AIRCRAFT MEASUREMENTS AND ANALYSIS OF $H_2O(v)$, CO, CH_4, AND N_2O IN SUPPORT OF THE ARCTAS FIELD CAMPAIGN

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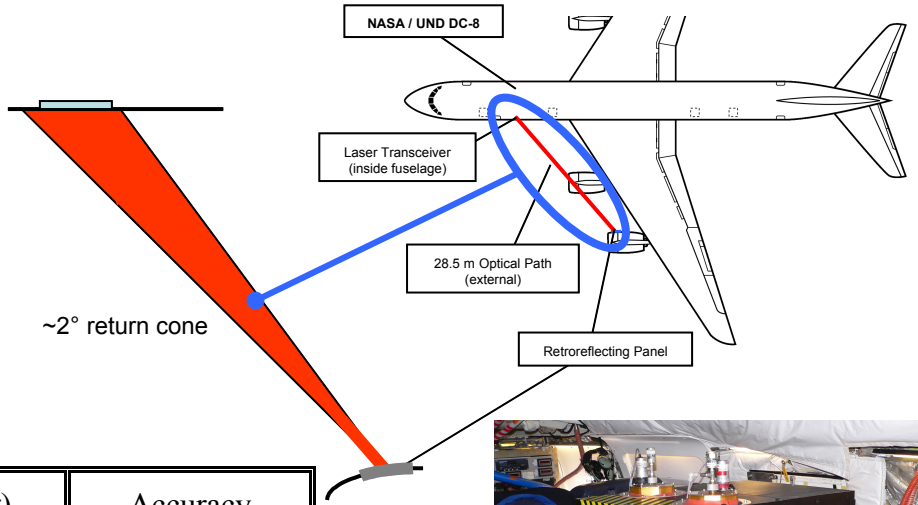
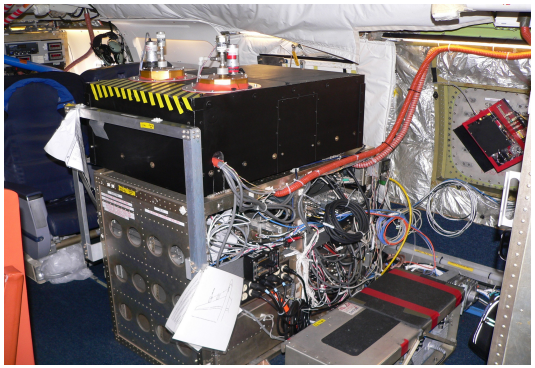


In-Situ Measurements from the DC-8

Instrument	Species	Time Response	Precision (1σ)	Accuracy
DLH	$H_2O(v)$	50 msec	0.1% or 0.01 ppmv (in 1 sec)	5% or 1 ppmv
DACOM	CO	1 sec	<1% or 1 ppbv	2%
	CH_4	1 sec	<0.1%	1%
	N_2O	1 sec	<0.1%	1%



In-flight reporting of preliminary $H_2O(v)$, CO

DLH / DACOM

- Operational Requirements
  - No restrictions on aircraft speed, p, T, …
  - Need LN2 fill daily, except on down days (we will install feeder dewar)

	Scenario		
	1 (2F/2D)	2 (3F/3D)	3 (3F/4D)
1. Gas cylinder requirements	None*	None*	None*
2. Cryogen requirements***	10 liters**	20 liters	30 liters
3. Additional equipment needed (e.g. calibration systems)	None	None	None
4. Staff requirements beyond normal science flight staff	None	None	None
5. Any other critical requirements	None	None	None

* Will change cylinders prior to flight to Thule, if required

** We would like to recommend that additional LN2 be brought to cover a contingency 2nd night

*** LN2 rationing planning discussion should be had prior to these suitcase flights

- We plan to test a 2nd version of the DLH from the starboard side of the DC-8
  - Station 530R, retroreflector on Engine #4
  - Non-interference with other instruments
  - Electronics mounted in DLH/DACOM rack