

New Horizons LORRI Data Review

Reviewer: Xiao-Duan Zou (Planetary Science Institute)

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1. Datasets overview

- PDS version: PDS4
- 5 LORRI sets:

pds:nh_lorri:kem1_cal::2.0 (477 files in total)

pds:nh_lorri:kem1_raw::2.0 (477 files in total)

pds:nh_lorri:kem2_cal::1.0 (519 files in total)

pds:nh_lorri:kem2_raw::1.0 (519 files in total)

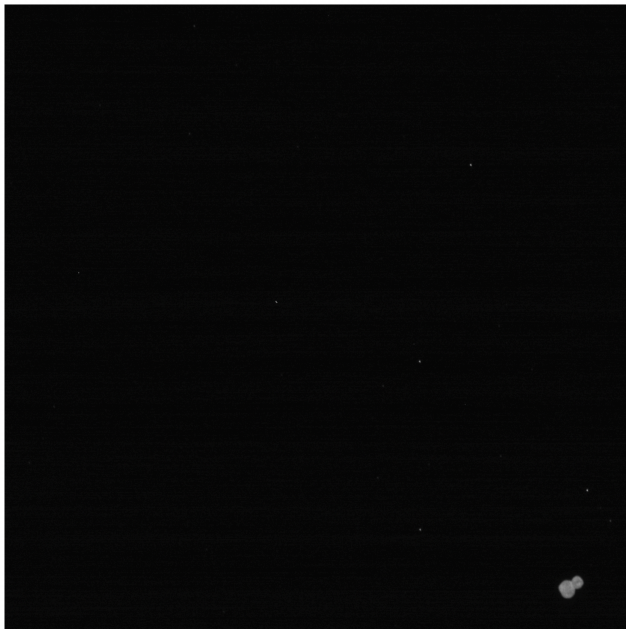
pds:nh_documents:lorri::2.0

- Mission phases:
Kuiper Belt Extended Mission 1 & 2

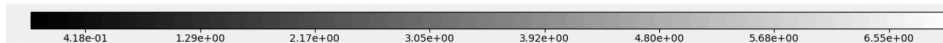
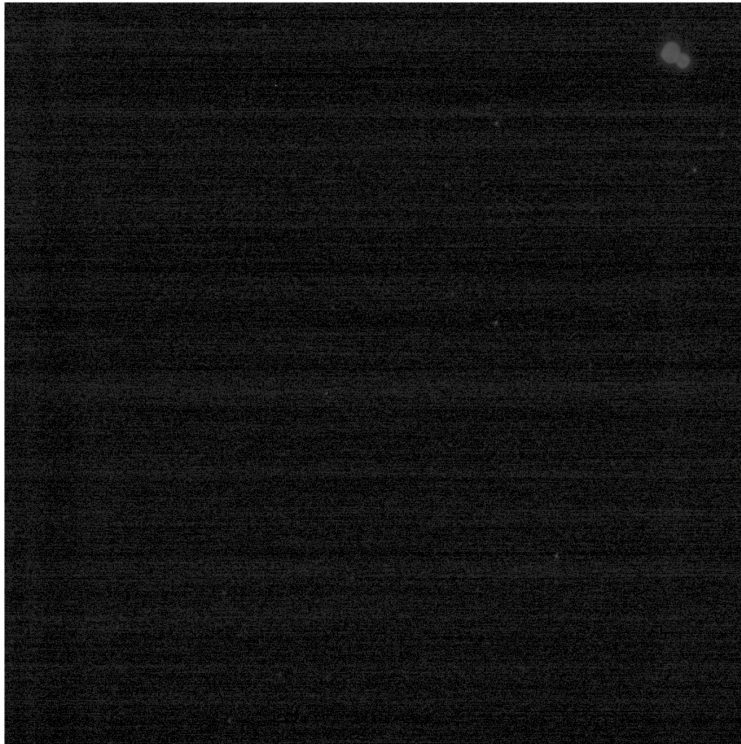
- Summary:

Example of the image:

/LORRI/kem1_cal/lor_0408617245_0x630_sci.lbx



“No valid/supported Display Settings found. Displayed image may not be correct.” error when showing the error image with PDS4 viewer.



Data set in good shape, no obvious problem. Only a few small issues.

Flag map:

With same error message as above. But not sure about the orientation, because **all the values are -32768 to -32736**

2. Review process

- Check folders, file names and inventory.csv
- Use astropy fits.open and test all fits
- Test files with **pds4_tools**: Read all .lblx label and .fit files and save images as png to check image content quality (**all can be read**)

- Check consistency between levels with tools:
Diff Files 23.1 and Beyond Compare 4.4.1
- Check error array and quality array, test if all are 0-arrays. **Quality flag array issue**
- Compare documents

3. Document/Calibration

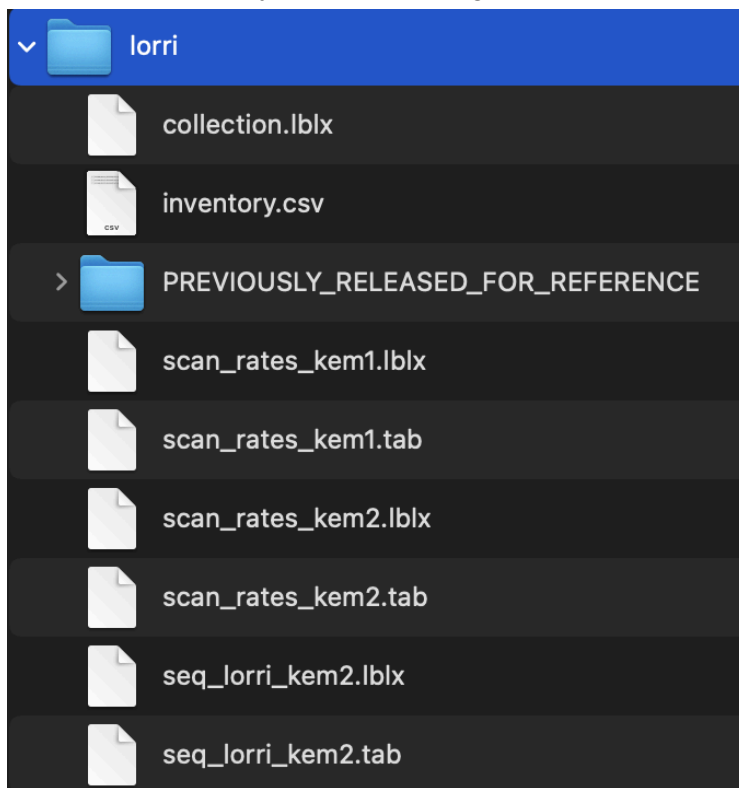
- The lorri/inventory.csv list doesn't match the file name in the "lorri" folder

P,urn:nasa:pds:nh_documents:lorri:scan_rates::1.1

P,urn:nasa:pds:nh_documents:lorri:scan_rates_kem2::1.0

P,urn:nasa:pds:nh_documents:lorri:seq_lorri_kem2::1.0

- There should be seq files for kem1 in the documents, "seq_lorri_kem1.lbx" "Seq_lorri_kem1.tab"
- Update the inventory.csv after adding the files



4. Data

- Files can be correctly read by python, pds4 python tool and ds9.
- Some minor improvements can be made to the overview.txt files

	Problem	Suggested Fix
Dataset	"Partially processed" is vague	Partial calibration steps applied
Versioning	V1.0 and V2.0 unclear	Kem2 are V1.0 in the data package title, make them consistent
Calibration Contradictions	Some steps are listed but stated as unnecessary	Clearly indicate which steps were done
SCANRATE	Always -999 in fits header	Better remove from header
Quality flag	Quality value -32768 or -32736 unexplained	Add the correct value to the list
"Noodles"	Term is not explained	Why noodles
distorion	typo	should be "distortion"

- SPICE data are available and included in the label completely

5. Conclusion: Certifiable, need to fix quality flag, flipped error image and clarify the overview.txt.