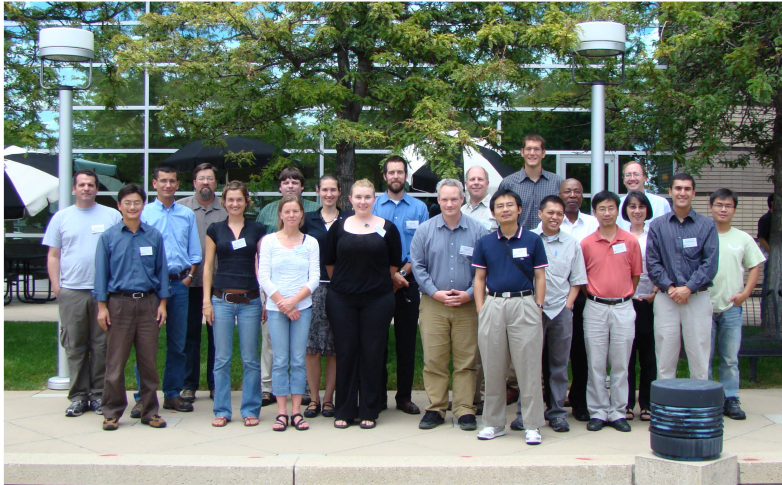


Biomass Burning

Biomass Burning - Observations, Modeling, and Data Assimilation

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Early Career Scientist Assembly Junior Faculty Forum on Future Scientific Directions, Boulder CO, July 13-15, 2010
Topic 1: Climate and Water: Advancing adaptation science and strategies for water-resource vulnerability from climate variability and change
Topic 2: Biomass Burning - Observations, Modeling, and Data Assimilations

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Biomass burning is a climatically significant source of greenhouse gases to the atmosphere and albedo change over land, as well as an important source of trace gas and aerosol pollution at local to continental scales. As a land surface process, biomass burning is highly concentrated in space and time, and highly variable on interannual, seasonal, and intraseasonal time scales, as well as fine spatial scales. In addition, biomass burning is strongly dependent on weather at a range of scales. These factors, scale dependence and temporal/spatial variability, pose a unique challenge to researchers attempting to represent biomass burning processes in Earth system models.

Improved observations of biomass burning from satellite have led to the development of spatially and temporally explicit estimations of biomass burning, but high levels of uncertainty remain. Estimation of burning effects at progressively finer scales requires progressively higher-resolution inputs. The key sources of uncertainty, and the critical information required to reduce uncertainty, vary depending on the scale of the atmospheric application.

Atmospheric observations contain a wealth of information about terrestrial sources of trace gases and aerosols. The development of a wide range of data assimilation and inverse modeling techniques in both the forecasting and climate modeling communities presents a great opportunity to use atmospheric observations to quantitatively evaluate models of surface processes such as biomass burning.

The purpose of the forum is to highlight and discuss research related to biomass burning across a range of diverse fields, and to identify information needs and scientific priorities common to multiple scientific applications. Topics will include:

- Observations of biomass burning processes and models of direct burning emissions;
- Atmospheric modeling of biomass burning emissions at "weather" scales;
- Modeling of biomass burning impacts on global and regional climate and associated climate-land surface feedbacks;
- Use of atmospheric observations in data assimilation or inverse modeling schemes to constrain and feed back to models of burning emissions.

Meeting Schedule (links to papers will be attached on individual speakers' pages).

News: Meeting summary now published in BAMS

Hyers, E.J., et al. (2012), Biomass Burning - Observations, Modeling, and Data Assimilation, Bull. Am. Meteorol. Soc., 93(1), ES10-ES14, doi: 10.1175/BAMS-D-11-00064.1

<http://journals.ametsoc.org/doi/pdf/10.1175/BAMS-D-11-00064.1>