

# Harvard Halogens Instrument

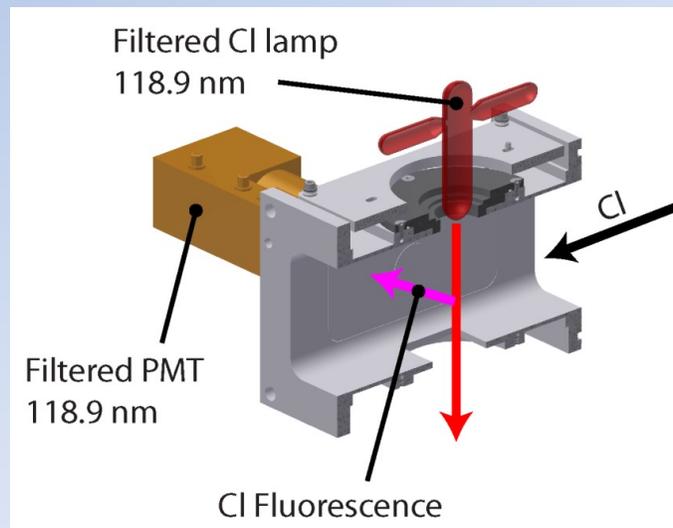
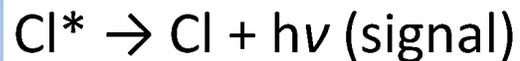
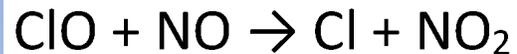
## **HAL**

PI: David Wilmouth  
wilmouth@huarp.harvard.edu

# Data Collection/Creation Process

- ClO is measured with Chemical Titration – Resonance Fluorescence detection
- ClONO<sub>2</sub> is measured with Thermal Dissociation – Chemical Titration – Resonance Fluorescence detection

## Chlorine Detection



- For more info: Stimpfle et al., JGR 2004, doi:10.1029/2003JD003811.

# File Structure & Content

- ClO and ClONO<sub>2</sub> mixing ratios in units of parts per trillion by volume (pptv) are archived as a function of time in seconds for individual flights.
- ClO is reported every 35 seconds, the duration of a NO titration cycle.
- ClONO<sub>2</sub> is also reported every 35 seconds, the duration of a NO titration cycle, but there are additional periodic gaps in the reported data due to cycling of the dissociation heater temperature.
- The file format is ICARTT. The file size is typically <50 KB. Data are generally reported only when the aircraft is in the stratosphere.

# Data Limitations & Considerations

- Precision and Accuracy

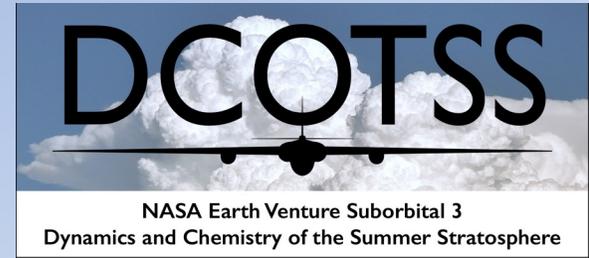
ClO: 3 pptv  $\pm$  30%  $2\sigma$

ClONO<sub>2</sub>: 10 pptv  $\pm$  40%  $2\sigma$

Based on historic numbers. Likely better for DCOTSS. Final archived files will have updated numbers.

- Be sure to read the notes in the header of each archived data file for any flight-specific information.
- Please contact the PI prior to use of the data.

# Tentative Archival Timeline



- Estimate final version of the data will be available on the DCOTSS archive for all flights by February 2022.

# Upcoming Conference Presentations

- DCOTSS HAL data will be presented at the Fall AGU Meeting:

**Abstract ID:** 999855

**Abstract Title:** In Situ Stratospheric Chemistry Observations from the 2021 NASA DCOTSS Campaign

**Final Paper Number:** A15N-1856

**Presentation Type:** Poster Session

**Session Date and Time:** Monday, 13 December 2021; 16:00 - 18:00 CST