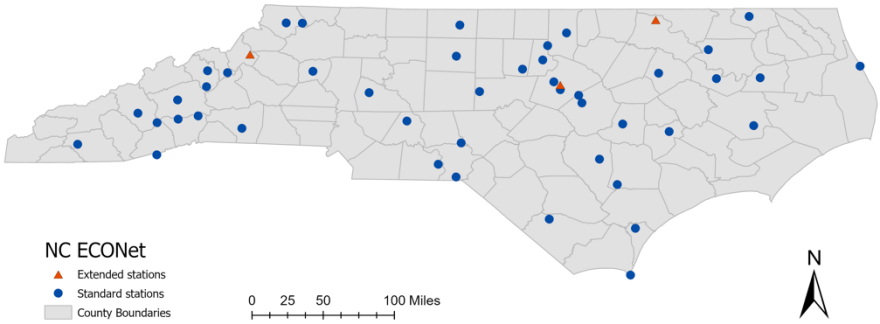
NC STATE UNIVERSITY

NORTH CAROLINA CLIMATEOFFICE

The North Carolina Environment and Climate Observing Network (ECONet)

The North Carolina ECONet is a network of 10-meter (33 feet) tall aluminum towers that measure weather and climate observations every minute. These data are freely accessible to the public. ECONet started as 13 stations in 1978 and has grown to 47 stations (44, 10-meter towers and 3, 3-m towers) across 37 counties in North Carolina. **ECONet is one of the most robust and longest running state weather and climate monitoring networks in the country.** The ECONet is housed at NC State University at the North Carolina Climate Office.



ECONet Station at BearWallow Mountain in Gerton, NC

Measurements and Observations

ECONet measures weather variables, such as air temperature, relative humidity, wind speed and direction, station pressure, and rainfall. However, ECONet is distinct from other state mesonets because it measures variables that are specific to the needs of various applications and sectors. These variables include: soil moisture, soil temperature, total amount of sunlight, sunlight used for plant growth, moisture amount on leaves, and black globe temperature. Also, ECONet stations measure weather variables such as wind speed/direction and air temperature at multiple heights above the ground surface. **All data are measured every minute, collected every 5 minutes, and are available to the public for free through the North Carolina Climate Office's public data portals.**

Applications of ECONet Data

ECONet data are used for research and practical applications across North Carolina. ECONet stations are located in areas that lack federally managed weather stations. Use of ECONet data has proved beneficial to a number of applications, such as:

Black Globe Thermometer used to calculate heat stress in Rocky Mount

- **Weather Monitoring:** Data from ECONet stations provide near real-time weather data coverage that enhances the monitoring capabilities of **National Weather Service meteorologists** and **local TV Meteorologists** during extreme weather events.
- **Agriculture:** Temperature, relative humidity, and leaf wetness measurements are used to alert peanut and berry growers in times of potential disease spread risk that may harm their crops. Air temperature measurements at multiple heights are used for inversion risk monitoring and determining ideal times and weather conditions to spray dicamba herbicides.
- **Forestry:** ECONet data are currently used by the **U.S. Forest Service and the NC Forest Service** to calculate metrics for the National Fire Danger Rating System.
- **Drought Monitoring:** ECONet Precipitation measurements in remote areas of North Carolina enable members of the **North Carolina Drought Council** to better understand drought conditions across North Carolina. ECOnet soil moisture measurements are also used in drought monitoring and are incorporated into the National Soil Moisture Network, an initiative that provides large-scale snapshots of soil conditions throughout the U.S.
- **Health Monitoring:** Black globe temperature measurements are one component of wet bulb globe temperature (WBGT), a heat stress risk metric that is currently used by **high school athletic associations, the U.S. Military, OSHA, and the National Weather Service.**

Questions about ECONet?

For more information on the North Carolina ECONet, visit our website at https://econet.climate.ncsu.edu or send us an email at climate-office@ncsu.edu.

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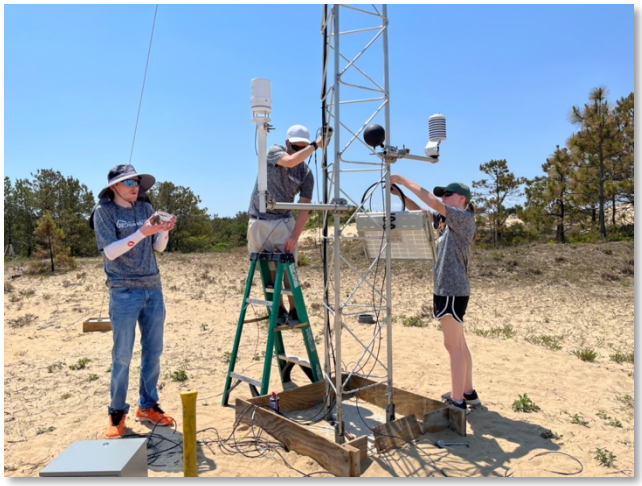

The ECONet Team installing a new station at Jockeys Ridge State Park, Nags Head, NC in May 2022.