

# The effect of temperature change on the type of clouds formed in Jeddah, Saudi Arabia



Batool abed AL-harbi  
*The 50th Secondary Girls School*



## Abstract

This research aims to study the effect of temperature on the type of clouds formed in Jeddah, Saudi Arabia as a basic hypothesis. An alternative hypothesis was also developed to study the effect of humidity on the type of clouds formed. A site has been identified in the city of Jeddah and monitoring the type of clouds for 12 days with measuring temperature, humidity, and pressure using Globe devices and devices. Measurements have also been entered in the Globe website. We found that there are specific types consisting of clouds on this city with a convergence in temperature and a variation in humidity values, which confirms the validity of the alternative hypothesis.

## Research Questions

**What is the effect of the temperature change on the type of clouds formed in the city of Jeddah?**

## Introduction

In this study, we noticed that the city of Jeddah is characterized by the presence of different types of clouds daily, noting that it has a mild climate in winter and hot in summer and with high humidity. I was wonder

**What is the effect of the temperature change on the type of clouds formed in the city of Jeddah?**

Then I began to raise my hypothesis about the effect of various factors such as temperature or humidity on the type of clouds formed on the city of Jeddah

**The basic hypothesis:** We assume that the temperature change affects the type of clouds formed on the city of Jeddah by 50%

**The alternative hypothesis :**We assume that the Humidity change affects the type of clouds formed on the city of Jeddah by 50%

## Research Methods

To study the hypothesis of this research and apply its experiments, the following steps were taken:

- 1- Determine the geographical location in which the type of clouds will be monitored daily and measure the temperature, pressure, and humidity for 12 days at 10 GMT. It is the location that has coordinates of latitude 21.6264, longitude 39.1598, height 15 m, SITE\_ID: 45516
- 2 - Continue to measure the type of clouds daily at 10 am GMT, by determining its type through the GLOBE clouds chart
- 3- Follow-up to the measurement of air temperature daily at the same time by using the Digital Multi Day Max/Min Thermometer
- 4- Follow-up to the measurement of humidity daily at the same time, using a digital humidity meter
- 5- Follow-up to daily pressure measurement at the same time, using a barometer
- 6- Record all results in Globe website
- 7- Compare the results, record them in tables, then analyze them to conclude the result



## GLOBE BADGES

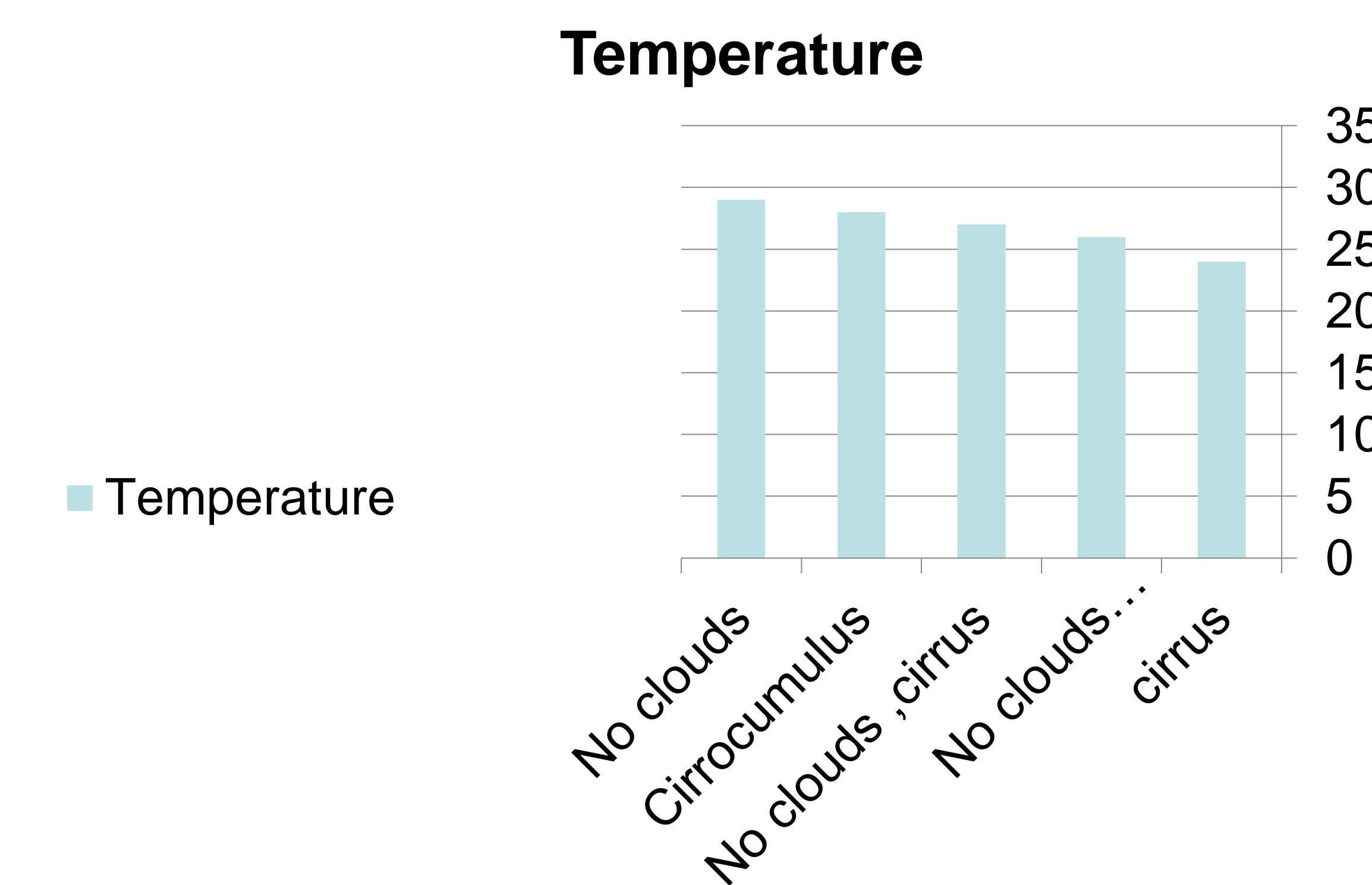
- **The impact of society** Through this study, I learned about the types of clouds that form in the city of Jeddah and the factors that affect that. I can sensitize the surrounding community around me and introduce them to the types of clouds that form on my city until the culture of scientific research spreads and the community members become aware of what is around them
- **Explore STEM careers** :In this research, STEM was achieved through the use of graphs, mathematical tables, and scientific devices such as a temperature gauge, barometer, or digital humidity gauge. The technology was also used by determining the location in which the study is carried out or entering data into the Globe website.
- **Interaction with a GLOBE**  
In this study, we dealt with Globe program devices such as the GLOBE clouds chart, digital humidity meter, barometer, and Digital Multi Day Max / Min Thermometer. The steps in the air protocol were also followed to define measurements and enter data on the Globe website

## Results

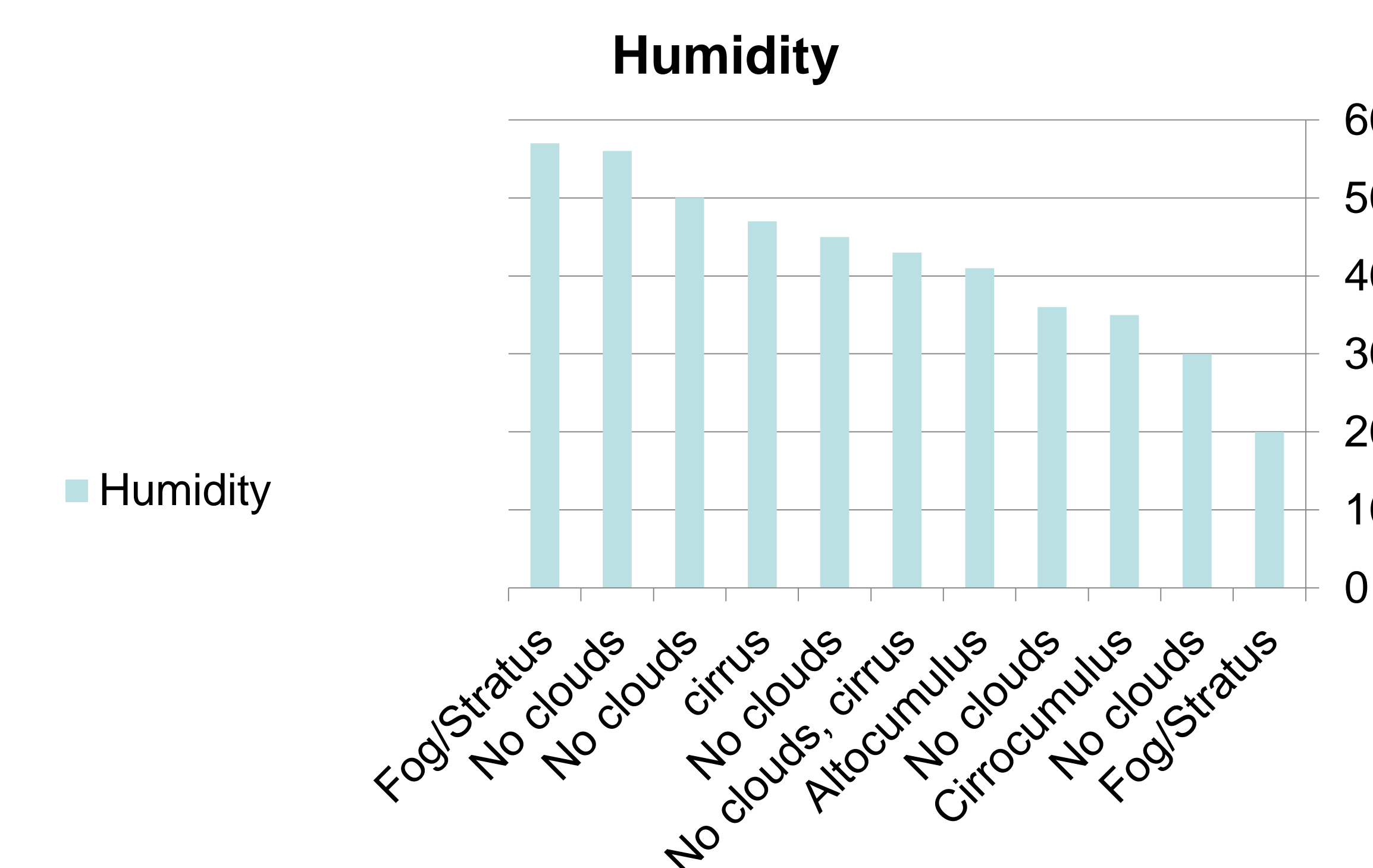
After following us with measurements of temperature and humidity, their relationship and their effect on the type of clouds formed, we find from the results of graphical analysis that in most cases clouds do not form in the city of Jeddah and when the temperature drops, clouds are formed:

- Fog/Stratus
- Altocumulus
- Cirrus
- Cirrocumulus

The most common type of clouds is Fog/Stratus



**Figure1:** Diagram showing the effect of temperature on the type of clouds



**Figure2:** Diagram showing the effect of Humidity on clouds type

## Discussion

Through the results, we note that there are specific types of clouds formed on the city of Jeddah and that the temperature was close during the days in which the type of clouds was determined and taking measurements and may not have much influence on the type of clouds formed, while we find that the percentage of humidity was very different with note that the pressure Its values were very close, which confirms the validity of the alternative hypothesis that moisture affects the amount of clouds formed.

## Conclusions

We conclude that the type of clouds formed on the city of Jeddah at moderate temperatures and at low humidity can be Fog/Stratus, Altocumulus, Cirrus, Cirrocumulus

Also, the type of clouds affected the change of humidity more than the temperature change, because the humidity was very different, while the temperature was the rate of increasing it by one or two degrees per day.

And on most days when the temperature rises or the humidity increases, the formation of clouds decreases or clouds do not form.

## Bibliography

**GLOBE materials used**

The tools that we will be using the GLOBE clouds chart, digital humidity meter, barometer, and Digital Multi Day Max/Min Thermometer.