

## **Lesson Plan #3**

### **Stella Model Activity**

**Objective** ~ There are many relationships within Meteorology that can be difficult for students to conceptualize. Specifically, students struggle to understand that air pressure is influenced by both temperature and relative humidity. Both relationships are indirect. Many students have the misconception that air pressure will increase by adding water vapor to the air.

#### **Science Concepts ~**

1. There is an indirect relationship between Temperature and Air Pressure.
2. There is an indirect relationship between Relative Humidity and Air Pressure.
3. On a given day, both Temperature and Relative Humidity can have a significant impact on Air Pressure.

#### **Lesson Steps ~**

1. Students will have begun to collect basic weather data daily in class. A brief discussion will bring out relevant points in the day's data. Students will begin to have some familiarity with basic weather variable relationships.
2. As a class we will look at a short powerpoint presentation (see attached) regarding the relationships between air pressure, temperature, and relative humidity. Students will answer questions on a separate worksheet individually.
3. This will be done using a SmartBoard. Students will come up to help answer questions in the discussion. The SmartBoard will be particularly helpful in using the Stella Model (See attached).
4. Students will then have an opportunity to discuss their answers with their partner.
5. Lastly, we will then discuss the answers as a class.

Name: \_\_\_\_\_

Period: \_\_\_\_\_

## Weather Relationships

### Air Temperature vs. Air Pressure

### Relative Humidity vs. Air Pressure

**Instructions:** Please answer the questions below, during the PowerPoint presentation.

## Air Temperature vs. Air Pressure

1. What is air pressure?
2. What happens to the spacing between air molecules, as the temperature of air increases?
3. What happens to the amount of air molecules in a given area, as the temperature of air increases?
4. So, as temperature increases, what happens to the density of air?
5. As temperature increases, then air pressure will increase or decrease?
6. What is air pressure? (Yes, it is the same question, but have you changed your mind from your answer above?)

## Relative Humidity vs. Air Pressure

1. **Air or Water Vapor** (Circle One) weighs more.
2. What happens to Air Molecules when Water Vapor is added to air?
3. Why does Air become lighter as Water Vapor is added?
4. What happens to Air Pressure as Water Vapor is added?

## Air Temperature & Relative Humidity vs. Air Pressure

1. What two weather variables influence air pressure?
2. What happens to Air Pressure when both Temperature and Humidity are high?
3. What happens to Air Pressure when both Temperature and Humidity are low?
4. What happens to Air Pressure when Temperature is high and Humidity is low?
5. Why should air pressure be so high during the Winter?
6. Why should air pressure be so low during the Summer?