



## **Introduction**

You are going to be looking at data collected at the University of New Hampshire, Climate Change Research Center's AIRMAP observing station at Thompson Farm in Durham, NH. The data was collected on two separate weeks, in February and August of 2005. The site is characterized by rolling fields surrounded by mixed forest. The CO<sub>2</sub> measurements are performed on air sampled from the top of a forty foot tower.

## **Part 1—Prediction**

Each data set (February & August) represents hourly averages of carbon dioxide collected over a five-day period. State a hypothesis that you would like to explore through data analysis. You might want to consider the role of biological activity in the carbon cycle, and how this might vary throughout the day and seasonally.

## **Data Analysis**

Use the data to create a scatter plot style graph. After you have finished your graph, provide a several paragraph analysis of the graph, as it relates to your hypothesis.

In your analysis you might consider the following:

1. Describe the patterns over time. Compare low points, high points and the times of day at which they occur.
2. What is causing these patterns?
  - Are the two patterns different (February vs. August)?
  - Consider the biological processes at work.
  - What are some possible sources and sinks of CO<sub>2</sub> at Thompson Farm?

## **Conclusion**

Does the data support or refute your hypothesis? Why? What additional information would help you explore this further?

## **Extension Activities**

1. Correlate the temperature data for these two periods of time. Are there any apparent relationships? Why or why not do you think this is the case?
2. How do the patterns in your graph compare or contrast with that of the Keeling Curve? Discuss the time scales of each graph.