

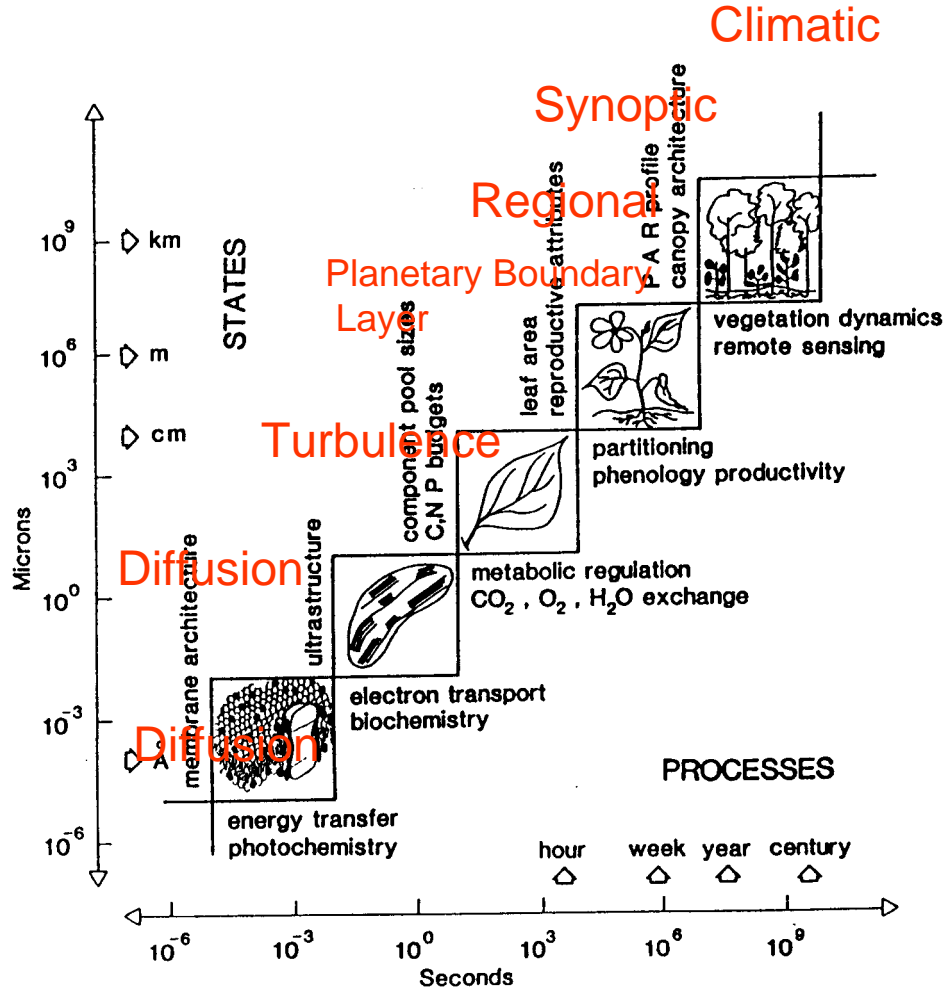


Current and Future Issues in BioMicrometeorological Measurements and Eddy Covariance & Publishing Strategies

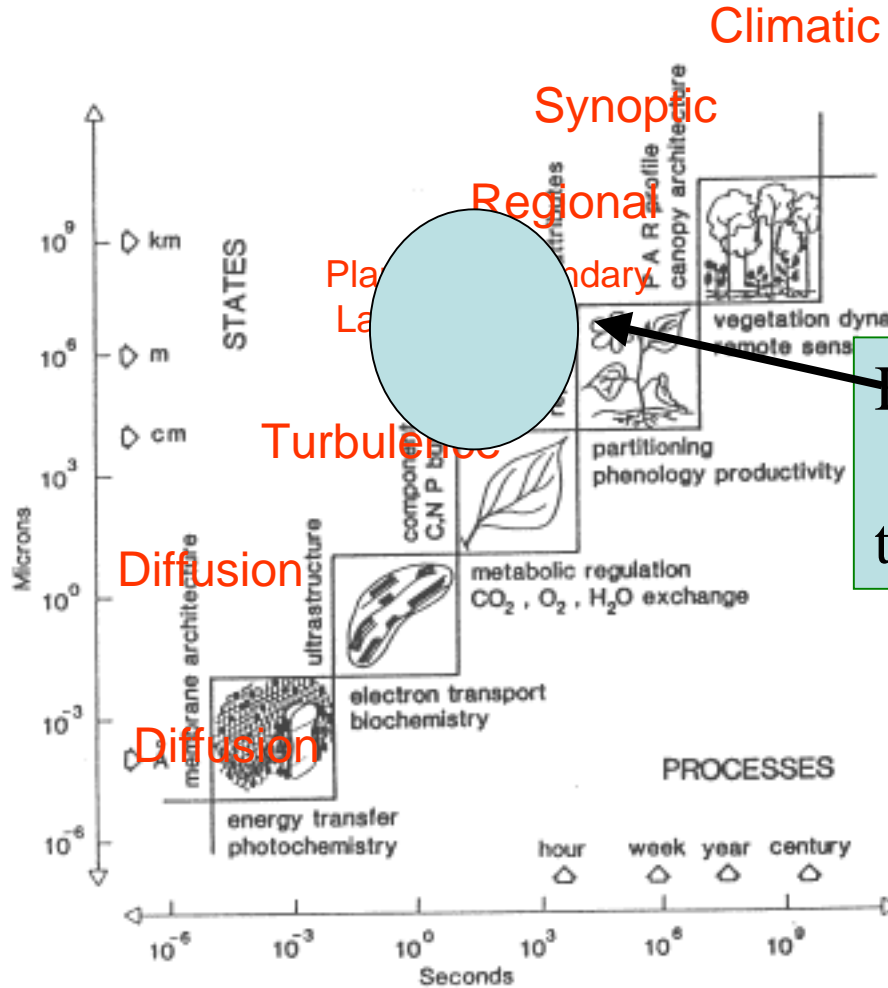
Kyaw Tha Paw U, Professor of Atmospheric Science
(aus1f o1 ay: Of;)

Biomicrometeorology Group, University of California, Davis
Editor-in-Chief, Agricultural and Forest Meteorology

The scale of physiological ecology (Osmond)



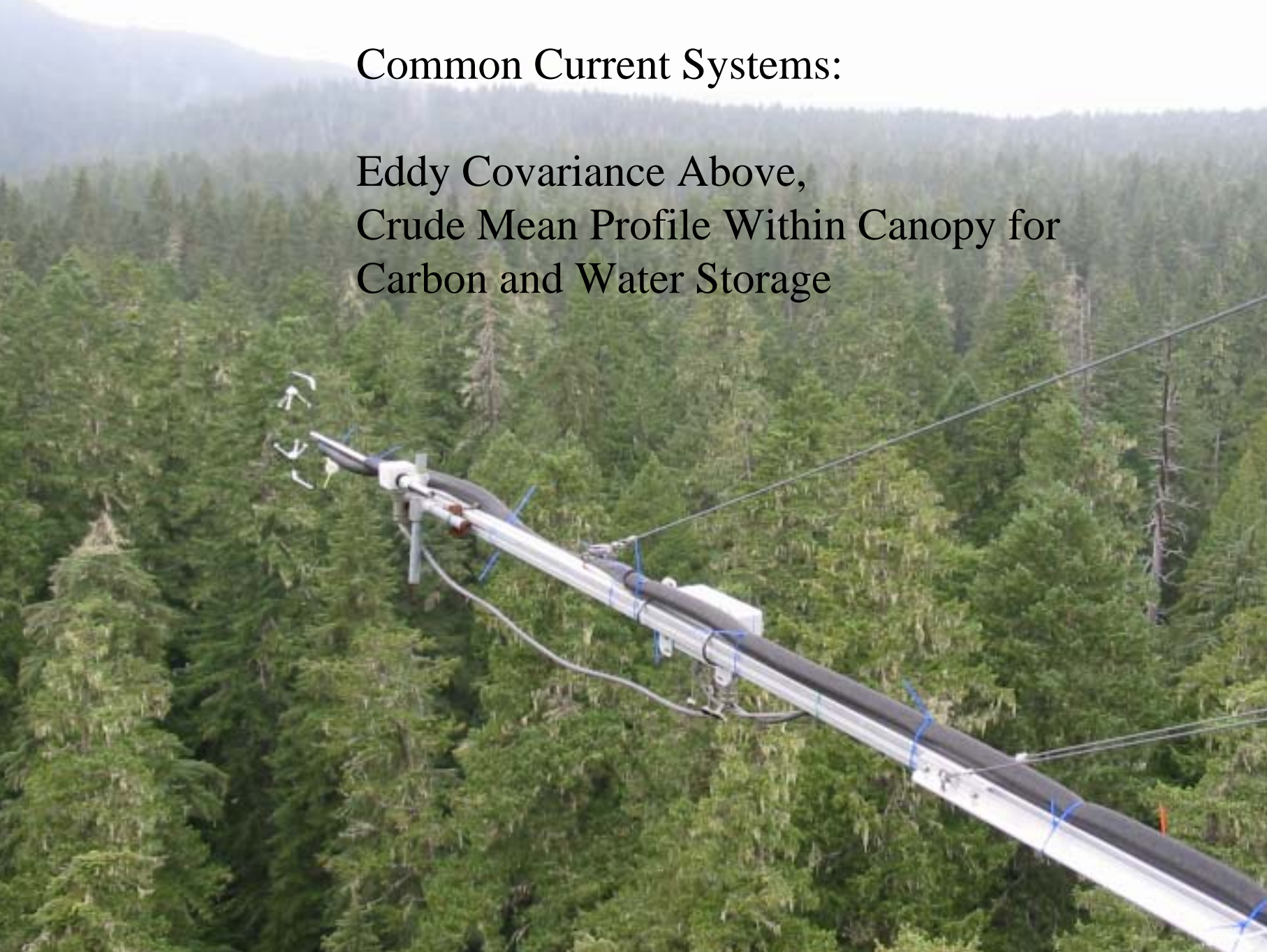
The scale of physiological ecology (Osmond)



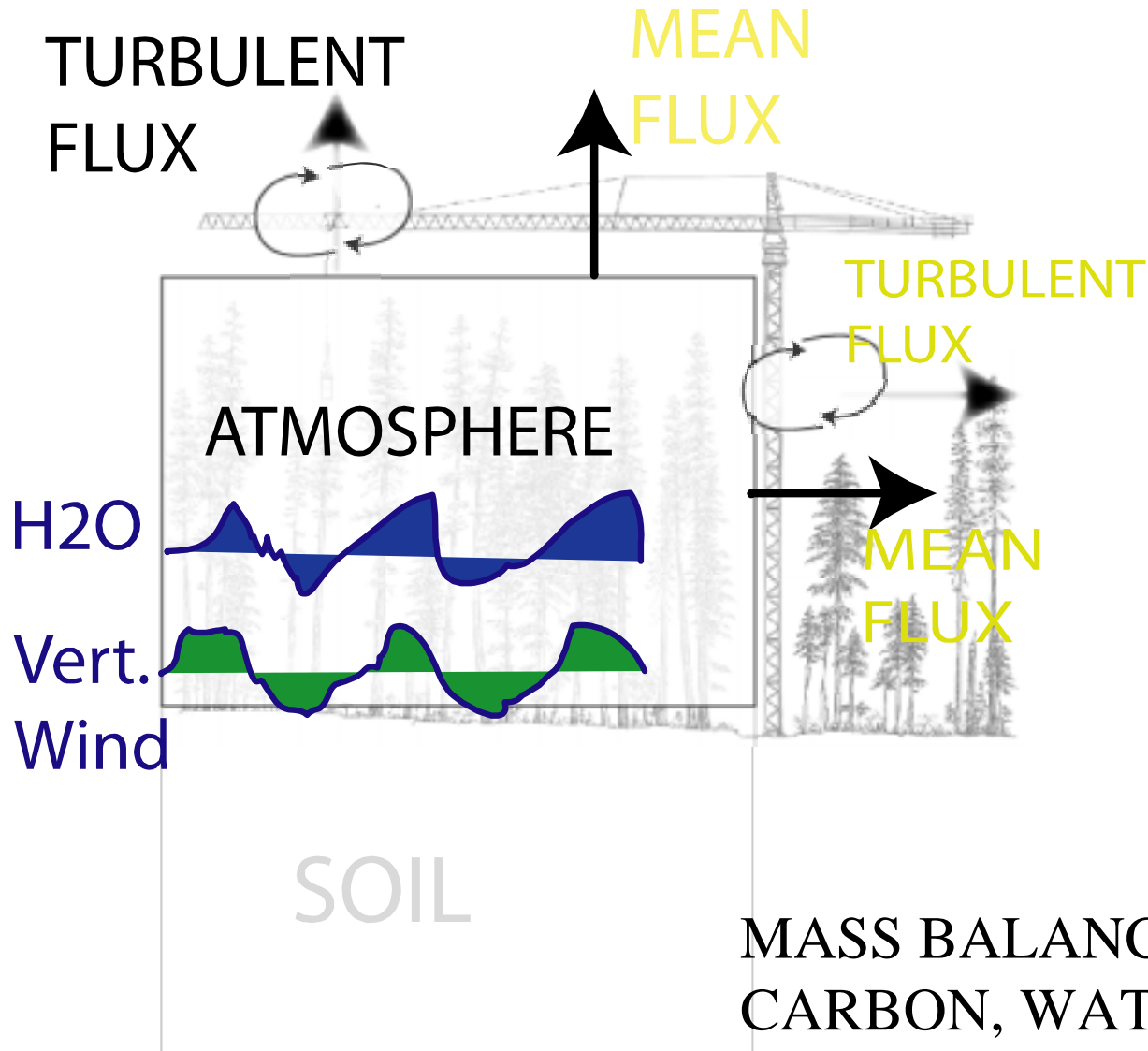
Biomicrometeorology automatically integrates to field-regional scales

Common Current Systems:

Eddy Covariance Above,
Crude Mean Profile Within Canopy for
Carbon and Water Storage



Eddy Covariance



MASS BALANCE TO MEASURE
CARBON, WATER EXCHANGE

Common Current Systems:

Eddy Covariance Above,
Crude Mean Profile Within Canopy for
Carbon and Water Storage

COSTS (US DOLLARS)

2,000-20,000 SONIC ANEMOMETER

10,000-15,000 IRGA FOR CO₂

2,000-17,000 FOR PROFILER

INACCURACY

10-20% UNDER TURBULENT CONDITIONS

20-100% UNDER LOW TURBULENCE

Overstory (70 m) Eddy-Covariance System

Eddy Covariance Above

LOW TURBULENCE: (Normally at Night)
Carbon Emission Never Reaches Canopy
Top

Carbon Advects Below

Estimate by Temperature, Moisture. Etc.
Equation Derived when Turbulence
High (as measured by u^*)

Estimate by Chambers over Soil, Plant Elements

Estimate by Direct Advection Measurements

FUTURE DEVELOPMENTS

Smaller, More Sensitive Sonic Anemometers
More Accurate Understory/Soil Exchange
Less Expensive, Improved Mean Advection
Turbulent Advection Measurements Possible

Less Expensive Fast Response IRGAs or other
Gas Sensors
Improved Mean Advection
Turbulent Advection Measurements Possible

Networking of Sensors Possible to Make Both
Eddy-Covariance and Advection Measurements
Possible

FUTURE DEVELOPMENTS

Process-Based Models Become more
Sophisticated

Improvements in Parameter Measurements
Improve Process-Based Results

Models Used for Data Filling

Empirical Models Become more Sophisticated
and are used for Data Filling

PUBLISHING GUIDELINES

PUBLISH NEW/NOVEL MATERIAL--NEW
CONCEPTUAL FRAMEWORKS
THEORY
EXPERIMENTAL TECHNIQUES
NEW SITES WITH NEW RESULTS
(DIFFERENT CONTINENT,
CLIMATE, SOIL, ECOSYSTEM TYPE)
NEW RESULTS (DIFFERENT ECOSYSTEM
RESPONSE)

LEVEL OF NOVELTY IMPORTANT

PUBLISHING GUIDELINES

The background of the slide is a composite image. On the left side, there is a tall, dark green pine tree against a light sky. On the right side, there is a person skydiving, seen from a high angle, with their arms and legs spread out. The skydiver is wearing a white helmet and a dark jumpsuit. The sky is a pale blue, and the forest below is a dense green.

OUTLINE-ORGANIZATION OF PAPER

ABSTRACT

INTRODUCTION & LITERATURE REVIEW

MATERIALS AND METHODS

RESULTS & DISCUSSION

CONCLUSIONS

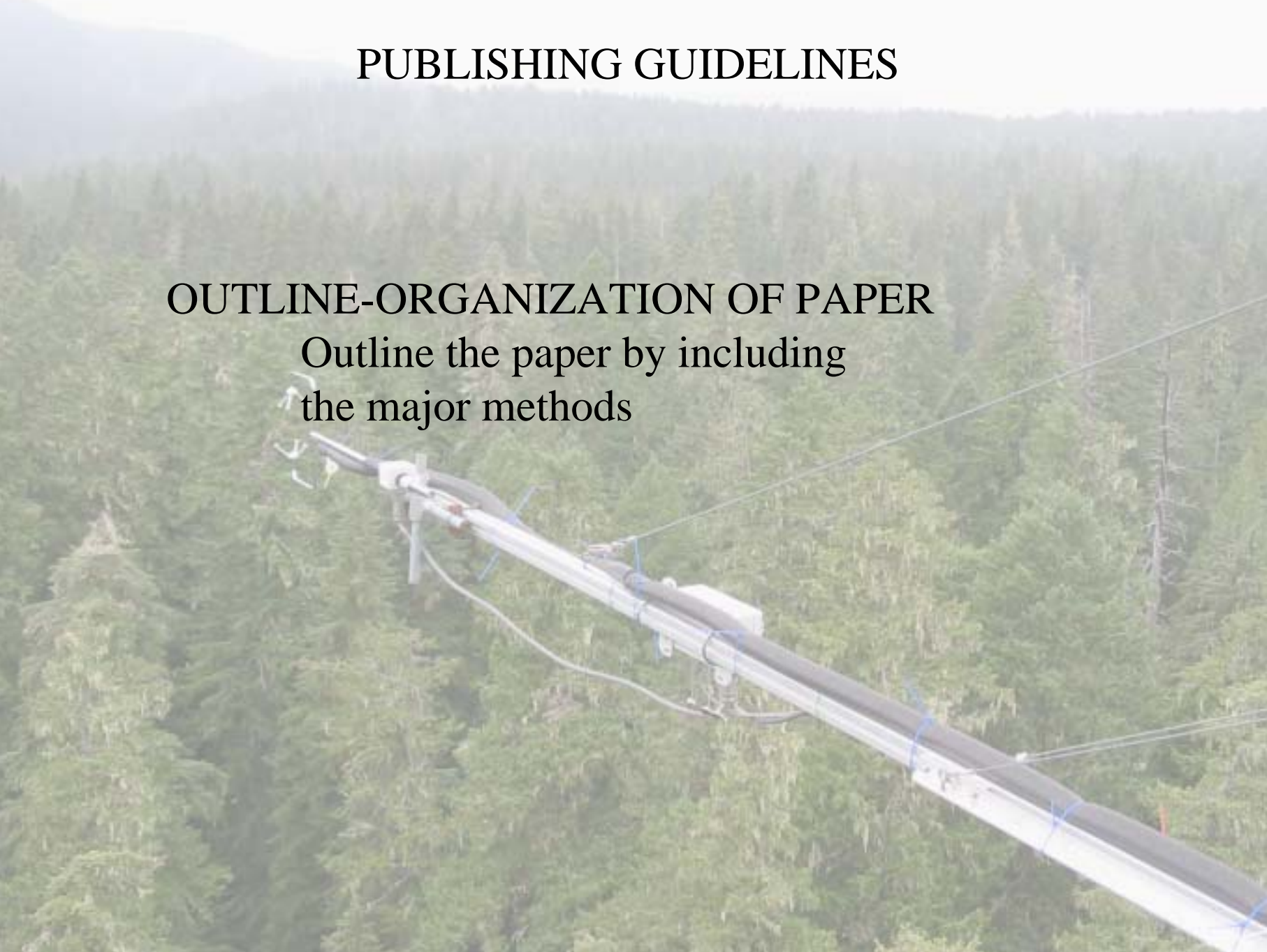
ACKNOWLEDGEMENTS

REFERENCES/BIBLIOGRAPHY

PUBLISHING GUIDELINES

OUTLINE-ORGANIZATION OF PAPER

Outline the paper by including
the major methods



PUBLISHING GUIDELINES

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ABSTRACT-- Briefly Explain main points of the manuscript, and how they are important to the topic/subject

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ABSTRACT

INTRODUCTION & LITERATURE REVIEW

In a few pages, summarize what has been done field that is relevant to your manuscript--please don't make this section too long--and highlight what is **NEW** about your study

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ABSTRACT

INTRODUCTION & LITERATURE REVIEW

MATERIALS AND METHODS

Describe the experiment well enough for someone else to replicate the experiment; describe the field site sufficiently well (location, canopy height, fetch, altitude above sea level, species, leaf area index, history of ecosystem, etc.)

2-5 Pages

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INTRODUCTION & LITERATURE REVIEW

MATERIALS AND METHODS

Describe the experiment well enough

For someone else to replicate the
experiment; Describe

Sensor TYPES

LOCATION of sensors,

DATA used (Dates, Times),

CALIBRATION procedures for sensors
(Dates, Frequencies)

Data QUALITY CONTROL/ASSURANCE

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RESULTS & DISCUSSION

DESCRIBE THE RESULTS, AND IF
THE RESULTS MATCH PREVIOUS
STUDIES 5-15 PAGES

PUBLISHING GUIDELINES

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ABSTRACT

INTRODUCTION & LITERATURE REVIEW

MATERIALS AND METHODS

RESULTS & DISCUSSION

CONCLUSIONS (One Paragraph or Two)

POINT OUT THE MOST RELEVANT
FINDINGS BASED ON THE REST
OF THE PAPER, CONCLUDING
REMARKS ESTABLISHING
IMPORTANCE OF PAPER,
NOVELTY OF RESULTS

PUBLISHING GUIDELINES

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ACKNOWLEDGEMENTS

LIST PEOPLE WHO HELPED WHO

DIDN'T DO ENOUGH TO BE

CO-AUTHORS

LIST GRANTS WHICH CONTRIBUTED

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LIST APPROPRIATE REFERENCES
FOR A CITATION:

EARLIEST PUBLICATION ON
CONCEPT

IMPORTANT MODIFICATION
OF CONCEPT

LATEST MODIFICATION OF
CONCEPT

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FOR A CITATION:

**DON'T CITE REFERENCES FOR
VERY COMMON TECHNIQUES
SUCH AS EDDY-COVARIANCE.
SOIL CHAMBERS, ETC.
OR IF YOU DO, CITE EARLIEST
REFERENCES
EXAMPLE: (SWINBANK 1951)**

PUBLISHING GUIDELINES

IF YOU ARE NOT A NATIVE ENGLISH/AMERICAN WRITER:

GIVE TO A FLUENT ENGLISH/AMERICAN SPEAKER-WRITER TO GO OVER PAPER, PAGE, PARAGRAPH AND SENTENCE STRUCTURE

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