Eddy Covariance Solutions

Simplified, automated systems for growing your research

- Field-proven gas analyzers
- Reliable data collection
- Automated flux computation

LI-COR eddy covariance solutions are trusted by researchers and flux networks around the world.

LI-COR eddy covariance systems measure the exchange of CO_2, H_2O, CH_4, and energy between the earth's surface and the atmosphere, empowering researchers to advance scientific understanding of climate and ecosystem dynamics.

From system design and set-up to data collection and automated flux computation, LI-COR offers comprehensive eddy covariance solutions that streamline the process for researchers of all experience levels.

LI-COR eddy covariance systems can be customized from a single-analyzer setup to advanced systems that measure methane flux and biological and meteorological variables. Analyzers, anemometers, biomet sensors, and everything else—including mounting equipment and a solar power supply—are available from LI-COR.

Three-gas system, low power requirements

LI-COR eddy covariance systems measure CO_2, H_2O, CH_4, and energy flux with as little as 12 watts of power in ideal conditions.

Open path CO_2/H_2O, enclosed path CO_2/H_2O, and any combination with CH_4 require less power than any other system on the market. Solar power systems – designed to LI-COR specifications – can power the system wherever it's deployed.
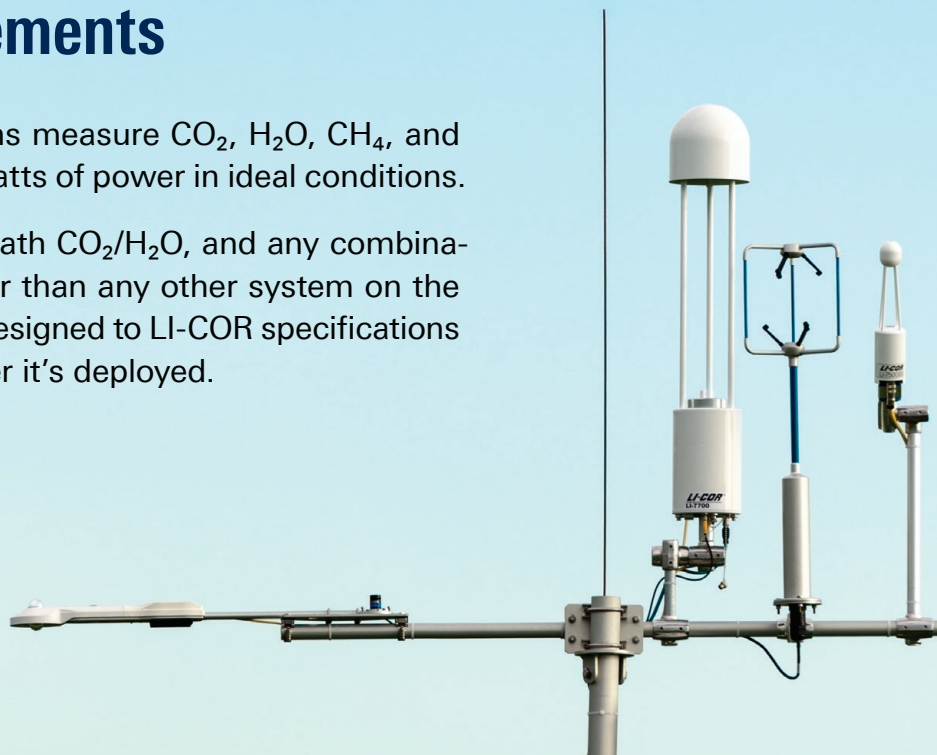
The global standard for eddy covariance research

LI-COR systems are the global standard chosen by major flux networks—including AmeriFlux, AsiaFlux, ChinaFLUX, Chinese Ecosystem Research Network (CERN), Cold and Arid Regions Network (CARN), Integrated Carbon Observatory System (ICOS), and National Ecological Observatory Network (NEON).

AmeriFlux

AsiaFlux

ChinaFLUX

CERN

ICOS

CARN

NEON
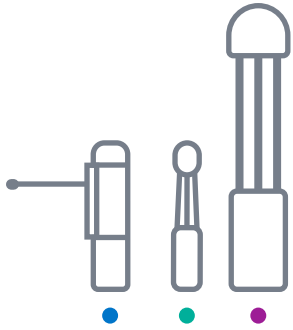
Field-proven gas analyzers

Featuring the most trustworthy gas analyzers available, LI-COR systems include technology that has been tested and chosen as the global standard by major flux networks.

LI-7200RS Closed Path CO_2/H_2O Analyzer

Designed for environments with frequent rain, fog, or snow events and low CO_2 flux rates, the LI-7200RS takes accurate gas density measurements, including dry mole fraction. It includes the SmartFlux System.

LI-7500DS Open Path CO_2/H_2O Analyzer

Suitable for sites with infrequent rain, fog, or snow events, the LI-7500DS is precise, easy to set up and use, and stable in harsh environments. It includes the SmartFlux® System.

LI-7700 Open Path CH_4 Analyzer

As the only open path methane analyzer available for eddy covariance, the LI-7700 eliminates problems associated with pumps and tubing. It features reduced power consumption and the ability to run on solar power.

Fast, accurate measurements

With a complete LI-COR eddy covariance system, observations accurately reflect differences in ecosystem-level gas exchange. Your results can be reliably interpreted, and you can submit data that are free of introduced bias from non-standard instruments or processing methods.

With careful optical and electronic design, the performance of LI-COR analyzers is consistent with theoretical expectations.
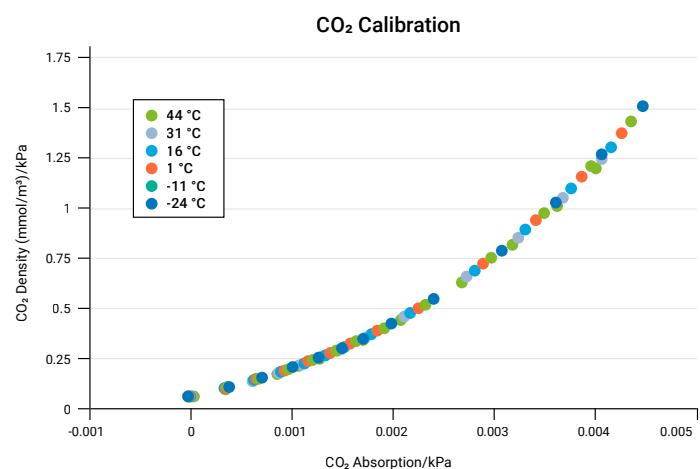
The typical performance of LI-COR gas analyzers over a range of temperatures and CO_2 densities.

Deploy anywhere

LI-COR high-speed gas analyzers provide dependable, stable gas concentration measurements over a full temperature range.

Designed for challenging outdoor environments, key optical components are actively temperature regulated and electronics are stable over a wide temperature range. They accommodate a variety of sonic anemometer models and mounting structures.
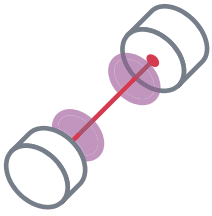
Reliable data collection

LI-COR eddy covariance systems are the only systems that provide accurate, fully processed, and corrected results on-site as data are collected.
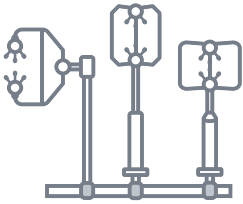
Every aspect of a LI-COR eddy covariance system is designed with reliable data collection in mind.
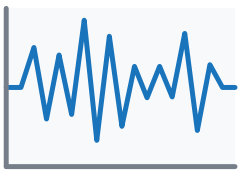
Temperature-regulated optical components

LI-COR analyzer optics are temperature regulated, mitigating signal drift with changing ambient temperatures.

Ability to integrate multiple sonic anemometer models

LI-COR systems can be configured with more than 10 digital anemometer models from different manufacturers.
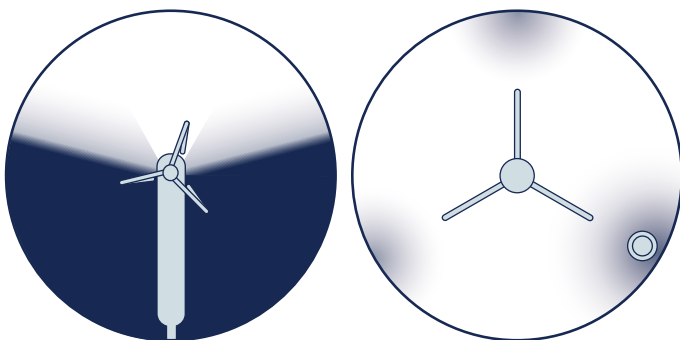
Streamlined data analysis

Data from LI-COR instruments are optimized for processing using EddyPro® Software and the SmartFlux® System.

Instruments separated for minimal flow distortion

If air flow is disrupted near the anemometer, flow distortion errors can occur. Since there is no correction algorithm for this, it is critical to choose a system that minimizes or eliminates this issue.

Object near anemometer

Airflow
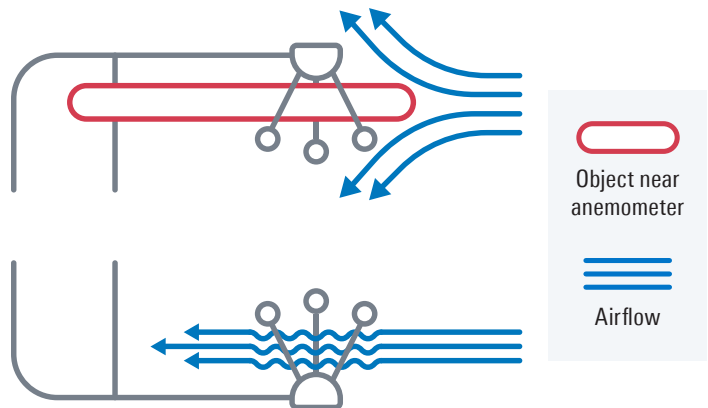
An object too close to the sonic anemometer—whether a tree branch, tower support, or gas analyzer—can lead to measurement errors.

Omnidirectional instrument positioning

The configuration of LI-COR instrument platforms allows for reliable measurements from nearly any wind direction.

Less reliable data   More reliable data

Automated flux computation

LI-COR eddy covariance systems are the only systems that provide accurate, fully processed, and corrected results on-site as data are collected. Get dependable data in real time on your computer, on-site, and online.

EddyPro® Software

EddyPro Software performs standardized processing steps and adheres to formatting requirements from FLUXNET, ICOS, CERN, AmeriFlux, OzFlux, and other networks. It has been tested, verified, and used by these network – you can use it with confidence that the results are the best available.
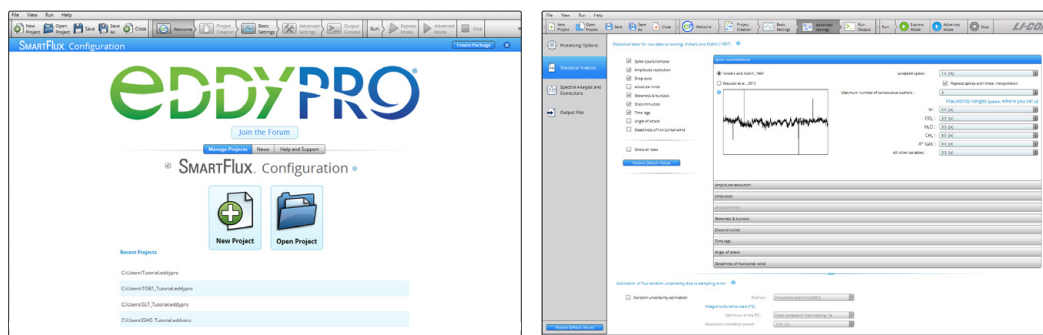
SmartFlux® System

The SmartFlux System features a powerful microcomputer that runs EddyPro Software and applies over 50 flux processing algorithms in real time. The GPS receiver acts to synchronize the system clock and mitigate drift or misalignments. It integrates and synchronizes biomet and high-speed digital wind and gas analyzer data, ensuring fluxes are not biased by random and systematic timing errors.

FluxSuite® Software

FluxSuite Software is a secure web-based cloud platform that allows you to view and download fully processed results to your smartphone, tablet, or computer. Track multiple sites, add users and collaborators, and set-up email alerts for data quality and equipment status.

EddyPro Advantages

With over 2,000 peer-reviewed publications and continuous improvements driven by community partnerships, EddyPro Software has redefined the standard for flux data processing.

- A graphical interface and easy configuration that requires no custom programming with proprietary languages

- Complete set of processing options, including frequency response correction, random error estimation, and quality flagging

- Standardized computation routines used by leading flux networks

- Customizable flux processing routines

- The same results whether on a computer or the SmartFlux® System, allowing for replication across devices and sites

- Outputs that meet the latest FLUXNET, ICOS, and AmeriFlux database standards without requiring additional post-processing

- Seamless processing of LI-COR .ghg files, with support for other file types

World-class support

LI-COR offers training, education, online resources, and ongoing support for its eddy covariance systems.

Supported by scientists

A team of eddy covariance scientists is available to answer questions and support your LI-COR system. LI-COR scientists also conduct research, publish, and collaborate with the community.

Training

In-person training courses taught by eddy covariance specialists are offered in Lincoln, Nebraska, and at various other locations throughout the year. The course includes hands-on experience with instruments and site set-up.

Technical support center

The LI-COR technical support center is an extensive repository of manuals, application notes, installation guides, calibration certificates, software, and how-to videos. It is the point of contact for LI-COR support.

The eddy covariance book

Written by LI-COR Science and Strategy Fellow and internationally recognized eddy covariance expert Dr. George Burba, the 2022 edition of *Eddy Covariance Method for Scientific, Regulatory and Commercial Application*s is for anyone—from novice to expert—interested in the method.

At nearly 700 pages, this comprehensive text includes hundreds of illustrations, examples, and references on the theory, applications, and practical aspects of the method.

Download a copy at **licor.com/book**

The eddy covariance method is used in agricultural fields, urban landscapes, tropical jungles, deserts, and many other environments. For a more holistic understanding of an ecosystem, add leaf level, soil surface, and other environmental measurements to eddy covariance data. LI-COR offers measurement solutions for leaf and canopy, light architecture, soil gas flux, trace gases, and more.

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