

# **Malta's Rainfall Trends: A Study of Early 2025 Precipitation**

**GLOBE Students** - All students in Year 6 Rebbiegħa

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Malta

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## **Summary**

Malta, situated in the central Mediterranean, experiences a typical Mediterranean climate characterized by hot, dry summers and mild, wet winters. Rainfall in Malta plays a crucial role in maintaining water resources, supporting agriculture, and sustaining the local ecosystem. Given the island's limited freshwater resources, understanding rainfall patterns is essential for effective water management and agricultural planning.

This report aims to analyze the rainfall recorded in Malta between 12 January and 7 February. The objectives are three: to measure total rainfall during this period, to identify and analyze patterns in rainfall distribution, and to compare the findings with historical averages. The analysis will help determine whether the rainfall observed aligns with typical seasonal trends or reflects anomalies that could have broader environmental or socioeconomic implications. By examining these aspects, the report provides a deeper understanding of Malta's rainfall dynamics and their significance for the island's sustainability and resilience.

## Research Questions

The period between 12 January and 7 February is particularly significant due to its placement in Malta's winter season when rainfall is most frequent. Rain during these months replenishes groundwater levels and reservoirs, directly impacting agricultural productivity and the availability of freshwater. However, rainfall variability can lead to challenges, such as periods of drought or intense storms causing localized flooding. Studying rainfall during this period provides insights into weather patterns, helps assess the impact of climate variability, and supports better planning for resource management.

This led to several key questions. Firstly, analyzing how rainfall was distributed throughout this period and how it compares to other averages for the same timeframe reveals a period that was both drier and warmer than average. In January 2025 the observed rainfall was less than the typical average which means it was drier than usual. On the other hand, the observed rainfall during the first seven days of February suggests a wetter start compared to the monthly average, with the first week alone accounting for over 80% of the typical monthly precipitation. The temperature for both months was slightly higher than the average.

In summary, the period from January 12 to February 7, 2025, in Malta was characterized by a drier-than-average January followed by a notably wetter-than-average start to February. Additionally, temperatures during this timeframe were consistently higher than historical averages, reflecting a warmer period overall.

This brings us to our next question: What potential environmental or socioeconomic impacts might the observed rainfall patterns have on Malta? Environmental impacts include mostly water resources management, where a drier-than-average January could result in lower groundwater recharge and reduced reservoir levels, posing challenges for long-term water availability on the island. However, the wetter start to February might have partially compensated for earlier deficits but could also lead to

surface runoff rather than groundwater replenishment if the rainfall was too intense. The concentration of rainfall in a short period (as seen in early February) may overwhelm urban drainage systems, increasing the risk of flash floods. Flooding can have long-term effects on coastal ecosystems, including damage to wetlands that serve as crucial habitats.

Water scarcity in January could have impacted crop irrigation, potentially reducing yields of crops planted during winter months. Conversely, excess rainfall in early February could have damaged crops through waterlogging, affecting farmers' incomes and food supply chains. Flash floods can damage roads, buildings, and public utilities, leading to economic losses and disruption of daily activities. The cost of repairs and upgrading drainage systems can place financial strain on local governments, diverting resources from other essential services.

With these in mind, long-term considerations could be taken into consideration. Climate adaptation measures may need to be strengthened, such as rainwater harvesting, improved drainage systems, and sustainable land management practices. The observed patterns might indicate shifting climate trends, requiring Malta to reassess its climate resilience strategies for water management, agriculture, and infrastructure planning.

Our last question was: How might climate change influence rainfall trends observed in Malta during this period? Climate change is expected to lead to greater variability in rainfall patterns, with longer dry spells interrupted by short, intense rainfall events. The observed drier-than-average January followed by a wetter start to February may reflect this trend, where rainfall becomes less predictable, impacting agriculture and water resource management. The intensification of extreme weather events suggests that intense rainfall episodes will become more frequent in the Mediterranean region, including Malta, raising the risk of flash floods, coastal erosion, and infrastructure damage. The higher-than-average temperatures observed during this period could

lead to increased evaporation rates, reducing the net benefit of any rainfall received. This reduces soil moisture, impacting crop yields and ecosystem stability, especially if rainfall continues to fall in short, heavy bursts rather than being evenly distributed. Finally, if these rainfall patterns persist, Malta could face challenges related to food security, rising insurance costs due to climate risks, and pressures on tourism if extreme weather events disrupt travel and infrastructure.

## Research Methods

Investigating rainfall in Malta at San Gwann Primary School required employing collecting data on precipitation patterns in the region. San Gwann Primary School is located in the central part of Malta. Our school is situated on a very busy road at the heart of San Gwann. However, the rain gauge is set up in an open yard at the back of the school (see Figure 1).



*Figure 1 Aerial view of the school. The rainfall study site is marked in red.*

## Materials used

- Rain gauge
- Datasheets
- Clipboard and pen

To collect data on rainfall, GLOBE protocols were utilized, which include standardized methods for measuring rainfall using rain gauges. The students visited the rain gauge daily to collect data on the rainfall from the previous day. The data was noted using the GLOBE Rainfall Data Sheet. All data collected was then logged onto the GLOBE website (see Figure 2).

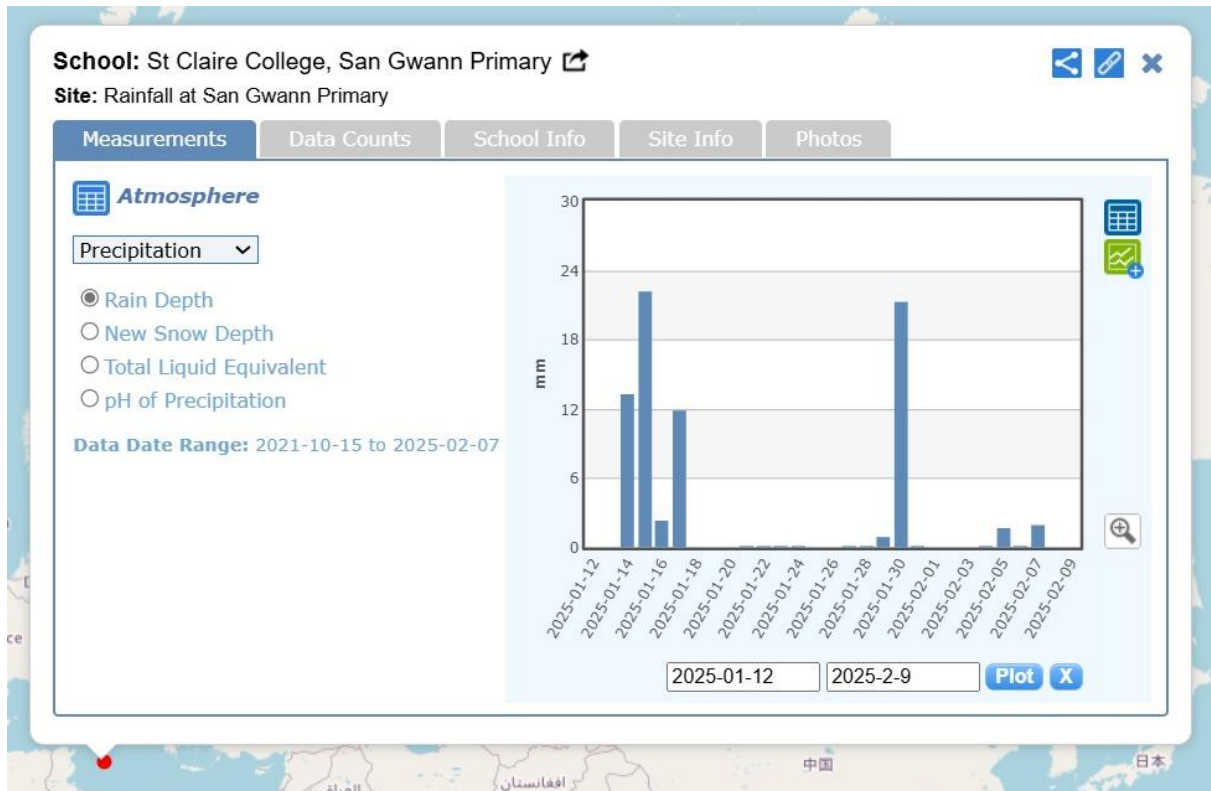


Figure 2 Rainfall plot of VIZ GLOBE

## **Conclusion**

The rainfall data from Malta, collected between 12<sup>th</sup> January and 7<sup>th</sup> February, highlights notable patterns and variations in precipitation over this period. The analysis shows that rainfall was relatively consistent during the first half of the reporting period, with significant fluctuations observed in the latter part. The highest rainfall occurred on the 15<sup>th</sup> and 30<sup>th</sup> January, which contributed to a substantial increase in total rainfall for the season. These trends reflect the typical weather patterns for this time of year in Malta, where winter months are often characterized by unpredictable rainfall events.

This report emphasizes the importance of understanding seasonal rainfall patterns to help inform water management strategies and predict future weather phenomena. Further analysis could examine longer-term trends, including comparisons with previous years, to gain deeper insights into the impacts of climate change on local weather patterns.

For this reason, our school has been working on adopting several water saving methods like collecting rainwater by installing a rain harvester that captures rainwater for outdoor irrigation; regularly checking faucets, pipes, and toilets for leaks and repairing them promptly to prevent water wastage; and educating and raising awareness to the community by promoting water conservation practices through educational campaigns and outreach efforts to encourage students and their families to reduce water waste.

By implementing these water-saving methods, individuals, households, and communities can contribute to sustainable water management and ensure the availability of water resources for future generations.



## References

[malteseislandweather.com](http://malteseislandweather.com)

[weatherandclimate.info](http://weatherandclimate.info)

[climatestotravel.com](http://climatestotravel.com)

## Badge Descriptions:

### I am a Problem Solver

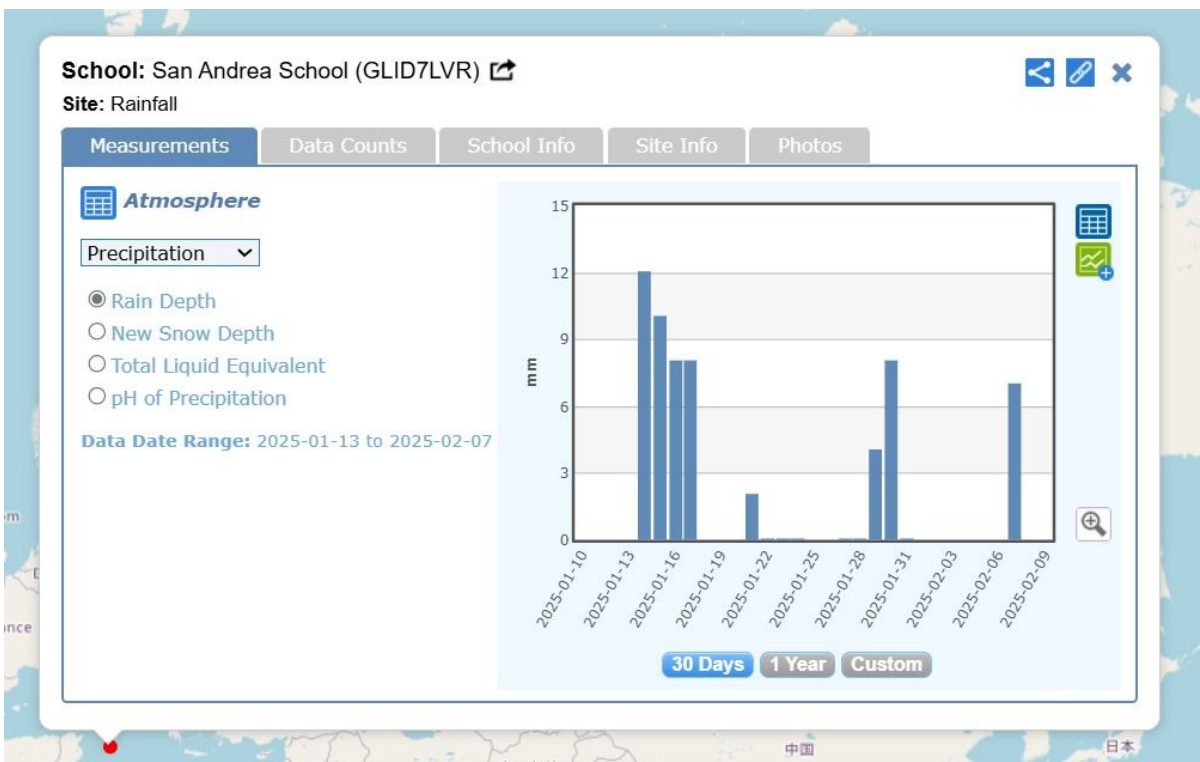
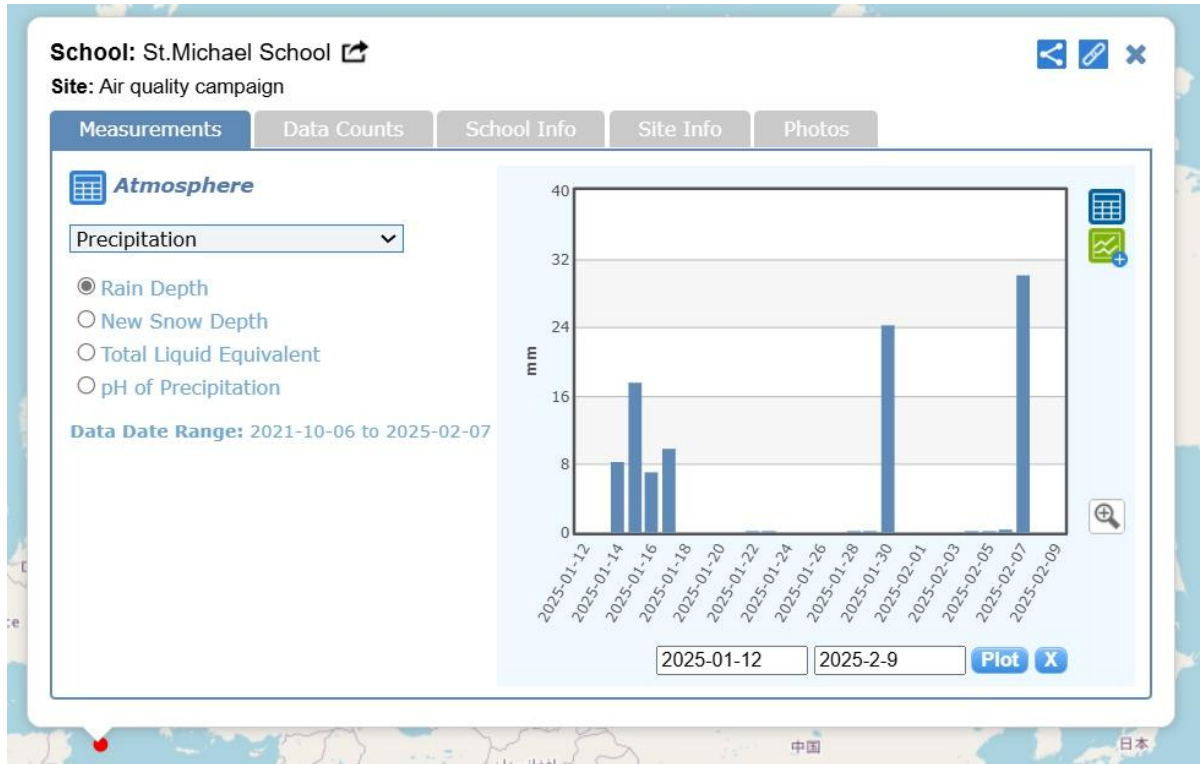
As a school we keep working on collecting rainwater. We set up a rainwater harvester to collect rainwater in the school main yard. This water is then used to water the trees in the school yard or to wash the floors by the cleaners. We also bought more olive trees and created more green areas within the school.



## I am a Collaborator

To deepen our understanding of rainfall patterns, we collaborated with three schools in Malta and Gozo, as well as a school in Ireland. This collaboration will allow us to compare and contrast rainfall data across different locations. By analyzing rainfall levels, we can study how different regions experience flooding or drought and identify climate trends over time. Since Ireland generally has a wetter climate than Malta, this comparison helped us understand how geographical differences influence precipitation.





School: Gozo College Zebbug Primary School



Site: Rainfall

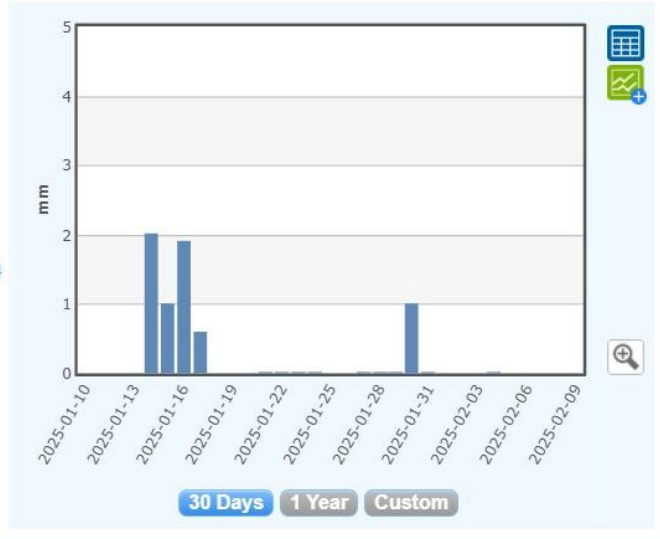
Measurements Data Counts School Info Site Info Photos

Atmosphere

Precipitation

- Rain Depth
- New Snow Depth
- Total Liquid Equivalent
- pH of Precipitation

Data Date Range: 2025-01-07 to 2025-02-04



30 Days 1 Year Custom

School: San Andrea School (GLID7LVR)



Site: Rainfall

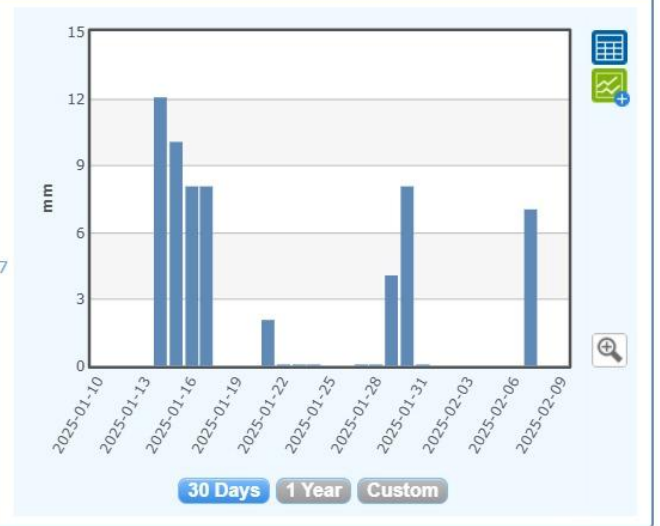
Measurements Data Counts School Info Site Info Photos

Atmosphere

Precipitation

- Rain Depth
- New Snow Depth
- Total Liquid Equivalent
- pH of Precipitation

Data Date Range: 2025-01-13 to 2025-02-07



30 Days 1 Year Custom

## I am a Data Scientist

The students regularly went to check the rain gauge, measured the water, wrote everything on the data sheet and then entered the data on the GLOBE website themselves.

