**Tools of the Trade – Using the Mesonet data**
**Middle School**

**OVERVIEW:** Weather is a condition of the atmosphere and meteorologists are scientists who use instruments to gather data in order to study and then forecast the weather.

**CONNECTIONS TO THE CURRICULUM: Science**

**STANDARDS**:
SC-P-EU-S-3
Students will observe weather conditions and record weather data over time using appropriate tools (e.g., thermometer, wind vane, rain gauge, etc.)

SC-P-EU-S-4
Students will use weather data to describe weather conditions and make simple predictions based on patterns observed (e.g., daily, weekly, seasonal patterns)

**GEOGRAPHIC SKILLS:**
Acquiring Geographic Information
Organizing Geographic Information
Answering Geographic Questions
Analyzing Geographic Information

**TIME:** 15 minutes for day 1-4, 50 minutes for day 5

**MATERIALS REQUIRED:** Mesonet data, weather watcher sheet, copy of weather tools worksheet, two 6"x9" pieces of construction paper, glue, scissors, crayons or markers

**OBJECTIVES**:
1. Observe and record weather data over a period of time.
2. Recognize instruments used in predicting the weather

**SUGGESTED PROCEDURE:**
Opening- Explain that a meteorologist is a scientist who collects atmospheric information using a number of scientific instruments. The Mesonet is a modern way to collect weather data. The data can be used to make weather forecasts.

Strategies/Activities- Students will observe and record weather data by looking at an outdoor thermometer each day and then comparing that temperature alternate weather data from the Mesonet website and other sources. Students will also gather from the Mesonet site daily weather information on humidity, wind speed and direction, precipitation, solar radiation, dew point, and heat index. They will record it on a weather chart for five days. On day five, they will discuss the results of each day and compare their results. Use Mesonet data for recording on weather observation chart below. Establish scale (Y axis) by subtracting the highest value from the lowest. Then divide the number by 10 to establish the scale for the graph

**SUGGESTED STUDENT ASSESSMENT:**
Student assessment will be answering an open response on weather instruments at the end of the five day weather collection activity.

Your Science Club is setting up a weather station for your school to observe and predict the weather.

A. Identify five weather instruments that might be found in your weather station.
B. Describe how you would use each of the instruments you choose.
C. Give an example of how information from each instrument would be useful to people living in your community.
D. Explain the relationship between the data recorded by each instrument

**EXTENDING THE LESSON:** Bring in a guest speaker such as a meteorologist or weather forecaster that could explain about weather instruments and how they are used on the job.

**ADAPTIONS:**

**Challenged Learner:** Students can graph out basic changes in weather observations by creating an average, and graphing change in average over the week.

**Challenging Learner:**

- At the end of the five days students will graph the results of all of their observations on one graph to search for trends. Students will answer questions about information gathered on the graph. Discuss any possible happening that may be occurring with the weather.
- Students can make additional weather observations at the regional and national scale, and explain the relationships at multiple scales (local, regional, national) Regional Scale: Ohio Valley, Tennessee Valley, Cumberland Plateau, Southeast US or Midwest US

**HYPERLINK:**
**Mesonet Data:** **http://www.kymesonet.org/**

**Elizabeth Riggs / Scott Dobler**
**Date: June, 2007**

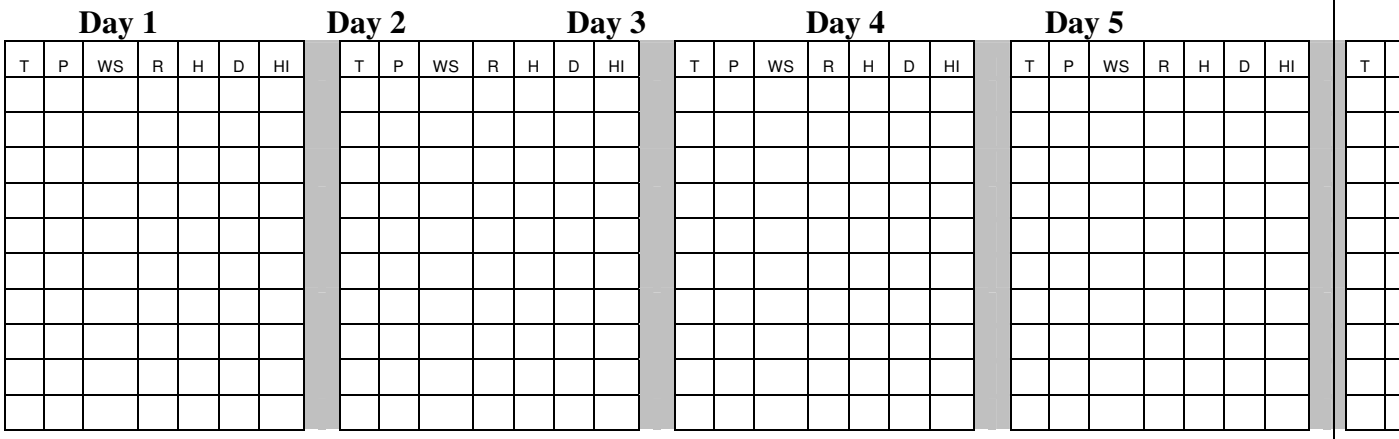
# Weather Observation

**Record the Weather Data on the Chart for 5 Days below. Transpose the data to the appropriate graphs on page 4.**

**Challenge: After 5 days of data, plot the temperature on the combined graph below.**
*Note: wind direction is not included on final graphic, but it can be used to explain change in other observations (vector approach)*

| | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 |
|---|---|---|---|---|---|
| **Temperature (°F )** | | | | | |
| **Precipitation (inches)** | | | | | |
| **Wind Direction (in degrees)** | | | | | |
| **Wind Speed (mph)** | | | | | |
| **Radiation ($W/m^2$)** | | | | | |
| **Humidity (%)** | | | | | |
| **Dew Point (°F )** | | | | | |
| **Heat Index (°F )** | | | | | |

# Final Combined Graphical Observation



**Temperature (°F )**

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**Precipitation (inches)**

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**Wind Speed (MPH)**

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**Wind Direction (365 Degrees)**

| Day 1 | Day 2 | Day 3 | Day 4 | Day 5 |
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**Radiation (W/m²)**

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**Humidity (%)**

| Day 1 | Day 2 | Day 3 | Day 4 | Day 5 |
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**Dew Point (°F )**

| Day 1 | Day 2 | Day 3 | Day 4 | Day 5 |
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**Heat Index (°F )**

| Day 1 | Day 2 | Day 3 | Day 4 | Day 5 |
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