AuxTel calibration collections

Visualization and comparison

IN2P3 Focal Plane meeting
18/01/2024
Nathan Amouroux

Confluence page

Calibration Production Products

Input of Instrument Signature Removal

ISR input (generated by cp_pipe)

- 1) [Integer to float conversion]
- 2) [Bad amplifier and SATURATED/SUSPECT pixel masking]
- 3) Overscan correction
- 4) [CCD Assembly]
- 5) Bias correction
- 6) Crosstalk correction
- 7) Linearization
- 8) Charge transfer correction (not currently implemented)
- 9) Dark
- 10) [Saturation trail widening]
- 11) Brighter-Fatter correction
- 12) Variance calculation
- 13) [Straylight]
- 14) Flat/gain normalization
- 15) [Defect masking and interpolation]
- 16) Fringe
- 17) [Bad pixel/camera-specific masking]

Applied on raw exposures

CPP collections

- Biases
- Crosstalks
- Darks
- Flats
- Defects

What I'm looking for

Confluence page

Calibration Production Products

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What I'm looking for

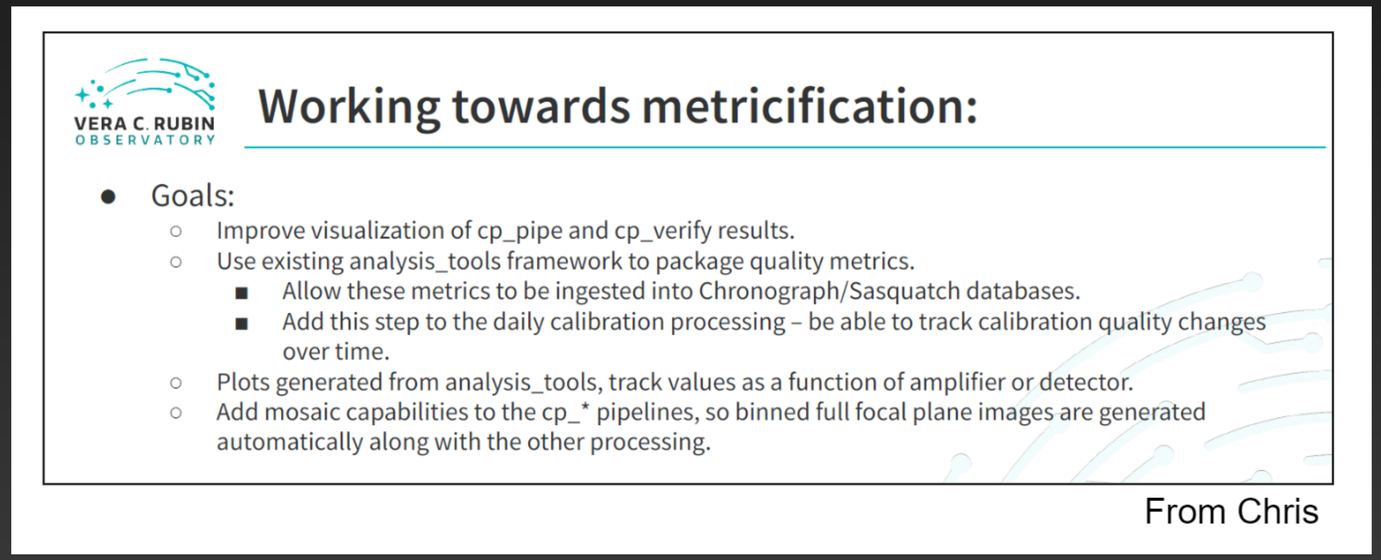
Various CPP exists my goal is to compare them

DM calibration validation

- There are many issues with calibration products in AuxTel

  Some flats in z_band have vertical bar structures not observed in other flats

- Plan to have an acceptance board for calibrations



From Chris

Butler access to calibrations products

- Take one processed collection = set of exposure processed with pipetask.

  Example : /repo/embargo/LATISS/runs/AUXTEL_DRP_IMAGING_2023-11A-10A-09AB-08ABC-07AB-05AB/w_2023_46/PREOPS-4553

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LATISS/calib/DM-41633/flat-i                                                    CALIBRATION
LATISS/calib/DM-40904//bias                                                     CALIBRATION
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u/czw/DM-37811/parOStest.20230202a/calib/flat-OG550.20230207a                   CALIBRATION
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LATISS/calib/DM-36484/bias.20221005a                                            CALIBRATION
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```

```
registry.queryDatasets(cal_t, collections = cal_n)
```

dark

LATISS/calib/DM-40904//dark

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dark

LATISS/calib/DM-40904//dark

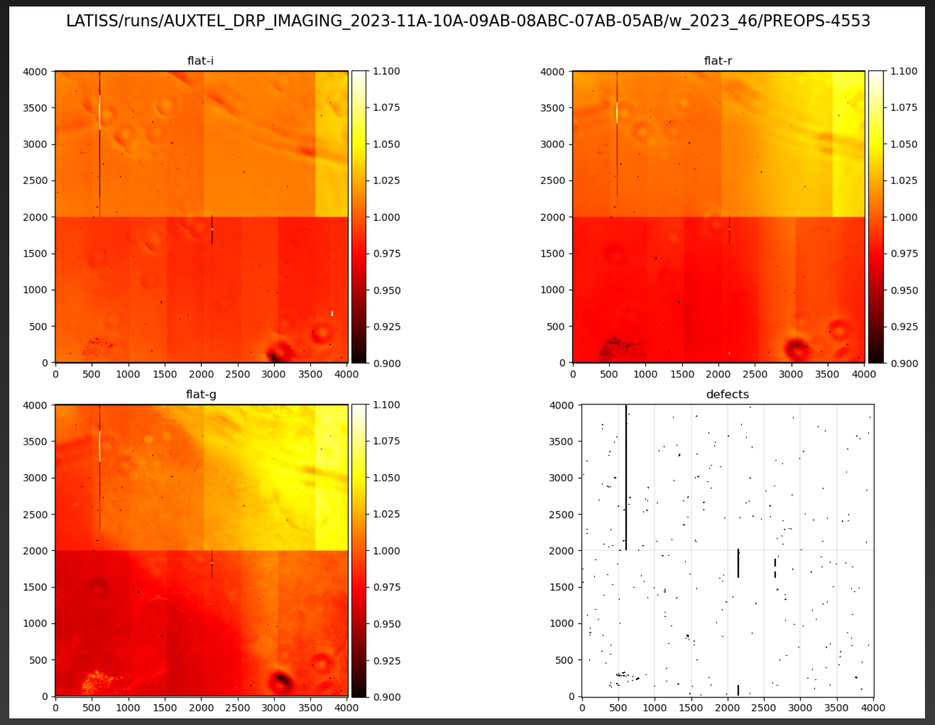
Path to access one calibration product

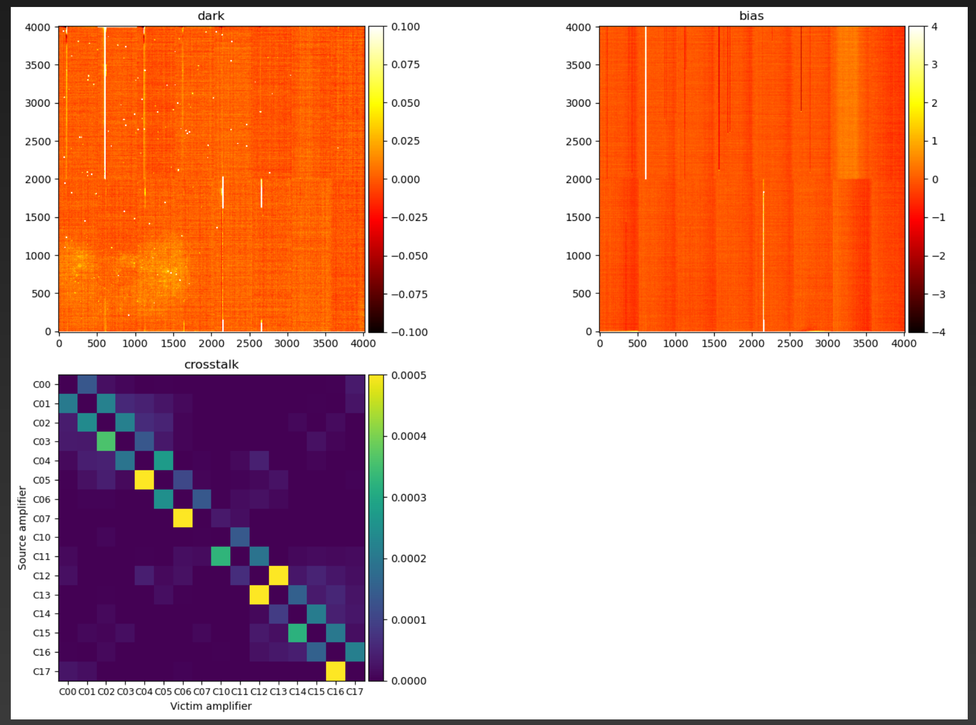
May be Improved by taking range_of_validity instead of DM number

Read and visualize CPP collections

Depending on their nature, one CPP format may be different from another

- Matrix of pixels : Flats (avaible in 3 bands +2 for newer processes), darks, biases
- Table (position (x,y), width and height) : Defects
- 2D Matrix (impact of i amp on j amp) : Crosstalks





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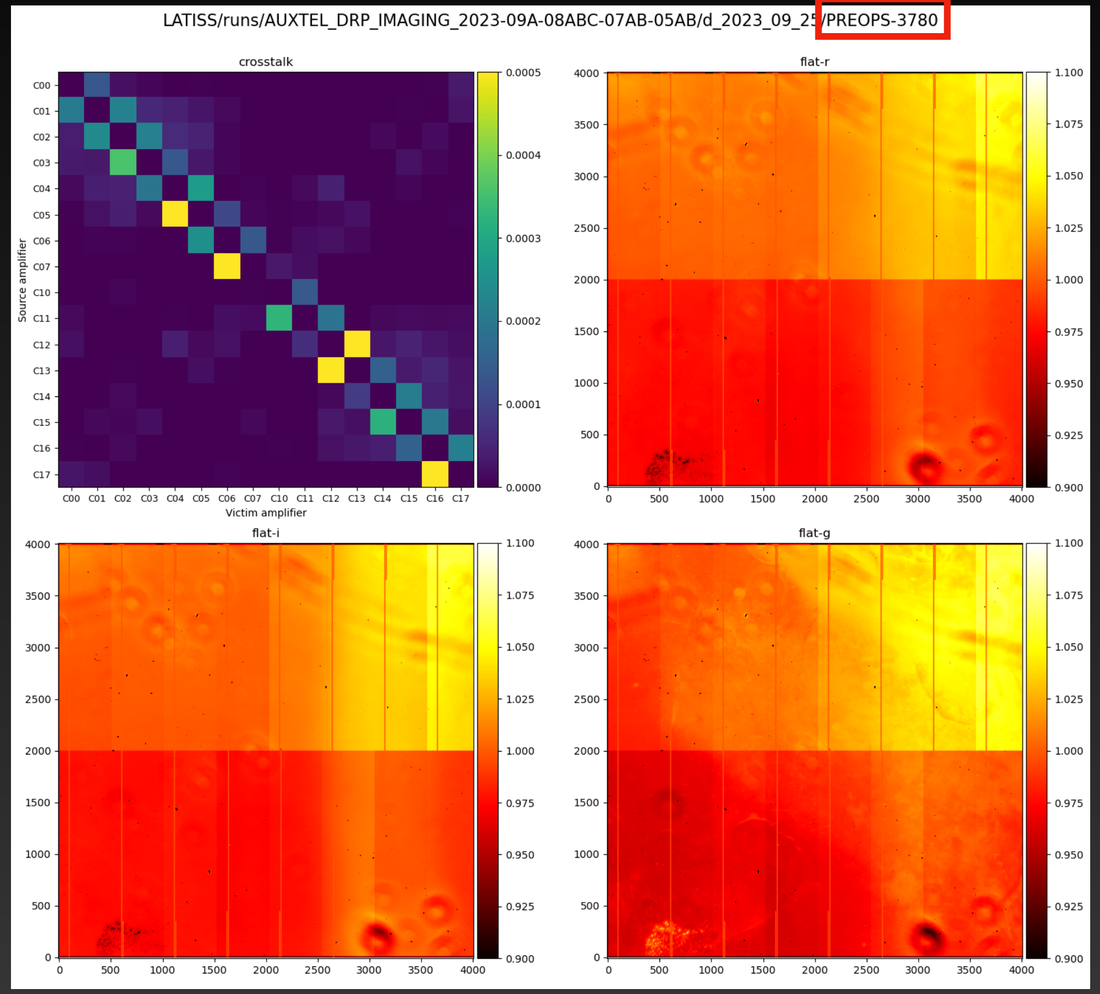
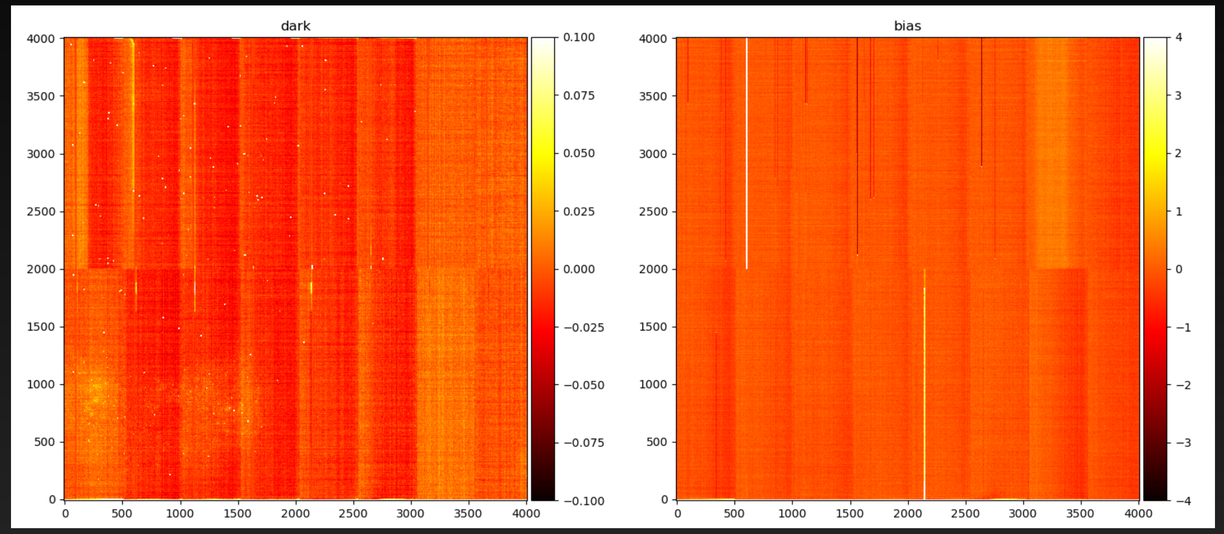




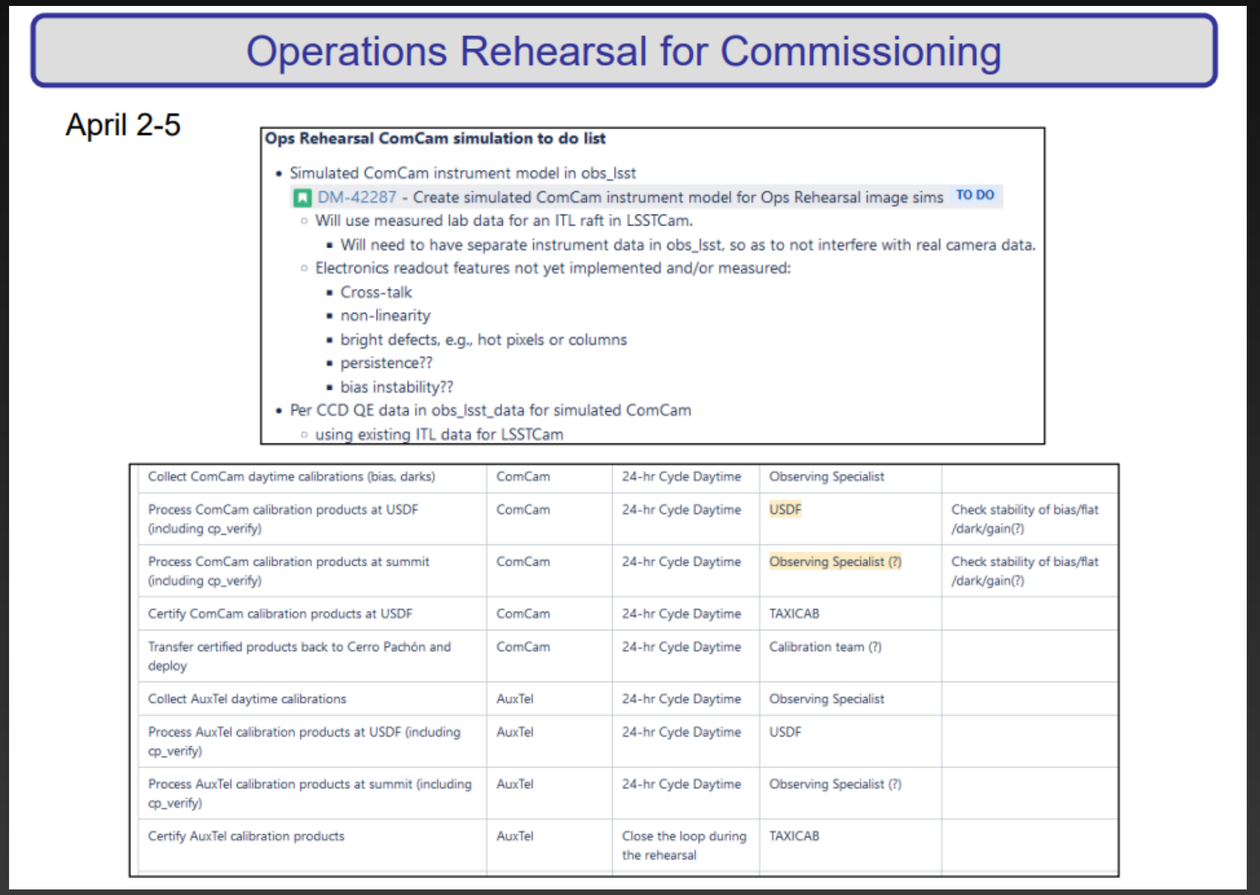
Compare CPP collections

AUXTEL_DRP_IMAGING_2023-11A-10A-09AB-08ABC-07AB-05AB/w_2023_46/PREOPS-4553 vs
AUXTEL_DRP_IMAGING_2023-09A-08ABC-07AB-05AB/d_2023_09_25/PREOPS-3780

- Need to define relevant metrics
    - Defects : covered pixels + pixels of defects 1 vs defects 2
    - Fraction of pixel value per amplificator for flats
    - Difference of pixel value per amplificator for darks and biases

Next step

- Contributing to ComCam rehearsal



Operations Rehearsal for Commissioning

April 2-5

Ops Rehearsal ComCam simulation to do list

- Simulated ComCam instrument model in obs_lsst
  - DM-42287 - Create simulated ComCam instrument model for Ops Rehearsal image sims TO DO
    - Will use measured lab data for an ITL raft in LSSTCam.
      - Will need to have separate instrument data in obs_lsst, so as to not interfere with real camera data.
    - Electronics readout features not yet implemented and/or measured:
      - Cross-talk
      - non-linearity
      - bright defects, e.g., hot pixels or columns
      - persistence??
      - bias instability??
- Per CCD QE data in obs_lsst_data for simulated ComCam
  - using existing ITL data for LSSTCam

Collect ComCam daytime calibrations (bias, darks)	ComCam	24-hr Cycle Daytime	Observing Specialist	
Process ComCam calibration products at USDF (including cp_verify)	ComCam	24-hr Cycle Daytime	USDF	Check stability of bias/flat /dark/gain(?)
Process ComCam calibration products at summit (including cp_verify)	ComCam	24-hr Cycle Daytime	Observing Specialist (?)	Check stability of bias/flat /dark/gain(?)
Certify ComCam calibration products at USDF	ComCam	24-hr Cycle Daytime	TAXICAB	
Transfer certified products back to Cerro Pachón and deploy	ComCam	24-hr Cycle Daytime	Calibration team (?)	
Collect AuxTel daytime calibrations	AuxTel	24-hr Cycle Daytime	Observing Specialist	
Process AuxTel calibration products at USDF (including cp_verify)	AuxTel	24-hr Cycle Daytime	USDF	
Process AuxTel calibration products at summit (including cp_verify)	AuxTel	24-hr Cycle Daytime	Observing Specialist (?)	
Certify AuxTel calibration products	AuxTel	Close the loop during the rehearsal	TAXICAB	