Lesson Title	Earth's Climates and Climatological Data
Length of Lesson	One (50 minute) class period
Created By	Charlotte Buehler
Subject	General Science
Grade Level	7th grade
State Standards	7th: Inquiry (1d), Earth and Space Science (4d)
DOK Level	DOK 3
DOK Application	Compare, Determine, Graph
National Standards	5-8: Inquiry (A), Earth and Space Science (C)
Graduate Research Element	Climate plays an integral part in field research. Investigating how the invasive Australian pine propagates and grows where it does links with temperature and precipitation. Australian pine thrives in areas that have warmer climates as well as tolerates abundant rainfall. Measuring these variables is important because it provides a clearer picture of where and how Australian pine survive.

Student Learning Goal:
MS 7th Grade:
Inquiry- (b) Organize data in tables and graphs and analyze data to construct explanations and draw conclusions.

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 (4d)-- Conclude why factors, such as lack of resources and climate can limit the growth of populations in specific niches in the ecosystem.

Materials Needed (supplies, hand-outs, resources):
Computer, projector, weather statistics for various climates, maps of the world (one for each student), Graph paper, colored markers, calculator

Lesson Performance Task/Assessment:
In this lesson the students will learn about Earth's climates. They will compare average monthly temperatures and rainfall for a dry region, polar region, moderate region, tropical region, continental region, and their hometown. Student will learn to compare and contrast the regions as well as depict the differences in temperature and precipitation by making graphs.

Lesson Relevance to Performance Task and Students:
Understanding how Earth's climates differ explains many things from why people live where they live to what plants and animals inhabit certain areas. Climate even dictates what crops can be grown and the length of the growing season. The invasive Australian pine is a plant species which can grow in a variety of climates (however, those climates must have usually have warmer temperatures and some rainfall). Understanding how climate affects Australian pine proliferation to the broader impact of how climate change might change the climate zones and average temperature and rainfall makes learning about climate and the climate zones imperative.

Anticipatory Set/Capture Interest:
The instructor should show the class a globe or map of the world and ask students what they might find in terms of temperature and rainfall in a random area on the globe or map. The instructor can ask the students to identify a place they would like to travel to (anywhere on the planet!) and think about what kind of climate they might encounter there.

Guided Practice:
The students will practice reading data on the average monthly high temperatures and low temperatures for given climates around the world. Ask if someone can explain what these temperatures mean. It may be necessary to explain to the students again what 'average' means and how the average is derived. Have students also read the average monthly rainfall data. Of the various climates the instructor has selected, the students should compare and contrast what they see in regards to the differences in rainfall and temperature around the world. The students should also look for patterns (on both a longitudinal and latitudinal scale). Next, the instructor should provide temperate and rainfall data for the hometown of the class (in this case Columbus, MS). The students should think about what climate their hometown would fit in.

Independent Practice:
Ask students to form pairs, and working together they should create line and bar graphs showing temperature and rainfall differences between the selected areas the instructor highlighted. The students should plot average monthly temperature data on a line graph, with the horizontal (x) axis showing the months, and the vertical (y) axis showing the temperature. The student should figure out what increment work best for their graph.

Next, the students should make another graph showing the average monthly rainfall for the selected areas the instructor highlighted. The horizontal (x) axis should again show the names of the months, and the vertical (y) axis should show the rainfall amounts in inches.

Remediation and/or Enrichment:
Remediation- Individual IEP; work in groups
Enrichment – Ask the students to think about other differences each climate zone may have (e.g. flora and fauna, human population differences etc).

Check(s) for Understanding:
Can the students interpret the graph they made? Do they know what average means? Can the students compare and contrast the different climate zones?

Closure:
Question 1: What factors are important for distinguishing climate zones?

Question 2: How does Columbus, MS average rainfall and temperature compare with the other climate zones?

Possible Alternate Subject Integrations:
Earth Science, Mathematics, Geography

Teacher Notes: