



Project Idea Starters



www.ag.ohio-state.edu/~idea

Weather

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Use this two page publication as the starting place for your 4-H Self Determined Project. You may choose to do a little or a lot depending on your level of interest in this topic. Use in conjunction with our 4-H 365, Self Determined Project Guide; available through your county OSU Extension office or by visiting our web page at www.ag.ohio-state.edu/~idea. Be sure to register your Self Determined Project with your county OSU Extension office.

Background

Our Entire planet is cocooned by a thin blanket of gases, which we call the atmosphere. Without this thin layer, which is no thicker on the Earth than the skin is on an apple, our world would be as lifeless as the Moon. Look up in the sky on a clear day and you can see the earth's atmosphere stretching some 430 miles above you. Without this blanket of gases to protect us, we could not live; we would be scorched by the Sun during the day and frozen solid at night. Most of the atmosphere is a thin mix of gases that are as calm and unchanging as outer space. But the lowest seven miles, the layer which we live and breathe, contains all the weather we experience, and is thick with gases, water and dust. As the Sun warms the land and sea beneath it, the heat keeps this thick broth forever churning. It is the constant swirling of this lower layer, called the troposphere, that gives us everything we call weather, from the gentlest summer showers to raging hurricanes and tornadoes.

When air begins to move, it becomes wind. A light breeze sprigs up when air moves slowly; gales and hurricanes tear through the skies when air moves very quickly. Slow or quick, wind always begins in the same way, with a

difference in air pressure. Air pressure usually is measured on a device called a barometer. One of the important things to remember about air pressure is that it is closely related to weather, and changes in air pressure can give a useful indication of weather to come. A sharp drop in pressure indicates the onset of a front and the coming of clouds and rain. High pressure is a sign of clear skies and dry weather. A sharp drop in pressure indicates the onset of a front and the coming of rain and clouds.

Clouds are formed by rising air. Because air gets cooler as it rises, it becomes less and less able to hold invisible water vapor. There comes a point when air becomes so cold that the water vapor condenses, forming rain. The amount of water in the air at any one time is known as humidity. Sometimes hot moist air rises rapidly over just a small area to form puffy cumulus clouds, which rarely last for more than a few hours. At other times, air can warm slowly and rise over a wide area to form vast, shapeless stratus (layered) clouds which cover the entire sky and last for days. The darkest clouds contain the most water because they are either very thick or very dense. The water simply blocks the Sun from view.

To make an accurate forecast of the weather, meteorologists need data, and lots of it. Every minute of the day, weather stations, satellites, and radar are making detailed recordings of barometric pressure, wind speed and direction, cloud formations, humidity and temperature. Typically data is fed to a computer and weather charts are drawn up. This compilation of data helps meteorologist forecast changes in the weather.

Planning Your Self Determined Project



Every Self Determined Project can be broken down into areas of interest. These are the specific things members wish to address during their project adventure. Using your Self Determined Project Guide 4-H 365, identify at least three (3) areas of interest with at least three (3) activities per area to explore. Take your ideas from the list below or make up your own.

Areas of Interest & Things to Do

The Atmosphere

- Visit a web site to explain the make-up of the atmosphere
- Draw and label a cut-away view of the earth's atmosphere
- Demonstrate how the atmosphere is like a cup of oil and water
- Compare the atmosphere of the planet Jupiter to ours
- Explore how our atmosphere causes the sky to look blue

Wind & Pressure

- Using a barometer, record the daily change in pressure for two weeks
- Discover if the sky turns cloudy when the barometer drops
- Demonstrate where wind comes from
- Visit a web site and explore the jet stream

Clouds & Precipitation

- Visit a web site to learn about the different types of clouds
- Demonstrate how clouds are formed
- Explore how rain is made
- Record the daily change in cloud cover for two weeks
- Record the daily change in humidity for two weeks

Weather Forecasting

- Collect weather data for two weeks then predict the weather for the next three days
- Visit a web site that tells more about what Meteorologists do
- Learn to read a weather map
- Compare the accuracy of a local Meteorologist for a two week period

Helpful Web Sites:

Weather Around the Globe

<http://www.geo.mtu.edu/weather>

Weather Reports

<http://www.wunderground.com/>

National Oceanic and Atmospheric Administration

<http://www.nws.noaa.gov/>

Visit our web page at www.ag.ohio-state.edu/~idea for more project idea starters along with additional information about exhibiting your Self Determined Project at the Ohio State Fair.

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