1. LESSON PLAN

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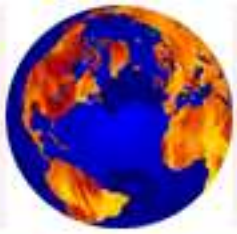

WEATHER AND CLIMATE
Learning about weather and climate, how and why we measure the weather

Suitable Ages	12 -15 years
Timeframe	45mins - 1 hr

Overview of Weather - Climate Lesson
This first lesson is about weather, and helps students to learn how weather and climate are connected through time. It will also assist students to consider how weather changes, and to think about the present state of the Earth's climate.

Alterations to our climate are having major consequences for life on Earth and this is likely to continue. Changes in our atmosphere and climate are measured by scientists drilling into the ancient glaciers of Antarctica, who are able to determine the amount of gases that were present in the atmosphere as far back as tens of thousands of years ago. By comparing the change in the amount of gases in the atmosphere over time, scientists are able to understand how the atmosphere has changed and make better predictions of atmospheric change in the future.

Lesson Objectives
1. Understand difference between climate and weather.
2. Learn some first ideas about the relationship between weather and climate, and the importance of climate stability to society.
3. List methods in which rain, wind, and air pressure can be measured.

Climate/Weather Lesson
1. Write the words 'The Weather' and 'Climate' on the board. Ask students to come up and write a phrase or a word about these words. (anything goes!) Conduct a class discussion on the weather and climate using the student's words and ideas.
Attempt to form a class definition of "The weather" and "climate'

For example:- The weather is the condition of the atmosphere and how it changes over a short period. Climate is the effect of the weather over a whole area or country for a definite longer period of time.
Resource: *http://www.global-greenhouse-warming.com/climate-weather.html*

2. Lead a discussion on the climate of the whole world and discuss averages for different global regions.
Consider ideas like; Averages - Temperature, precipitation, solar radiation wind speed. Regions - Polar, tropics, temperate, oceanic and high altitude.

3. Why do we measure the weather?
It doesn't matter where we live in the world, being able to predict the weather is an advantage. Most activities are closely linked to the weather, and communities having some idea about "what the weather will do" helps in planning these activities. People have developed local lore about weather, for example; "Red Sky at night, sailor's delight. Red sky in the morning, sailor take warning; Clear moon, frost soon; Rainbow in the morning gives you fair warning." How useful might these saying be?

Measuring wind, rain, clouds, air pressure, snowfall etc provides an information base to predict or forecast weather. Stability and averages of weather is important because civilisations rely on consistent predictable conditions for resource supply.
Reference *http://www.global-greenhouse-warming.com/climate-weather.html*

Activity - Make A Barometer (see Activity Sheet)
A barometer is an instrument that is used to measure changes in air pressure. Barometers used in weather stations are very sensitive and expensive.

Materials:
A transparent glass jar or plastic bottle.
A length of transparent tube (drinking straw)
Blu tac or modelling clay
Tap water
Small quantity of food colouring

Instructions:
1. Take the transparent container and fill around half-full with tap water.
2. Add a few drops of the dye or food colouring to the water, enough so you can clearly see the water change to the colour of the dye.
3. Insert the straw or tube into the container, and tape it to the inside of the container. (ensure that the straw is not touching on the bottom of the container)
4. Draw the liquid up through the straw (suck on it) until it appears above the water line.
5. Quickly pinch the end of the tube and seal off with blu-tac or clay.6. Attach a short ruler piece or piece paper to the outside of the container in order to measure and record changes in air pressure.
6. Keep barometer out of direct sunlight, to reduce evaporation and thermal expansion.

What Happens?
As the pressure in the atmosphere rises, water in the jar is forced downwards which in turn, will put pressure on the water in the straw and force it to rise. Rising air pressure means rising water in the straw and falling air pressure means the water level in the straw drops.

You may have noticed when watching weather reports on TV, that when the air pressure is rising, the weather generally becomes fine, clear and generally dry. The reverse is generally the case, and when the air pressure falls, the weather becomes more unsettled.