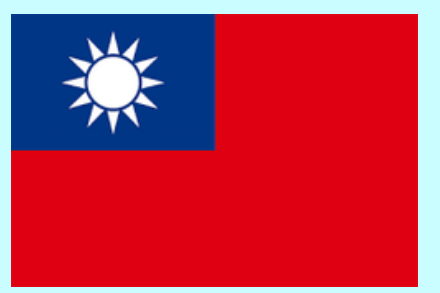


Is Winter Running Late?

Is winter actually arriving later this year?



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Abstract

Using data from GLOBE, we analyzed the first 10 days of December across different years to investigate whether winter is arriving later. Our findings indicate that while early December 2024 had higher temperatures than previous years, the overall trend does not confirm a delayed winter. Additionally, it remains uncertain whether this year's climate is influenced by La Niña, as more data and long-term observations are needed.

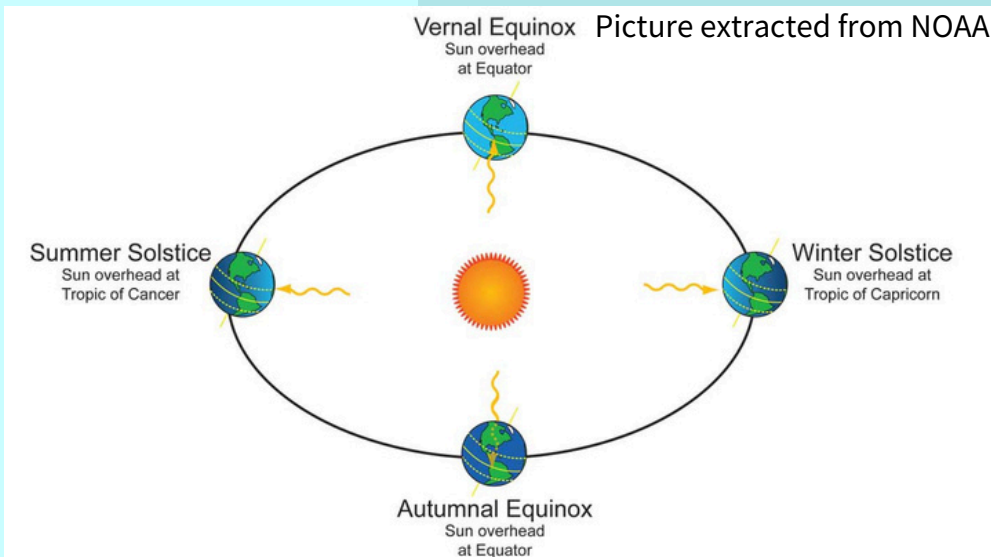
Research Question

1. Is winter actually arriving later this year?
2. How does La Niña influence winter temperatures?

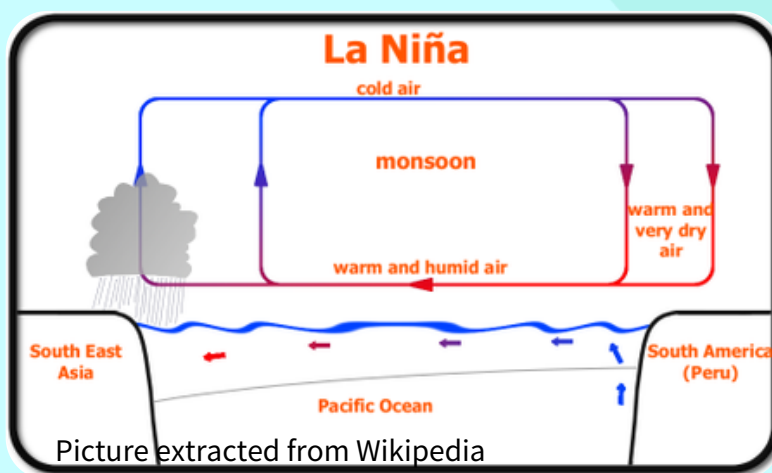
Literature Review

1. What Defines Winter?

According to the Central Weather Bureau, winter in the Northern Hemisphere is defined as December, January, and February, based on astronomical seasons.



2. What is La Niña?

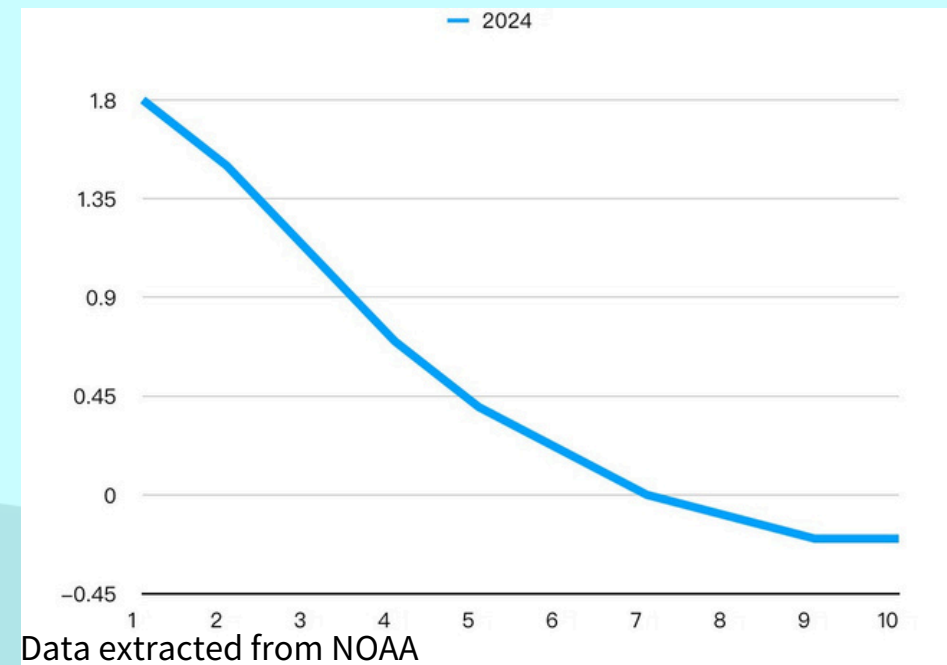


La Niña occurs when sea surface temperatures in the central and eastern equatorial Pacific are lower than normal, impacting global weather patterns.

3. How Does La Niña Affect Winter?

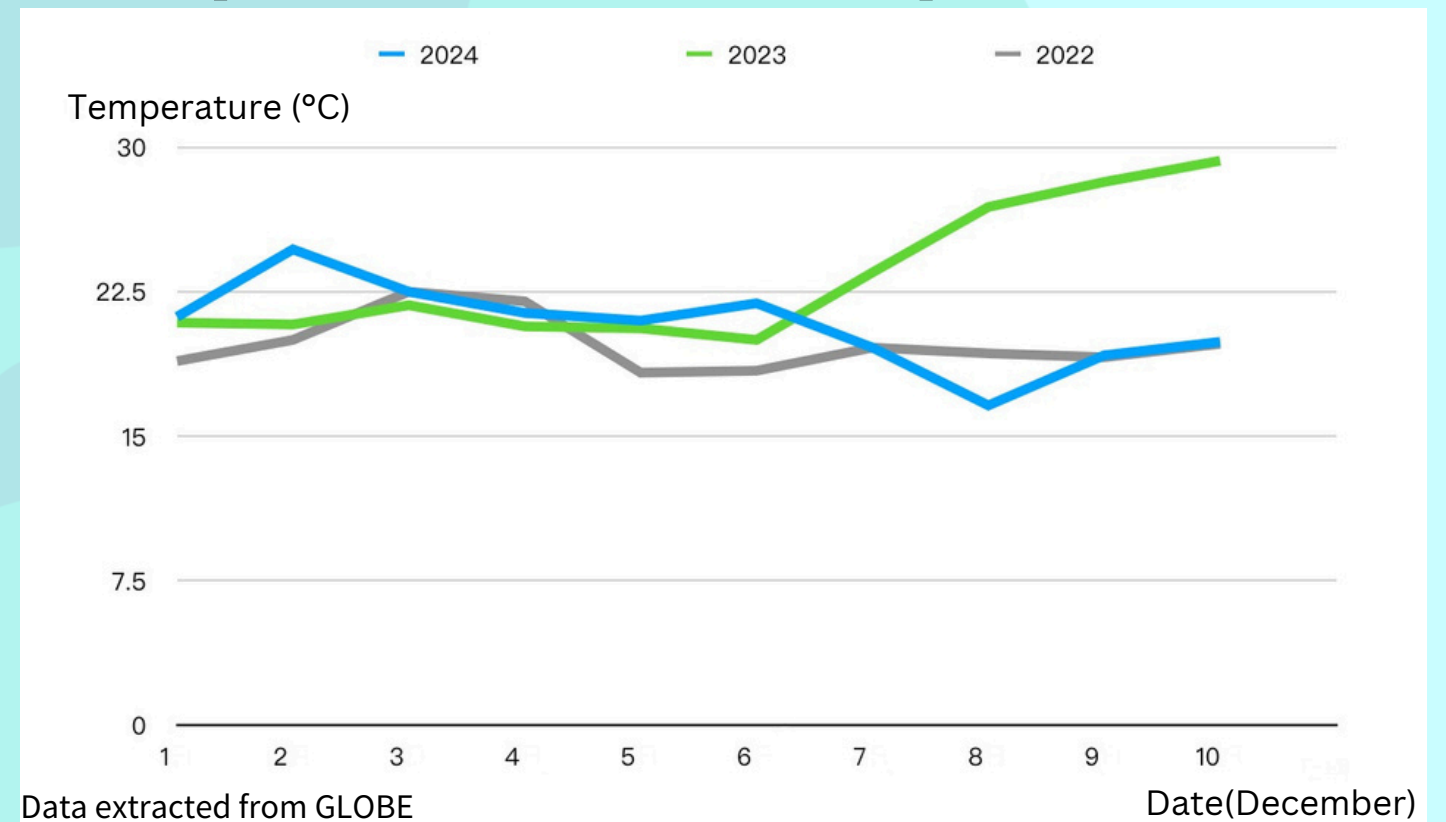
- **Stronger Subtropical High:** The western Pacific subtropical high becomes more dominant, preventing cold air from reaching Taiwan.
- **Regional Temperature Variability:** While La Niña typically brings colder winters to some regions, its effect on Taiwan's winter arrival is not well established.

4. This winter is La Niña?



The La Niña phenomenon can be confirmed by observing the sea surface temperatures in the equatorial Pacific (ONI) being consistently below -0.5°C for more than three months.

5. Compare winter temperatures



- The first five days of December 2024 had higher temperatures than previous years.
 - However, December 2023 showed overall higher temperatures compared to December 2022.
 - This suggests that short-term temperature variations do not necessarily indicate a delayed winter.
- (Include a clear temperature trend graph with labeled axes.)

Conclusion

Our analysis shows that winter does not definitively arrive later. Perceptions of temperature vary based on individual experiences and definitions of winter. Future studies should incorporate longer-term climate data to better assess the relationship between La Niña and seasonal changes.

References

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