Generating an Avg. Temp vs. % Leaf Fallen Graph

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Leaves, Buds, Global Warming Study





Define a Question

3 Types of Questions

 Descriptive – describes something; based on observations Ex. When did the study branches on Red Maple #1 lose all of their leaves?

• **Comparative** – compares two or more sites

Ex. Do the leaves drop sooner in Williamstown or on Mt. Greylock?

 Correlative – explores a relationship between 2 variables
 Ex. What is the relationship between temperature and leaf drop dates?

Choose an Appropriate Graph

- % of a Whole pie chart
- Comparisons bar graphs
- Comparing % of a whole stacked bar graph
- Relationships or Change Over Time line graphs

Statistical Analysis Tools

- **Comparison** 2 sample T-test
- **Relationship** correlation coefficient (R value)
- Does y depend on x? coefficient of determination (R² value)
- Probability (P value)

Average Temperature and % of Leaves Fallen MAH (Bennington, VT Fall 2009)



Julian Date

% Fallen vs. Avg. Temp



Avg. Temp (C)

% Fallen vs. Avg. Temp



Avg. Temp (C)

Climatology Data

<u>http://www.erh.noaa.gov/aly/Climate/Bennington/ClimateDDH.htm</u>





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Average Temperature and % of Leaves Fallen MAH (Bennington, VT Fall 2009)



Julian Date

Data Analysis

- What type of relationship is it?
 Direct, inverse, quadratic?
- How strong is the relationship?
- What is the cause of the relationship?



Options for Graphing

- Teacher Generated time constraints; students analyze data
- Student Generated from Teacher Spreadsheet

 students generate & analyze graphs
- Student Generated no time constraints; students learn to create spreadsheet, graph & analyze data

References

- <u>http://www.uvm.edu/~streams/PDFFiles/tutorial</u> <u>s/Data Analyses Tutorial FINAL.pdf</u>
- <u>http://harvardforest.fas.harvard.edu/museum/da</u> <u>ta/k12/Colburn%202009%20Graphing%20Manua</u> <u>l.pdf</u>
- <u>http://www.pacificeducationinstitute.org/resourc</u> <u>es/pdf/Field%20Investigation%20Guide%20updat</u> <u>ed%20April%202009.pdf</u>
- <u>http://www.erh.noaa.gov/aly/Climate/Benningto</u> n/ClimateDDH.htm
- <u>http://www-air.larc.nasa.gov/tools/jday.htm</u>

Generating an Avg. Temp vs. % Leaf Fallen Graph

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