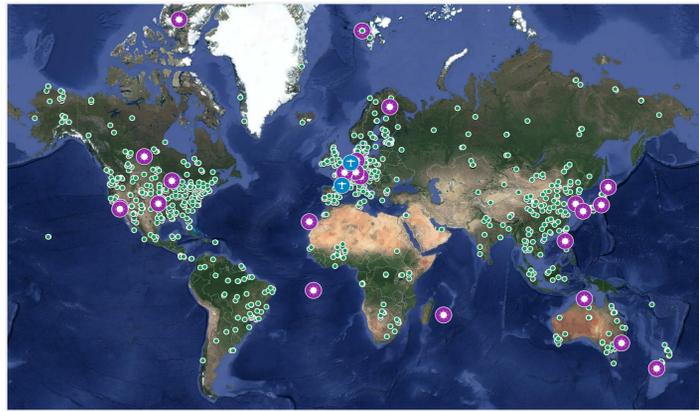


# DIRECT REAL-TIME GHG & ET MEASUREMENTS FOR IMMEDIATE SOCIETAL BENEFITS

## GETTING TO AN AWS-LIKE APPROACH WITH SIMPLE EXPLANATIONS AND CARBONDEW

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### LIMITED USE OF SUPERIOR TOOLS & DATA



Continental-scale research infrastructures and flux networks (e.g., AmeriFlux, AsiaFlux, ChinaFlux, ICOS, NEON, OzFlux), as well as numerous smaller GHG flux networks, and individual sites, measure CO<sub>2</sub>, CH<sub>4</sub>, and other GHG exchange, as well as water vapor fluxes (evapotranspiration, ET) between ecosystem and atmosphere.

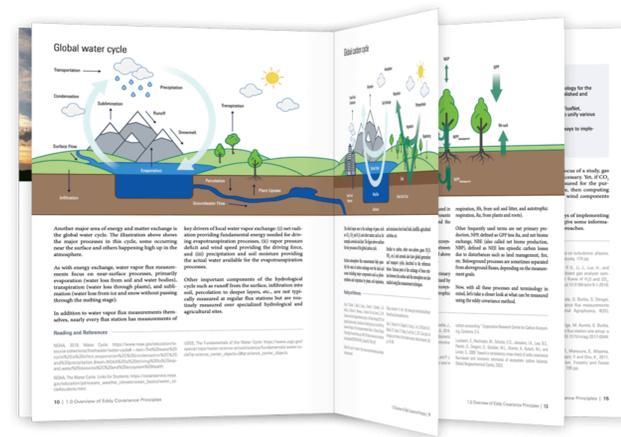
After four decades of academic use, the flux stations covered over 2100 stationary measurement locations, and numerous campaigns' locations. Most measurements were used for process-level ecological and hydrological studies and for long-term climate and ecosystem modeling.

Such measurements use ultra-high-resolution methodology and state-of-the-art hardware vastly superior to typical monitoring-grade methods and equipment deployed outside academia for a wide range of non-academic decision-making applications. However, despite providing exceptional ways to measure GHG emissions and ET, these are very rarely utilized outside academia.

The ultimate goal of this presentation is to ignite and provide a base for a discussion regarding the latest needs, ideas, and examples of the use of the flux measurements for practical 'everyday' decision-making applications benefiting society.

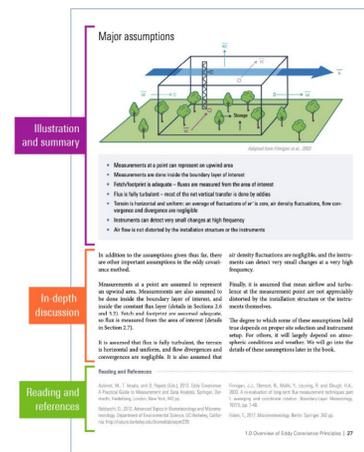
	Total	Active	Unknown	Inactive
Africa	80	32	9	39
Antarctica	1	1	0	0
Asia	353	157	142	54
Australia, New Zealand & Oceania	102	28	42	32
Europe	731	110	452	169
North America	720	187	221	312
South America	168	29	25	114
World	2155	544	891	720

### EMERGING NEED FOR SIMPLE INSTRUCTIONS

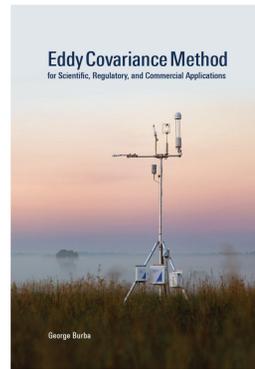


Efforts of the flux networks have led to major progress in the unification of the terminology and general standardization of processing and analysis.

Yet many non-EC researchers and nearly all non-academic stakeholders are not well-acquainted with the method, and as a result, cannot take proper advantage of the high-quality, reliable, traceable, and defensible measurements in their respective areas of interest.



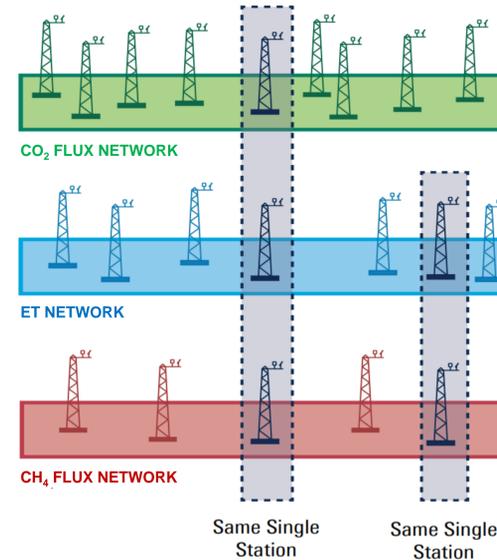
With this in mind, detailed step-by-step instructions were created to introduce a novice to general principles, requirements, applications, processing and analysis steps of the conventional Eddy Covariance technique, and to assist an advanced reader in deeper understanding of the method through complex scientific references.



New 700-page book:

- Simple to understand, with hundreds of clear illustrations, and numerous practical examples
- Free Electronic PDF book at [www.licor.com/env/products/eddy-covariance/ec-book](http://www.licor.com/env/products/eddy-covariance/ec-book)
- Printed textbook at LI-COR booth #44/46

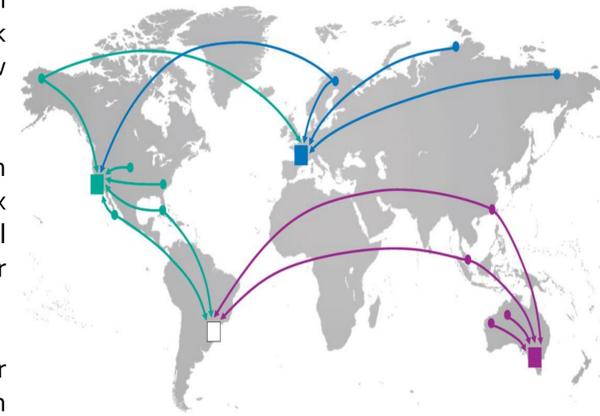
### CONCEPT OF DECENTRALIZED PEER-TO-PEER CROSS-SHARING



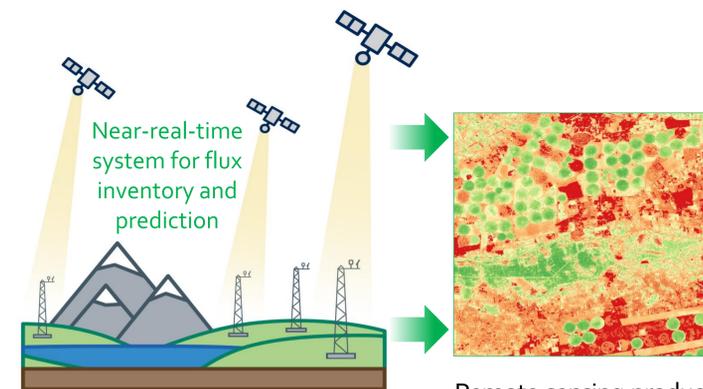
Presently, most of the stations are used by an individual group or network for a specific and narrow purposes.

Yet, same single station can be used by multiple flux networks and individual stakeholder groups for various different purposes.

Stakeholders without their own flux stations can form the virtual thematic networks of actual flux stations.

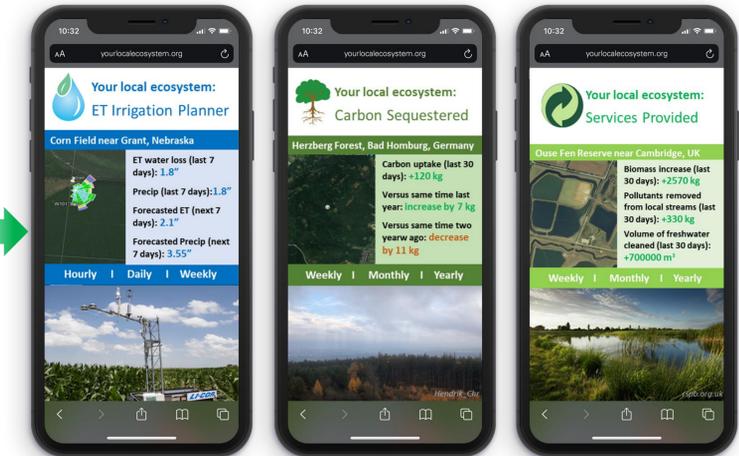


### AWS-LIKE APPROACH APPLIED TO FLUX STATIONS & RESULTED IMMEDIATE SOCIETAL BENEFITS



A future network of automated real-time flux stations (AFS) designed similar to the existing network of automated weather stations (AWS)

Remote sensing products and resulted models fine-tuned by the flux stations continuously and in near-real-time, similar to AWS approach



Public products and services, similar to weather apps: GHG emissions, carbon sequestration, irrigation guides, local ecosystem services tracker, growth forecasts, etc.

### RESOURCES & AUDIENCE

New Community of Practice:

- Communicate with experts across academic and non-academic GHG domains: [www.carbondew.org](http://www.carbondew.org)
- Free private or public membership for individuals and organizations: [www.carbondew.org/join](http://www.carbondew.org/join)
- Collaborate to bring best available science to practical climate solutions



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