

Module 11: Meteorology

Topic 2 Application: Observable Clouds Scientific Investigation

Before you begin the scientific investigation below, make sure to download the Observable Clouds Scientific Investigation Report. As you complete this scientific investigation, fill in any needed information on the report template. If you need more information about each section of the report, please visit the Developmental Module.

Introduction

Throughout this topic, you have seen images of clouds in the sky. But, what do clouds look like in real life? Due to the varying conditions of Earth's atmosphere, clouds in the sky change each day. By observing the sky over several days, you will be able to observe the daily fluctuation in cloud cover and cloud type.

Objectives

In this scientific investigation, you will:

- review the cloud types;
- observe the clouds and sky conditions for seven days; and
- observe the type of weather associated with the different cloud types.

Hypothesis

Using the Procedure and Data Collection section below, read through the procedural information for this scientific investigation. Based on your understanding of the procedure, develop your own hypotheses which describe your expected results. Specifically, how will the clouds change from day to day? What will the cloud type tell you about the current weather? Record these hypotheses in the Hypothesis section of your Observable Clouds Scientific Investigation Report.

Equipment and Materials

- Pencil or pen*
- Binoculars (if available)

**Please Note: You may also use a computer-based or mobile application to record your cloud illustrations on the Observable Clouds Scientific Investigation Report.*

Procedure and Data Collection

Before you begin your Observable Clouds Scientific Investigation, select a location and time to make your cloud observations each day. You should try to make the observations from the same location and around the same time to maintain consistency in your data reporting.

1. In the Data section of your Observable Clouds Scientific Investigation Report, indicate the date and time at which you are making your observations.
2. In the Data section of your Observable Clouds Scientific Investigation Report, indicate the weather during which you are making your observation. You may include your observations of the weather, as well as exact information from local or national media sources.

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3. Now, it is time to make your cloud observations. If you are using binoculars for assistance, take a few moments to observe the sky conditions with your naked eye before using optics. Then, look at the clouds from where you are located. Illustrate the sky's appearance in the Data section of your Observable Clouds Scientific Investigation Report. You may also make qualitative observations about the sky and cloud types around your illustration.
4. In the Data section of your Observable Clouds Scientific Investigation Report, indicate which cloud types exist in your illustration.
5. Repeat Steps 1-4 for each of the seven days during which you are making your cloud observations.

Data

Use the table provided in the Data section of your Observable Clouds Scientific Investigation Report to record your data from this scientific investigation. An excerpt of the data table is also shown below:

Data Analysis

In the Data Analysis section of your Observable Clouds Scientific Investigation Report, provide responses to the following questions:

1. What causes the cloud types you observed?
2. Were there other factors that impacted your ability to view the sky each day?
3. How did the types of clouds change each day? Was this change associated with any observable weather patterns?
4. How could the clouds be used to indicate the weather for the following day?

Conclusion

Using the Conclusion section of your Observable Clouds Scientific Investigation Report, compose three to four sentences describing an overall conclusion based on your data. Were your hypotheses true or false, and how do you know? Use the data and notes that you collected from your investigation to form your conclusion. Make sure that you include information that you gained from data analysis to support your conclusion.

Experimental Sources of Error

On your Observable Clouds Scientific Investigation Report, provide responses to the following questions: Are there any sources of error? If so, what are they, and what could be done to minimize error?



Once you have completed the Observable Clouds Scientific Investigation Report, please submit your work to the dropbox.