PDS Data Review

New Horizons LORRI & MVIC

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MVIC - RAW and CAL

MVIC Instrument

- Part of the RALPH instrument
- PanFrame CCD
 - 5024x128 pixels sweep over the scene
 - 128 pixels per exposure time
 - Create an image cube 5024 x 128 x XXX pixels, where XXX is defined by scan rate and time
 - Not clear how these data are used, though there are not many of them
- Six other CCDs operate in TDI mode (different filters)
 - 5024x32 pixels sweep over the scene
 - The 32 pixels are clocked at the scan rate, so each exposure time gives a shift of 1 pixel
 - Creates an image 5024 x XXX
- Raw data format
 - FITS files with 3 extensions
 - Primary image, housekeeping, window mismatch table
- Calibrated data format
 - FITS files with 3 extensions
 - Primary image (DN), Error map, Quality flag image
 - Do-it-yourself flux calibration: Flux conversion coefficients are added to the header

General Comments

- Two datasets:
 - KEM1 Encounter phase, V6.0, Raw and calibrated (359 images)
 - 31 Aug 2018 02 Sep 2019
- Same number of files and start and end dates as V5
- Not clear what is included in this version that was not in that one
- Overall, both data sets are in great shape
- Well documented with lots of description and information available

Various

- DATASET.CAT
 - START_TIME is 2018-08-16 and END_DATE is 2021-09-30
 - Those dates match the data files
 - However, there is a discrepancy later
 - In the text it says "This version includes data acquired by the spacecraft between 08/14/2018 and 04/30/2022."
- Same issue in other data sets

MVIC Data Files – RAW and CAL

- Data are in good shape
 - Read with IDL FITS readers, PDSREAD.
 - Includes extensions
 - Read and displayed every image
 - Tested to make sure data could be manipulated and measured
- One-to-one correspondence between raw and calibrated files

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SPICE

- I don't have updated SPICE kernels for the time that was added to this review.
 - Can't comment on the accuracy of the geometry in the headers and labels.
 - Previous tests have shown the SPICE calculations to be robust

• Relevant to both the LORRI and MVIC data

MVIC Status

- A minor issue in DATASET.CAT file
- Data are Certifiable

LORRI - RAW and CAL

LORRI Instrument

- Narrow angle, panchromatic camera
 - 0.29 degree square FOV
 - High resolution (5 μ rad/pixel)
 - 1024x1024 pixel CCD detector
 - Operates in 1x1 or 4x4 on-chip binning modes
- Raw data format
 - FITS files with 5 extensions
 - Primary image, Histogram, First 34 pixels, Image descriptor, Window mismatches
- Calibrated data format
 - FITS files with 3 extensions
 - Primary image (DN), Error map, Quality flag image
 - Do-it-yourself flux calibration: Radiance and Irradiance calibration coefficients are given in the header

General Comments

- Two Datasets:
 - KEM1 Encounter phase, V6.0, Raw and Calibrated (9705/9641 images)
 - 16 Aug 2018 30 Sep 2021
- Extends the date over V5.0
 - Fills in additional downloaded data
 - Adds other KBO targets
 - Full frame images of previously windowed data
 - Data from COB demo and microlensing demo
- Overall, both data sets are in great shape
- Well documented with lots of description and information available

Catalog Files

- DATASET.CAT
 - Same issue with START_DATE and STOP_DATE as in MVIC datasets

Data

- Data are in good shape
 - Read with IDL FITS readers and PDSREAD
 - Includes extensions
 - Read and displayed every image
 - Tested to make sure data could be manipulated and measured



LORRI Status

- Minor issue in the DATASET.CAT file
- Data are Certifiable.