

# Put the weather in your classroom

Davis weather stations are in thousands of educational and scientific programs around the country. With professional-level accuracy, they're used in university research studies from the Arctic to Patagonia. Yet, they're economical (and fun!) enough for grade school science programs.



## Complete Weather Station

Vantage Pro weather stations are available in two models: wireless and cabled. Each includes our innovative integrated sensor suite, which combines our rain collector, temperature and humidity sensors, and anemometer all into one package—making setup easier than ever and improving performance and reliability.

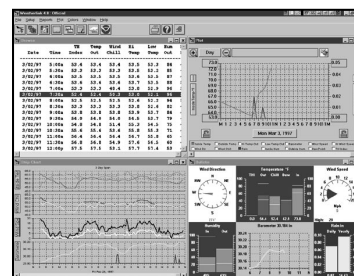
Whichever Vantage Pro model you choose, you get all of the following:

- **Barometric Pressure.** Currently and for each of the last 24 hours. Five-position trend arrow shows whether pressure is rising, falling, or stable.
- **Temperature.** Inside and outside temperature, currently and for each of the last 24 hours. High and low temperature alarms.
- **Humidity.** Inside and outside humidity, currently and for each of the last 24 hours. High and low humidity alarms.
- **Rain.** Rainfall for the last 15 minutes and the last 24 hours, days, months, and years. Flash flood and 24-hour rain alarms.
- **Rain Rate.** Currently and for each of the last 24 minutes. Rain rate alarm.
- **Rain Storm.** Rainfall for the last 24 storms, with beginning and ending dates for each storm. Rain storm warning and alarm.
- **Wind Speed.** Current wind speed. Average for the last ten minutes and each of the last 24 hours. High and average wind speed alarms.
- **Wind Direction.** Currently and for the last 24 hours, days, and months. Direction of high wind speed.
- **Wind Chill.** Current wind chill. Wind chill alarm.
- **Dew Point.** Currently and for each of the last 24 hours. High and low dew point alarms.
- **Heat Index.** Currently and for each of the last 24 hours. Heat index alarm.
- **Sunrise & Sunset.** Time of sunrise and sunset at your location—it even takes daylight savings time into account!
- **Highs & Lows.** For most weather variables, with time and/or date, for each of the last 24 hours, days, months, and years.
- **Optional Sensors.** For UV and solar radiation, evapotranspiration, soil moisture, and more.
- **On-screen graphing.** Graph current conditions, averages, or highs and lows for the last 24 hours, days, months, or years.
- **Your own local forecast.** Forecast icons show sun, part sun, clouds and rain, or snow. Check the scrolling ticker-tape for more details.



## WeatherLink

For the ultimate in weather data collection, analysis, and display, connect Vantage Pro to your personal computer. Data logger fits neatly into the Vantage Pro console, storing weather data even when the computer is off. Transfer data to a PC whenever you like, then use the WeatherLink software to create graphs, generate summaries, and more—all with your own weather database. You can even update the weather to your website and create your own weather web pages!



PR500 03/22/02

## Vantage PRO®

Wireless or cabled, starting at just \$495!  
Order now, or ask for your FREE catalog.

## Davis Instruments

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800-678-3669 • www.davisnet.com

## **CASE STUDIES:**

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### Use of Electronic Weather Stations as Multiple-Intelligence Teaching Tools



# Lewis Mills High School Environmental Earth Sciences

*Burlington, Connecticut*

## PROGRAM OVERVIEW

Environmental Earth Sciences teacher Tony Mitchell introduced a weather station (the Davis Instruments Weather Monitor II) into the curriculum in 1995. Currently, he uses it as part of his ninth grade Atmospheric Management Program. By the end of the course, the students understand the role of weather in what happens to the tons of pollutants that are dumped into the air they breathe.

The purpose of the Environmental Earth Science course is to use management of natural resources as a basis for learning Earth Science principles and skills. Students will develop and apply their scientific literacy by studying the interrelationship of humans to Earth's interior, land, sea, air, and space.

## COURSE SECTIONS

### **Foundations of Environmental Earth Science:**

This section explores the role of science in management of the planet by connecting scientific method with the management cycle of inventory, planning and implementation. After making the case for science as a valuable method to acquire the knowledge necessary to manage the planet, this section of the course strengthens some of the measurement techniques and principles required for Earth Science

### **Space/Earth:**

This section examines the ways that Earthlings are affected by the universe we live in, and how we learn about space. Solar radiation, meteorite impact danger, orbital effects on days and seasons, and how we use space to study earth are included.

### **Atmosphere:**

Students learn how the atmosphere developed, its components, how those components cycle, how energy is transferred through the atmosphere, the formation of weather systems and weather prediction

### **Oceans:**

In this section, oceans are studied for their physical and chemical processes such as coastal erosion, danger from hurricanes, formation and management of coastal features, the sea floor, and both surface and deep sea currents.

### **Internal Earth Process and Products:**

Students learn how we acquire knowledge of the interior of the planet, the structure that is revealed, the transfer of energy to the surface, plate tectonics, formation of plate boundary features, mineral and rock resources, and earthquakes.

### **Land Processes and Products:**

This section examines the weathering of the land and the resources such as soil that are formed, the work of erosion agents such as wind gravity and glaciers, and the water systems of the land that create both resources and hazards.

## MAJOR TEXTS

*Focus on Earth Science*, Merrill, 1989

*Earth Science*, Scott Foresman, 1991

*Earth Science: Geology, the Environment, and the Universe*, Glencoe, 2002

*Modern Earth Science*, Holt, Rinehart and Winston, 2002

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"Weather interests the kids, both boys and girls, because it's real. When we talk about internal earth processes, the students can't see it. But they can see clouds and can understand the relationship between what we see and what is going on inside the earth and in the atmosphere."

*Tony Mitchell*

*Environmental Earth Science Teacher,  
Lewis Mills High School*

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### **Homework Expectations:**

Homework is assigned almost every night. Most homework is in preparation for class work and so stays as part of the students' notes, which are collected and graded regularly. Most assignments should take 20 - 60 minutes to complete.

<http://www.geocities.com/CapeCanaveral/7639/INDEX.HTM> Reprinted with permission.

Permission granted to use lesson plan in whole or in part.



## Weather Stations in the Classroom: Sacramento, California

When the kids in Mrs. Powell's fifth grade class in Sacramento, California, first saw our new Vantage Pro stations, they responded with the words, "Way cool!"

In the classroom, the kids were responsible for taking measurements three times a day, and then charting and graphing them at the "Weather Watch Center." In the meantime, small groups of kids were responsible for researching and reporting back to the class the meaning and importance of dew point, wind chill, relative humidity, and barometric pressure. After all, as Mrs. Powell says, "If we're going to measure it, they're going to have to be able to explain to everyone what it is and why we care about it!"

What did the kids think at the end of their unit on weather? Mrs. Powell says, "On their last test, I gave them points for telling me the most interesting thing and what was the most fun. Several said that the weather station was the most fun, one adding 'Because it made me responsible to the rest of the class.' So I think it taught more than weather."

# Ophir School Weather Project

## Big Sky, Montana

### WHY A WEATHER STATION?

The Weather Project is a study of the weather in our own backyard. In September, 2001, Mr. Coon's 6th grade class began studying the weather and weather patterns in our area. Over the course of the study, students began to notice that the data they were collecting from Gallatin Airport was 45 miles away, (quite a ways away from Big Sky where we were trying to collect data). The class decided that in order to accurately obtain weather data in Big Sky, they would have to build and position a weather station in their backyard. Through the help of grants, the weather station was obtained, constructed and positioned in the backyard of Ophir School.

Mr. Coon's 6th grade class explores their natural curiosity about the weather through an interdisciplinary study. Students become scientists and orators—building a weather station, collecting and interpreting data, and reporting their findings. They check the weather twice a day and report their observations, then record their findings in the database. After twelve weeks, they create spreadsheets to examine the data trends of the average daily temperatures. Finally, they create graphs for visual communication and prepare an oral presentation and a slide show.

### SERVICE LEARNING

The weather project will also incorporate a service learning approach in that the students will upload their weather data to the Internet so that community members can acquire weather data appropriate to their location.

### LESSON PLAN

#### Objectives:

- To study aspects of the weather and its effects on the environment
- To collect data in a regular and systematic way
- To interpret and graph information
- To create and present a slide show that represents the change of weather

#### Curricular Areas:

Math, Science, Language Arts

Grade: 6

#### Length of Unit:

Ongoing throughout the year

### MULTIPLE INTELLIGENCES

#### Visual/Spatial:

Students will create a PowerPoint slide show to present conclusions. Design the layout, artwork, graphs and text for a slide show.

#### Interpersonal:

Students will work as a group to construct a weather station. Work daily with partners to read, record, and present data.

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“At Ophir School, we believe in an integrated approach to teaching. We bring science, language, math, and social studies into every subject. The Weather Project has been such an easy fit to that approach. And it's universally popular. Both girls and boys are interested in it.”

*Mike Coon  
Science and Math Teacher,  
Ophir School (K-8)*

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#### Nature:

Students will become aware of the pattern and fluctuation of sky, clouds, wind, and temperature.

#### Verbal/Linguistic:

Students will create presentations explaining methods and conclusions based on research. Report findings to the class and other classes and/or parents.

#### Logical/Mathematical:

Students will collect data daily, analyze, and compare it to previously collected data. Create spreadsheets to calculate averages and graph information. Draw logical conclusions based on data analysis.

### TECHNOLOGY SKILLS

- Create a database

- Create a slide show multimedia presentation
- Create a graph from a database

### PROCESS

1. Choose which important aspects of the weather to record
2. Construct a weather station
3. Work in pairs to observe, collect, classify and record the data into the database
4. Graph the data in bar graphs
5. Interpret graphs and write out explanations
6. Scan pictures of students and the weather station
7. Place the scanned pictures into PowerPoint
8. Create a slide show using PowerPoint
9. Present project to community at school board meeting

### STANDARDS

#### English/Language Arts:

- Use technology and tools to gather data and extend the senses
- Collect and analyze data using concepts and techniques in mathematics, such as averages, data displays, variability, and sampling
- Acquire information from multiple sources
- Represent data and experimental results
- Conduct systematic observations
- Participate in group meetings
- Prepare and deliver individual presentations

### APPLIED LEARNING

- Work with others to complete a task
- Show or explain something clearly enough for someone else to be able to replicate it

### MATHEMATICS & SCIENCE

- Collect and organize data
- Display data graphically
- Make statements and draw simple conclusions based on data
- Read and represent data graphically
- Develop hypotheses, predict results and write

<http://home.mcn.net/~ophir/weather.htm>.  
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