South African Weather Service

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Monday, 13 February 2023

Heavy rain and flooding observed across eastern South Africa, with further rainfall anticipated for the northern and north-eastern provinces

During the latter half of last week and continuing through the past weekend, a slow-moving upper-air cut-off low pressure system lingered over the interior, causing widespread and often heavy rain over the eastern and north-eastern provinces. This extreme rainfall resulted in widespread flooding, with major rivers (especially those transiting the Kruger National Park and Lowveld) now being in full flood since the beginning of the weekend. The Escarpment and Lowveld regions of the Limpopo province and particularly the Mpumalanga province have borne the brunt of the flooding, with the southern half of the Kruger National Park particularly affected. Many low-water bridges and causeways (including the Crocodile bridge and the causeway at Lower Sabie camp) are flooded, while numerous main roads, including the main road linking Skukuza to Lower Sabie are closed due to flood damage.

Moreover, the presence of an additional low-pressure system over southern Mozambique and northern KwaZulu-Natal (KZN) significantly elevated the risk of flooding along the KZN coastline for Saturday night, prompting the South African Weather Service (SAWS) to broaden the Orange Level 9 Impact-Based warnings to include a significant portion of eastern KZN.

These warnings were issued in a timely manner with relevant Provincial Disaster Management structures consulted and informed ahead of time. Overnight measurements of rainfall (Table 1) revealed that Charters Creek in KwaZulu-Natal received 242 mm during Saturday into early Sunday morning while Tshivhasie Tea Estate in Venda in Limpopo received 294 mm on Friday into Saturday morning.

Despite the cut-off low having weakened significantly, there is a fresh rain system currently moving into Zimbabwe today from the east, expected to move westwards in the coming days. This system is a so-called east wind wave and is likely to herald a further episode of persistent and sometimes heavy rain for the north-eastern and northern provinces, which are already saturated and rain-soaked, following the heavy rainfall of the past week**.** An easterly wave is a tropical phenomenon, where tropical easterly flows result in disturbances that bring rainfall over the north-eastern regions of South Africa. These waves in the lower atmosphere are usually associated with the Inter-Tropical Convergence Zone (ITCZ).

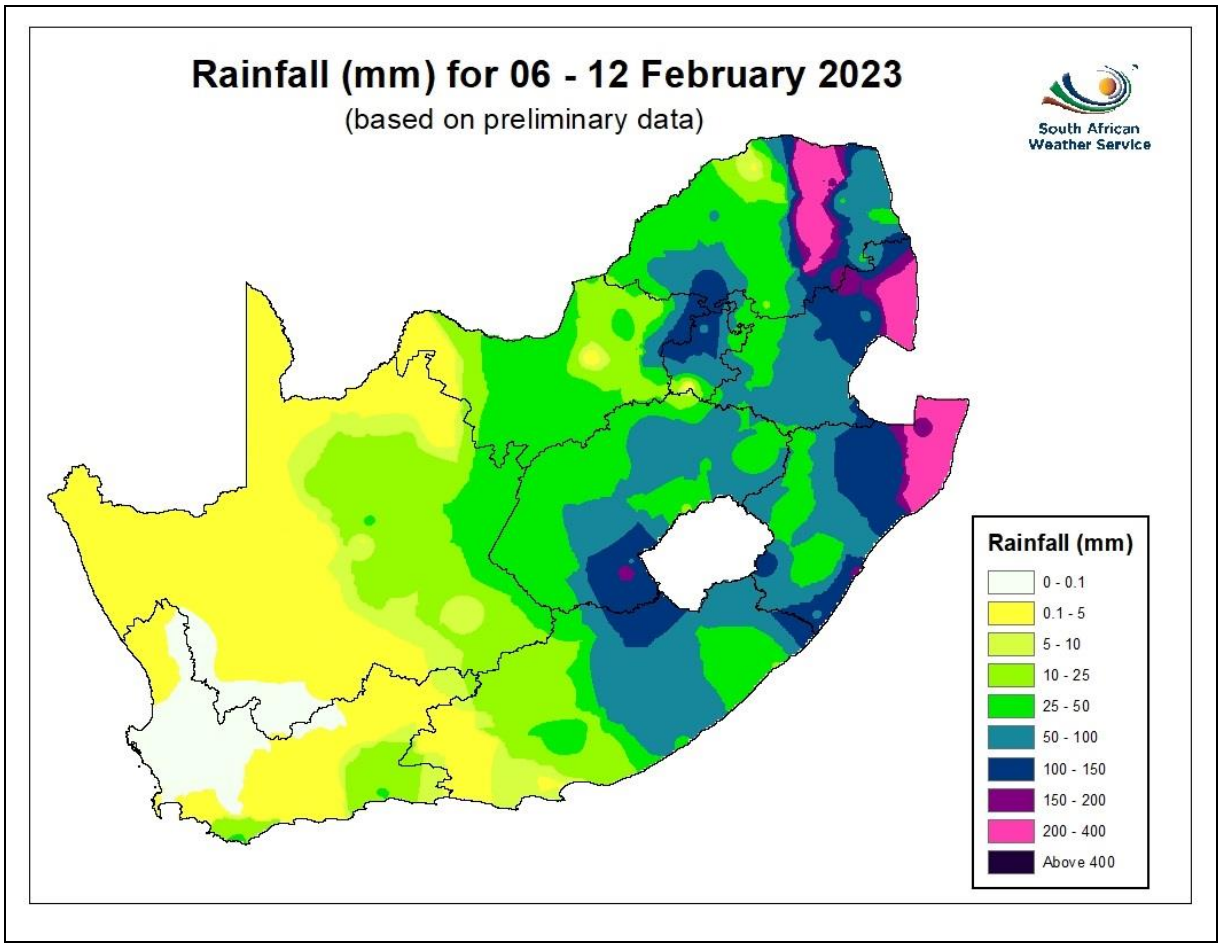

Figure 1: Observed rainfall accumulation (mm) over the country for the week of 6 to 12 February 2023 clearly indicating the heavy rainfall over the eastern and north-eastern provinces, Including KwaZulu-Natal, Gauteng, Mpumalanga, and Limpopo. SAWS

Town/City	**24-hour rainfall accumulation (mm)**
Mbazwana Airfield (KZN)	173 (reported Sunday)
Richards Bay Airport (KZN)	165 (reported Sunday)
Riverview (KZN)	135 (reported Sunday)
Thohoyandou (Limpopo)	61 (reported Sunday)
Tzaneen-Westphalia (Limpopo)	122 (reported Saturday)
Levubu (Limpopo)	98 (reported Saturday)

Table 1: A selection of some of the more significant measured rainfall (mm) which occurred during the weekend of 11 to 12 February 2023. Source: SAWS.

Persistent and heavy downpours are expected to continue especially over the Lowveld and along the escarpment areas of both Limpopo and Mpumalanga for which an Orange level 9 warning was issued for Monday (13 February). These areas have seen significant rainfall amounts the last few days and further severe impacts may occur, especially over the Mopani and Vhembe Districts of Limpopo until at least Tuesday (14 February), resulting in prolonged strain on Disaster Management and emergency personnel. Current high-resolution numerical models suggest further 24-hour rainfall accumulations of 100 to 200 mm, especially along the escarpment of Limpopo on Monday and Tuesday. Other areas in Limpopo and Mpumalanga will also see showery conditions, which may result in flooding because soil moisture content is high, and catchment and river systems are full.

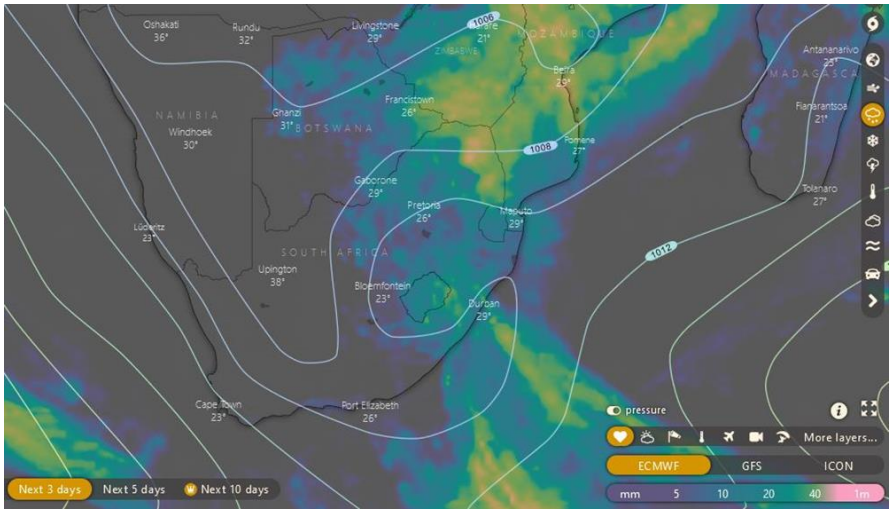

Figure 2: Rainfall accumulation (mm) for the following 3 days, 13 to 15 February 2023. Image courtesy of Windy.com

The easterly wave is expected to continue influencing the north-eastern regions of the country until 14 February 2023 over the eastern parts of Limpopo and Mpumalanga with the surface trough over the western interior continuing to create a convergence zone east of the country with a high chance of thunderstorms developing over Gauteng and eastern parts of the North West province which will bring about heavy rainfall with an impact of flooding expected on 15 February 2023. The easterly wave is expected to subside from 14 February 2023 in the evening with the intensity of prolonged rainfall gradually tailing off. However, scattered to widespread showers and thunderstorms are still expected for the remainder of the week for a large portion of the country.

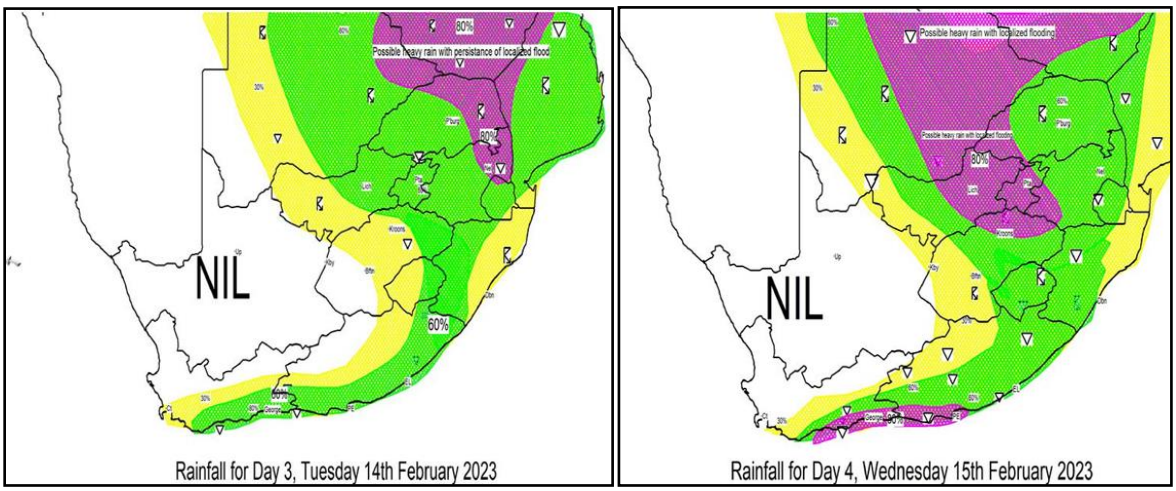

Figure 3: Rainfall probability (yellow = 30%, green = 60% and purple = 80% likelihood) expected for 14 and 15 of February 2023 (at top left and top right respectively). Source: SAWS.

The South African Weather Service will therefore continue to monitor any further developments relating to these weather systems and will issue subsequent updates as required. Furthermore, the public is urged and encouraged to regularly follow weather forecasts on television and radio. Updated information in this regard will regularly be available at www.weathersa.co.za as well as via the SA Weather Service Twitter account @SAWeatherServic

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