

# Primary Emissions of Formaldehyde in Houston

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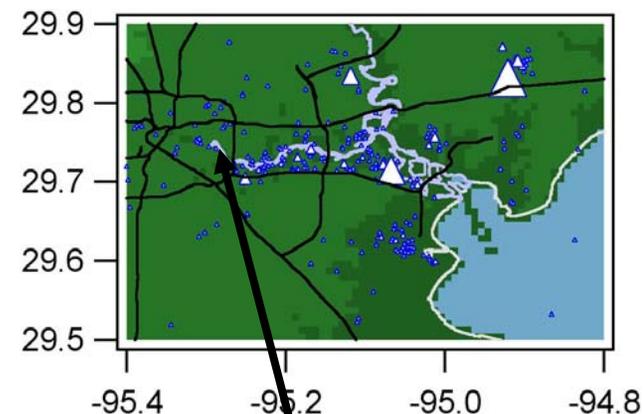
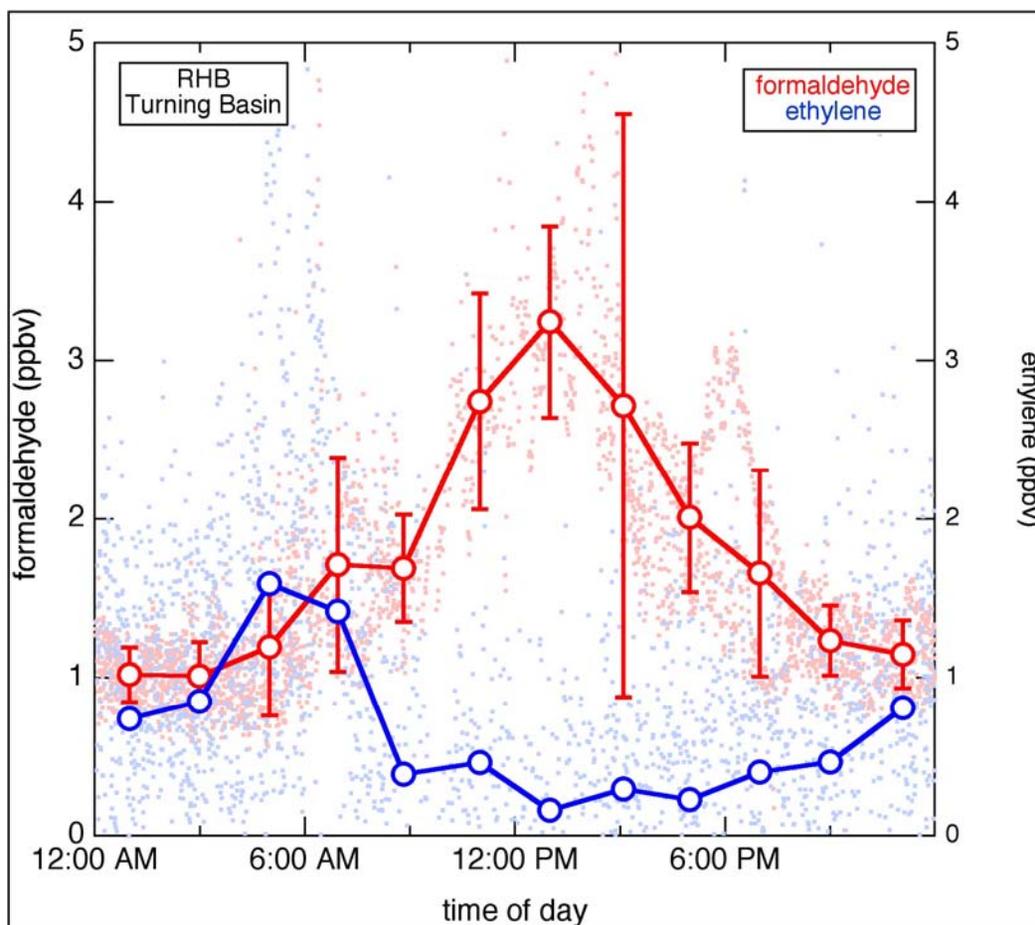
Scott Herndon and Mark Zahniser  
*Aerodyne Research, Billerica, MA*

Dirk Richter, Jim Walega, Petter Weibring and Alan Fried  
*NCAR, Boulder, CO*

## Question E:

Are there sources of ozone and aerosol precursors that are not represented in the reported emissions inventories?

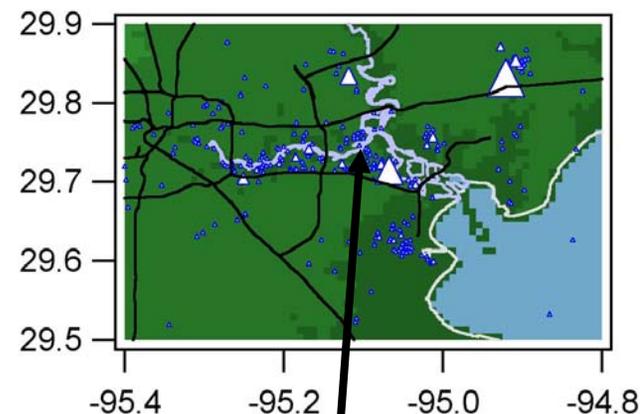
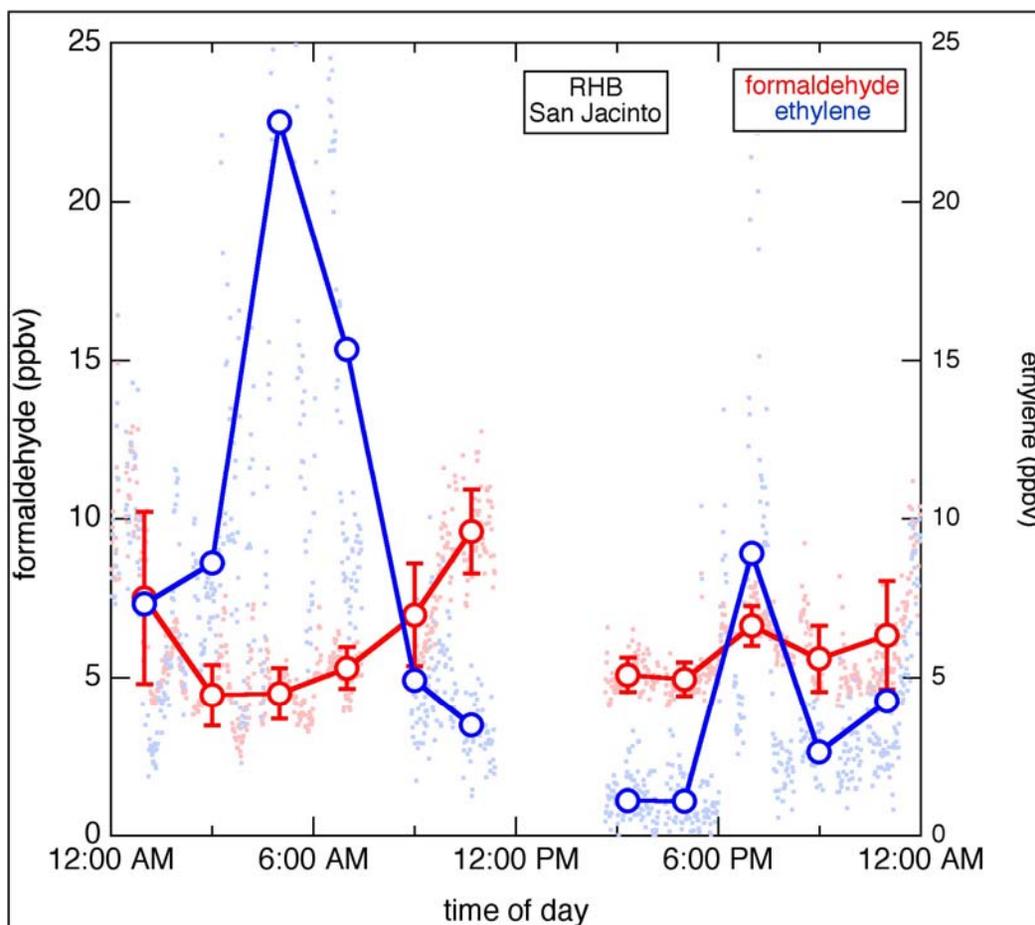
# Diurnal Variation of Formaldehyde and Ethylene



RHB data from  
Turning Basin

- High ethylene at night: low PBL height, slow chemistry
- High HCHO during day: photo-chemical production
- Primary HCHO < ethylene emissions

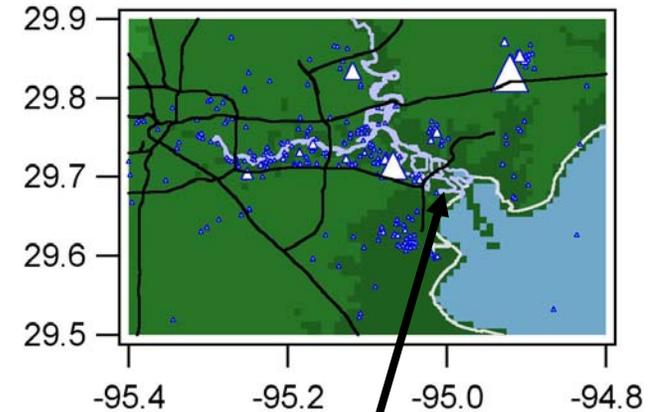
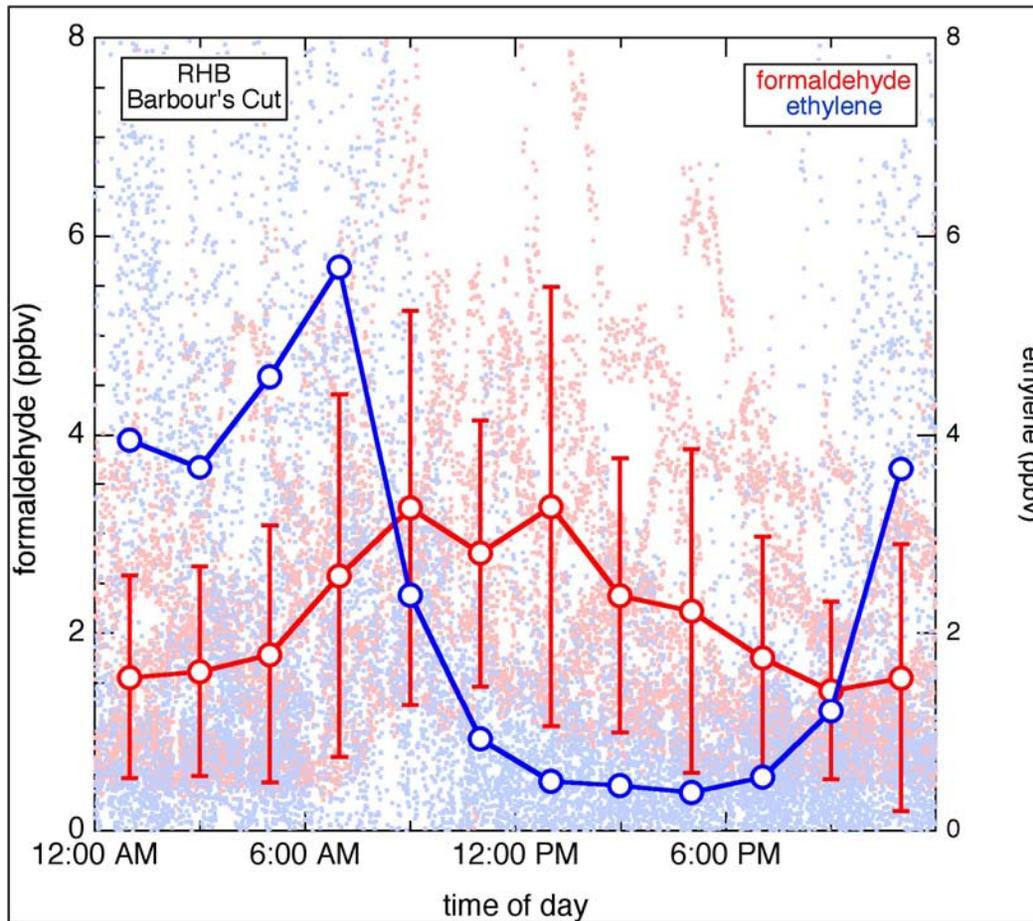
# Diurnal Variation of Formaldehyde and Ethylene



RHB data from  
Jacinto Port

- Very high ethylene not accompanied by formaldehyde
- Primary HCHO  $\ll$  ethylene emissions

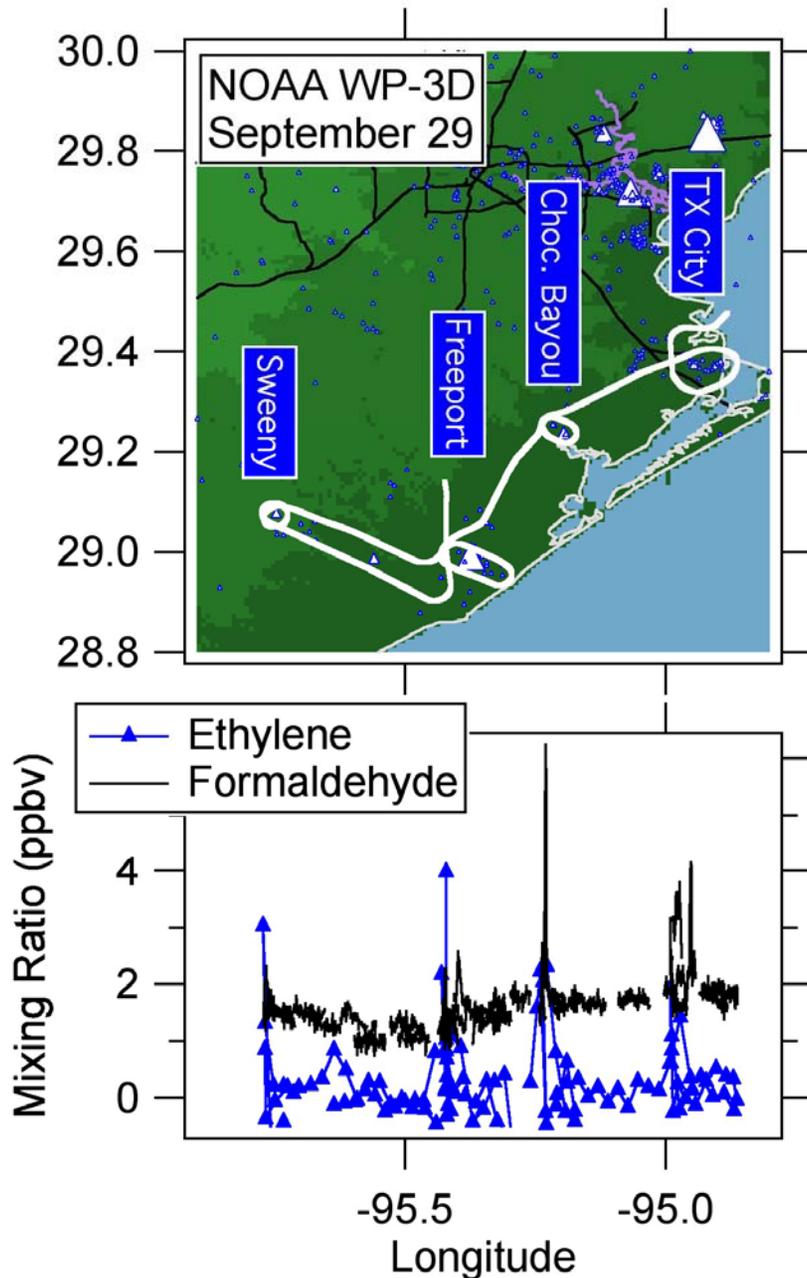
# Diurnal Variation of Formaldehyde and Ethylene



RHB data from  
Barbours Cut

- High ethylene at night: low PBL height, slow chemistry
- High HCHO during day: photo-chemical production
- Primary HCHO < ethylene emissions

# Airborne Measurements of Petrochemical Sources



- In some cases, enhanced formaldehyde observed from petrochemical sources
- Direct emissions or rapid formation from ethylene?

## Summary

- There may be direct emission sources of formaldehyde from industrial sources
- Difficult to distinguish from rapid chemical formation from ethylene
- Overall: primary sources  $\ll$  secondary sources from ethylene (and isoprene) oxidation