Interdisciplinary Biomass Burning Initiative

JOHANNES KAISER AND MELITA KEYWOOD

(IBBI CO-CHAIRS)

5th IBBI Workshop, July 2017, Boulder, CO, USA
What is IBBI?

- IBBI is the “Interdisciplinary Biomass Burning Initiative”.

- IBBI was founded in 2012, by
  - iLEAPS (Integrated Land Ecosystem-Atmosphere Processes Study),
  - IGAC (International Global Atmospheric Chemistry),
  - WMO (World Meteorological Organization).

- IBBI has been set up through a couple of workshops:
  - European Science Foundation (ESF) Exploratory Workshop (Farnham Castle, 2009)
  - Joint IGAC-iLEAPS-WMO workshop (WMO, 2012)
What does IBBI do?

- **Primary goal:** improve **atmospheric composition and air quality** monitoring and forecasting through better **scientific understanding of processes** around biomass burning.

  *science-driven, application-oriented*

- **Approach:** instigate new interdisciplinary research
  - [http://www.dl.mpic.de/ibbi](http://www.dl.mpic.de/ibbi)
  - [mailto:ibbi@lists.mpic.de](mailto:ibbi@lists.mpic.de)
  - workshops & conference sessions  
    - Geneva Workshop July 2012 (IBBI 1)
    - Schloss Ringberg 2014 (IBBI 3); iLEAPS Science Conference 2014
    - Jakarta Workshop 2016 (IBBI 4)

- **publications:**
  - Special Issue of *Atmospheric Environment*
  - WMO Report
ICAP Multi-Model Ensemble Smoke Forecast for Now

NRL Monterey ICAP Multi-Model Ensemble

This page is an official U.S. Navy site and is intended as an internal research and development testbed. Products should not be treated as operational forecasting tools!

NOT OFFICIAL FNMOC NAAPS Privacy Policy Disclaimer
Marine Meteorology Division (Code 7500)
U. S. Navy  Navy Recruiting  Navy FOIA  ONR

previous / next Main Listing / ICAP Multi-Model CONUS Smoke Aerosol Optical Depth Archive

Saturday 8 July 2017 06UTC NAAPS forecast t+48h0
Sunday 9 July 2017 06UTC Valid Time
SMOKE Aerosol Optical Depth at 550nm

BSC Imagery Unavailable

Plots generated Sunday 9 July 2017 12:00 UTC NAAPS/Monterey Aerosol Modeling
NOT OFFICIAL NAVY PUBLISHING OFFICE

Global...
Results of workshop at Schloss Ringberg

Preface for Atmos. Env. Special issue on IBBI

Fig. 1. Biomass burning data processing pathways and two major blocks (grey boxes) identified during the 3rd IBBI workshop.
Specific Result 1: Use different information sources to estimate global fire emissions for CMIP6

Historic global biomass burning emissions based on merging satellite observations with proxies and fire models (1750-2015)

Margreet J.E. van Marle¹, Silvia Klotter², Brian I. Magi³ Jennifer R. Marlon⁴, Anne-Laure Daniau⁵, Robert D. Field⁶, Almut Arneth⁷, Matthew Forrest⁸, Stijn Hantson⁹, Natalie M. Kehrwald⁹, Wolfgang Knorr¹⁰, Gitta Lasslop⁷, Fang Li¹¹, Stéphane Mangeon¹², Chao Yue¹³, Johannes W. Kaiser¹⁴, Guido R. van der Werf¹
Specific Results 2: Bridging scales

Ad-hoc IBBI working group:

integrated case study of individual fire/plume event
(Filippi, Field, Kaiser)

Multiscale processes

Global impacts

Fire-atmosphere interactions

Fire behavior

Flame scale

2017 Conference on Fire Prediction Across Scales

The 2017 Conference on Fire Prediction Across Scales will take place **October 23rd - 25th 2017** on Columbia University's Morningside Campus.
Workshop Indonesia in 2016

Forecasting Emissions from Vegetation Fires and their Impacts on Human Health and Security in South East Asia

International workshop organized by the World Meteorological Organisation (WMO) and the International Biomass Burning Initiative (IBBI)
Supported by the WMO, UNISDR/IWPM, GIZ, IGAC, UNU, the Global Wildland Fire Network and Indonesian Agency for Meteorological, Climatology and Geophysics (BMKG), Jakarta, Indonesia
29 August – 1 September 2016

Result:
WMO Report detailing expert recommendation for the establishment of a Regional Vegetation Fire and Smoke Pollution Warning and Advisory Center in SE Asia

Figure 2. Overview of a potential Vegetation Fire and Smoke Pollution Warning and Advisory System
Workshop rational

- Current field campaigns study biomass burning in the US in great detail.
- Other parts of the world are studied less intensively, while facing similar questions.
- Operational global forecasting system still have large uncertainties.

Q1: What are the most pressing questions that people want the US campaigns to investigate?

Q2: Which information will the US campaigns provide that might benefit operational systems and global research?
# Workshop Agenda

**Monday 10 July 2017**
University of Colorado Center for Community
Flatirons Room

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-10:30</td>
<td>Welcome and Introductions</td>
</tr>
<tr>
<td>9:00-10:30</td>
<td>Welcome from local organizations (NOAA, NCAR, CIRES, Future Earth)</td>
</tr>
<tr>
<td>10:10</td>
<td>IGAC Overview</td>
</tr>
<tr>
<td>10:20</td>
<td>IBBI Overview and Workshop Goals</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Coffee/Tea Break</td>
</tr>
<tr>
<td>11:00-12:30</td>
<td>Introduction to the 2018/2019 US Field Campaigns</td>
</tr>
<tr>
<td>12:30-13:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30-15:30</td>
<td>Challenges for Forecasting and Modeling Biomass Burning</td>
</tr>
<tr>
<td>15:30-16:00</td>
<td>Coffee/Tea Break</td>
</tr>
<tr>
<td>16:00-17:30</td>
<td>Fire Products from Satellites</td>
</tr>
</tbody>
</table>

**Tuesday 11 July 2017**
University of Colorado Center for Community
Flatirons Room

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00-10:30</td>
<td>ACCORD Biomass Burning Synthesis Effort and selected non-US activities</td>
</tr>
<tr>
<td>10:30-11:00</td>
<td>Coffee/Tea Break</td>
</tr>
<tr>
<td>11:00-12:30</td>
<td>Breakout Session “How can the U.S. led field campaigns, the synthesis effort, and NASA/NOAA/ESA fire products contribute to enhancing non-US activities and improve forecasting and modelling of biomass burning?”</td>
</tr>
<tr>
<td>12:30-13:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13:30-15:00</td>
<td>Reports from Breakout Groups/Plenary Discussion</td>
</tr>
<tr>
<td>15:00-15:30</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>15:30-17:30</td>
<td>Closing Session: Identification/leadership of actions</td>
</tr>
</tbody>
</table>

**Speakers**

**Monday 10 July 2017**
- Megan Melamed
- David Fahey, David Edwards, Waleed
- Abdalati, Josh Tewksbury
- Megan Melamed
- Alexander Baklanov
- Johannes Kaiser/Melita Keywood

**Tuesday 11 July 2017**
- Christine Wiedinmyer/Louisa Emmons
- Alexander Baklanov
- Daniela Franca
- Jean-Baptiste Filippi
- Emily Fischer
- Carsten Warneke
- Jim Crawford
- Roger Otmar
- Art Sedlacek
- Mark Parrington
- Martin Repo
- Christopher Gan
- Edward Hyer
- Kirk Baker
- Johannes Kaiser
- Amber Soja
- Brad Pierce
ICAP and WMO-SDS multi-model ensembles

International Cooperative for Aerosol Prediction
Link will go public soon

WMO Sand and Dust Storm Warming Advisory and Assessment System
Northern Africa-Middle East-Europe Regional Centre
Public link: http://sds-was.aemet.es/forecast-products/dust-forecasts/compared-dust-forecasts

MACC contributes through:
1. global run from ECMWF at 80 Km
2. Global run from Met Office at 25 Km
3. Boundary condition for regional model
   DREAM8_MACC (Serbian Met Service)
The AULLENE 2009 fire
3500 ha – 900 proc – 24 millions of grid points