

**Airborne Measurements of VOCs  
Using a Compact PTRMS During 05  
SETTS and NETPS**

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# PTR-MS Measurements



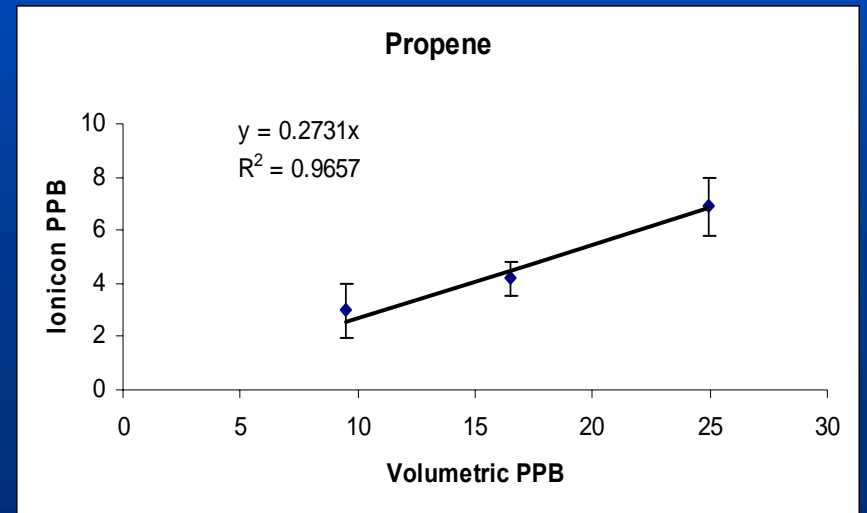
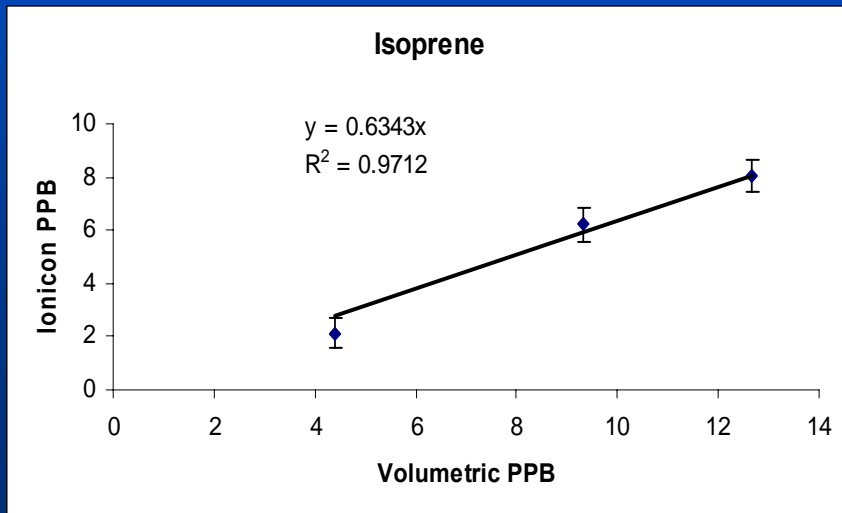
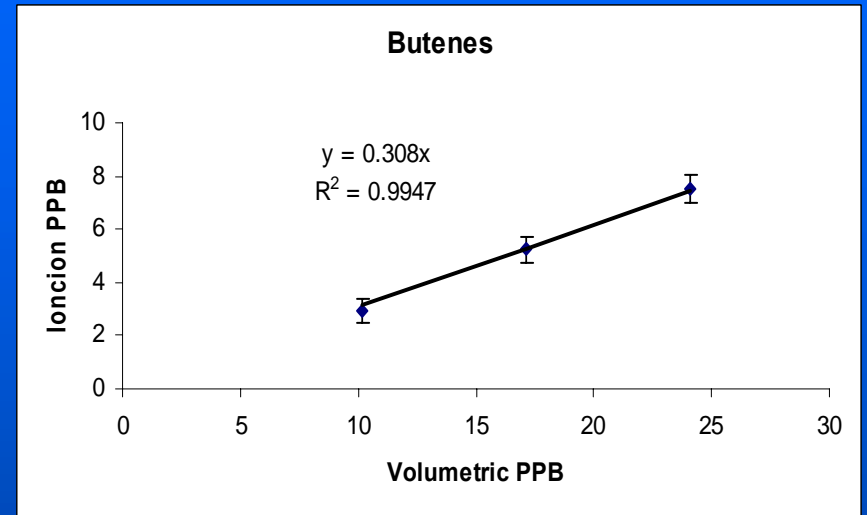
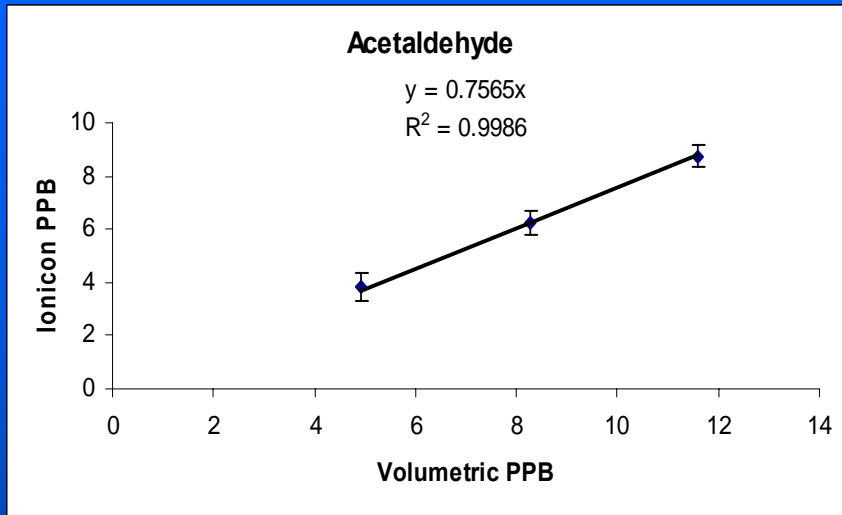
$$[\text{R}] = [\text{RH}^+] / ([\text{H}_3\text{O}^+]kt)$$

$[\text{RH}^+]$  and  $[\text{H}_3\text{O}^+]$  are counts per second,  $k$  is the reaction rate constant for above reaction.  $t$  is the time that the reagent ion spends in the drift tube

Zero-air checks were performed approximately hourly in flight to determine the background

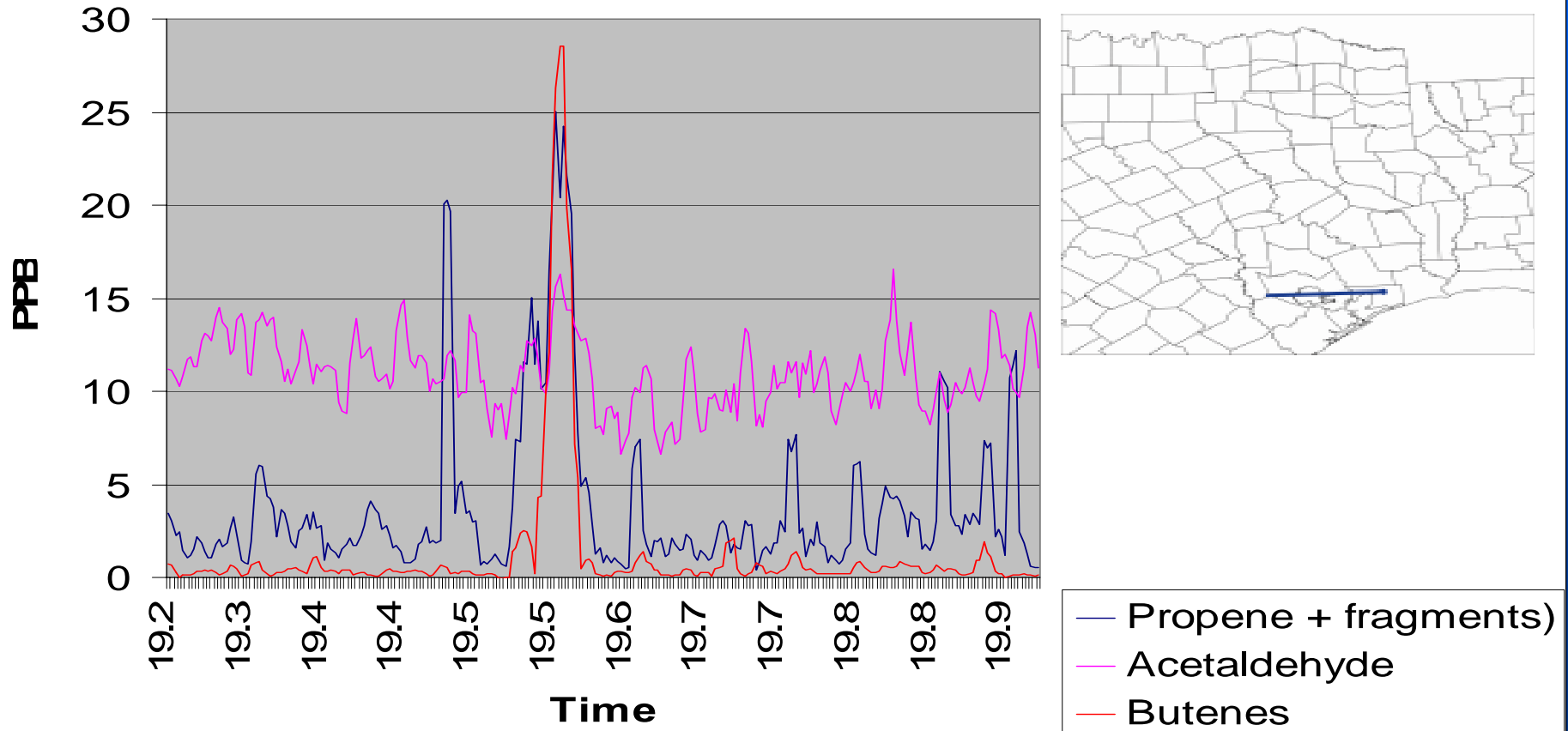
Calibrations were performed post-flight for a suite of VOCs

# VOC Calibrations

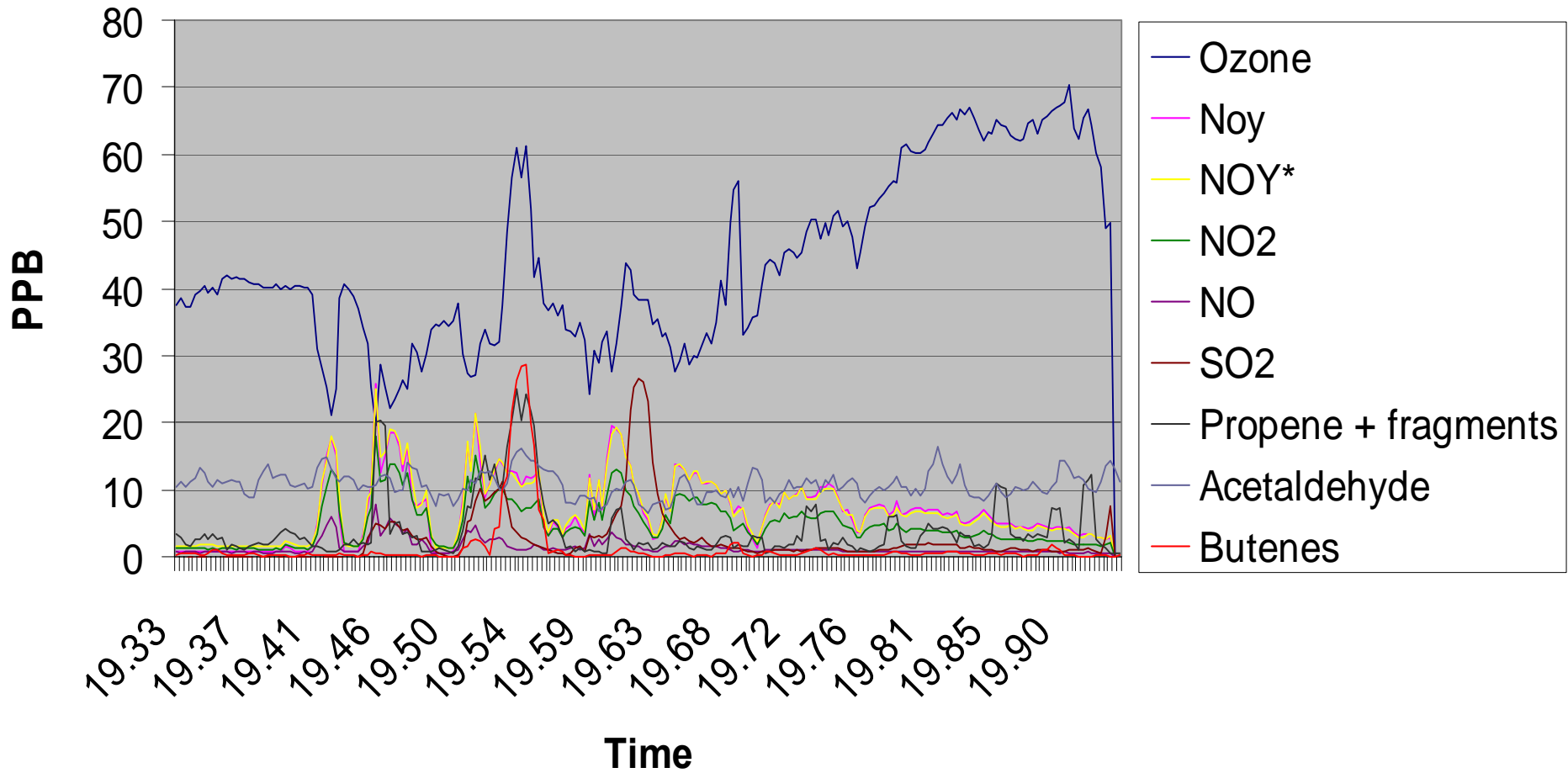


# 3 Miles North of the Ship Channel at 2000' MSL

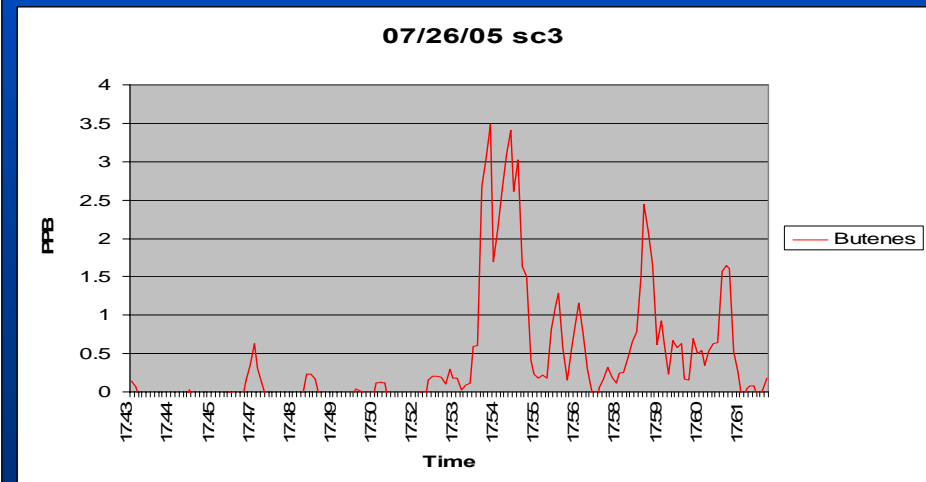
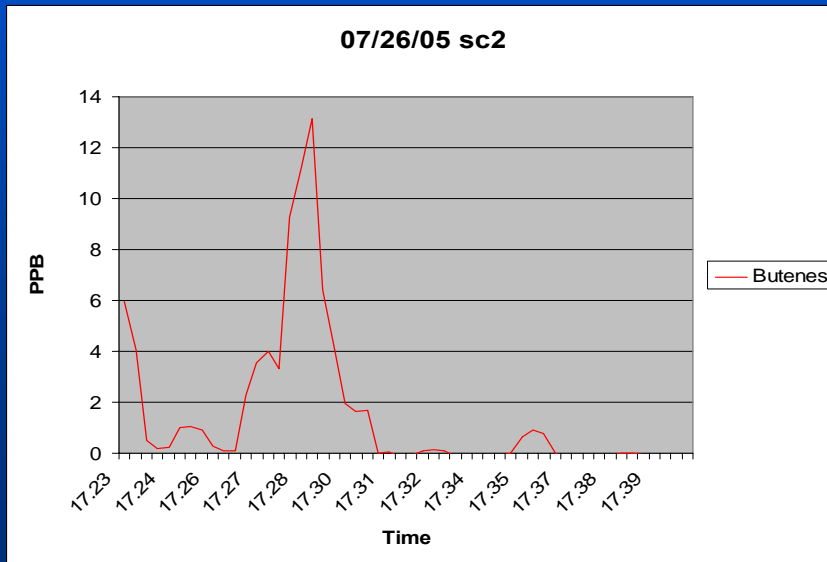
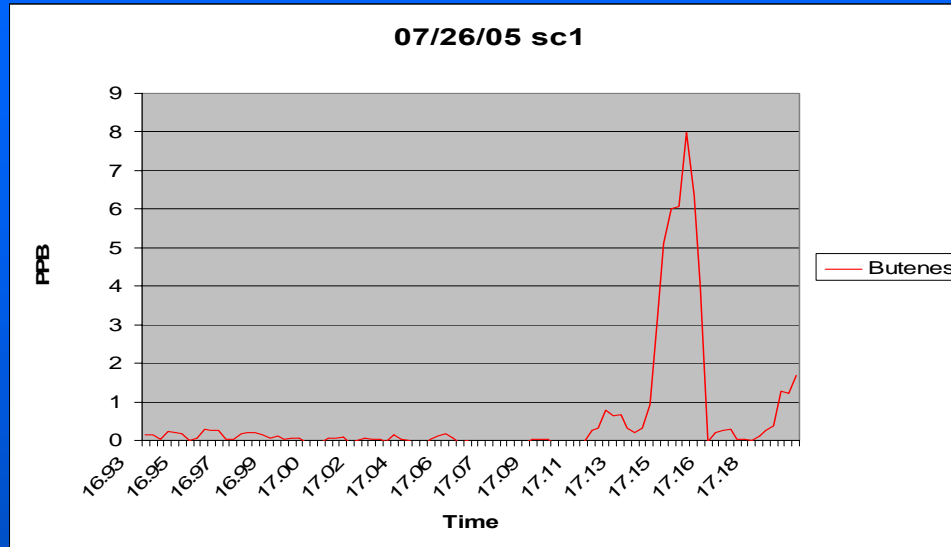
07/21/05 ship channel



# 7/21/05 Trace Gas Measurements by TVA

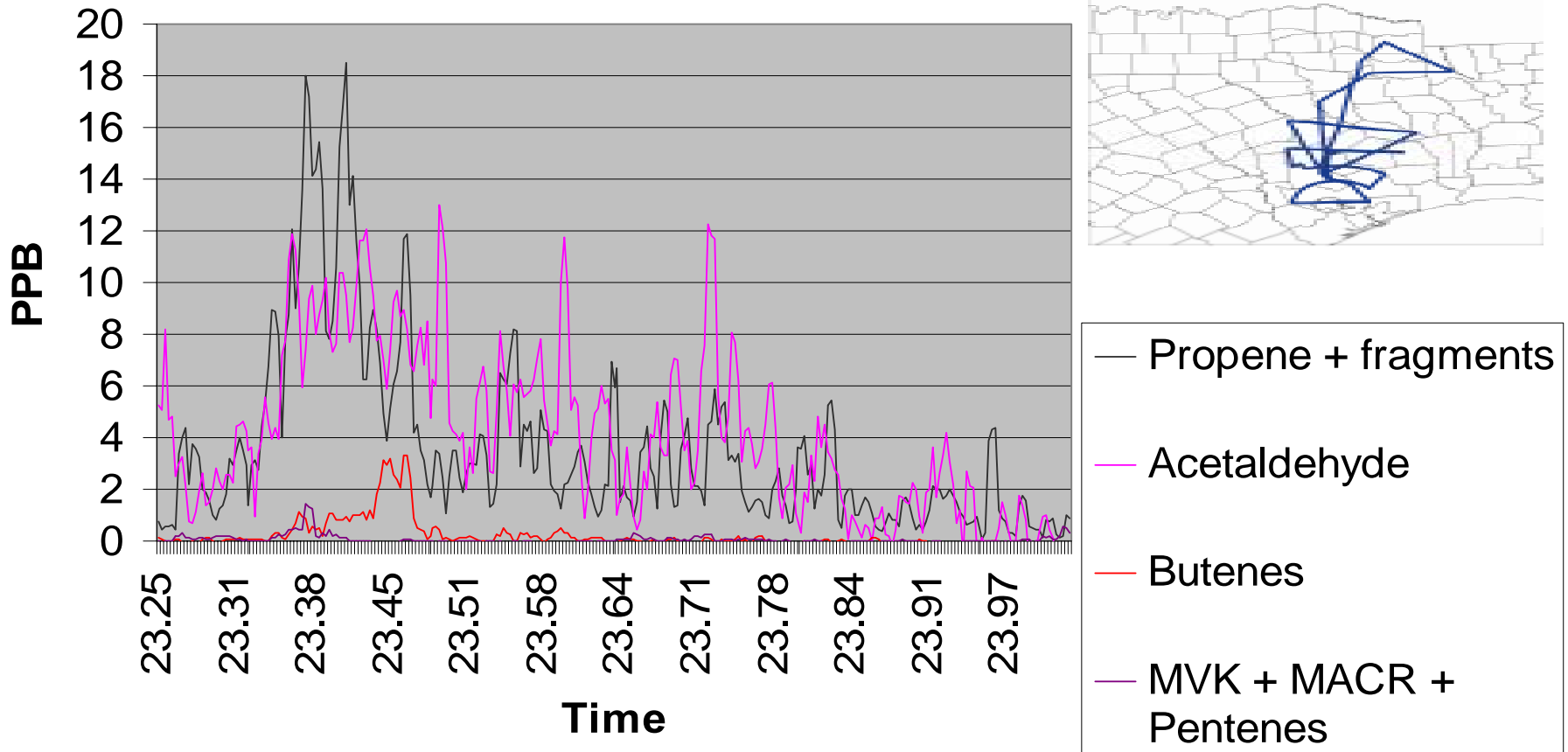


# Three Consecutive Transects on East-West Passes 3 miles North of the Ship Channel

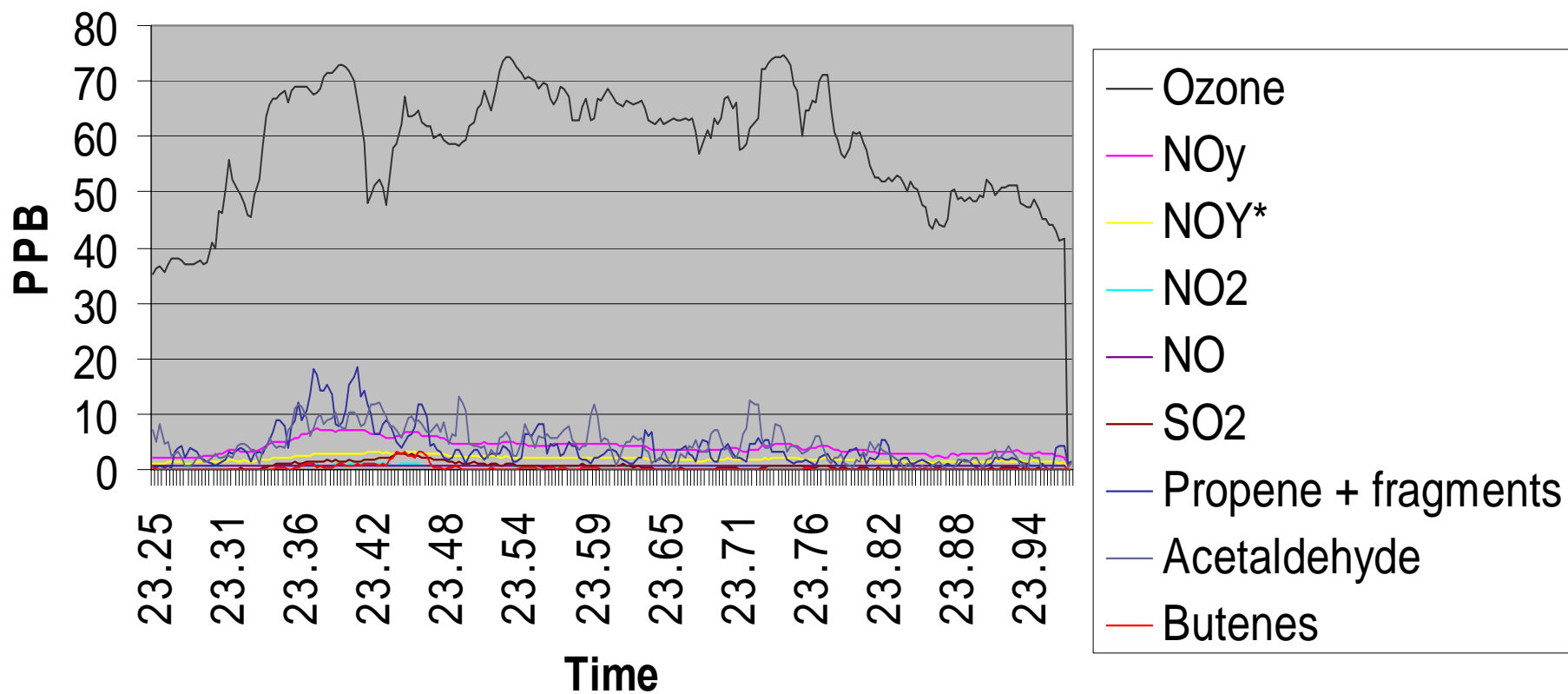


# SETTS Transect Heading of 100° 120 Miles North of Houston

07/26/05 flt2 Hdg 100

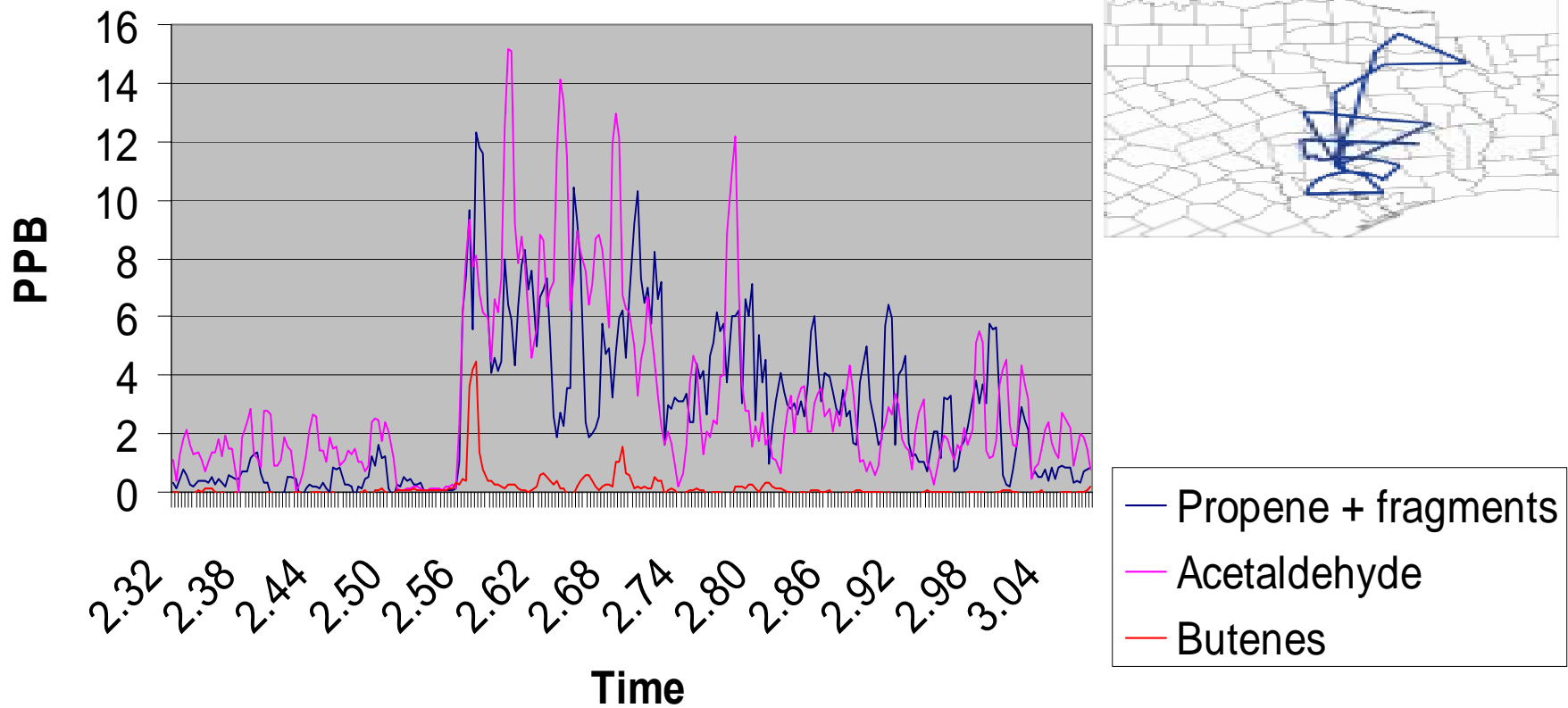


# 07/26/05 flt2b Hdg 100

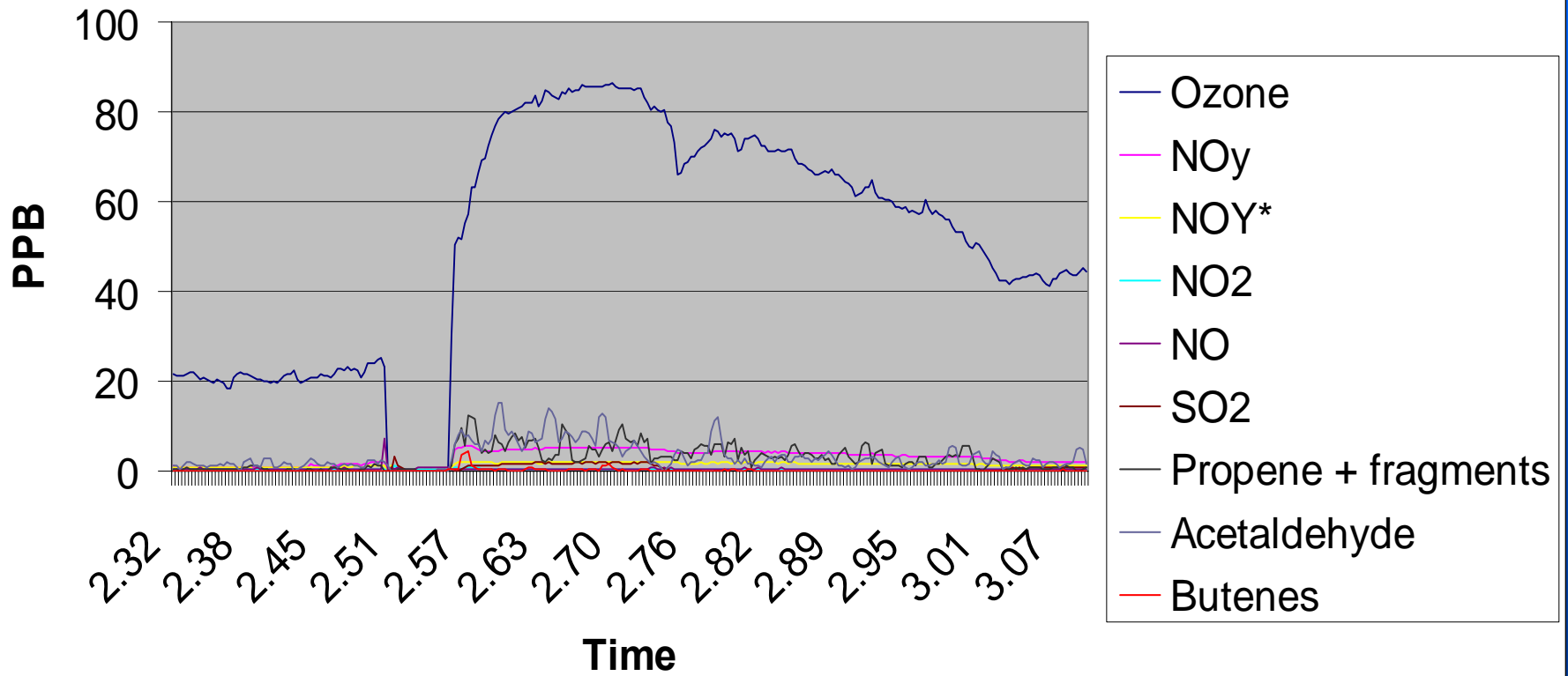


# SETTS Transect 190 Miles NNE of Houston Later In the Evening

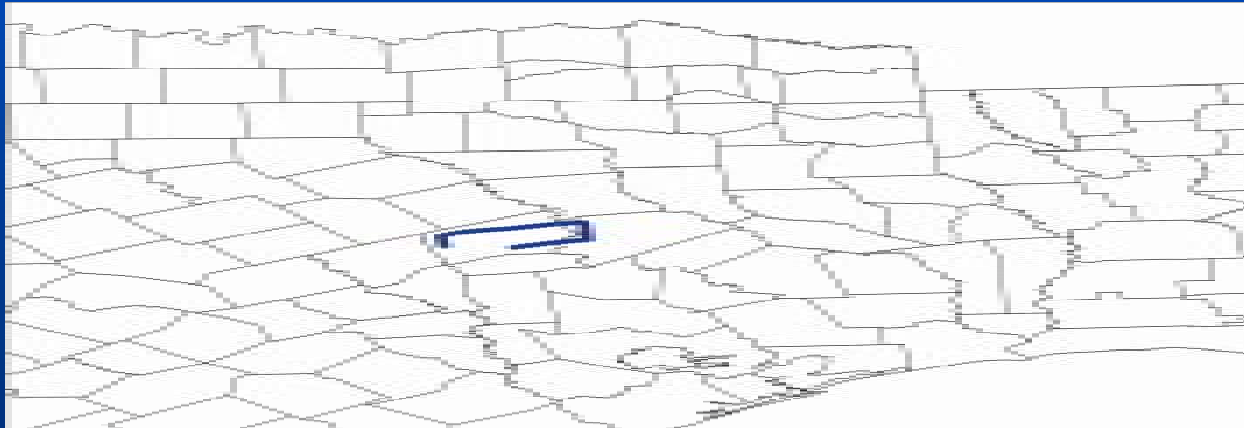
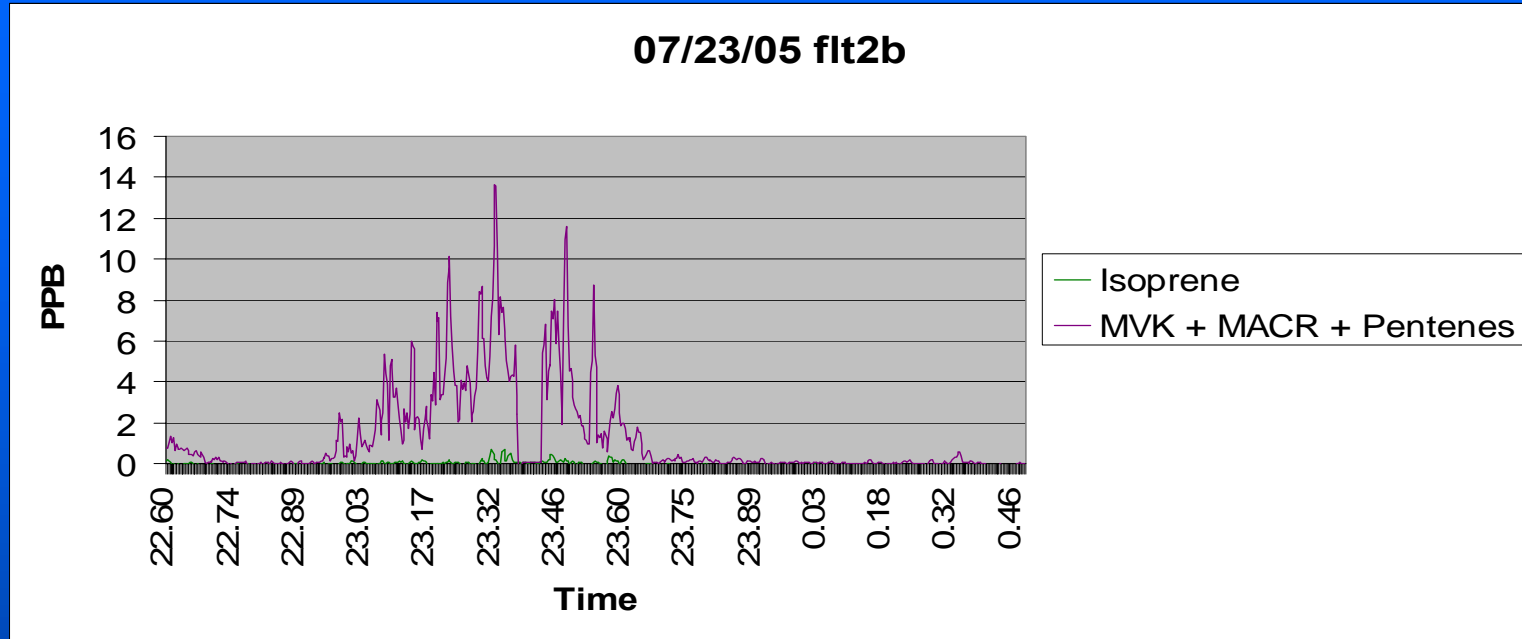
07/26/05 flt3 Transect 1



# 07/26/05 flt3 transect 1

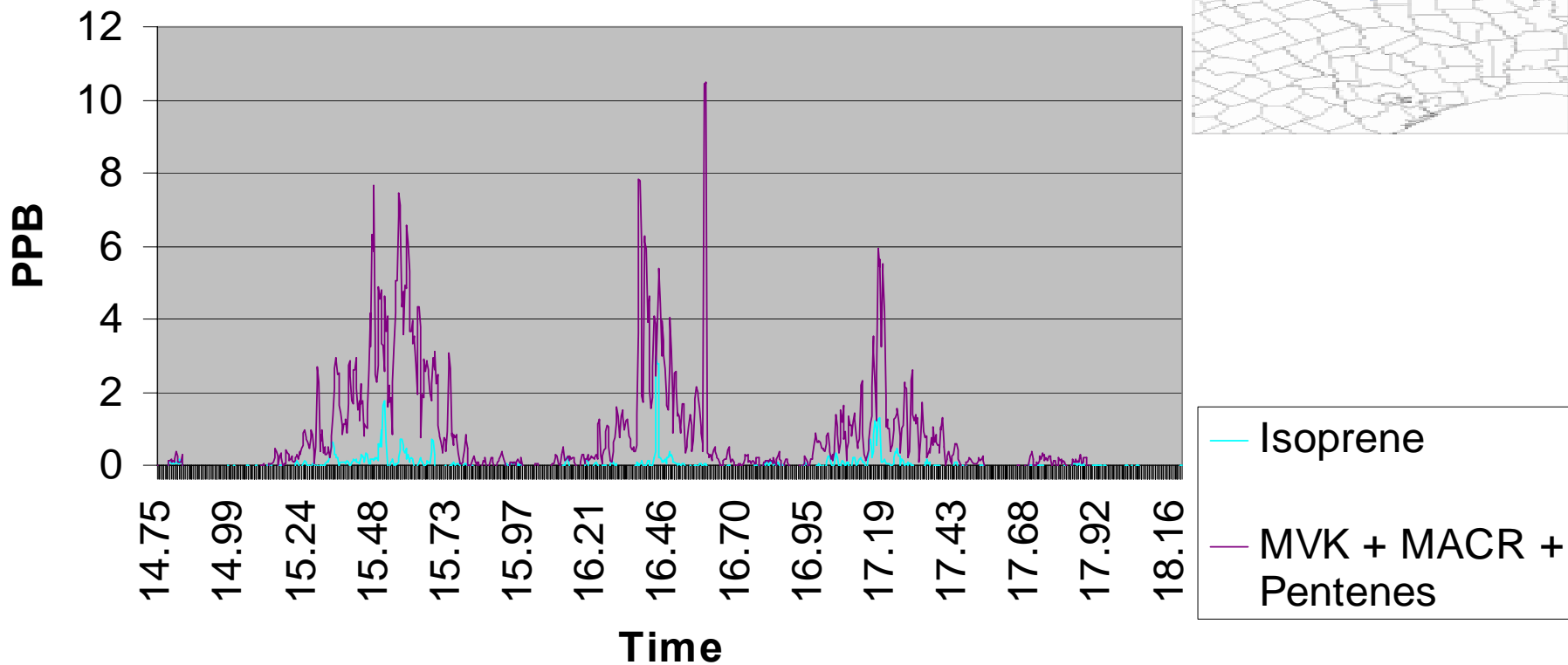


# SETTS Biogenic Isoprene and Isoprene Oxidation Products



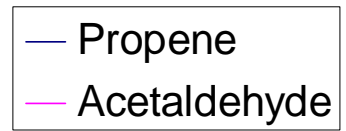
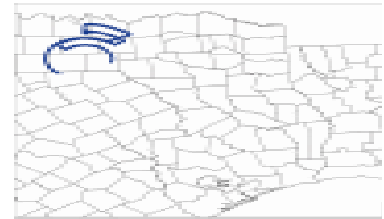
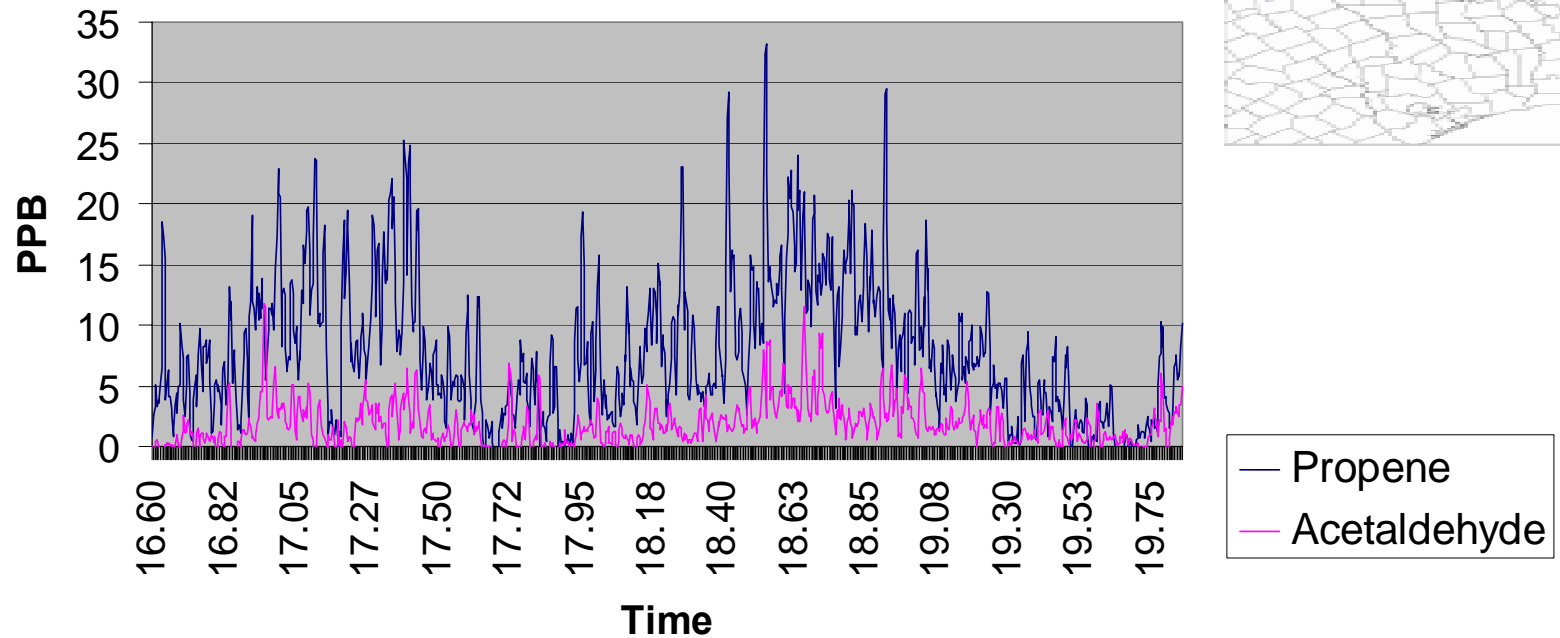
# NETPS Rural Isoprene and Isoprene Oxidation Products

08/18/05 flt2

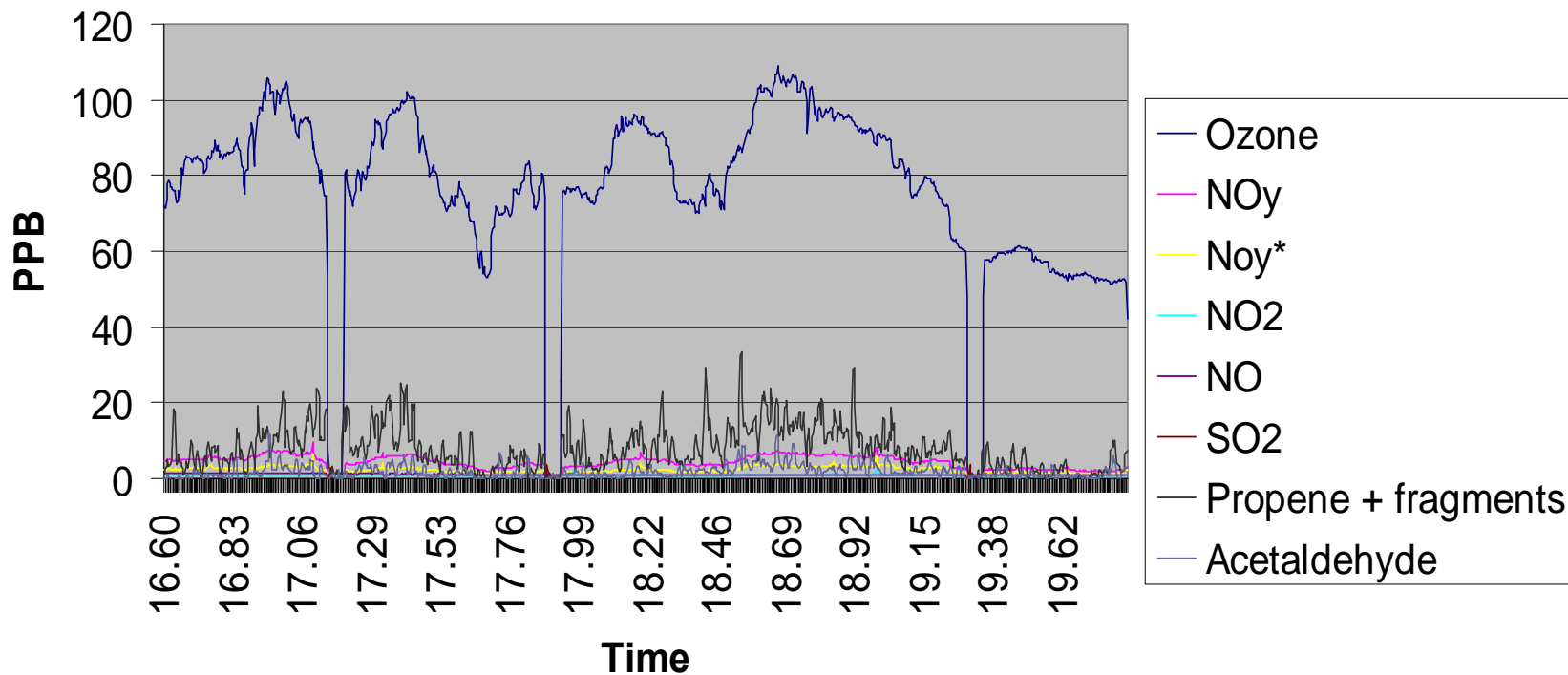


# NETPS Urban Pollution Plume

08/26/05 Downwind Dallas



# 08/26/05 Downwind Dallas



# Conclusions

- **The Compact PTR-MS was able to detect and quantify VOC plumes associated with industrial, urban and rural sources in an airborne measuring platform**
- **For future uses in TexAQS II - 06**

# Acknowledgements

- **05 TERC Funding**
- **Aircraft crew, TVA and other SETTS and NETPS teams**