



Creating Sustainable School and Home Gardens: Using Weather Stations

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Setting up your own weather station in your garden can help you monitor conditions that affect your plants.

The weather impacts every aspect of our lives, from the clothing we choose to wear each day to our travel plans and activity choices. The weather also impacts our school and home gardens and landscaping. Whenever you check the weather on your phone or anywhere else, such as the television or radio, the data come from a weather station. Weather stations are

instruments and equipment that measure atmospheric conditions to provide information on weather forecasts or study weather patterns and climate. Some weather stations are publicly accessible and share their data. Other weather stations are personal and can be set up to measure conditions at your specific location.

This fact sheet provides an overview of how weather stations work and the steps to set up your own weather station. To help monitor the water conditions, wind speeds, and temperatures that can impact your plants, we suggest adding a weather station to your garden area or greenhouse.

How Weather Stations Work

Many weather stations use sensors that transmit multiple and various weather readings to a specific display. They may use a thermometer to measure the temperature, a barometer to measure the atmospheric pressure, and many other measuring tools to accurately describe weather conditions. With accurate weather measurements, you can monitor conditions outside as well as inside greenhouses and check that the climate is ideal to help your plants grow and thrive.

Choosing the Right Weather Station

- When deciding the type of weather station to purchase, we suggest that you consider the information you need or want, ways you can easily access the information already available to you, the timeframe in which you want to gather weather data (e.g., recording and monitoring throughout the day or across several days vs. current conditions only), and the amount of time and money you are willing to invest in this project.
- Make a checklist to identify the capabilities you desire in a weather station. Keep in mind that more sophisticated features and options usually equate to more expense. You may find it helpful to use this [weather station checklist](#) (Sagers, 2015).
- Look around at your options for locally available weather stations and other options from online vendors. Do your research to ensure that the weather station meets your needs.
- Consult [Building a Garden Weather Station](#), an archived Utah State University (USU) Extension presentation by Larry A. Sagers that compares several weather station brands and provides more information.
- Check local, open-access weather monitoring to see if you can obtain the data you need without purchasing your own weather station. Consider the websites listed in the Resources section.



A weather station collects data in a middle school's garden.

How to Use a Weather Station

- Because of the wide variety of weather stations available, device functions may vary.
- Carefully and completely read any instructions provided by your weather station's manufacturer to see if it needs batteries, how to link the system to your phone, and any other requirements to make the station fully operational.
- Select a location that will accurately reflect the conditions in your area. Make sure that the location will be secure and sturdy enough to protect your weather station from the elements and being knocked down. Consider your typical weather conditions across the seasons. Does your area receive intense winds, heavy snowfall, or other hazards? While considering your location conditions, decide how and where to place and mount the weather station so it remains functional and secure.

How to Read Weather Station Data

- Read the manufacturer's instructions for the selected weather station since each device may vary.

- Some weather stations may require you to link to another device, such as a phone or computer. Others may require a drive or SD card to store data. You can then remove the storage mechanisms from the station to read the data.

Maintenance

- Determine when you need to change batteries to ensure a consistent power supply.
- Check on your weather station every week or so to ensure it remains undamaged and securely in place.
- Consider temporarily taking down weather stations if a particularly violent storm is predicted for your area. These situations underscore the importance of carefully mounting and placing your weather station.

Tips for Use

- Place your station where it won't get damaged easily. Since some weather stations show the temperature of both the inside and outside environments, you may need to consider what components need direct exposure to the outdoor elements and what parts can be contained in a sheltered/screened box or area.
- When growing plants, make sure they have the right environment by reading the different humidity levels and choosing plants that will grow well in your particular climate.



A weather station monitoring barometric pressure will relay data of an approaching storm and measure wind speed and precipitation.

Fun Facts

- The first known weather station, the *Tower of the Winds*, can be found in Greece, near Athens.
- Weather stations are more common than you think! Our phones are connected to multiple weather stations worldwide, allowing us to receive weather notifications at any moment in time.
- A higher percentage of humidity means more moisture in the air, whereas the opposite is true for a low percentage of humidity. Higher humidity means less evaporation occurs. This information can help you determine when plants require more frequent watering.

Resources

Publications

- Sagers, L. A. (2015). *Garden weather station checklist*. Utah State University Extension. https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=2453&context=extension_histall
- Sagers, L. A. (2005). *Building a garden weather station*. Utah State University Extension. https://digitalcommons.usu.edu/extension_histall/1413

Websites

- [Utah Climate Center](#), USU
- [USU Environmental Observatory](#), College of Agriculture and Applied Sciences
- [MesoWest](#), University of Utah
- [National Weather Service](#), National Oceanic and Atmospheric Administration

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[Smart Foodscapes](https://usu.edu/smart-foodscapes) (usu.edu/smart-foodscapes)

Learn more by scanning the QR code.



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