



Data Preview 0 (DP0)

LSST:UK

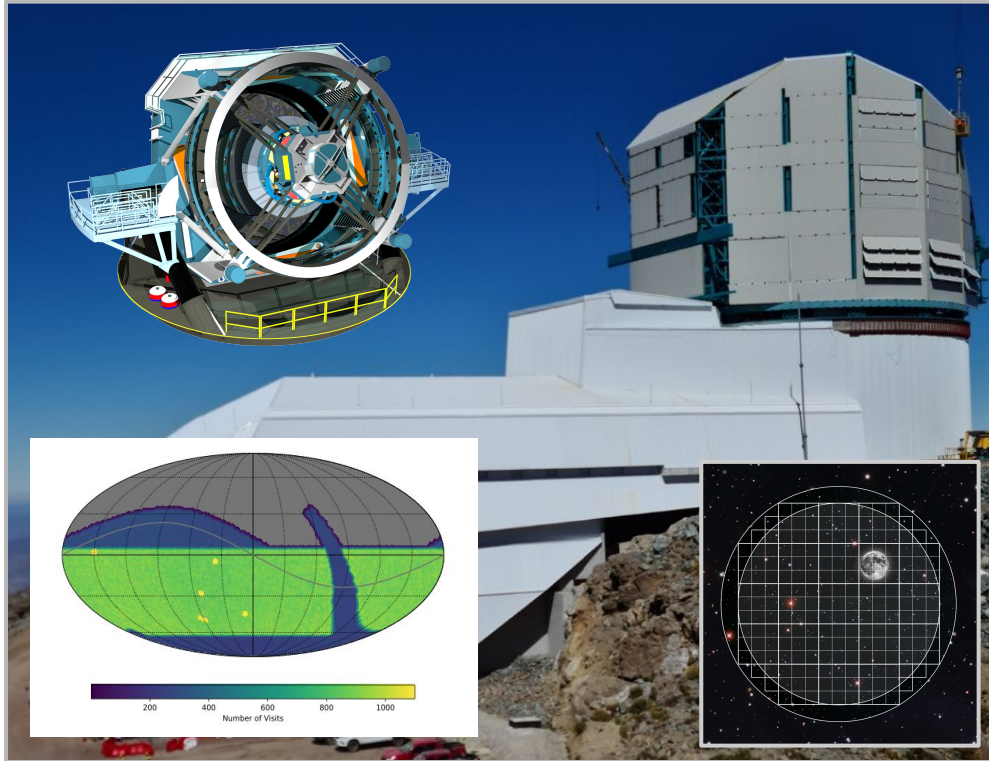
Tue May 11 2021

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Rubin Observatory Community Engagement Team



U.S. DEPARTMENT OF
ENERGY

The Vera C. Rubin Observatory



The Rubin Observatory, located in Chile, has an 8.4 meter diameter primary mirror and a 9.6 deg² field-of-view camera with six filters, *ugrizy*.

Once complete, Rubin Observatory will execute the **Legacy Survey of Space and Time (LSST)**.

The 10-year southern sky survey will make major advances in four core science areas:

1. Probing dark energy and dark matter
2. Taking an inventory of the solar system
3. Exploring the transient optical sky
4. Mapping the Milky Way

The LSST will cover $\sim\frac{1}{3}$ of the sky each night, detect billions of stars and galaxies, and millions of transients, variables, and moving objects -- a data set of unprecedented volume and complexity.

Rubin Science Platform

It will not be possible to download the entire LSST data set, and scientists will need a venue for “**next-to-the-data analysis**”.

The **Rubin Science Platform (RSP)** is a set of integrated web-based applications and services running at the Rubin Observatory Data Access Centers (DACs).



Portal Aspect

exploratory analysis and visualization of the Rubin archive



Notebook Aspect

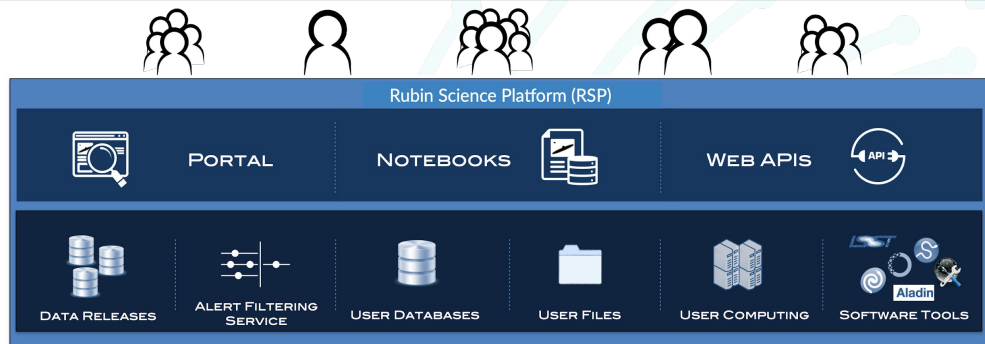
in-depth ‘next-to-data’ analysis and creation of added-value data products



API Aspect

remote access to the Rubin archive via industry-standard APIs

The RSP will include tools to query, visualize, subset, and analyze the full LSST data archives in a stable software environment located “next-to-the-data”, along with storage space, compute resources, and remote access options.



Data Preview 0 (DP0)

Data Preview 0 (DP0): The first of three planned data previews between now and operations.

DP0 Goals: To enable the community to begin to prepare for science with the LSST, and to serve as an early integration test of the LSST science pipelines and the Rubin Science Platform.

Who: Up to 300 scientists and students.

What: *Simulated* LSST-like data products.

Where: In the Rubin Science Platform (RSP).

When: June 30 2021 through 2022.

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DP0 “Delegates” will represent the science community and provide feedback to Rubin Observatory, and share what they learn about the RSP with their communities.

Why 300? The Rubin pre-operations team has a limited ability to provide support for services that are in development, and needs to scale-up in a safe and sustainable way.

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Simulated images and catalogs generated by the Dark Energy Science Collaboration (DESC) for their Data Challenge 2 (DC2).

Primarily contains extragalactic and Galactic objects, and some transients and variables, but not Solar System objects.

Full DC2 description in the DESC's paper, [arXiv:2010.05926](https://arxiv.org/abs/2010.05926). Catalogs have been released by the DESC ([arXiv:2101.04855](https://arxiv.org/abs/2101.04855)).

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The DP0 images and catalogs have a format similar to the future LSST data products.

The **RSP is still in development and has limited functionality**. The Portal and API aspects especially will experience major upgrades between now and Operations.

RSP aspects available for DP0 delegates:

- Jupyter Notebooks
- Portal and TAP Service

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DP0.1: June 30 2021

- Applicants notified by May 31 if selected.
- DC2 data set as processed by the DESC.
- Images via Notebook aspect only.

DP0.2: June 2022

- Another opportunity to apply.
- DC2 reprocessed with more up-to-date version of the LSST Science Pipelines.
- Images via NB & Portal aspects.

What are we all getting out of DP0?

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DP0 Delegates:

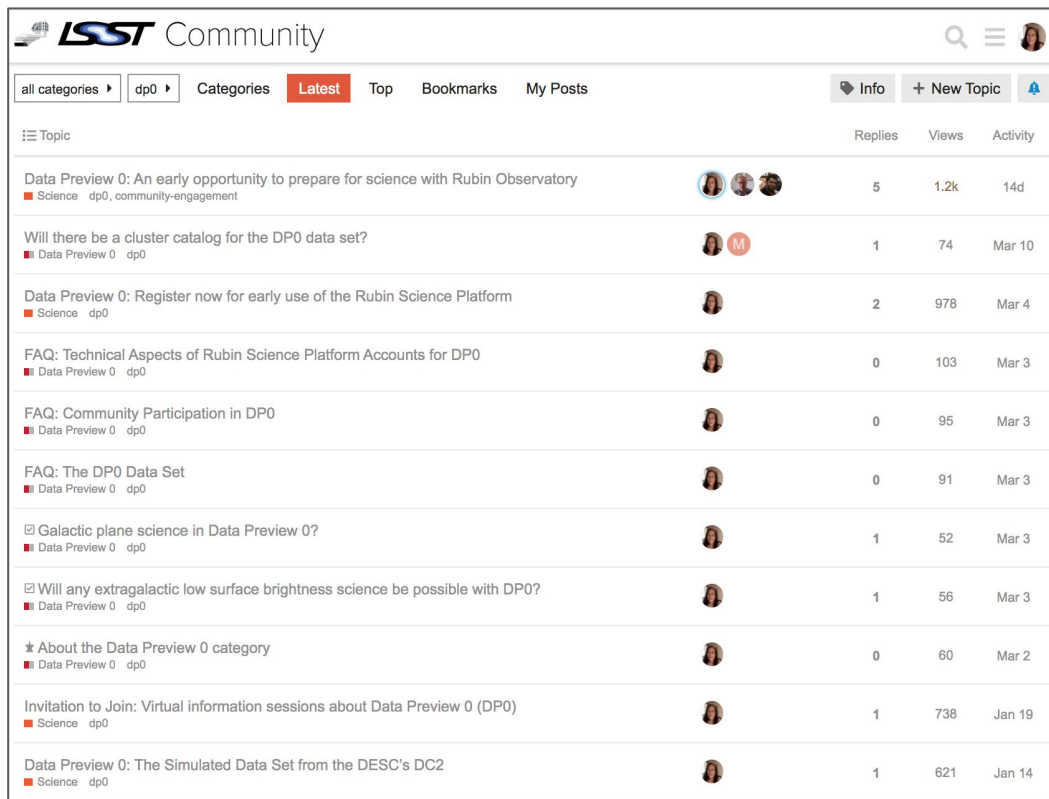
- have an accelerated learning experience with the Rubin Science Platform
- design, test, share, and publish work with DP0 (e.g., algorithms, analysis tools)
- spread what they've learned with their communities as teachers and colleagues
- provide feedback and advocate for RSP development and improvement

Rubin Observatory:

- experience in supporting active users, technical 'stress test'
- feedback via surveys, Community Forum posts, and submitted issue tickets
- input on RSP usability to direct the planned development

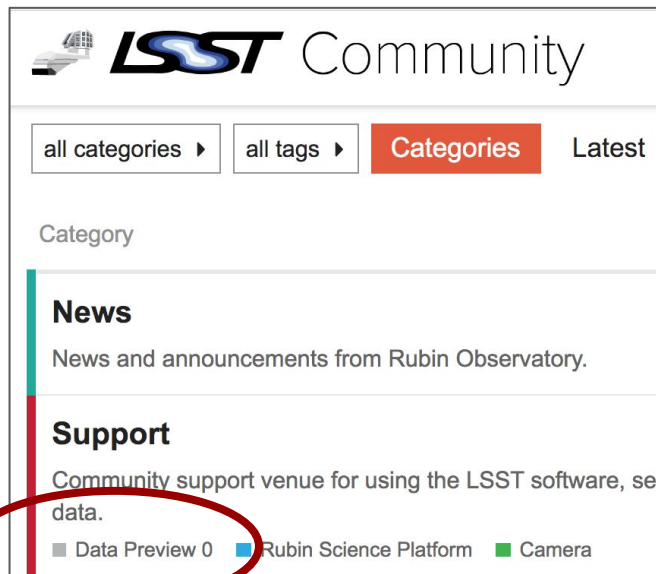
Find more DP0 info at [Community.lsst.org](https://community.lsst.org)

Browse existing DP0-related content using the “dp0” tag.

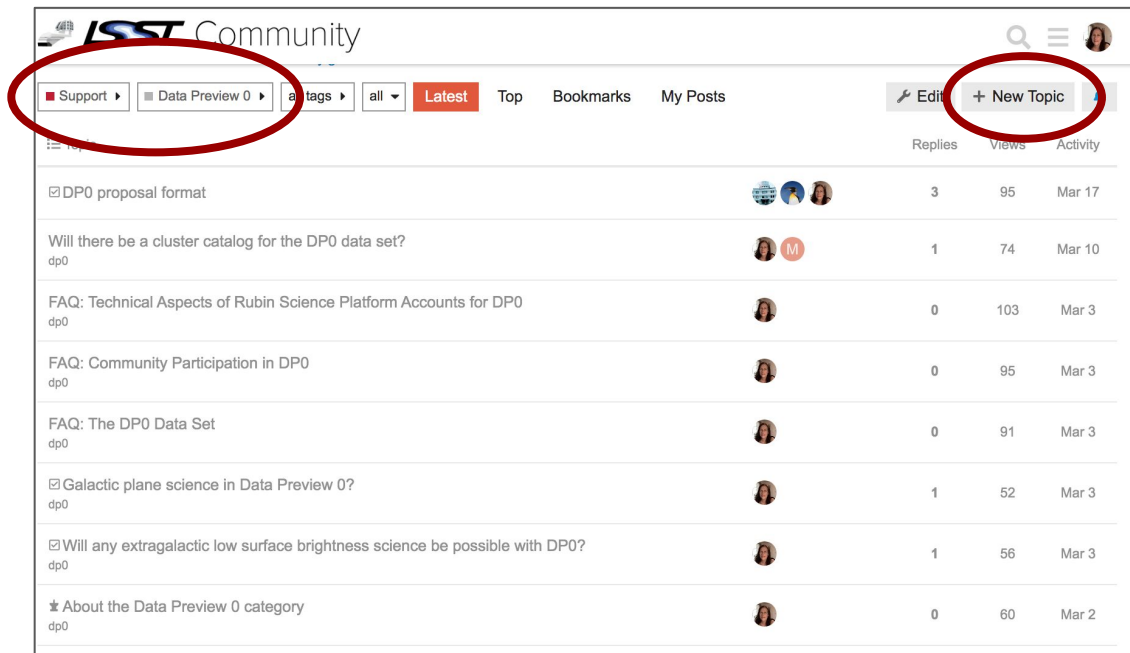


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Ask a DP0-related question by posting a new topic in the “**Support - Data Preview 0**” category (must be logged in).



The screenshot shows the 'LSST Community' website. At the top, there are navigation buttons for 'all categories', 'all tags', and 'Categories' (highlighted in red). Below this, there is a 'Category' section with two main options: 'News' and 'Support'. The 'Support' option is highlighted with a red circle and includes a sub-menu with 'Data Preview 0', 'Rubin Science Platform', and 'Camera'.



The screenshot shows the 'LSST Community' website topic list page. At the top, there are navigation buttons for 'Support' and 'Data Preview 0' (both highlighted with red circles), 'all tags', 'all', 'Latest', 'Top', 'Bookmarks', and 'My Posts'. On the right side, there are buttons for 'Edit' and '+ New Topic' (highlighted with a red circle). Below the navigation, there is a table of topics with columns for 'Replies', 'Views', and 'Activity'.

	Replies	Views	Activity
<input checked="" type="checkbox"/> DP0 proposal format	3	95	Mar 17
Will there be a cluster catalog for the DP0 data set? dp0	1	74	Mar 10
FAQ: Technical Aspects of Rubin Science Platform Accounts for DP0 dp0	0	103	Mar 3
FAQ: Community Participation in DP0 dp0	0	95	Mar 3
FAQ: The DP0 Data Set dp0	0	91	Mar 3
<input checked="" type="checkbox"/> Galactic plane science in Data Preview 0? dp0	1	52	Mar 3
<input checked="" type="checkbox"/> Will any extragalactic low surface brightness science be possible with DP0? dp0	1	56	Mar 3
★ About the Data Preview 0 category dp0	0	60	Mar 2

Quick Links

[Community.lsst.org](https://community.lsst.org)

All #dp0 posts: <https://community.lsst.org/tag/dp0>

Ask your DP0 questions: <https://community.lsst.org/c/support/dp0>

The LSST DESC DC2 Simulated Sky Survey, [arXiv:2010.05926](https://arxiv.org/abs/2010.05926)

DESC DC2 Data Release Note, [arXiv:2101.04855](https://arxiv.org/abs/2101.04855)

The Rubin Science Platform Vision Document, <https://lse-319.lsst.io>

Guidelines for Community Participation in Data Preview 0, [ls.st/rtn-004](https://lsst.org/rtn-004)

The Rubin Observatory Data Policy, [ls.st/rdo-013](https://lsst.org/rdo-013)