



# Temperature and Relative Humidity in Temukus, Besakih Village, Rendang District, Karangasem Regency, Bali Province

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**Abstract.** This research is focused on the maximum and minimum temperature and relative humidity (RH) data in Temukus, Besakih Village, Rendang District, Karangasem Regency, Bali Province. We use the Davis Vantage Pro 2 Wireless Weather Station to measure air temperature and relative humidity (RH) at the research location from April to August 2023. In Temukus, the maximum temperature reaches 32°C, and the minimum temperature reaches 14.5°C. At this location, simultaneously, it has a high value of maximum RH, which ranges from 95% to 97%. While the minimum RH value is 30%.

**Keywords:** Davis Vantage Pro 2 Wireless Weather Station; temperature relative humidity; Temukus; Bali.

## I. INTRODUCTION

Temperature and relative humidity conditions at a location are important parameters that must be studied to anticipate climate change. Temperature is the measure of warmth or coolness expressed in several scales, including Fahrenheit and Celsius. Meanwhile, humidity is the amount of water vapor, an invisible gas, in the air. All meteorological instruments measure the relative humidity (RH). It is the amount of water vapor in the air compared to the amount required to saturate it, given as a percentage. Toersilowati et al. studied climate change projections using a conformal cubic atmospheric model (CCAM) [1]. Natayu et al. reported climate behavior

through data interpretation in Java, Bali, and Nusa Tenggara [2]. Rajendra investigated the climate change impacts on the coastal tourist resorts of Bali [3]. Sumaja *et al.* also reported the climate comfort and risk assessment for tourism in Bali [4]. Other researchers, namely C.-Y. Liu *et al.* [5], Rahmawati, and M.W. Lubczynski [6], researched rainfall estimation in Bali, which affects temperature and RH.

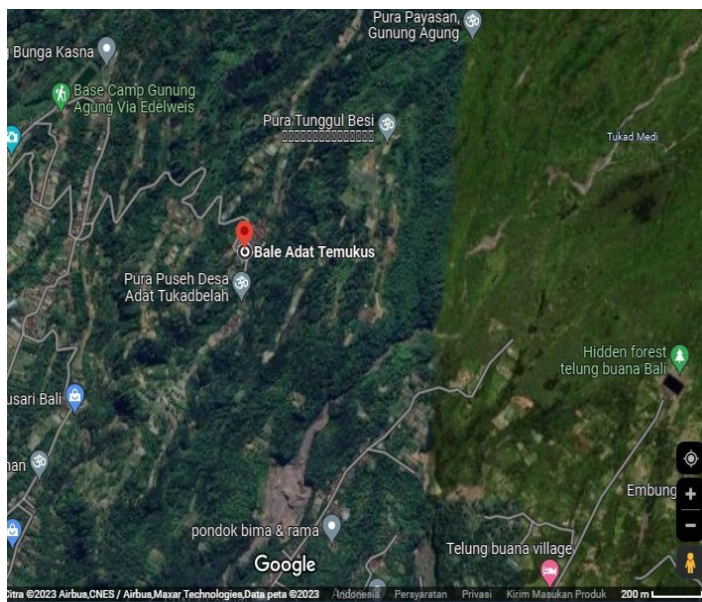
Besides being a tourist destination, Bali is also an agricultural and plantation area. Temukus, Bali, has an Edelweiss (*Anaphalis javanica*) field close to the Besakih temple, one of the largest temples and a popular tourist destination. Apart from that, Temukus also produces red onion.

Several studies related to this have been carried out, namely Saraswati *et al.* [7], F.R. Falayi and H.A. Yusuf [8], Sasongko *et al.* [9], and M.N. Islam *et al.* [10].

This research focuses on maximum and minimum temperature and RH data in Temukus, Besakih Village, Rendang District, Karangasem Regency, Bali Province. The is research to support green tourism in Bali in general and in Temukus in particular. As far as researchers know, there has been no research on temperature and RH in Temukus.

## II. METHODOLOGY

This research is conducted in Temukus Hamlet, Besakih Village, Rendang District, Karangasem Regency, Bali Province, located at -8.37141, 115.47222. Temukus is 1,150 meters above sea level, located at the foot of Mount Agung, the highest mountain in Bali. Figure 1 shows the maps of the research location



**Fig. 1.** Map of research location.

The research uses the Davis Vantage Pro 2 Wireless Weather Station to measure air temperature and relative humidity (RH) at the research location. Researchers placed the device in a position not blocked by buildings or trees at 6 meters above ground. Figure 3 shows the researcher and the equipment



**Fig. 2.** Davis Vantage Pro 2 Wireless Weather Station in Temukus

This weather station records temperature and RH data every 10 minutes. The researchers collect the data weekly at Temukus, as documented in Figure 3.



**Fig. 3.** Data Collection in Temukus

### III. RESULT AND DISCUSSION

This section presents the temperature and relative humidity (RH) conditions in

Temukus from April to August 2023, as shown in Figure 1 and Figure 2.

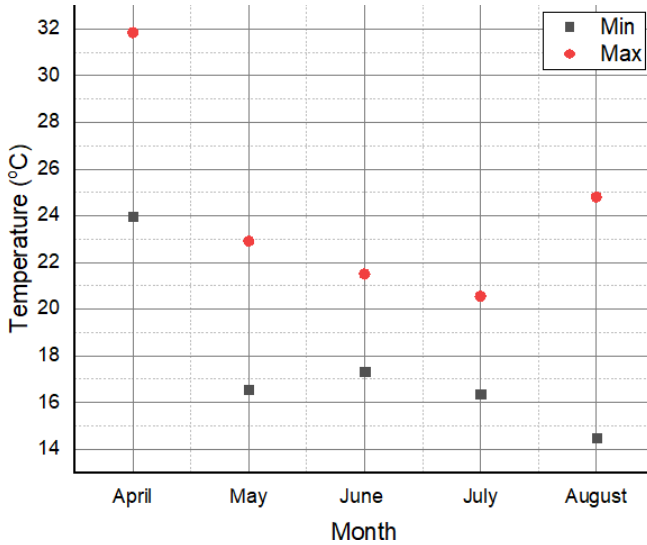


Fig. 4. Max and Min Temperature in Temukus.

In April, the maximum temperature reaches 32°C, and the minimum reaches 24°C. It is the highest temperature range from April to August 2023. In the following month, May, the sun points north, away from Bali. The maximum temperature reaches 23°C, and the minimum temperature reaches 16.5°C.

In June, when the sun reaches the summer solstice position, which is the northernmost position of the sun, the temperature at Temukus reaches a maximum of 21.5°C and a minimum of 17.5°C. It is the smallest temperature difference from April to August 2023.

The sun returns to the equator in July, but the maximum temperature only reaches 20.5°C. It is the lowest maximum temperature from April to August 2023. In this month, the minimum temperature comes to 16.5°C. It is still lower than the previous month. In August, the maximum temperature reaches 25°C. It is an increase in the maximum temperature from the previous month. However, the opposite happened for minimum temperature. It reaches 14.5°C, the lowest value from April to August 2023.

The maximum temperature value from April to August 2023 is predicted according to Equation (1).

$$y = \text{intercept} + B_1 \cdot x + B_2 \cdot x^2$$

$$y = \text{maximum temperature value (°C)} \quad \text{intercept} = 99.36$$

$$B_1 = -24.63$$

$$B_2 = 1.91$$

$$x = 4, 5, 6, 7, 8, \text{ respectively, for April to August } \text{Adj } r^2 = 0.94$$

Meanwhile, the minimum temperature from April to August 2023 did not find a

suitable equation.

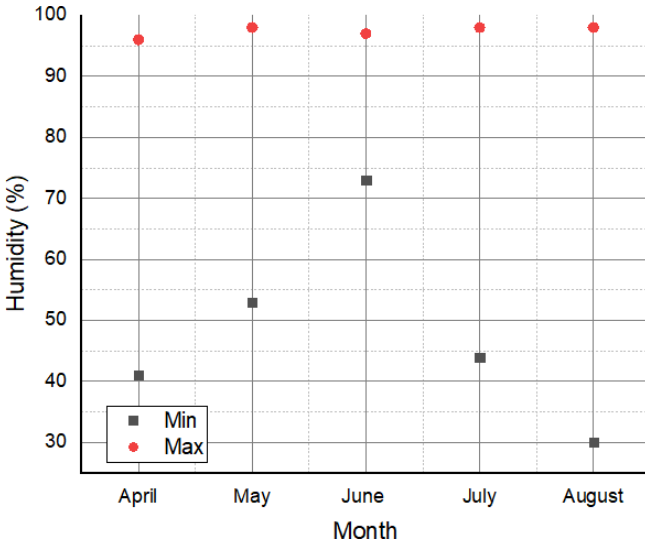


Fig. 5. Max and Min RH in Temukus.

There is no significant change in maximum RH from April to August 2023. The maximum RH value is in the range of 95% to 97%. Meanwhile, the minimum RH increased from 40% in April to 52% in May, to 74% in June. Furthermore, from July to August, the minimum RH value decreases. In July, the minimum RH reaches 44% and decreases to its lowest of 30% in August.

#### IV. CONCLUSION

From April to August 2023, in Temukus, the maximum temperature reaches 32°C, and the minimum temperature reaches 14.5°C. At this location, simultaneously, it has a high value of maximum RH, which ranges from 95% to 97%. At the same time, the minimum RH value is 30%.

#### ACKNOWLEDGMENT

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