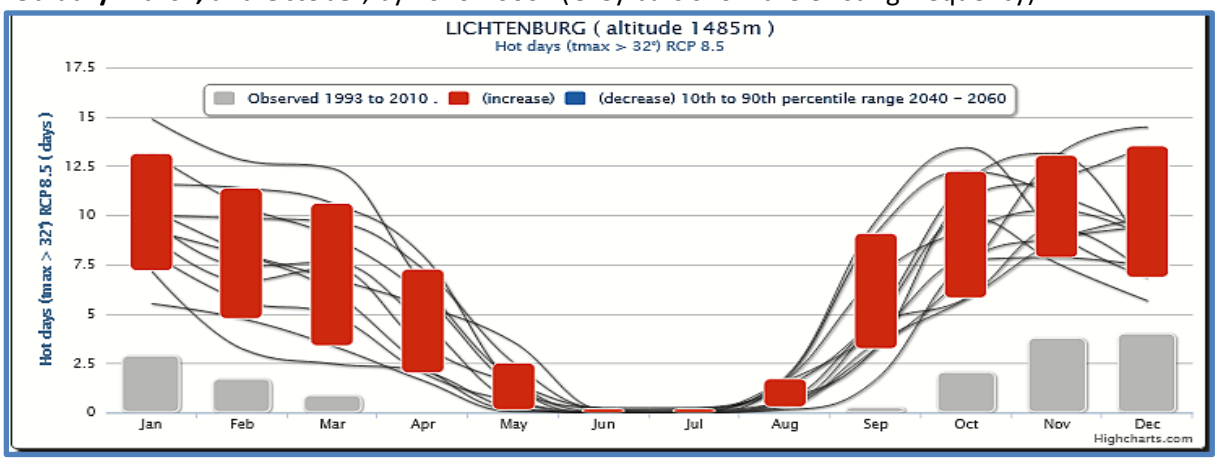
Rainfall: Overall, lower rainfall is predicted for the region but with significant uncertainty. Projections show that rainfall is expected to **increase (blue bars)** by about 5-15mm (with high confidence) in **January** by 2040-2060. Other months show degrees of uncertainty (both red and blue bars). Where both red and blue bars are present, it indicates a likelihood of increase but also the likelihood of decrease rainfall projected. Different models predict varying projections as seen by the black lines. To adjust timeframe and regions, see the following link: https://tinyurl.com/57myv5rf.



Temperature: Projections show **increases** of temperature in all months of between 24 degrees by 2040-2060



Very hot days: Projections show that the number of very hot days (>32 degrees) will **increase** in all months, with **7.5-12.5 more** such days in **January, November, and December (effectively 4-5x more)** and approx. **4-11 more** in **February March, and October**, by 2040-2060. (Grey bars show the existing frequency).



Impacts and responses expected in the future

- Later rainfall onset means that sunflowers and dry beans are becoming a more possible alternative in this region
- A shorter planting window means there is an urgency to plant quickly and efficiently
- The change from ploughing to minimum till preparation, and soil cover is becoming imperative.
- Appropriate seed breeding and selection for warmer temperatures is required
- Pests and diseases are becoming resistant to existing treatments and warmer temperatures can lead to more frequent outbreaks
- Fires are becoming more likely in the dry season and during dry spells in late summer
- More appropriate climate information is becoming available
- Suitability for maize is still moderate for this region, but **increasing temperatures and a large increase in the number of very hot days are a threat**

Recommendations

- Conservation agriculture which focuses on soil health and soil water conservation is becoming more important to build resilience to climatic risk
- Farmers need to cooperate with each other and various input supplies, marketing agents, and keep up to date with the latest research
- Climate forecasts and information are available and should be accessed and compared to records kept.

Resources

Seasonal forecasts: University of Pretoria: https://www.up.ac.za/geography-geoinformatics-and-meteorology/article/2872667/seasonal-forecast-worx
International Research Institute: https://tinyurl.com/df3kr46k
SA Weather Service: https://www.weathersa.co.za/home/seasonalclimate
Climate change projections and impacts: Graphs above: https://tinyurl.com/57myv5rf
El Nino Southern Oscillation update: https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/