


The Vera C. Rubin Observatory Data Preview 2

VERA C. RUBIN OBSERVATORY TEAM,¹ ERIC C. BELLM ,² JOHANN COHEN-TANUGI ,³ MELISSA L. GRAHAM ,^{2,4}
LEANNE P. GUY ,⁵ MINHEE HYUN ,⁵ YIJUNG KANG ,^{6,5} ARUN KANNAWADI ,^{7,8} KSHITIJA KELKAR ,⁵
SHUANG LIANG,⁹ KIAN-TAT LIM ,⁹ JAMES R. MULLANEY ,¹⁰ KATE NAPIER ,⁶ WILLIAM O'MULLANE ,⁵
AASHAY PAI ,¹¹ KARLA PEÑA RAMÍREZ ,⁵ AND IAN S. SULLIVAN ²

¹Vera C. Rubin Observatory Project Office, 950 N. Cherry Ave., Tucson, AZ 85719, USA

²University of Washington, Dept. of Astronomy, Box 351580, Seattle, WA 98195, USA

³LPCA, Université Clermont-Auvergne, CNRS/IN2P3, Clermont-Ferrand, France

⁴Institute for Data-intensive Research in Astrophysics and Cosmology, University of Washington, 3910 15th Avenue NE, Seattle, WA 98195, USA

⁵Vera C. Rubin Observatory, Avenida Juan Cisternas #1500, La Serena, Chile

⁶Kavli Institute for Particle Astrophysics and Cosmology, SLAC National Accelerator Laboratory, 2575 Sand Hill Rd., Menlo Park, CA 94025, USA

⁷Department of Physics, Duke University, Durham, NC 27708, USA

⁸Department of Astrophysical Sciences, Princeton University, Princeton, NJ 08544, USA

⁹SLAC National Accelerator Laboratory, 2575 Sand Hill Rd., Menlo Park, CA 94025, USA

¹⁰Astrophysics Research Cluster, School of Mathematical and Physical Sciences, University of Sheffield, Sheffield, S3 7RH, United Kingdom

¹¹Department of Astronomy and Astrophysics, University of Chicago, 5640 South Ellis Avenue, Chicago, IL 60637, USA

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ABSTRACT

We present Rubin Data Preview 2 (DP2), the second data preview from the NSF-DOE Vera C. Rubin Observatory,

Keywords: Rubin Observatory - LSST

1. INTRODUCTION

2. COMMISSIONING WITH LSSTCAM

3. OVERVIEW OF THE CONTENTS OF RUBIN DP2

4. DATA RELEASE PROCESSING

5. PERFORMANCE CHARACTERIZATION AND KNOWN ISSUES

Look at the science requirements document. [ls.st/srd](https://lsst.st/srd), [ls.st/lsr](https://lsst.st/lsr), [ls.st/oss](https://lsst.st/oss), [ls.st/dmsr](https://lsst.st/dmsr).

This DP2 paper should give a good indication of what we expect for LSST proper.

The following subsection headers are placeholders.

In the following, groups of three numbers in brackets correspond to (design, minimum, stretch).

5.1. Visit-level

5.1.1. Filter compliment

See SRD.

5.1.2. PVI Depth

Median point source r-band 5sigma depth of D1 mag, where D1=(24.7,24.3, 24.8).

No more than DF1 per cent of images will have point source r-band 5sigma depths greater than Z1, where DF=(10,20,5) and z=(24.4,24,24.6).

D1 for all bands are:

- u: (23.9,23.4,24.0)
- g: (25.0,24.6,24.3)
- r: (24.7,24.3,24.8)
- i: (24.0,23.6,24.1)
- z: (23.3,22.9,23.4)
- y: (22.1,21.7,22.2)

Corresponding author: Leanne P. Guy

Put the above comparison in a table (table 1?).

Variation in depth across the FOV:

For a median-depth visit, no more than DF2 per cent of detector-images will have a 5sigma point source depth brighter than Z2, where DF2=(15,20,10) and Z2=(0.2,0.4,0.2). This should be in a section, not (necessarily) in a table.

May also want to include an estimate of the saturation limit (in magnitudes) in this subsection.

5.1.3. Image quality

Note that image quality improved over commissioning (DP2). Take a late-stage subset, or perhaps a curated late-stage subset that we can argue would be representative of what we expect going forward.

5.1.4. Astrometric accuracy

5.1.5. Photometric accuracy

5.2. Coadd-level

5.3. Prediction for 10-year survey

Details of calculation should go in a separate paper. This section should probably be just two or three paragraphs, depending on what parameters we want to predict.

6. RUBIN SCIENCE PLATFORM

7. SUPPORT FOR COMMUNITY SCIENCE

8. SUMMARY AND FUTURE RELEASES

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Facilities: Rubin:Simonyi (LSSTComCam), Rubin:USDAC

Software: Rubin Data Butler ([Jenness et al. 2022](#)), LSST Science Pipelines ([Rubin Observatory Science Pipelines Developers 2025](#)), LSST Feature Based Scheduler v3.0 ([Yoachim et al. 2024](#); [Naghib et al. 2019](#)) Astropy ([Astropy Collaboration et al. 2013, 2018, 2022](#)) PIFF ([Jarvis et al. 2021](#)), GBDES ([Bernstein 2022](#)), Qserv ([Wang et al. 2011](#); [Mueller et al. 2025](#)), Slurm, HTCondor, CVMFS, FTS3, ESNet

APPENDIX

Glossary

Association of Universities for Research in Astronomy:

consortium of US institutions and international affiliates that operates world-class astronomical observatories, AURA is the legal entity responsible for managing what it calls independent operating Centers, including LSST, under respective cooperative agreements with the National Science Foundation. AURA assumes fiducial

responsibility for the funds provided through those cooperative agreements. AURA also is the legal owner of the AURA Observatory properties in Chile.

AURA: [Association of Universities for Research in Astronomy](#).

DP2: Data Preview 2.

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