HOxCIMS (NCAR)

MEASUREMENTS:

- Chemical Ionization Mass Spectrometric-based
- Chemical conversion to H_2SO_4 followed by ionizati

	FREQUENCY	DETECTION LIMIT	ACCURACY
OH	2 min^{-1}	3 x 10^5 cm^{-3}	45% (2σ)
HO_2 & HO_2+RO	1 min^{-1}	1 pptv	35% (2σ)

TOOLS:

- Radical Calibrator
  - OH, HO_2 and RO_2 concentrations: 1 pptv and higher
  - Flows up to 50 l/min; RH 1-99%
- Steady State Box Model
  - Estimates of short- and interm.-lived species (radicals, reservoirs, etc.)

ANALYSIS:

- Measurement-model comparisons
- Multiple instrument comparisons
- Radical and ozone budgets

HOxCIMS

- Operational Requirements
  - Advanced warning of cloud penetrations
  - Inlet performance untested at DC-8 speeds
    - Range of speeds during test flights
    - Range of altitudes (15 minute legs) during test flights (e.g. every 5 kft over operational range)
  - Fresh N_2 cylinder every flight, O_2 cylinder every 5 flights, can go 36 hours without attention
  - Temperature must stay above 5 °C on A/C (SO_2/N_2 mix condensation) or put in heated laboratory
  - Need real-time Dew Point to adjust water addition
- Other Operational Information
  - Gas venting box (propane, NO/N_2 mix)
  - Exhaust contains SO_2, NO, propane, HNO_3
- Perceived Gaps & Issues
  - Cylinders, radioactive sources