Cloud Watch

Purpose

To explore the connections between cloud type, cloud cover, and weather and stimulate student interest in taking cloud type observations

Overview

Students observe cloud type and coverage and weather conditions over a five-day period and correlate these observations. Students make and test predictions using these observations.

Student Outcomes

Students learn to draw inferences from observations and use them to make and test predictions.

Science Concepts

Earth and Space Science

- Weather changes from day to day and over the seasons.
- Clouds affect weather and climate.

Geography

- The nature and extent of cloud cover affects the characteristics of the physical geographic system.

Atmosphere Enrichment

- Clouds help us to understand and predict the weather.

Scientific Inquiry Abilities

- Identify answerable questions.
- Design and conduct scientific investigations.
- Develop explanations and predictions using evidence.
- Communicate results and explanations.

Time

Ten minutes, one to three times per day for five days; plus one-half to one class period for discussion

Level

All

Materials and Tools

GLOBE Cloud Charts

Preparation

None

Prerequisites

None

What To Do and How To Do It

Over a five-day period, students should carefully look at the clouds and write down what they see in their GLOBE Science Logs. If they do not yet know the names of the clouds, they can try to match them with the clouds on the cloud chart or they can write down what the clouds look like. It is best if they can check the sky three times per day: once in the morning (on the way to school); once at midday (around lunchtime); and once in the late afternoon or early evening (perhaps on the way home from school). The exact times of each observation are not critical, although it will help if the observations are made at roughly the same time each day. (For example, the morning observations should all be made around 8 a.m., rather than at 7 a.m. one day, and 10 a.m. the next day. The same is true for the noontime and afternoon or evening observations). If students can make only one observation, it is best to choose the one within one hour of local solar noon.

At the end of each day, students should also record the weather for that day. Was it a rainy morning and clear afternoon? Did it snow all day? Was it calm and humid? The students do not need to quantify their weather reports (i.e.,

they don't have to write down "21 millimeters of rain" or "79% relative humidity"), but should describe the weather as completely and clearly as possible.

As the students record their cloud and weather observations, they should look for any patterns. For example, are altocumulus clouds in the morning typically followed by afternoon thunderstorms? Are small puffy clouds in the morning or at mid-day ever associated with precipitation later in the day? Are isolated morning contrails followed by extensive cirrus or altocumulus clouds later in the day?

After a week of recording clouds and weather, ask students to use their observations to predict the weather. Can they predict in the morning what the afternoon weather will be? Can they predict the weather for the following day? Ask students to explain why they made the predictions they did. Have each student keep track of how well they do in forecasting the weather. They may develop a new respect for the difficulty of forecasting!

Frequently Asked Questions

What if the cloud and weather conditions are the same for five days in a row?

This can happen in some places and at certain times of year. If you need to move on to other topics, you can have students discuss their observations without making predictions and go on.

In predicting weather, predicting that tomorrow will be the same as today is known as a persistence forecast, and it is generally correct more than half the time. For a forecasting system to have skill it must be more accurate than a persistence forecast over a period of months and years.

Other approaches are to have students extend their observations beyond five days until they have observed a variety of cloud types and weather conditions. Sometimes weather patterns lock in place for a month or more, so you may have more success by having students resume taking measurements at a later date.