

Title

2017 Fifth Interdisciplinary Biomass Burning Initiative (IBBI) Workshop

Date

10-11 July 2017

Location

Boulder, CO, USA

IGAC Sponsored or Endorsed

IGAC Sponsored

Authors

[Melita Keywood](#), CSIRO Climate Science Centre, Australia

[Johannes W. Kaiser](#), Max Planck Institute for Chemistry, Germany

[Megan L. Melamed](#), IGAC Project Office, Boulder Colorado, USA

Host Institutions (logos only)**Funding (logos only)**

futurearth

Participants (List of countries)

Australia, Brazil, China, Colombia, France, Germany, India, Indonesia, Japan, Netherlands, Singapore, Switzerland, Thailand, United Kingdom, United States

Background

IGAC provided financial sponsorship for this workshop to support the jointly sponsored IGAC/iLEAPS/WMO Interdisciplinary Biomass Burning Initiative which aims to foster international and interdisciplinary collaboration of research activities dealing with vegetation

fires leading to improved atmospheric composition and air quality monitoring and forecasting through better scientific understanding of the various processes around biomass burning.

Workshop Summary (~500 words)

Fifty-three participants from 15 countries gathered in July 2018 in Boulder, Colorado, for the Fifth IBBI Workshop. Biomass burning occurs on every continent except Antarctica. As well as changing the land surface, it releases large amounts of trace gases and aerosols to the atmosphere that play important roles in atmospheric chemistry and climate. However, there is large uncertainty on how climate change and global change will impact the frequency, intensity, duration, and location of biomass burning in the short- and long-term, making their emissions a large source of uncertainty in future atmospheric composition.

In the U.S., there are currently several research campaigns underway to study the impact of fires on the atmosphere. They include integrated laboratory, field, and modeling activities, with the following major field activities taking place in 2018 and 2019 funded by the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA), the National Scientific Foundation (NSF), and the Joint Fire Science Program Project, respectively.

- Fire Influence on Regional and Global Environments Experiment ([FIREX](#))
- [FIREChem](#)
- Western wildfire Experiment for Cloud chemistry, Aerosol absorption and Nitrogen ([WE-CAN](#))
- Fire and Smoke Model Evaluation Experiment ([FASMEE](#))

In addition, the U.S. Department of Energy (DOE) Biomass Burning Observation Project ([BBOP](#)) took place in 2013 and the National Center for Atmospheric Research (NCAR) Atmospheric Chemistry Center for Observation Research and Data ([ACCORD](#)) is coordinating an effort to synthesize the various data related to open fires. At the same time, operational global fire observation capabilities are currently being greatly improved with the series of [Sentinel satellite](#) launches by the European Space Agency (ESA) and the geostationary [GOES-R](#) and [Himawari-8](#) satellites launched by the U.S. and Japan, respectively. Furthermore, ESA is developing a stable long-term time series of fire observations in its [Climate Change Initiative](#). All these activities will contribute significantly to the understanding of the role of biomass burning in the climate system and to operational air quality forecasting applications.

The aim of the workshop was to capitalize on the U.S. research campaigns in the global and operational contexts. The workshop brought together the international biomass burning research community to discuss how to leverage the efforts in the U.S. and Europe to improve

scientific research and understanding of open biomass burning around the world and maximize the benefits from the new satellite instrumentation.

The workshop took place over two days and included plenary talks, breakout groups, and plenary discussions. The workshop opened with welcomes and introductory presentations from the host institution and sponsors of the workshop, including David Fahey from NOAA who discussed a newspaper article from the same day describing current fires raging in California and British Columbia. Alexander Baklanov from the World Meteorological Organization (WMO) Global Atmosphere Watch (GAW) announced the publication of [Vegetation Fire and Smoke Pollution Warning and Advisory System \(VFSP-WAS\): Concept Note and Expert Recommendations](#), which was the outcome from the 2016 Fourth IBBI Workshop reported in [IGACnews Issue 58](#).

Other plenary sessions included descriptions of the 2018/19 U.S. field campaigns, the challenges of forecasting and modelling biomass burning, where forecasting systems from Europe, Australia, the US and Singapore were described, and fire products available from satellites. On the second day, after a plenary session in which the ACCORD project and selected non-US based activities were described, a World Café-style break out session was carried out. In this session participants circulated between tables, and discussed: (1) How the outcomes of the U.S. Field Campaigns can be transferred beyond the U.S. and into the Future; (2) How the U.S. Field Campaign can serve to verify and enhance satellite products; (3) How the U.S. Field Campaigns, satellite products, and non-U.S. activities can address the challenges of forecasting and modelling biomass burning; and (4) How the U.S. Field Campaigns can help to meet the goals and needs of biomass burning research outside the U.S.. Two themes emerged repeatedly amongst a wealth of ideas:

1. The U.S. Field Campaigns should link the smoke plume properties to fire characteristics like flaming versus smoldering fire type, temperature and radiative fire power (FRP), in order to make their results applicable to large-scale satellite observation analysis for smoke forecasting. This is also highly relevant in view of the strong fire temperature-dependence of the smoke composition that has been observed during the BBOP campaign. It may, however require an additional aircraft dedicated to the observation of the evolution of the fire(s) that emit(s) an observed smoke plume.
2. Developing programs for visiting scientist from outside the U.S. to observe aircraft experiment activities directly from the campaign bases was expected to be most effective in making results and know-how from the U.S. campaigns accessible to scientific groups worldwide. In particular, this would likely have a long-lasting effect by initiating research collaborations for years to come.

Other suggestions included ensuring the products and information are discoverable and usable to the international community, expanding the scope of U.S. campaigns, e.g. adding fuel types from outside the US such as peat and Eucalypt to laboratory burning experiments, and building capacity by developing “best practice” guidelines based on the U.S. Field Campaigns.

IBBI is currently developing follow-up activities to implement the themes that emerged from this workshop.



2017 IBBI Workshop Participants



University of Colorado Boulder