



Agenzia Spaziale Italiana

OU-NIR status

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on behalf of OU-NIR and SDC-IT

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PV Phase Rehearsal



The [Euclid Calibration Framework](#) (CalF) defines in-flight calibration products and survey characterizations, as set out in the CalCD-B. The calibration plans during both **PV phase** and routine science operations derive from the CalF.

The PV Phase is organised in **CalBlocks**, each of them providing data for one or more **CalProducts**.

PV Rehearsals were organised to test CalBlocks data reduction, CalProducts generation and validation.

Current status: PVPR#1 closed, PVPR#2 being prepared.



OU-NIR and PV Phase Rehearsal #1



Calibration pipelines:

- [CALBLOCK-PV-012 master dark](#)
- [CALBLOCK-PV-010 master flat](#)
- [CALBLOCK-PV-001 self calibration & geometric distortion](#)
- [CALBLOCK-PV-002 absolute photometric calibration](#)

NIR Science PF:

- [CALBLOCK-PV-001 self calibration](#)
- [CALBLOCK-PV-006 background model](#)

Configuration:

- [NIR_IAL_Pipelines](#) v2.1.1



CALBLOCK-PV-012: NISP Dark Current



CALPRODUCT-NI-006: NISP Dark

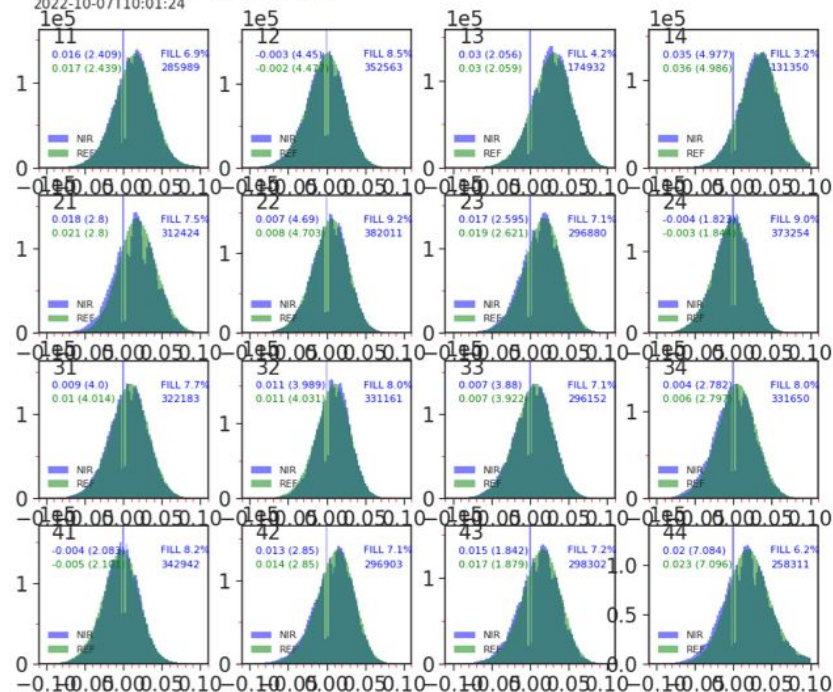
[NIR_MasterDark_Pipeline](#)

Data products: DataSetRelease
NIR_PV-012_R1 [photometric MD](#) and
[spectroscopic MD](#)

Validation: Median dark current level is in line
with input master dark, and it is below
CalCD-B requirement of 0.07 e-/s

Status: master darks have been validated by
IS and CS

NIR: EUC_NIR_C-MASTERDARK_NIR-Y_20220910T154854.339545Z.fits
REF: EUC_NISP_DARKPHOTO-TV1_01.02.fits
2022-10-07T10:01:24



CALBLOCK-PV-010: NISP LED Flats



CALPRODUCT-NI-010: NISP LED Flats

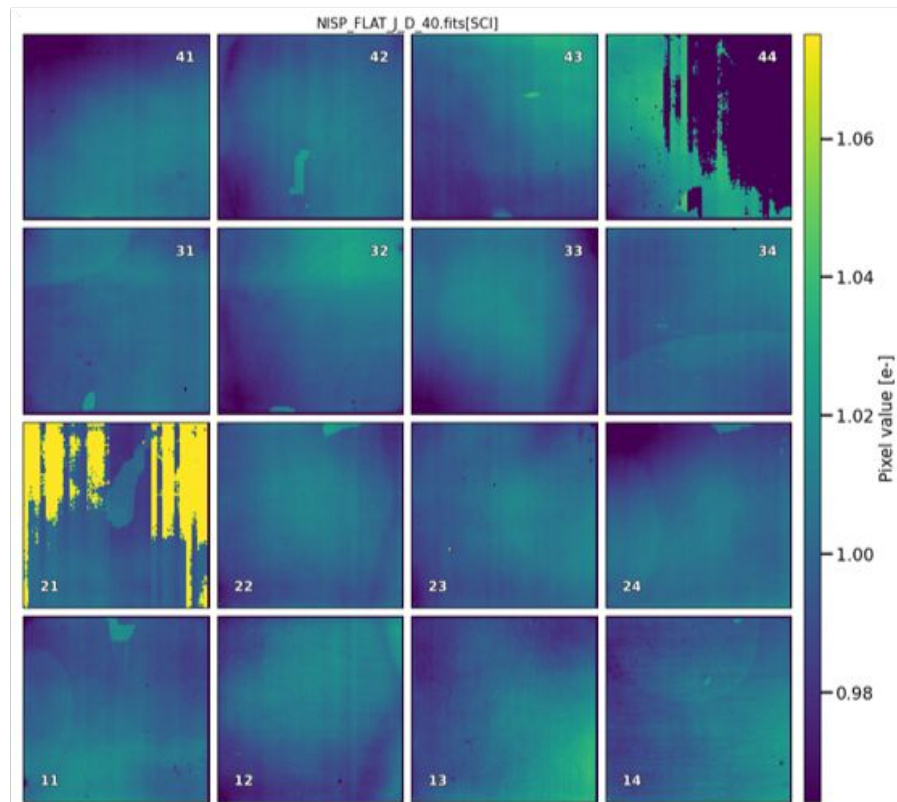
[NIR MasterFlat Pipeline](#)

Data products: DataSetRelease NIR_PV-010_R1, for each NIR filter, there are 5 fluence levels for a single LED (LED D), for a total of 15 master flats.

Validation: task #20141 10, 20, 30, and 50 kADU are ok, while 40kADU is not (high values and variance), especially for DET21 and DET44.

Issue with non-linearity model

Status: **partially validated**



CALBLOCK-PV-001: Self-calibration



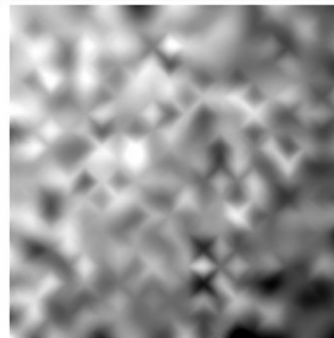
CALPRODUCT-NP-003: NISP-P Large-Scale Flat

[NIR_SelfCalib_Pipeline](#)

Data products: DataSetRelease NIR_PV-001_R1, for each NIR filter 2 data products [large-scale flat](#) and [detector offsets](#).

Validation: task [#20153](#) high frequency noise due to interpolation between independent grid points corresponding to 100x100 pixel boxes. Non-local, non-parametric reconstruction to comply with requirement in the most general case. If provided, info from optics experts could be added to reduce dimensionality and move to parametric estimates.

Status: **valid**



[Calibrated frames](#) and [stacks](#) for Self-cal



CALBLOCK-PV-001: geometric distortions and PSF



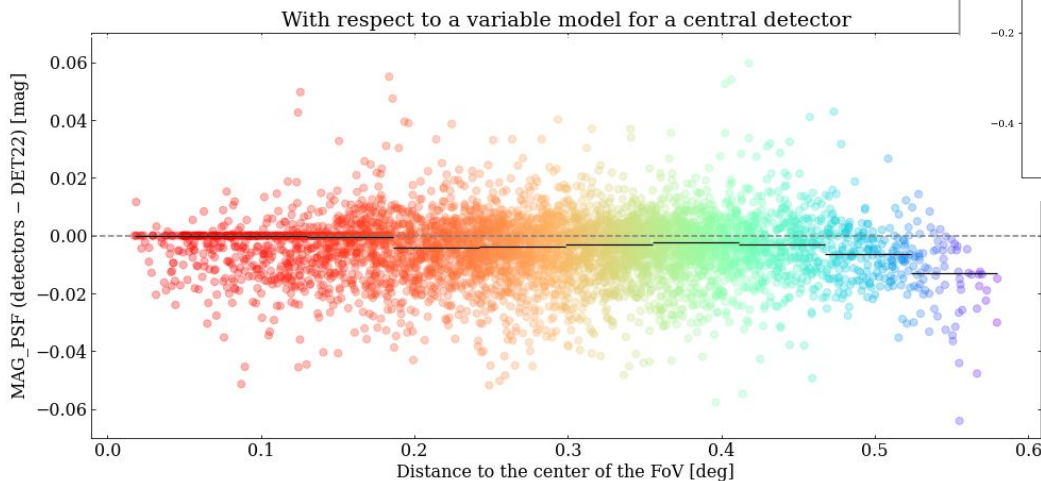
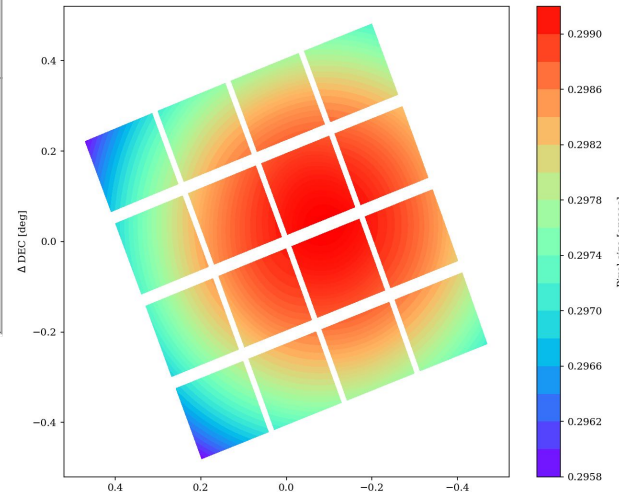
CALPRODUCT-NP-002: Focal Plane Astrometric Solution

[NIR_DistortionModel_Pipeline](#)

Data products: DataSetRelease NIR_PV-010_R1, for each NIR filter, [distortion model](#)

Validation: task [#20155](#) geometric distortions are valid

Status: valid



CALBLOCK-PV-002: Absolute photometric calibration



CALPRODUCT-NP-001: NISP-P Absolute Photometric Standards

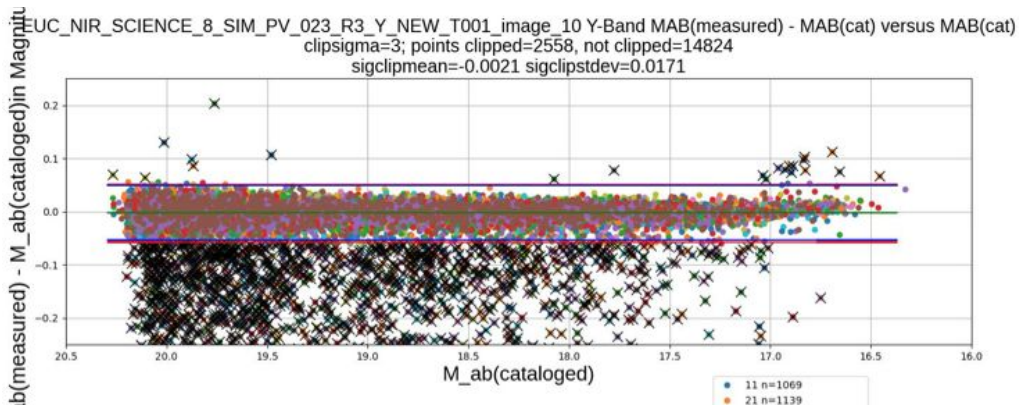
[NIR_AbsolutePhotometry_Pipeline](#)

Data products: DataSetRelease NIR_PV-002_R1, Y filter only, [inverse sensitivity](#) [$\mu\text{Jy}/\text{e}\cdot\text{s}^{-1}$].

Validation: task [#20187](#) additional diagnostic plots to be produced

Status: valid

CALBLOCK-PV-006: Background Model



Background Model - no specific Data Product

[NIR_ProcessField_Background_Pipeline](#)

Data products: DataSetRelease NIR_PV-006_R1, 17 pointings, 3 filters -> 51 [calibrated frames](#)

Validation: internal validation mostly ok, failing on crowded fields; metadata to be added

Status: open

PVRH#2 and beyond



New/updated features:

- **Ghosts**
- **Updated NL model**
- **Realistic focal plane layout**
- **Persistence**

New CalBlocks/CalProducts:

- **CalBlock-PV-018 - NL verification**
- **CalProduct-NI-001 - Bad Pixel Map**
- **CalBlock-PV-016 - Persistence**
- **CalBlock-PV-011 - NISP IPC verification**
- **CalBlock-PV-004 - Internal straylight check**
- **CalProduct-NP-004 - Ghost model**

Other detector effects:

- **Brighter-Fatter Effect**
- **Baseline MAP**
- **NISP reciprocity failure**

Implementing feedback from PVPR#1

New features readiness:

- **ready to be simulated and tested**
- **being finalized**
- **missing models -> won't be simulated**

New CalBlocks/Products currently untested:

- **high priority**

Known unknowns from JWST:

- hard to make quantitative predictions and devise possible calibration/corrections

In the latest Data Model update we defined a “*Generic Data Product*” to allow for unknown unknowns



Thanks