



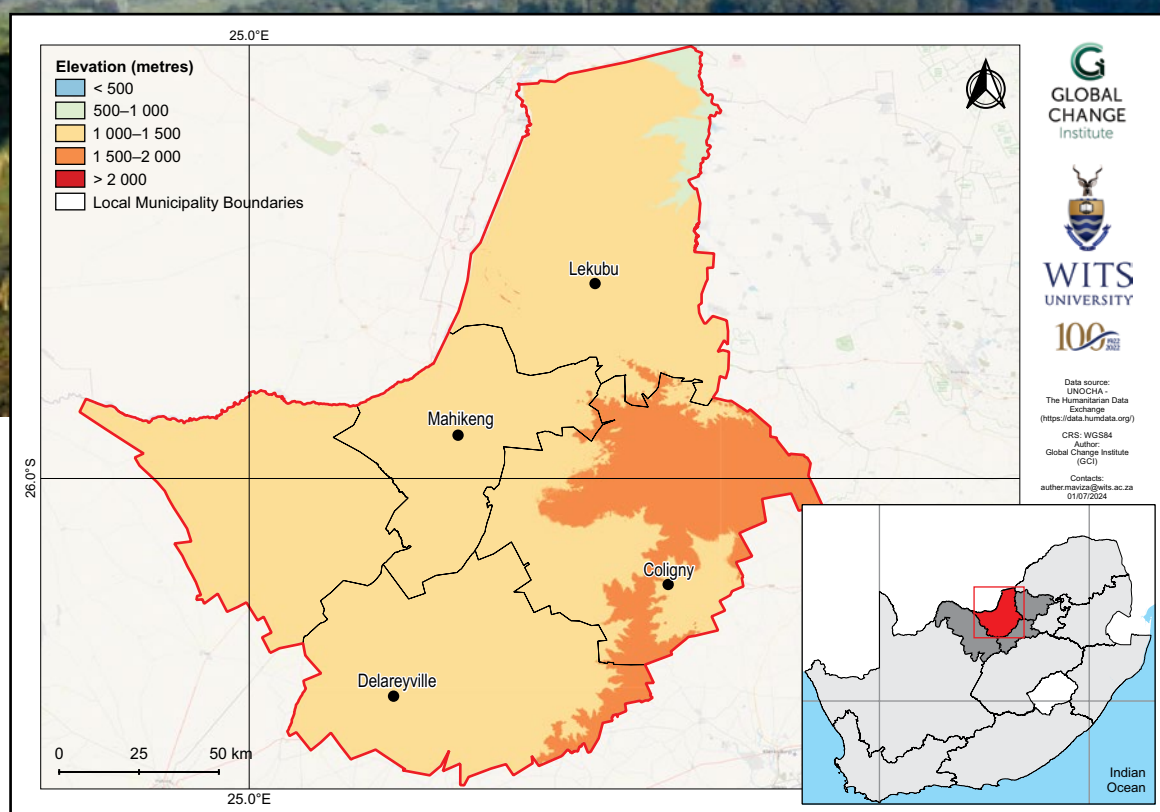
# Ngaka Modiri Molema District Municipality climate change fact sheet

North West, South Africa

MUNICIPAL

## Introduction

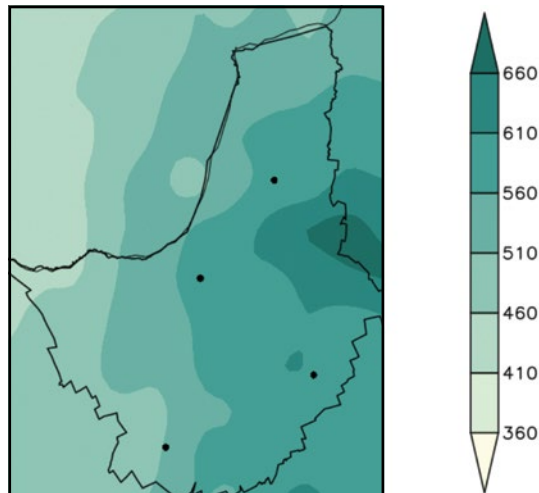
- This fact sheet is part of a series of district municipality fact sheets developed by the Wits GCI and SANBI. The fact sheets present a summary of observed and projected changes in climate over district municipalities in South Africa. They should be used together with the guidelines presented in the cover page.
- Ngaka Modiri Molema District Municipality covers an area of approximately 28 206 km<sup>2</sup> 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)

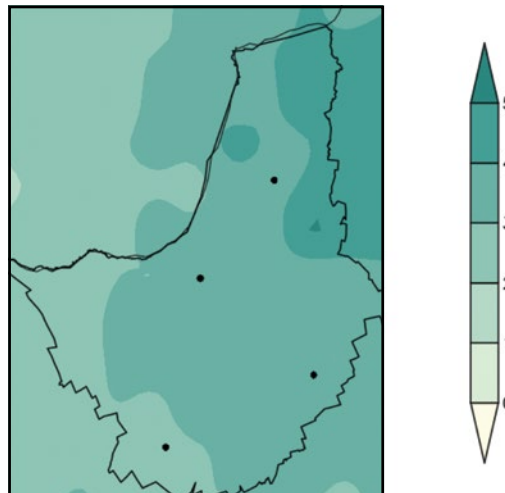
### Mean annual rainfall

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

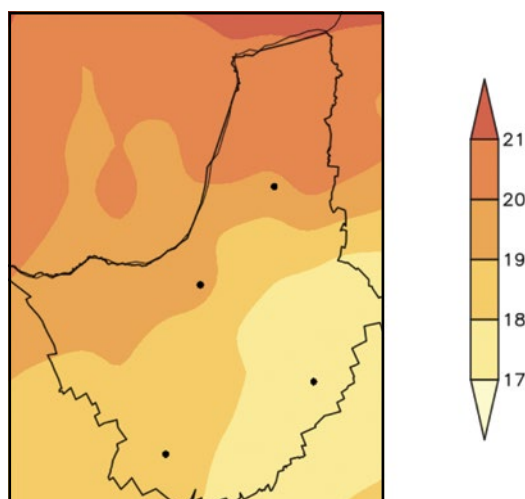
Observed annual average number of extreme rainfall days range from 1 day in the western areas to 5 days over the eastern mountainous areas.



## Observed climate: temperature (1981–2000)

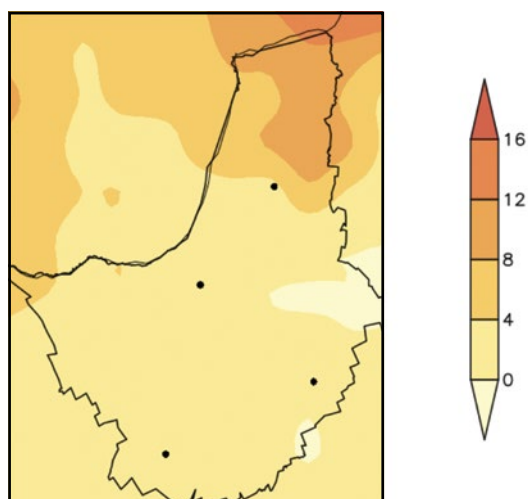
### Mean annual temperature

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.

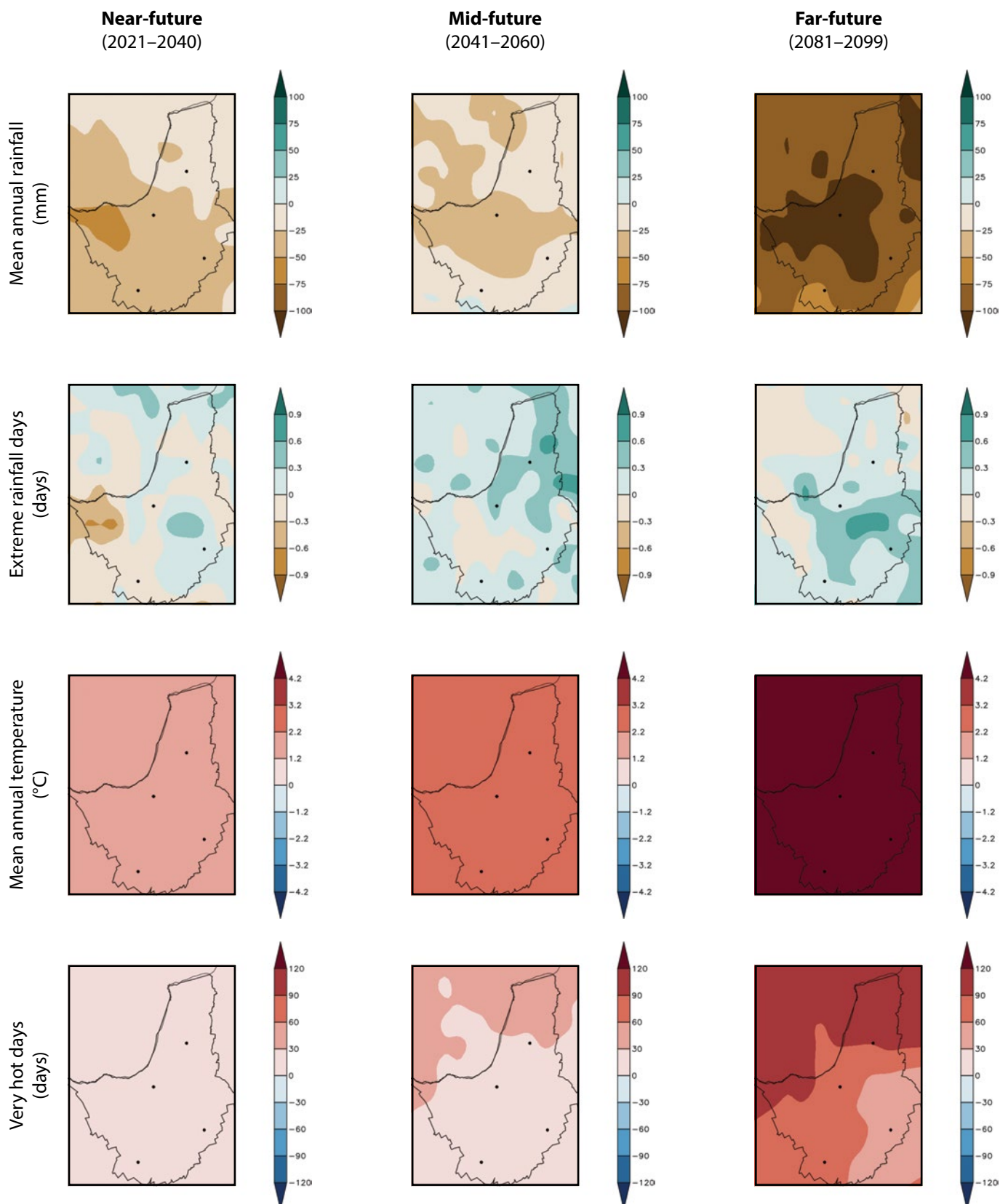


## Observed climate trends (overview)

- 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)

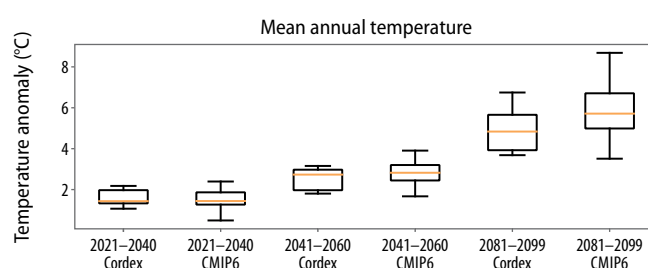
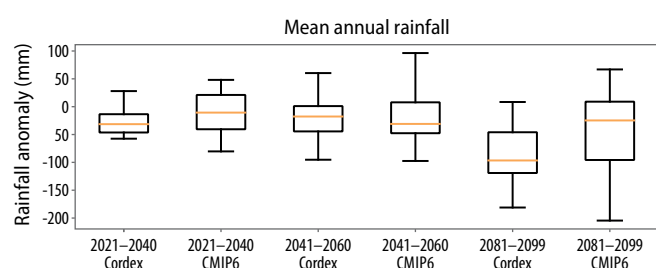
### Near- and mid-future

- 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*).

#### Citation:

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