Detrending pipeline Plans for DR2.5

ZTF-IN2P3 @ LPNHE

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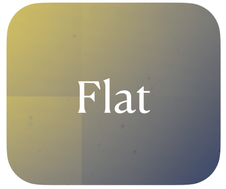
Detrending process (for the newbies & the oldies)

16 x 4 x (3080, 3078) is a total focal plane image.

Raw images

Calibration

20/day

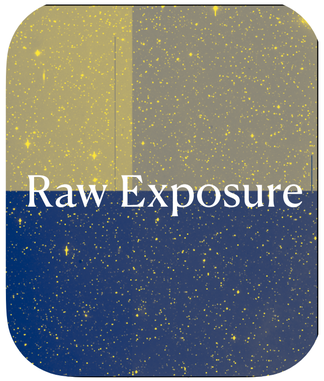


5-7/led/day

Objects

Lots

Performed at the CCD level



Science image

IN2P3 Detrending flow

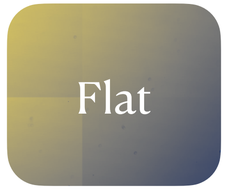
At each time a **raw** image is opened :

1. Overscan correction applied , model computed on [5,25] pixel range.
2. Linearity corrections.

Calibration

10/day to remove dilation effects.

→ Reduced to 1 master bias.



5-7/led/day

N_led = 11

Each corrected by master bias
→ 3 filter master flat.

Status : Testing current detrending to aperture process

Now have a proper script that goes from Raw to Aperture photometry.

Calibration

~~20/day~~

10/day to remove dilation effects.

→ Reduced to 1 master bias
→ On disk

5-7/led/day

N_led = 11

Each corrected by master bias
→ 3 filter master flat.
→ On disk

→ On the fly

→ On disk

Simon Conseil has joined to help in dev/optimization

Current strategy to be tested :
1 job / day / CCD

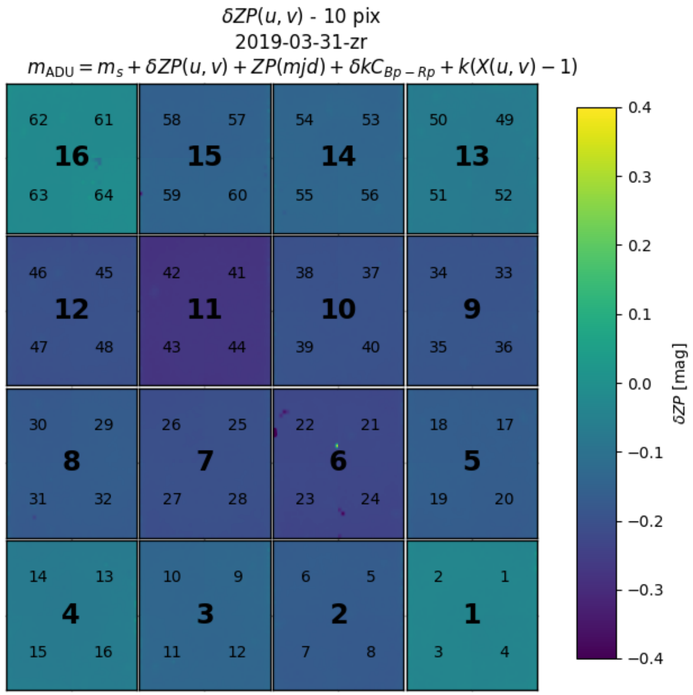
Starflats and new detrending.

Aperture photometry applied on :
→ ztfin2p3 ccd-flatfielded data
→ ztfin2p3 focalplane-flatfieldded data

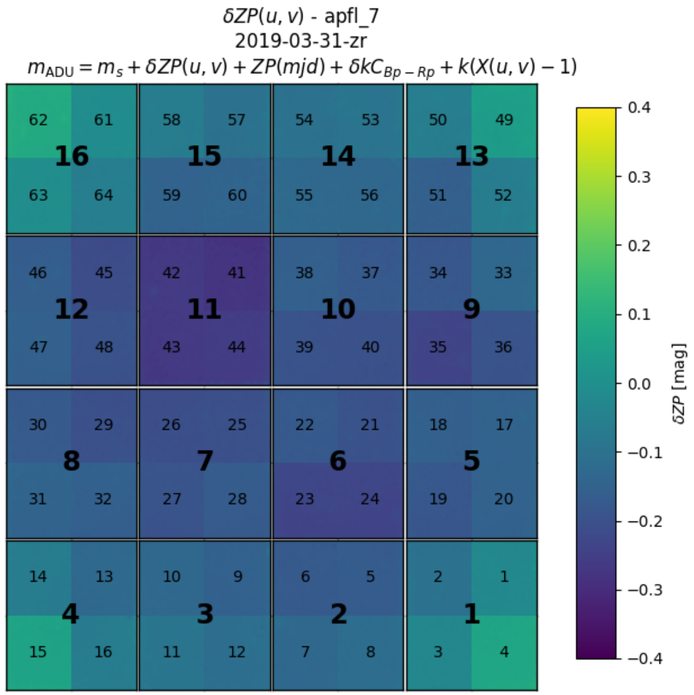
Data = all available starflats

Data processed with LPNHE starflat procedure

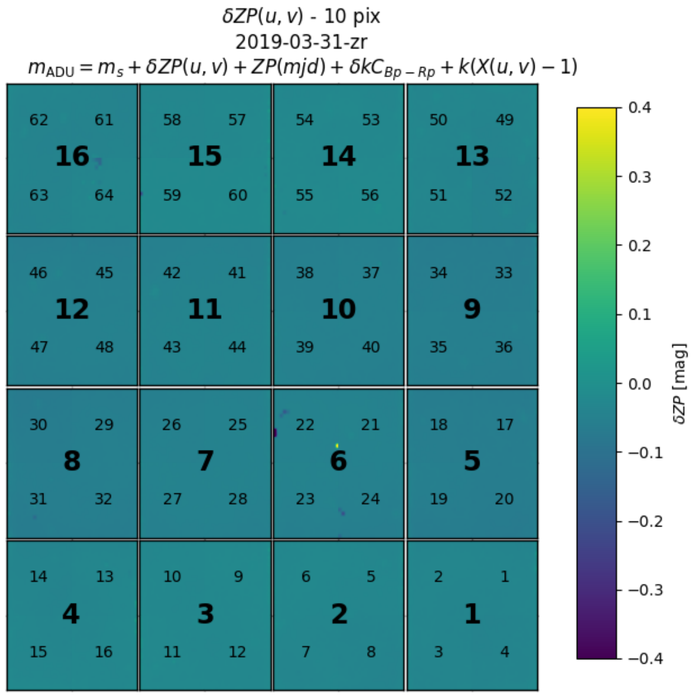
CCD



IPAC Quadrant + Leander aperture



Focal-Plane



Starflats and new detrending.

Aperture photometry applied on :
→ ztfin2p3 ccd-flatfielded data
→ ztfin2p3 focalplane-flatfieldded data

Data = all available starflats

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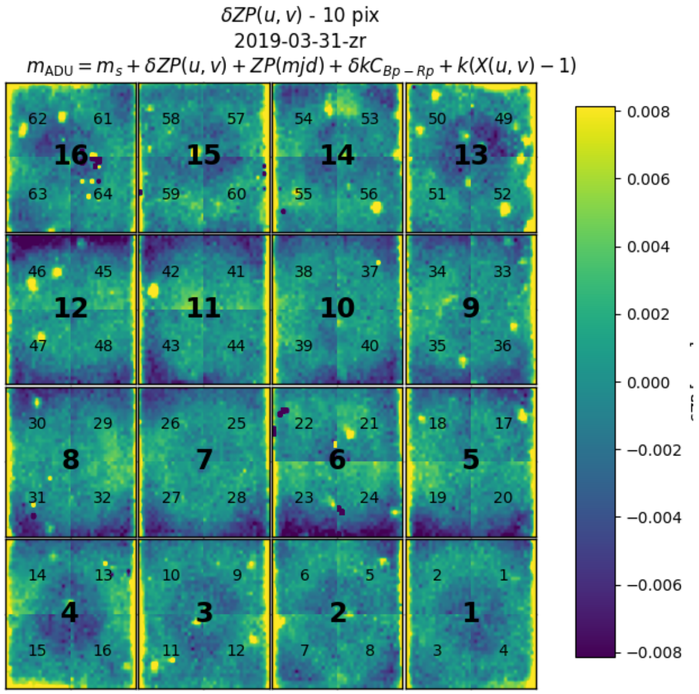
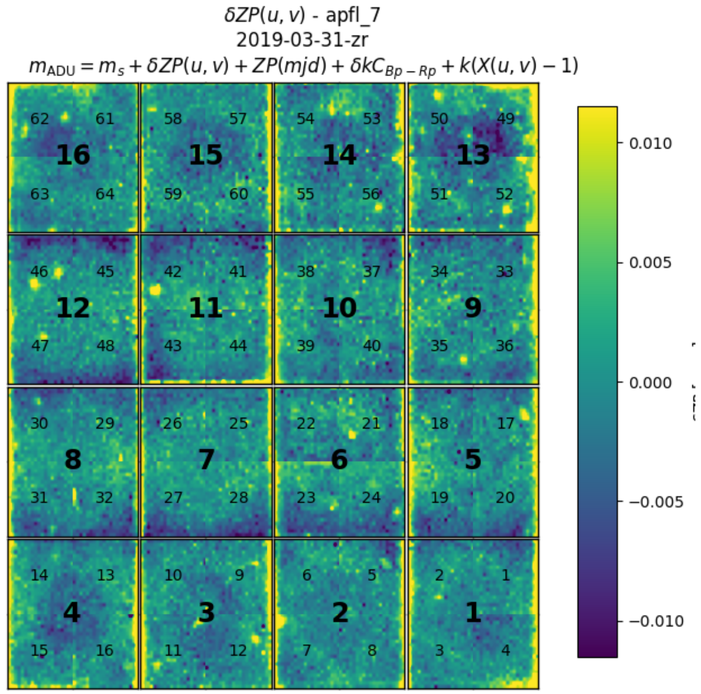
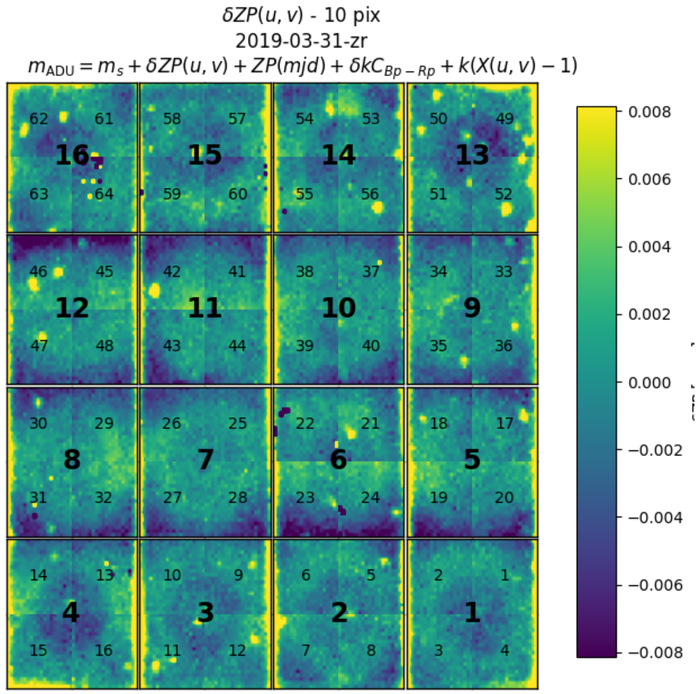


IPAC Quadrant + Leander aperture



Focal-Plane



→ Need to go forward

Thoughts on the way to DR2.5

Implementation (short-*long* term)

Pocket Effect

Overall debugging & optimization

Troubleshoot missing data (flat or bias sequence)

CCD level aperture for uncomplete CCDs (→ Missing quadrants).

Brighter Fatter ?

(Unsure what's the status on that)

DR2.5 choices

Low level choices / Pipeline effectiveness :
Bias , Flats combination
→ will be validated with starflats (in progress).

Production choices :
→ e.g Flat normalization (changes the 1 job / CCD / day strategy)

Backlog IPAC vs IN2P3

Flats / Bias Pixel Variance Pixel masks
→ **ONLY IPAC**

(→ I don't know how much these come into play in current error propagation of current analyses)

Is `ztfin2p3` designed to replace IPAC pipelines ?

Limiting aspects

Download

Will need to download all raws (raw obj + raw flats + raw biases) which are not on disk.
BUT also :

→ will also need part of the header from IPAC sciimg (→ **WCS**) .
→ will also need masks for aperture.

Workarounds:
→ download stuff on the fly then erase but probable big slow down (and connexion issues) .
→ Modify the pipeline (big change might be involved in the current developed status)

Links to :

Storage

What's on disk right now ?
→ Mostly IPAC sciimg (600TB)

Will need to make room for raws and aperture catalogues → but ipac sciimg needed...

Strategy Conflicts

Download all raws + sciimg (or only header) + masks for a period → Detrend to aperture → remove all but masks AND sciimg for which we have SNIa ?

Workaround → database of exposures we ran, we lack, we need to keep (e.g SM) ?

→ ‘Readiness’ of the pipeline is not necessarily the only issue.

Need to discuss needs of various pipelines and consequence :
SM → needs image. On the fly strategy needs to be worked-around
Ubercal → Only apcat (a priori). OK for now.

→ Affects storage and some production choices.

Basically we need a database of what’s on disk,
what we need, what **can** be erased, etc etc.

Will also need some bookkeeping / cleaning / organizing of ztf/data !

Tentative simplistic block plan