

# Discusses wind direction, wind speed, solar illuminance, and the influence on different orientations of the old house

**RESEARCH PURPOSES** : Understand the influence of wind direction, wind speed, solar illumination, and on different directions of the house (1) Observe the relationship between elevation angle value and relative humidity by recording the two (2) Discuss the relationship between each other by measuring the wind speed of windows in different

**summary:**

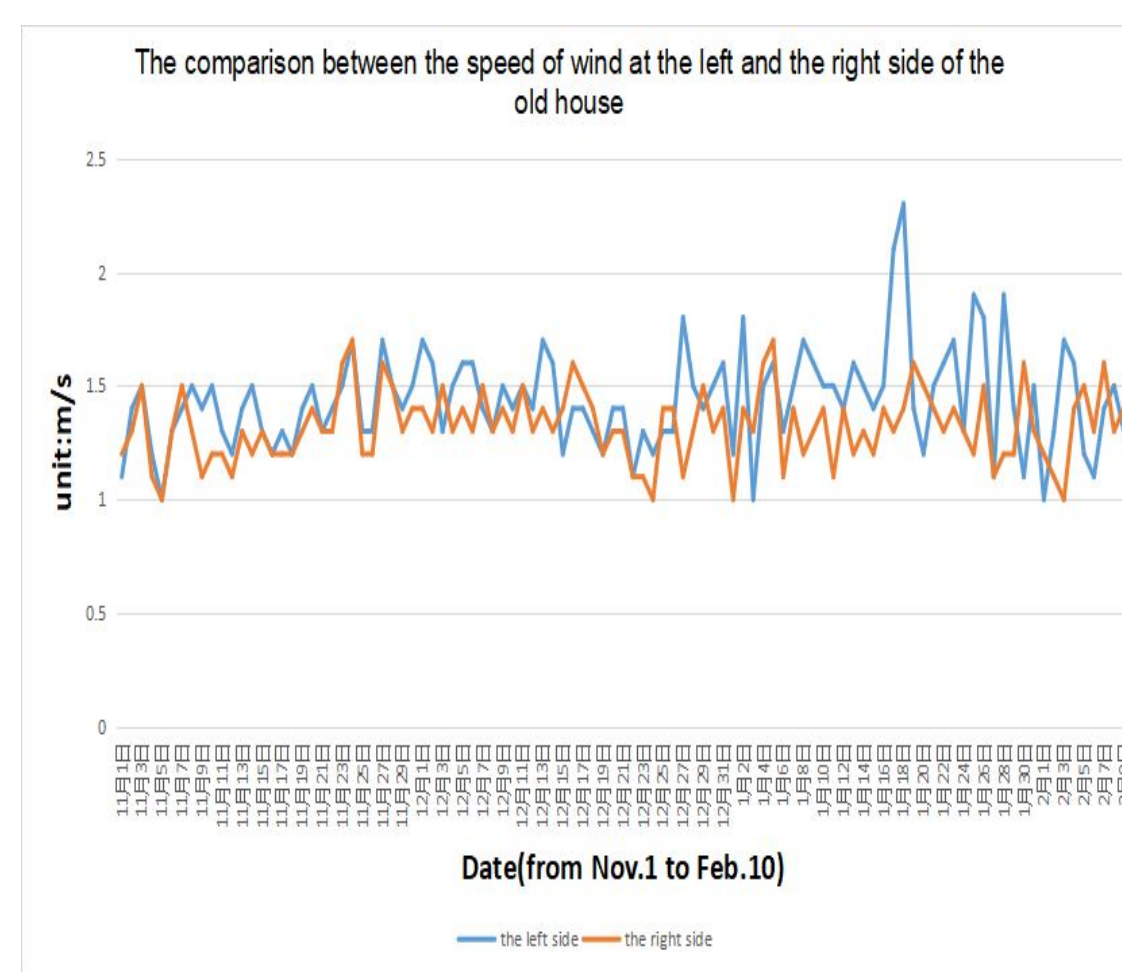
This study is based on the surrounding environment (meteorological factors: elevation angle, relative humidity, temperature, wind speed) of Kinmen's unique architecture, Hokkien style old house, and discusses the numerical relationship between them and makes rough conclusions.

**RESEARCH METHODS and STEP :**

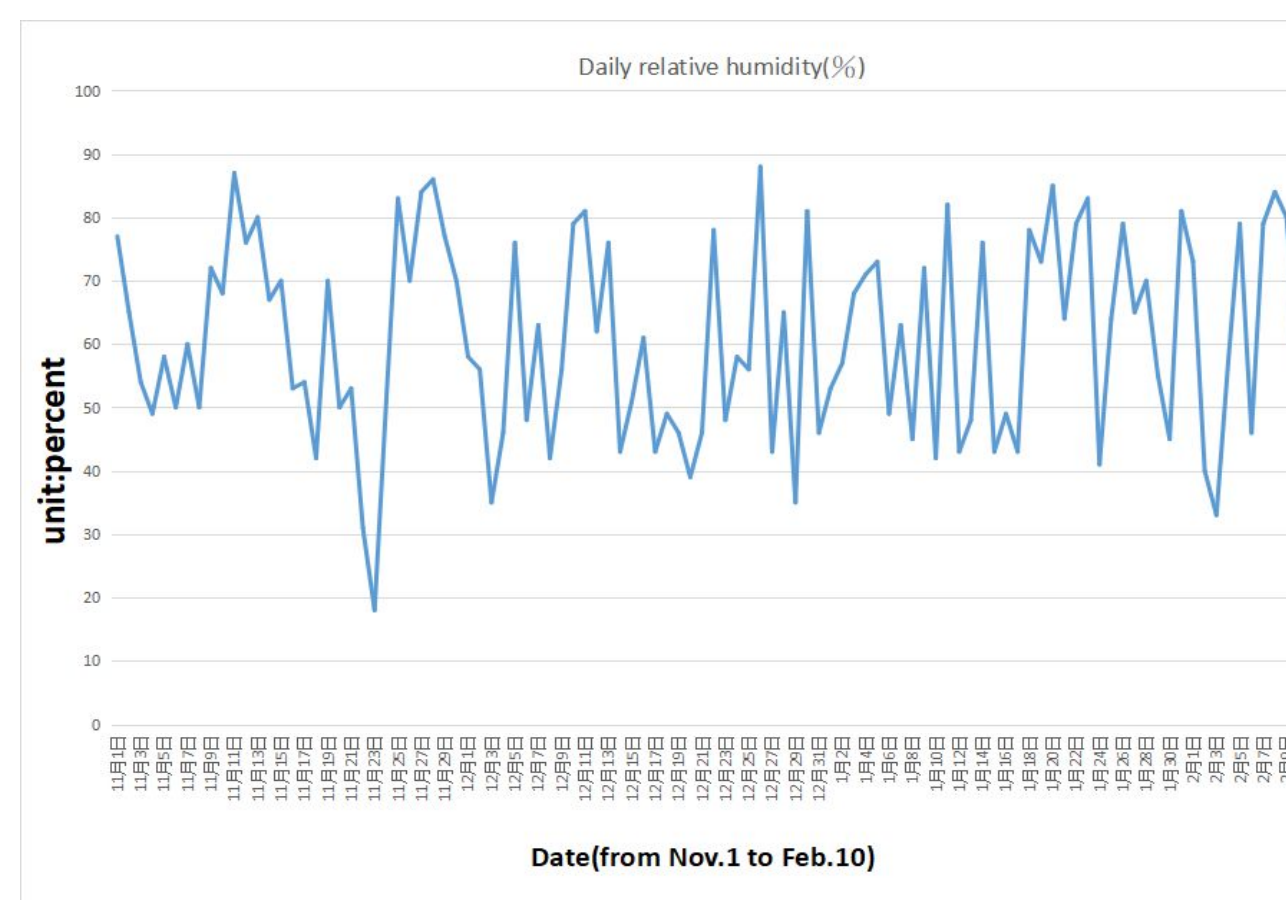
- (1) Measure the wind direction and wind speed of the windows in different directions of the building at noon
- (2) Measure the illuminance, wind direction and wind speed outside the windows of different directions
- (3) Measure the temperature of the room where each window is located
- (4) Check the day on the website Sun elevation and azimuth at noon, record data
- (5) measure again at 6 o'clock in the evening, repeat the above steps

**RESEARCH METHODS and STEP :**

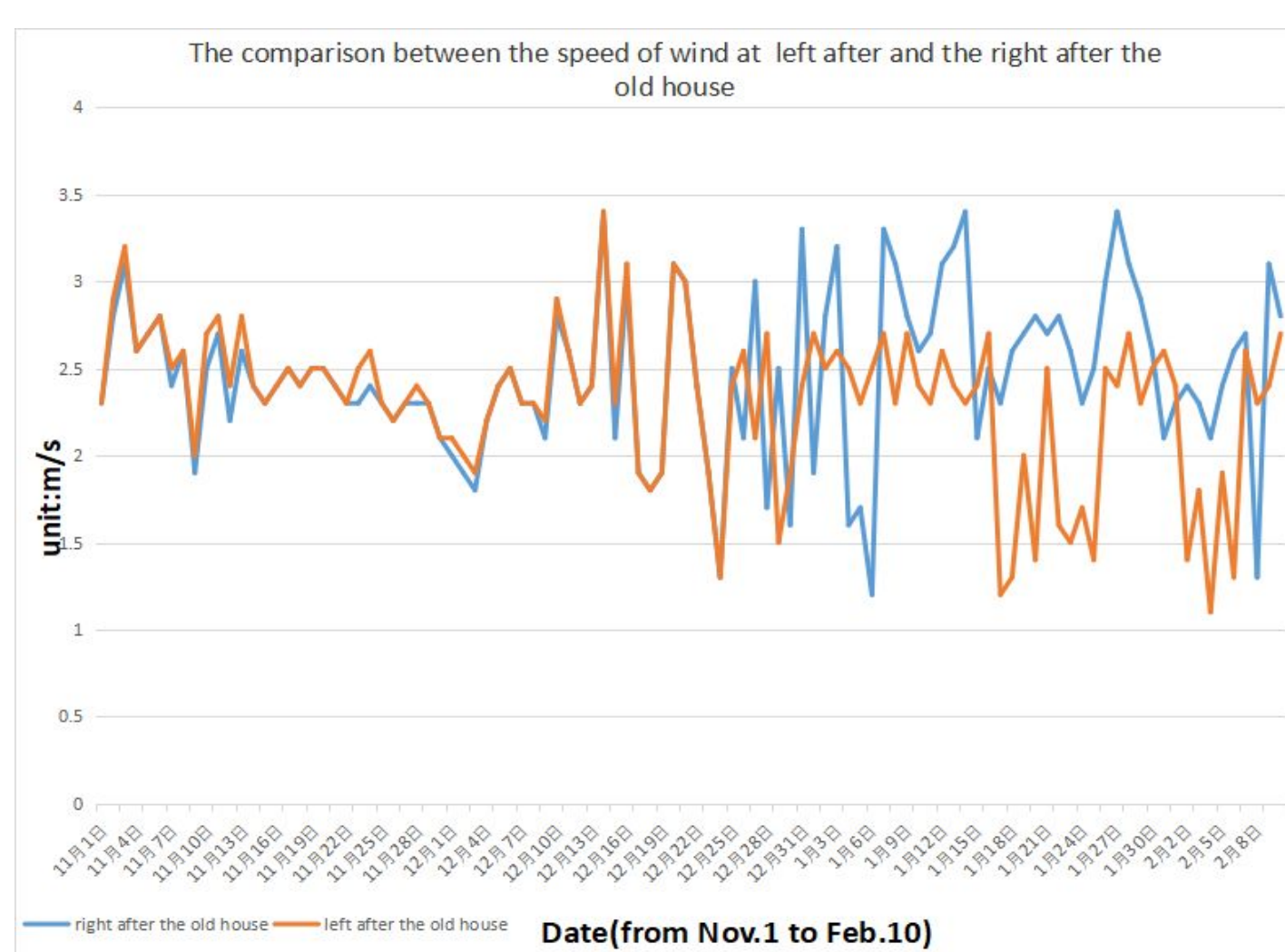
- (1) Measure the wind direction and wind speed of the windows in different directions of the building at noon
- (2) Measure the illuminance, wind direction and wind speed outside the windows of different directions
- (3) Measure the temperature of the room where each window is located
- (4) Check the day on the website Sun elevation and azimuth at noon, record data
- (5) measure again at 6 o'clock in the evening, repeat the above steps



As can be seen from the figure below, the noon elevation angle gradually decreases to gradually increases, which is related to the winter solstice sun shining on the southern hemisphere at 23.5 degrees.



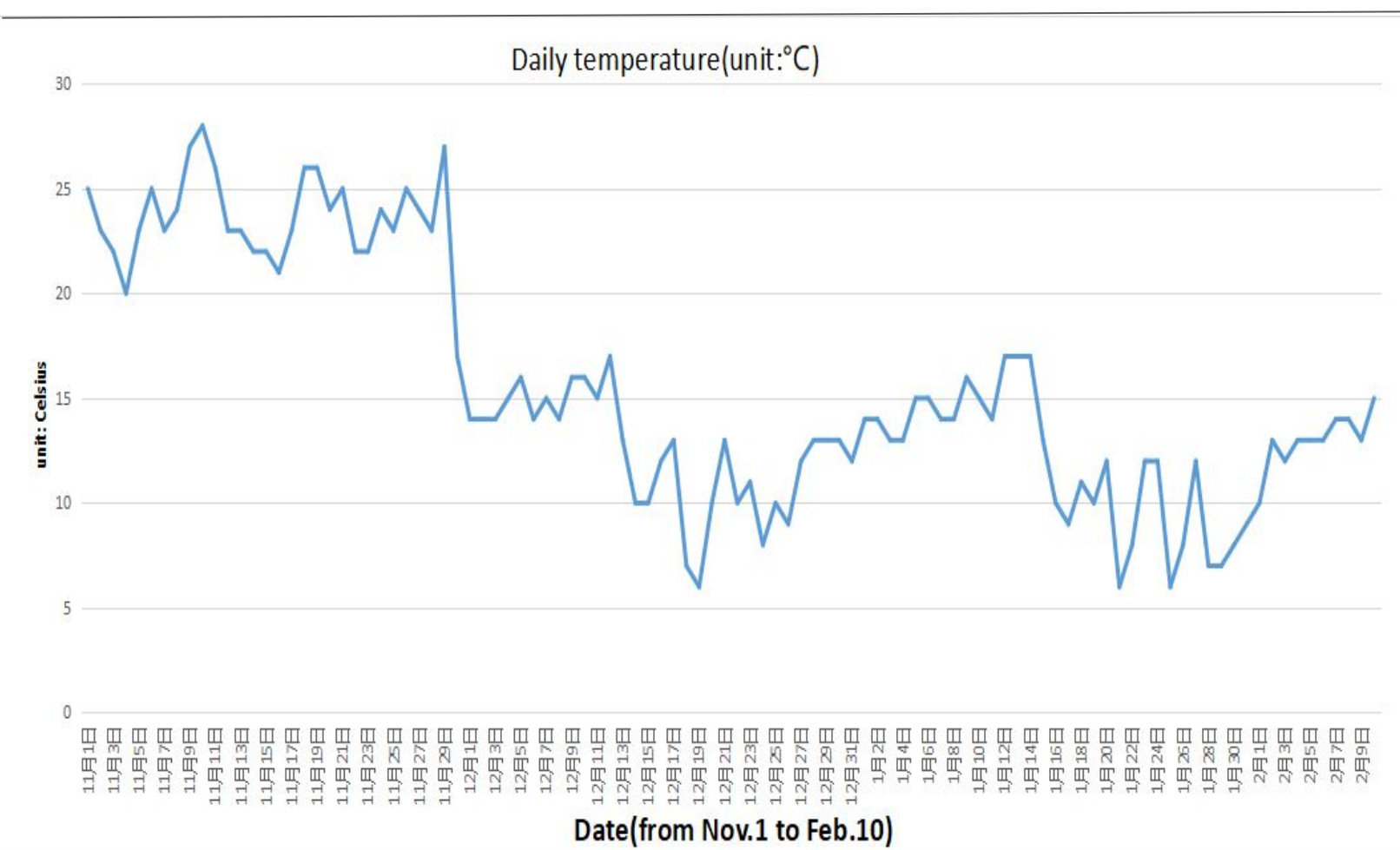
It can be seen from the figure that the humidity change is quite irregular, but it can be inferred that the humidity change will rise or fall irregularly, and the change is obvious.



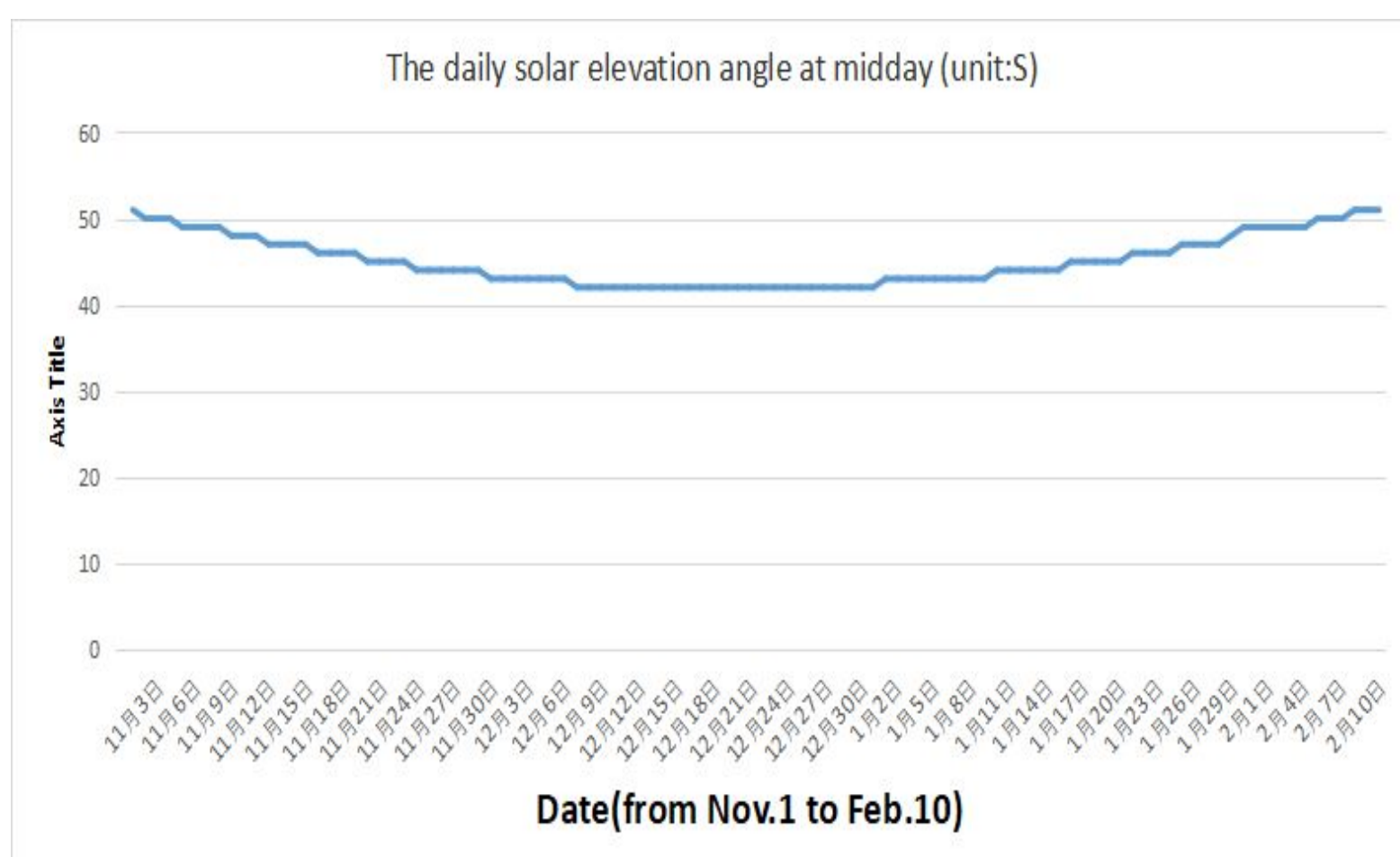
Because there is a residential building behind the right, and it is difficult for the wind to blow to other places, which may cause the wind to blow here. , or the wind is blocked by the houses and blows in the opposite direction from the houses to the ancient houses.

**Conclusion:**

- (1) The lower the temperature, the lower the elevation angle, the smaller the change in relative humidity, and the greater the change in wind speed
- (2) The wind speed changes greatly when the temperature is low, especially at the rear of the ancient house (rear left and rear right), but The correlation coefficient of the wind speed between the left side and the right side of the ancient house is larger than that between the left side of the ancient house and the right side of the ancient house.
- (3) When the elevation angle is not directly related to the temperature



The overall trend is slightly decreasing, but it can still be found that the temperature change is first decreased, then increased, then decreased, and increased again



As can be seen from the figure below, the noon elevation angle gradually decreases to gradually increases, which is related to the winter solstice sun shining on the southern hemisphere at 23.5 degrees.