

Climate Profiles of Countries in Southern Africa: Lesotho

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The following climate factsheet⁴ provides an overview of the climate of Lesotho, one of ten countries of interest for the Finnish Red Cross Food Security Study, 'Interventions to improve food security in a changing climate in Southern Africa'. Each of the factsheets were written as a compilation of information from peer-reviewed academic papers, government publications, and INGO documentation, and are also available in one compiled document.

1. What is the general climate of Lesotho, and what are its climate zones?

The climate of Lesotho is classified as temperate and one of the most important drivers of these conditions is the country's altitude. Lying at a mean elevation of 2161 m above sea level, the small landlocked country can be divided into three major geographic zones. The western part Lesotho forms a high elevation plateau called the lowlands which comprise 17% of land area. Foothills comprise 15% of land area, bridging the lowlands and the high mountains ([UNDP 2020](#)). Finally, a mountainous region makes up the majority of the land area, with the Drakensberg range to the east and the Maloti mountains to the north). This area supplies a significant proportion of southern Africa's water resources ([The Editors of Encyclopaedia Britannica 2020](#)).

The country's population and main economic activities are mostly located in the lowlands and foothills, particularly along the Senqu River valley in central Lesotho ([UNDP 2020](#)), and only 11% of the country's land is suitable for agricultural production (Gwimbi et al. [2008](#)).

1.1. How does precipitation vary throughout the year?

Average precipitation in Lesotho is higher than other areas in southern Africa ([Legum et al. 2020](#)). The period from October to April is the country's rainy season, when 85% of annual precipitation occurs ([MEMWA 2013](#)). Peak daily precipitation rates are reached between December and February, falling as rain or snow depending on elevation. During these months, the lowlands and

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foothills experience severe storms ([MEMWA 2013](#)). In April and May, precipitation amounts decrease and reach very low levels in June and July ([Dejene et al. 2011](#)).

1.2. How does temperature vary throughout the year?

Temperatures in Lesotho are strongly influenced by the country’s high elevation gradients. Generally, temperatures are highest during the summer months (December to February) when they vary between 10.8°C to 27.6°C – January is the country’s hottest month. Temperatures then decrease at the end of the rainy season, in May, reaching between 0.1°C and 17.3°C in June, July, and August – July is the country’s coldest month and often experiences snow and frost in the highest elevations ([MEMWA 2013](#), [Dejene et al. 2011](#)).

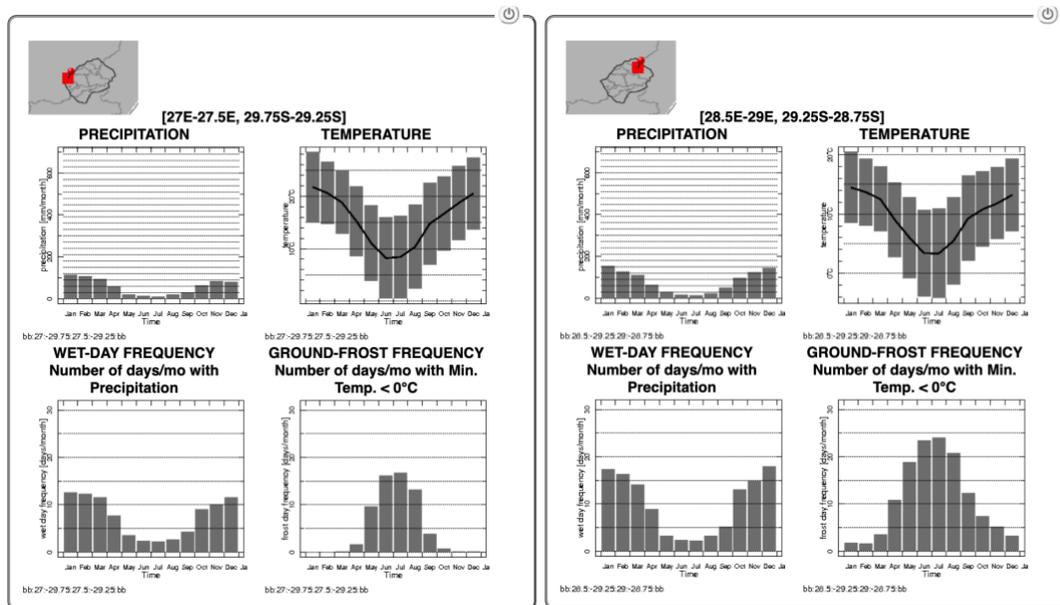


Figure 1. Climate Statistics for western lowlands (1a) and eastern highlands (1b) of Lesotho

2. What types of extreme weather and climate does Lesotho experience?

Lesotho experiences various types of extreme weather and climate events including droughts, floods, tornados, cyclones, and cold waves ([IFRC 2020](#)).

- Dry spells and periodic droughts are a chronic condition in Lesotho. With limited arable land, the impacts of precipitation deficits are critical for food security ([FAO 2011](#)). There have been at least six drought periods between 1980 and 2016 (1981 to 1983; 1990 to 1992; 2001 to 2003; 2007 to 2008; 2009 to 2013; 2015 to 2016), all spanning multiple years and with devastating impacts on mortality and agricultural production (Kamara et

al. [2019](#)). 1990 to 1995 saw the longest dry spell in the 200-year climate record ([UNDP 2020](#)). More recently, a drought from 2019 to 2020 impacted over a quarter of the country's population and led to a significant decline in cereal production ([ARC 2020](#)).

- Severe rains and storms are of particular concern, causing riverine floods, flash floods, and sometimes accompanied by devastating hail storms. For example, the severe rains of December 2010 and January 2011 displaced over 5,000 people, destroyed 50% of the country's roads, and led to a significant decrease in crop production and livestock operations ([IFRC 2011](#)). In 2018, severe rains and a hailstorm caused flash floods, impacting over 1,400 people and causing damages of approximately 346,000 USD ([UNORCH Lesotho 2018](#)).
- Lesotho is impacted by ENSO, where El Nino and La Nina have been respectively linked to dry spells and wet spells in the country ([UNDP 2020](#), [Fobo 2012](#)).

3. What are certain current and projected impacts of climate change in Lesotho?

3.1. Observed changes

Temperatures and precipitation have already changed since the 1960s ([Ministry of Energy and Meteorology 2017](#)).

- Trends of increasing temperatures are visible in the record since the 1960s. Analysis of the temperature records shows that average temperatures rose by 0.76°C between 1967 and 2006, with the greatest increase in the early 1980s. In the lowlands, temperatures have also increased since the 1970s ([Ministry of Energy and Meteorology 2017](#)).
- Records show slight decreases in annual precipitation amounts since 1967. Additionally, changes in precipitation patterns have also been observed, including a lengthening of the winter precipitation season and a shortening of the summer season. The changes also seem to be spatial with the lowlands experiencing decreased rainfall as recorded between 1970 and 2005 ([Ministry of Energy and Meteorology 2017](#)).

3.2. Projected changes

- Projections estimate increases in average seasonal temperatures between 1.78 et 2.20 °C by the year 2060. More specifically, temperatures are likely projected to increase by 1°C by 2030, 1.5-2.0°C by 2050, and by 2.5-3.5°C by 2080 ([FAO 2011](#), [Ministry of Energy and Meteorology 2017](#))
- Winter rainfall is projected to slightly decrease and spring rainfall to moderately increase (the latter especially in the later part of the 21st century). In particular, Eastern Lesotho

is projected to experience the most significant increase in rainfall. Although research is limited, there is thought that there will be shifts of the onset of the summer rains and an increase in the intensity of precipitation events during the seasons. It is important to note here that signals are not extremely clear between different climate models and studies ([FAO 2011](#)).

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