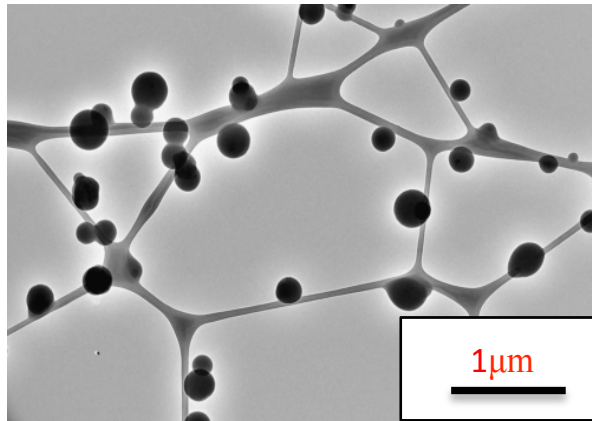
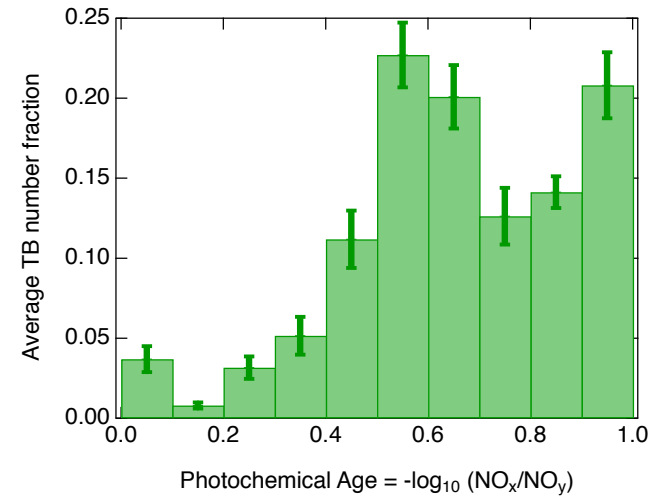


# BBOP: Tar Balls (TB) in Wildfires

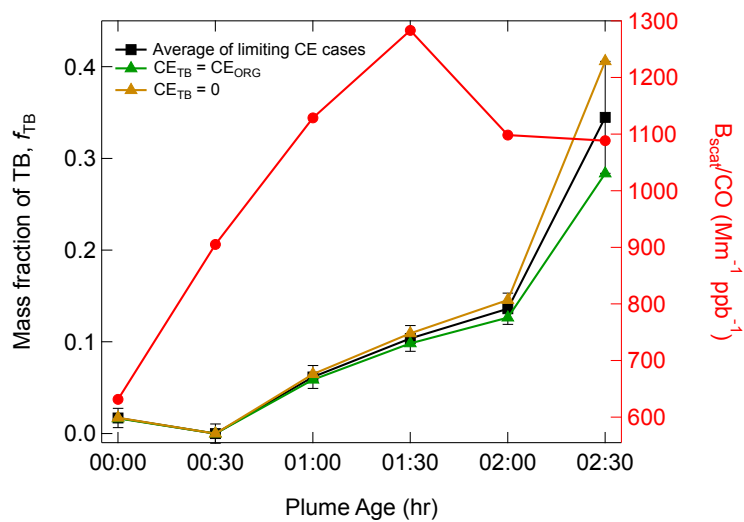
TB are a Major class of Brown Carbon



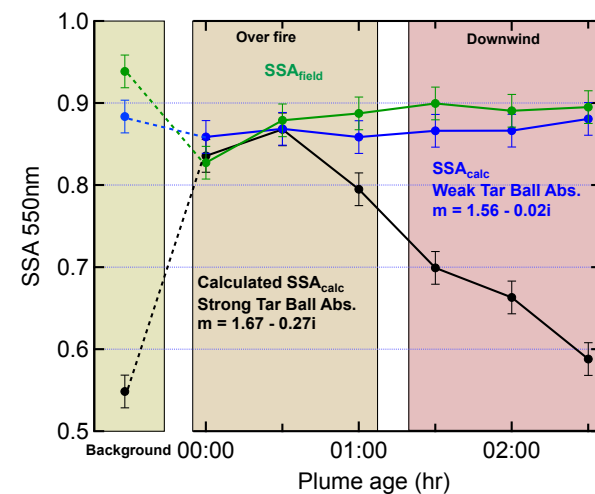
TBs are a Secondary Aerosol



TBs are a Major Source of BB PM Emissions



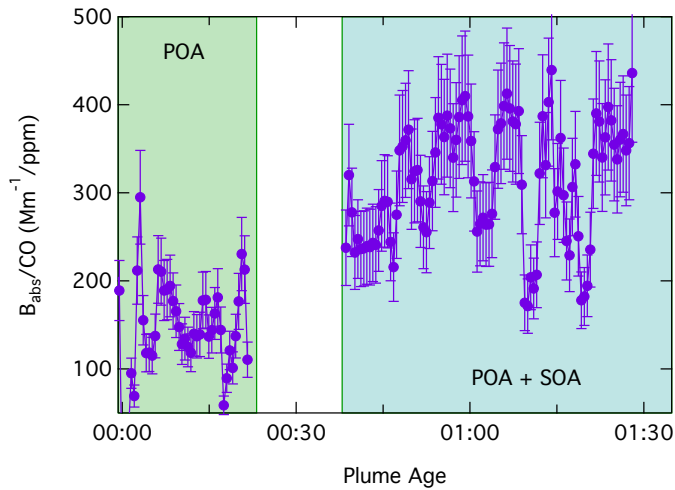
TBs are a Weak Absorber



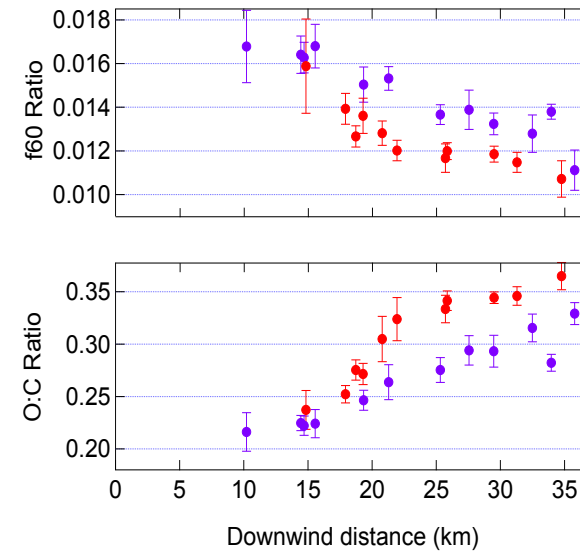
Sedlacek, Buseck, Adachi, et al.,

# BBOP: Chemical and Optical Properties of BB Aerosols

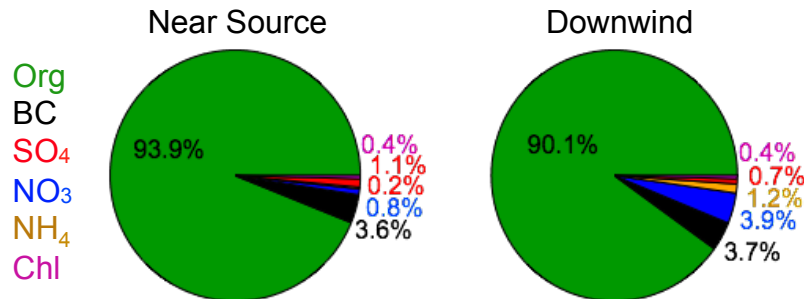
## BrC Absorption Increase with Age



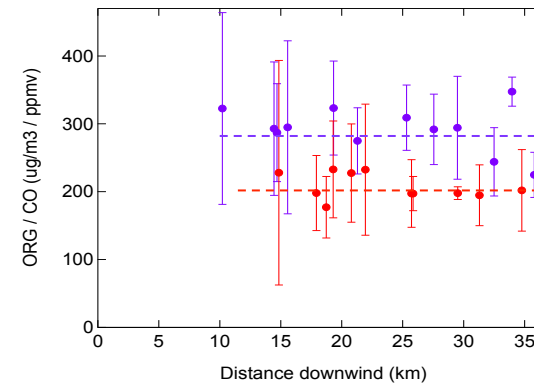
## OA Oxidation Increase with Age: SOA



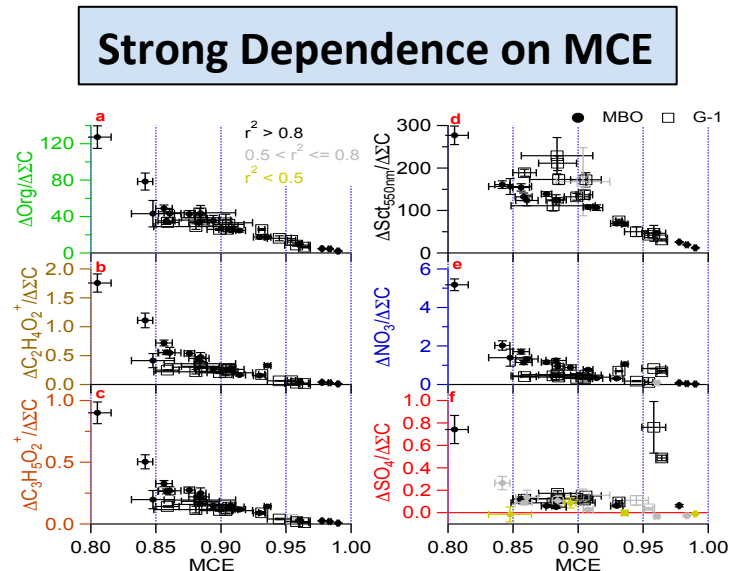
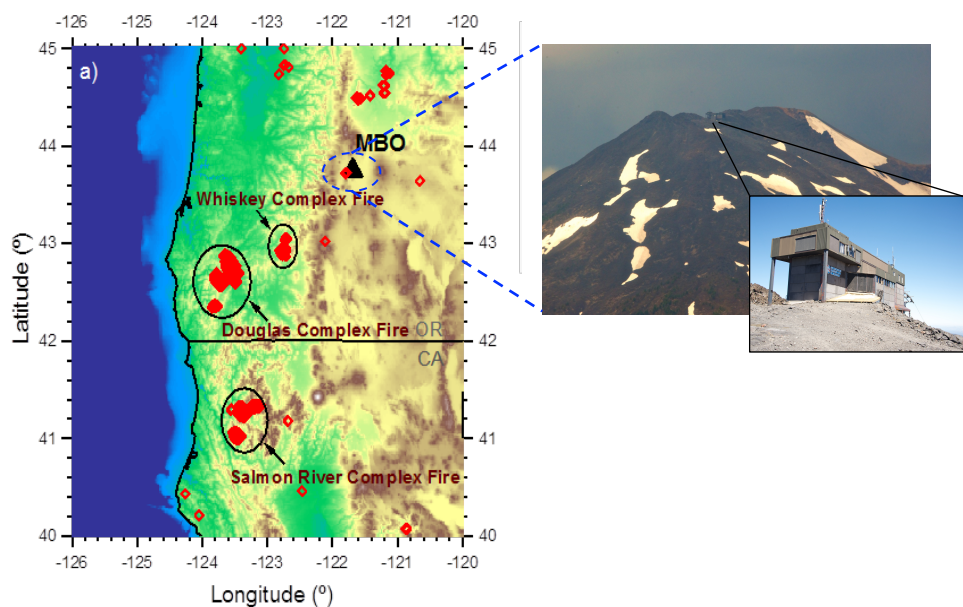
## Particulate Nitrate Increase with Age



## Org/CO Constant despite Chemistry

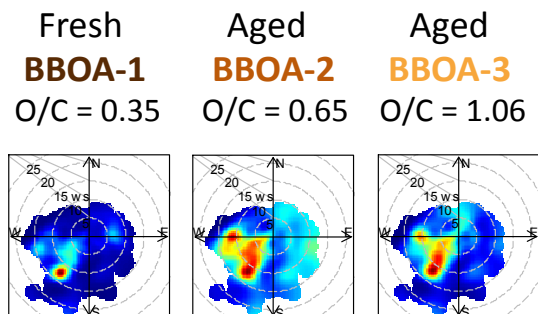


# BBOP: Regional Influence of Wildfire Emissions

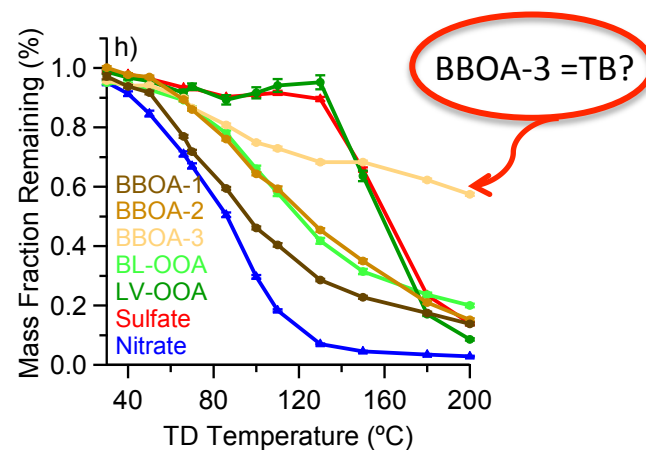
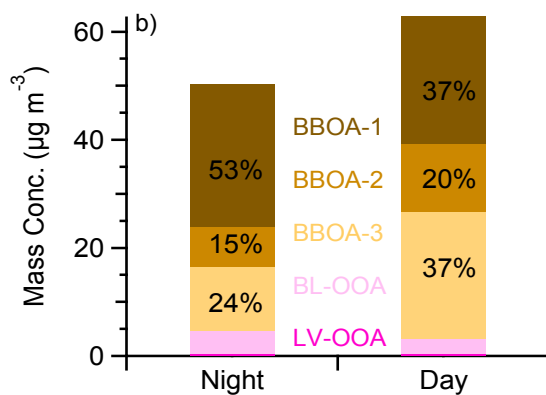


Collier et al., ES&T 2016

## 3 Different Types of BBOA



## Highly Oxidized and Low Volatility BBOA Increase with Age



Zhou et al., ACP 2017