

SIP Relevant Findings

Question A: Which local emissions are responsible for the production of high ozone in Houston, Dallas, and eastern Texas? Are different kinds of emissions responsible for transient high ozone and 8-hour-average high ozone (i.e., ≥ 84 ppbv)?

Analysis of high O₃ plumes observed by the NOAA WP-3D and RHB compared to 2000

David Parrish - NOAA ESRL

This Presentation:

- Where do high O₃ plumes originate?
- Compare to 2000
- What are the O₃ production efficiencies in these plumes?

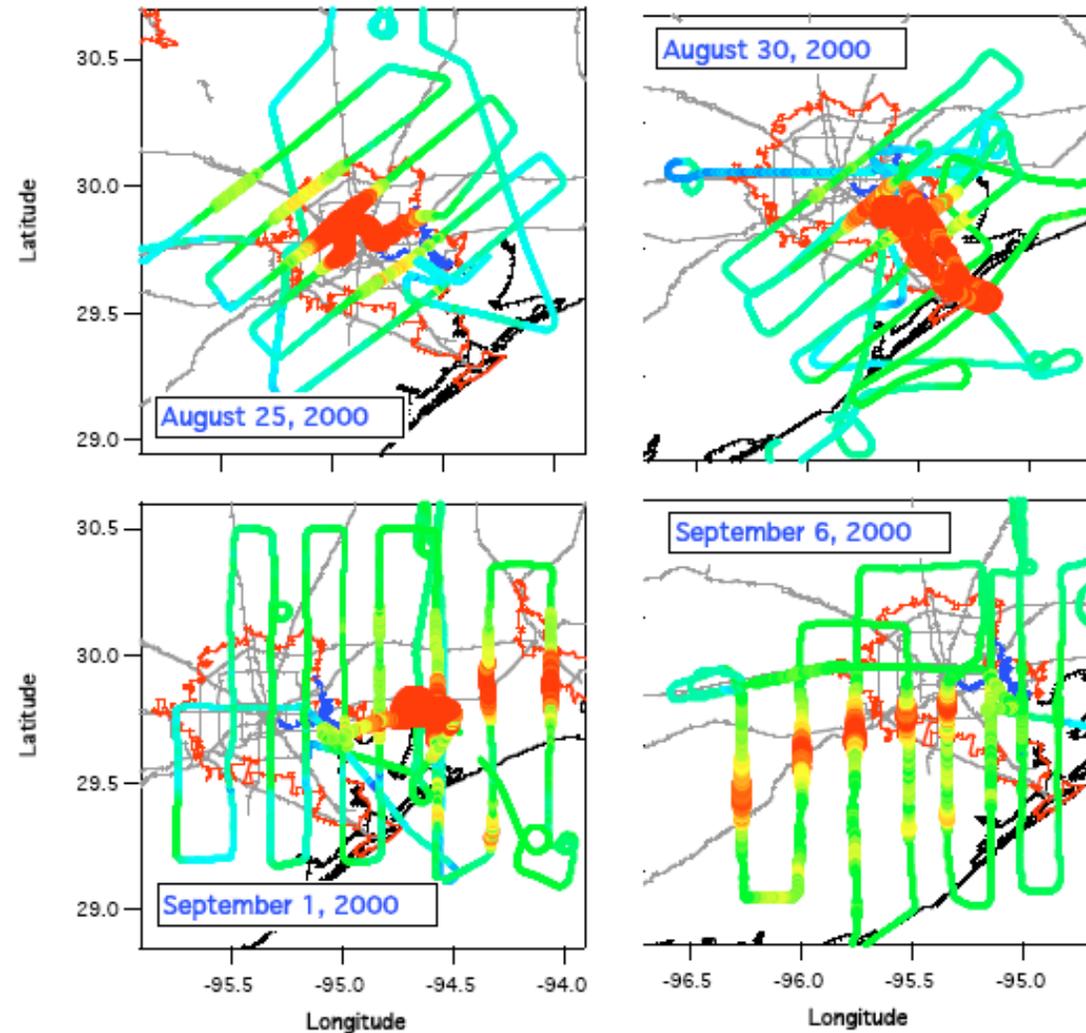
**Chemical and meteorological influences on
extreme (>150 ppbv) ozone exceedances
in the Houston metropolitan area**

TCEQ Contract No. 582-4-65613

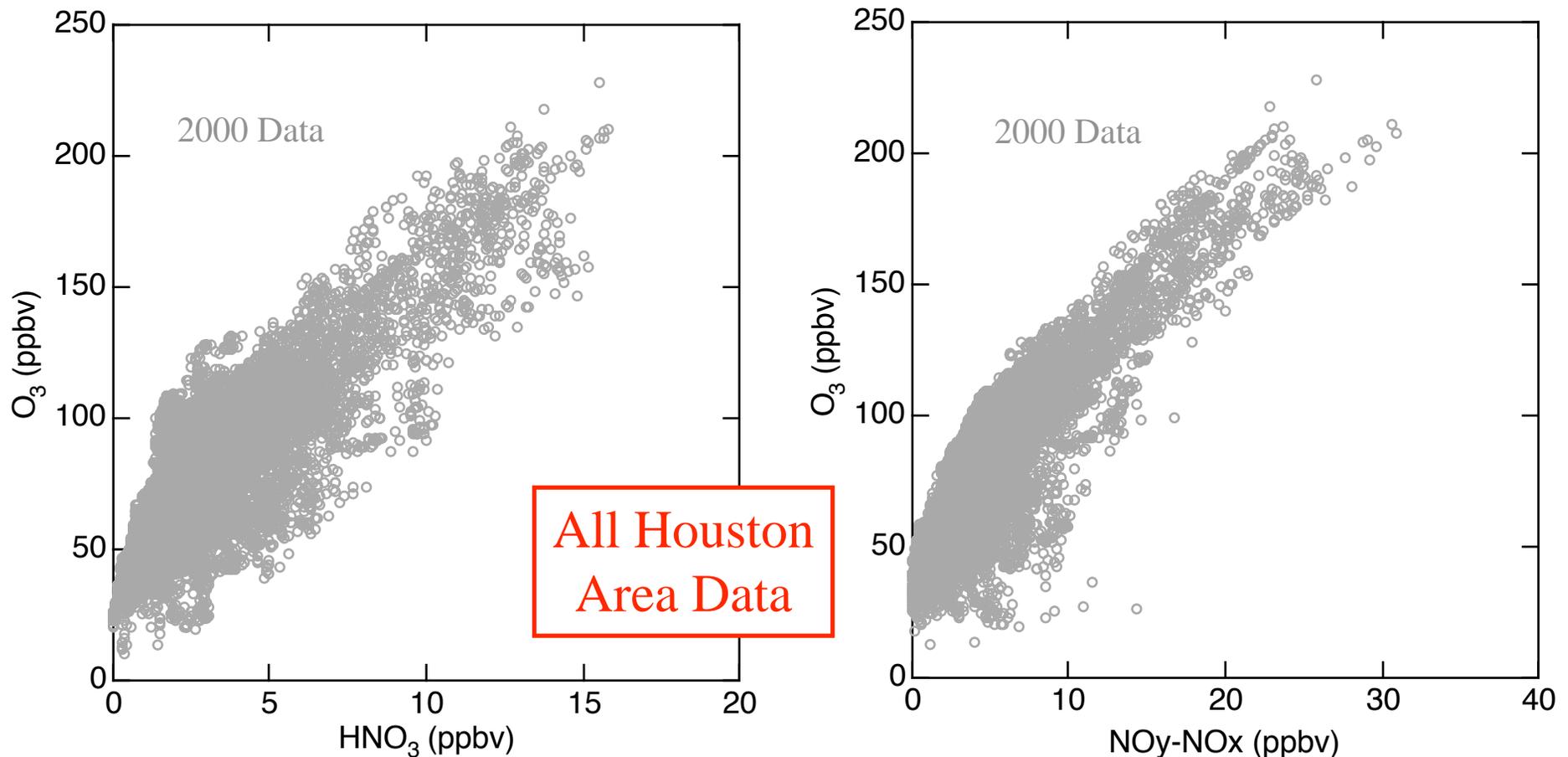
Draft report

**Ryerson et al. report
examines 4 highest
O₃ days in 2000
studied by Electra**

**All primarily due to
emissions of
HRVOC and NO_x
from the Houston
Ship Channel area
Differ in meteorology**



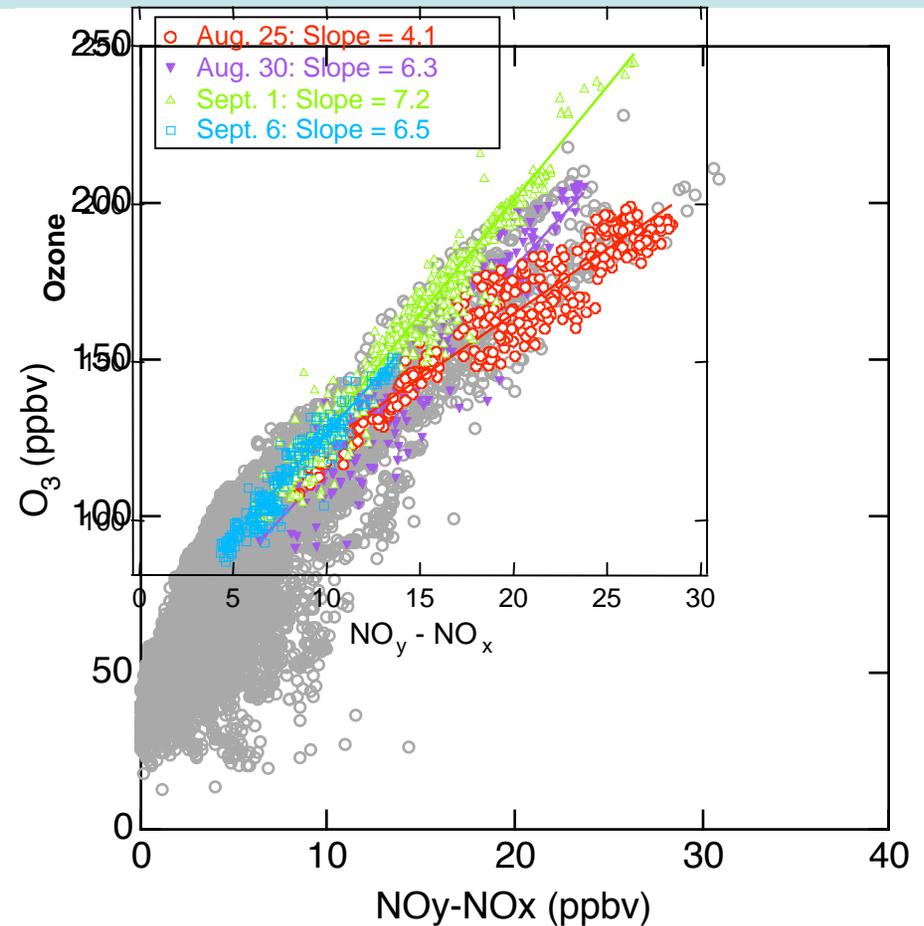
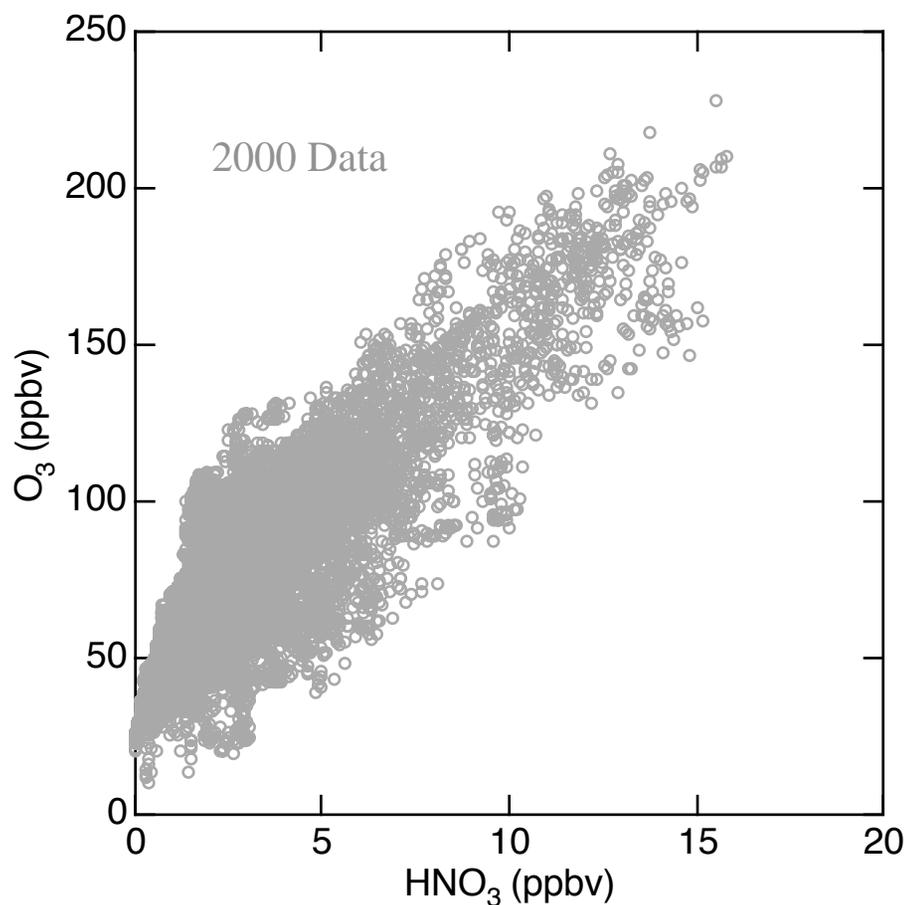
Two Useful Relationships



- **Test of VOC vs. NO_x O_3 sensitivity? (See next presentation)**

- **Slope of right graph related to O_3 production efficiencies (OPE)**

Two Useful Relationships



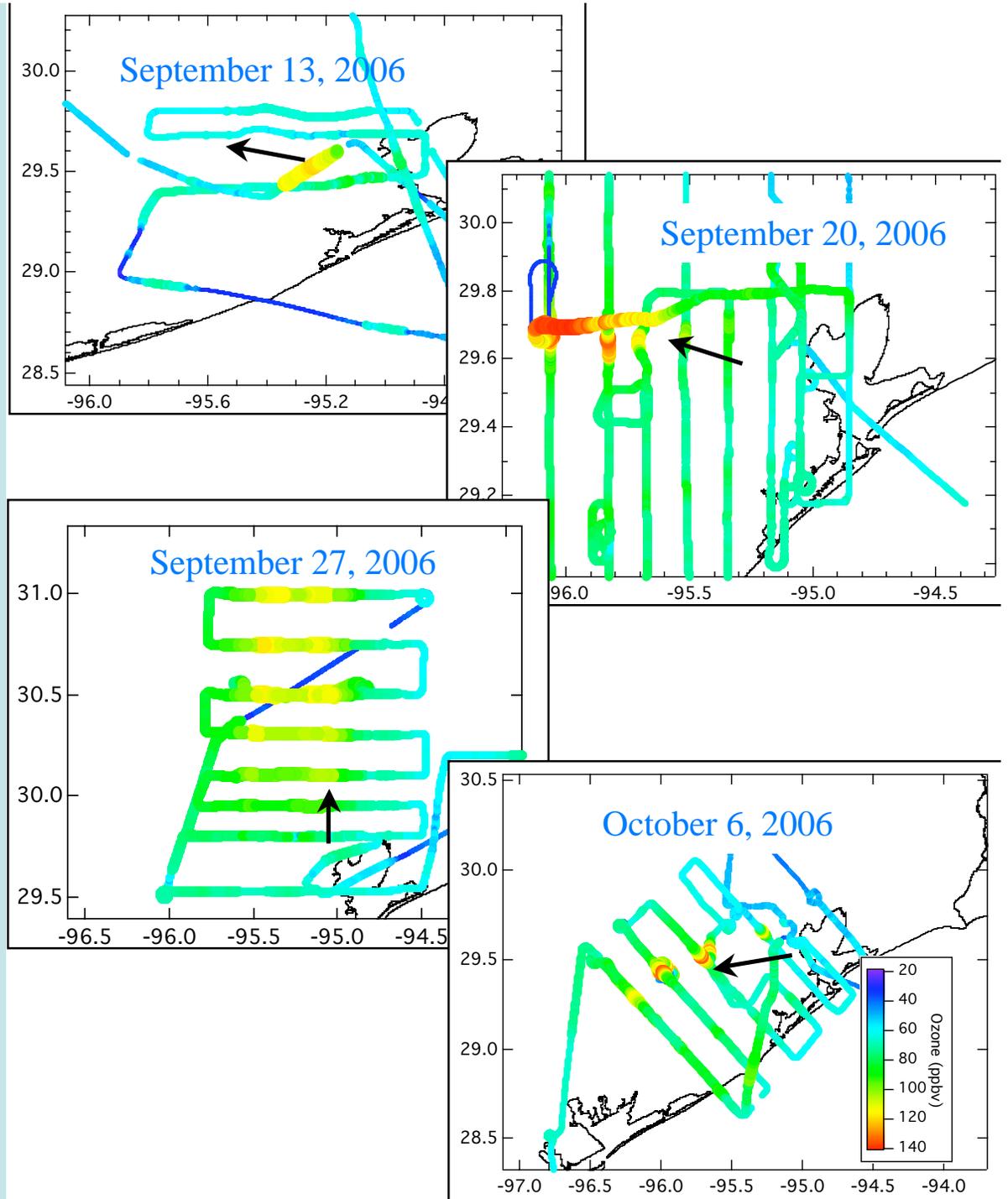
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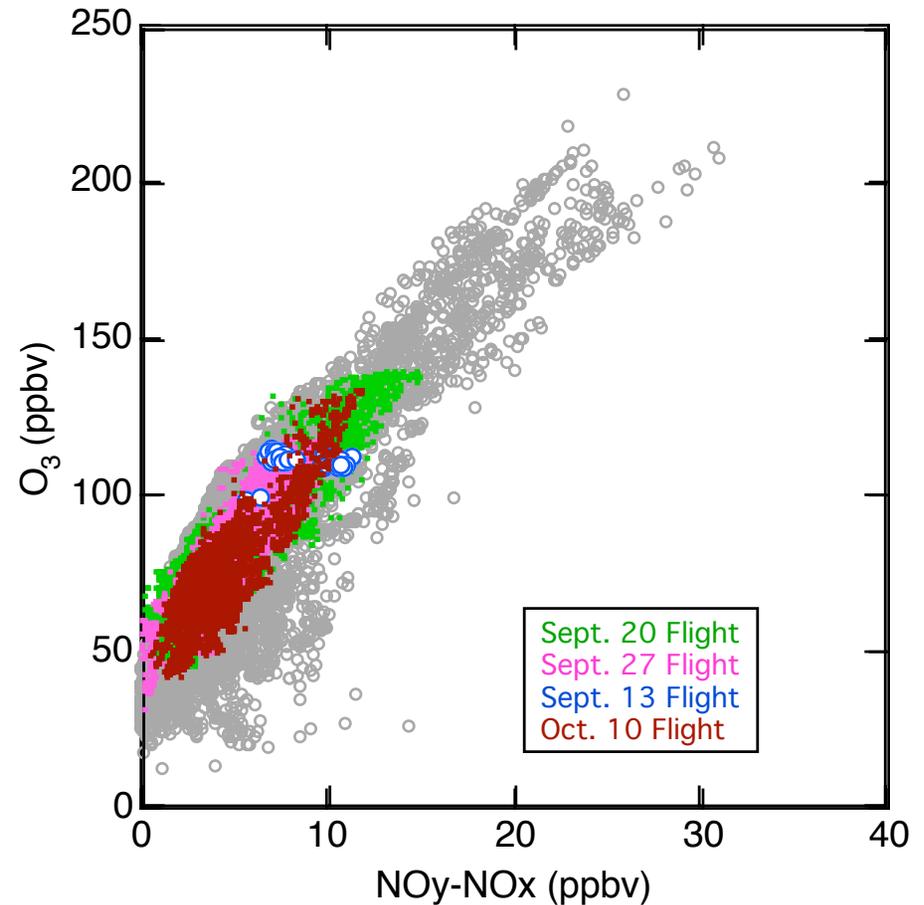
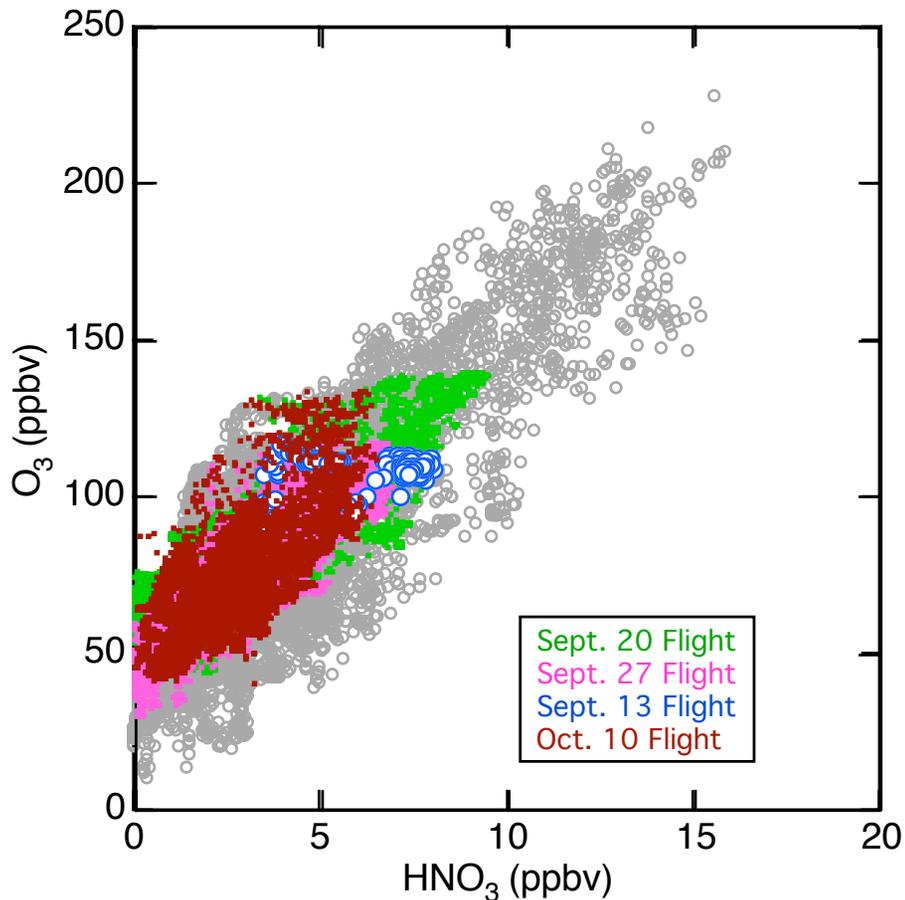
What are 2006 WP-3D measurements telling us?

Examine 4 highest O₃ days in 2006 (maxima 120-140 ppbv)

Arrows indicate approximate wind direction: Consistent with HSC origin (More analysis required!!)



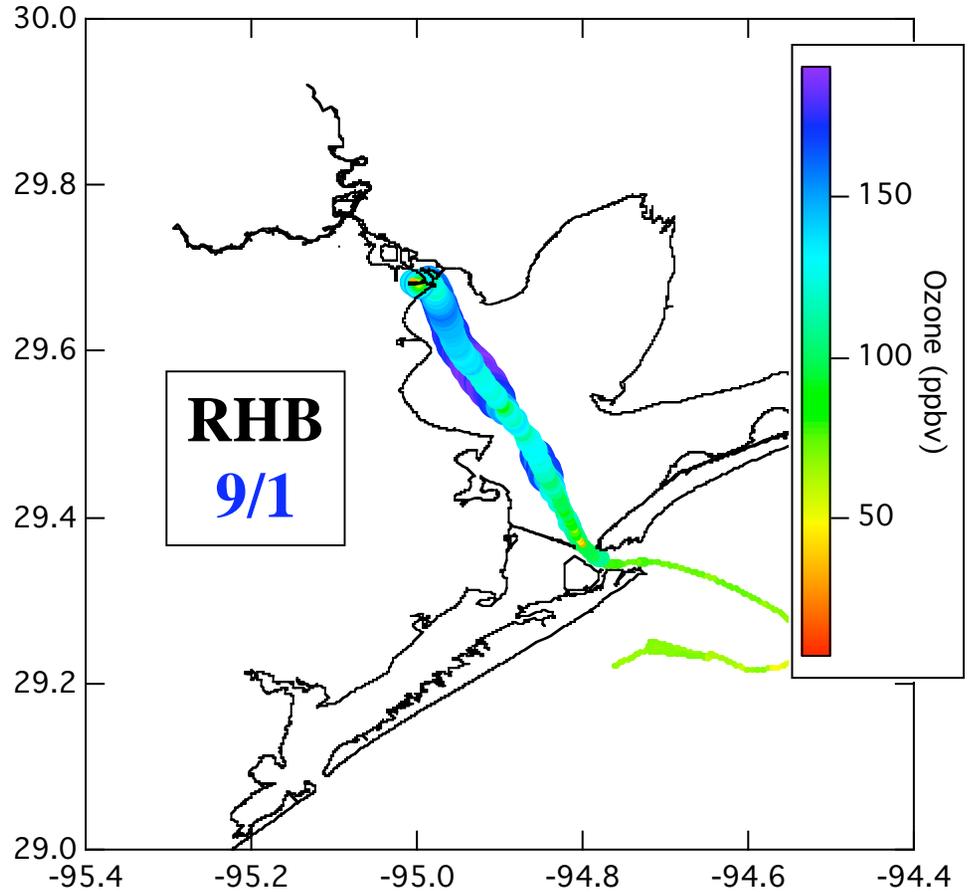
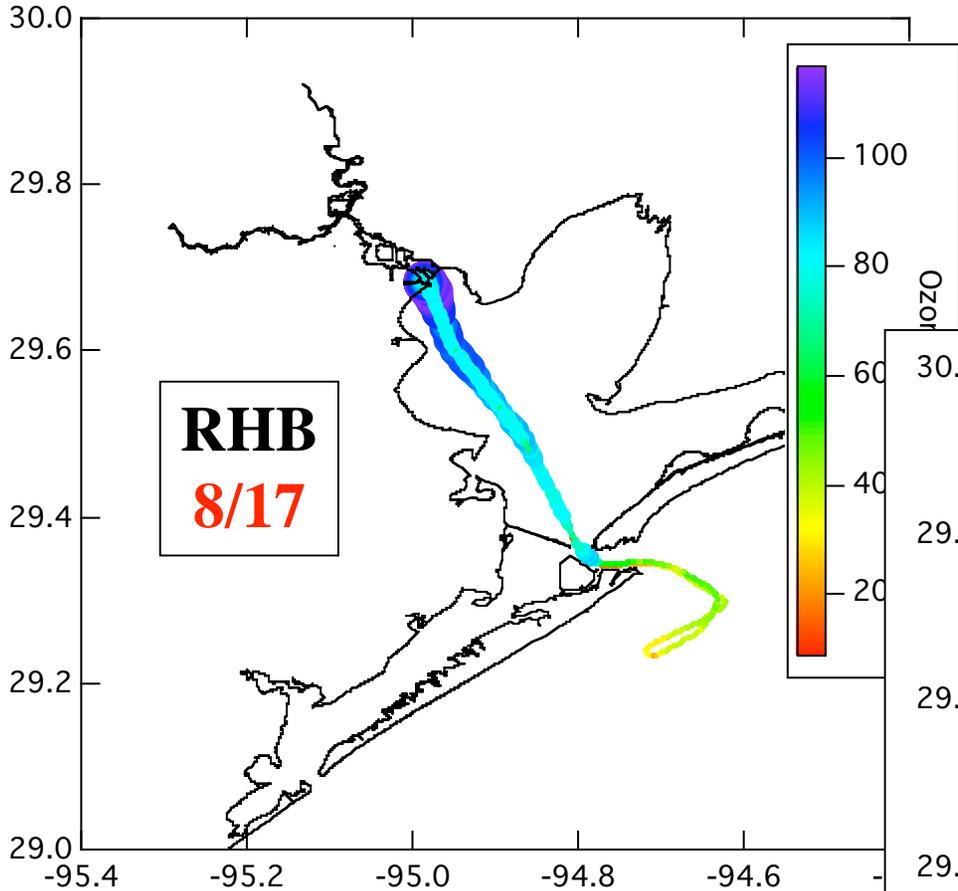
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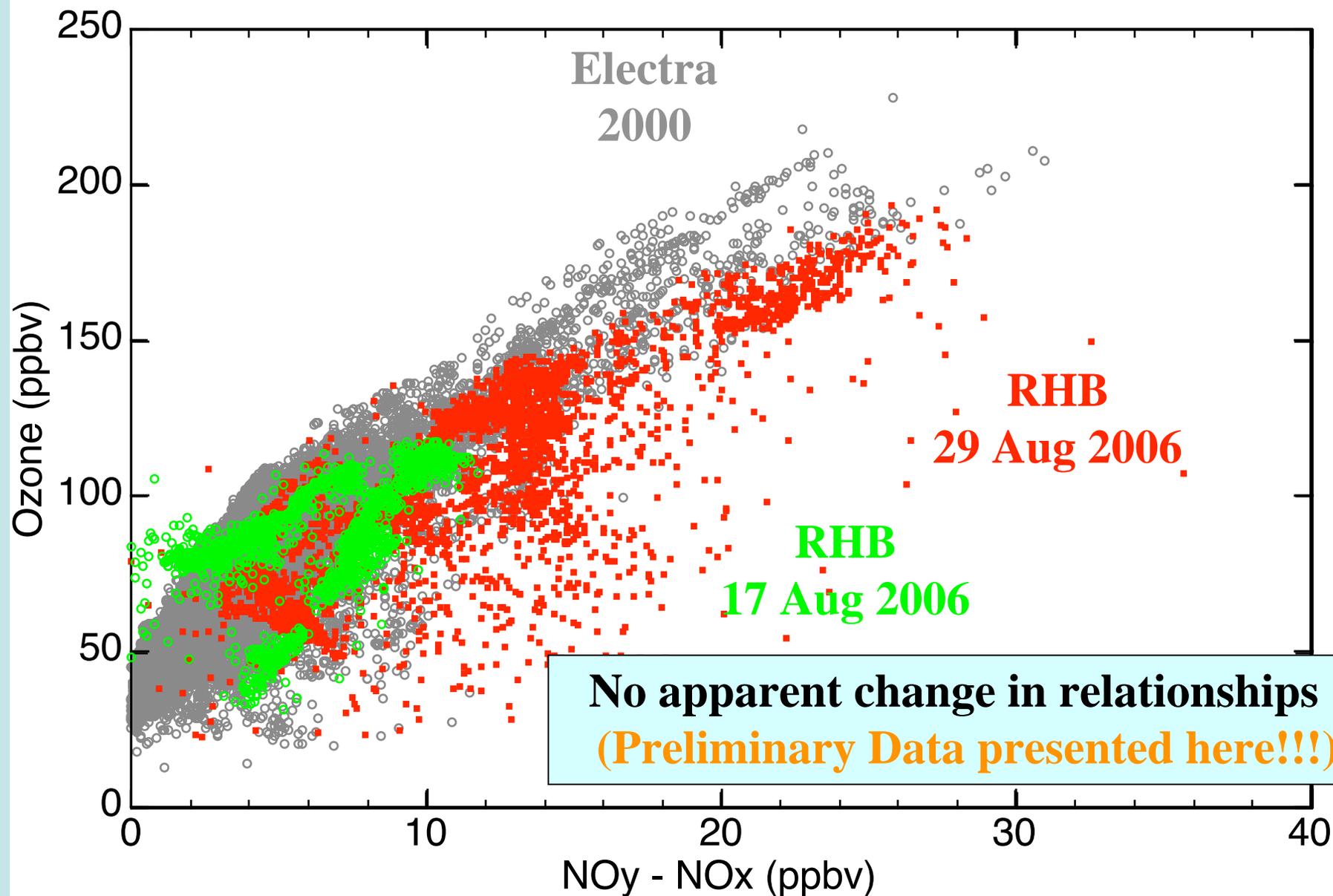
No apparent change in relationships (i.e. O_3 production efficiency) despite substantially lower maximum O_3 levels
(Reason for lower O_3 levels needs further analysis)

What are 2006 RHB measurements telling us?

2006 Ronald H. Brown



What are 2006 measurements telling us?



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Analysis of high O₃ plumes observed by the NOAA WP-3D and RHB compared to 2000

- Maximum O₃ lower in 2006 (More analysis required here!!!) than 2000, but OPE quite similar.
- Source of maximum O₃ plumes still consistent with Houston ship channel (More analysis required here!!!)
- “Are different kinds of emissions responsible for transient high ozone and 8-hour-average high ozone (i.e., ≥ 84 ppbv)?”
At this point, cannot directly address from observations.