

Prolonged Drought in southern Africa

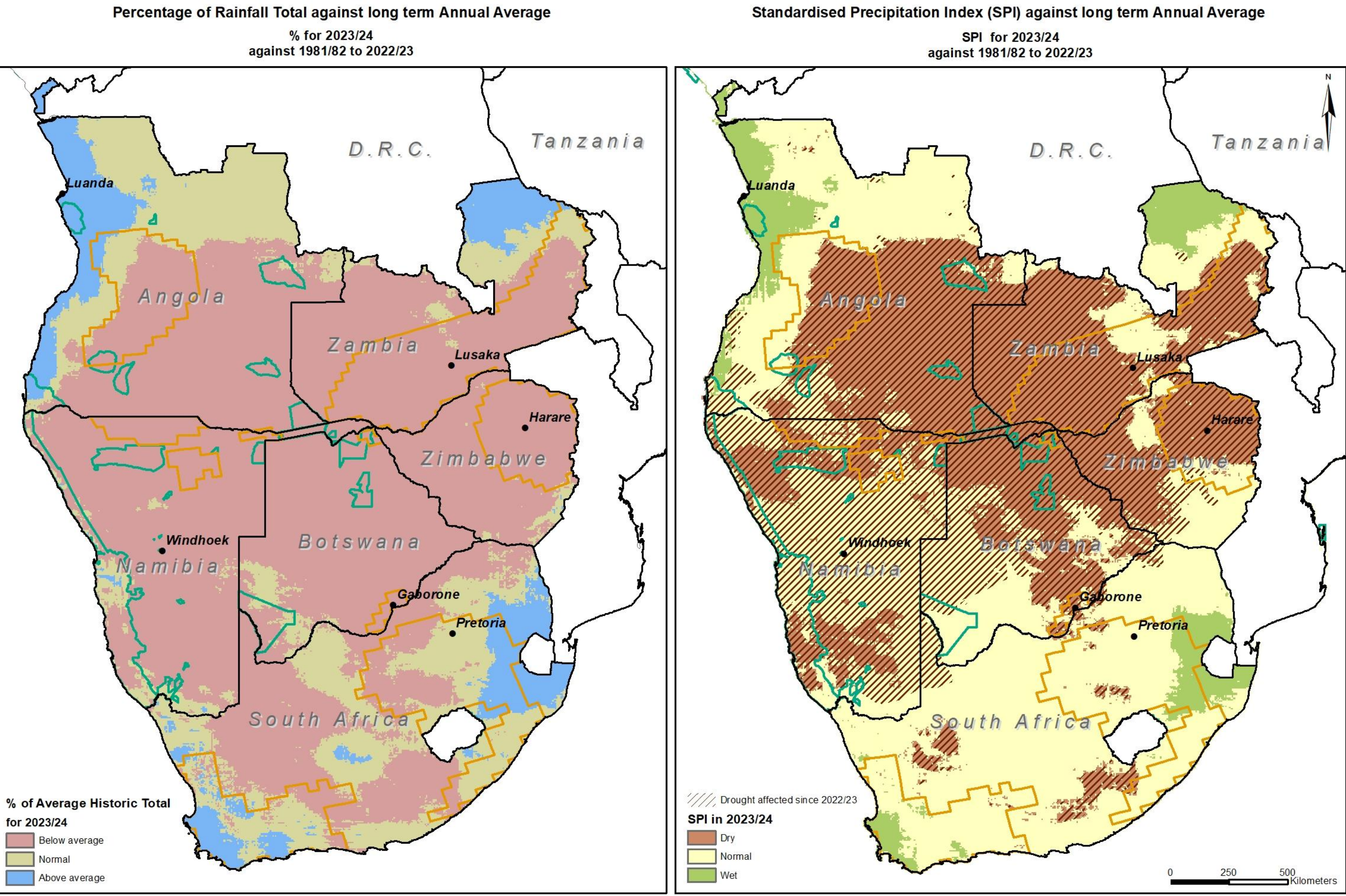
Prognosis after 2023/24

by, Sylvia Thompson¹, Baptista Joao¹, Musonda Ng'onga¹, Budzanani Tacheba¹
1 Southern African Science Service Centre for Climate Change and Adaptive Land Management, Windhoek, Namibia

On 05 June 2024, reliefweb reported that more than 30 million people across southern Africa have been affected by a severe drought. The severe drought is believed to have been a consequence of the impacts of an El Niño event, and a climate-driven crisis (reliefweb 2024)

“Rural communities we have met on the ground tell us they have never seen anything like this. They are extremely worried about their future,” said Reena Ghelani, the UN Climate Crisis Coordinator for the El Niño / La Niña Response. Rightfully so: climate change models now unanimously predict a drier southern Africa for the future, with the exception of the south-eastern part of South Africa (SASSCAL TIPPECC 2024).

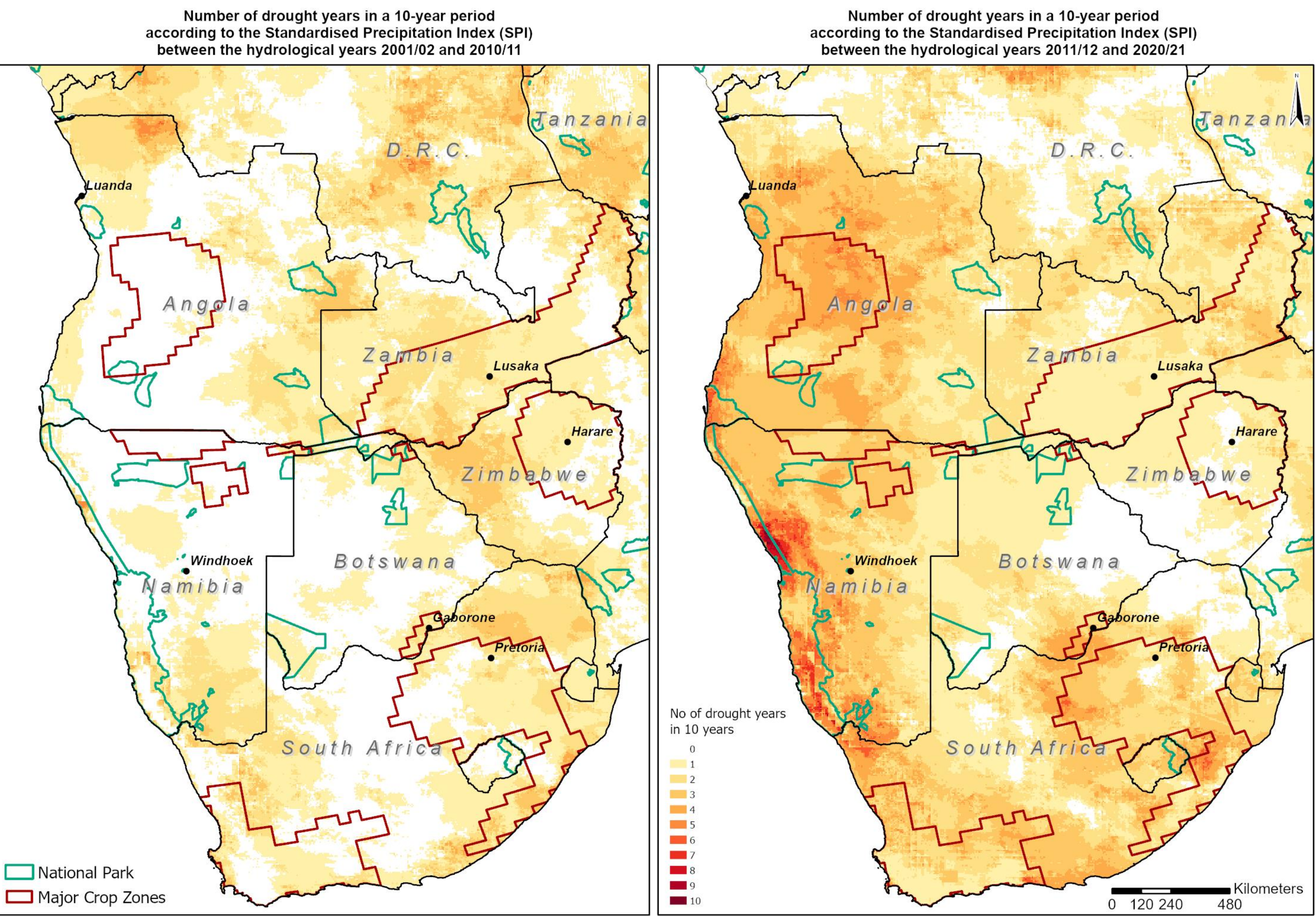
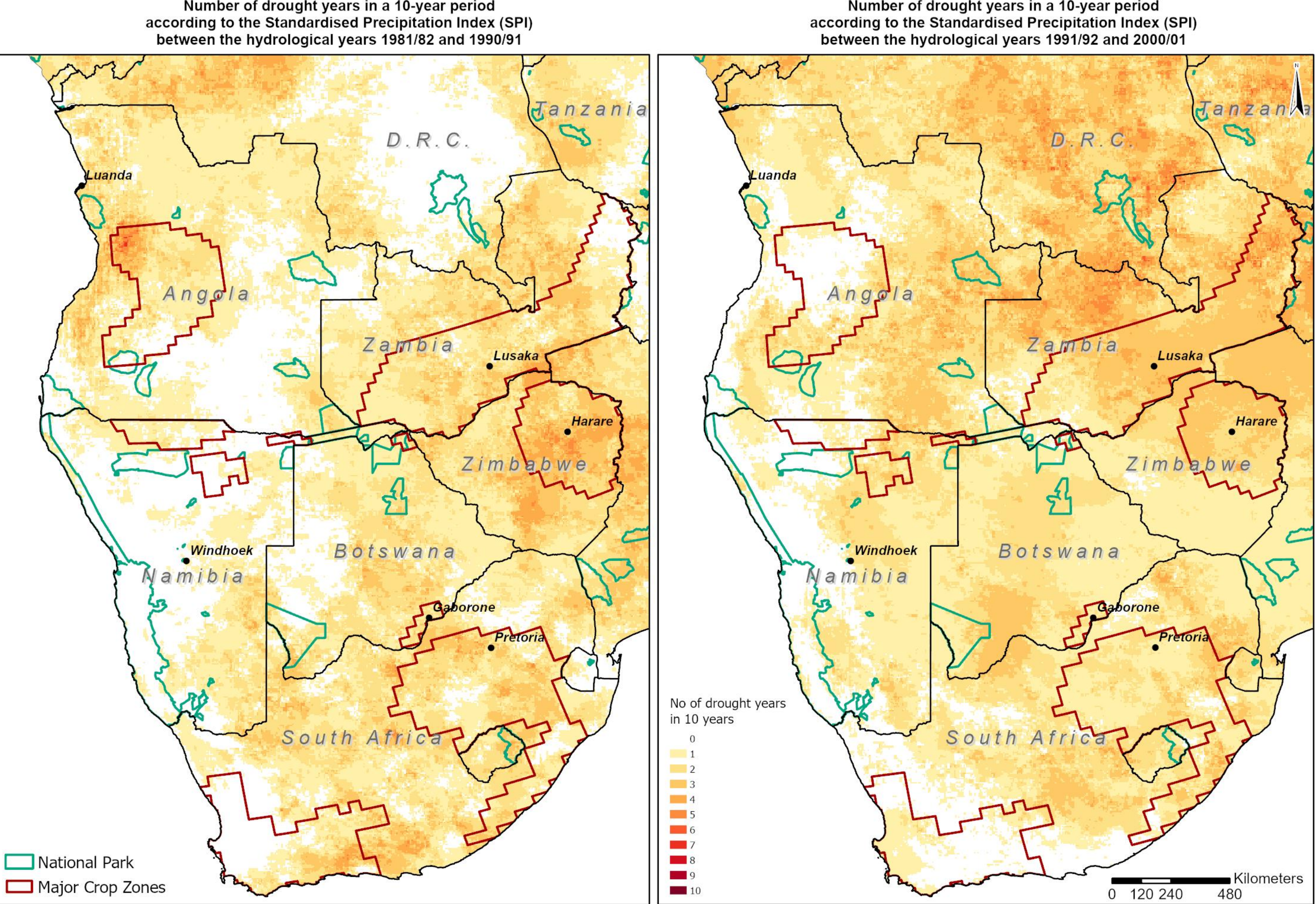
This poster creates perspective on the 2023/24 drought event of southern Africa, but moreover looks at the drought history of the region.



Areas prone to droughts

Looking at the past 64 years of rainfall, by combining WorldClim and CHIRPS 2.0 historic rainfall data, suggests that Angola has had, on average, the highest frequency of below average rainfall years in the past 10 years, with six below average years. The driest year in Angola was in 2014/15.

Botswana's driest year was in 1994/95. The past 64 years of data show a history of drier years. Five years in the past ten years had a below average rainfall year. Similarly, almost half of the past 64 years were below average rainfall years.



Worst in over 100 years

According to reliefweb , in 2023/24, southern Africa experienced its worst drought in over a 100 years.

The analytics derived from 43 years of CHC CHIRPS 2.0 precipitation data, demonstrated that particularly Angola, Botswana, Namibia and Zimbabwe suffered from a prolonged drought that already started during the 2022/23 rainfall year.

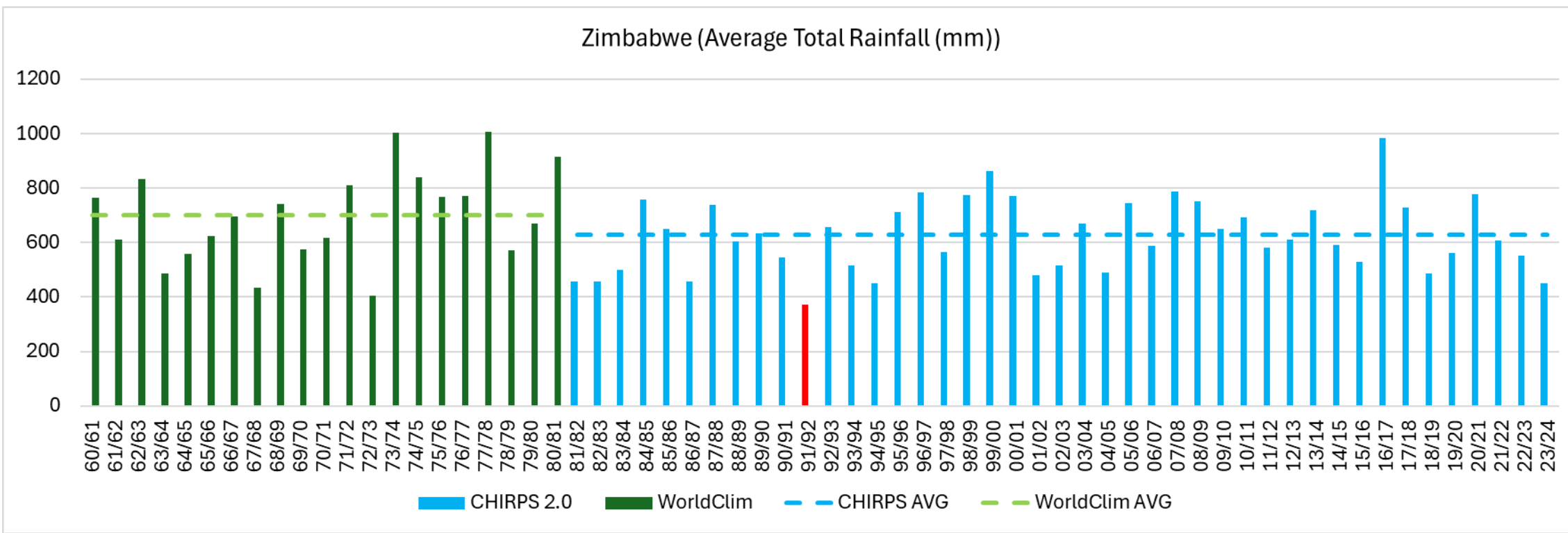
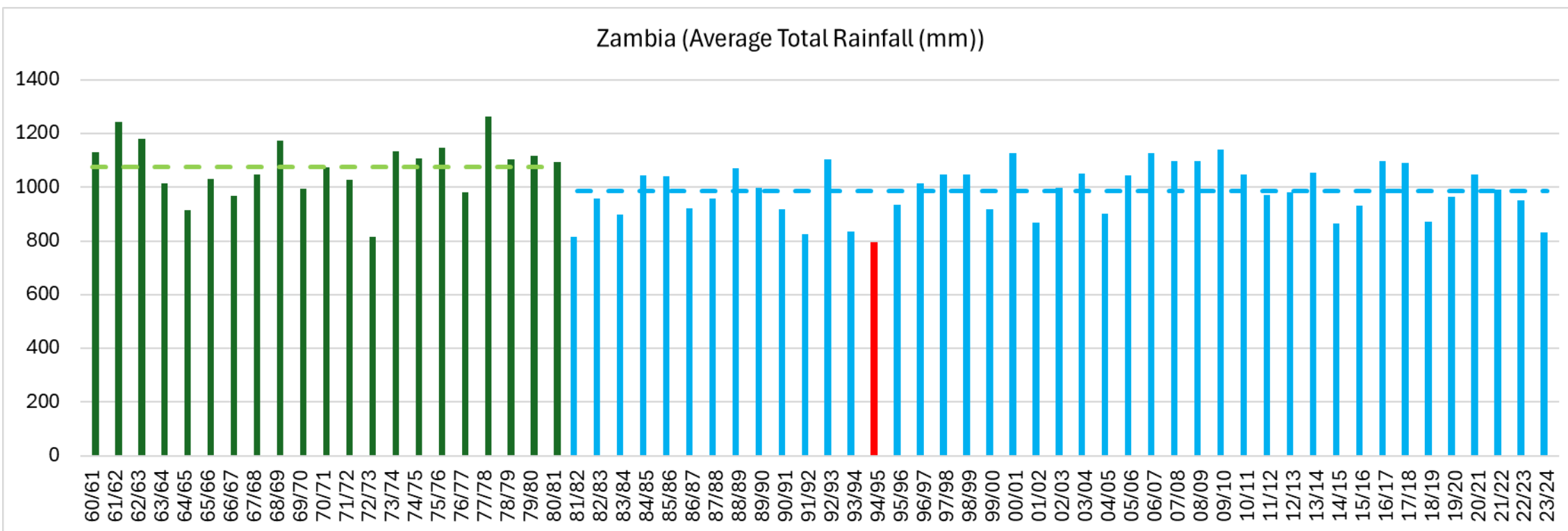
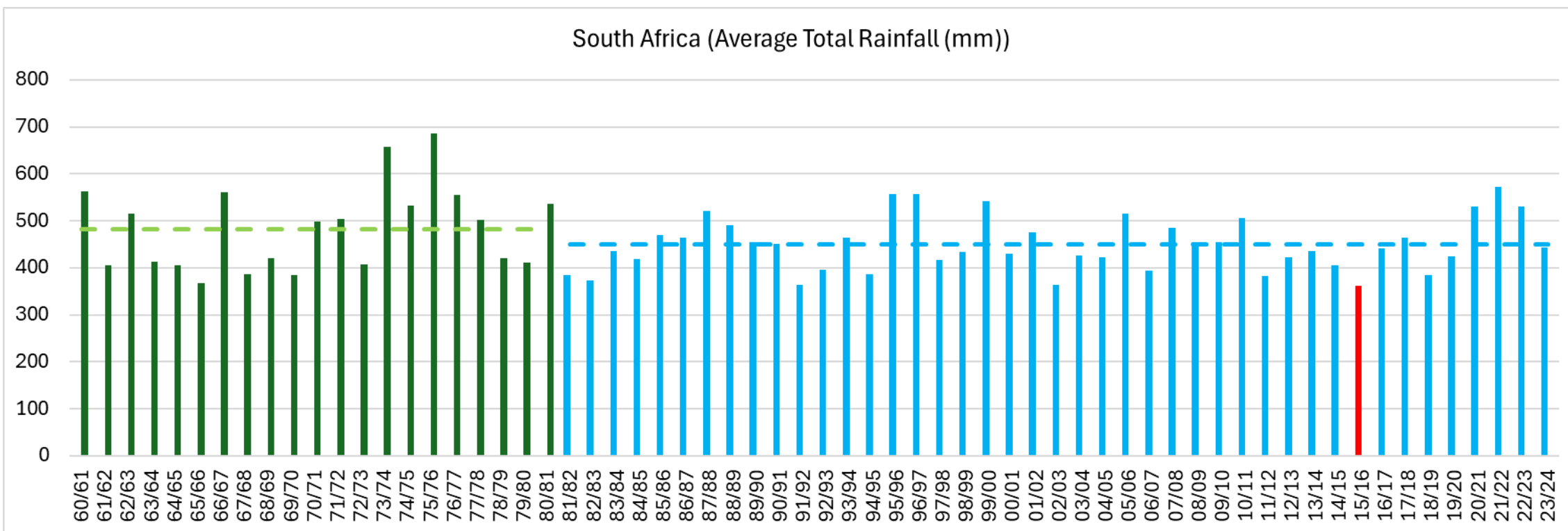
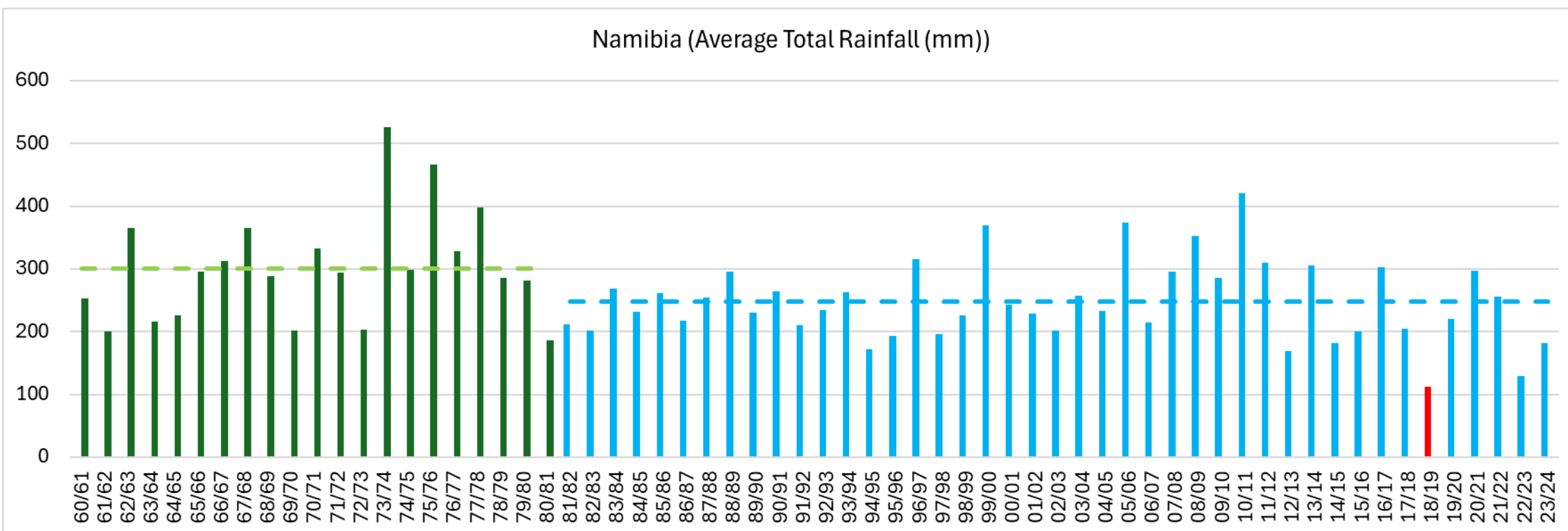
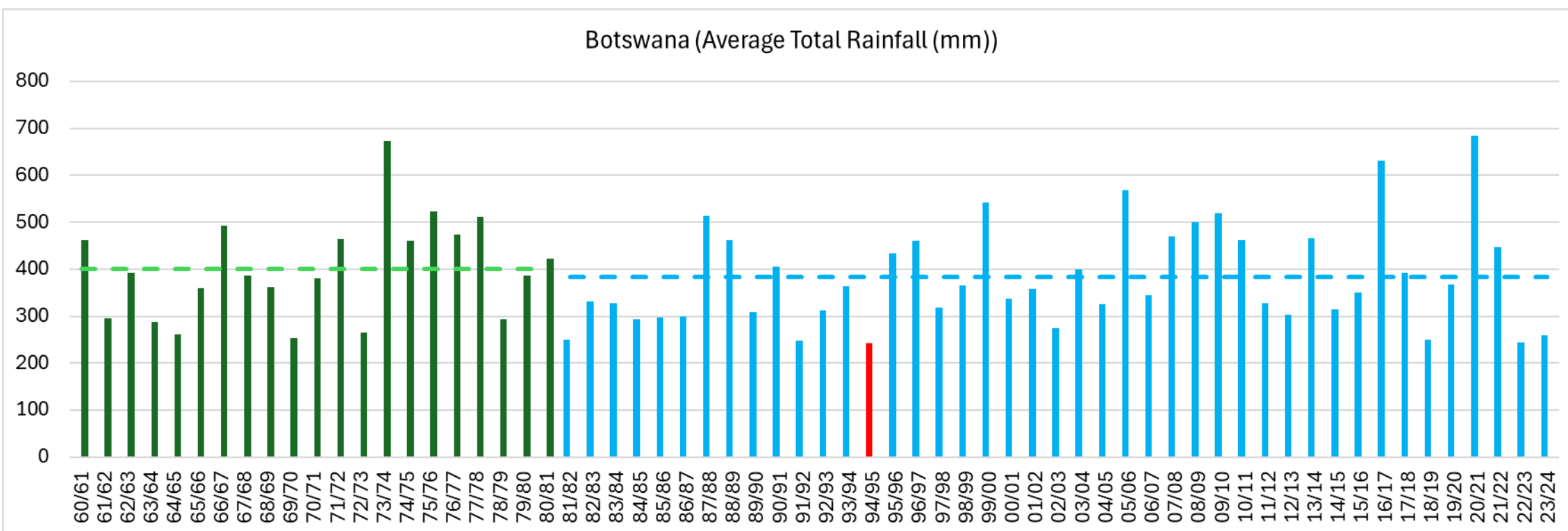
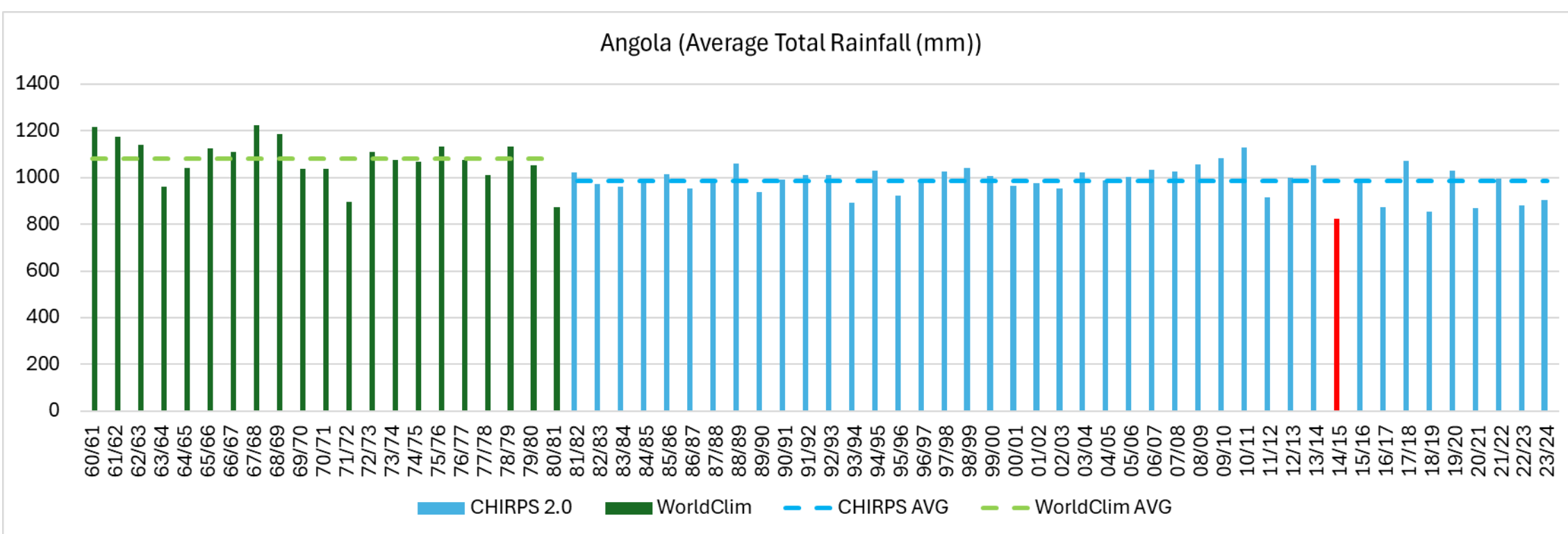
A measure of drought

The WMO (World Meteorological Organisation) recommends that the Standardized Precipitation Index (SPI) be used by all National Meteorological and Hydrological Services to characterise meteorological droughts (WMO 2012).

A drought starts when the SPI has a value of -1 or less. The drought duration ends when the SPI becomes positive.

Accordingly, it can be derived that large parts of Angola, Botswana, Namibia, Zambia and South Africa already started suffering from a drought during the 2022/23 rainfall year. But drought affected areas increased during the 2023/24 rainfall year. The drought affected area of 2023/24 is the combination of the hatched area and the “dry” area in the map of the 2023/24 SPI.

Accordingly, by the time the 2023/24 rainfall season arrived, the whole of Namibia, most of Botswana and Zimbabwe and much of Angola and Zambia were affected by a drought.



Seven out of the past ten years in Namibia have been below average rainfall years, with the lowest annual rainfall recorded in 2018/19. The past ten years show a high frequency of drought.

South Africa's driest year in the past 64 years was the infamous 2016/17 drought. Notably, the South African Cape still receives rainfall during the winter months and therefore, the 2023/24 rainfall year can not yet be concluded.

1994/95 was the driest rainfall year in 64 years in Zambia. 2023/24 is the driest year in the past ten years, with four below average years in the past ten years.

Driest Decade

Looking at the past four decades, large parts of southern Africa have experienced the highest incidence of droughts in the past ten-year decade, starting from 2011/12 and ending 2020/21.

In particular for Angola, Namibia and South Africa, the past decade has been plagued by the most droughts. For Zambia, the 1990s had the most droughts.