

# Turning weather information into farming decisions

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**A**gricultural producers across South Africa regularly make management decisions influenced by changing weather conditions, whether preparing livestock for heat stress, planning irrigation after rainfall, or managing fire risk during dry periods. Access to clear and practical weather information can make these decisions easier, yet such information is not always available in a form that is easy to interpret at the farm level.

To help address this need, the Agricultural Research Council (ARC) has developed the *Weather Risk app* (available at [www.weatherrisk.arc.agric.za](http://www.weatherrisk.arc.agric.za)), a free web-based tool that brings together key weather and water availability information for South Africa in a single interactive interface.

## Introducing the *Weather Risk app*

The app was developed by the ARC, with scientific input from the Agrometeorology Division alongside systems developers and researchers from the Water Science Division. The app is freely available online and can currently be accessed via a desktop computer. It provides national coverage while allowing users to explore conditions at local farm level scales within the interface (Figure 1).

**Figure 1: Homepage of the *Weather Risk app* showing the national coverage and interactive web-based interface.**



It combines observed weather and water-related data with short-term forecasts, enabling users to assess current conditions as well as potential upcoming risks. Designed with practical decision-making in mind, the app supports farmers, extension officers, agricultural advisors, and others who require accessible and reliable information for planning and risk management. Although designed with simplicity in mind, guidance on navigating and using the app is available through an online user guide that can be downloaded at [www.github.com/climindex/hydroclimsa/blob/main/App\\_user\\_guide/Weather\\_Risk\\_app\\_user\\_guide.md#weather-risk-app-user-guide](https://www.github.com/climindex/hydroclimsa/blob/main/App_user_guide/Weather_Risk_app_user_guide.md#weather-risk-app-user-guide).

## From information into insights

The *Weather Risk app* presents weather and water availability information in the form of indices, which are designed to make complex data easier to interpret. An index summarises weather or water conditions over a defined period into a single, meaningful measure, helping users quickly understand developing conditions without needing to interpret individual daily values.

For example, weather data can be summarised into indicators showing when livestock may begin to experience

heat stress or when meteorological conditions increase the likelihood of veld or crop fires. Instead of analysing multiple weather variables separately, the app translates this information into practical indicators that highlight conditions relevant to everyday farming activities.

Numerous indices are available on the *Weather Risk app* using both observed weather and water-related data, as well as short-term forecasts. These indices help users identify conditions such as livestock heat stress, elevated fire danger, and other weather-related risks that may influence farm management decisions.

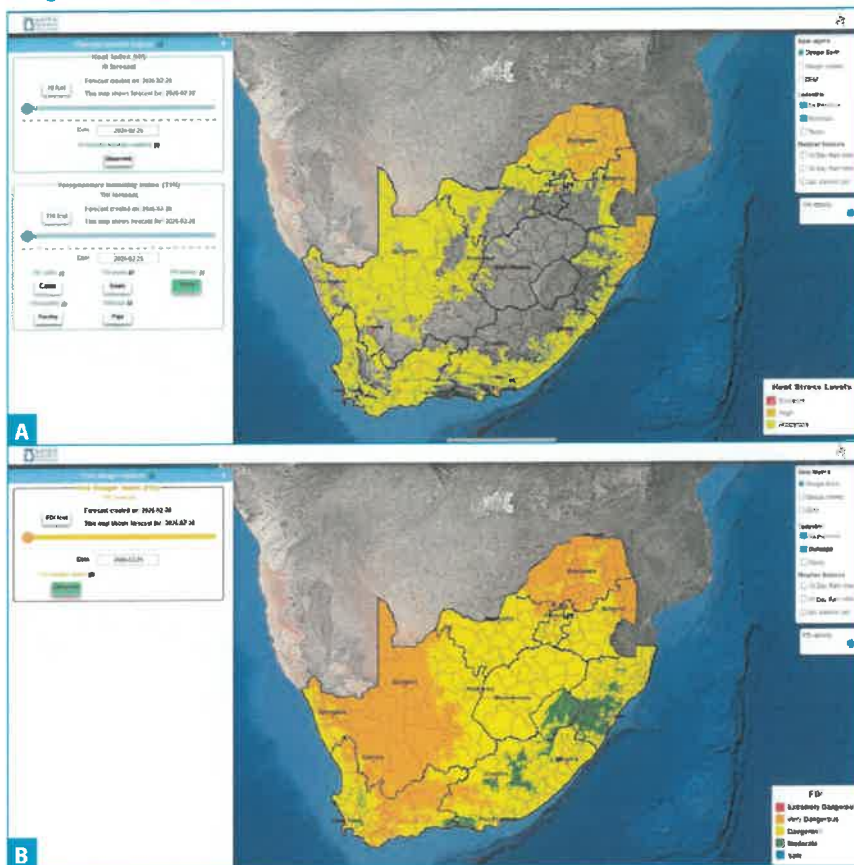
Figure 2 shows examples of two indices available on the *Weather Risk app* for 25 February this year. The livestock thermal comfort index, shown here for sheep, highlights conditions where animals may begin to experience heat stress, while the fire danger index classifies conditions according to increasing levels of fire risk. Displayed across South Africa, these indices allow users to quickly identify areas where increased awareness or management action may be required.

## A practical example

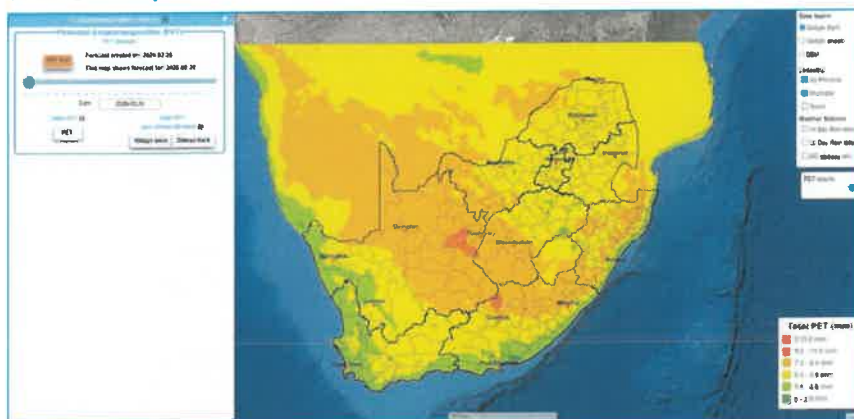
Weather and water availability information is most useful when it can support practical decisions on the ground. Observed indices on the *Weather Risk app* help users understand recent conditions, allowing producers and advisors to assess current impacts and adjust management where necessary, while forecast-based information provides an opportunity to anticipate conditions in the days ahead and plan proactively. Several forecast indices are available on the app and, when considered together, these can provide a more complete picture of developing conditions and potential risks.

Figure 3 shows the daily potential evapotranspiration forecast for 28 February 2026 (day one of the forecast), indicating expected atmospheric water demand under forecast weather conditions.

**Figure 2: Examples of indices available on the *Weather Risk app*, 25 February 2026: (a) livestock (i.e., specifically for sheep), thermal comfort conditions, and (b) fire danger conditions across South Africa.**



**Figure 3: Daily potential evapotranspiration forecast for 28 February 2026 (day one of the forecast).**



Higher potential evapotranspiration values suggest increased moisture loss from soils and plants, which can signal rising irrigation requirements and faster drying of grazing areas.

Information like this can support short-term planning and risk reduction by helping crop producers adjust irrigation

scheduling and anticipate crop water stress, while livestock producers may use the same information to prepare for declining pasture moisture or increased water needs for animals. By presenting both observed and forecast information in a clear and accessible format, the *Weather Risk app* supports more proactive and

informed decision-making across weather-sensitive agricultural activities.

**Built with users, and still growing**

The *Weather Risk app* has been developed with input from stakeholders across the agricultural sector, including producers, extension officers, and other users of weather and water information. Feedback received during development has helped shape the app’s design and functionality, ensuring it remains practical and relevant for real-world decision-making. Although the app is ready for wider use, ongoing feedback is encouraged as it continues to evolve through additional user input.

Planned enhancements include user login and customisation features, alert functions, additional indices, and continued refinement of existing tools. As the app grows, opportunities for long-term sustainability and potential commercialisation are also being explored to support ongoing development and expansion.

Readers are encouraged to explore the *Weather Risk app* and consider how it may support planning and risk management within their own operations. Feedback remains an important part of the app’s development and can be provided directly through the online questionnaire available at [www.forms.gle/z2aSdZhHvhPqwRHh7](http://www.forms.gle/z2aSdZhHvhPqwRHh7). By making weather and water availability information more accessible, the *Weather Risk app* aims to support more informed and proactive decision-making across South African agriculture under variable weather conditions. <sup>5F</sup>

**Acknowledgments**

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