

**BRINGING LIFE TO LECTURE:
THE USE OF MODERN RESEARCH
INSTRUMENTATION IN THE
CLASSROOM AND LAB**

Presenters

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Bringing Life to Lecture: Overview



Schedule

- 2:00-2:15PM Introductions
- 2:15-2:45PM Overview: LI-COR and LEEF Program
- 2:45-3:00PM Introduction to Lab
- 3:00-4:00PM Lab
- 4:00-5:00PM Discussion/Questions

LI-COR



LI-COR[®]

First PAR sensor and light meter



Impacting lives...

Our mission is to help scientists find better answers to their questions. We believe that data of exceptional quality provides answers with exceptional clarity. In turn, the results help improve the world where we live and the quality of individuals' lives.

Environmental



Biotechnology



Clinical Translation



Biotechnology Products



Odyssey® CLx
Infrared Imaging System

Odyssey® Family of Infrared Imaging Systems

Protein analysis. Used in cancer research and drug discovery, for example.



Pearl® Trilogi
in vivo Imaging System

Detects binding sites in living organisms.



Odyssey® Fc
Imaging System



C-DiGit® Blot Scanner

Chemiluminescent Western Blot detection. A digital replacement for film.



Reagents, including
IRDye® Infrared
Dyes and Custom
Services

EDDY COVARIANCE
CH₄ | CO₂ | H₂O

CO₂/H₂O ANALYSIS

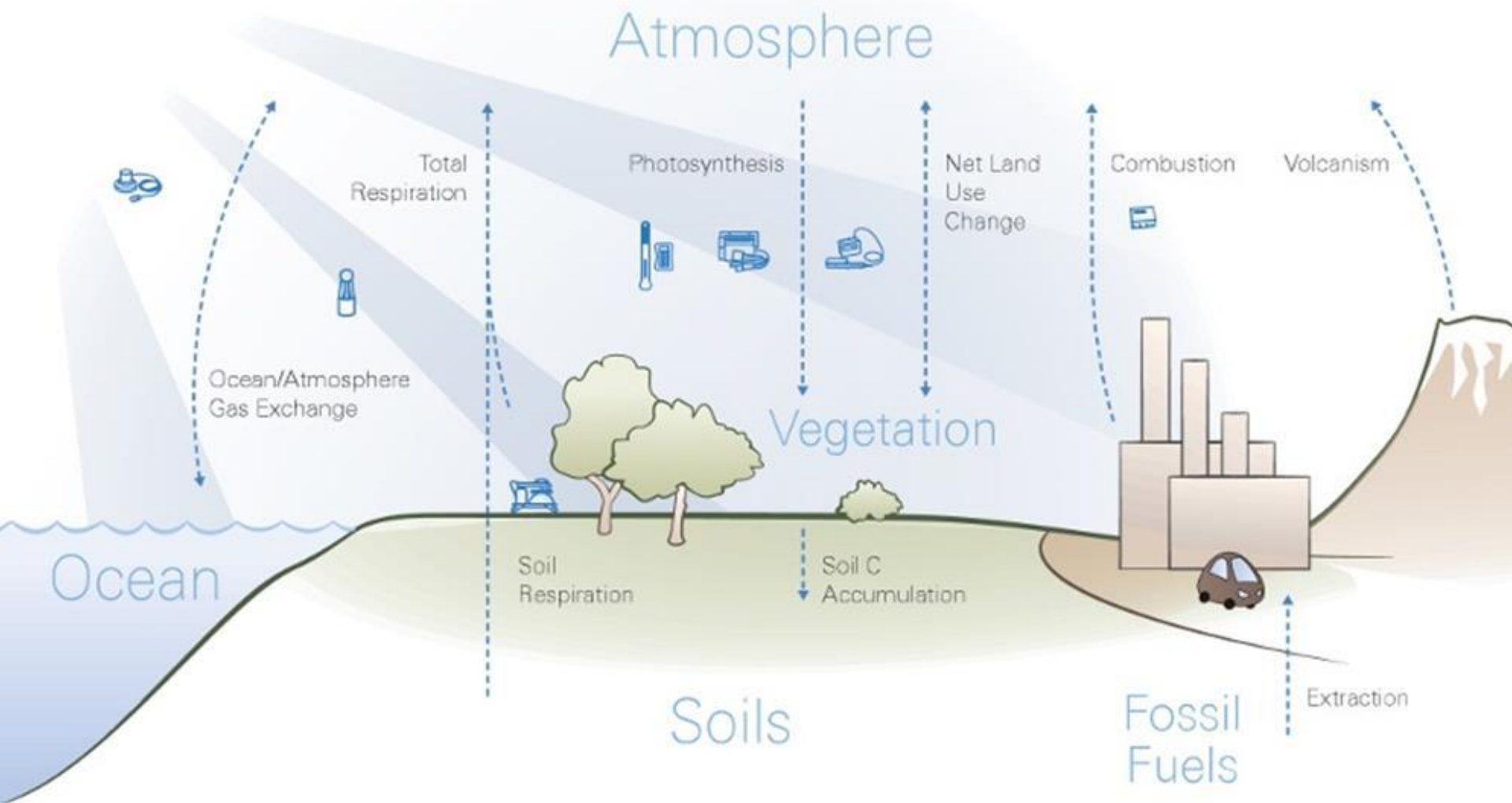
PHOTOSYNTHESIS

SOIL CO₂ FLUX

LEAF AREA

LIGHT MEASUREMENT

LI-COR



LI-COR

Environmental Products



Open Path
CO₂/H₂O Analyzer



Open Path
CH₄ Analyzer



Light Sensors



Photosynthesis



Area Meters

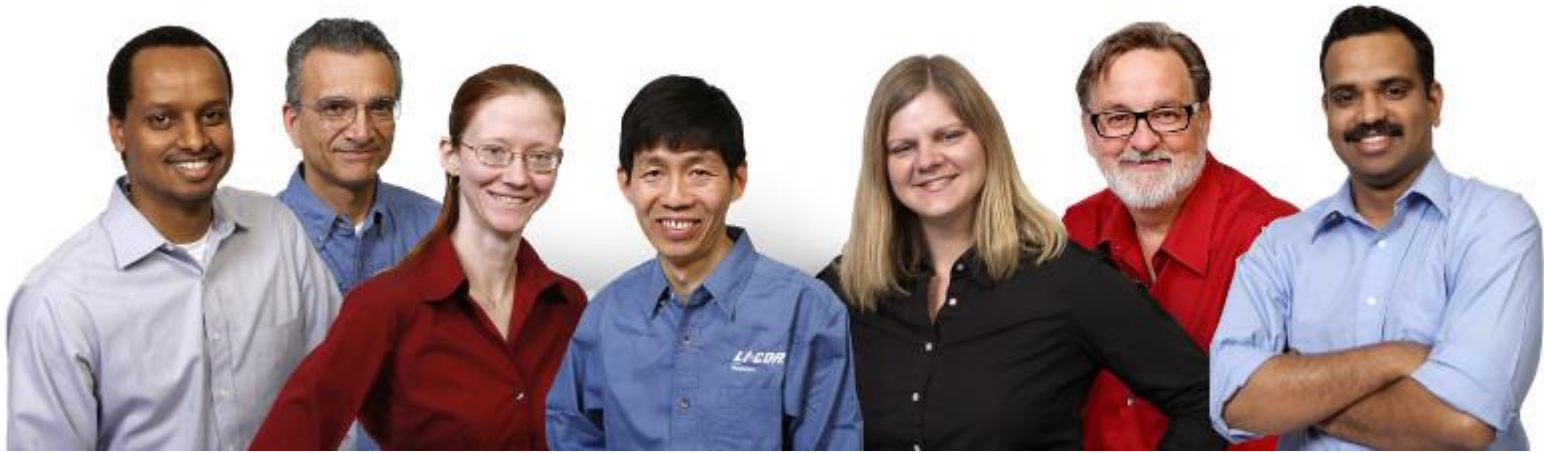


CO₂/H₂O Analyzers



Soil Flux

Our Team





LEEF
LI-COR ENVIRONMENTAL
EDUCATION FUND

Science Undergraduate Research Grant (SURG)

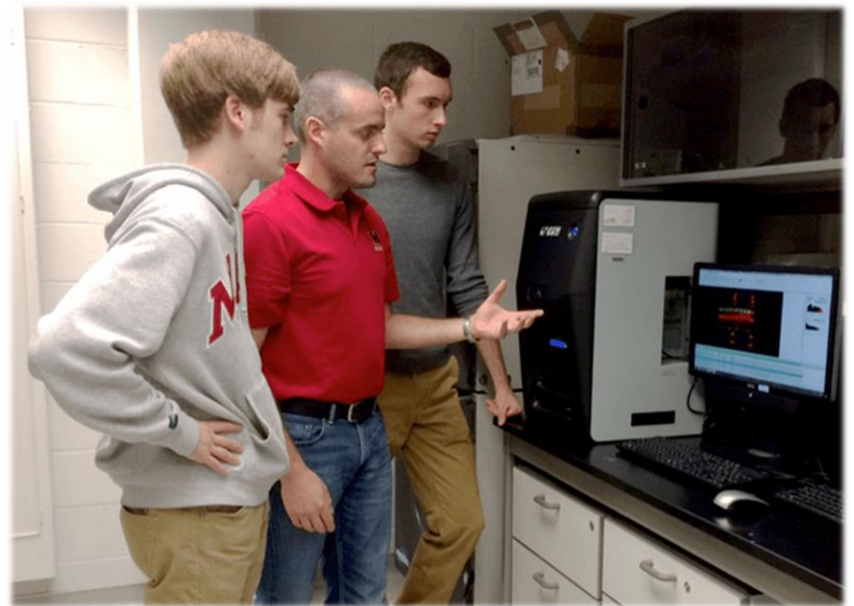
- Purpose: Provide meaningful and relevant undergraduate research and education
- How: Provide matching grants and exclusive discounts to PUIs to help obtain research-grade instrumentation
- Over 120 schools have benefited



LEEF Packages



Bringing Life to Lecture: Importance



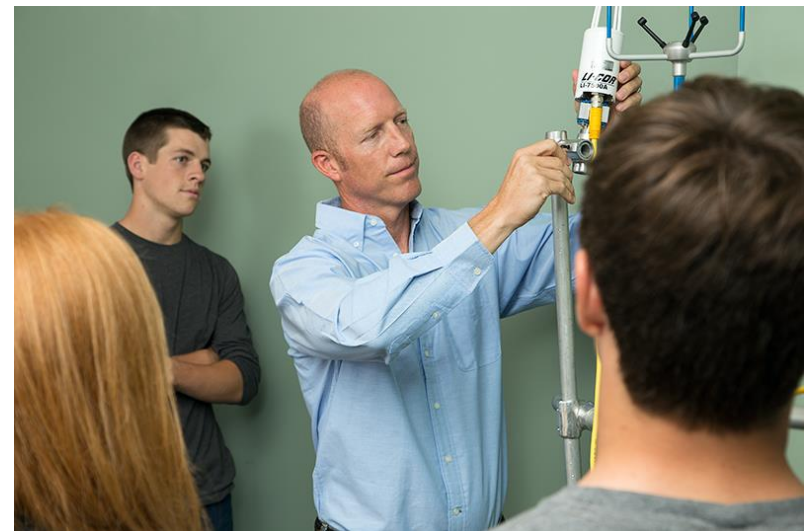
Benefits for Students

- Understand the scientific method
- Engagement
- Skills
 - Critical thinking
 - Problem solving
 - Time management
 - Communication
 - Career and graduate school



Benefits for Faculty

- Integrate research into the classroom
- Enhance student/faculty interaction
- Explain complex concepts



Benefits for University

- Recognition and retention
- Decrease isolation
- Curriculum development



Benefits for Community

- Emerald Ash Borer
- Reclamation
- Native and invasive species
- Medicinal plants
- Chestnut Blight Fungus



Customer Story: Bringing Life to Lecture



Holly Dolliver, University of Wisconsin-River Falls



- “These activities are very high impact and help our students get the skills needed to land great jobs.”
- “We get real data out of the ground. It’s not like a textbook or conventional lecture.”
- “With the LI-8100A, I have been able to develop a high-quality unit on gas flux that not only teaches the concepts, but provides students with applied learning opportunities as well.”

Dr. Jason Kilgore, Washington & Jefferson College



- “My students were very excited that they could watch the net assimilation rate instantaneously change with these variables.”

Pamela Kittelson, Gustavus Adolphus College



- “It is one thing to learn the theories that describe photosynthesis, but to see a leaf using CO₂, then shutting down in response to the environment is very fascinating to them.”
- “Everything they’ve learned about stomata closing and stress becomes something they can actually measure and see on an instrument.”

Bringing Lecture to Life: Lab



Resources & Discussion

Resources

- LEEF & SURG
 - Labs
 - Forum
 - Funding suggestions
 - www.licor.com/leef or www.licor.com/surg
- Prometheus Wiki
 - http://prometheuswiki.publish.csiro.au/tiki-custom_home.php
- LifeDiscoveryEd Digital Library
- Vermont Energy Education Program (VEEP)
- Council on Undergraduate Research (CUR)