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# Highlights from the DESDM DC4 Review and DC5 Planning Meeting

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# Agenda

## Morning: DC4 Review

8:15AM CT coffee & light breakfast

9AM CT start

- Introductory Comments (MikeF)
- [Simulated Data](#) (Huan - 10 min)
- Processing Framework
  - [Overview of New Orchestration](#) (Michelle ~10 min)
  - [Overview of the Event System](#) (Greg)
  - Improvements to Monitoring Portal (Greg)
- Archive
  - [Data Access Framework](#) (integration with Orchestration, general issues; Darren)
  - [Ingestion Codes](#)(Tony)
  - [Archive Database](#) (Dora ~10 min)
  - [Archive Data Portal](#) (Tony)
  - [Archive Control Portal](#) (Tony)
- Astronomy Codes
  - [Image masking pdf](#)(Shantanu)
  - [Image compression pdf](#) (Shantanu)
  - [Multithreading](#) (Greg)
  - [Global Photometric Calibration](#) (Douglas - 10 min)
  - Model Fitting photometry and Star/Galaxy Classification (Emmanuel)
  - [PSF Homogenization](#) (Tony, Emmanuel and Eric)
- Science Pipelines
  - [Weak Lensing Pipeline](#)(Mike, Erin and Shantanu)
  - [Difference Imaging Pipeline](#) (Choong - 10 min)
  - [DC4 Processing pdf](#)(Shantanu)
  - [DC4 Data quality](#) (Choong - 15 min)



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## Afternoon: DC5 Planning

1PM CT start (probably later)

Goals:

- Initial testing of Community Pipeline within E2E environment at NOAO
- Test targeted processing of images using more flexible orchestration layer
- Final validation of coaddition using PSF homogenization and of object classifier
- Continued testing of the WL pipeline and the difference imaging pipeline
- Initial Testing of BAO and CL pipelines within DESDM framework
- Testing of the Standby database in Fermilab
- Deployment of the Query Broker portal for managing distributed queries at UIUC and Fermilab sites

Data:

- [1000 deg<sup>2</sup> of simulated images in grizY that include shear fields](#) (Huan - 10 min)



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# DC4 Single-Epoch Photometry (Choong Ngeow)

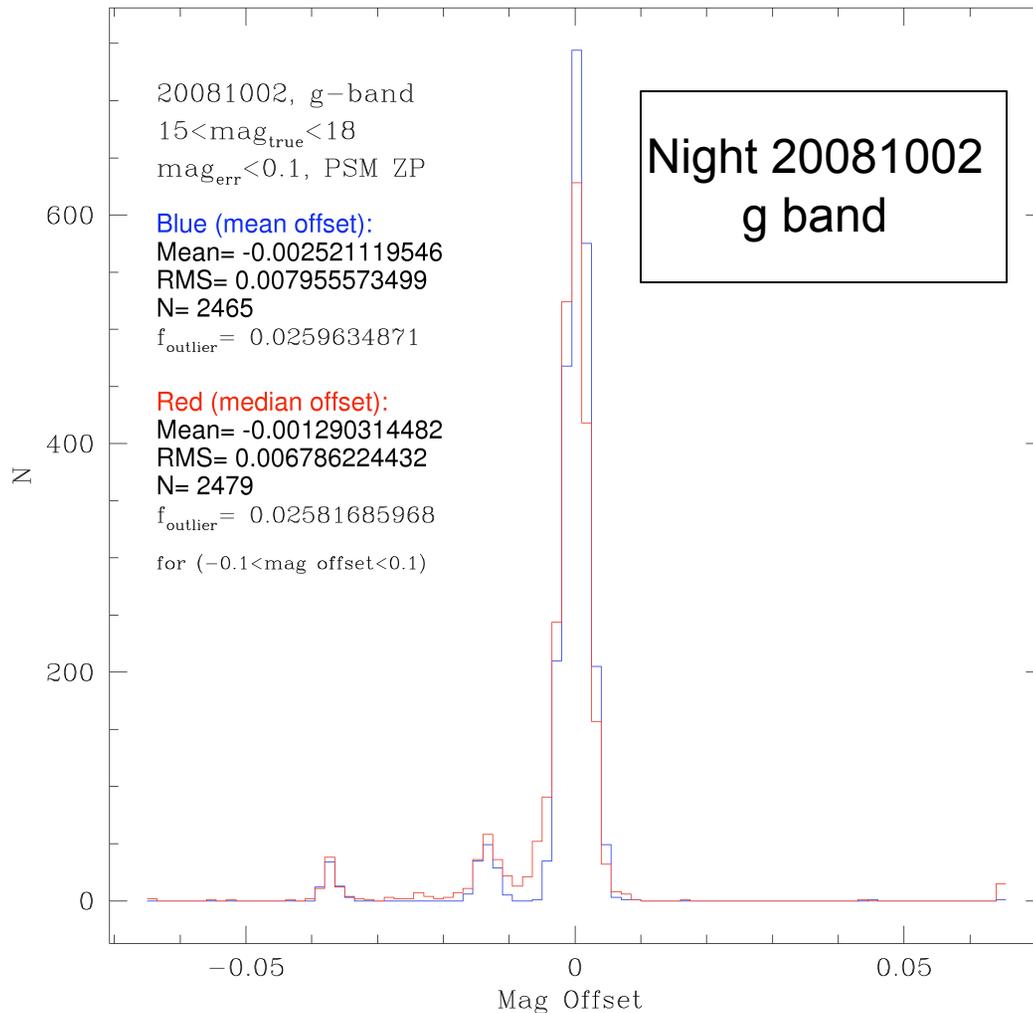
Measured First-order Extinctions (k-terms) from  
DC4 Photometric Nights

	<b>g</b>	<b>r</b>	<b>l</b>	<b>z</b>	<b>Y</b>
20081002	0.1658±0.0014	0.1227±0.0011	0.0937±0.0006	0.0129±0.0006	0.0304±0.0006
20081003	0.1396±0.0007	0.1146±0.0006	0.0061±0.0008	0.0370±0.0009	0.0696±0.0008
20081004	0.1558±0.0012	0.1536±0.0010	0.0268±0.0006	0.0377±0.0006	0.0322±0.0006
20081005	0.1965±0.0015	0.1314±0.0012	0.0144±0.0010	0.0533±0.0011	0.0041±0.0015
20081006	0.1578±0.0008	0.0566±0.0006	0.0671±0.0004	0.0551±0.0004	0.0902±0.0004
20081007	0.1565±0.0012	0.1132±0.0010	0.0612±0.0005	0.0613±0.0005	0.0549±0.0005
20081008	0.1564±0.0009	0.1053±0.0007	0.0649±0.0007	0.0628±0.0008	0.0242±0.0007
Mean:	0.1550±0.0004	0.1034±0.0003	0.0556±0.0002	0.0472±0.0002	0.0563±0.0002



# Single-Epoch Photometry Comparison to Truth Table

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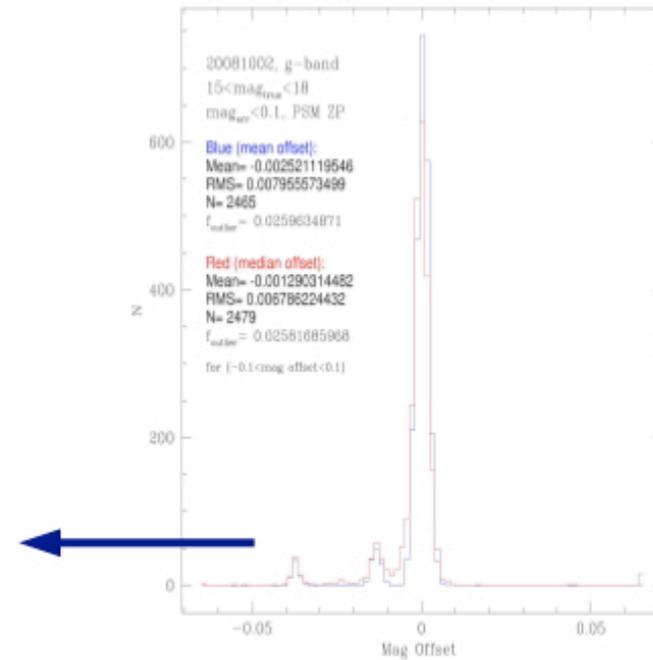
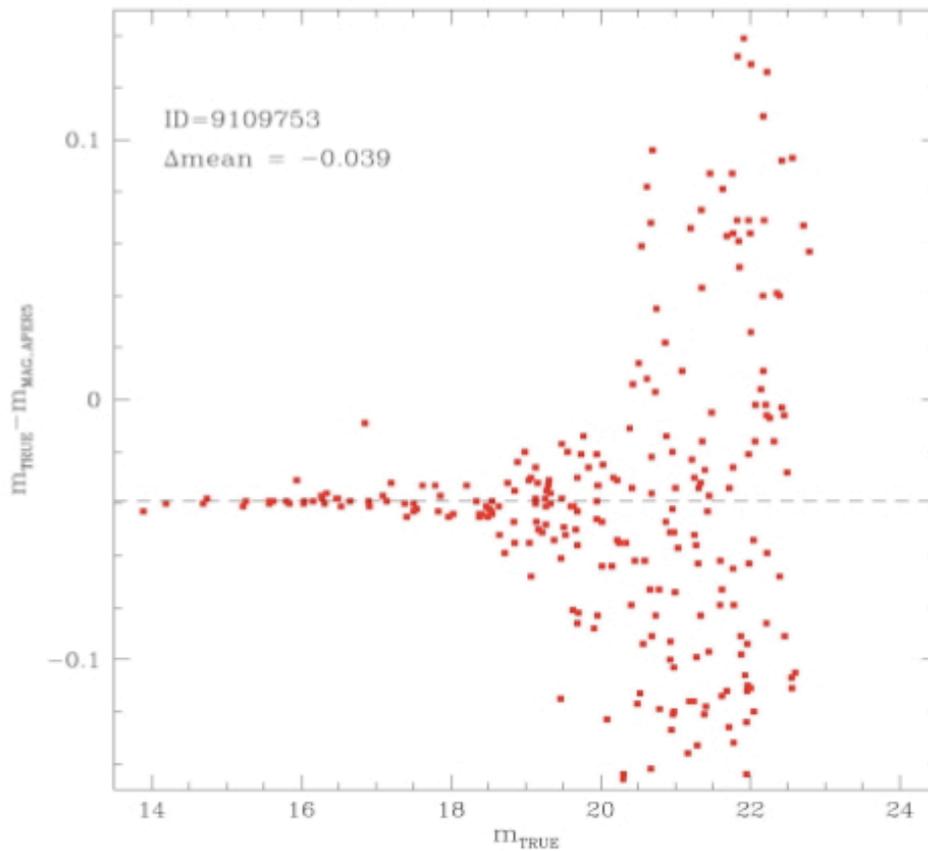


- for each DECam exposure (with 62 CCDs), match the objects from the reduced images and match them to the truth table.
- plot the  $\text{mag\_truth}$  vs  $\text{delta}(\text{mag})$ , where  $\text{delta}(\text{mag})$  is  $\text{mag\_true} - \text{mag\_measure}$  from DC4 reduction, for all matched objects.
- calculate the mean (or median) offset for each exposure, after iteratively reject the outliers, and only apply to the certain mag range ( $15 < \text{mag\_true} < 18$ )
- repeat for all exposures for a given nite, and plot the histogram of the mean (or median) offsets from all the exposures.



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# One "Bad" Example





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# DC4 Global Photometric Calibration on Coadd (Douglas Tucker)

- The GCM Zeropoint Solver "prep" step and the GCM Zeropoint Solver itself both were tested on the DC4 coadd as it was available on December 18, 2008.
- Both codes worked well, and the results are highly consistent with those of Choong's coadd\_flux solutions in that the suggested additional zeropoints to be applied to coadd images are typically only about 0.001-0.002 mag for the g, r, i, and z coadds and typically  $< 0.005$  mag for the Y coadd.

Figure 0

Non-equatorial DC4 coadd images in the DES DB as of 2008-Dec-18, ref. coadd image id = 9631260 (tilename DES2218-3646): g-band

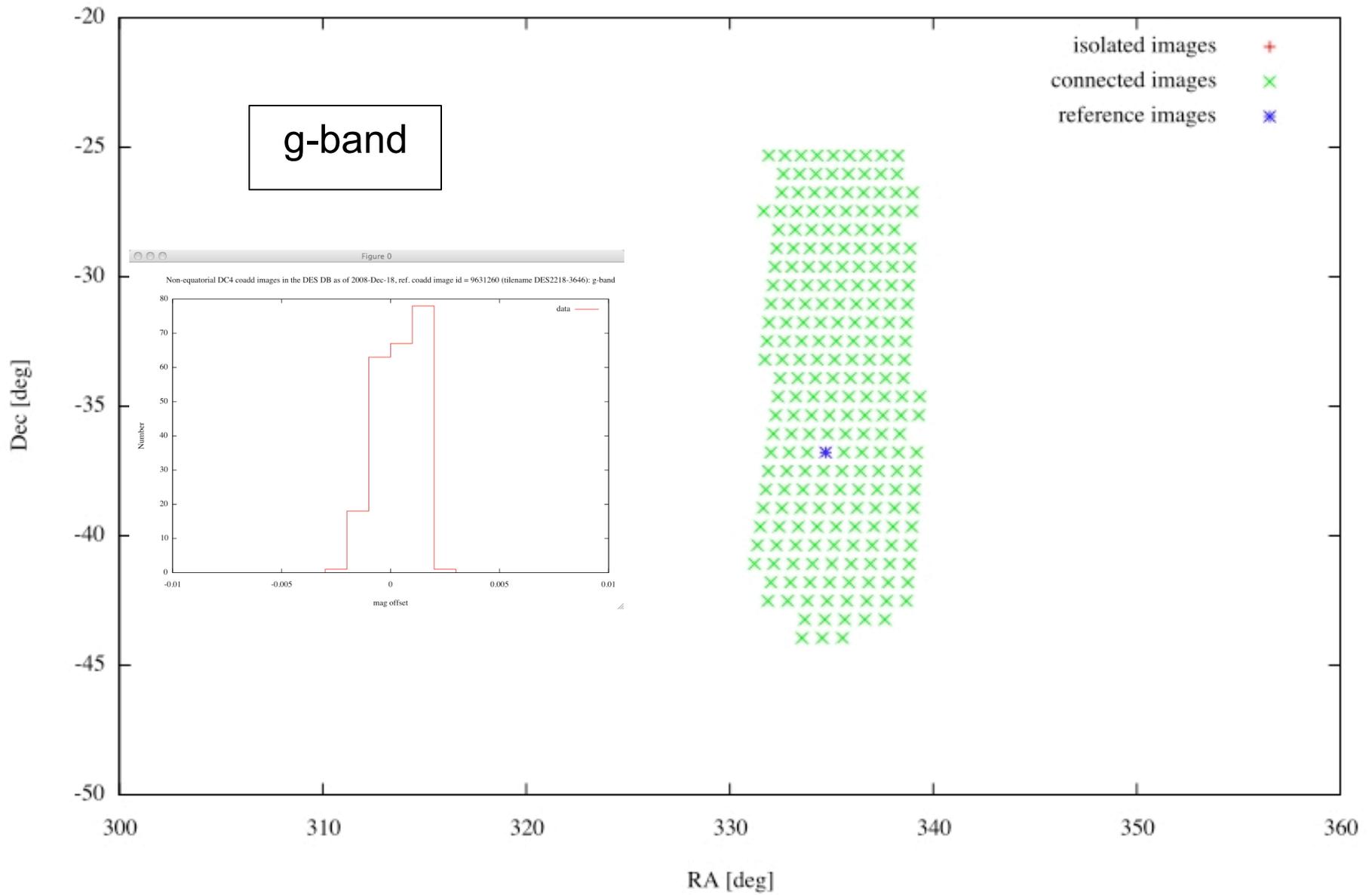


Figure 0

Non-equatorial DC4 coadd images in the DES DB as of 2008-Dec-18, ref. coadd image id = 9631259 (tilename DES2218-3646): r band

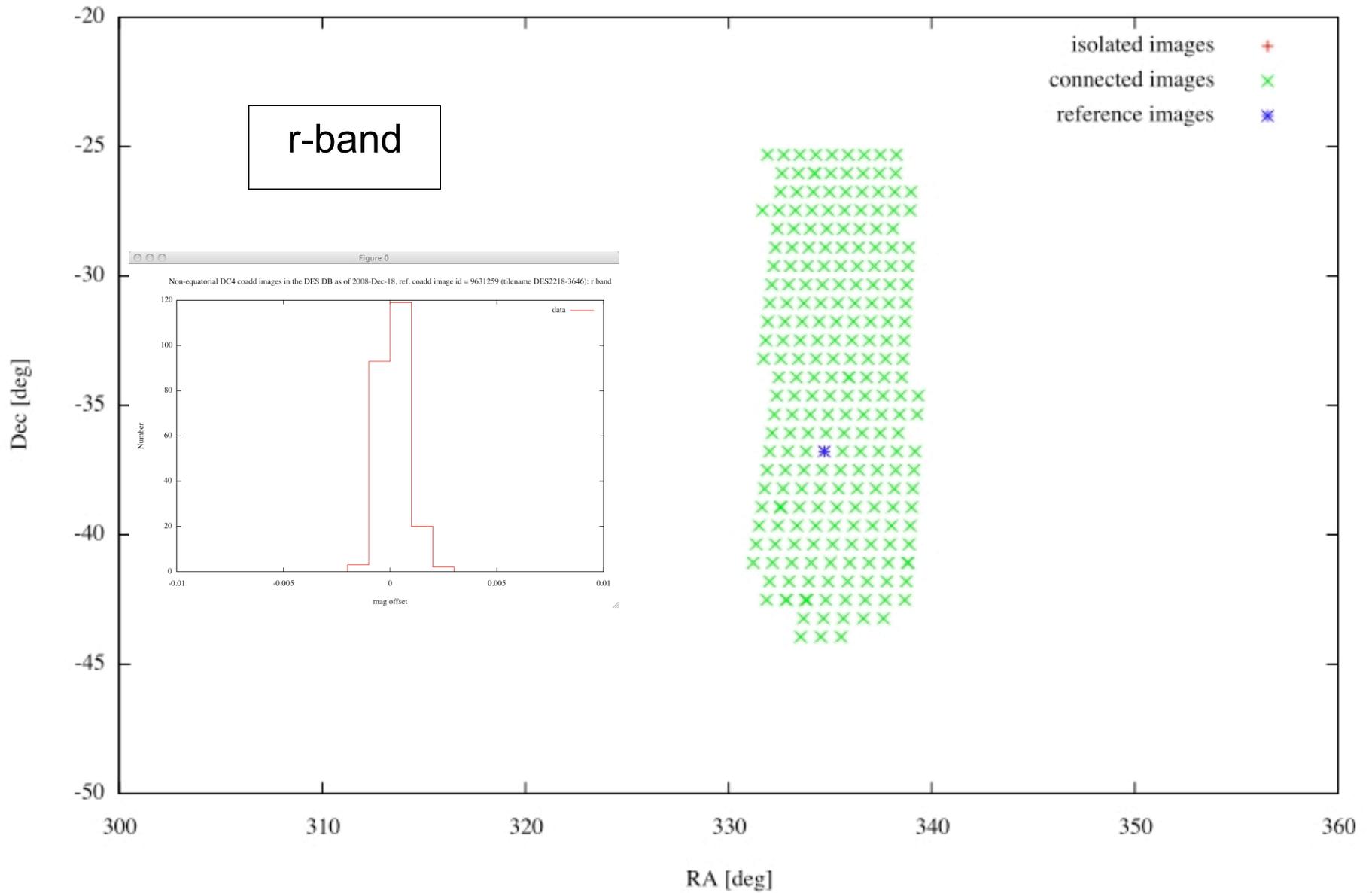


Figure 0

Non-equatorial DC4 coadd images in the DES DB as of 2008-Dec-18, ref. coadd image id = 9631261 (tilename DES2218-3646): i band

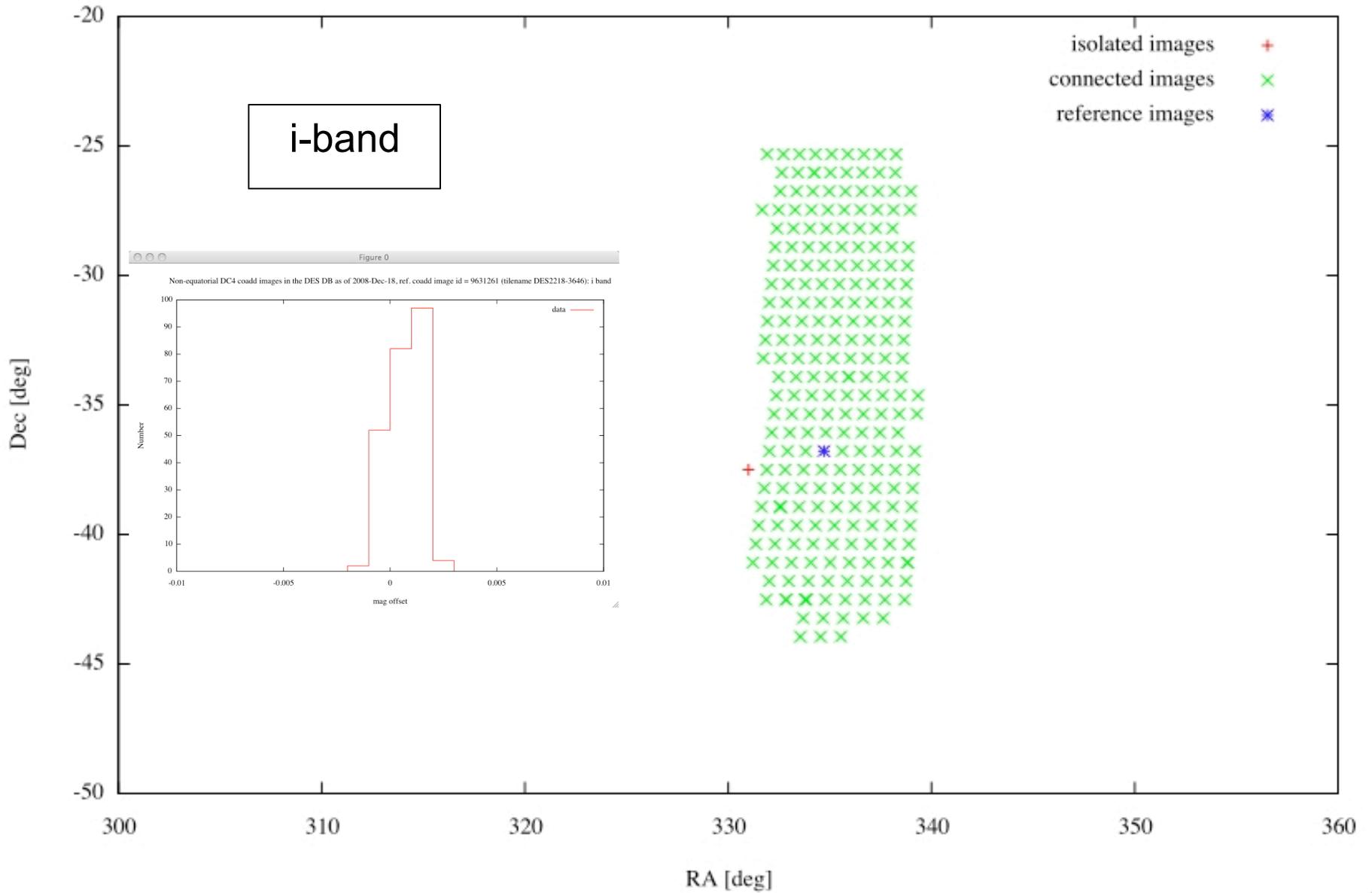


Figure 0

Non-equatorial DC4 coadd images in the DES DB as of 2008-Dec-18, ref. coadd image id = 9631262 (tilename DES2218-3646): z band

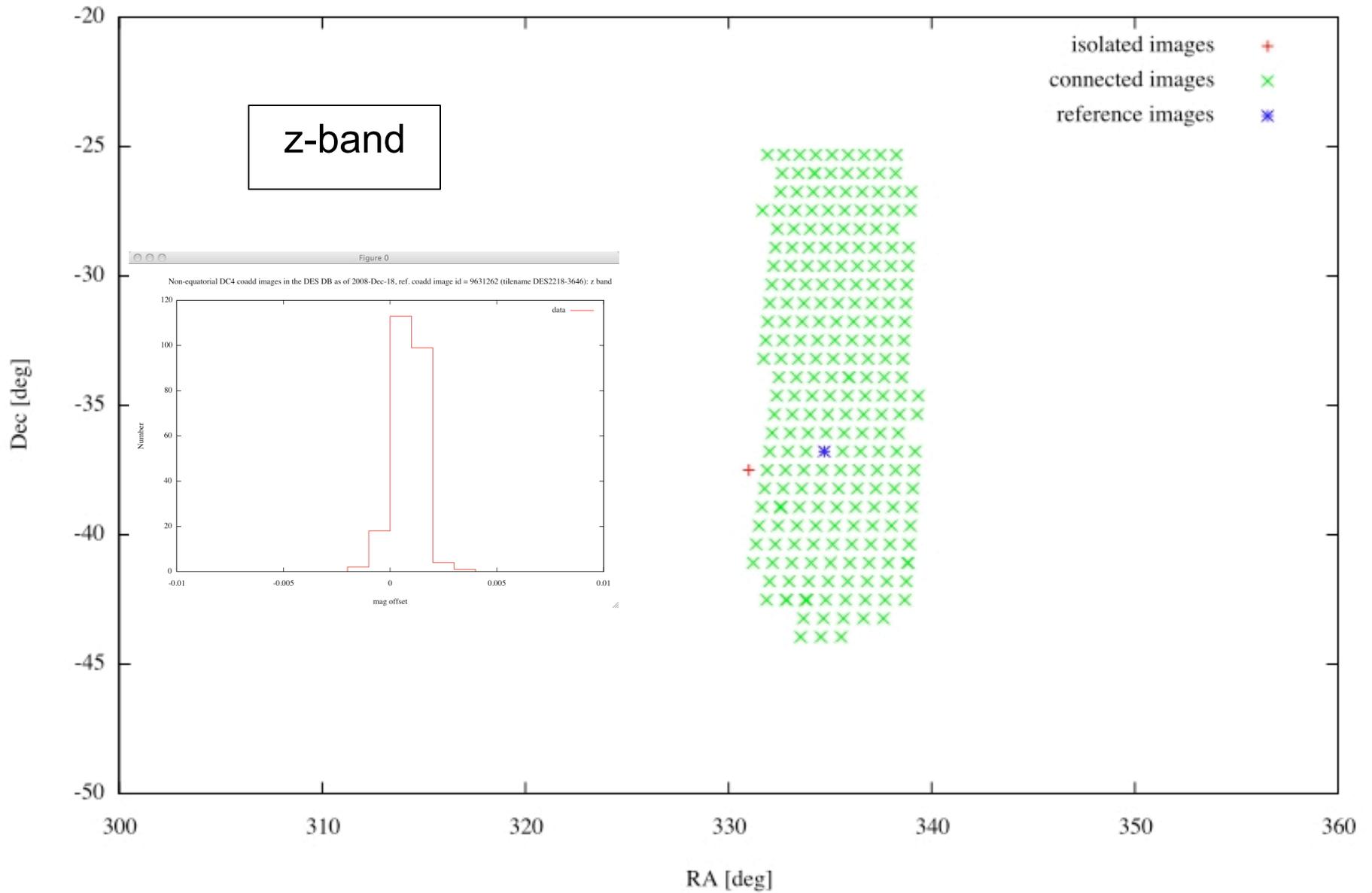
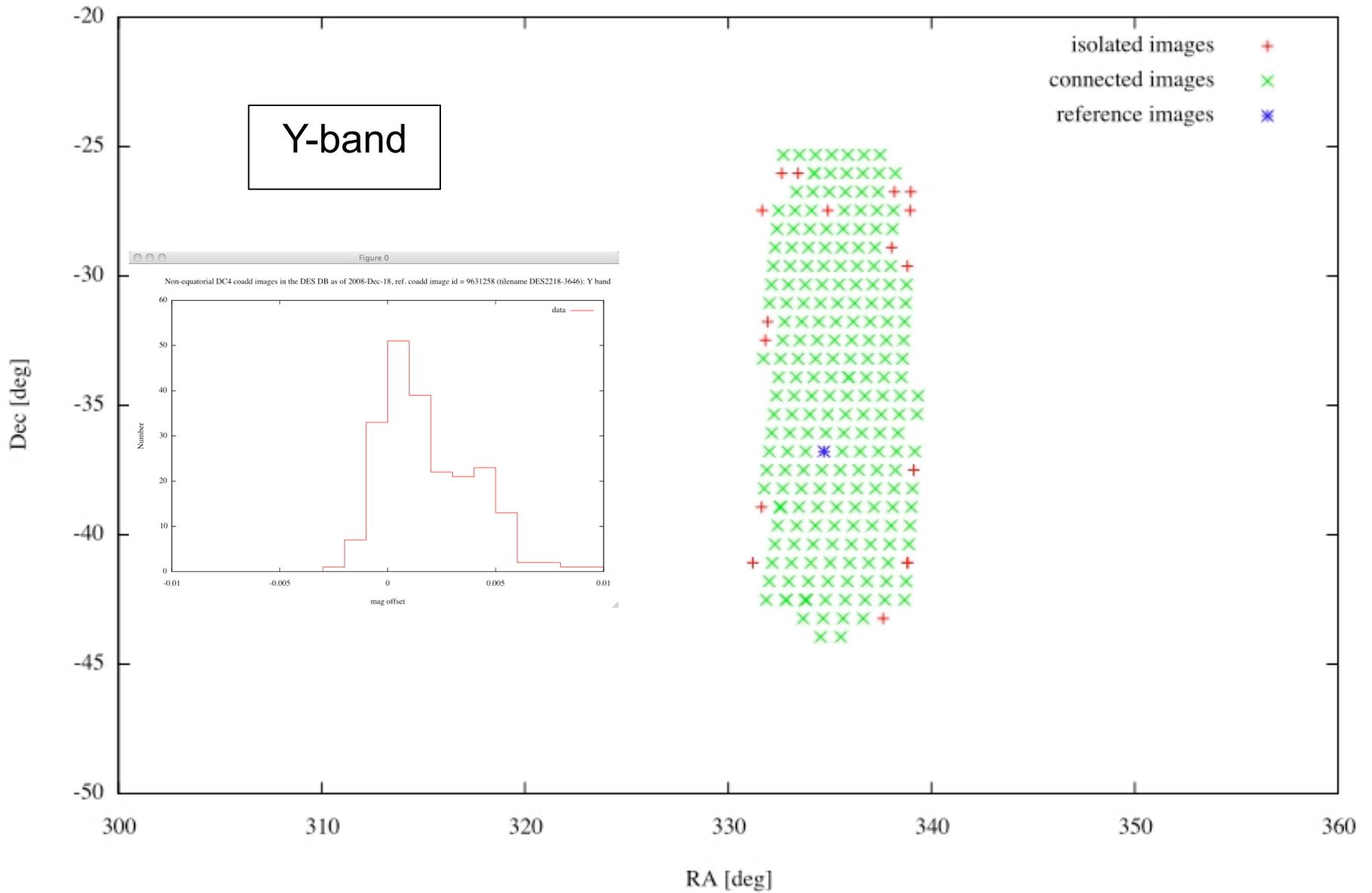


Figure 0

Non-equatorial DC4 coadd images in the DES DB as of 2008-Dec-18, ref. coadd image id = 9631258 (tilename DES2218-3646): Y band





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# Extra Slides