



Micrometeorology / Greenhouse Gas Fluxes



Sensors and systems for measuring greenhouse gas and energy fluxes



Campbell Scientific offers research-grade instrumentation for micrometeorological applications including measurement of sensible heat, water vapor and trace gas fluxes, and atmospheric variables required

by air quality dispersion models. We also offer a variety of automated weather station configurations.

MAJOR SYSTEMS

| | Measurements | Datalogger | Power Usage | Communications |
|--|---|------------|--|--|
| CPEC200 Closed-Path Eddy-Covariance System  | Surface-atmosphere exchange of carbon dioxide, water vapor, heat, and momentum | CR3000 | User-supplied 12 Vdc battery and solar panel or ac power | CompactFlash cards, Ethernet, RS-232, short haul modem, phone modem, RF, cellular, satellite |
| AP200 CO ₂ /H ₂ O Atmospheric Profile System  | carbon dioxide (CO ₂) and water vapor (H ₂ O) concentration from up to eight intakes | CR1000 | User-supplied 12 Vdc battery and solar panel or ac power | CompactFlash cards, keyboard display, Ethernet, RS-232, short haul modem, phone modem, RF, cellular, satellite |

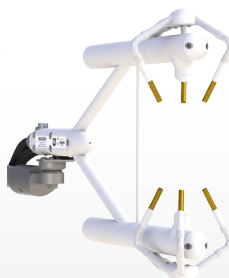
Custom Systems

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.

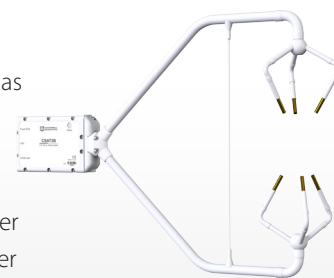
Sensors

Gas Analyzers and Sonic Anemometers

- IRGASON Integrated CO₂/H₂O Open-Path Gas Analyzer and 3D Sonic Anemometer
- EC150 CO₂/H₂O Open-Path Gas Analyzer and CSAT3A 3D Sonic Anemometer



- EC155 CO₂/H₂O Closed-Path Gas Analyzer System
- TGA200A Closed-Path Trace-Gas Analyzer
- CSAT3A 3-D Sonic Anemometer
- CSAT3B 3-D Sonic Anemometer



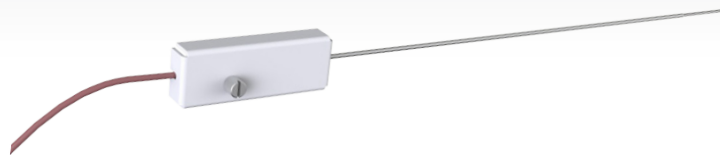
More info: 435.227.9120

campbellsci.com/micrometeorology



Optional Eddy Covariance Sensors

- FW05, FW1, and FW3 Type E, Fine Wire Thermocouples
- KH20 Krypton Hygrometer



Energy Balance Sensors

- EE181 Temperature and Relative Humidity Probe
- NR-LITE2 Net Radiometer
- NR01 Net Radiometer
- CNR4 WMO Class Net Radiometer
- TCAV Type E Thermocouple Averaging Soil Temperature Probes
- CS616 Water Content Reflectometer (volumetric soil moisture)



- CS650 and CS655 Water Content Reflectometers (volumetric soil moisture)
- HFP01 and HFP01SC Soil Heat Flux Plates
- CS300 Silicon Pyranometer
- LI200RX Silicon Pyranometer
- LI190R Quantum Sensor
- SI-111 Infrared Radiometer
- TE525 Tipping Bucket Rain Gage



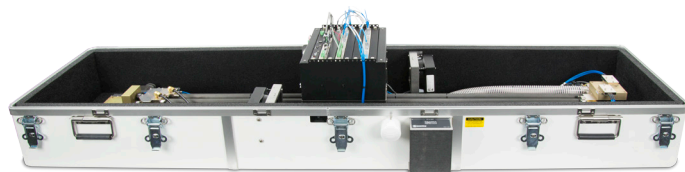
Measurements

Surface Flux

Our flux systems can measure atmospheric gradients or vertical turbulent transport directly. Our open path eddy covariance systems measure sonic sensible heat flux, momentum flux, and the flux of other scalars between the atmosphere and earth's surface.

Campbell Scientific also offers a closed-path eddy-covariance system and an atmospheric profile system. Measurements of trace gas fluxes, such as CO₂ isotopes, N₂O, or CH₄ are obtained with our TGA200A Trace-Gas Analyzer.

Trace Gas



The TGA200A measures trace-gas concentrations in an air sample using tunable-diode laser absorption spectroscopy (TDLAS). It is housed in a rugged environmental enclosure designed for use in demanding climates. Common applications include slow gradient or high speed eddy-covariance flux measurements of nitrous oxide, methane, or isotopologs of carbon dioxide in all global ecosystems.

Micrometeorology/Greenhouse Gas Fluxes Case Studies

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

Large CSAT3 array and other sensors measured turbulence in and above a canopy of a walnut orchard in Cilker Orchards, Dixon, California. The arrays first gathered data with no leaves on the trees, then during leaf-out, and finally when the canopy was fully developed.

www.campbellsci.com/chats-csat3

Our CPEC200 closed-path eddy covariance system, EC155 closed-path gas analyzer, and CSAT3A sonic anemometer monitor fluxes in British Columbia forest. The data will help scientists better understand the temporal and spatial carbon cycles of these habitats and is available through the Fluxnet Canada Research Network.

www.campbellsci.com/canada-cpec200



The California walnut groves's sensor arrays provided a large data set used to confirm models linking turbulence and elements of weather, climate, and plant growth.



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