Alice Data Review
New Horizons KEM 1 v5.0
Alice 5 IPM, Alice 5 Atmosphere

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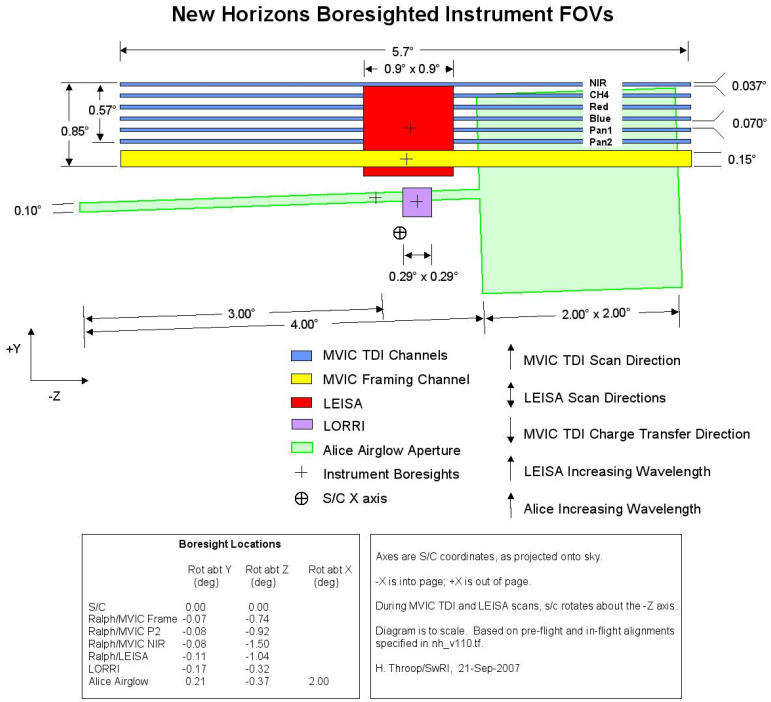
Overview: KEM1 v5.0

- Review of nh_a_alice_2_KEM1_v5.0 and nh_a_alice_3_KEM1_v5.0
- Previously reviewed nh_x_alice 2_KEM1_v1.0, nh_x_alice_3_KEM1_v1.0, nh_a_alice_2_KEM1_v2.0, nh_a_alice_3_KEM1_v2.0,nh_a_alice_2_KEM1_v3.0, nh_a_alice_3_KEM1_v3.0,nh_a_alice_2_KEM1_v4.0, nh_a_alice_3_KEM1_v4.0
- New submission includes data through 04-30-2020 (S/C Time)
  - 734 total eng/sci.fits files in each
  - V4.0 had 726 FITS files
  - 8 new files are Alice dark exposure, IPM measurements

1. **No major issues preventing database from use and data look good**
2. **No minor issues**

Brief P-Alice Instrument Overview

- P-Alice is an ultraviolet spectrograph sensitive from 520 to 1870 Angstroms
- A “lollipop” shaped slit is used (wide on top, narrow on bottom)
- Detector has 1024 columns in the spectral dimension, 32 rows in the spatial dimension.

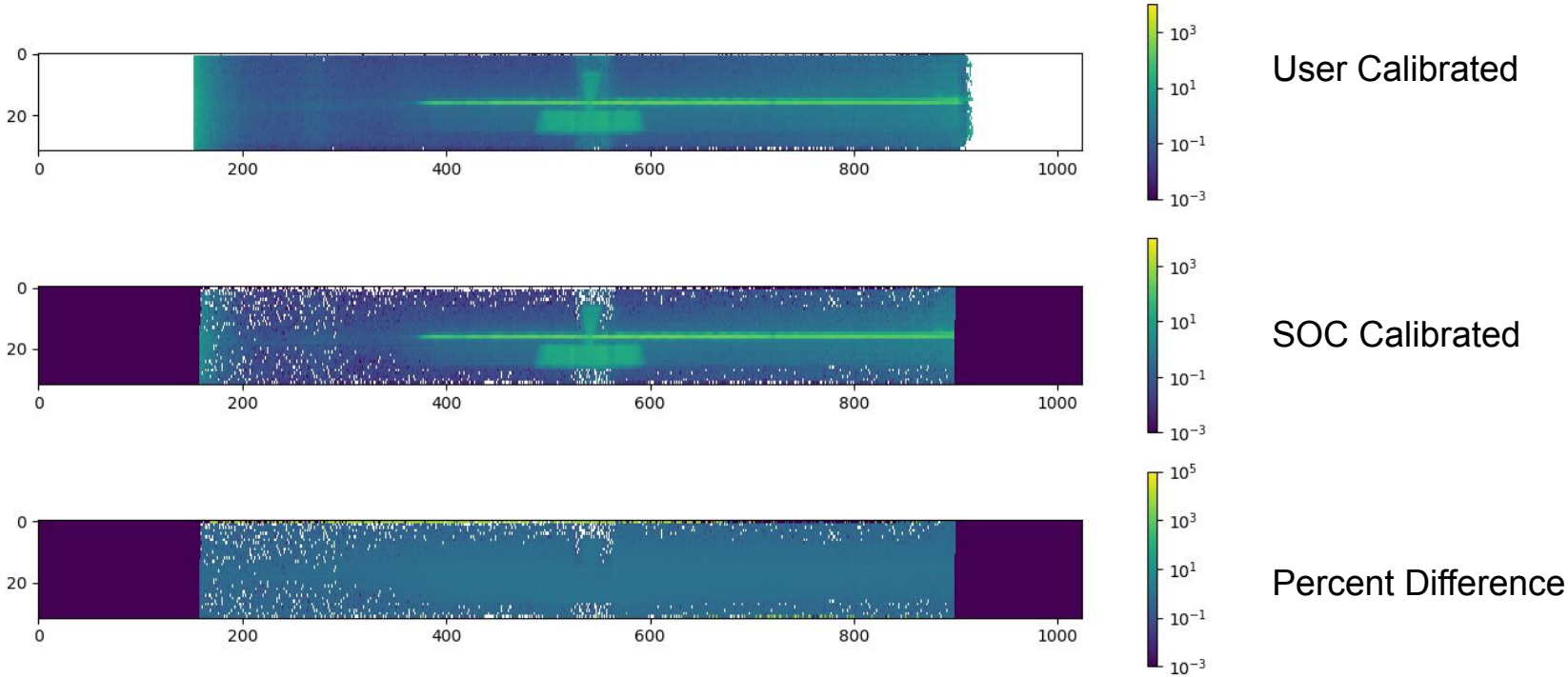


Data Review: Alice KEM1 v5.0

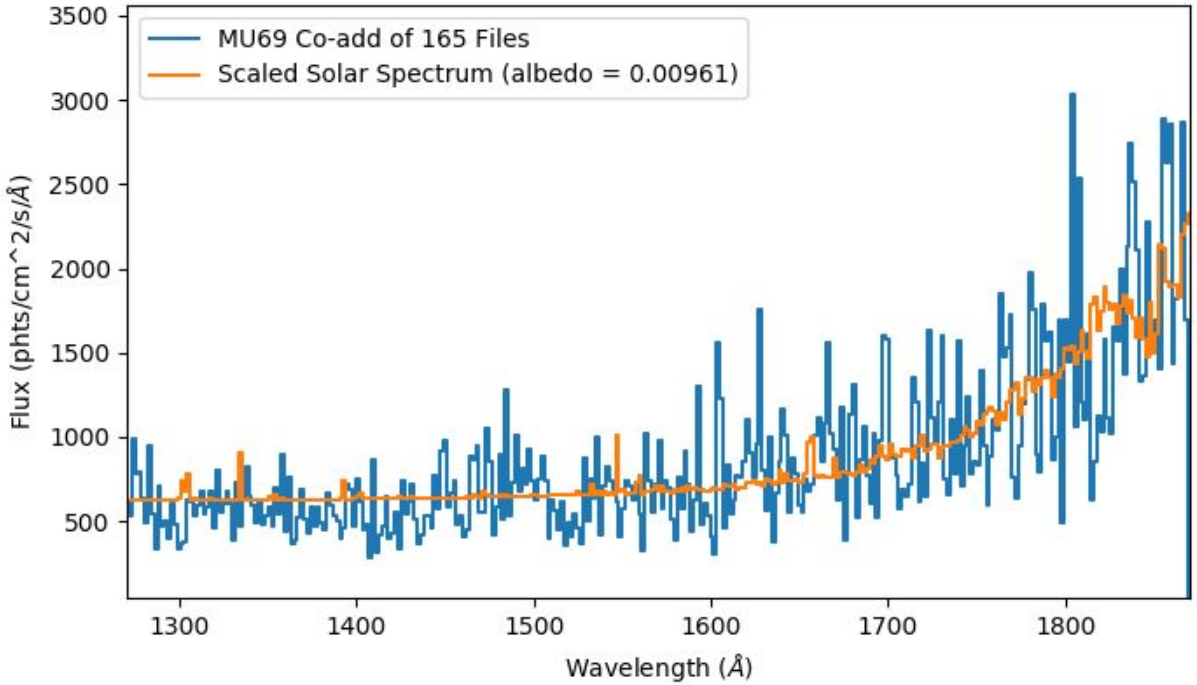
Usability

- All .fits files accessed using Python and astropy.io.fits
  - All eng files calibrated according to ICD
  - All sci files accessed, both data and headers
  - Log file with machine readability available
  - PNGs with both user-calibrated, science files, and differences available on request
  - Python code available as well
- All .lbl files checked with Python script for machine readability
  - Log available upon request
- Select files checked in NASAView/DS9 to ensure _eng.fits files matched _sci.fits files
  -

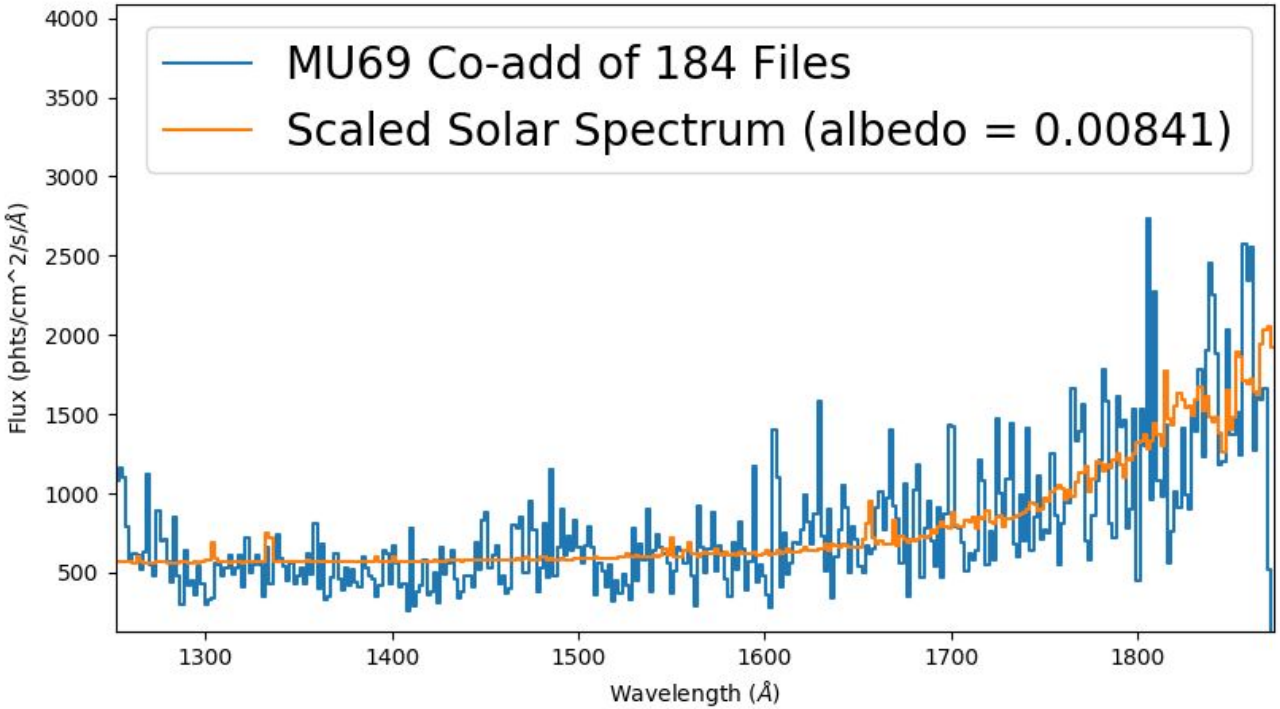
Example Difference Image: ali_0429588629_0x4b2_sci



Arrokoth Solar Reflectance Fit (a_{UV}=0.01, v3.0)



Arrokoth Solar Reflectance Fit (a_{UV}=0.01), v4.0



Major Issues

1. None

Minor Issues

1. None

Data Review: Alice IPM Scans

Overview: Alice IPM Scans

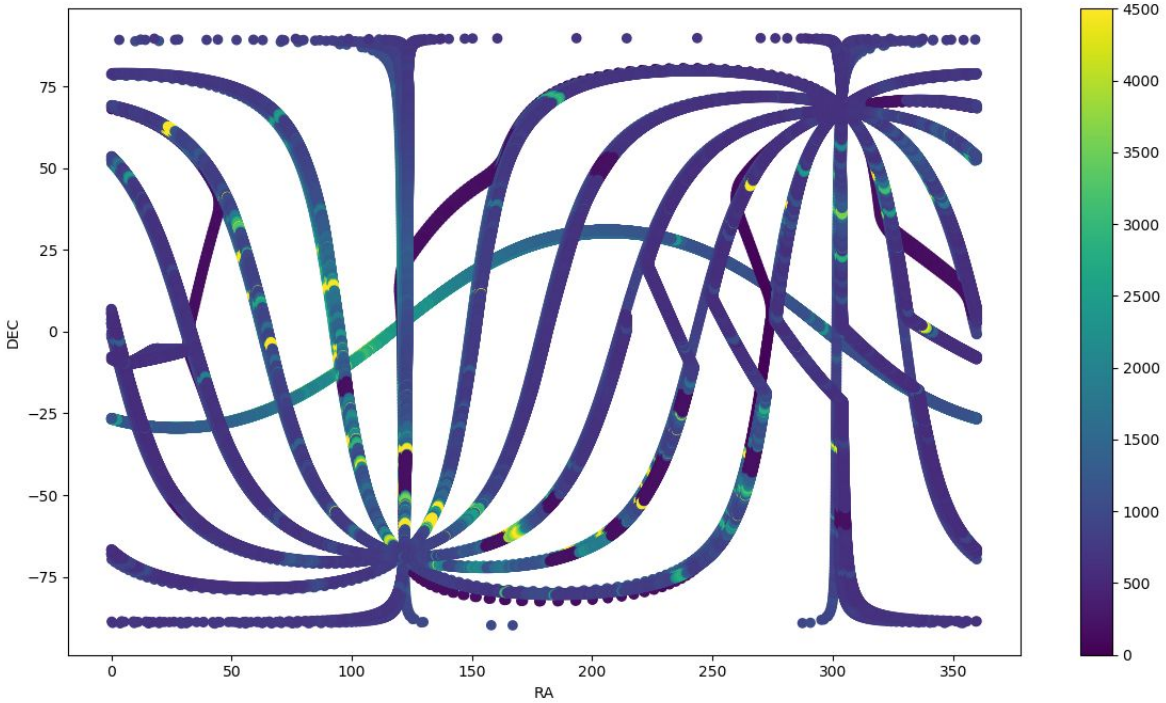
- Review of NH-X-ALICE-5-IPM-V1.0
- Submission includes data through 04-30-2020 (S/C Time)
  - 1 Count rate CSV file, 10 IPM scans

1. **No major issues preventing database from use and data look good**
2. **No minor issues**

Usability

- Manually accessed and read user files
- Accessed and plotted 10 scans, data look good
  - Python code available as well
- All .lbl files checked with Python script for machine readability
  - Log available upon request

Data - IPM Scans



- 10 Scans
- Similar to Fig. 6 in Gladstone et al. 2021
- All processing info present in dataset.cat
- Information for orientation of Alice slit present in CSV

Issues

- No major issues
- No minor issues

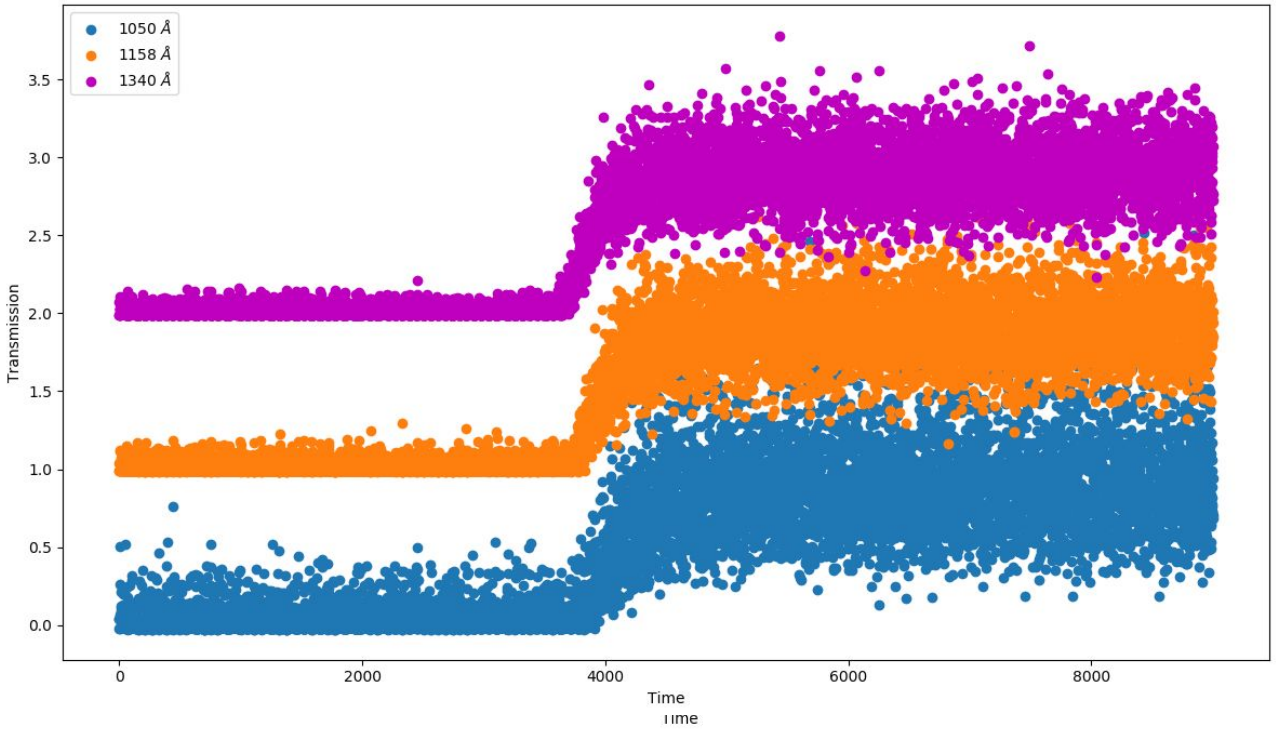
Data Review:
Pluto Encounter -Alice Atmosphere Data v.20

Overview: Pluto Encounter Atmospheric Data v2.0

- Review of NH-P/PSA-ALICE-5-ATMOS-V2.0
- Submission includes data through 04-30-2020 (S/C Time)
  - 2 Fits files in Solar Occultation, 1 Fits file in Stellar Occultation
  - 2 Composition abundance and density CSV
- New to this version is /STAROCC, stellar occultation and appulse data

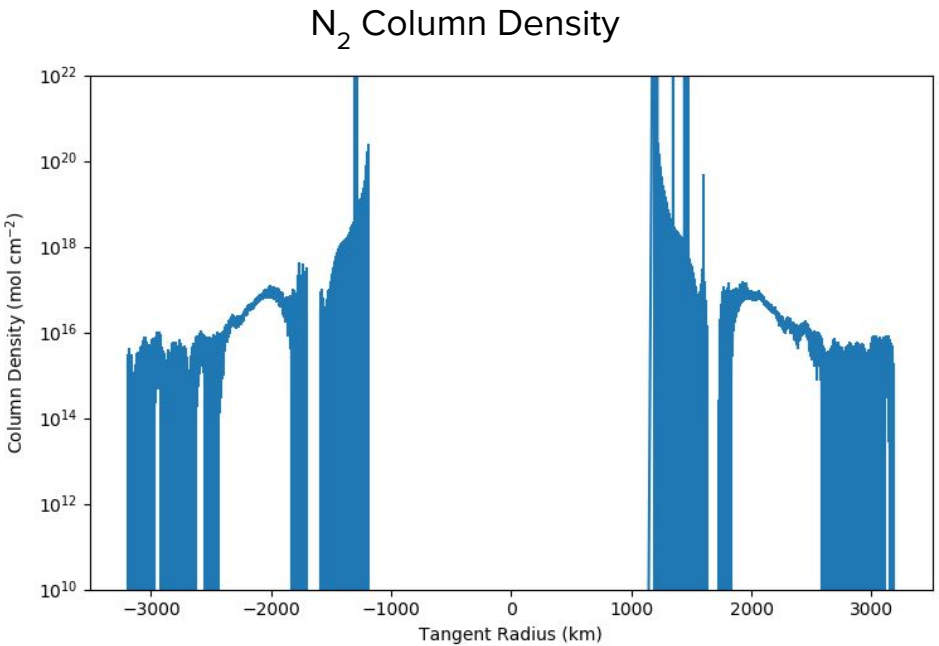
1. **No major issues preventing database from use and data look good**
2. **No minor issues**

Data - Stellar Occultation/Appulse



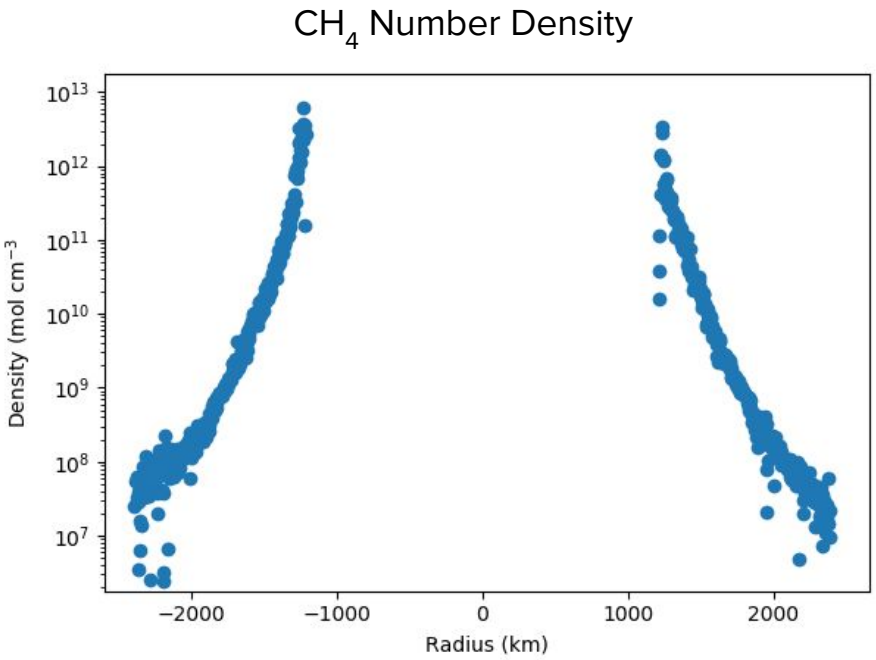
- Transmission lightcurves processed according to dataset.cat
- Appulse and Occultation data match Kammer et al. 2020

Data - Atmosphere Abundances



- Data look good and plot easily
- Ample documentation in the FITS headers as well as supporting docs

Data - Atmosphere Densities



- Data look good and plot easily
- Ample documentation in the FITS headers as well as supporting docs

Issues

- No major issues
- No minor issues

All data and documentation look good and are ready for release.