

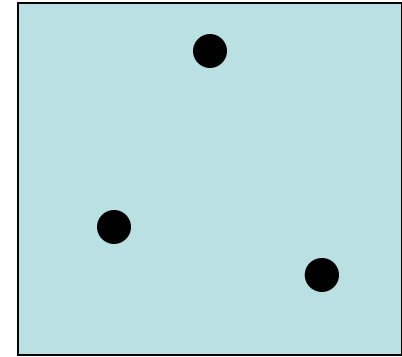
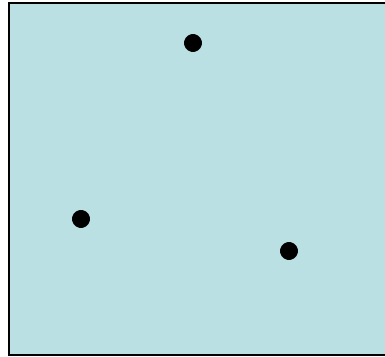
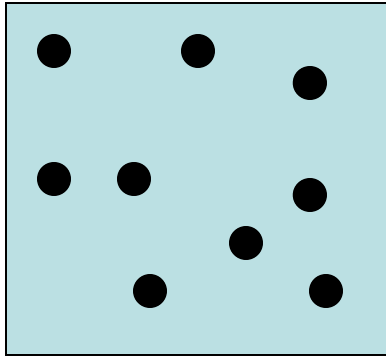
# Organic Aerosol from Biomass Burning: Volatility and Oxidation

## Proposal for ARCTAS investigation

**Question:** *How much aerosol due fires produce?*

**Answer depends on the chemical dynamics of the plume. ARCTAS can provide new constraints on these dynamics by taking advantage of the short nights and multiple aircraft (including the long range DC8.**

# Organic Aerosol Evolution



## **Near Field:**

“Primary” aerosol is primarily organic. Concentrations are high.

## **Diluted plume:**

“Primary” aerosol evaporates due to dilution of semivolatile compounds. Increase in BC/OA

**Far Field:** Oxidation of semivolatiles released to gas phase during dilution produces lower vapor products that re-condense.

# Proposed Flight Plan

- Observe fire plume in near field just before and after sunset. Measure aerosol physical and chemical properties along with conservative tracers (e.g. HCN, CH<sub>3</sub>CN, CO)
- 3. Follow plume during short night. Expect to see significant loss of aerosol volume relative to tracer (perhaps a factor of 3 to 10).
- 3. Observe plume for 3-4 hours after sunrise. Expect to see significant growth of aerosol following oxidation of semivolatiles.