

NOAA WP-3D aircraft - status report

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NOAA-CSD

2006 science instrumentation

Capabilities

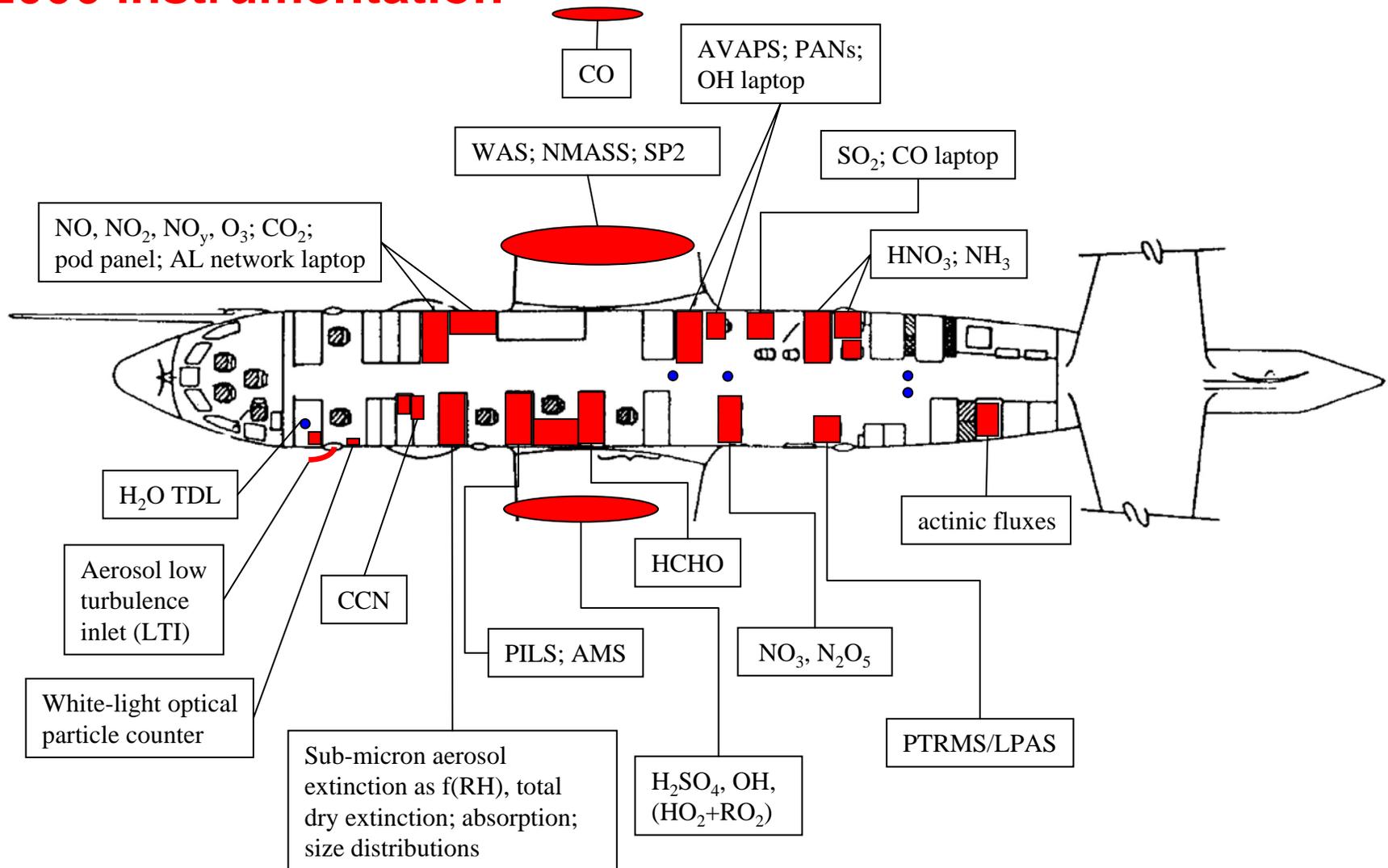
Science objectives

Example flight plans

Schedule

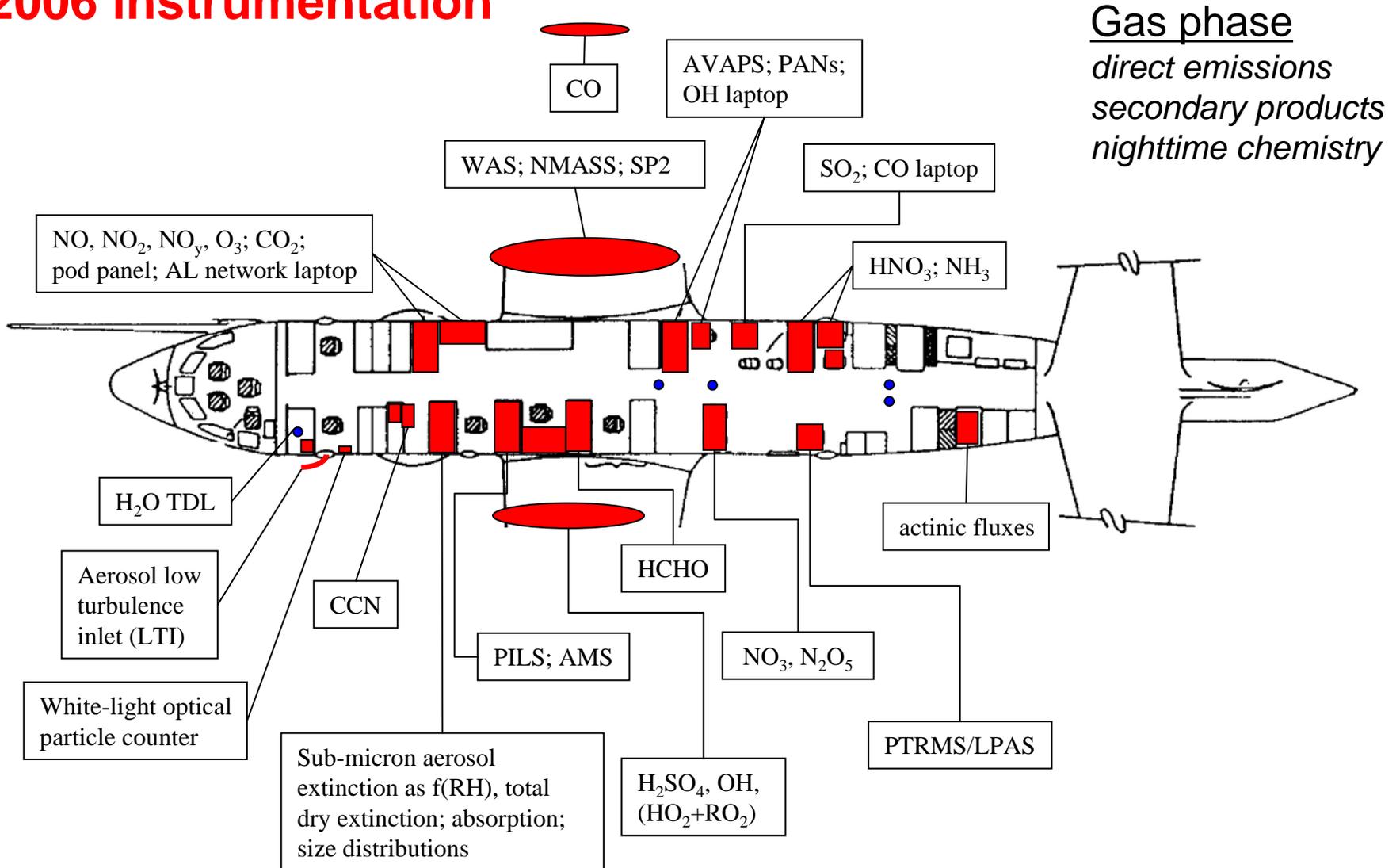
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2006 instrumentation



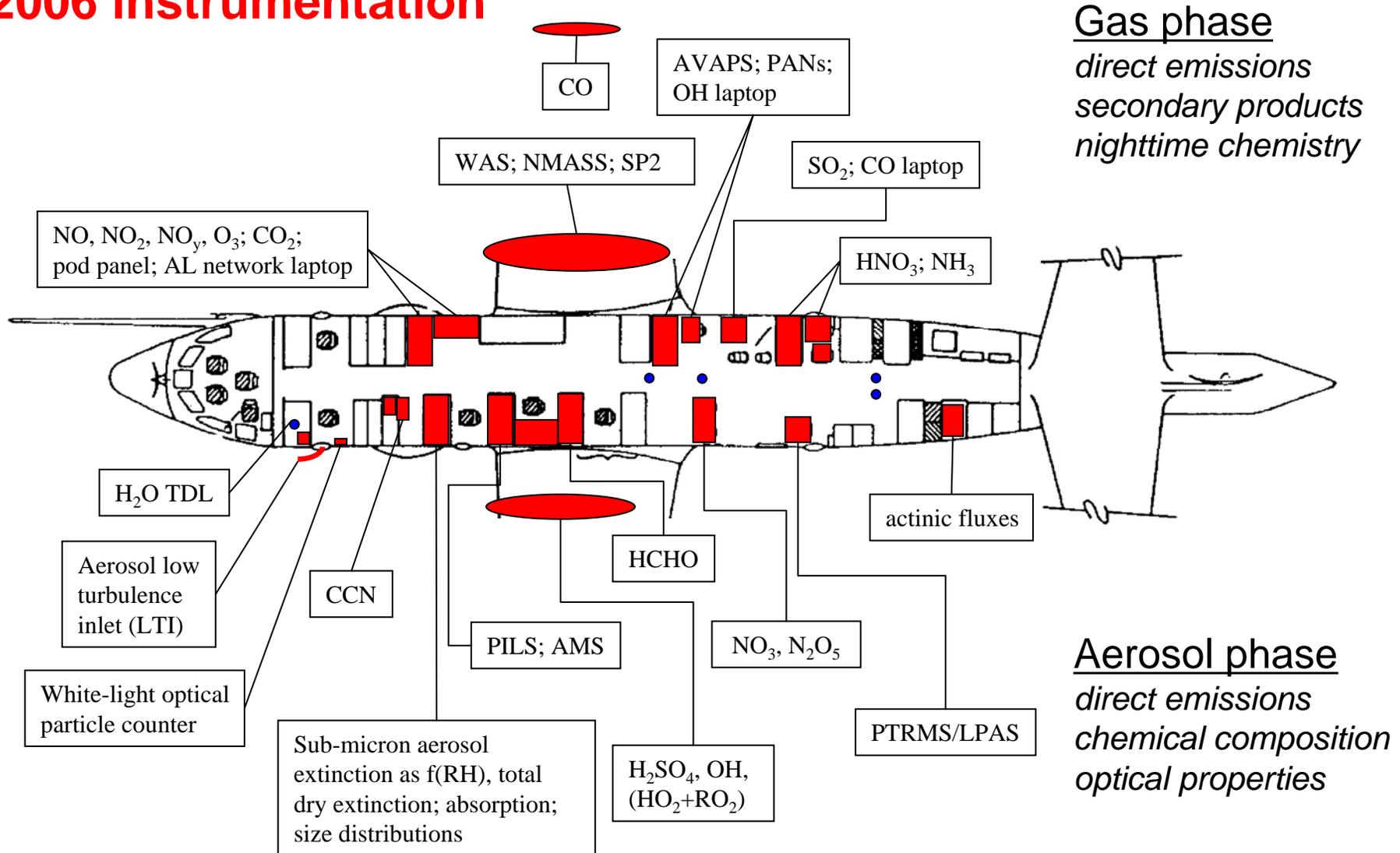
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2006 instrumentation



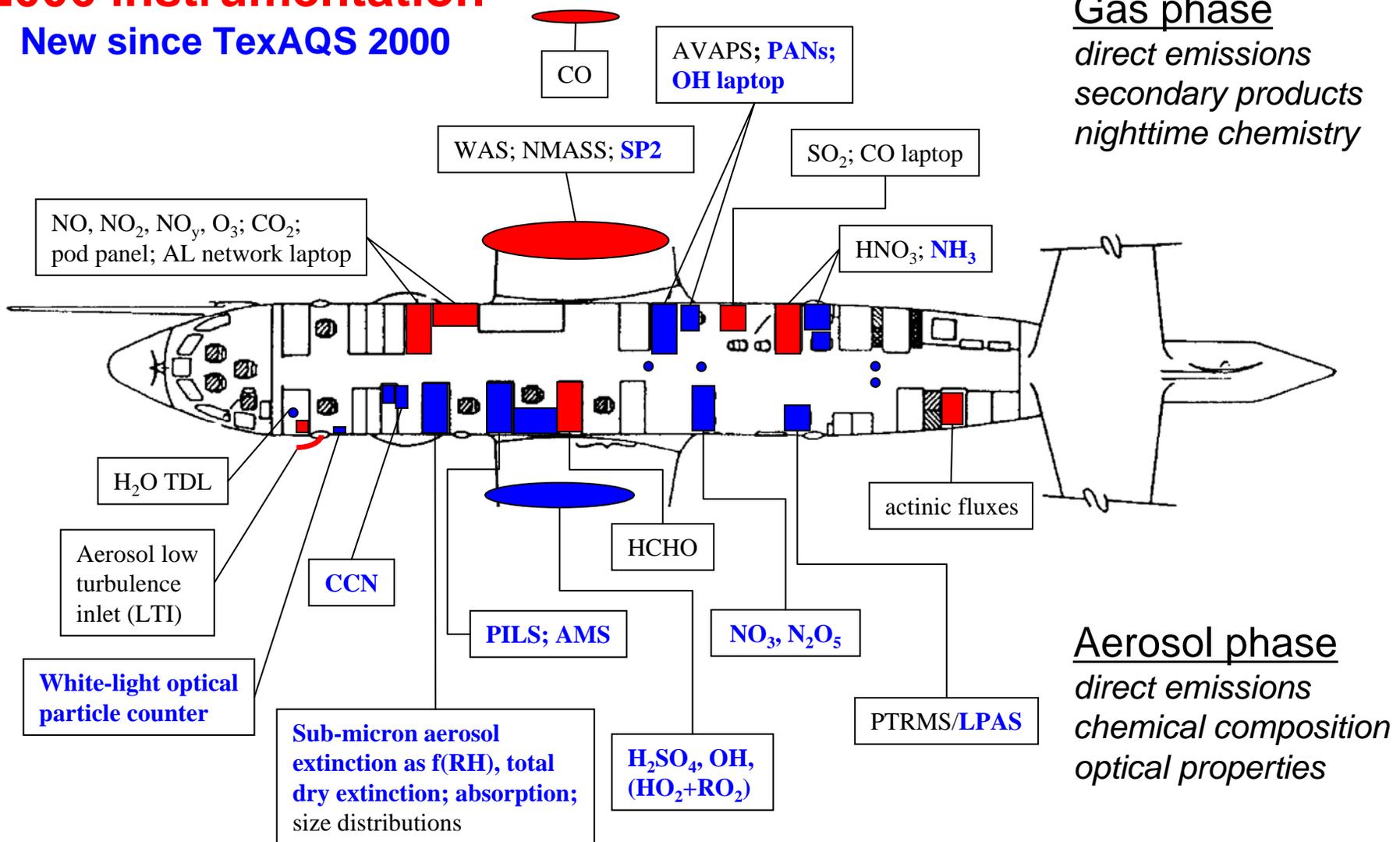
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2006 instrumentation



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2006 instrumentation New since TexAQS 2000



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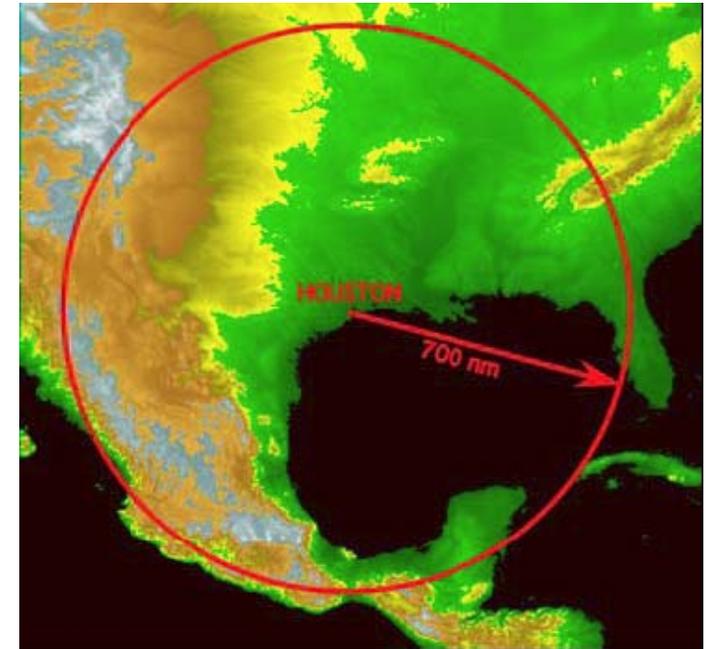
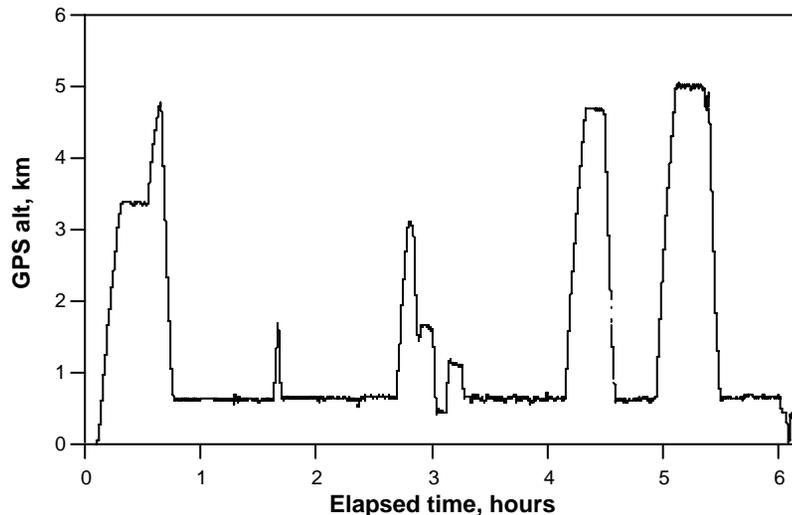
Capabilities:

138 flight hours; purchase up to 180
(~80 hours in TexAQS 2000)

Endurance ~8.5 hours

Range ~700 nautical miles

Ceiling ~6.5 km (21,000 feet)



700-nm out-and-return radius shown

*NEAQS 2004 study:
P-3 altitude vs. time*

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Science objectives: Based on results and experience from the TexAQS 2000 campaign

- **Emissions Verification:**

How well do current inventories represent actual emissions for:
Cities, Power Plants, Industry, Ships, and Vegetation (Forest Fires)?

- **Transport and Mixing:**

What are the roles of local, regional, and long-range transport processes in the accumulation and spatial distribution of pollution in the boundary layer over Eastern Texas, and in the export to the free troposphere?

- **Chemical Transformation:**

How do gaseous and aerosol emissions evolve chemically and physically as they are transported away from the source regions?

- **Aerosol Properties and Radiative Effects:**

What are the chemical, physical, and optical properties of the regional aerosol, and how do these properties affect regional haze and aerosol direct and indirect radiative forcing of climate?

- **Forecast Models:**

What is the current skill of air quality forecast models on local and regional scales?
What improvements can be made to enhance the accuracy and to extend the periods of these forecasts?

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Example flight plans

Houston survey flights

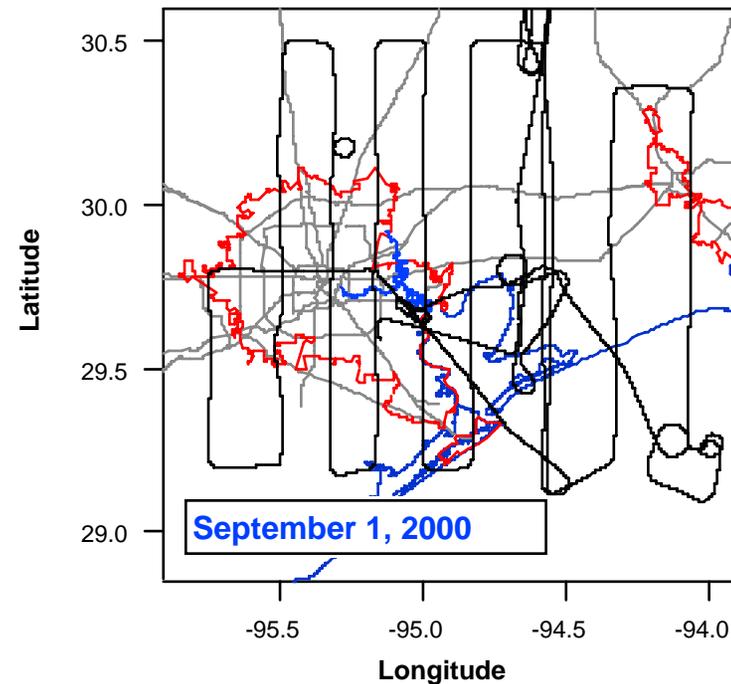
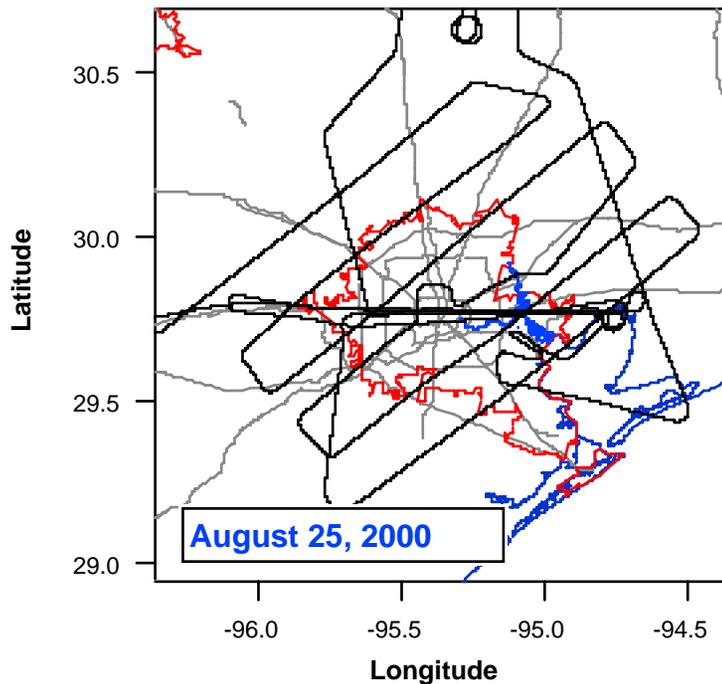
7 to 8.5 hours duration

Long crosswind transects at 500m AGL

Short profiles to 3000m AGL and return

1-2 profiles to maximum altitude

Emissions characterization
Chemical processing
Aerosol formation
Model evaluation



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Example flight plans

Dallas survey flights

7 to 8.5 hours duration

Long crosswind transects at 500m AGL

Short profiles to 3000m AGL and return

1-2 profiles to maximum altitude

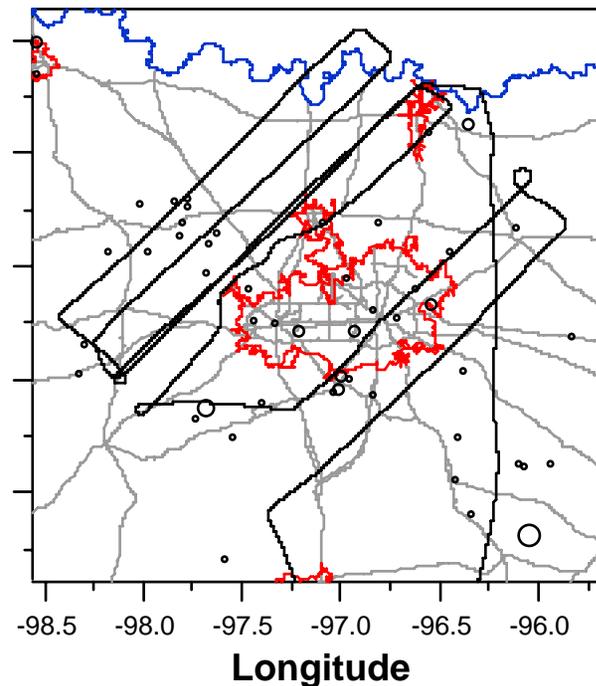
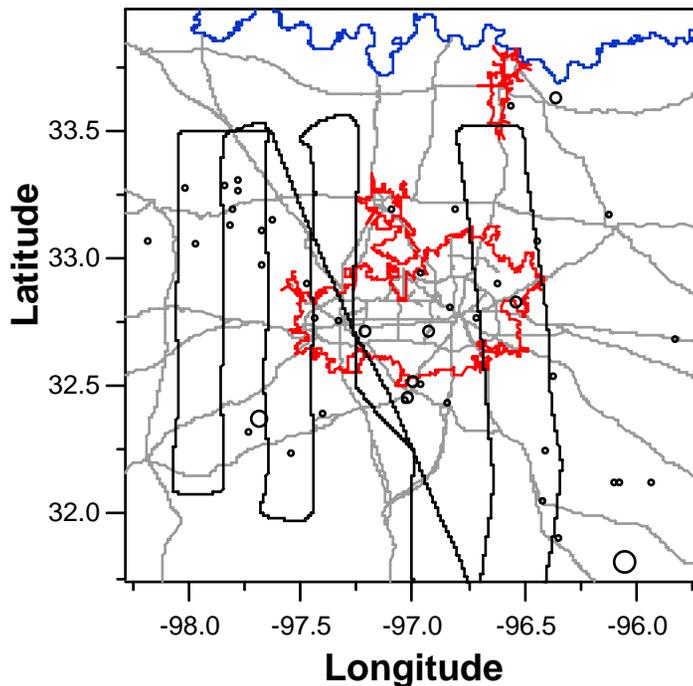
Emissions characterization

Chemical processing

Aerosol formation

Model evaluation

Contrast with Houston



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Example flight plans

Regional survey flights

7 to 8.5 hours duration

Long crosswind transects at 500m AGL

Short profiles to 3000m AGL and return

1-2 profiles to maximum altitude

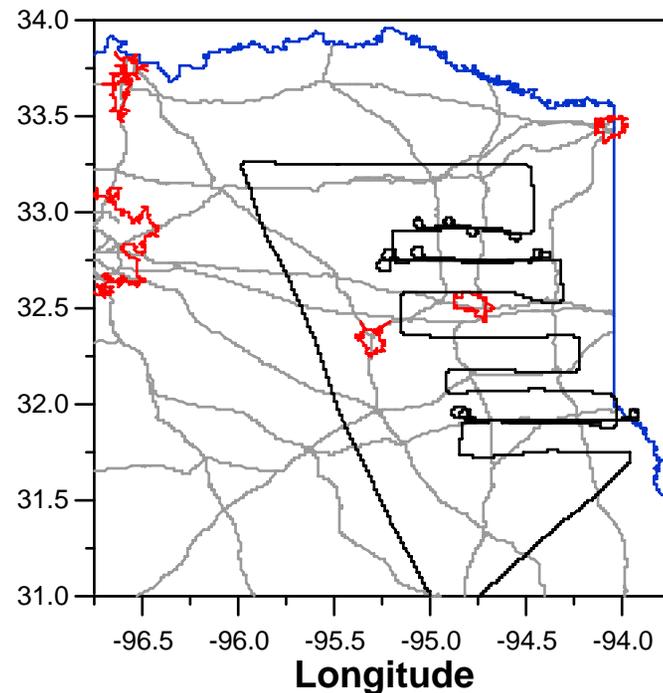
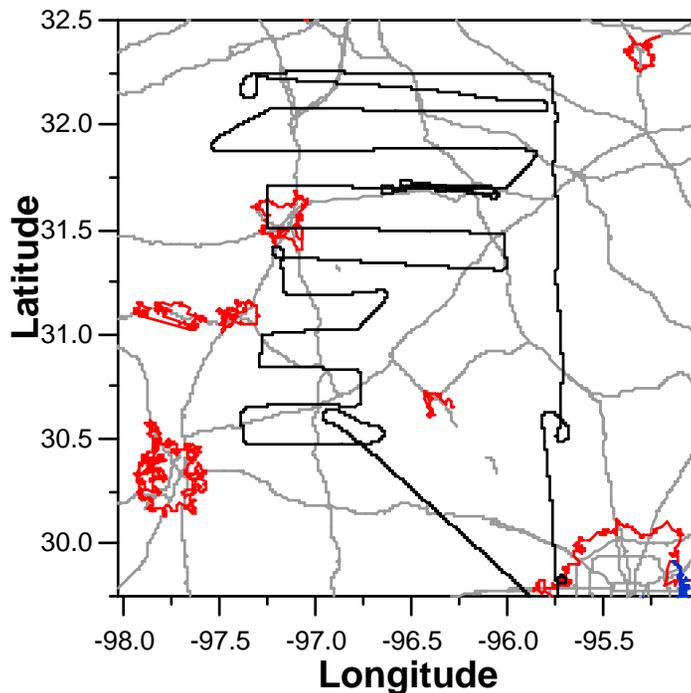
Biogenic emissions

Power plant emissions

Chemical processing

Aerosol formation

Transport and mixing



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Additional flight plans

- Nocturnal NO_3 and N_2O_5 chemistry studies
level legs at minimum safe altitude after dark

missed approaches at regional airports,
to provide data below level leg heights
- Point source studies on TX-NM border
large industrial plant - emissions plume study
- Crosswind transects along state borders
study inflow from extra-regional sources
- Area source studies in NW Texas?
study NH_3 emissions from agricultural areas

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Schedule

- NOAA P-3 originally scheduled to arrive in Houston on August 1
- Fleet maintenance issues at NADEP Jacksonville have delayed the NOAA aircraft return to home base in Tampa
- **P-3 arrival in Houston now scheduled for Tuesday, August 15**
- overlap with other major platforms not significantly affected:
 - NOAA Twin Otter
 - NOAA R/V *Ron Brown*
 - NASA King Air
 - CIRPAS Twin Otter