

How's the weather?

There are many different sources where grapegrowers can access weather data, and how it is presented and interpreted can vary. In this article, Christa Schwarz, Technical Officer - Viticulture, reviews some of the most useful websites, apps and portals that are available.

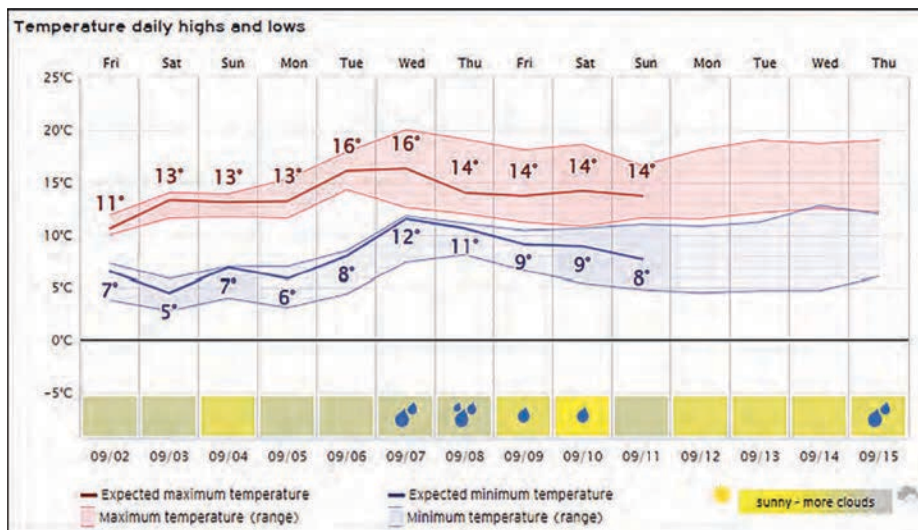


Figure 1. An example of the type of graphs presented in the 14-day forecast by Meteologix

What are the main types of weather information relevant to growers?

Growers generally want access to short-term (within the next week) and medium-term (within the next fortnight or month) weather forecasts to aid with decisions on irrigation, canopy management, heat wave management, frost mitigation and disease control. Information on the maximum and minimum temperatures, cloud cover, likelihood of rainfall, wind speed and direction, and groundwater are therefore all vital to make informed viticultural decisions.

Historical data can also be used by growers to help determine the suitability of a new vineyard site, in terms of the need for supplementary irrigation, frost mitigation or which varieties should be planted.

What weather forecast information is available to manage disease pressure?

The weather conditions that have an impact on foliar spray applications to control pests and diseases, as well as herbicide applications, are rainfall, wind speed and direction, temperature and humidity. Cloud cover and sunshine hours are also important weather metrics, due to their impact on diseases such as powdery mildew and on grapevine growth and development. The Australian Bureau of Meteorology (BOM) has world-class forecasting tools

and maps that can be used to observe these for locations across Australia.

The BOM Weather app provides on-the-spot access to weather data for saved locations. This recently updated app provides information on the current weather conditions as well as an hourly forecast for the next 72 hours for rain, temperature, cloud cover, wind and wind gusts. Push notifications and official warnings are also provided by the app, which may be useful for growers.

A 7-day forecast of various weather events is provided by the BOM's Meteye. There are two ways to view this information, as a map or as text. The service uses the closest weather station to the chosen location. Weather information is provided in an overview, as detailed 3-hour intervals, as an extended 7-day forecast and as current and past weather.

Additional useful services can be accessed for free from international sources. Meteologix is a USA based service that provides weather data analysis (www.meteologix.com). It provides hourly updates for the upcoming 72 hours, 3-hourly intervals for the next 48 hours and then 6-hourly intervals for the following 5 days. This information provides the temperature, precipitation, wind direction and mean speed. Drop-down arrows for each time interval

allow for a more detailed forecast to be analysed.

The 14-day Meteogram forecast by Meteologix displays similar information to the 10-day forecast, except this data is presented in an interactive table that records high and low temps, rainfall, wind and sunshine/cloud cover.

How can I plan for extreme weather events?

Heatwaves

Heatwave forecast services have been developed by the BOM in recent years and become available at the start of spring and through summer in Australia. Two categories of heatwave maps are provided: heatwave assessment and heatwave forecast. The two assessment maps indicate the intensity of the heatwave just experienced and describe the conditions from the past 3-day period. The five forecast maps indicate the upcoming consecutive 3-day heatwave potential and intensity.

Things that need to be considered when planning for hot weather include:

- Applying adequate irrigation pre-veraison to achieve good canopy cover
- The need for a good water supply particularly from fruit set to veraison and during heat waves
- If a heat event is forecast, ceasing any deficit irrigation and applying irrigation to refill the soil profile

The BOM's heatwave forecast service is especially useful for managing irrigation in the lead-up to an event because irrigation will affect the vineyard microclimate. Active transpiration must occur prior to a heat event as transpirational cooling is critical (Edwards *et al.* 2011).

Frosts

The Frost Map designed for agriculture by the BOM, shows maps of forecasted low temperature thresholds for various

locations across Australia. The maps are updated each day and show forecasts for the next 48 hours. The BOM reminds users that this information is produced from computer models, without any input from weather forecasters. It is also very important to check local warnings and forecasts when assessing frost risk.

New forecasting products for weather extremes

A recent Australian Government-funded and industry-led project called 'Forewarned is Forearmed' has developed new products to improve the forecasting of extreme events such as heatwaves, frost, floods and drought, and to link the forecasts with management options. The new products include forecasts of the chances of the driest or wettest, coldest and warmest two deciles, presented in a range of maps and location-based charts and graphs. A webinar featuring Peter Hayman (SARDI) providing guidance on how to use these and other forecasting tools will be available from the AWRI's YouTube channel from early October 2022.

Where can growers access a seasonal outlook to help with irrigation scheduling?

The BOM releases a new weekly, monthly, and seasonal outlook video every Thursday, providing an understandable source of information. Summaries and chance outlooks can also be viewed for rainfall and temperature.

The ENSO Tracker from the Bureau of Meteorology provides the seasonal indicator whether an El Niño or La Niña event will occur in Australia for the next growing season. El Niño indicates a dry, warm forecast and La Niña indicates a cooler, wetter forecast in Australia.


A water budgeting tool developed by SARDI is being converted to an online tool by the AWRI which will be accessible from the water management page of the AWRI website. The tool uses site-specific historical weather data to estimate the monthly water requirements of vines grown in different regions of Australia. It can help growers allocate water resources to blocks based on target yields.

Looking much further ahead than weather, where can growers access longer-term climate projections for their vineyards?

Wine Australia and the University of Tasmania have developed a climate atlas tool that considers the impact of seasonal climate variability and longer-term climate trends on the wine sector in Australia. It has generated the finest available climate projections for Australia's wine regions and provides detailed information about how the climate may change in the near-, mid- and long-term time horizons (out to 2100). This tool is available from: www.wineaustralia.com/growing-making/environment-and-climate/climate-atlas.

References

Websites, tools, apps and webinars mentioned in this article are linked from the AWRI's climate and weather tools webpage: www.awri.com.au/industry_support/viticulture/climate-weather-tools/

Edwards, E.J., Smithson, L., Graham, D.C., Clingeffer, P.R. 2011. Grapevine canopy response to a high-temperature event during deficit irrigation. *Aust. J. Grape Wine Res.* 17(2): 153-161. 

Two Proven Steps to a Bigger, Better Harvest

Step 1. PURIFY your vines of mites and mildew with **KENDON Organic Lime Sulphur**.

Step 2. NURTURE healthy vigorous growth with **KENDON High K**.

The result is bigger fruit, more sugar, a better yield, and fruit that's ready to pick two to four weeks earlier. Which means you beat the frost.

For a bigger, better harvest, switch to KENDON in the BIG BLUE DRUM.

KENDON is available at Your Local AG Distributor. Visit www.Kendon.com.au/distributors for locations.



KENDON The Farmer's Mate Since 1950
Owned by an Aussie Farmer for Aussie Farmers
Available at Your Local AG Distributor



For chemicals that work, switch to Kendon in the BIG BLUE DRUM.

Kendon



Insecticides, Fungicides, Wetting Agents, Surfactants,

Plant Growth Regulators, Herbicides, Disinfectants, Foliar Fertilisers