

Rubin Observatory Hits the Record Button

A long-awaited survey gets rolling, beginning a decade-long effort to produce the most expansive movie of the Universe ever recorded.

By **Matteo Rini**

Today, the NSF–DOE Vera C. Rubin Observatory kicks off its Legacy Survey of Space and Time (LSST), a ten-year effort to create a time-lapse record of the cosmos. To mark the occasion, the Rubin Collaboration has released a new ultrawide, ultra-deep image showcasing its capabilities.

Named after pioneering astronomer Vera C. Rubin, whose observations of galaxy rotation provided compelling evidence for the existence of dark matter, the observatory is located atop Cerro Pachón in Chile, where clear, dry, and dark skies provide exceptional observing conditions. Rubin’s 8.4-m-wide telescope is engineered to rapidly scan large swaths of the sky night after night. This wide-field telescope is combined with the 3.2-gigapixel LSST Camera—the largest ever built for astronomy.



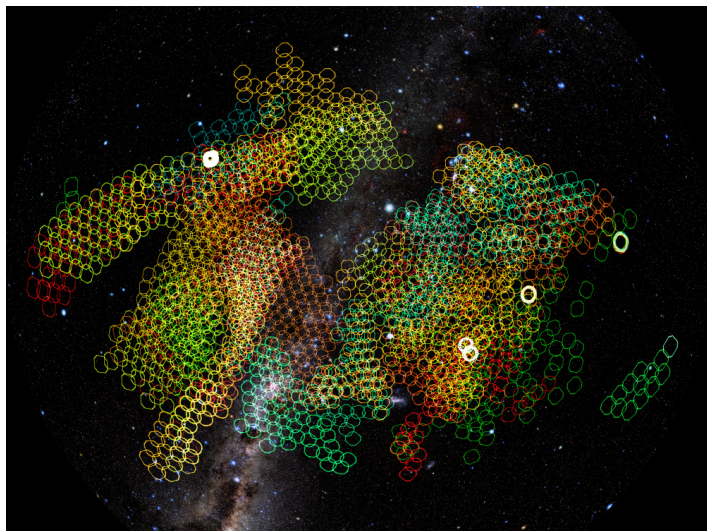
Panning across the high-resolution “Ocean of Stars” image of the constellation Lupus, captured by the Rubin Observatory.

Credit: NSF–DOE Vera C. Rubin Observatory; NOIRLab; SLAC; AURA

After nearly two decades of design, construction, and commissioning, the Rubin Observatory has gradually ramped up toward full survey operations through a series of demonstrations. In June 2025, its “First Look” release highlighted the observatory’s imaging capabilities (see [Research News: First Takes of the Largest Astronomical Movie Ever](#)). In March 2026, the Rubin Collaboration unveiled its public alert system—a cornerstone of its mission in time-domain astronomy (see [Research News: Launching an Alert System for the Changing Sky](#)). During a single night of commissioning observations, it generated about 800,000 alerts by automatically identifying changes between new images and reference templates, detecting supernovae, variable stars, active galactic nuclei, and asteroids. The test paved the way for the LSST, which is expected to issue up to 10 million alerts every night.

Rubin is the culmination of efforts to catch the Universe in motion. Its principal precursor, the Zwicky Transient Facility (ZTF), discovered thousands of supernovae, asteroids, and other transient phenomena while pioneering rapid public alerts. Rubin dramatically scales up that vision, with the ability to see 40 times fainter objects and generate roughly 10 times more alerts per night than ZTF.

Among the images released today is a 1.7-gigapixel view of the “Ocean of Stars”—a star-rich region in the constellation Lupus. The image captures a wide range of cosmic objects, from stars in the Milky Way to distant background galaxies, with wisps of interstellar dust known as galactic cirrus—echoing the feathery cirrus clouds in Earth’s atmosphere—stretching across the foreground.



This map shows how much of the sky the Rubin Observatory will cover in a representative week. The colors of the tiles depict the filter used for each exposure.

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Rubin was designed with well-defined scientific goals: probing dark matter and dark energy, taking a census of the Solar System, exploring the transient sky, and mapping the Milky Way. But as with any good movie, the most exciting moments will surely be the unexpected plot twists—discoveries no one had planned for.

Matteo Rini is the Editor of *Physics Magazine*.