# CCIN2P3

**Centre de Calcul**

de l'Institut National de Physique Nucléaire
et de Physique des Particules

# LSST Data Products

## A quick introduction

Fabio Hernandez, Quentin Le Boulc'h, Gabriele Mainetti

*December 14, 2023*

**VERA C. RUBIN OBSERVATORY**

# Outline

**1** Introduction

**2** Images and Catalog

**3** References
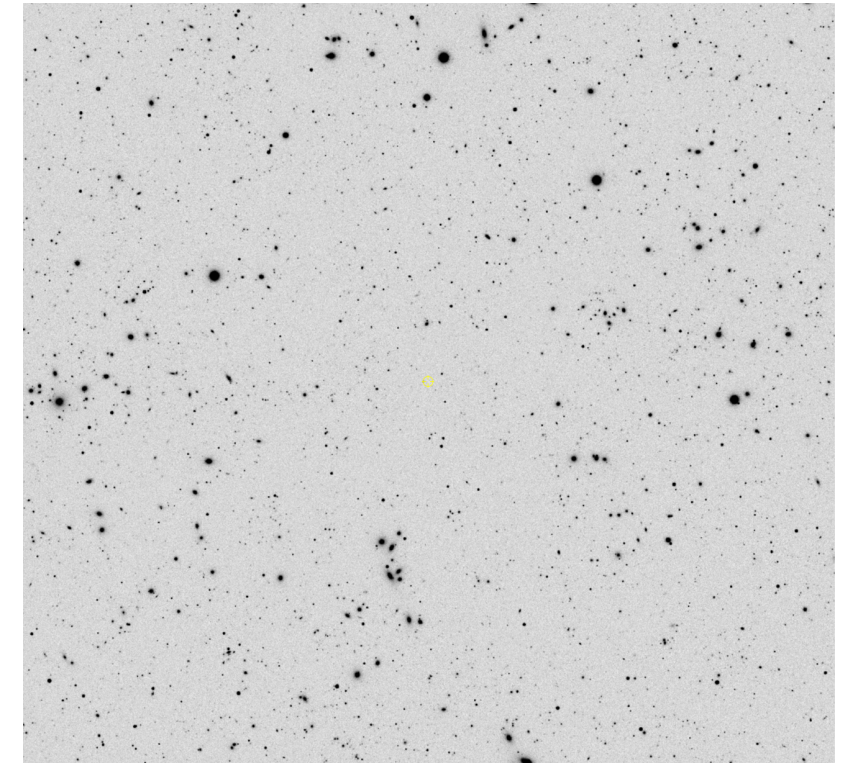
**4** Video Demo

# Introduction

LSST Data Products

## LSST Data Products

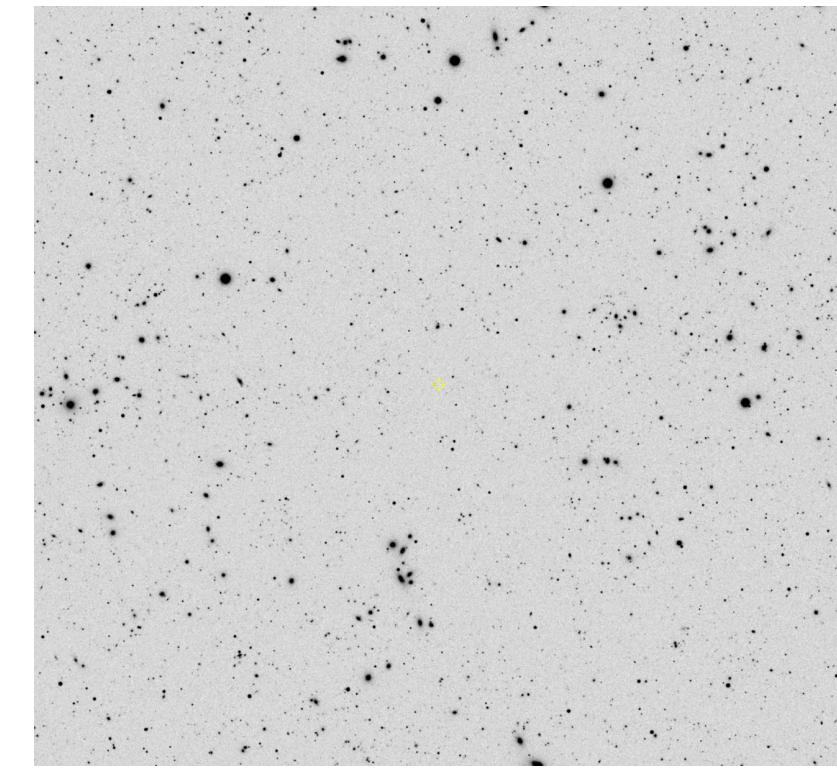## Images

# Introduction



## LSST Data Products

### Catalog

### Images

| coord_dec (deg) double | coord_ra (deg) double | deblend_nChild int | deblend_skipped boolean | detect_fromBlend boolean | detect_isDeblendedModelSource boolean | detect_isDeblendedSource boolean | detect_isIsolated boolean | detect_isPatchInner boolean | detect_isPrimary boolean | detect_isTractInner boolean | footprintArea (pixel) int | q_ap03Flux (nJy) double | q_ap03Flux_flag boolean | q_ap03FluxErr (nJy) double | q_ap06Flux (nJy) double | q_ap06Flux_flag boolean | q_ap06FluxErr (nJy) double | q_ap09Flux (nJy) double | q_ap09Flux_flag boolean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -32.8731327 | 63.0168574 | 1 false | false | false | true | true | true | true | true | | 143 | 61.2333679 false | | 8.6223576 | 135.1218886 false | | 17.3136285 | 164.6818271 false | |
| -32.8752928 | 63.0172388 | 0 false | true | true | true | false | true | true | true | | 651 | 109.4846596 false | | 8.7796789 | 197.0007136 false | | 17.5803744 | 229.8476385 false | |
| -32.8759299 | 63.017164 | 0 false | true | true | true | false | true | true | true | | 650 | 317.3165384 false | | 8.9517221 | 466.7059158 false | | 17.6773116 | 494.1617681 false | |
| -32.8757029 | 63.0205613 | 0 false | false | true | false | true | false | true | true | | 81 | 21.2741645 false | | 8.7357334 | 61.4612223 false | | 17.5722524 | 110.2749747 false | |
| -32.874725 | 63.0161931 | 0 false | true | true | true | false | true | true | true | | 2407 | 47.1925192 false | | 8.5785793 | 71.6698694 false | | 17.3014455 | 80.403129 false | |
| -32.8751307 | 63.0151232 | 0 false | true | true | true | false | true | true | true | | 3508 | 2367.2119154 false | | 10.2437228 | 4152.2584567 false | | 18.9773117 | 4832.0008339 false | |
| -32.8756587 | 63.0152527 | 0 false | true | true | true | false | true | true | true | | 3333 | 144.2648622 false | | 8.896067 | 277.5704323 false | | 17.8996456 | 319.2882308 false | |
| -32.8744746 | 63.0155065 | 0 false | true | true | true | false | true | true | true | | 3474 | 188.4251397 false | | 8.7756968 | 406.0152593 false | | 17.5145565 | 484.4950779 false | |
| -32.8737537 | 63.0157199 | 0 false | true | true | true | false | true | true | true | | 2349 | 26.2440227 false | | 8.5990249 | 41.0337997 false | | 17.2829104 | 41.2700127 false | |
| -32.8744004 | 63.0167379 | 0 false | true | true | true | false | true | true | true | | 2355 | 52.5095027 false | | 8.6332981 | 83.8199298 false | | 17.3014404 | 79.0942695 false | |

## LSST Data Products
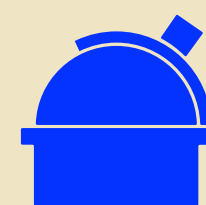
### Images



### Catalog

| coord_dec (deg) double | coord_ra (deg) double | deblend_nChild int | deblend_skipped boolean | detect_fromBlend boolean | detect_isDeblendedModelSource boolean | detect_isDeblendedSource boolean | detect_isIsolated boolean | detect_isPatchInner boolean | detect_isPrimary boolean | detect_isTractInner boolean | footprintArea (pixel) int | q_ap03Flux (nJy) double | q_ap03Flux_flag boolean | q_ap03FluxErr (nJy) double | q_ap06Flux (nJy) double | q_ap06Flux_flag boolean | q_ap06FluxErr (nJy) double | q_ap09Flux (nJy) double | q_ap09Flux_flag boolean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -32.8731327 | 63.0168574 | 1 false | false | false | true | true | true | true | true | 143 | 61.2333769 | false | 8.6223576 | 135.1218886 | false | 17.3136285 | 164.6818271 | false |
| -32.8752928 | 63.0172388 | 0 false | true | true | true | false | true | true | true | 651 | 109.4846596 | false | 8.7796789 | 197.0007136 | false | 17.5803744 | 229.8476385 | false |
| -32.8759299 | 63.017164 | 0 false | true | true | true | false | true | true | true | 650 | 317.3165384 | false | 8.9517221 | 466.7059158 | false | 17.6773116 | 494.1617681 | false |
| -32.8757029 | 63.0205613 | 0 false | true | true | false | true | false | true | true | 81 | 21.2741645 | false | 8.7357334 | 61.4612223 | false | 17.5722524 | 110.2749747 | false |
| -32.874725 | 63.0161931 | 0 false | true | true | true | false | true | true | true | 2407 | 47.1925192 | false | 8.5785793 | 71.6698694 | false | 17.3014455 | 80.403129 | false |
| -32.8751307 | 63.0151232 | 0 false | true | true | true | false | true | true | true | 3508 | 2367.2119154 | false | 10.2437228 | 4152.2584567 | false | 18.9773117 | 4832.0008339 | false |
| -32.8756587 | 63.0152527 | 0 false | true | true | true | false | true | true | true | 3333 | 144.2648622 | false | 8.896067 | 277.5704323 | false | 17.8996456 | 319.2882308 | false |
| -32.8744746 | 63.0155065 | 0 false | true | true | true | false | true | true | true | 3474 | 188.4251397 | false | 8.7756968 | 406.0152593 | false | 17.5145565 | 484.4950779 | false |
| -32.8737537 | 63.0157199 | 0 false | true | true | true | false | true | true | true | 2349 | 26.2440227 | false | 8.5990249 | 41.0337997 | false | 17.2829104 | 41.2700127 | false |
| -32.8744004 | 63.0167379 | 0 false | true | true | true | false | true | true | true | 2355 | 52.5095027 | false | 8.6332981 | 83.8199298 | false | 17.3014404 | 79.0942695 | false |

Prompt Data Products :
Products generated by the prompt processing on a nightly/daily basis for time-dependents phenomena

 Processed Visit Images
Difference Images

 DIASource ➙ Fink
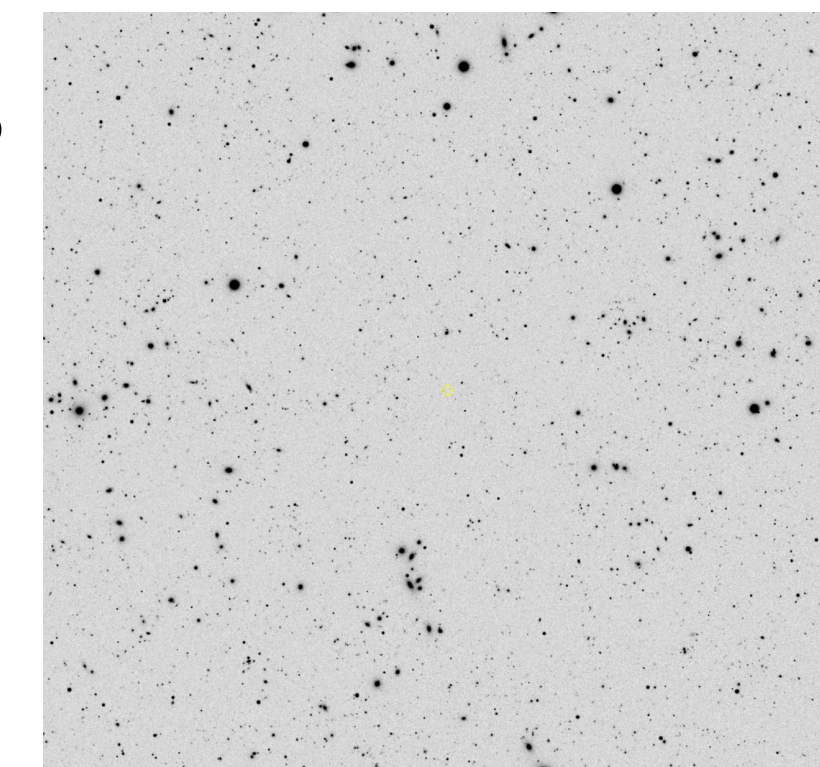DIAObject and SSObjects
Almost real time database

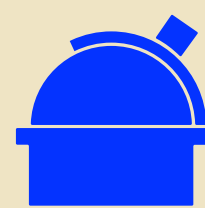## LSST Data Products

### Catalog

| coord_dec (deg) double | coord_ra (deg) double | deblend_nChild int | deblend_skipped boolean | detect_fromBlend boolean | detect_isDeblendedModelSource boolean | detect_isDeblendedSource boolean | detect_isIsolated boolean | detect_isPatchInner boolean | detect_isPrimary boolean | detect_isTractInner boolean | footprintArea (pixel) int | q_ap03Flux (nJy) double | q_ap03Flux_flag boolean | q_ap03FluxErr (nJy) double | q_ap06Flux (nJy) double | q_ap06Flux_flag boolean | q_ap06FluxErr (nJy) double | q_ap09Flux (nJy) double | q_ap09Flux_flag boolean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -32.8731327 | 63.0168574 | 1 false | false | false | true | true | true | true | true | 143 | 61.2333679 | false | 8.6223576 | 135.1218886 | false | 17.3136285 | 164.6818271 | false |
| -32.8752928 | 63.0172388 | 0 false | true | true | true | false | true | true | true | 651 | 109.4846596 | false | 8.7796789 | 197.0007136 | false | 17.5803744 | 229.8476385 | false |
| -32.8759299 | 63.017164 | 0 false | true | true | true | false | true | true | true | 650 | 317.3165384 | false | 8.9517221 | 466.7059158 | false | 17.6773116 | 494.1617681 | false |
| -32.8757029 | 63.0205613 | 0 false | true | true | false | true | true | false | true | 81 | 21.2741645 | false | 8.7357334 | 61.4612223 | false | 17.5722524 | 110.2749747 | false |
| -32.874725 | 63.0161931 | 0 false | true | true | true | false | true | true | true | 2407 | 47.1925192 | false | 8.5785793 | 71.6698694 | false | 17.3014455 | 80.403129 | false |
| -32.8751307 | 63.0151232 | 0 false | true | true | true | false | true | true | true | 3508 | 2367.2119154 | false | 10.2437228 | 4152.2584567 | false | 18.9773117 | 4832.0008339 | false |
| -32.8756587 | 63.0152527 | 0 false | true | true | true | false | true | true | true | 3333 | 144.2648622 | false | 8.896067 | 277.5704323 | false | 17.8996456 | 319.2882308 | false |
| -32.8744746 | 63.0155065 | 0 false | true | true | true | false | true | true | true | 3474 | 188.4251397 | false | 8.7756968 | 406.0152593 | false | 17.5145565 | 484.4950779 | false |
| -32.8737537 | 63.0157199 | 0 false | true | true | true | false | true | true | true | 2349 | 26.2440227 | false | 8.5990249 | 41.0337997 | false | 17.2829104 | 41.2700127 | false |
| -32.8744004 | 63.0167379 | 0 false | true | true | true | false | true | true | true | 2355 | 52.5095027 | false | 8.6332981 | 83.8199298 | false | 17.3014404 | 79.0942695 | false |

### Images



**Prompt Data Products** :
Products generated by the prompt processing on a nightly/daily basis for time-dependents phenomena
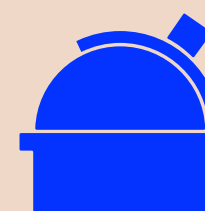
Processed Visit Images
Difference Images

DIASource ➡ Fink
DIAObject and SSObjects
Almost real time database

**Data Release Products :**
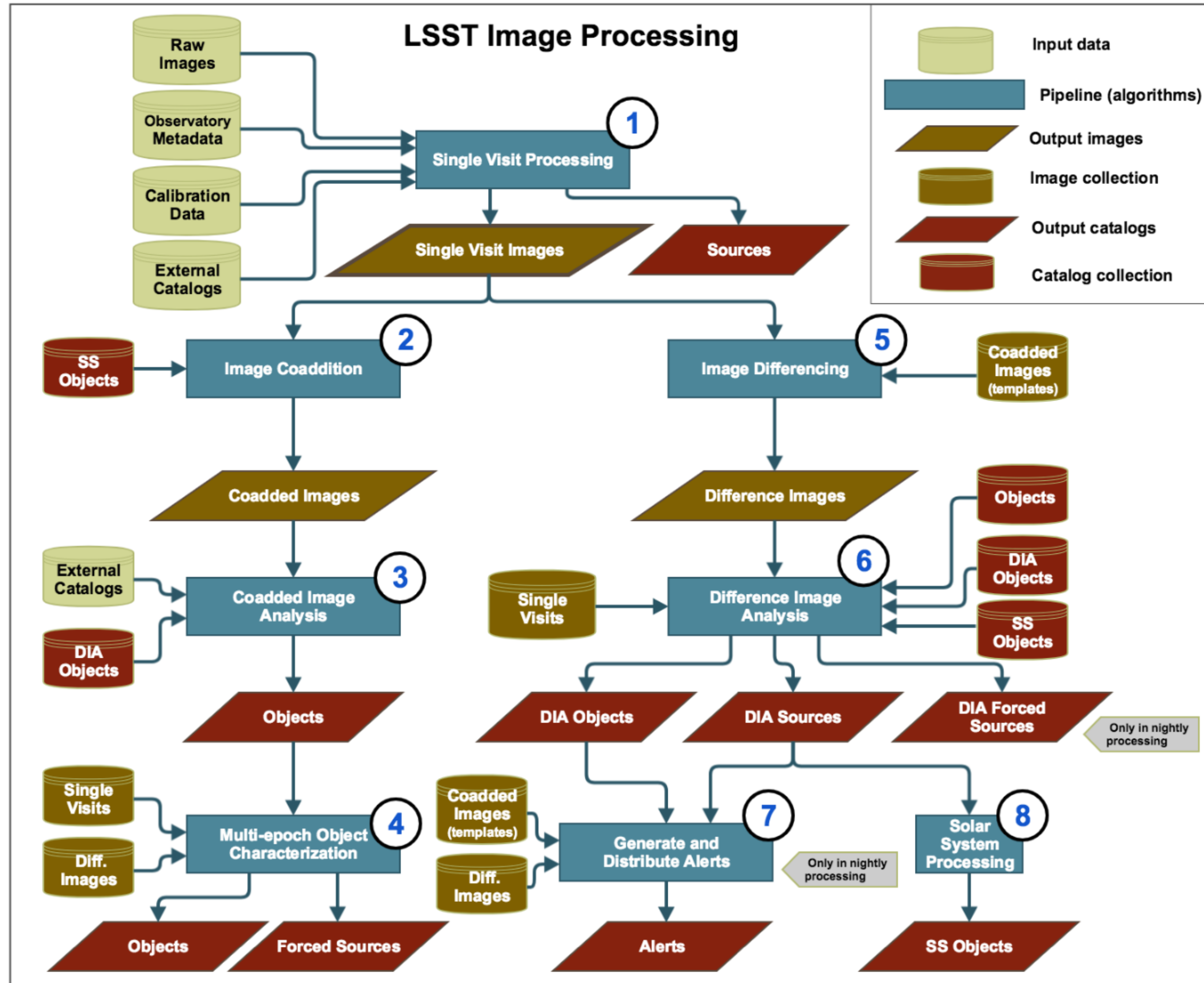Products generated by the annual process and it uses all the data collected
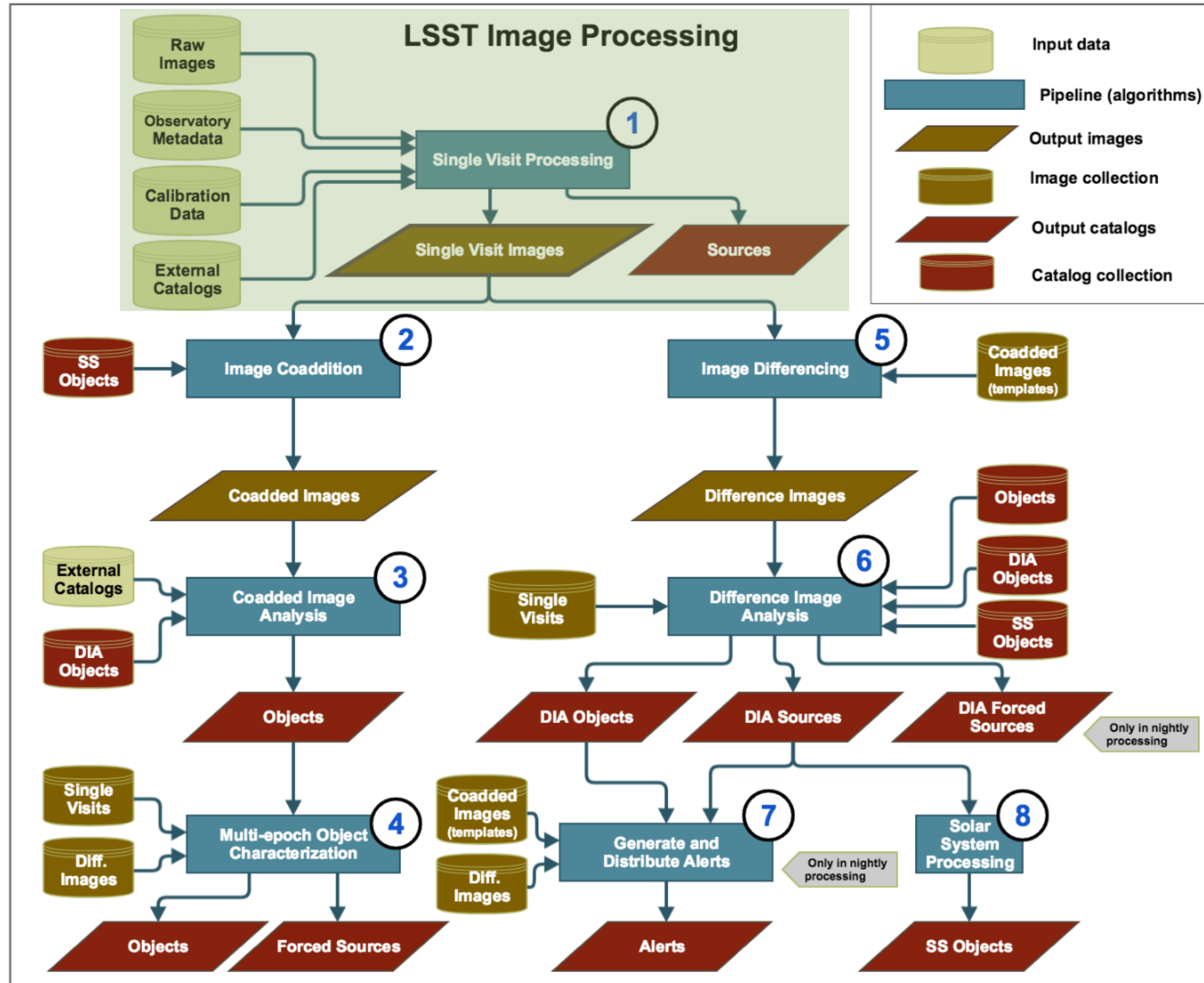
Processed Visit Images
Coadded images

Source and Object
ForcedSource
DIAObject and SSObjects
Static Database
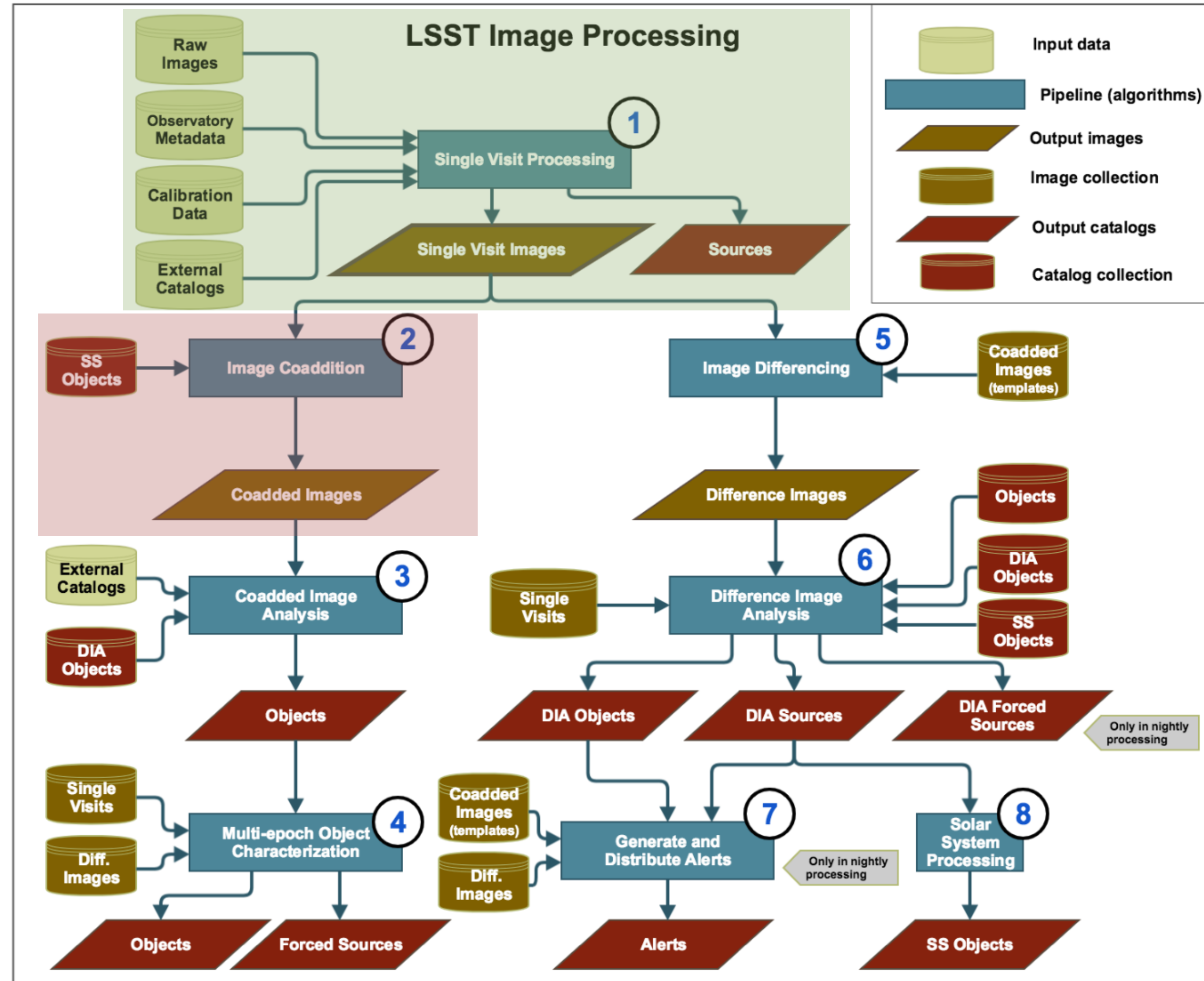
# Images and Catalog

From Raw to
Processed Visit Images
(PVI a.k.a. Calexp)
Source Table

# Images and Catalog

From Raw to
Processed Visit Images
(PVI a.k.a. Calexp)
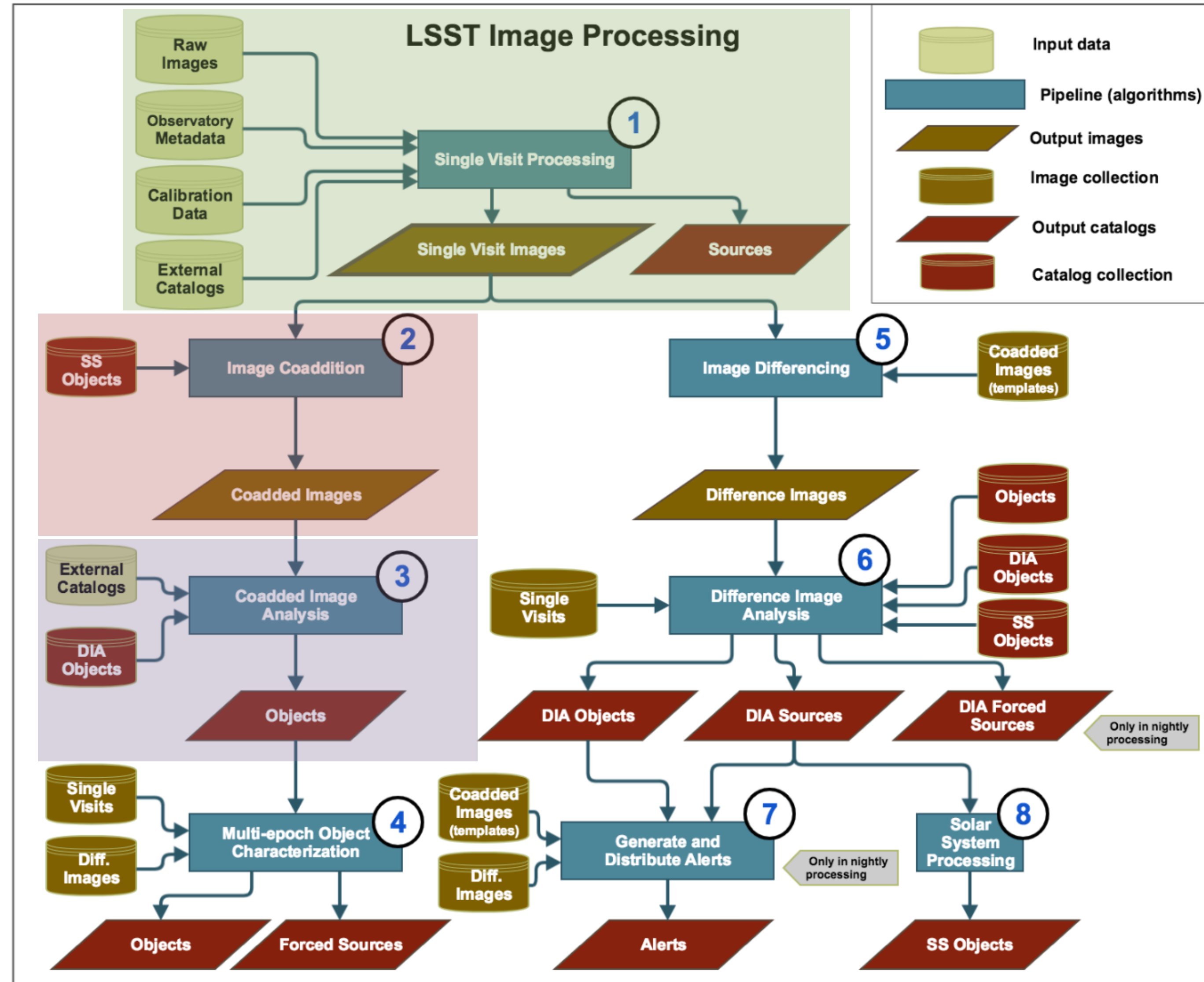Source Table

From PVI to Coadd

# Images and Catalog

From Raw to
Processed Visit Images
(PVI a.k.a. Calexp)
Source Table
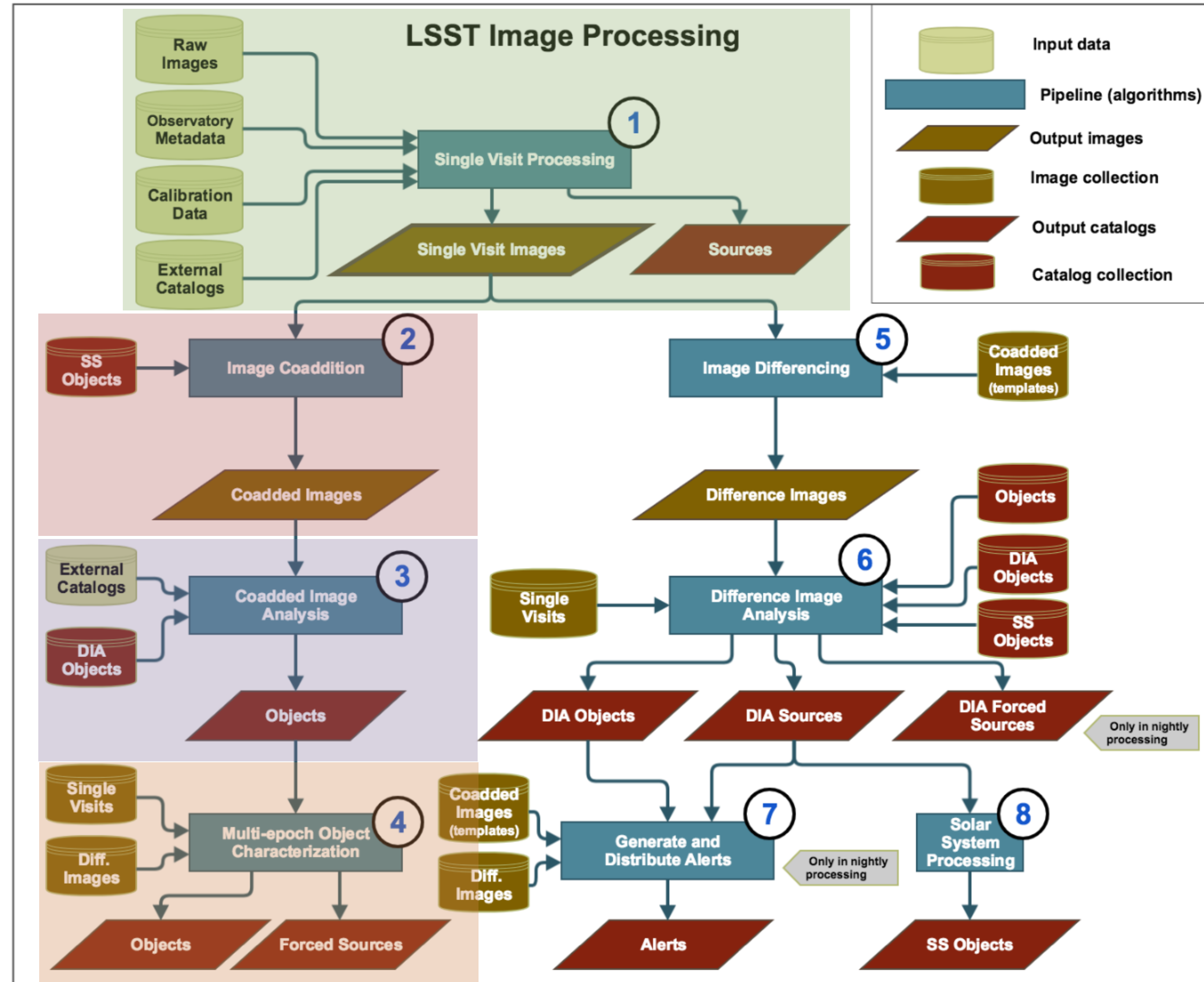
From PVI to Coadd

Object Table

From Raw to
Processed Visit Images
(PVI a.k.a. Calexp)
Source Table

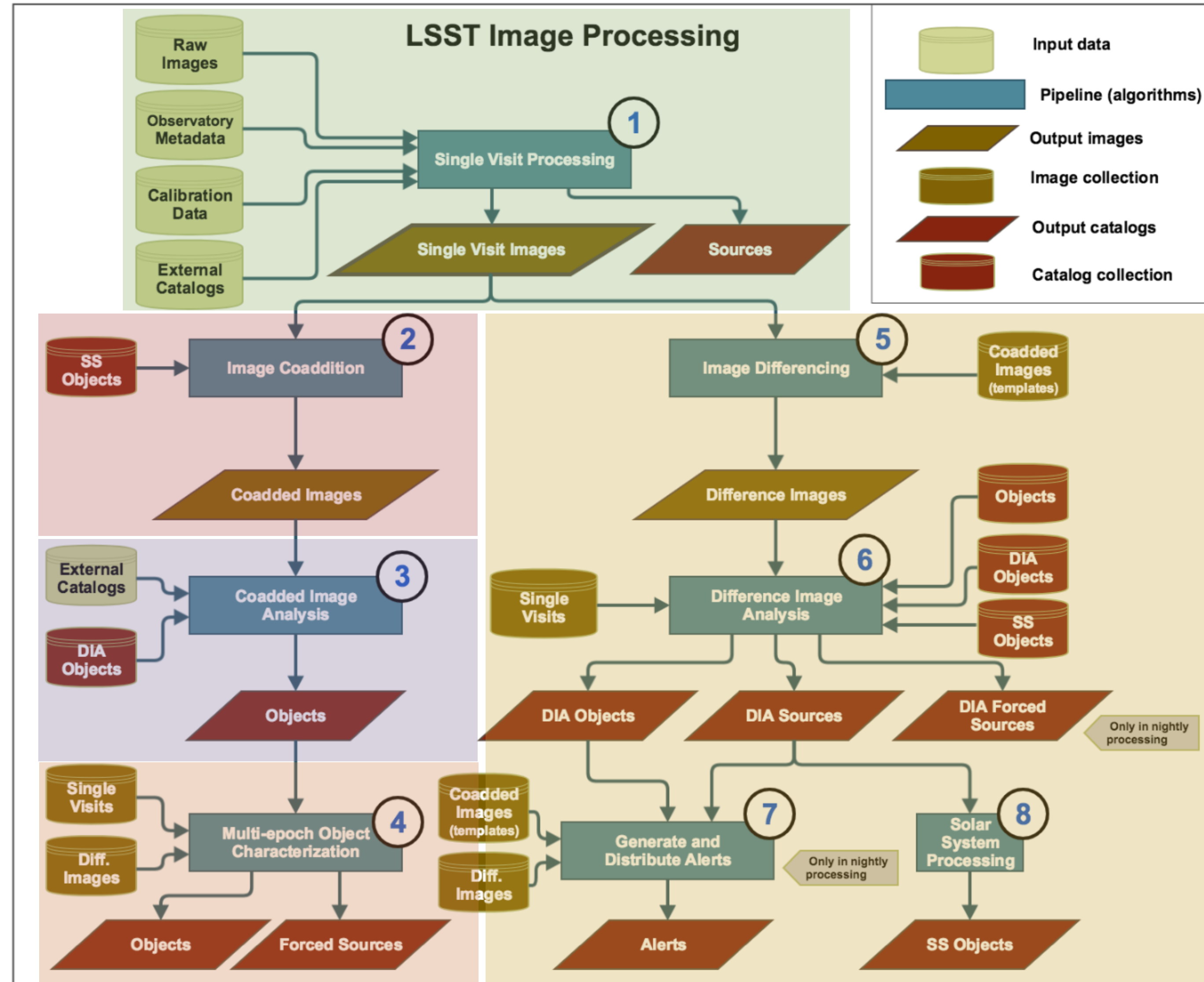From PVI to Coadd

Object Table

Forced Source Table

# Images and Catalog



From Raw to
Processed Visit Images
(PVI a.k.a. Calexp)
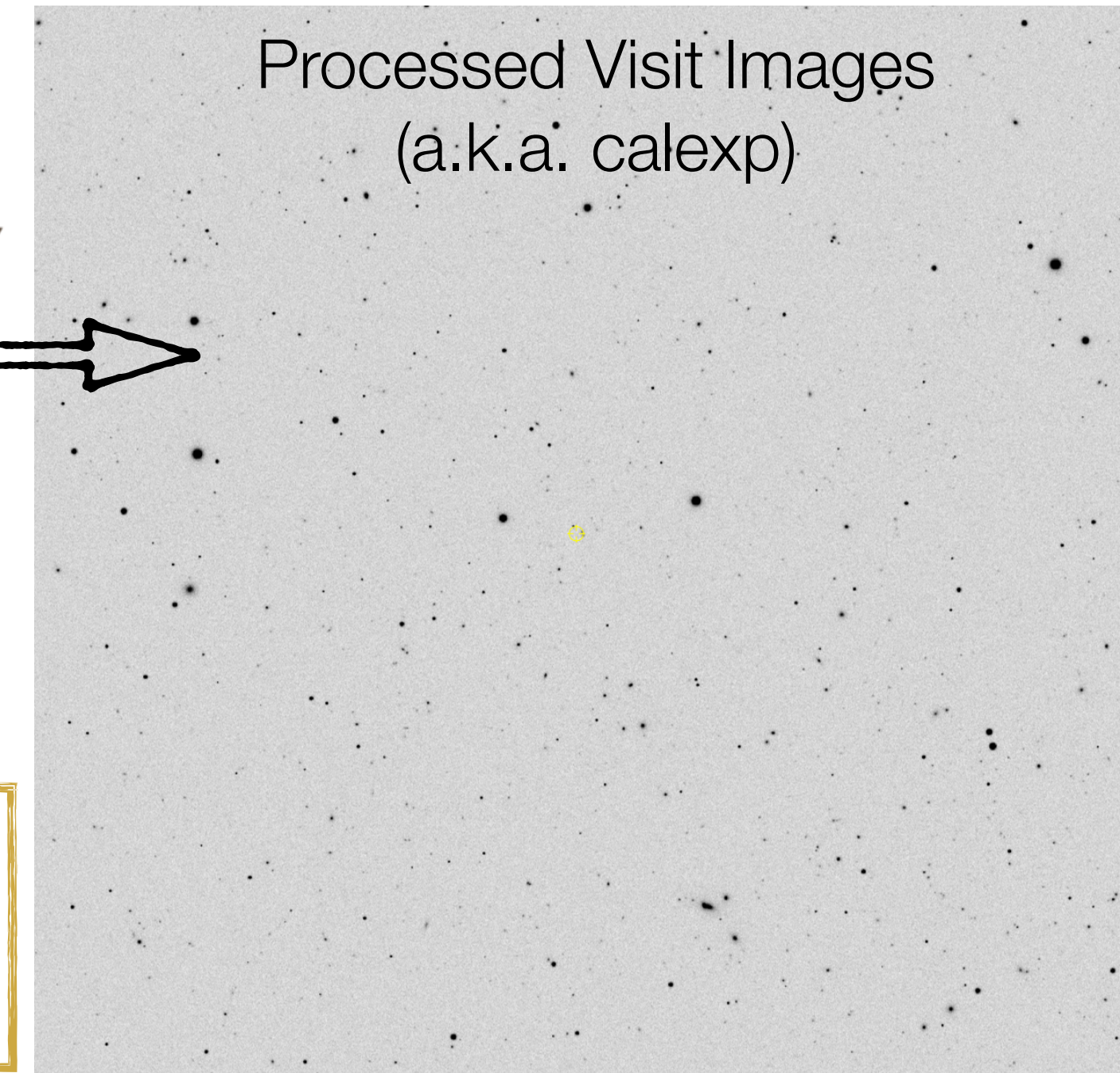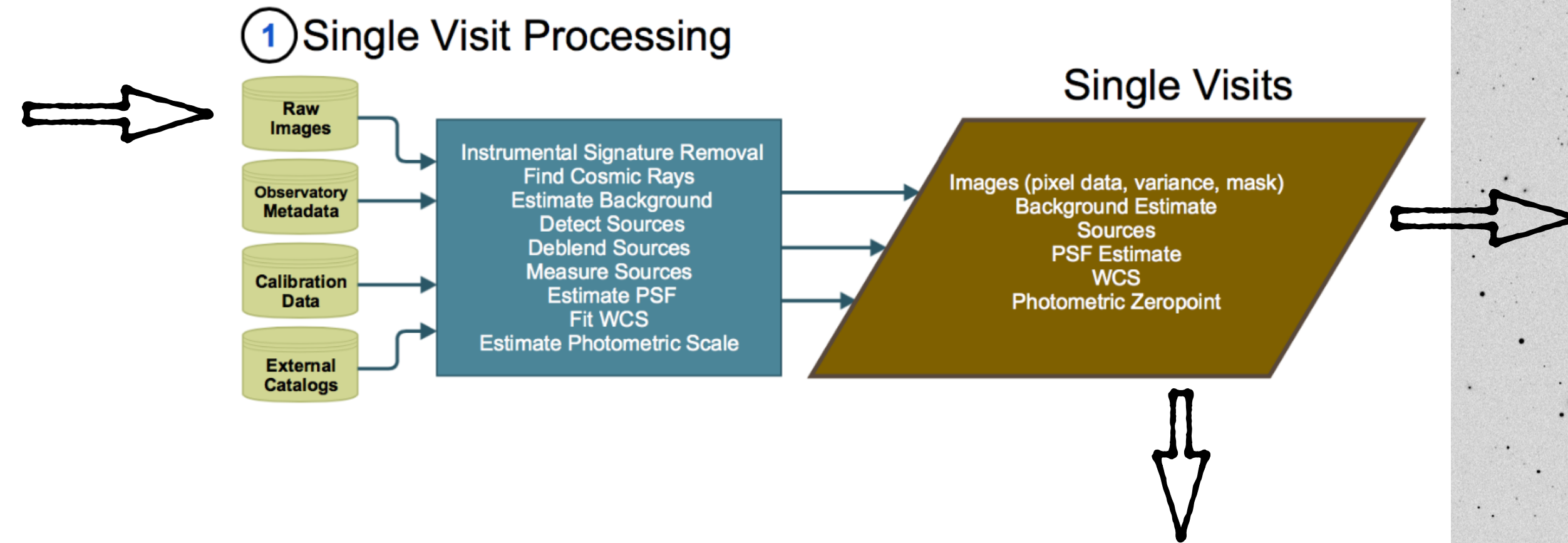Source Table

From PVI to Coadd

Object Table

Forced Source Table

Prompt Processing:
From PVI to DIA Tables and Alerts

# Images and Catalog

Processed Visit Images (a.k.a. calexp)

① Single Visit Processing

Raw Images
Observatory Metadata
Calibration Data
External Catalogs

Instrumental Signature Removal
Find Cosmic Rays
Estimate Background
Detect Sources
Deblend Sources
Measure Sources
Estimate PSF
Fit WCS
Estimate Photometric Scale

Single Visits

Images (pixel data, variance, mask)
Background Estimate
Sources
PSF Estimate
WCS
Photometric Zeropoint

The `Source` table stores properties of detections (instrumental fluxes and shapes) of sources independently detected, deblended, and measured on all visits.

**sourceId**: unique source identifier
**objectId**: ID of the object associated
**ccdVisitId**: ID of CCD and Visit

**apFlux**: calibrated aperture flux
**psFlux**: calibrated point source model flux
**calibFlux**: calibrated flux within 12.0-pixel aperture

**gaussianFlux**: flux from Gaussian Flux algorithm
**sky**: estimated background surface brightness
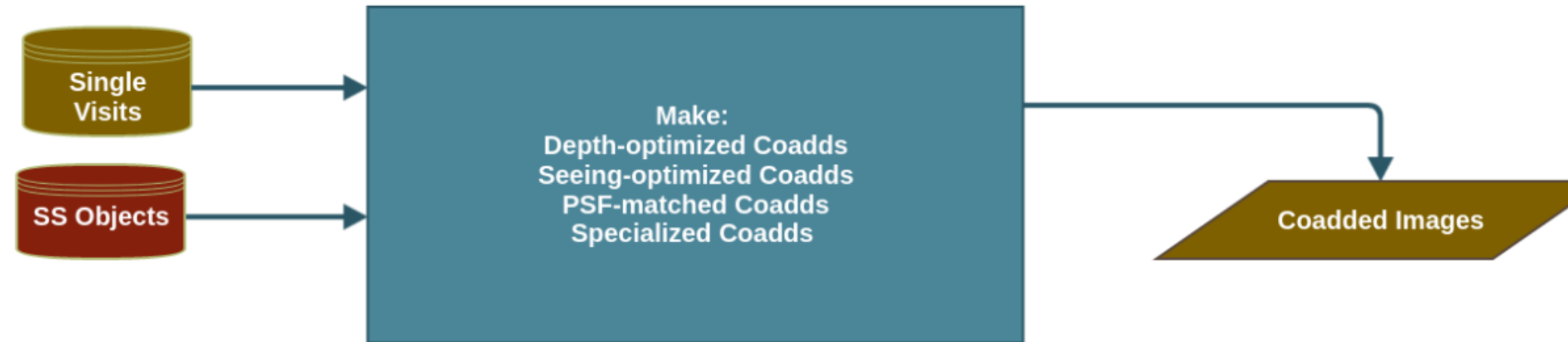**extendedness**: 0 → point source, 1→ extended

| ap03Flux (nJy) double | ap03Flux_flag boolean | ap03FluxErr (nJy) double | ap06Flux (nJy) double | ap06Flux_flag boolean | ap06FluxErr (nJy) double | ap12Flux (nJy) double | ap12Flux_flag boolean | ap12FluxErr (nJy) double | ap70Flux (nJy) double | ap70Flux_flag boolean | ap70FluxErr (nJy) double | band char | calibFlux (nJy) double | calibFluxErr (nJy) double | ccdVisitId long | coord_dec (deg) double | coord_ra (deg) double | gaussianFlux (nJy) double | gaussianFlux_flag boolean | gaussianFluxErr (nJy) double | psfFlux (nJy) double | psfFlux_apCorr double | psfFlux_apCorrErr double | sourceId long |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2331.4968841 | false | 170.4638405 | 4202.525079 | false | 336.7087489 | 7130.4884555 | false | 672.1985989 | 12810.9897112 | false | 3925.7283179 | i | 7130.4884555 | 672.1985989 | 965396136 | -32.8751162 | 63.0150962 | 5608.2157196 | false | 379.6063468 | 3832.4355092 | 0.9910757 | 0.0 | 5182931039755980 |
| 2582.0020212 | false | 228.2974128 | 5001.048114 | false | 453.0381009 | 6300.450902 | false | 906.8518319 | 7536.8890729 | false | 5317.3702094 | i | 6300.450902 | 906.8518319 | 1198805186 | -32.8751507 | 63.0151395 | 5801.7235427 | false | 446.0260211 | 3585.1952158 | 0.9928332 | 0.0 | 6436036335181516 |
| 1786.2589324 | false | 107.4406122 | 3792.5621292 | false | 211.5539865 | 4945.998075 | false | 417.9327846 | 6635.3319938 | false | 2432.5520422 | r | 4945.998075 | 417.9327846 | 1193701076 | -32.8751438 | 63.0151347 | 5008.5647501 | false | 250.2580398 | 3296.1180922 | 0.9871098 | 0.0 | 6408633853275028 |
| 1671.8113392 | false | 64.9910743 | 3793.5043954 | false | 124.2411657 | 5868.1474858 | false | 238.7145227 | 7874.7850522 | false | 1360.44959 | g | 5868.1474858 | 238.7145227 | 466321174 | -32.8751242 | 63.0151258 | 5613.3134301 | false | 179.7833763 | 4067.4653385 | 0.9830501 | 0.0 | 2503542739702920 |
| 389.1767502 | false | 59.4627145 | 541.9344706 | false | 116.8408131 | 871.211735 | false | 234.0471161 | 2018.503739 | false | 1409.2572964 | g | 871.211735 | 234.0471161 | 960245179 | -32.8749463 | 63.0189649 | 535.823795 | false | 79.9921265 | 621.7559421 | 0.9898801 | 0.0 | 5155277049933340 |
| 2060.2164423 | false | 67.024701 | 3901.0349794 | false | 125.3230669 | 5458.2710829 | false | 239.9253476 | 6499.1088424 | false | 1371.7552913 | g | 5458.2710829 | 239.9253476 | 960245179 | -32.8751275 | 63.0151254 | 4772.4095088 | false | 142.8201676 | 3671.1507359 | 0.9899399 | 0.0 | 5155277049933340 |
| 2060.177917 | false | 67.0287333 | 3894.4686803 | false | 125.3185151 | 5240.57078 | false | 239.9218939 | 5748.7848373 | false | 1371.7545082 | g | 5240.57078 | 239.9218939 | 960245179 | -32.8751271 | 63.0151257 | 3665.5565595 | false | 141.8041196 | 3665.5565595 | 0.9899399 | 0.0 | 5155277049933358 |
| 2661.2174871 | false | 185.2956923 | 4550.5135727 | false | 364.8225928 | 7088.3134744 | false | 728.3708815 | 11289.5675906 | false | 4258.2085731 | i | 7088.3134744 | 728.3708815 | 1229687125 | -32.8751333 | 63.0151259 | 4886.599675 | false | 320.512883 | 3607.6158443 | 0.998271 | 0.0 | 6601832482734088 |
| 2744.6558582 | false | 274.7206175 | 3930.2145213 | false | 546.637078 | 5352.7396406 | false | 1097.9055662 | 163.2382922 | false | 6443.5896279 | i | 5352.7396406 | 1097.9055662 | 211200141 | -32.8751463 | 63.0151031 | 4753.941438 | false | 443.5515887 | 3553.7146409 | 0.9970213 | 0.0 | 1133872123131994 |
| 2783.66662 | false | 297.2399335 | 4346.0431934 | false | 591.9650015 | 6148.5914168 | false | 1189.0992819 | | true | | i | 6148.5914168 | 1189.0992819 | 731792013 | -32.8751203 | 63.0151256 | 4025.6629504 | false | 377.5353412 | 3482.0006768 | 1.0001207 | 0.0 | 3928778454136276 |
| -284.3011212 | true | 289.5361308 | -319.0401538 | true | 588.975413 | 1910.376355 | true | 1188.2413131 | | true | | i | 1910.376355 | 1188.2413131 | 731792013 | -32.876099 | 63.0185414 | | true | | -142.3228164 | 0.9998898 | 0.0 | 3928778454136277 |

# Images and Catalog

Processed Visit Images
(PVI a.k.a. calexp)

Coadded images



② Image Coaddition

Single Visits

SS Objects

Make:
Depth-optimized Coadds
Seeing-optimized Coadds
PSF-matched Coadds
Specialized Coadds

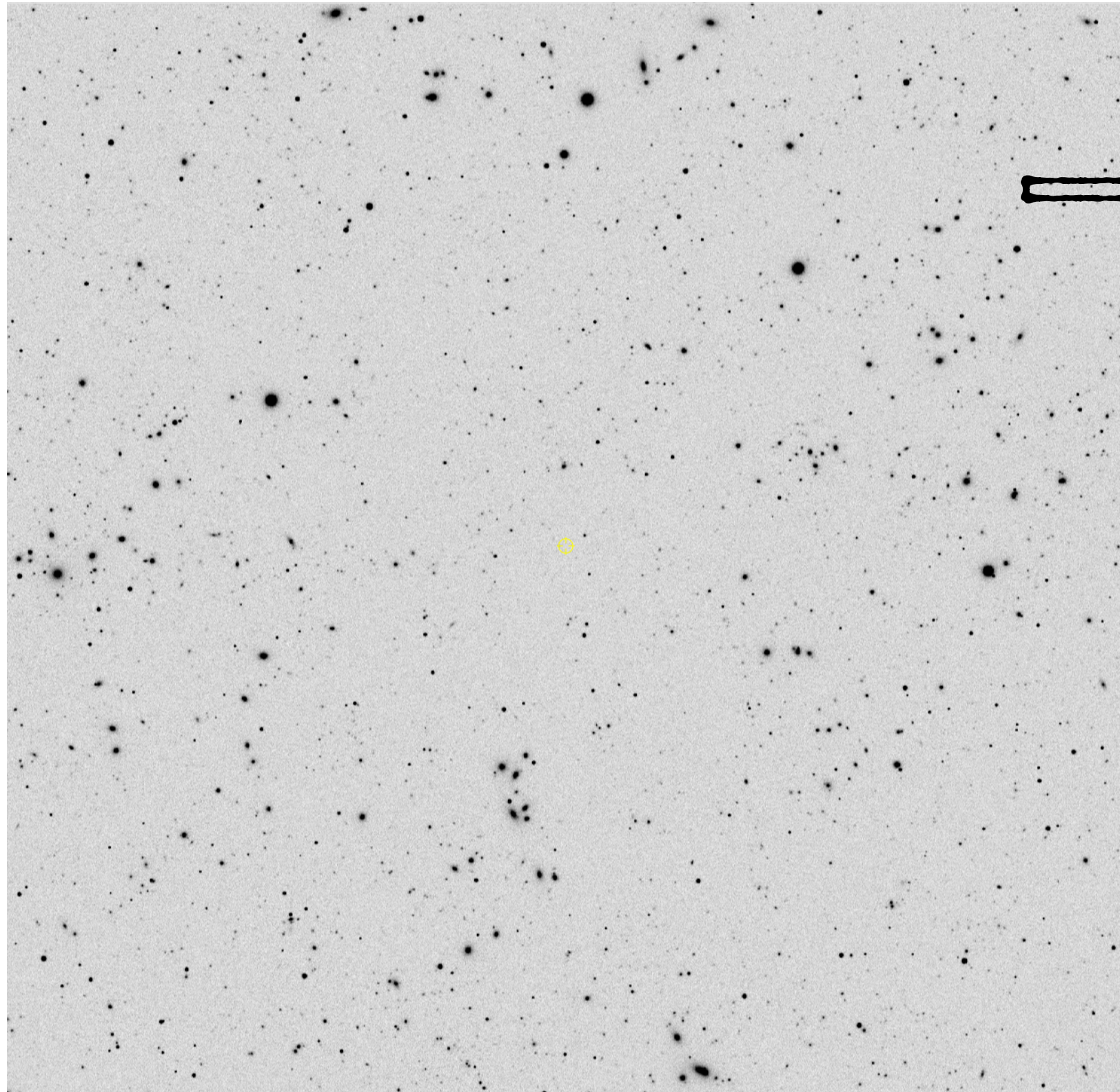Coadded Images

There are different kinds of coadd images:
- DeepCoad to emphasize depth at the possible expense of seeing
- GoodSeeingCoadd to emphasize image quality at the possible expense of depth

# Images and Catalog

③ Coadd Image Analysis

Coadded Images

External Catalogs

DIA Objects

Find Sources
Merge Source Lists
Prune Source List
Deblend Footprints
Measure Objects

Objects

**Object** Table:
Properties of the astronomical objects detected and measured on the deep coadded images.

**objectId**: ID of the object associated
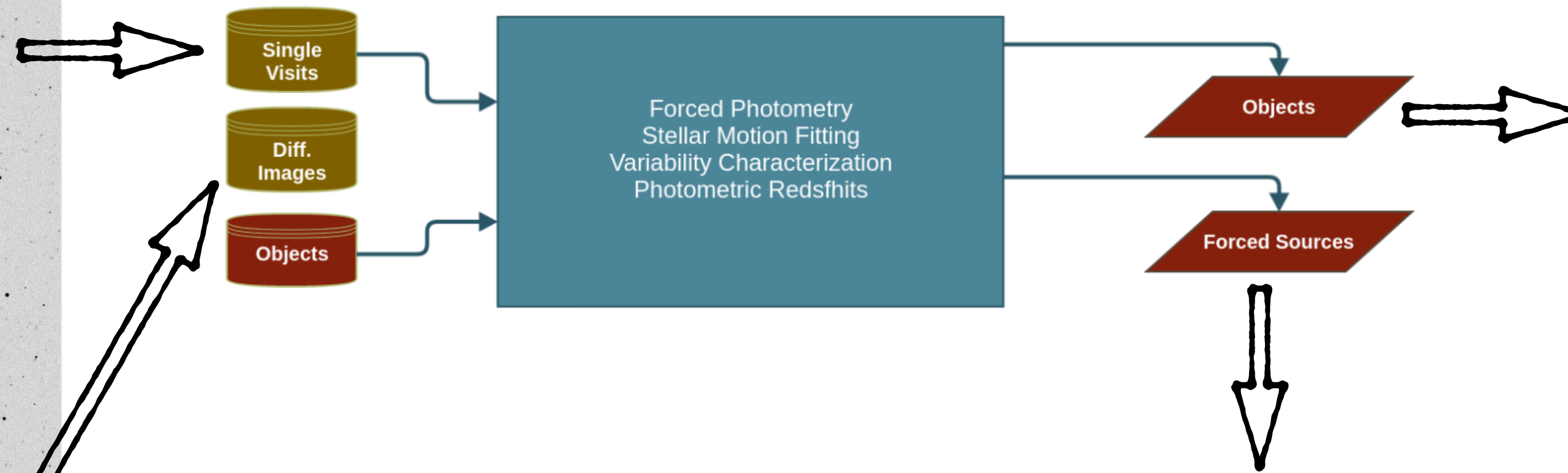**tract** & **patch** IDs

<band>_**apFlux**: per band aperture flux
<band>_**calibFlux**: calibrated flux within 12.0-pixel aperture
<band>_**kronFlux**: Flux from Kron Flux algorithm.

**blendedness_abs**: Measure of how much the flux is affected by neighbours
**detect_isPrimary**: True if source has no children

| coord_dec (deg) double | coord_ra (deg) double | deblend_nChild int | deblend_skipped boolean | detect_fromBlend boolean | detect_isDeblendedModelSource boolean | detect_isDeblendedSource boolean | detect_isIsolated boolean | detect_isPatchInner boolean | detect_isPrimary boolean | detect_isTractInner boolean | footprintArea (pixel) int | g_ap03Flux (nJy) double | g_ap03Flux_flag boolean | g_ap03FluxErr (nJy) double | g_ap06Flux (nJy) double | g_ap06Flux_flag boolean | g_ap06FluxErr (nJy) double | g_ap09Flux (nJy) double | g_ap09Flux_flag boolean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -32.8048634 | 62.9988907 | 2 false | false | false | false | false | false | true | false | true | 332 | 163.3777694 false | | 8.3542251 | 286.6498981 false | | 16.6987454 | 336.7719955 false | |
| -32.8043377 | 63.001425 | 1 false | false | false | true | true | true | true | true | 258 | 54.5744402 false | | 8.2716239 | 101.1038211 false | | 16.6439649 | 104.9203893 false | |
| -32.8075021 | 62.9994376 | 1 false | false | false | true | true | true | true | true | 272 | 151.8884085 false | | 8.3457481 | 203.7373866 false | | 16.6485969 | 230.3997135 false | |
| -32.8060212 | 63.002288 | 3 false | false | false | false | false | true | false | true | 1098 | 443.9846553 false | | 8.4393867 | 899.1971218 false | | 16.7198203 | 1081.3358781 false | |
| -32.8079362 | 63.001379 | 4 false | false | false | false | false | true | false | true | 707 | 125.9270413 false | | 8.3342443 | 183.1358663 false | | 16.6909749 | 219.5271976 false | |
| -32.8042645 | 63.0024495 | 1 false | false | false | true | true | true | true | true | 77 | 27.1511958 false | | 8.2537336 | 54.7929584 false | | 16.5696923 | 70.544996 false | |
| -32.8042616 | 63.00248 | 0 false | false | true | false | true | true | false | true | 121 | 23.776075 false | | 8.2498038 | 31.959098 false | | 16.5772827 | 47.3087787 false | |
| -32.8049766 | 62.9983161 | 0 false | true | true | true | false | true | true | true | 450 | 46.9474879 false | | 8.3167673 | 67.2241086 false | | 16.6992358 | 75.2535069 false | |
| -32.8048915 | 62.9988778 | 0 false | true | true | true | false | true | true | true | 450 | 164.4141311 false | | 8.3877669 | 272.5195499 false | | 16.6807144 | 294.1658008 false | |
| -32.8075039 | 62.9994427 | 0 false | false | true | false | true | true | false | true | 380 | 149.8926932 false | | 8.3476757 | 221.0928323 false | | 16.645486 | 239.4348651 false | |
| -32.8052937 | 63.0024357 | 0 false | true | true | true | false | true | true | true | 1684 | 53.2268538 false | | 8.2593715 | 86.8970138 false | | 16.5712169 | 96.551871 false | |
| -32.8070573 | 63.003081 | 0 false | true | true | true | false | true | true | true | 1665 | 174.147759 false | | 8.3485649 | 270.1290817 false | | 16.6623371 | 300.1786437 false | |
| -32.8060256 | 63.0022964 | 0 false | true | true | true | false | true | true | true | 1983 | 468.2712624 false | | 8.4405751 | 894.4688685 false | | 16.7136945 | 1060.7676277 false | |

# Images and Catalog

④ Multi-Epoch Object Characterization

**Single Visits**

**Diff. Images**

**Objects**

Forced Photometry
Stellar Motion Fitting
Variability Characterization
Photometric Redsfhits

Objects

Forced Sources

`Object` Table (Post-Processing):
To include multi-epoch properties

## `ForcedSource` Table
Forced-photometry measurements on individual single-epoch visit images and difference images, based on and linked to the entries in the Object table. Point-source PSF photometry is performed, based on coordinates from a reference band chosen for each Object

**objectId**: ID of the object associated
**ccdVisitId**: ID of CCD and Visit
**psFlux**: point source model flux on direct image
**psDiffFlux**: point source model flux on diff image

| objectId | band | psfFlux (nJy) | psfFluxErr (nJy) | psfDiffFlux (nJy) | psfDiffFluxErr (nJy) | ccdVisitId | forcedSourceId | detect_isPrimary |
|---|---|---|---|---|---|---|---|---|
| long | char | double | double | double | double | long | long | boolean |
| 18240106256 | r | 303.353464! | 206.9903651 | 236.7689555 | 206.3584458 | 1182658158 | 6349347638869705308 | true |
| 18240106256 | r | 259.707522( | 207.0617152 | 179.7413251 | 206.3235743 | 1182658158 | 6349347638869710186 | true |
| 18240106256 | r | 484.775551 | 207.2658213 | 5.4255478 | 206.3713387 | 1182658158 | 6349347638869710223 | true |
| 18240106256 | r | 94.9875868 | 206.1482489 | -16.8308356 | 205.3263214 | 1182658158 | 6349347638869710224 | true |
| 18240106256 | r | 97.1621807 | 206.3160338 | -51.0647592 | 205.6169905 | 1182658158 | 6349347638869710226 | true |
| 18240106256 | r | -160.630768 | 205.4194625 | -254.2276531 | 204.6266171 | 1182658158 | 6349347638869710427 | false |
| 18240106256 | r | -136.922277 | 205.5340599 | -181.0641715 | 204.6870967 | 1182658158 | 6349347638869710394 | true |
| 18240106256 | r | 189.985492: | 206.0226954 | -35.2769596 | 205.2273015 | 1182658158 | 6349347638869710393 | true |
| 18240106256 | r | 184.899560! | 206.3259455 | -245.7733782 | 205.5070085 | 1182658158 | 6349347638869710261 | false |
| 18240106256 | r | 1085.340100 | 208.6553703 | 16.9980999 | 207.9954465 | 1182658158 | 6349347638869710285 | true |
| 18240106256 | r | 236.318275! | 206.5712527 | -88.5898613 | 205.7907543 | 1182658158 | 6349347638869710286 | true |

# Images and Catalog
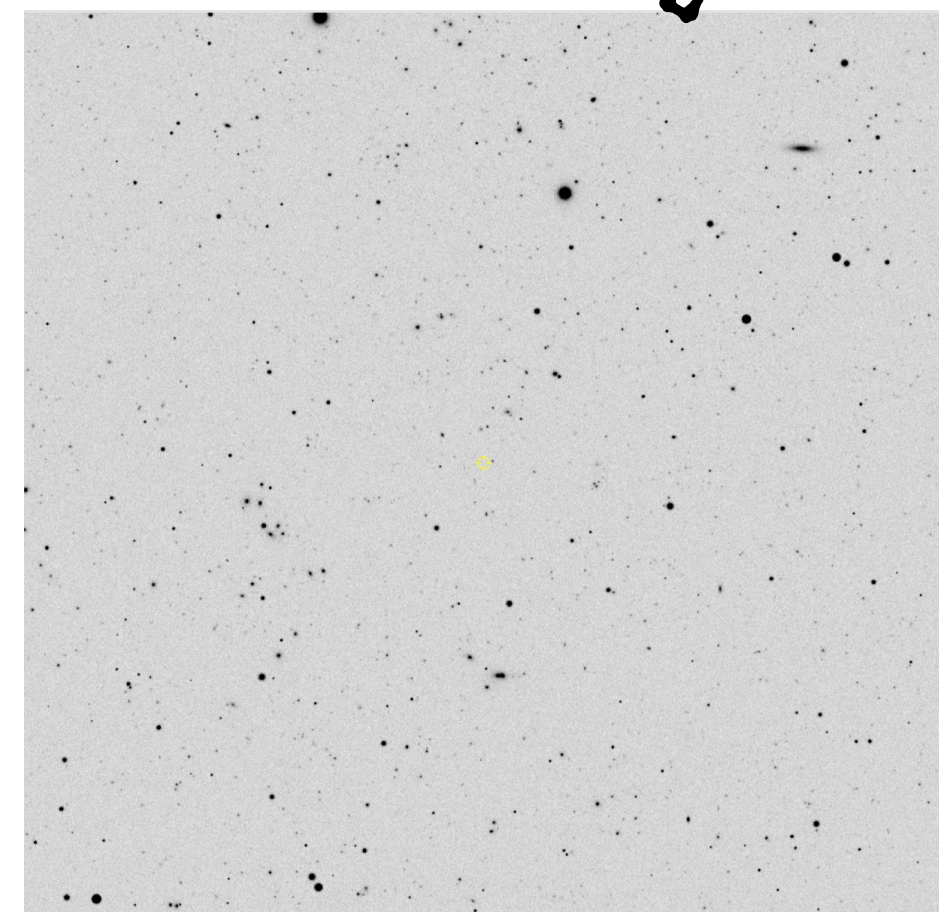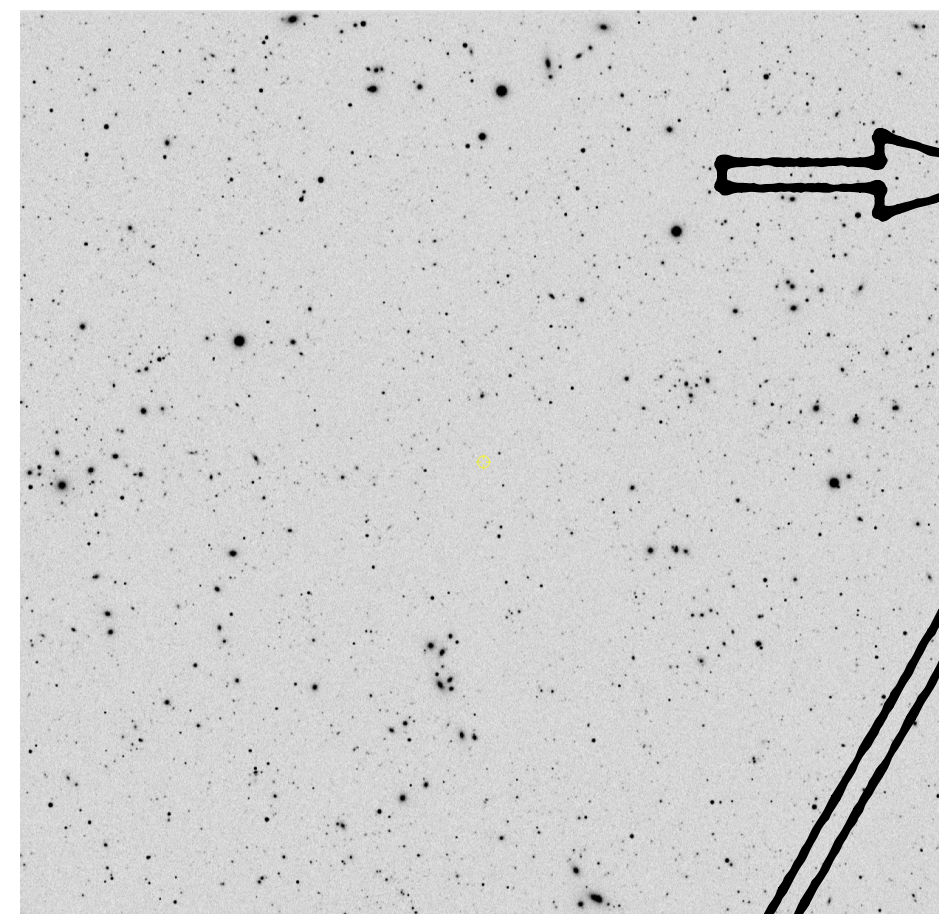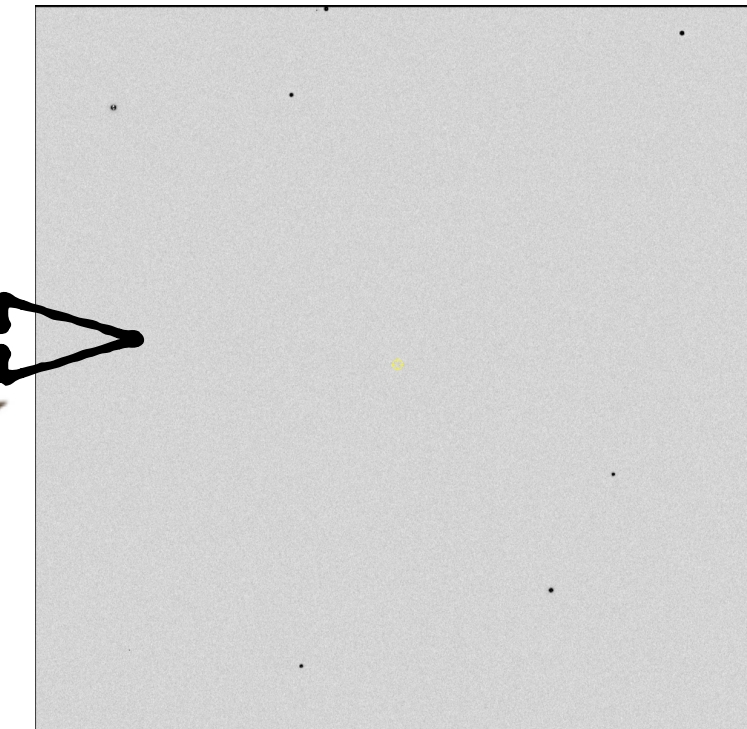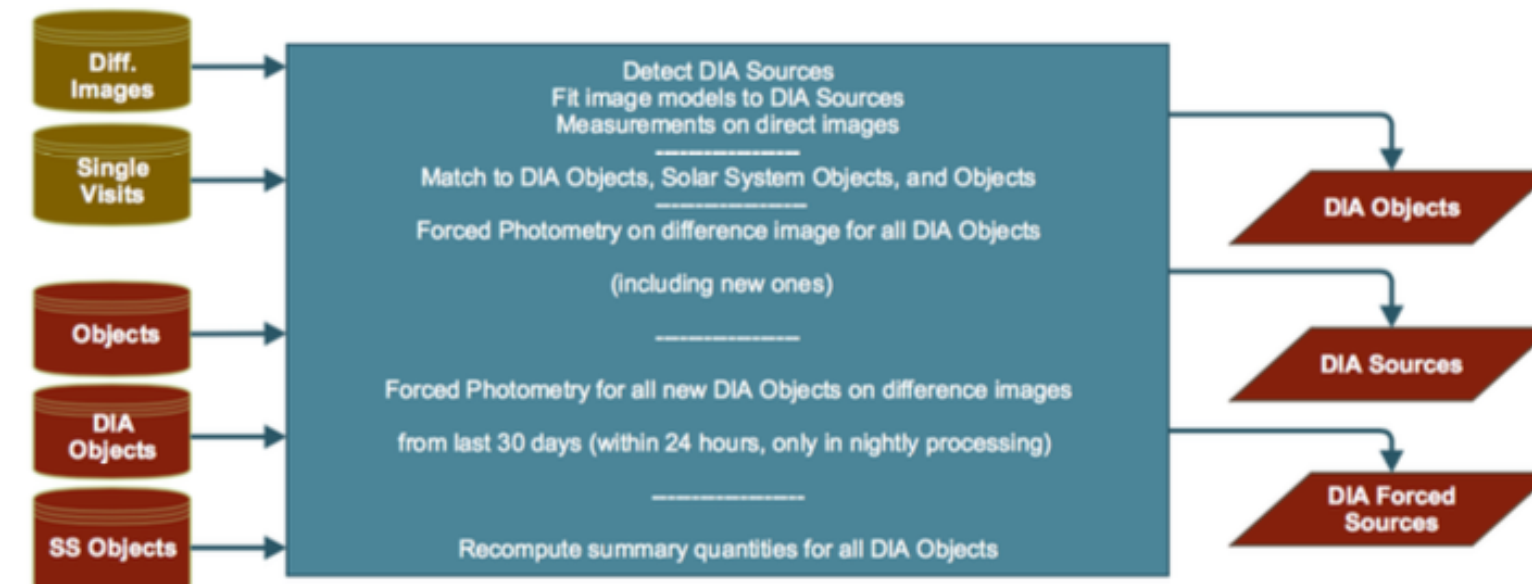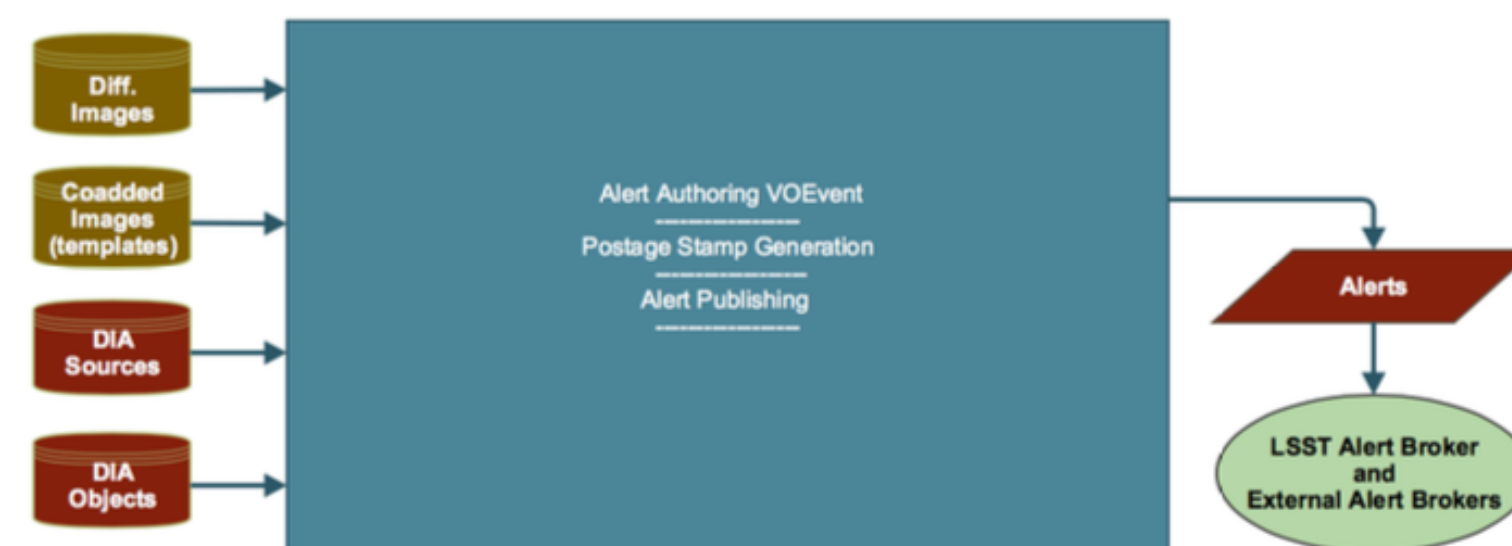


**DiaSource**
Properties of transient-object detections on the single-epoch difference images.

**apFlux**: calibrated aperture flux
**psFlux**: calibrated point source model flux
**totFlux**: forced PSF flux on the direct image

**DiaObject**
Properties of time-varying astronomical objects based on association of data from one or more spatially-related DiaSource detections on individual single-epoch difference images.

<band>**PSFluxMin/Max/Mean/MAD**
<band>**TOTFluxMean**: weighted mean of the PSF flux forced photometered on the calibrated image

**ForcedSourceOnDiaObject**
Point-source forced-photometry measurements on individual single-epoch visit images and difference images, based on and linked to the entries in the DiaObject table

# References

## Data Products References

- *Data Products Definition Document* LSE-163
- *The Rubin Data Products, Abridged* https://doi.org/k8d3
- *LSST Data Product Categories* LPM-231
- *Data Management System (DMS) Requirements* LSE-61
- *Data Management Science Pipelines Design* LDM-151
- https://www.lsst.org/about/dm/data-products

## Rubin Science Platform

- data-dev.lsst.eu
- data.lsst.cloud

## Tutorial

- *DP0.2* : https://is.gd/yY5iBC
- *Introduction to the RSP API Aspect* : https://is.gd/xs3pkL
- *Data Access with Topcat*: https://is.gd/rhleqm

# Video Demo

https://me.lsst.eu/mainetti/Rubin_Data_ Products.mp4