

OBSOLETE see RDO-11 . Release Scenarios for LSST Data

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2021-11-08

1 Introduction

This document outlines possible data releases derived in conjunction with the LSST operations plan. All data release are seen as operations or pre operations activities - the MREFC project, including commissioning did not foresee serving data to the the community. During the commissioning and operations the plan will have to be adjusted according to the success of the data reductions (quality of the data products), resources available for preparing and supporting a release, and the need for incremental releases (i.e. will a new intermediate release be a significant improvement on the previous release).

The capability level of an Data Access Centre will also have to be considered - the final platform is well understood LDM-554 but at what point specific features may become available is discussed here also.

This document does not present a release schedule, instead we present a release scenario which may or may not play out depending on the many unknowns and caveats on the various data releases and available resources.

Unless the data access policy changes data releases in this document concerning delivering data to LSST Data Rights holders (US, Chilean, and named international contributors).

1.1 Data Quality

The release of any data will be preceded by a set of quality checks done as part of science operations. Especially for initial data releases poor quality data may be held back even though all data will come with quality flags allowing end user filtering.

For commissioning data this would be done in consultation with the commissioning team. Data of adequate quality for early shared-risk scientific investigations will be distributed.

2 Commissioning Data Releases

Distributing commissioning data to the LSST data rights community brings the mutual benefits of preparing the community for LSST data and giving the LSST team the opportunity to prepare for efficient operations. This policy balancing early science with the importance of ensuring fair access to LSST data for LSST Data Rights holders is still being decided but we outline a likely scenario here.

2.1 Commissioning Interface

LSST will make a best effort to distribute commissioning data through an early version of the Science User Interface that the community will use to access LSST data during 10-year survey operations. However, before full operations, the LSST's Science Platform and suite of user services will be operating at limited capacity and with limited functionality. **TBD - this is actually tricky with authentication** The minimum data products to be made available would be through flat files (e.g. FITS images and tables), the desired distribution would be through a still emerging DAC (i.e. without full services), and with provisional access to file systems and databases.

Some user groups will be interested in the bulk transfer of commissioning data from the LSST DAC at NCSA to their own facility. The technical details and possible cost of such bulk data distribution is TBD. This cost will be supported by the user groups, and not by LSST.

2.2 Alerts

Early alert stream data will also be distributed, possibly with substantial latency, to familiarize the community with the planned format and content of the alert stream. At best-effort alert stream may be distributed around August 2021.

2.2.1 Distribution Mechanism

Kafka/AVRO based system currently being tested on ZTF.

2.3 ComCam Release - end 2020

Currently ComCam ends around August 2020 - allowing a few months for cleaning and documenting the ComCam Images and source catalogs could be available 3-6 months later hence by end of 2020 **iff** the schedule holds and ComCam finishes mid 2020.

2.4 Commissioning Full Camera Release - end Q3 2021

Currently commissioning of the Full Camera ends around March 2021 before the mini surveys start. Again allowing for clean up and documenting, Images and source catalogs could be available 3-6 months later around September 2021.

2.5 Mini Surveys Release - end 2021

The Mini-Surveys ends around August 2021 - they commence directly as commissioning the Full Camera Ends hence this data release may be affected by preparations of the prior release Section 2.4. Hence, effort permitting, Images and source catalogs from the mini surveys may be available by end of 2021.

3 First Data Release

The first data release (DR1) is specified to process the first six months of survey data. Six months of processing time have been allocated to perform a final test of the software used to create the release, generate the data products, validate their scientific usefulness, document them (and any of their limitations), deliver them to partners including LSST Education and Public Outreach, and prepare the Data Access Center systems to handle them. The sum of these time periods means that the expected release date for DR1 is one year after the start of survey operations. If the start of the survey were to be, for example, 2022-10-01, then DR1 would be released before 2023-10-01 and would contain data from 2022-10-01 to 2023-03-31.

Alerts would be running in some limited form - A detailed analysis of alerts possibilities for year one is given in DMTN-107.

This Release would include some of the products from section 4 of [DPDD](#) including:

- Raw images
- Processed images and coadds
- Catalogs including
 - Object Catalog
 - Source Catalog
 - Forces Photometry Catalog

For the first release we may not produce catalogs in crowded fields. We may also not reproduce the SObject catalog the contents of which would be at MPC mostly already.

3.1 DR1 Interface

For DR1 we expect to have full science platform access as envisioned in LSE-319. The availability of batch processing is not guaranteed for the first release

4 Subsequent Data Releases

Subsequent data releases (DR3 through DR11) are specified to process 2 through 10 years of survey data, and produce all products from DPDD Section 4. Each subsequent DR has been allocated one year to perform the data release tasks, even though the amount of data increases each time. The sum of these time periods means that the expected release date for DR3 is three years after the start of survey operations, 18 months after the release of DR2; similarly, DR4 through DR11 are released 4 through 11 years after the start of the survey. If the start of the survey were to be, for example, 2022-10-01, then DR3 would be released before 2025-10-01 and would contain data from 2022-10-01 to 2024-09-30.

	DR	Data Range	Release Date
	DR1	2022-10-01 to 2023-03-31	2023-10-01
	DR2	2022-10-01 to 2023-09-30	2024-04-01
	DR3	2022-10-01 to 2024-09-30	2025-10-01
	DR4	2022-10-01 to 2025-09-30	2026-10-01
To summarize:	DR5	2022-10-01 to 2026-09-30	2027-10-01
	DR6	2022-10-01 to 2027-09-30	2028-10-01
	DR7	2022-10-01 to 2028-09-30	2029-10-01
	DR8	2022-10-01 to 2029-09-30	2030-10-01
	DR9	2022-10-01 to 2030-09-30	2031-10-01
	DR10	2022-10-01 to 2031-09-30	2032-10-01
	DR11	2022-10-01 to 2032-09-30	2033-10-01

A References

References

- [1] **[LDM-554]**, Dubois-Felsmann, G., Ciardi, D., Mueller, F., Economou, F., 2018, *Science Platform Requirements*, LDM-554, URL <https://ls.st/LDM-554>
- [2] **[DMTN-107]**, Graham, M.L., Bellm, E.C., Slater, C.T., the DM System Science Team, 2019, *Options for Alert Production in LSST Operations Year 1*, DMTN-107, URL <https://dmtn-107.lsst.io>,
LSST Data Management Technical Note
- [3] **[LSE-319]**, Jurić, M., Ciardi, D., Dubois-Felsmann, G., 2017, *LSST Science Platform Vision Document*, LSE-319, URL <https://ls.st/LSE-319>
- [4] **[LSE-163]**, Jurić, M., et al., 2017, *LSST Data Products Definition Document*, LSE-163, URL <https://ls.st/LSE-163>

B Acronyms used in this document

Acronym	Description
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ComCam	The commissioning camera is a single-raft, 9-CCD camera that will be installed in LSST during commissioning, before the final camera is ready.
DAC	Data Access Center
DMTN	DM Technical Note
DPDD	Data Product Definition Document
DR	Data Release
DR1	Data Release 1
DR10	Data Release 10
DR11	Data Release 11
DR2	Data Release 2
FITS	Flexible Image Transport System
LDM	LSST Data Management (document handle)
LSE	LSST Systems Engineering (Document Handle)
LSO	LSST Science Operations (document handle)
LSST	Legacy Survey of Space and Time (formerly Large Synoptic Survey Telescope)
MPC	Minor Planet Center
MREFC	Major Research Equipment and Facility Construction
NCSA	National Center for Supercomputing Applications
OPS	OPERationS
RDO	Rubin Directors Office
TBD	To Be Defined (Determined)
US	United States
ZTF	Zwicky Transient Facility