



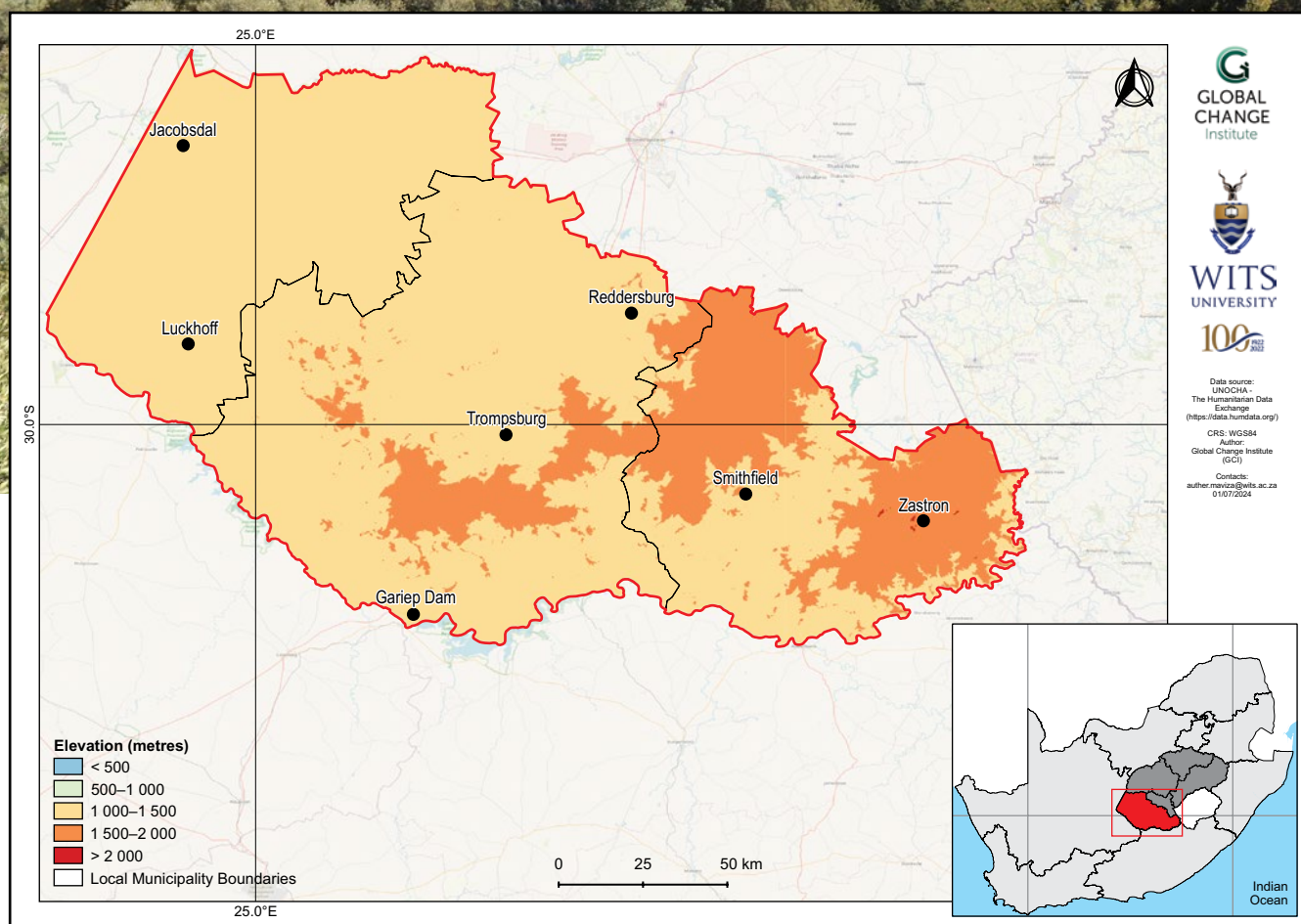
Xhariep District Municipality climate change fact sheet

Free State, South Africa

MUNICIPAL

Introduction

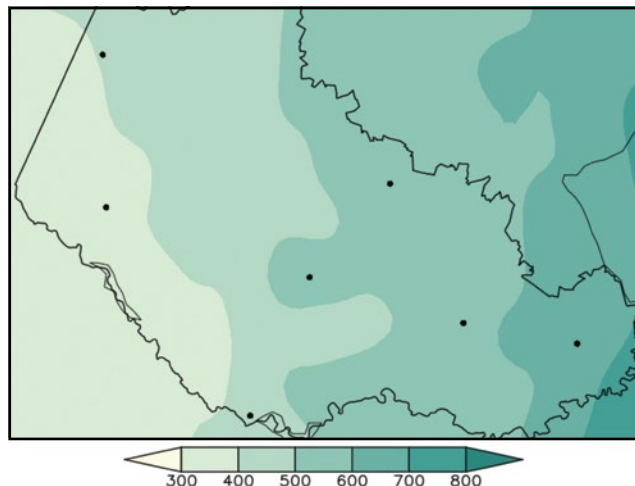
- This fact sheet is part of a series of district municipality fact sheets developed by the Wits GCI and SANBI. The fact sheets present a summary of observed and projected changes in climate over district municipalities in South Africa. They should be used together with the guidelines presented in the cover page.
- Xhariep District Municipality covers an area of approximately 34 250 km², with elevation ranging from 1 200 m above sea level on the western plateau to 1 500 m above sea level along the mountainous regions in the east.
- The district experiences a semi-arid climate in the west, with the eastern parts being substantially wetter. It is characterised by hot, wet summers and cold, dry winters, with occasional frost.



Observed climate: rainfall (1981–2000)

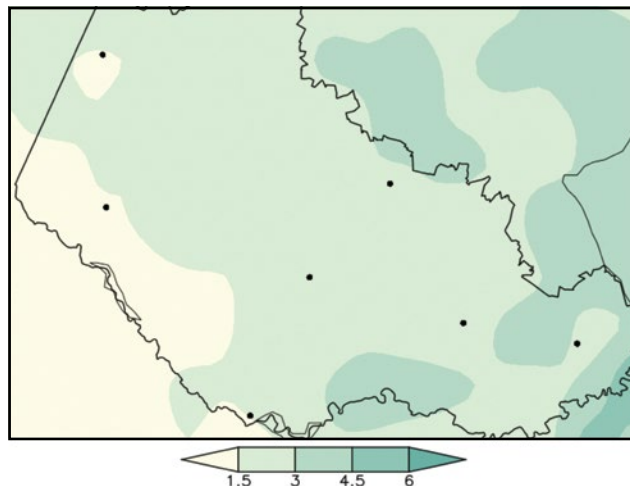
Mean annual rainfall

Mean annual rainfall ranges from 300 mm over the western plateau, increasing to 700 mm in the eastern parts.



Extreme rainfall days

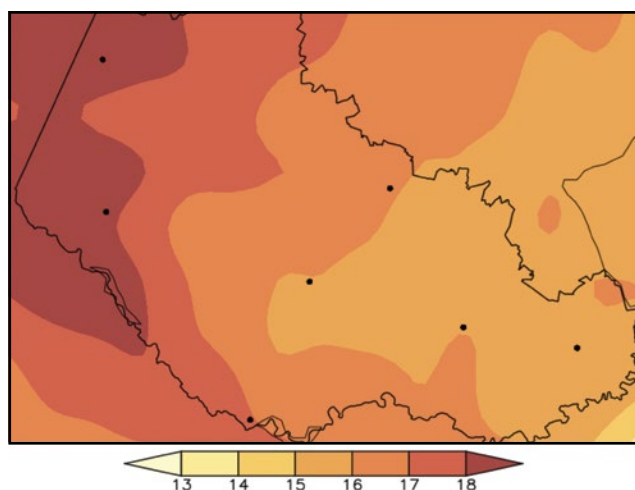
Observed mean annual number of extreme rainfall days range from less than 1.5 days over the southwestern border parts to 6 days over the southeastern parts.



Observed climate: temperature (1981–2000)

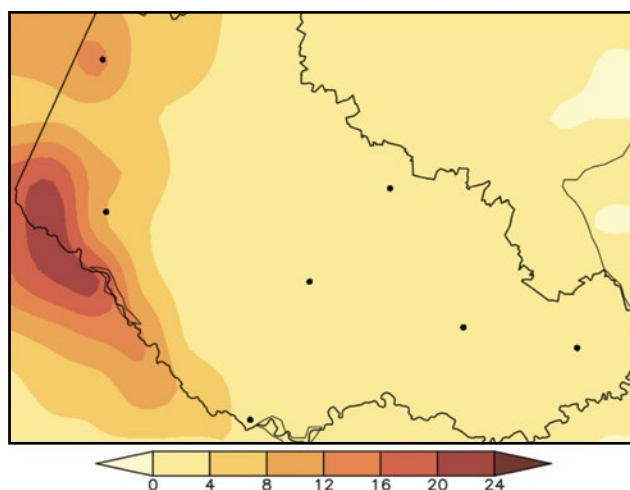
Mean annual temperature

Mean annual temperature ranges from 14 °C over most of the southeastern highlands to 18 °C in the western region.



Very hot days

Observed mean annual number of very hot days range from less than 4 days over the greater eastern and central parts to 24 days over the southwestern parts.

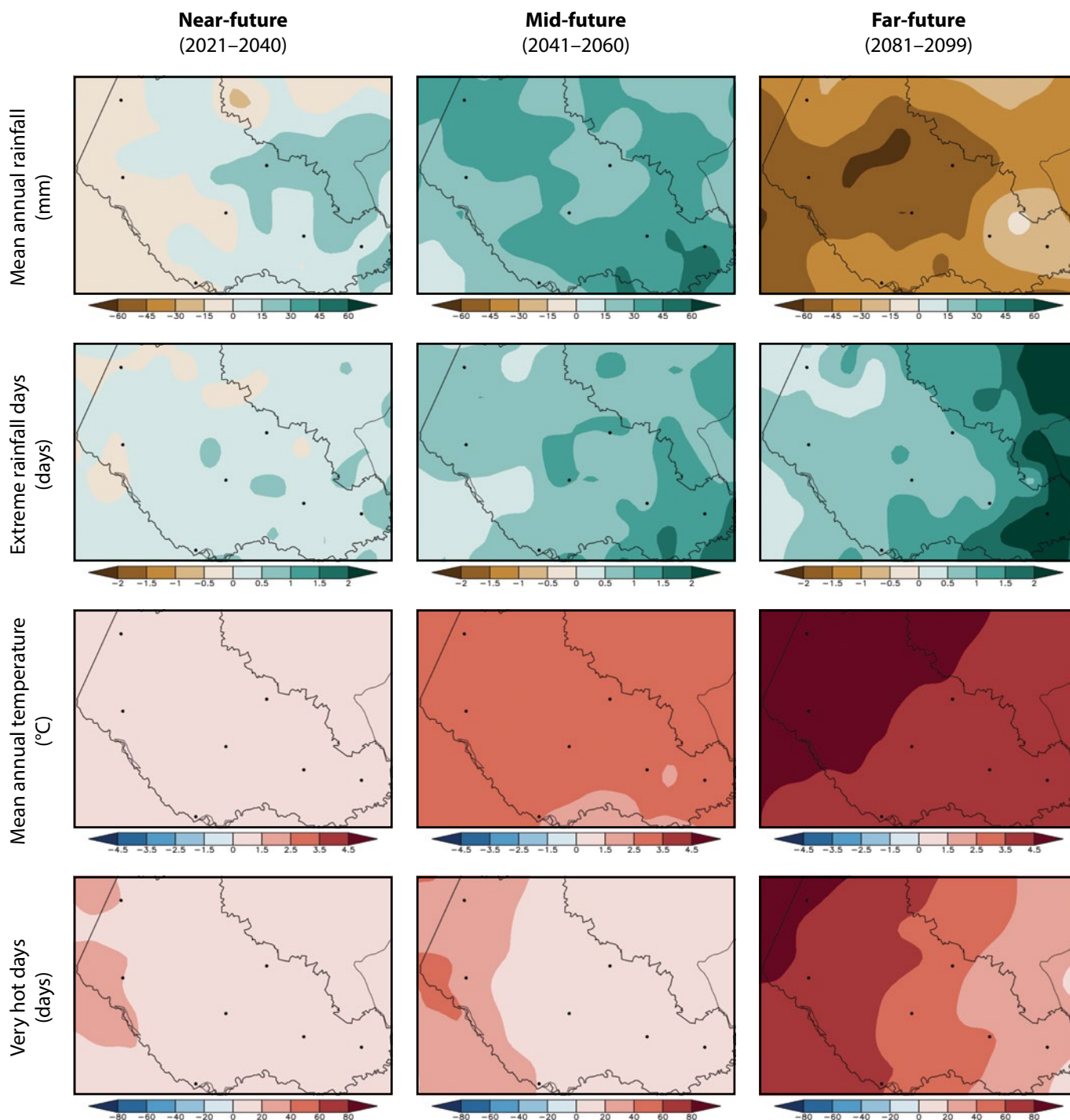


Observed climate trends (overview)

- Observed decrease in mean annual rainfall (*low confidence*).
- Observed increase in the frequency of extreme rainfall events (*high confidence*).
- Observed increase in mean annual temperature and warm extremes (*virtually certain*); decrease in cold extremes (*high confidence*).
- Observed increases in meteorological and agricultural drought (*low confidence*).

Projected future climate change (overview)

- Projected changes in mean annual rainfall are *uncertain* in the near- and mid-future, but there is *high confidence* in decreases in the far-future.
- Projected increase in the frequency of extreme rainfall events (*high confidence*).
- Projected increase in mean annual temperature and warm extremes (*virtually certain*); decrease in cold extremes (*high confidence*).
- Projected increase in agricultural and meteorological drought in the far-future (*high confidence*).



Projected future climate change (*detailed*)

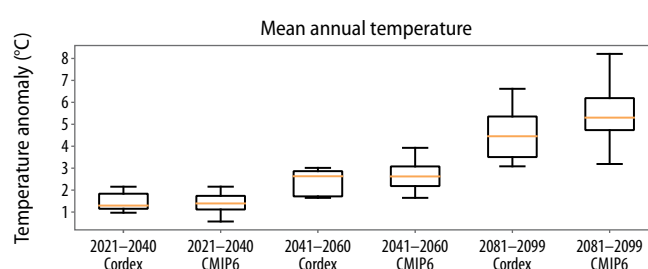
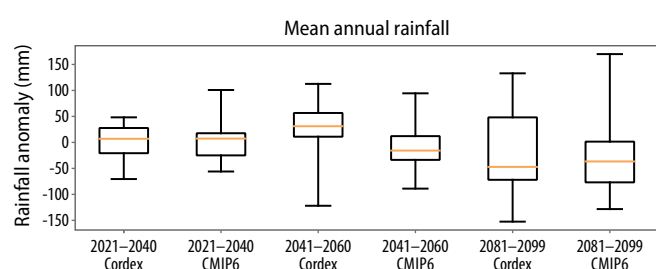
Near- and mid-future

- Projected changes in rainfall in the near- and mid-future are *uncertain*.
- Projected increase in extreme rainfall events (*likely*).
- Projected increase in temperature and warm extremes (*virtually certain*); decrease in cold extremes (*very likely*).
- Projected increase in agricultural and meteorological drought (*more likely than not*).

Far-future

- Projected decrease in rainfall over the entire district (*likely*).
- Projected increase in extreme rainfall events (*likely*), particularly over the mountainous regions.
- Projected increase in temperature and warm extremes (*virtually certain*); decrease in cold extremes (*very likely*).
- Projected increase in agricultural and meteorological drought (*very likely*).

Climate model projections: model agreement and uncertainties



Mean annual rainfall

- Averaged across the district, projected rainfall changes for the near- and mid-future are *uncertain*.
- Rainfall decreases are projected in the district in the far-future under low mitigation scenarios (*likely*).
- Partially in response to *virtually certain* temperature increases, agricultural drought is to occur more frequently in the near- to mid-future (*low confidence*) and far-future (*very likely*).

Mean annual temperature

- Temperature increases averaged across the district are *virtually certain* in the near-future and may be as high as 1.5 °C.
- Under low mitigation, further temperature increases are *virtually certain* and may approach 3.0 °C in the mid-future and 6.0 °C in the far-future.
- Increases in average temperature will be accompanied by increases in warm temperature extremes such as heatwaves and high fire danger days (*likely*).

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Contact

- Global Change Institute (GCI), University of the Witwatersrand, Johannesburg, South Africa. Website: www.wits.ac.za/gci
- South African National Biodiversity Institute (SANBI). Website: www.sanbi.org