R-Alice Lutetia PDS/PSA Data Review

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Datasets Reviewed

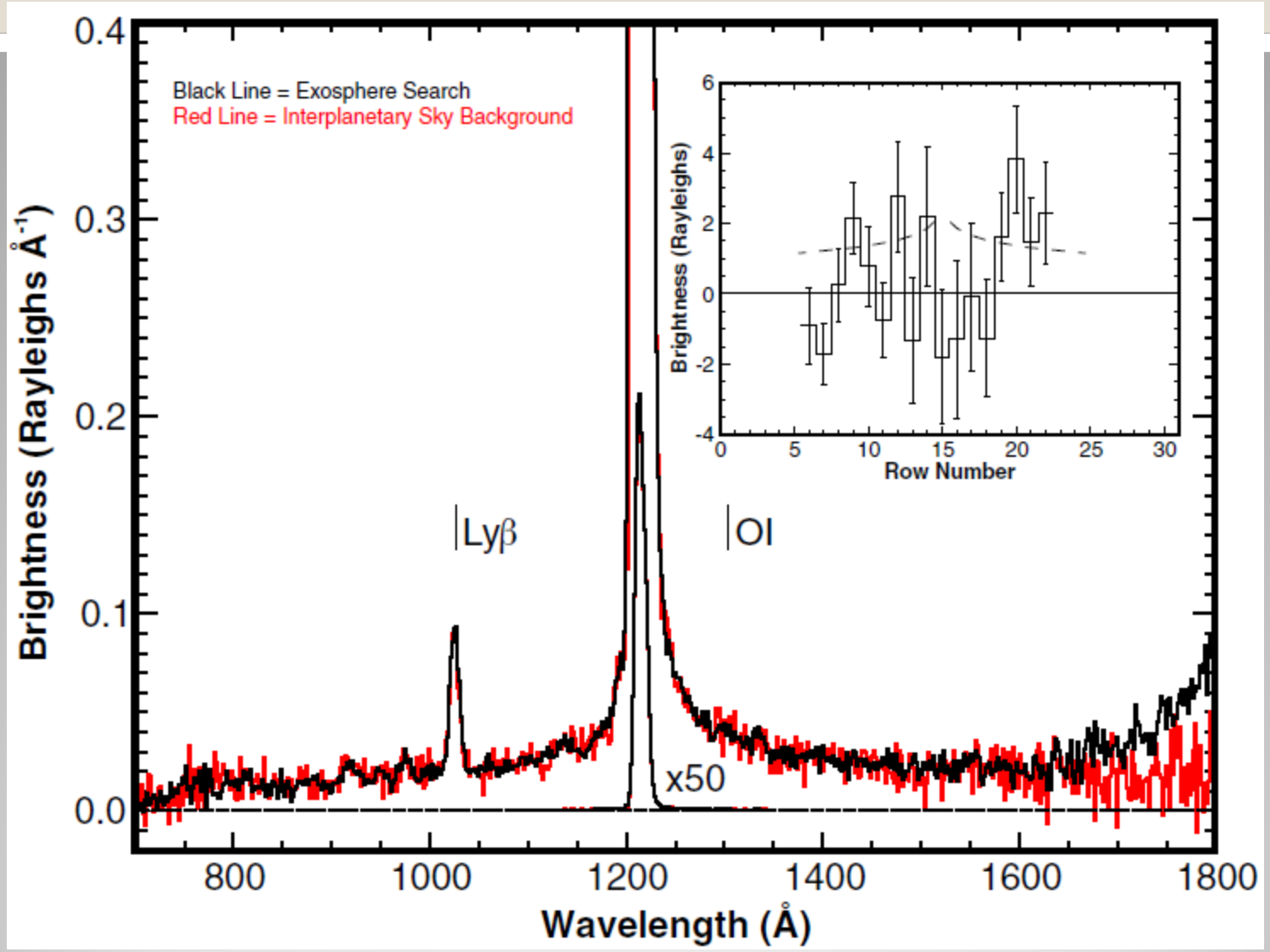
- RO-A/CAL-ALICE-2-AST2-V1.0
- RO-A/CAL-ALICE-3-AST2-V1.0
- RO-A/CAL-ALICE-4-AST2-V1.0

- Review Conclusions
  - Data are ready to be released after minor RIDs are addressed (no delta-review needed)
  - RIDs submitted: 279, 291, 292, 293

R-Alice Spec's

- Spectral Range 700 - 2050 Angstroms
- Spectral Resolution 12.5 - 9.8 Angstroms for extended sources
- Spatial Resolution 0.6 degrees
- Projected Entrance Slit 0.1 by 6 degrees
- Nominal Effective Area 0.03cm^2 (at 1900 Angstroms), to 0.53cm^2 (at 1150 Angstroms)

Very similar to the New Horizons Alice and LRO LAMP instruments I work with.



R-Alice Lutetia Results

- Stern et al., “Ultraviolet Discoveries at Asteriod (21) Lutetia by the Rosetta Alice Ultraviolet Spectrograph,” AJ, 2011.

- Beginning on approach to Lutetia on 2010 July 8 at 14:30 UT,
- at a distance of 2.7×106 km,
- we obtained 22 separate spectra of the region around the asteroid;
- these observations totaled 20.2 hr of integration,
- ending on 2010 July 9 at 18:15 UT
- at a distance of 1.2×10^6 km from the asteroid.
- Rows 14-16 extracted.

R-Alice Lutetia Observations

Evaluation Tools

- Lenovo Thinkpad Running via VMWare SuSE 11.4x64
- Desktop PC running SuSE – data installed just fine

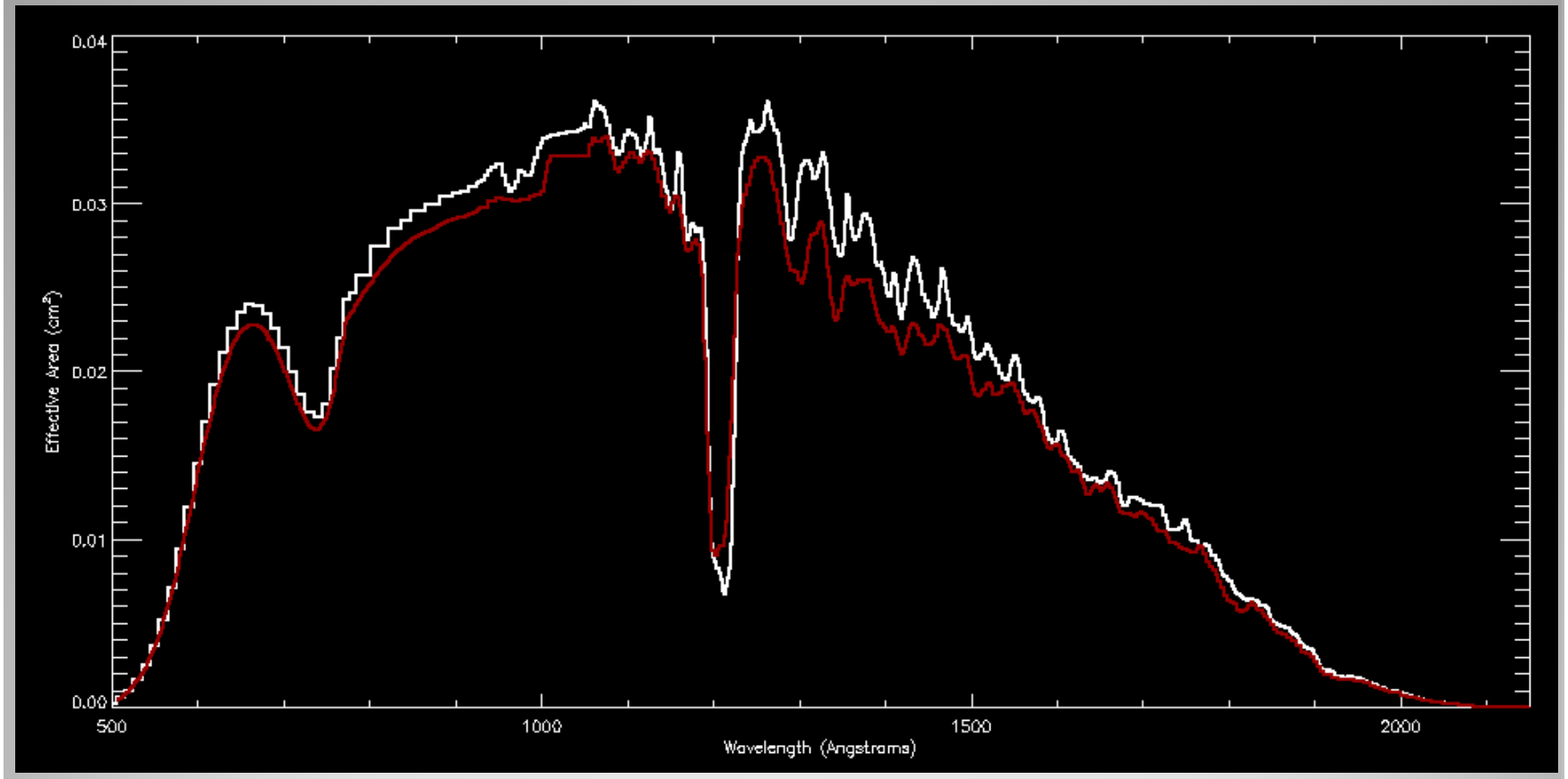
- IDL 8.0
- Readpds v4.5
- Astron library

- AAREADME.TXT, VOLDESC.CAT, and ERRATA.TXT: good

RO-A/CAL-ALICE-2/3/4-AST2-V1.0

- CALIB/CALINFO.TXT: good
- CALIB/RA_AEFF_008
  - RA_CR2_PC10_CORRECTION
  - RA_CVP2_PC10_CORRECTION
  - RA_ESB2_PC10_CORRECTION
  - RA_ESB3_PC10_CORRECTION
  - RA_MARS_PC10_CORRECTION
  - RA_PC4_PC10_CORRECTION
  - RA_PC6_PC10_CORRECTION
  - RA_PC8_PC10_CORRECTION
  - RA_STEINS_PC10_CORRECTION
- CALIB/RA_PC12_AEFF_001
  - RA_LUTETIA_PC12_CORRECTION
- CALIB/Flat, Dark, and Wave (2,3,4): good
  - Flats not recommended for use (~5% effect)

RO-A/CAL-ALICE-2/3/4-AST2-V1.0



- Before and After Correction

Effective Area Calibration Data

Effective Area Calibration Data

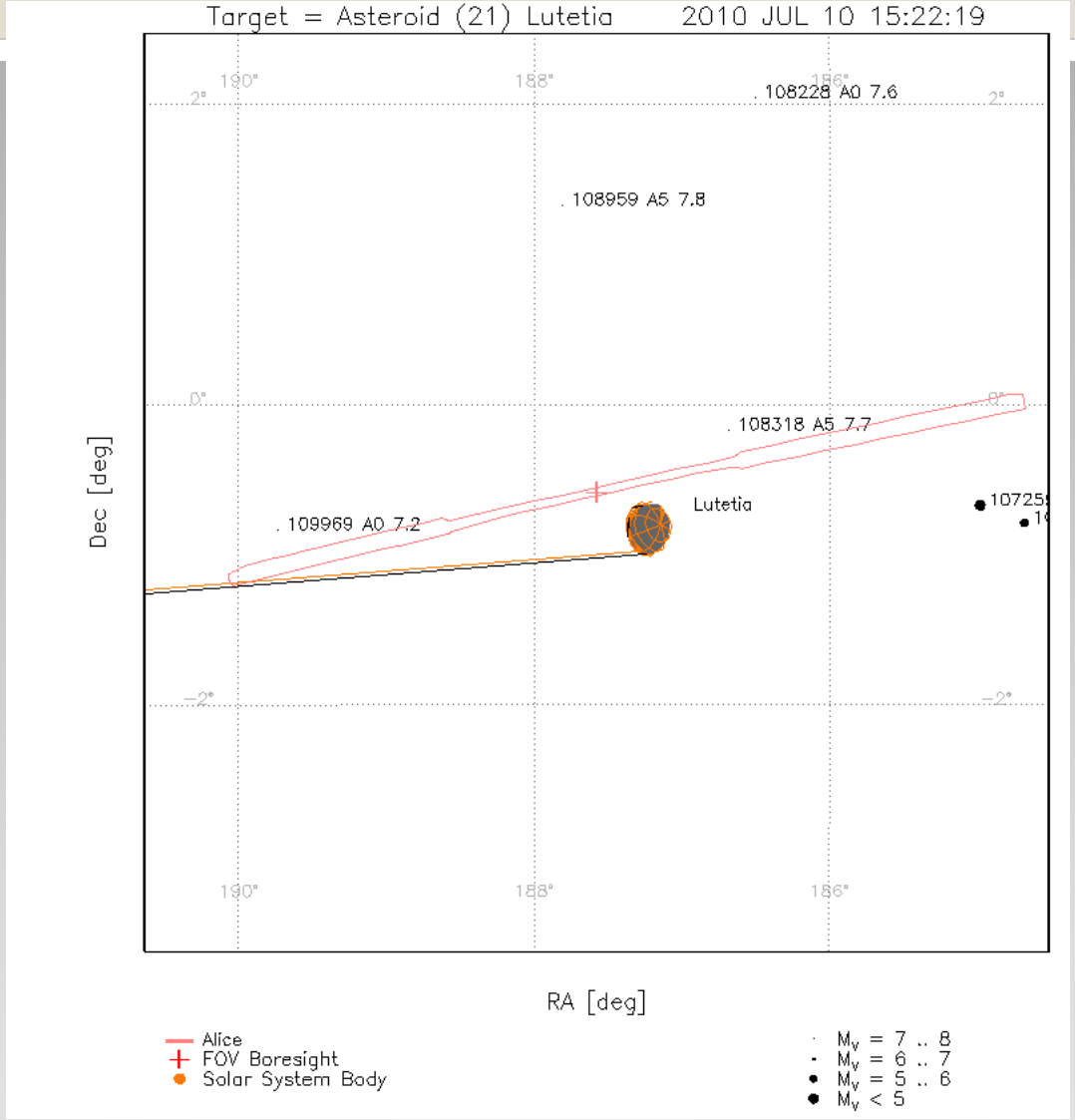
- Trouble reading RA_PC12_LUTETIA_CORR.TAB
  - Probably my environment variables (new setup), rather than the file
  - Readcol brings in the .TAB ascii file (2 columns) just fine

CATALOG, DOCUMENT, & INDEX

- CATALOG/ALICE_RO.CAT through SOFTWARE.CAT (2,3,4): good
- DOCUMENT/* (2,3,4): good
  - DOCUMENT/ALICE_DATA_TO_RAYLEIGHS.ASC is especially nice to have.
    - Note that conversion from flux photons/cm^2/sec to differential flux (i.e., specific intensity) photons/cm^2/sec/A by dividing by $\Delta\lambda$/pix is described here with an idl code example.
    - **RID: The table listing solid angle per row is so useful that it should be provided as an additional calibration data product in the archive**
- DOCUMENT/CODE/* (2,3,4), Entire "MIKE" calibration pipeline code: good
  - Didn't get around to running myself (most users won't ever need this)
- INDEX/ (2,3,4): good
  - 2 is ENG, uncalibrated
  - 3 is SCI, flux calibrated
  - 4 is LIN, extracted calibrated spectra
  - (1 is raw datastream from spacecraft, not useable – not archived)

GEOMETRY

- **GEOMETRY/GEOMINFO.TXT: editorial change**
  - **RID**
  - **“one of the following 4-character values” =>**
  - **“one of the following 3-character values”**
  - **Missing the version number following the first three characters PIX#, HIS#, CNT#.**
  - **# might not be needed, unless related to SPICE info updates**
- GEOMETRY/
  - One for each data file
  - Plot of target on sky and background stars with the GeoVis (GV) software
    - **RID: Add a reference to Throop et al. DPS 2008 poster for GV details.**
  - These are a nice addition to the delivery

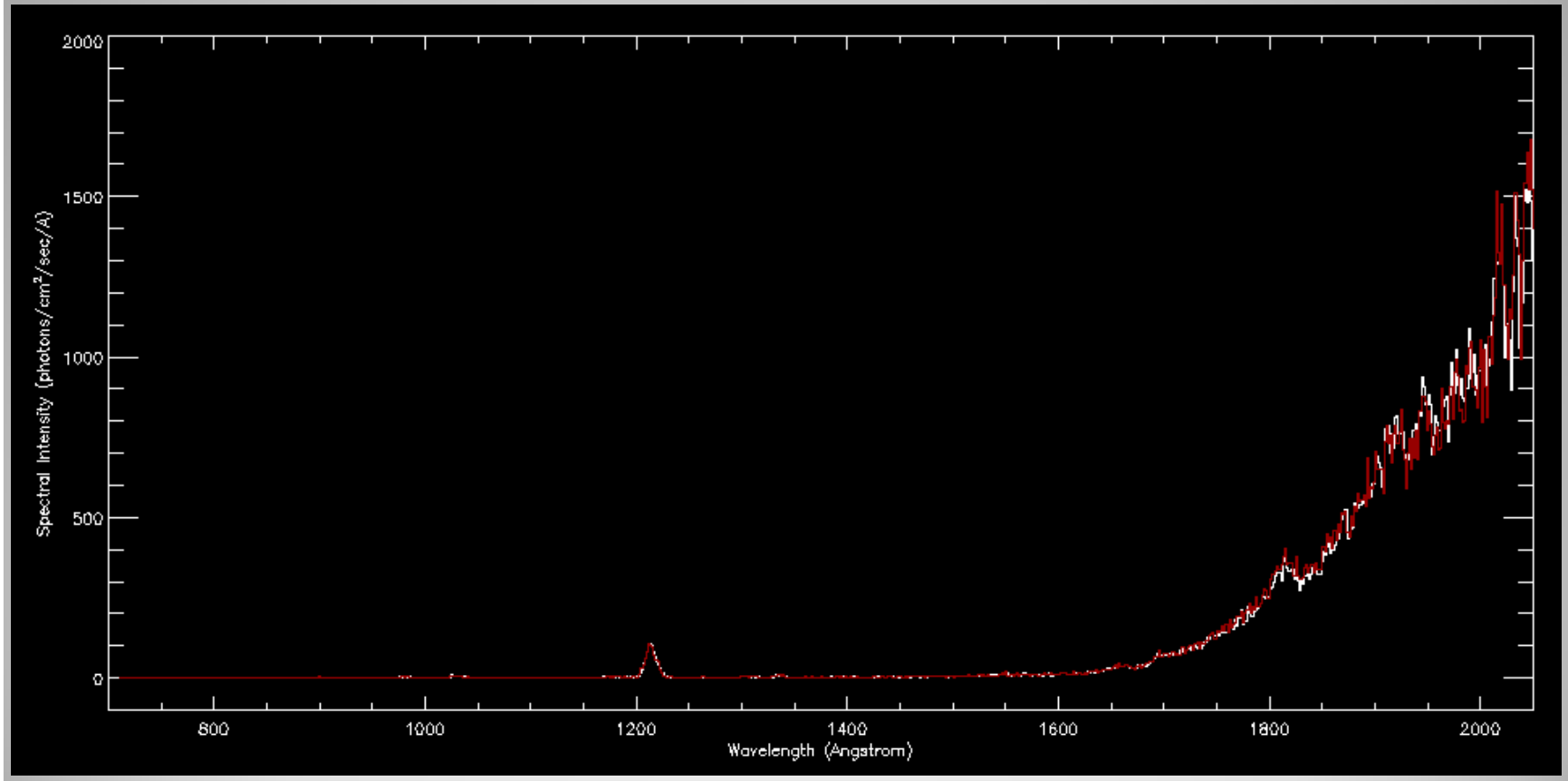


Geometry Plots

- RA_YYMMDDhhmmss_<type>_<lev>_<v>,
  - where type is PIX# (pixel list), HIS# (histogram), CNT# (count rate)
    - and where # is the 1-digit version number to distinguish different dumps from the same observation;
  - where lev is ENG, SCI, or LIN level (2, 3, 4, respectively);
  - And where <v> is the running version number of the calibration
    - **Why isn't <v> always 1 here? Instead it is absent. Not a problem though.**

DATA

- Successfully plotted SCI and LIN versions of one of the Lutetia targeted spectra



DATA

- Data are ready to be released
- Four minor RIDs
  - 279, 291, 292, 293

Summary