



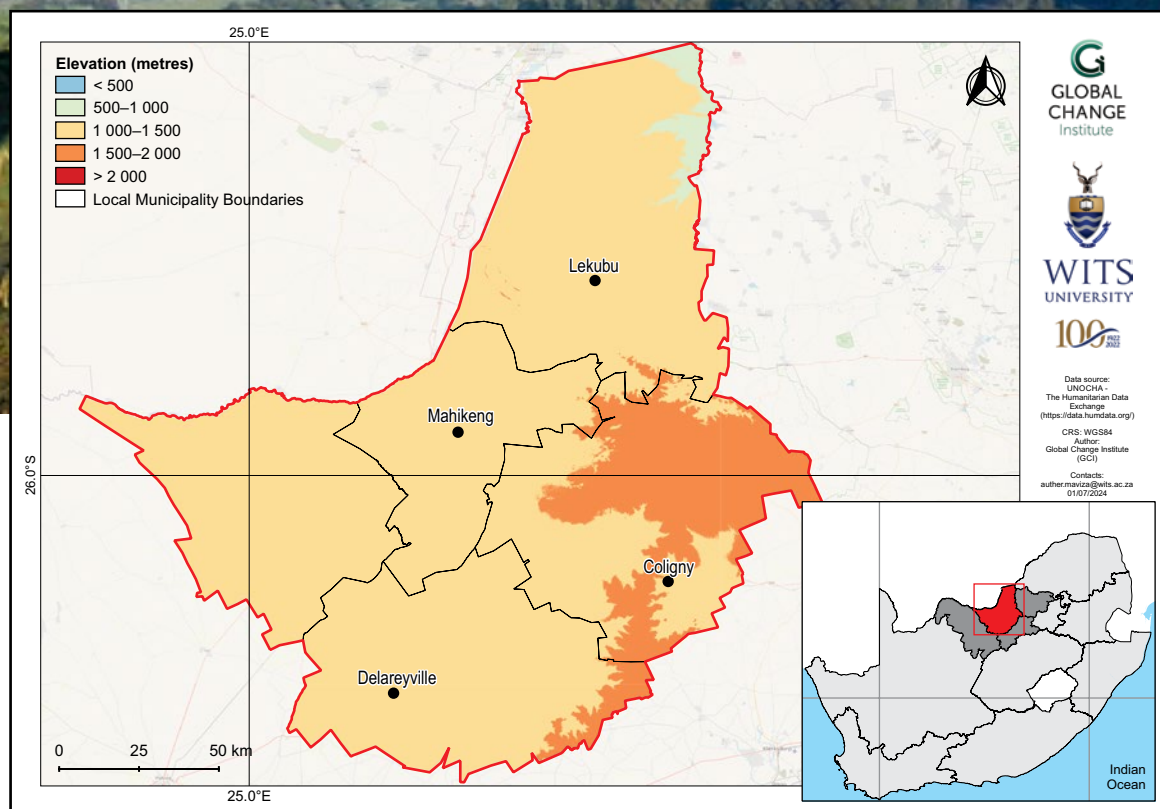
Ngaka Modiri Molema District Municipality climate change fact sheet

North West, South Africa

MUNICIPAL

Introduction

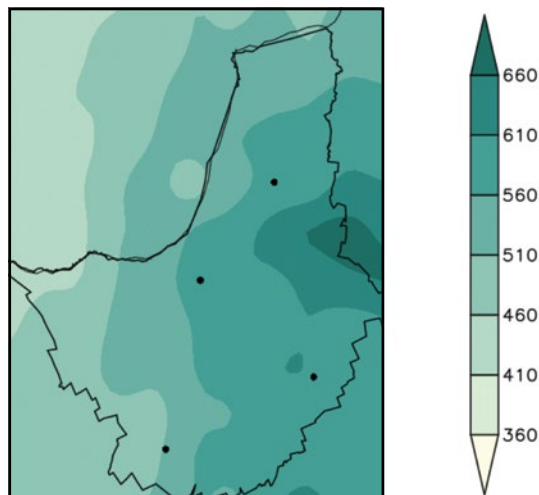
- This fact sheet is part of a series of district municipality fact sheets developed by the Wits GCI and SANBI. The fact sheets present a summary of observed and projected changes in climate over district municipalities in South Africa. They should be used together with the guidelines presented in the cover page.
- Ngaka Modiri Molema District Municipality covers an area of approximately 28 206 km² characterised by flat to gently undulating plains interspaced with small hills and ridges. Elevation ranges from 920 to 1 700 m above sea level over the eastern region.
- The district has a predominantly subtropical climate in the east, while western parts are semi-arid. The district exhibits pronounced dry-wet seasonality, with wet summers and cool dry winters. Rainfall is higher over the eastern Magaliesberg.



Observed climate: rainfall (1981–2000)

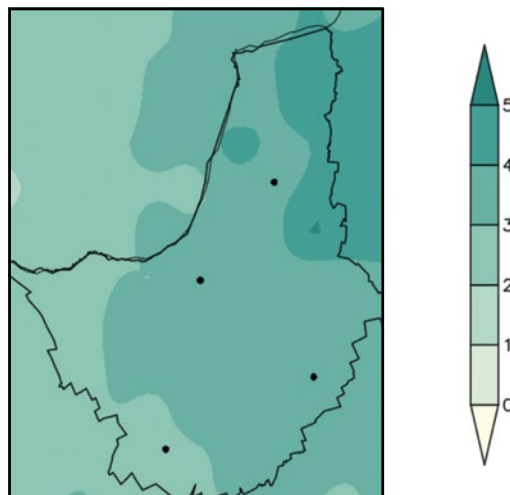
Mean annual rainfall

Mean annual rainfall ranges from 360 mm over the drier western areas to just over 610 mm over the eastern mountainous areas.



Extreme rainfall days

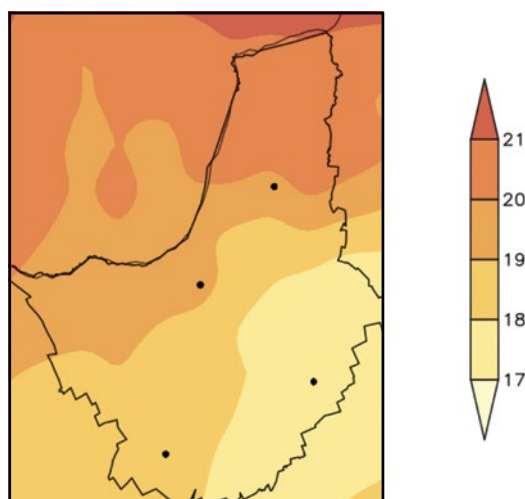
Observed annual average number of extreme rainfall days range from 1 day in the western areas to 5 days over the eastern mountainous areas.



Observed climate: temperature (1981–2000)

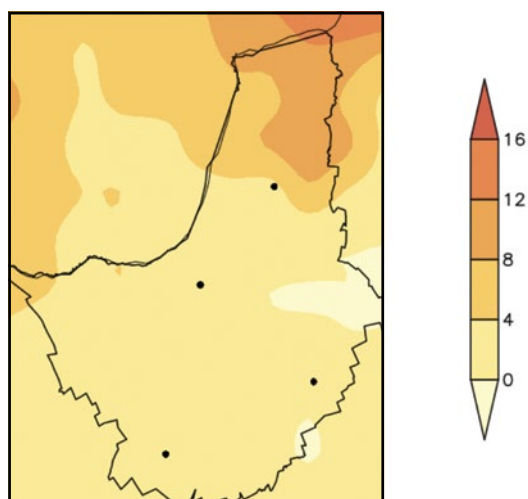
Mean annual temperature

Mean annual temperatures range from 17 °C over the eastern highlands up to 21 °C in the northern low-lying areas.



Very hot days

Mean annual number of very hot days range from 0 days in the eastern mountainous region to as many as 16 days in the northern parts of the district.

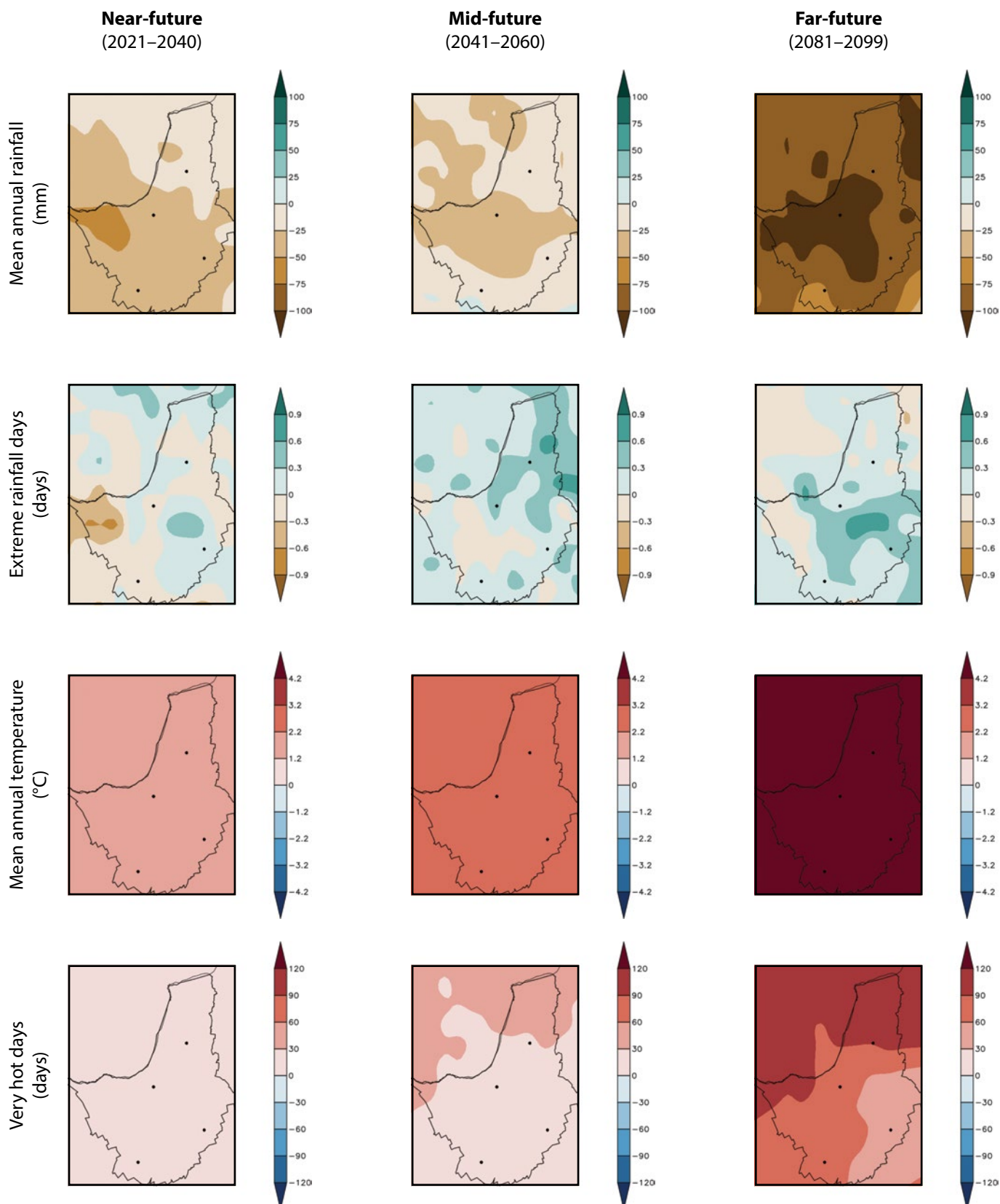


Observed climate trends (overview)

- 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*).
- Observed increases in meteorological and agricultural drought (*low confidence*).

Projected future climate change (overview)

- Projected decrease in mean annual rainfall in the near-future (*low confidence*), and in the mid- and far-future (*high confidence*).
- Projected increase in the frequency of extreme rainfall events (*high confidence*).
- Projected increase in mean annual temperature and warm extremes (*virtually certain*).
- Projected increase in agricultural and meteorological drought in the near-future (*low confidence*), and mid- to far-future (*high confidence*).



Projected future climate change (detailed)

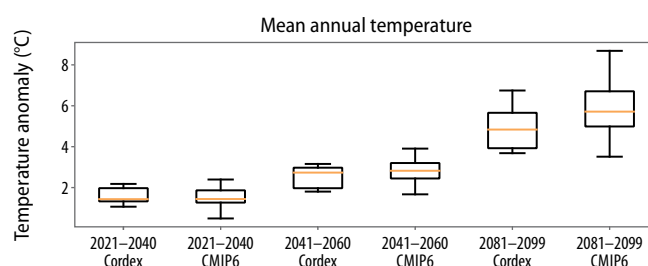
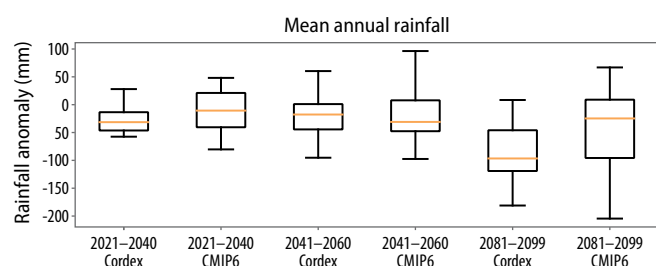
Near- and mid-future

- Projected decrease in rainfall in the near-future (*low confidence*) and mid-future (*likely*).
- Projected increase in extreme rainfall events in the near-future (*likely*) and mid-future (*very likely*).
- Projected increase in temperature and warm extremes (*virtually certain*), with larger increases over the northern and northwestern parts of the district.
- Projected increase in agricultural and meteorological drought in the near-future (*low confidence*) and mid-future (*likely*).

Far-future

- Projected decrease in rainfall and corresponding increase in agricultural and meteorological drought (*very likely*).
- Projected increase in extreme rainfall events (*very likely*).
- Projected increase in temperature and warm extremes (*virtually certain*), with larger increases over the northern and northwestern parts.

Climate model projections: model agreement and uncertainties



Mean annual rainfall

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

Mean annual temperature

- Temperature increases averaged across the district in the near-future are *virtually certain* and may be as high as 2.0 °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 (*virtually certain*).

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