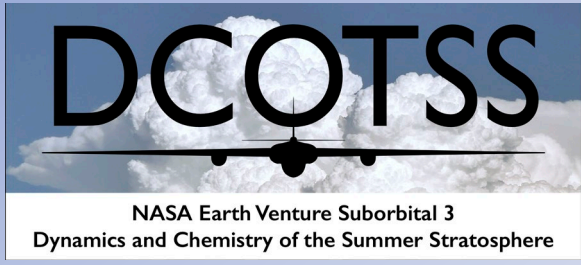
2021 Open Data Workshop
(December 7th)



Rapid Ozone Experiment

ROZE

PI: Jessica B. Smith
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Data Collection/Creation Process

DCOTSS
NASA Earth Venture Suborbital 3
Dynamics and Chemistry of the Summer Stratosphere

- In situ measurement of ambient ozone
- Rack mounted in Left Wing Superpod Aft Body

Spec.	Value
Dimensions	18 x 44 x 60 cm
Weight	19 kg
Power	250 W
Sample rate	0.1 s

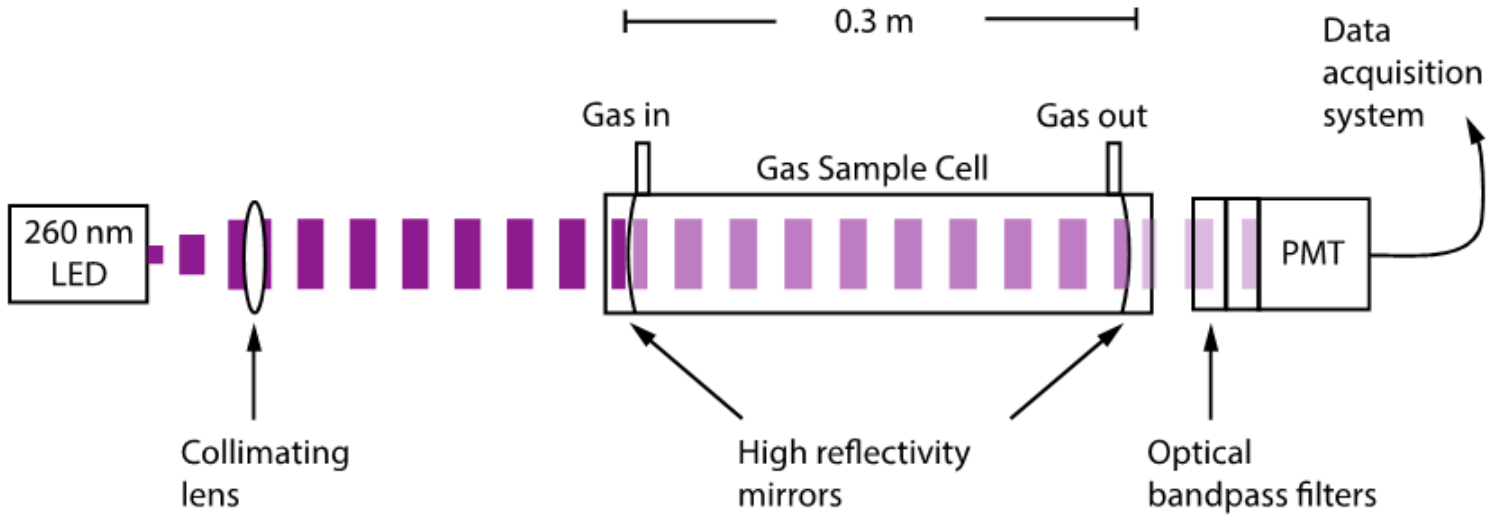
Hannun, R. A., et al., (2020), A cavity-enhanced ultraviolet absorption instrument for high-precision, fast-time-response ozone measurements, *Atmos. Meas. Tech.*, 13, 6877–6887, https://doi.org/10.5194/amt-13-6877-2020.

Data Collection: ROZE

Rapid Ozone Experiment (ROZE) – On loan from NASA Goddard

* Cavity-Enhanced Absorption Technique *

* Similar to – $\ln(I/I_0) = [O_3] \cdot \sigma(\nu) \cdot \ell$ *



Effective pathlength ℓ ~100 m

File Structure & Content

DCOTSS
NASA Earth Venture Suborbital 3
Dynamics and Chemistry of the Summer Stratosphere

- Time series of ambient ozone mixing ratio (ppbv)
- Data are archived using the ICARTT file format
- Range: <~800 hPa
- Files output at 1 Hz and 10 Hz
- Continuous data except for periodic zero measurements – zeroing frequency and duration varied during the mission

Data Limitations & Considerations

DCOTSS
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Dynamics and Chemistry of the Summer Stratosphere

Generic specifications below – Look in header for detailed specs.

- 5% uncertainty established during laboratory calibration
- 100 pptv @ 10 Hz, 30 pptv @ 1 Hz

Spec.	**Value**
Sample rate	0.1 s
Time response	50 µs (1/e)
Accuracy	~5%
Precision	~100 ppt/0.1 s ~30 ppt/s

Tentative Archival Timeline

DCOTSS
NASA Earth Venture Suborbital 3
Dynamics and Chemistry of the Summer Stratosphere

- Estimate for final data submission to archive:

  All flights by February 2022

- If data for individual flights are needed sooner, please contact me and I may be able to provide an “R0” to the archive

Upcoming Conference Presentations

DCOTSS
NASA Earth Venture Suborbital 3
Dynamics and Chemistry of the Summer Stratosphere

- Eric Hintsa will be showing a comparison of UCATS and ROZE ozone at AGU Fall 2021:

  The UAS Chromatograph for Atmospheric Trace Species (UCATS) - a versatile instrument for airborne platforms, rebuilt for the Dynamics and Chemistry of the Summer Stratosphere (DCOTSS) Mission

  Poster #A15N-1878, December 13, 15:00-17:00.