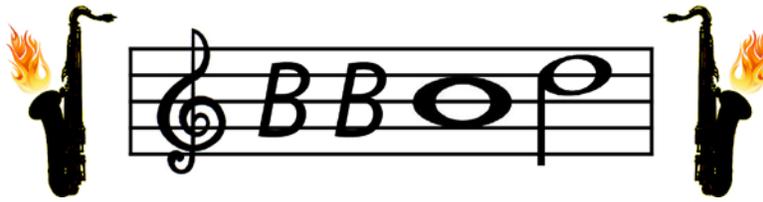


BBOP Newsletter – Issue 1 – June 28, 2013



This is the first issue of the BBOP Newsletter, which is designed for friends, family, coworkers, and others (both scientists and non-scientists) interested in BBOP (pronounced “bebop”), the Biomass Burn Observation Project. BBOP is a field program that is being carried out with the Aerial Facility of the ARM Climate Research Facility of the US Department of Energy this summer to measure the evolution of properties of aerosols produced by biomass burns. Biomass refers to any vegetation—trees, grass, etc., and thus biomass burns refer to forest fires, grass fires, etc., whether they be natural, such as forest fires started by lightning strikes, or anthropogenic (i.e., man-made), such as crops being burned by farmers. This first newsletter will give an introduction to BBOP, and subsequent newsletters, to be distributed every few weeks, will provide information on the status of the program.



Instruments that measure a variety of properties of gases and aerosol particles (particulate matter) resulting from biomass burns have been installed in a research aircraft (referred to as the “G-1”) in Pasco, WA. In July, August, and the first half of September, the plane will be stationed in Pasco and will attempt to sample the outflow from forest fires in the Pacific Northwest. After this, the plane will be flown to Memphis, TN, where it will be stationed in October to sample the outflow of fires in rice fields and grass fields that are intentionally set to remove stubble from the fields. One of the goals of the study is investigate how the properties of the gases and aerosols resulting from a fire depend on the fuel source, and by sampling forest fires and grass fires, at least two fuel sources will be examined.



Gulfstream-159 (G-1)

The G-1 aircraft is a Gulfstream-159 twin turboprop that is 64 feet long and has a wingspan of almost 80 feet. It has two pilots and can carry up to 4 scientists, and can fly for up to 4-1/2 hours with a typical payload, giving it a range of 1000 miles. It can operate as high as 25,000 feet (nearly 5 miles), although BBOP research flights will be restricted to altitudes below ~12,000 feet.



Larry Kleinman (L) and Art Sedlacek (R).
Larry's glass is half empty, Art's glass is half full.

The project is led by Larry Kleinman and Art Sedlacek, both scientists at Brookhaven National Laboratory (BNL) on Long Island in New York State. Their personalities are quite different, and they complement each other well (see photograph above). There are also about 20 co-investigators (co-Is), from BNL and other national laboratories and from universities all over the US. Larry and Art, along with other scientists, will be in the field for the better portion of the summer, and each morning they will look at satellite images and other sources of information to decide whether or not (and if so, where) to fly that day. Ideally, the plane will fly as close to the fire as is safe and practical, and then follow the plume (outflow) downwind as it cools and evolves, sampling gases and aerosols along the way. Fires are roughly divided into two burning regimes: active burning and smoldering, with different amounts and types of gases and aerosol particles being emitted for each. Another of the goals of BBOP is to investigate how the properties of these gases and aerosol particles depend on the type of burning regime.



High altitude plume from flaming source and low altitude plume from smoldering chaparral fire in California (from Akagi et al., 2012).

All field programs are described by some acronym, and BBOP was chosen for this one. Art and others were trying to come up with a short but catchy name, and nothing was clicking. John Shilling, one of the co-Is from Pacific Northwest National Laboratory, suggested BBOP, pronounced like the music style. As Art is a big jazz fan, this was instantly recognized as a sure winner. A logo (shown at the top of this newsletter) was designed (by co-I Ernie Lewis) to capture the essence of the field program. As the acronym is musical, so is the logo; notice that the two “B”s are centered on the B-line on the music scale, as are the two saxophones, and the flames coming out suggest hot music and the fires to be investigated this summer.

Please feel free to forward this to anyone you think might be interested. If you know of anyone who would like to receive future BBOP newsletters, please respond to this email and let us know (conversely, if you would not like to receive additional newsletters, let us know that also). More information on BBOP can be found on the ARM website: <http://www.arm.gov/campaigns/aaf2013bbop> or on the BNL website: <http://www.bnl.gov/envsci/ARM/bbop/>.

The BBOP Team
June 28, 2013