Lesson Title	What Elements Control the Weather?
Length of Lesson	One (50 minute) class period
Created By	Charlotte Buehler
Subject	General Science
Grade Level	7th grade
State Standards	7th: Inquiry (1d,c), Earth and Space Science (4h)
DOK Level	DOK 3
DOK Application	Draw conclusions, Investigate, Compare
National Standards	5-8: Inquiry (A), Earth and Space Science (D)
Graduate Research Element	Weather and climate are not interchangeable terms, and understanding how both weather and climate shape the planet is essential. Research how the invasive Australian pine will adapt to new conditions is one question that will emerge as scientists notice variations in weather and climate as a result of climate change.

Student Learning Goal:
MS 7th Grade:
Inquiry- (1b) Discriminate among observations, inferences, and predictions, (1c) Collect and display data using simple tools and resources to compare information.
Earth and Space Science- (4h) Predict weather events by analyzing clouds, weather maps, and satellites, and various data

National Science Education Standards of Content 5-8:
Inquiry (A)-- Use appropriate tools and techniques to gather, analyze, and interpret data.
Earth and Space Science
Earth and Space Science (D)—Structure of the Earth System

Materials Needed (supplies, hand-outs, resources):
Computer, projector, internet, weather tools (thermometer, psychrometer, barometer, anemometer), various weather maps including: Satellite, Radar, Precipitation, Temperature, Wind speed, worksheet (INSPIRE_Buehler_HO_Weather_2_1_12)

Lesson Performance Task/Assessment:
In this lesson students will learn about the elements that combine to generate weather. By the end of the lesson student will have a better idea of what weather is (day-to-day temperature and precipitation activity) compared to climate (average atmospheric

patterns over time). Weather tools will be incorporated so students can measure weather elements such as temperature, moisture, wind speed, and pressure.

Lesson Relevance to Performance Task and Students:
Understanding how weather forms is essential to understanding the how the planet works. Temperature and precipitation are elements (along with air pressure, wind etc.) which combine to create events from sunny or cloudy days to tornados, hurricanes, and blizzards. How weather forms, primarily due to temperature and moisture in the air, is different between one place and another. Various other factors including the jet stream and whether El Nino or La Nina is in place all affect weather and understanding how these events in turn affect humans around the world makes learning about weather important.

Anticipatory Set/Capture Interest:
The lesson will begin with the instructor showing a video from NASA (http://www.nasa.gov/multimedia/videogallery/index.html?media_id=11917700). The video links how weathermen forecast weather events based off technology and weather tools/instruments.

Guided Practice:
The instructor will give a presentation on the elements of weather. For each weather element, the instructor will allow the students to use a few of the tools used to measure that specific element. For example, when talking about temperature, the students will have a thermometer to see how to read temperature. This lesson should take about half of the class. For the remaining part of class, the instructor will segue to technology used for predicting weather (satellites, radar etc), including talking about the various images and maps that are produced each day for weather forecasting.

Independent Practice:
The students will be asked to answer questions on a worksheet pertaining to each map. For example when students are looking at the precipitation map, they should be asked: what is precipitation, what are some examples of precipitation, what are the different types of precipitation on the map and what causes different types of precipitation.

In closing, the instructor will show another short NASA video:
(http://www.nasa.gov/multimedia/videogallery/index.html?media_id=82067471)
on how instruments in space (e.g. satellites) are used to track and show weather events. And those events, recorded over time, provide pieces to understanding our earth's climate!

Remediation and/or Enrichment:
Remediation- Individual IEP; work in groups
Enrichment – Ask the students to think about weather on small scale (Columbus, MS) to weather on a large scale (a front moving across the southeast). How do these relate, differ?

Check(s) for Understanding:
Can the students interpret different weather maps? Do they know what the weather elements are?

Closure:
Question 1: What elements are important in determining the weather?

Question 2: How do we get weather forecasts? Are these forecasts accurate?

Possible Alternate Subject Integrations:
Earth Science, Mathematics, Geography

Teacher Notes: