

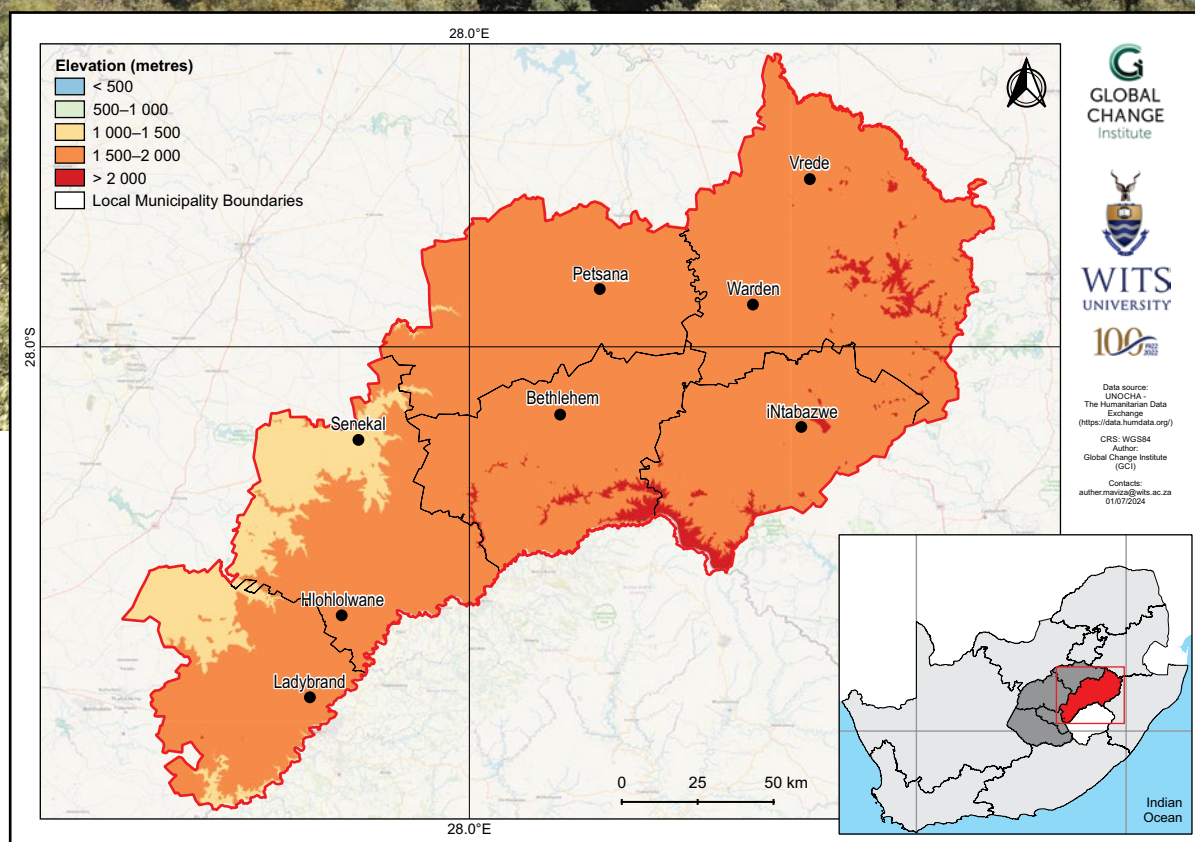
# Thabo Mofutsanyana District Municipality climate change fact sheet

Free State, South Africa

MUNICIPAL

## Introduction

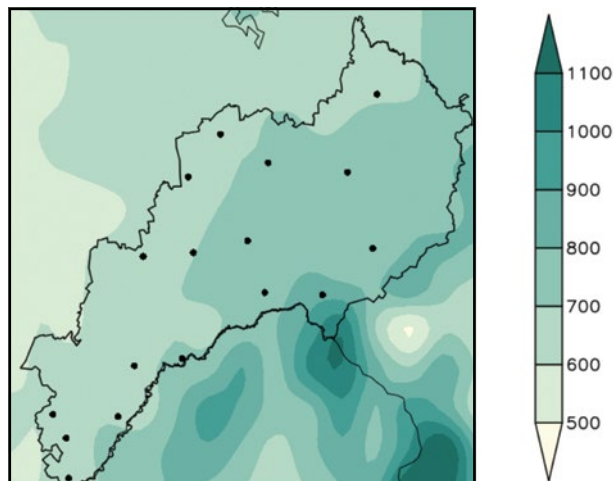
- This fact sheet is part of a series of district municipality fact sheets developed by the Wits GCI and SANBI. The fact sheets present a summary of observed and projected changes in climate over district municipalities in South Africa. They should be used together with the guidelines presented in the cover page.
- Thabo Mofutsanyane District Municipality covers an area of approximately 32 734 km<sup>2</sup>, with elevation ranging from 1 400 m above sea level in the southwestern plains to over 2 000 m above sea level at the foothills of the Drakensberg in the east, bordering Lesotho.
- The district is one of the wettest in the Free State and is characterised by strong dry-wet seasonality with rainfall predominantly occurring in summer. Winters can be cold with frost and occasional snow at higher altitudes.



## Observed climate: rainfall (1981–2000)

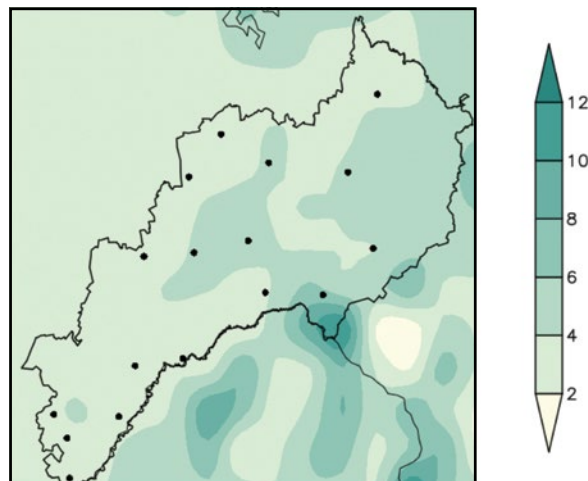
### Mean annual rainfall

Mean annual rainfall ranges from 400 mm over southwest-ern parts to 600 mm over eastern parts.



### Extreme rainfall days

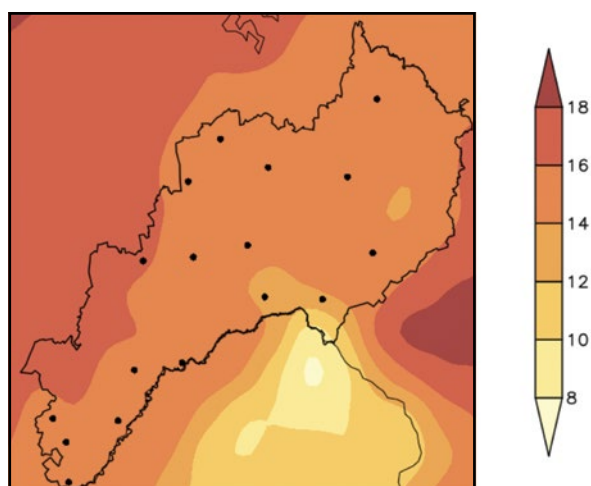
Mean annual number of extreme rainfall days range from 2 days in the western and northern parts to as many as 8 days over the southern mountainous parts.



## Observed climate: temperature (1981–2000)

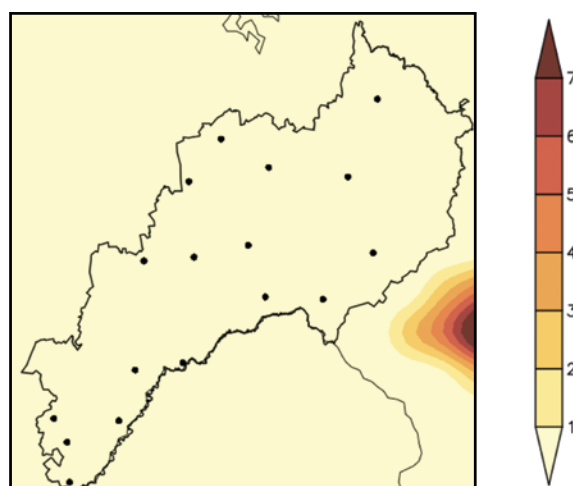
### Mean annual temperature

Mean annual temperature ranges from 12 °C over the mountains in the south to 18 °C over the lower-lying west-ern parts.



### Very hot days

Mean annual number of very hot days are less than 1 day over the entire district.

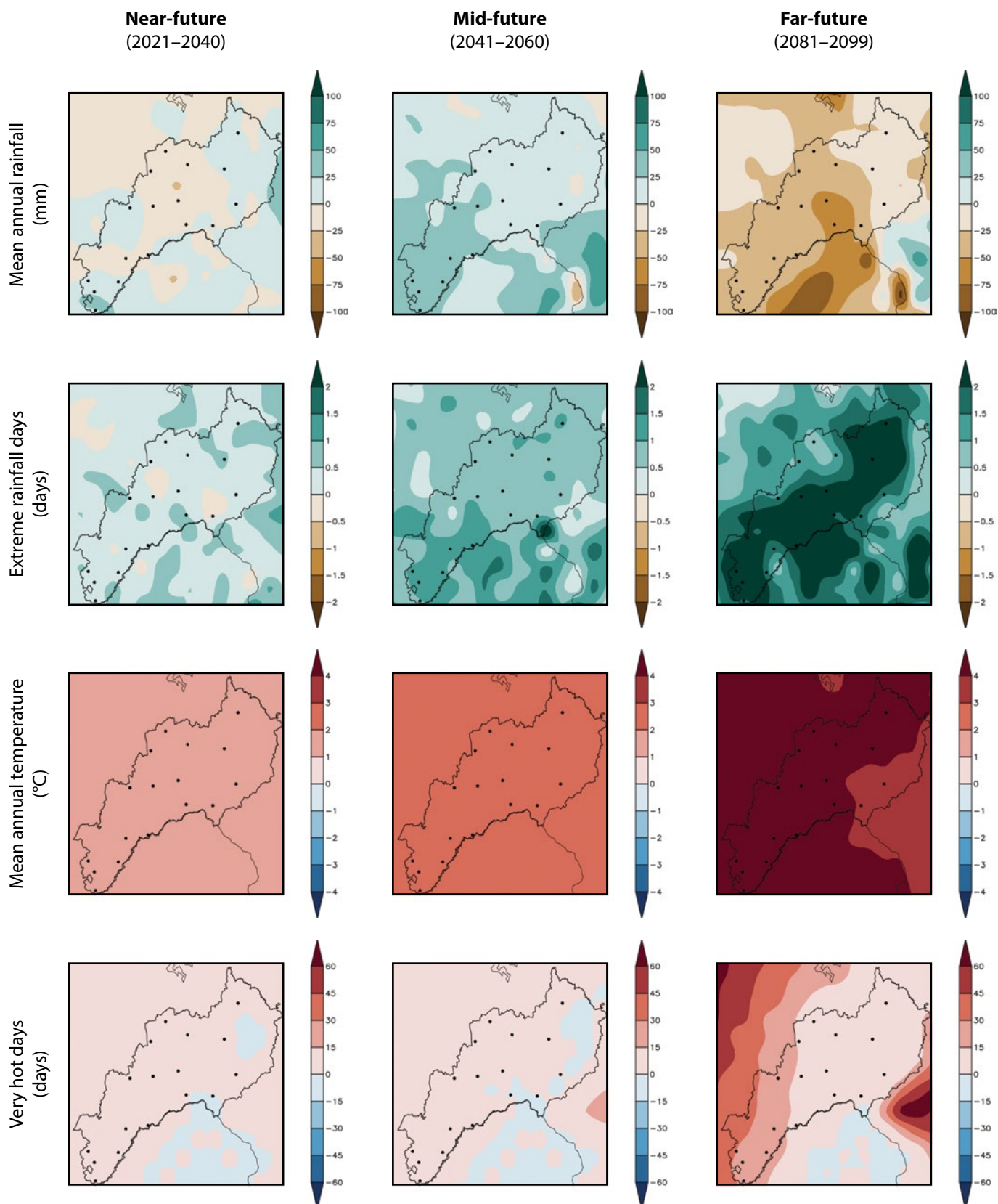


## Observed climate trends (overview)

- Observed decrease in mean annual precipitation (*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* for the near- and mid-future, but with projected decreases in the 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*); decrease in cold extremes (*high confidence*).
- Projected increase in agricultural and meteorological drought in the far-future (*high confidence*).





# Projected future climate change (detailed)

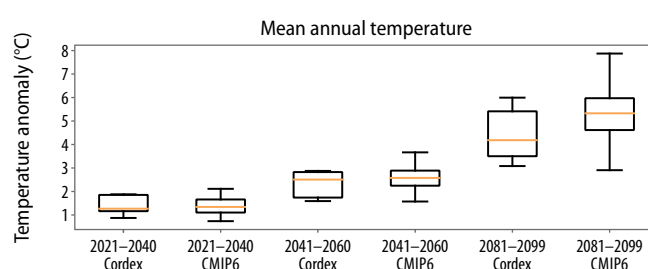
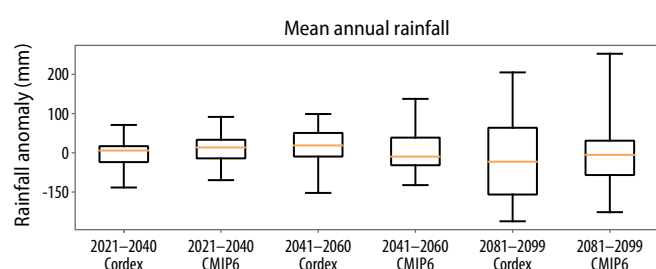
## Near- and mid-future

- 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 (*likely*).
- Projected increase in agricultural and meteorological drought (*more likely than not*).

## Far-future

- Projected decrease in mean annual rainfall (*likely*) and associated 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*); decrease in cold extremes (*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 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 (*likely*).

### Citation:

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