

New Horizons LORRI Data review

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1. Datasets overview

- PDS version: PDS3
- 2 data sets from the high res cam LORRI.

nh-a-lorri-2-kem1-v5.0

nh-a-lorri-3-kem1-v5.0

- Level: 2 raw and 3 calibrated
- Mission phases:

KEM1 v5.0 added new data (data downlink before 05/01/2020)

- Datasets comparison:

	Version 2.0	Version 3.0	Version 4.0	Version 5.0
Image number	2115	4731	8021	8813
Time range	2018-08-16 - 2019-01-05	2018-08-16 - 2019-07-13	2018-08-16 - 2020-04-23	2018-08-16 - 2020-12-31

- Summary: Benefit from our previous reviews, this version review went pretty simple and easy. I compared the files with the previous version and only checked the changed or new parts. Generally, both level 2 and 3 datasets are well produced, and well documented. Found very minor issues.

2. Review process

- All processing and evaluation:



- Double checked a few items from last review of v4.0 data: (All GOOD)
- Compare difference between different level and different version sets with tools:
 - Diff Files 23.1
 - Beyond Compare 4.4.1

- Read all .fit and label files (all can be read correctly).
 - Check the headers and labels
 - Compare catalog files in all datasets, and analyze the difference
 - Compare documents in document/directory
 - Collect aspect data from all image headers, check consistency between levels
3. Catalog/Document/Index
- In /catalog/dataset.cat, there is this description added to version 5.0 part:
“Earlier in the KEM1 mission phase, some playbacks of MVIC images used windowing to save downlink bandwidth. The New Horizons Science Operations Center (SOC) has now begun the long process of playing back many of these windowed files in full-file format. The names of affected files will not change. **However, the new file versions may contain a binary table partition called WINDOW_MISMATCHES. This optional partition** holds information on byte-by-byte differences within the previous window boundaries and is mainly used by the SOC for internal verification.” I noticed that the WINDOW_MISMATCHES extensions are the same as v4.0 (no file is affected). And all the images of level 1 MVIC have this binary table. Suggest to change this description to be more accurate.
 - When Nw = 1row, is WINDOW_MISMATCH meaningful info?
4. Data
- Files can be correctly read by python, IDL and ds9.
 - Is it possible to rearrange the data folders as for each day? Just too many folders and too few images in one folder.
 - How about adding a browse folder?
5. Conclusion: these v5.0 datasets are **certifiable**.