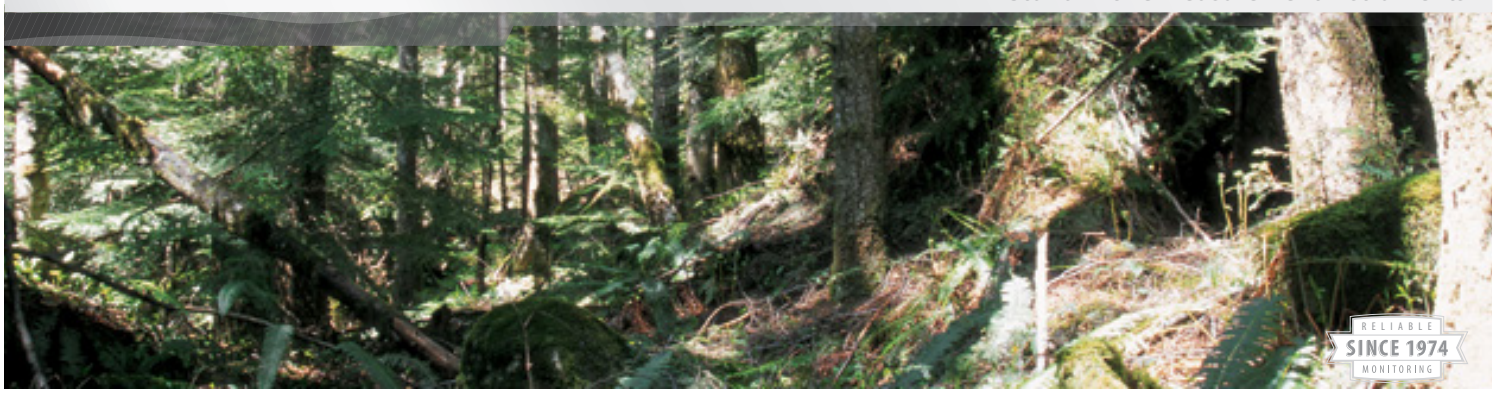
CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

Ecology

Stand-Alone Measurement Instruments



Campbell Scientific's rugged, low-power data-acquisition systems can be configured to support the full spectrum of ecological research. Our dataloggers are compatible with most sensors, and commonly measure meteorologic, hydrologic, and soil conditions. Data is often used in research facilities and applications evaluating relationships between different organisms as climate and other conditions change. Battery and solar power allow our systems to provide remote, unattended data collection over long periods of time. Our instrumentation has been proven in some of the harshest environments in the world.

MAJOR SYSTEMS

		Measurements	*Control*	*Datalogger*	*Power*	*Communications*
GRWS100 General Research-Grade Weather Station		Wind speed Wind direction Air temperature Relative humidity Barometric pressure Precipitation Solar radiation (sun-plus-sky radiation)	Yes	CR1000	Rechargeable Battery	Variety of telecommunication methods

Custom Systems

Most of the systems we sell are customized. Tell us what you need and we'll help you configure a system that meets your exact needs.

Dataloggers

Our monitoring stations are based around a programmable datalogger that measures the sensors, then processes, stores, and transmits the data. Our low-power dataloggers have wide operating temperature ranges, programmable execution intervals, onboard instructions, and ample input channels for commonly used sensors. Our dataloggers interface directly to most sensors, eliminating external signal conditioning.

Data are typically displayed and stored in the units of your choice (e.g., wind speed in mph, m/s, knots). Measurement processing and data storage are programmable, but measurements are typically made every minute then processed and stored at hourly and daily intervals (e.g., maximum, minimum, average). Data can be measured and stored more or less frequently (depending on the application and conditional sampling) based on events such as increased wind speeds, torrential rainfall, or diurnal cycle.

Sensors

Almost any sensor can be measured by our dataloggers, allowing monitoring systems to be customized for each site. Typical sensors used on our stations include, but are not limited to: wind speed, wind direction, solar radiation of various types, air temperature, water temperature, soil temperature, relative humidity, precipitation, snow depth, barometric pressure, soil moisture, soil electrical conductivity, and soil heat flux.

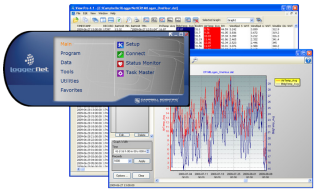
Our systems interface to a variety of sensors that measure water level and water flow, as well as water quality parameters such as pH, conductivity, and dissolved oxygen. Our dataloggers can interface directly to most air flow sensors, opacity meters, particle samplers, and gas analyzers.

Communications

We offer multiple communications options for data retrieval, which can be mixed within the same network. Telecommunications options include short-haul, telephone (land line, voice-synthesized, cellular), radio frequency, multidrop, and satellite. On-site options include storage module and laptop computer.

Software

Our PC-based support software simplifies the entire data acquisition process, from programming to data retrieval to data display and analysis. Our software automatically manages data retrieval from networks or single stations. Robust error-checking ensures data integrity. We can even help you post your data to the Internet.



Ecology and Natural Resources Applications

- Micro-, meso-scale climate monitoring
- Global warming/eco-indicators
- Reclamation/reforestation
- Soils research
- Animal behavior monitoring
- Carbon budget
- Pest and disease control
- Canopy research/sap flow
- Surface flux research
- Below ground/duff layer monitoring
- Habitat characterization
- Pollution monitoring

Ecology Case Studies

Our ecology systems have helped a variety of organizations reach their goals. The following are just a few of these:

The Caribbean Marine Research Center (CMRC) of Vero Beach, FL, launched a long-term program to identify the critical processes that determine changes in the abundance of key marine species in Florida and the Caribbean. As part of this project, several Campbell Scientific weather stations were deployed to monitor the atmospheric forces in Exuma Sound, Bahamas.

www.campbellsci.com/bahamas-ecology

A long-term scientific study monitoring trends in the biodiversity and structure of ecosystems of tropical forests uses a network of Campbell Scientific field stations in Central America. The stations measure variables that provide information on a variety of levels, range of plant sizes, physiological adaptations, and strata inside the tropical forest.

www.campbellsci.com/costa-rica-biodiversity

The Solar Decathlon competition enlists about 20 teams of college and university students to design, build, and operate the most attractive, effective, and energy-efficient solar-powered houses. Each house is instrumented with sensors to evaluate how well the students meet the challenge. Campbell Scientific dataloggers were chosen for a key role in the evaluation phase.

www.campbellsci.com/solar-decathlon

The Long-Term Ecological Research (LTER) program, sponsored by the National Science Foundation, used Campbell Scientific gear to monitor ecological phenomena in McMurdo Dry Valleys, Antarctica—one of the most extreme deserts on Earth.

www.campbellsci.com/antarctica-ecology

Meteorological conditions affecting marine larvae distribution are monitored at Exuma Cay, Bahamas.

CAMPBELL SCIENTIFIC®
815 W 1800 N | Logan, UT 84321-1784 | 435.227.9120 | www.campbellsci.com
USA | AUSTRALIA | BRAZIL | CANADA | CHINA | COSTA RICA | FRANCE | GERMANY | SE ASIA | SOUTH AFRICA | SPAIN | UK