

The Nightly Digest: an integrated dashboard for monitoring and contextualizing the progress of observatory operations

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ABSTRACT

As the Vera C Rubin Observatory moves towards starting the Legacy Survey of Space and Time (LSST), it is imperative to provide an integrated logging platform to serve Rubin staff and the scientific community so they may monitor daily operations. We have developed a solution to fulfill this need: the Nightly Digest. The Nightly Digest displays a dashboard of high-level performance metrics to understand how we spent observation time and our progress in the survey. Supporting pages integrate monitoring data including observer remarks, exposure metadata, and telemetric data to enable a wide view of nightly operations. The Nightly Digest is deployed in Phalanx to leverage authentication, authorization, and data services for secure operations. Its FastAPI backend supports asynchronous ingestion of heterogeneous data sources while reducing and caching metrics for efficient retrieval. The Nightly Digest has been developed and deployed and continues to be improved as we add features with stakeholder feedback. We present our current modern web application to enable efficient nightly operations.

1. INTRODUCTION

As the Vera C. Rubin Observatory moves toward executing the ten-year Legacy Survey of Space and Time (LSST),¹ multiple teams within the observatory have been working towards formalizing the logging processes ahead of operations. Multiple teams within Rubin Observatory have been working towards formalizing the logging processes ahead of operations. These efforts have been characterized by the Observatory Electronic Logging group of 2020, and further built upon by the Telescope and Site software team in recent years. Multiple tools and workflows were created and integrated into existing applications at the observatory to automate the creation and exploration of the logs. These continual efforts culminate in a new team and focused effort towards creating a platform to explore and contextualize both human- and computer- created logs.

1.1 Observatory Electronic Logging

In mid 2020 Rubin Observatory SIT-Com (System Integration, Testing, and COMmissioning) formed a working group to map out the state of electronic logging ahead of commissioning. This group set out to understand the logging tools and systems used at the observatory and identify opportunities to unify the overall logging to increase communication between teams and improve problem resolution. This group identified different types of logging data important to each of the audiences: written observer remarks, telemetry from the observatory control system stored in the Engineering and Facilities Database (EFD), exposure metadata, engineering ticketing system (Jira), and others. They also identified that relationships between this data add to the overall context and strength of each data source.

There are many reasons to need an integrated logging platform such as efficient reporting and addressing of technical faults, reporting observing efficiency statistics to our funding agencies, and tracking how we spend our

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observing time. Knowing how our observing time is impacted by planned/unplanned downtime and weather is critical to continued operations. Interruptions to observing time and their resolutions need to be understood and tracked for a single observing night, and over a larger time period.

The conclusion of this working group spawned multiple contributions to the logging ecosystem at Rubin Observatory: Observer Logging Environment (OLE),² where observers enter live notes and link work tracking tickets into their control system interface, and the Night Report where they summarize the observation night's events.

1.2 Telescope and Site Logging

Despite the initial efforts and fruits of the logging working group of 2020, the landscape of logging at Rubin Observatory in early 2024 was in a divided state. Differing teams had developed bespoke logging metrics and platforms to monitor the performance of their system at the observatory.

The observers had a view into each of the systems through the LSST Observer Visual Environment (LOVE) as well as view their written logging through OLE.² The Telescope and Site software team had a view into the observatory control system and how each component was running through their own logs. Sub-system owners had unique chronograf dashboards (web application to visualize and query data from an InfluxDB instance) measuring logs and telemetry from their systems, and people working offsite-outside of the summit created interactive Jupyter notebooks run in Times Square in the Rubin Science Platform (RSP). Each technical group had a slightly different focus and measure for how a 'good night' goes, and monitored different slack channels, created their own daily/weekly/monthly summary reports, or used a mixture of all the methods above.

Notable monitoring and logging systems had been created and widely used by summit staff to this point, namely ROLEX (Rubin Observatory Log EXplorer) and RubinTV. ROLEX was a tool to view observer remarks in time relation to observatory control system actions including scripts run and telemetry created. RubinTV is a real-time application that analyzes and displays data where summit staff can quickly view specific exposures and scientific metadata plotted about the exposures and list these values for exposures taken within an observing night.³ Each of these applications offered functionality that the logging team could build upon or subsume into our unified monitoring platform. RubinTV will continue to operate as a real-time monitoring application, and the Nightly Digest will be focused on providing a more comprehensive and contextualized view of the night's operations after the fact.

2. THE NIGHTLOG

At this point, the logging team was assembled and tasked with revisiting the goals of a previous logging working group. This initiated us to create a system with "the purpose of exchanging information between the different technical teams and operations departments during the commissioning and the operation of the observatory".⁴ To get a feel for the data landscape, demonstrate a clear prototype, and understand our stakeholders use cases, the logging team created an interactive jupyter notebook running within the RSP notebook aspect as our minimum viable product (MVP). We hosted this MVP within the RSP's Times Square, a service to publish jupyter notebooks with project and data rights holders.⁵

This MVP allowed the logging team to become familiar with these disparate logging data sources and the types of metrics and visualizations our stakeholders were accustomed to and preferential towards. Increasing stakeholder engagement with the MVP provided deeper insight into project requirements and helped solidify alignment across the team.

When the MVP gained enough traction, the idea of a unified logging dashboard matured into our current application: the Nightly Digest.

3. THE NIGHTLY DIGEST

Early 2025 we gathered resources and lessons learned from the MVP deployed in Times Square. We better understood the audiences we were serving and their use cases for logging and monitoring the operations of the telescope, during commissioning and their monitoring vision through operations. Working with the in-kind

program and contributors from Astronomy Data and Computing Services (ADACS), we designed an interactive dashboard composed of summary data and aggregated metrics spanning different summit-based data sources to get a wide view of summit operations to engage and serve our differing audiences. We call this dashboard and associated pages the Nightly Digest.

3.1 Architecture and Data Sources

The Nightly Digest is deployed within a kubernetes platform managed by Phalanx, providing access to data and services run at Rubin Observatory.^{6,7} The applications deployed in Phalanx make up a large microservices architecture, including the Rubin Science Platform, and spanning data access services, as well as the services that compose the observatory control system. Nightly Digest's integration into this larger infrastructure enables us to take advantage of authentication, access control, load balancing, and abstracts the infrastructure so our deployment is the same whether the Nightly Digest is deployed on our summit infrastructure or on our US Data Facility (USDF).

The Nightly Digest's front end displays a dashboard composed of applets with additional pages expanding on different categories of information to drill-down into the details. The front end architecture is based on a reactive component model using React, with TanStack Table⁸ and Recharts⁹ providing tabular and visualization infrastructure, and ShadCN/Tailwind CSS¹⁰ supporting a consistent design system. Data retrieved from our back end are transformed into interactive client-side views including synchronized plots, filtering interfaces, and timeline-based operational summaries.

3.1.1 Automated Data Sources

We access control system telemetry from the **EFD**, a time-series based database backed by InfluxDB.¹¹ This data source provides detailed data including commands sent to components of the control system, as well as data streams from sensors throughout the observatory. To access exposures and their metadata, the Nightly Digest queries the **Consolidated Database (ConsDb)**.¹² **ConsDB** is populated per exposure (rather than by timestamp) by summarizing telemetric data added to the **EFD** over the duration of an exposure, or from other services including Rapid Analysis and science validation pipelines. Initial scientific measurements regarding exposures are accessed via **ConsDB**.

3.1.2 Human-Driven Data Sources

Humans are a critical component of our observatory system, and this is clearly demonstrated in the narrative and interactions from our Observing Specialist team. The Observing Specialists contribute to three key written data sources which the Nightly Digest injects: the **Exposure Log**, the **Narrative Log**, and the **Night Log**.² The **Exposure Log** provides a list of exposures, but is distinct from ConsDB in that it stores a flag and a message for certain exposures where this commentary is available. Exposures rarely have annotations, but collecting these notes alongside scientific data leads to real-time insights in understanding anomalies that could be acted upon within the same observing day. Exposure quality is more thoroughly evaluated later on by science data reduction pipelines. The **Narrative Log** provides a stream of comments left throughout the observation day where each entry gives further context to the scripts and tests run, the exposures taken, and any faults or anomalies that occur. These more verbose notes offer debugging information and steps to replicate the system state when investigating complex component interactions. Finally, the **Night Log** is a written summary of the entire night's observation period, summarizing the key events and providing a higher level understanding of the state of the observatory after the night has concluded for a broader audience.

Similar to the Exposure Log, where human comments and context are added to generated exposure content, the Nightly Digest also queries **Jira** and **Zephyr Scale**. Observing Specialists create and update **Jira** tickets related to aforementioned anomalies, adding context, error messages, and the state of the system around these incidents. **Zephyr Scale** is a Jira-embedded test plan management application where tests cases and their steps are defined for the Observing Specialists to test more focused behavior of the observatory's operations. **Zephyr Scale** is where we define our observing blocks, referred to as BLOCKs. The Nightly Digest augments these summit-based data sources with almanac data from the python package Astropy and simulated survey scheduling data from the observatory system performance team.

Table 1. Summary of heterogeneous data sources queried by the Nightly Digest.

Data Source	Ingestion Method	Data Type	Primary Operational Purpose
EFD (InfluxDB)	InfluxQL	Time-Series	Control System telemetry
ConsDB (PostgreSQL)	Database Query	Per-Exposure	Initial scientific metadata
Narrative / Night / Exposure Log	Microservices APIs	Natural Language / Text	Qualitative summaries
Jira / Zephyr Scale	API Endpoint	Issue Tracking	Fault tracking and BLOCK definitions

4. THE NIGHTLY DIGEST LAYOUT OF SUMMARY METRICS

The main page of the Nightly Digest serves as a digest: a condensed and organized summary divided into components (applets) to communicate an overall understanding of how the previous observation night, or range of nights, progressed. The sidebar offers users control to choose which telescope (Simonyi/AuxTel) to focus on, what observation day (dayobs) range to request data for, and how many nights of data. The sidebar [Fig 1] also includes a navigation menu to further detailed pages covered in section 5.

The main summary page includes both summary cards and more detailed applets to answer core logging questions given the requested observation day range;

1. **Volume** - How many exposures were taken during the time frame?
2. **Performance** - To what extent did the observed atmospheric conditions and system performance meet the observatory's efficiency and derived data quality?
3. **Context** - What were the Observing Specialists' qualitative observations of the night?
4. **Interruptions** - Where did the system fail, and what was the root cause of the resulting downtime?

Additional pages build upon the summary page by combining data from multiple applets to add nuance, depth, and context to answer these four questions.

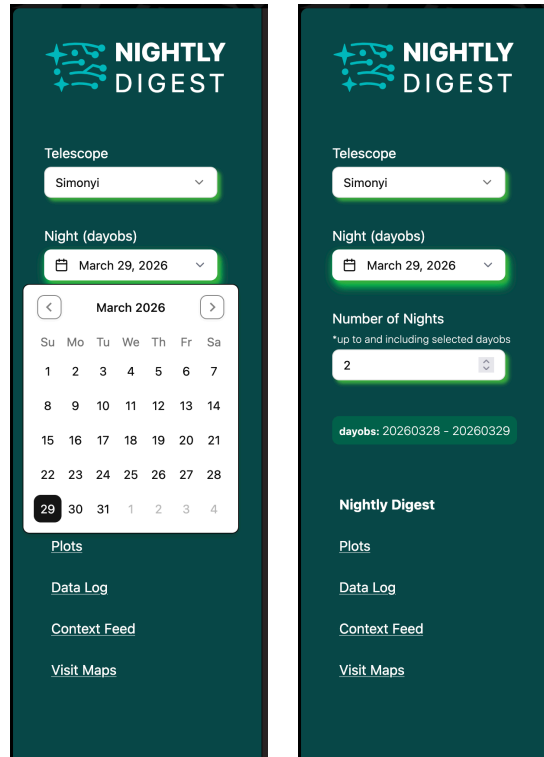


Figure 1. The Nightly Digest Sidebar contains selectable menus for telescope, night, and number of nights. Below these parameters, the selected observation day is displayed. Navigation to [5](#) is shown below.

4.1 The Nightly Digest page

Across the top of the Nightly Digest [Fig 2], we display four summary cards: Nighttime Exposures, Open Shutter Efficiency, Time Loss, and Jira Tickets. The **Nighttime Exposures** card displays the number of exposures, queried from ConsDB, that were taken on-sky, with the observatory dome open. This card also indicates the number of expected exposures calculated from daily Feature Based Scheduler (FBS) simulations to predict how many exposures could be taken each night.^{13,14} **Open Shutter Efficiency** builds on the number of exposures taken to aggregate total time exposing on-sky and compares this to the time available, subtracting out any time impacted by weather. The **Time Loss** card collects the time loss reported from the Narrative Log entries, and reports a total number of hours and distribution between weather and technical faults. The **Jira Tickets** card displays the number of tickets created in the time frame the user has selected, and includes a note for the number of updated tickets. When clicking on the Jira card, a dialog box opens displaying a table of these tickets with notable attributes, including a summary, the current status, and a link to the issue in the ticketing system.

When a larger observation day range is selected these cards accumulate data from each observation day. The combination of these four cards at the top of our application gives a quick overview of how the observing time went, answering questions about the volume of data taken, the efficiency of the time spent, and if there were significant losses in time and where to look to address those gaps. The rest of the page is broken down into larger displays of data, combining multiple data sources. The following sections describe each of these applets in more detail and how they work together to give a comprehensive view of the observing night(s) selected.



Figure 2. The Nightly Digest’s main page displays multiple views of metrics both simple and more complex. The applets and cards are arranged to display the data in a maximized browser window but adjust to size and mobile displays.

The Jira ticket card shows a table of tickets. The table has the following columns: Link, Number, Summary, Status, Created, Last Updated, and Time Lost. The data is as follows:

Link	Number	Summary	Status	Created	Last Updated	Time Lost
	OBS-1850 New	OBS-1786	Duplicate	2026-04-26 14:03:56	2026-04-30 08:29:10	0 hrs
	OBS-965	TMA Azimuth Encoders - Fault & cleaning log	Tracking	2025-05-22 11:54:07	2026-04-27 00:18:17	1.9 hrs
	OBS-964	MTMount FAULT - Extrapolation Time Exceeded	To Do	2025-05-22 02:06:01	2026-04-27 03:17:47	1.13 hrs

At the bottom right of the card is a 'Close' button with an 'X' icon.

Figure 3. Click on the Jira ticket card to access a table displaying the specific tickets added and their attributes. Click on a link to access our ticketing system.

4.1.1 Observing Conditions

The Observing Conditions applet [Fig 4] communicates the overall quality of the set of exposures during the selected observation day range through a few different measures layered together. Using exposure metadata from ConsDB and almanac information, this applet displays a timeline of the exposures taken represented as their values of PSF FWHM and a separate data point corresponding to the magnitude of their zero points categorized by what filter was used for the exposure. This data interactively comes alive by mousing over the filter legend as the plot displays only the data points from the filter the cursor selects.

We are also able to see gaps in exposures highlighted in this chronological representation. The user can zoom in on a selected portion of the plot to see a subset of data and hover over any of the data points to display highlighted attributes for each exposure. This applet communicates the time distribution of exposures taken and their measured qualities throughout the night. Users can infer observatory qualities from this combined

information including photometric depth and image quality. The interactivity that we provide in this applet connects to both other applets on the page [Fig 7], and the zoom in selection holds when navigating to other pages in the Nightly Digest for further investigation.

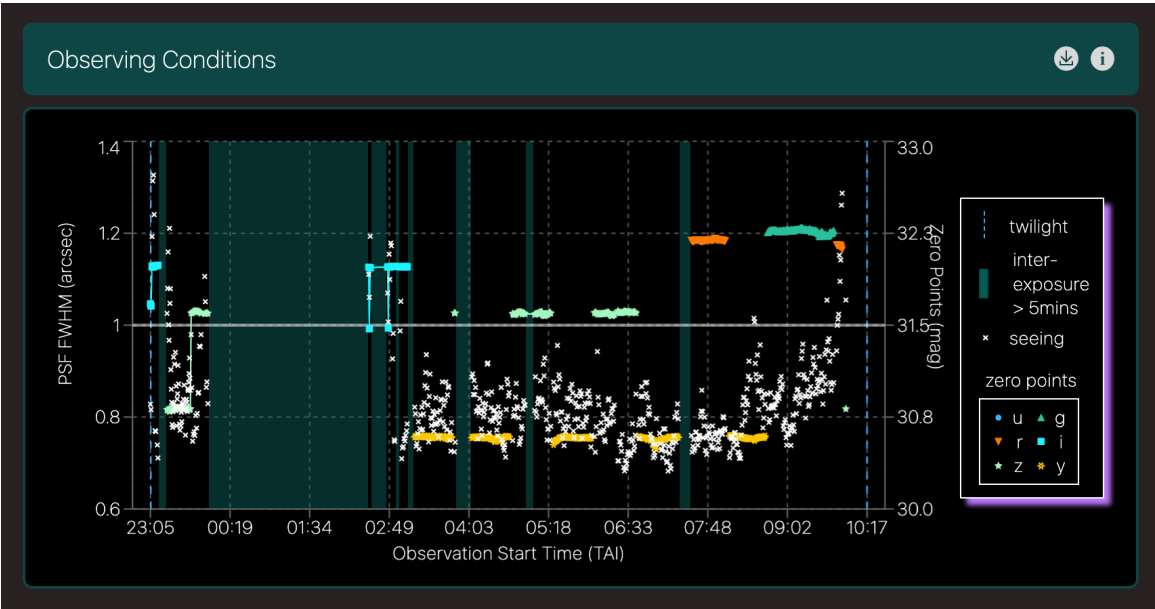


Figure 4. The Observing Conditions applet displays the zero points and the point spread function (PSF) for exposures taken during the selected time frame. The zero points are color-coded based on which filter was active on the LSSTCam, and gaps between exposures are highlighted in the background as dark green.

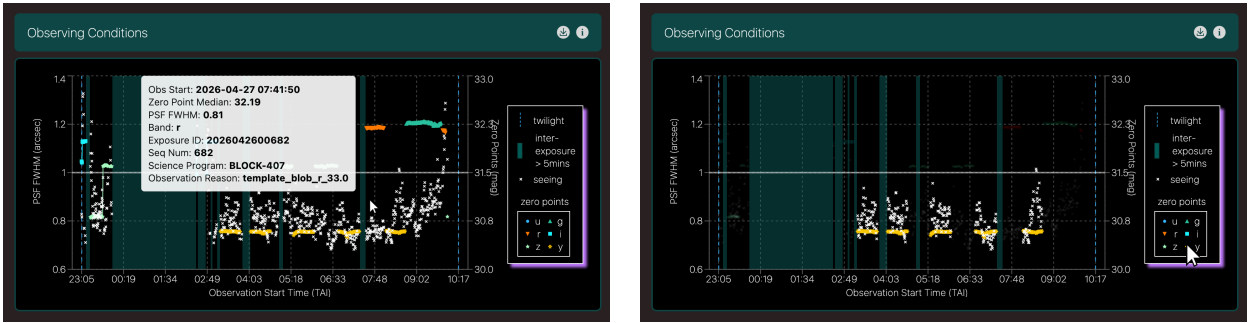


Figure 5. Left: The Observing Conditions applet shows a dialog box when hovering over any individual data point, displaying further attributes for any exposure. Right: Hover over a specific filter to the bottom right of the observing conditions plot to see only that set of data displayed in the applet.

4.1.2 Exposure Breakdown

The Exposure Breakdown applet [Fig 6] displays a horizontal bar chart that distributes the cumulative number or time duration of exposures taken in any number of test case categories, observation reason, target name, image type, or filter. This distribution can be sorted numerically or alphabetically. If the user is interested in the exposures of a particular category, they can click on that bar to navigate to a sorted Data Log page, filtering the exposure table to reveal exactly how the night’s visits spanned our science and engineering goals.

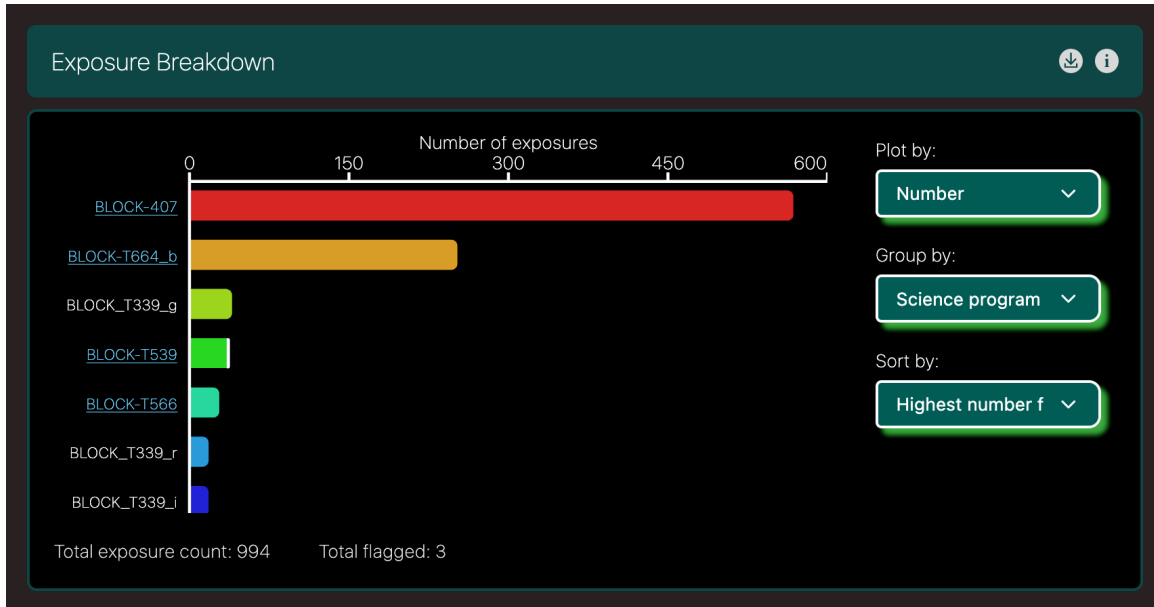


Figure 6. The Exposure Breakdown applet distributes the cumulative number or time duration of exposures taken in any number of test case categories, observation reason, target name, image type, or filter. This distribution can be sorted numerically or alphabetically.

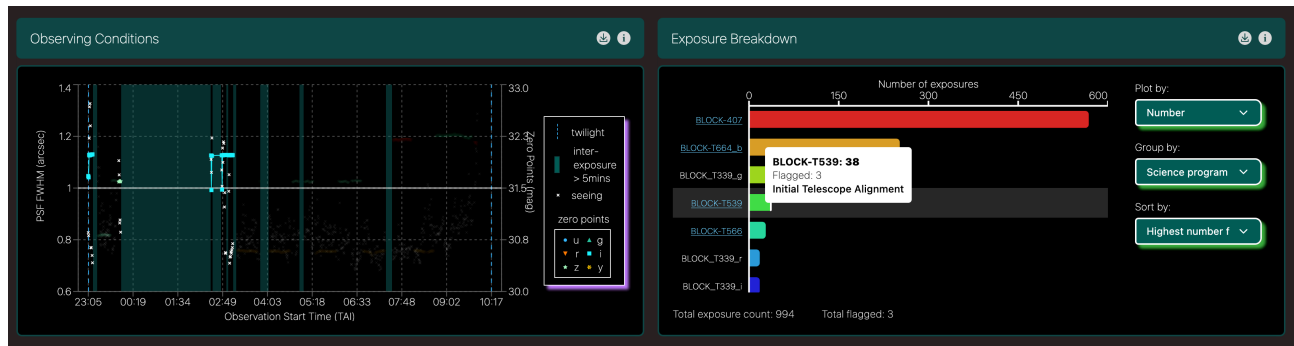


Figure 7. The Observing Conditions applet and Exposure Breakdown applet work together through interactivity. Highlight a category in Exposure Breakdown, and only the corresponding exposures are displayed in Observing Conditions.

4.1.3 Night Report

The Night Report applet [Fig 8] is the most narrative driven visual on the main page. This applet queries data from the Night Log to represent the summary the Observing Specialists write at the end of the observation day. The report contains a summary, weather conditions, a detailed report, and a list of Observing Specialists and other staff who participated in the summit operations directly, usually in person. When multiple days are selected, users can navigate each observation day via a drop down menu, or scroll continuously through the summaries. This high level summary of the events during each observation day is presented to connect the numerical data presented elsewhere on the page and add context to which tests were run, what anomalies were encountered, and give deeper understanding to how the volume and quality of exposures ties to the way the available observing time was spent.

4.1.4 Time Accounting

The Time Accounting applet [Fig 9] is an evolving visualization to inform observatory metrics that describe how the off-shutter time (when the camera is not actively exposing on the sky) is used. It is critical to see how

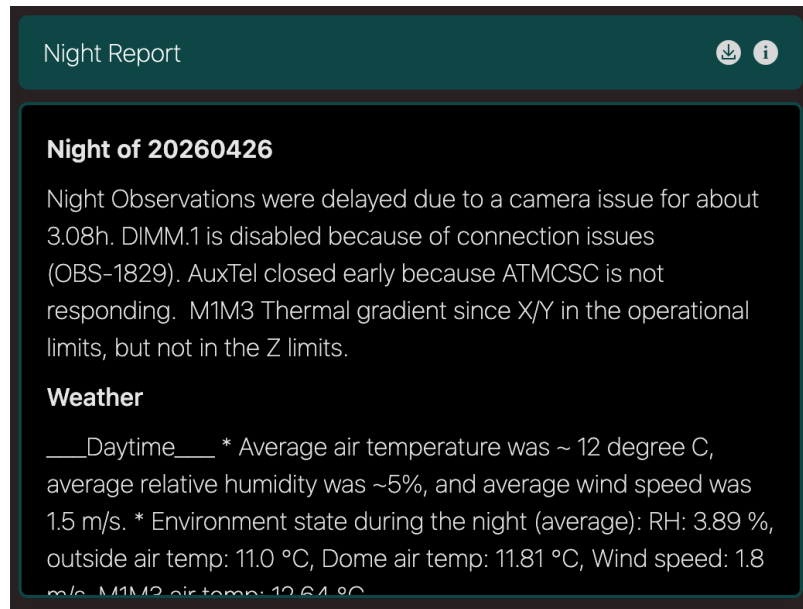


Figure 8. The end-of-the-night summary narrative is displayed in Night Report where sections include a summary, weather conditions and scrolls when multiple observing days are selected.

efficient the system is at taking observations, and to enable different technical teams to dive into the time spent not observing.

The Nightly Digest's back end calculates how the available observing time was spent and delineates between total exposure time and time not taking exposures. The 'Not Exposures' time is broken down into gaps between exposures, gaps and overhead related to filter changes, calculated overhead time, calculated fault time, and time when the observatory dome was closed during the night. We calculate fault time taking into account gaps, overhead, total exposing time and comparing with total available observing time based on almanac and weather information. These categories are either calculated internally or gathered using the survey scheduling team's software package **rubin_nights** to add slew and overhead detail to exposure data from ConsDB.¹⁴ We also use time based data from the EFD including when the observatory dome opens and closes.

The applets previously described cover observatory activities throughout the observation period, and this applet adds further context about the time not represented in the volume of exposures taken.

Our current iteration of the Time Accounting applet will soon be replaced to represent further automated systems and information about observatory status as a whole, calculated outside of the Nightly Digest [Fig 10].



Figure 9. The Time Accounting applet proportions the time spent during the night over the course of the selected observation days between exposing time and not exposing. The Not Exposing time is further broken down into gaps, overhead, fault, closed dome, and gaps/overhead related to filter changes.

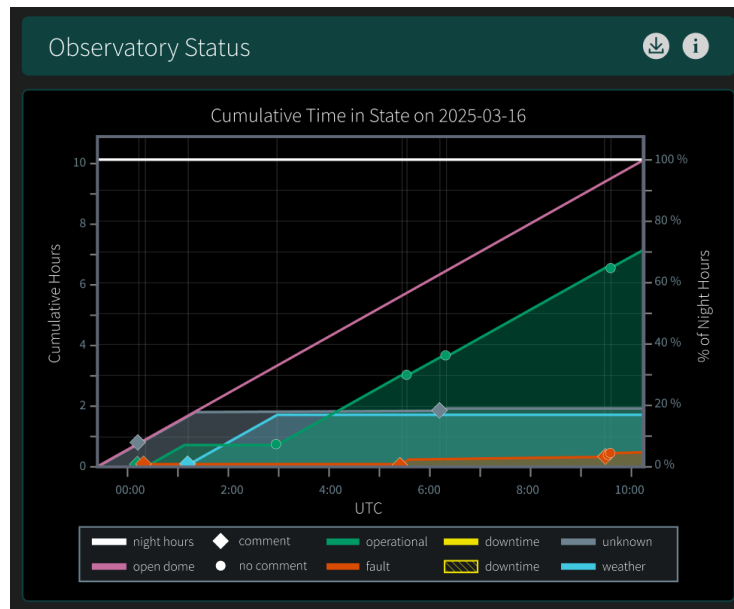


Figure 10. Mock up of Time Accounting/Observatory Status. Rubin Observatory is improving how we track the state of the observatory, and we are updating our visualizations to reflect new automated Observatory States. Here we see a model of the cumulative time in various states and when the states change throughout the observation night.

4.1.5 Visit Map

The Visit Map applet [Fig 11] shows an interactive planispheric projection of a full observation day's visits*. We get this RA and Dec data from ConsDB for each exposure. This data is augmented with almanac data to display environmental information relative to visit locations. The user can scroll this display over many nights adjacent to the currently selected observation day or range to see the pattern of where the observatory is exposing on the sky. This applet communicates what type of activities the summit is performing, engineering tests could look quite different than LSST-like observations, while survey-like activities will sweep across an area filling it in. The Visit Map is highly detailed, including markers for the moon, sun, ecliptic, plane of the milky way and other labels. From this applet, users learn if their area of interest was exposed, and they can understand further context including how the exposures shown in other applets was distributed across the sky for that period. This data visualization is expanded upon in a Visit Map page 5.4 and is a result of our inspiration from and collaboration with the survey scheduling team who has been a great help in our development and integration of this plot.¹⁴

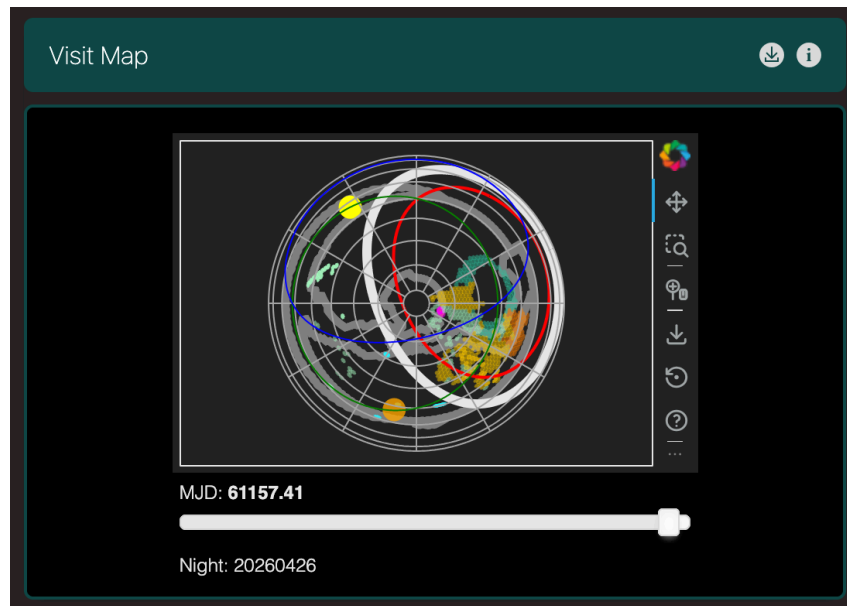


Figure 11. The Visit Map applet displays a planispheric projection of the visits taken within an observation day selected and includes the sun, moon, ecliptic, and horizon locations. This applet is interactive as one can scroll through time.

5. SUPPORTING PAGES

While the Nightly Digest's main summary page [Fig 2] was our initial focus, we have found that additional pages support our use cases of debugging and adding context. These pages tie into our core questions 4 and expand upon our summary page applets while adding complexity and depth to the information provided.

One theme of logging that continues through each of these pages is our shared chronological understanding of data. This is represented in three of the four additional pages via a timeline UI component, and in the fourth as a slider through time. Initially in the Context Feed page [Fig 14], our timeline component [Fig 12] displays a horizontal area marking events as vertical lines from left to right. Each of our timelines has a pink selection area so users may modify the time selected and displayed in the data pages to span multiple observation days, partial selections across multiple days [Fig 13], to even a single exposure or event.

*We use 'visit' and 'exposure' to refer to the same piece of data. Rubin Observatory once considered multiple shorter exposures to compose one visit, but currently they share a one to one relationship.

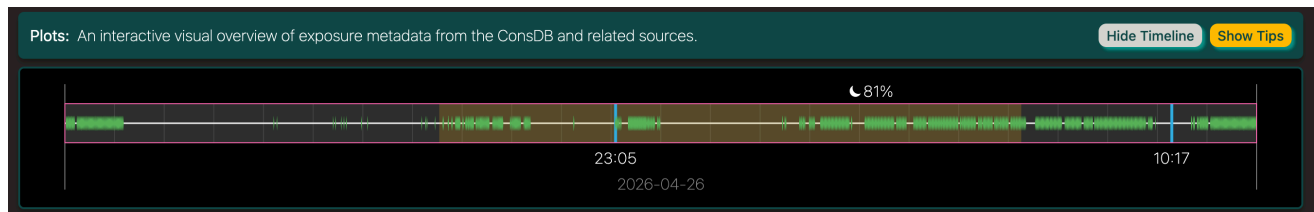


Figure 12. The timelines in the Nightly Digest allow the user to select a portion of data to view in tables or data in the corresponding page. This allows the user to focus in on only their time frame of interest.

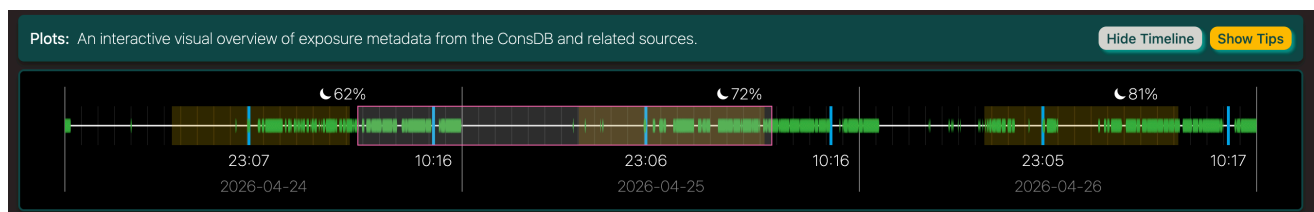


Figure 13. Multiple observation days can be selected in the Nightly Digest where the timelines update to include this greater time period of data. The user can select portions of multiple nights together as shown here.

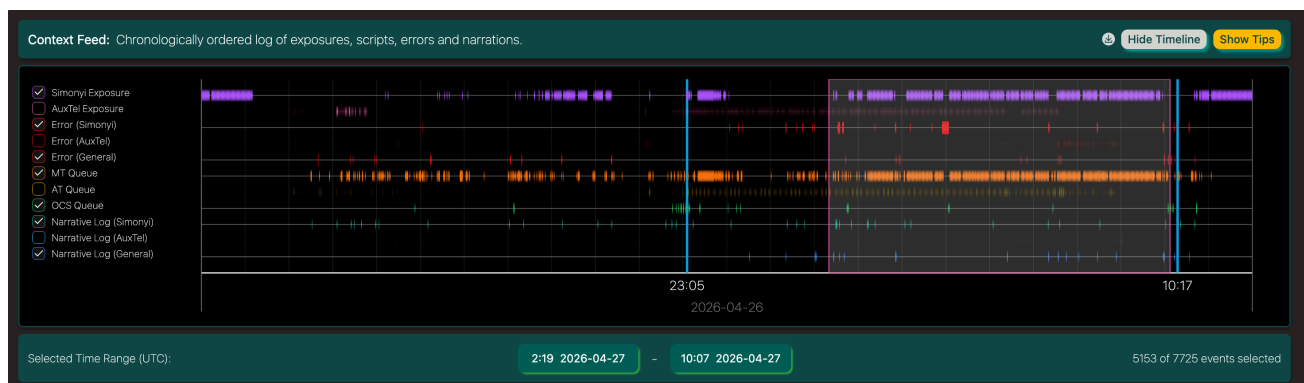


Figure 14. The timeline in the Context Feed page displays each category of telemetric and narrative log message in relationship to the time frame selected. These categories include exposures, script errors, and observer narrative messages.

5.1 Plots

The Plots page [Fig 15] expands on the Observing Conditions applet [Fig 4] to satisfy the users' desires to easily access exposure metadata and trends across the selected observation day range. This page displays numerous pre-created plots from many exposure attributes in ConsDB, and by default displays airmass, PSF FWHM, photometric zero points, and sky brightness. The user may also select a portion of any plot to zoom in on, and the additional plots displayed synchronously adjust to that new time period. For more complex plotting and data exploration, users are encouraged to use a jupyter notebook in the RSP where they can query the same data sources and create custom plots with more freedom and flexibility.



Figure 15. The Plots page displays a configurable set of data during the selected time frame corresponding to the timeline at the top of the page. Each plot displays data based on the attributes and metadata provided from ConsDB.

5.2 Data Log

The Data Log page [Fig 16] expands on the main summary page's Exposure Breakdown applet [Fig 6] by providing a table of all exposures within the selected observation day range. The columns display exposure metadata from ConsDB and comments from the Exposure Log associated with each exposure. This table is scrollable and the visible columns can be selected [Fig 17] and defined by the user. Any column may also be sorted or grouped by the available values [Fig 18] for each attribute, allowing users to categorize data to understand groupings of exposures according to their area of focus.

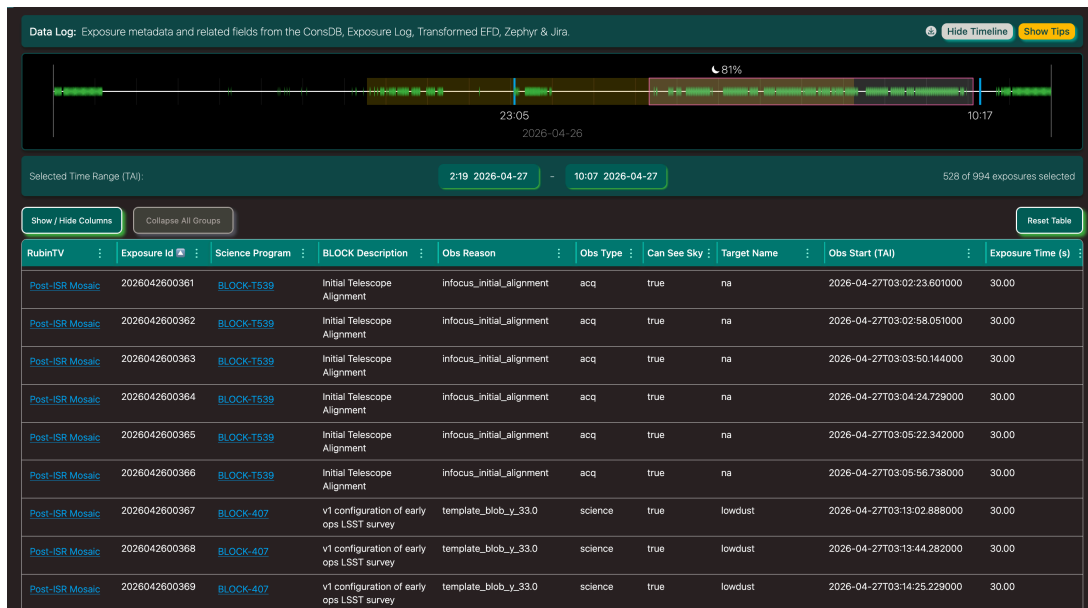


Figure 16. The Data Log page includes a timeline of the exposures and when they were taken over the time frame selected, or entire observation day, and displays this selected range of data below in an interactive table.

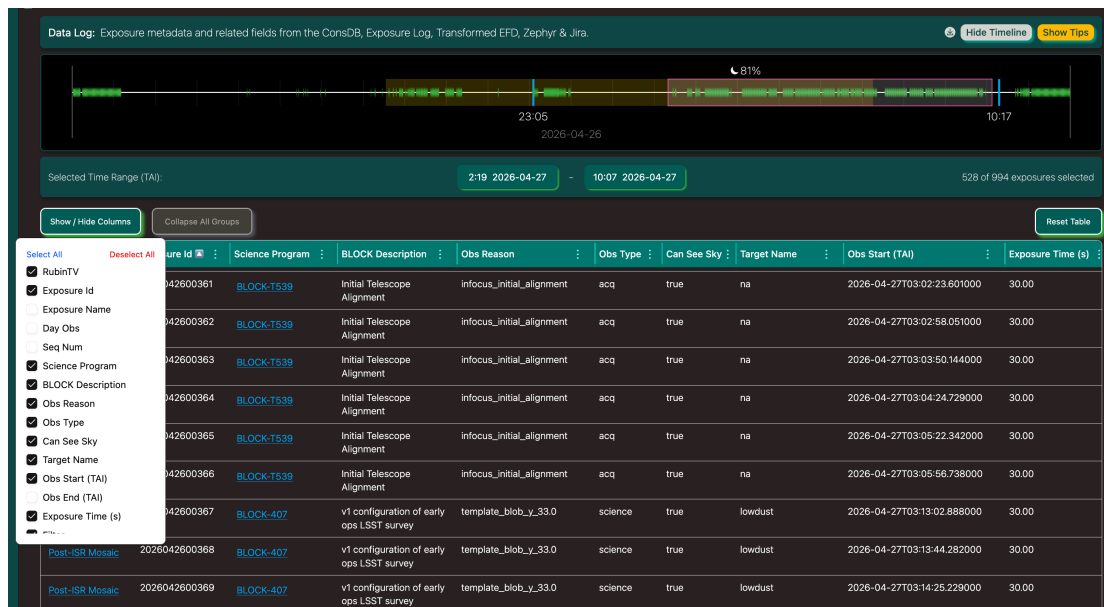


Figure 17. The Data Log table invites users to select all columns of metadata associated to the exposures, or only the columns of their interest.

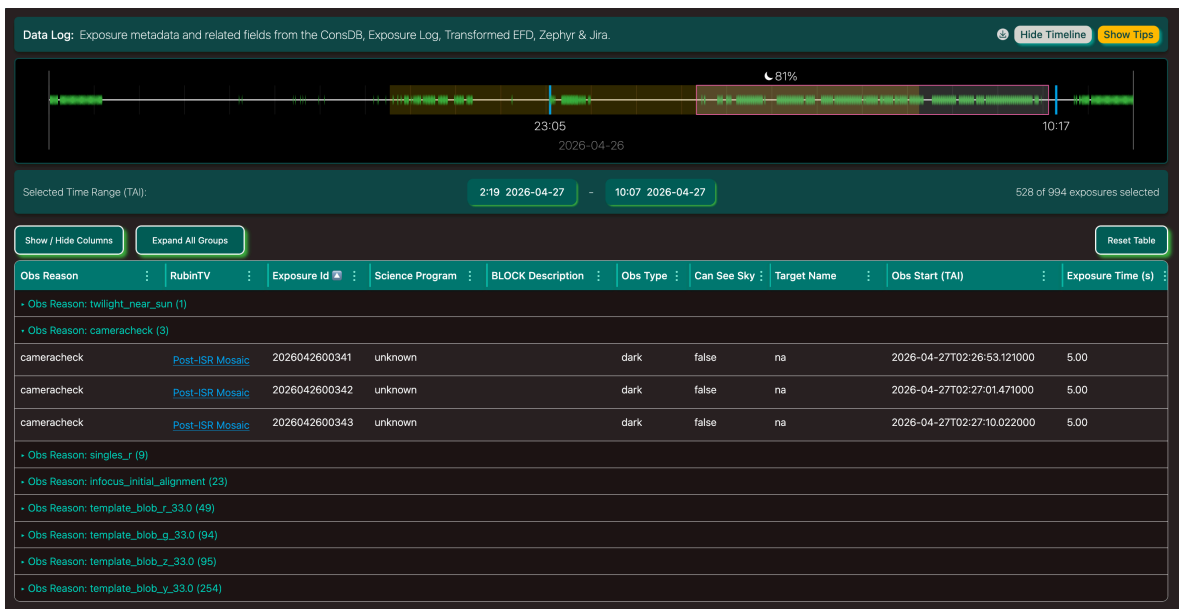


Figure 18. The Data Log table allows grouping based on the data available in any of the selected columns for unique filtering and searching.

5.3 Context Feed

Before integration to the Nightly Digest, the Context Feed page had a predecessor: ROLEX.¹⁵ ROLEX, or Rubin Observatory Log EXplorer, is a logging display that integrates telemetric and narrative data for observatory specialists and commissioning scientists. By viewing Narrative Log entries alongside script configurations and errors, users gain a clear understanding of the Observing Specialists' activities over the course of an observation day.

The Context Feed page [Fig 19] is an iteration on this integrated data visualization through development collaboration with the survey scheduler team. This page expands on the Observing Specialists' written summary in the Night Report applet [Fig 8] and the Time Accounting applet [Fig 9], to add detail to events that occurred during the available observing time and elaborate on what was happening during different categories shown in the Time Accounting applet. The Context Feed takes telemetric data from the EFD to include scripts, faults, and exposures and displays these chronologically with written log messages from the Observing Specialists in the Narrative Log. Combining this data into a timeline and a table to display events and their descriptions allows the user to imagine themselves shadowing the Observing Specialists during the observation day. From the Context Feed we can understand what the Observing Specialists wrote about their activities, what scripts and programmatic actions were taken, their results, details of any faults, and how the Observing Specialists and observatory components reacted. Crucially, when an operational anomaly or fault is logged, users can isolate the event within the feed to instantly extract the specific system error messages while simultaneously reviewing the surrounding script configurations and real-time operator remarks to determine the exact conditions that triggered the failure.

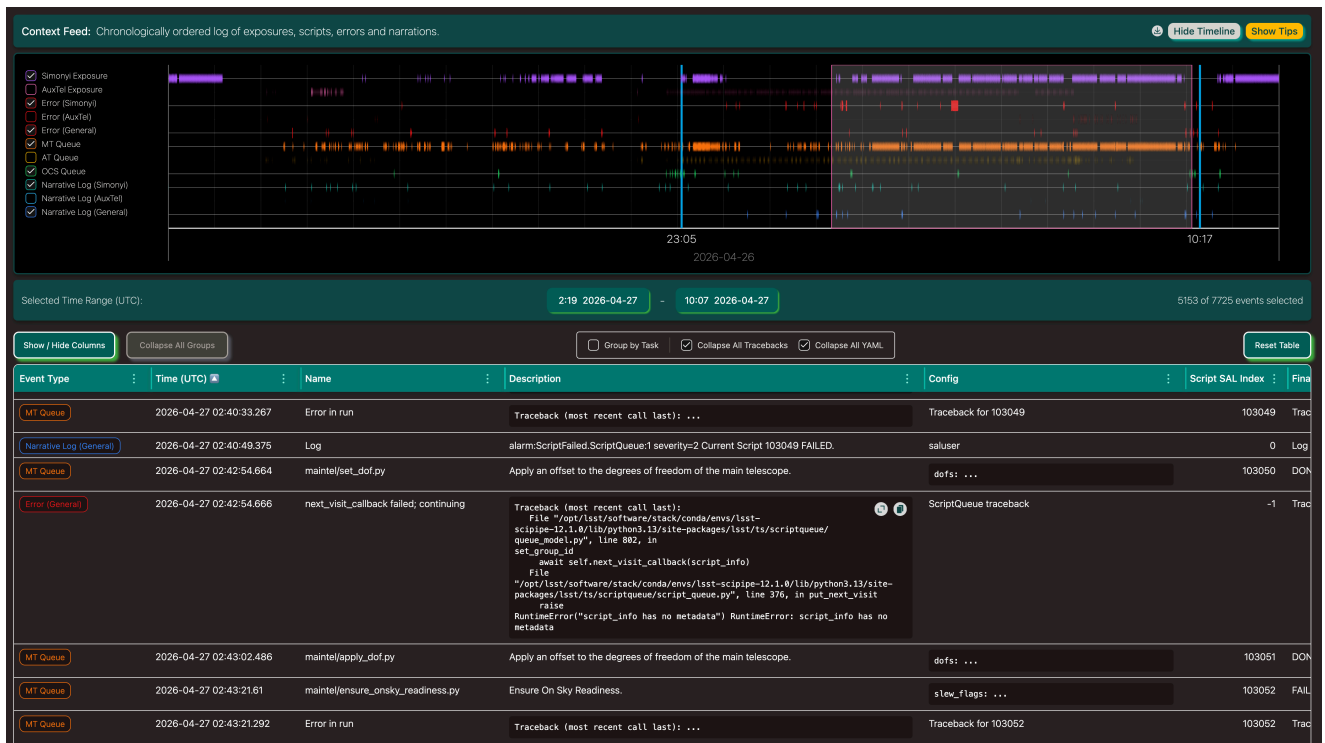


Figure 19. The Context Feed page displays a timeline of events by each type, then displays a table of these below, expanding on each category by displaying different attributes including script configurations, messages, and telemetric timestamps.

5.4 Visit Maps

The Visit Maps page [Fig 20] expands on the main summary page's Visit Map applet [Fig 11] to give a larger and more detailed view of the visits taken during the selected observation day range. This visualization

was a result of our cross disciplinary work with the survey scheduler team who creates these maps to evaluate survey progress. With their help, we offer a larger view of the visits on a planispheric projection and is also visualized with an armillary projection adjacent. Both projections work together; as the user slides the time control through the available time range, the visits populate on both maps simultaneously. The data populating these plots is accessed via ConsDB and added by our almanac data. These detailed projections show additional data to contextualize the Visit Map data being shown: the planned final depth of LSST survey,¹ the moon and sun coordinates, the ecliptic, the plane of the Milky Way, the horizon, and the zenith distance of 70 degrees.

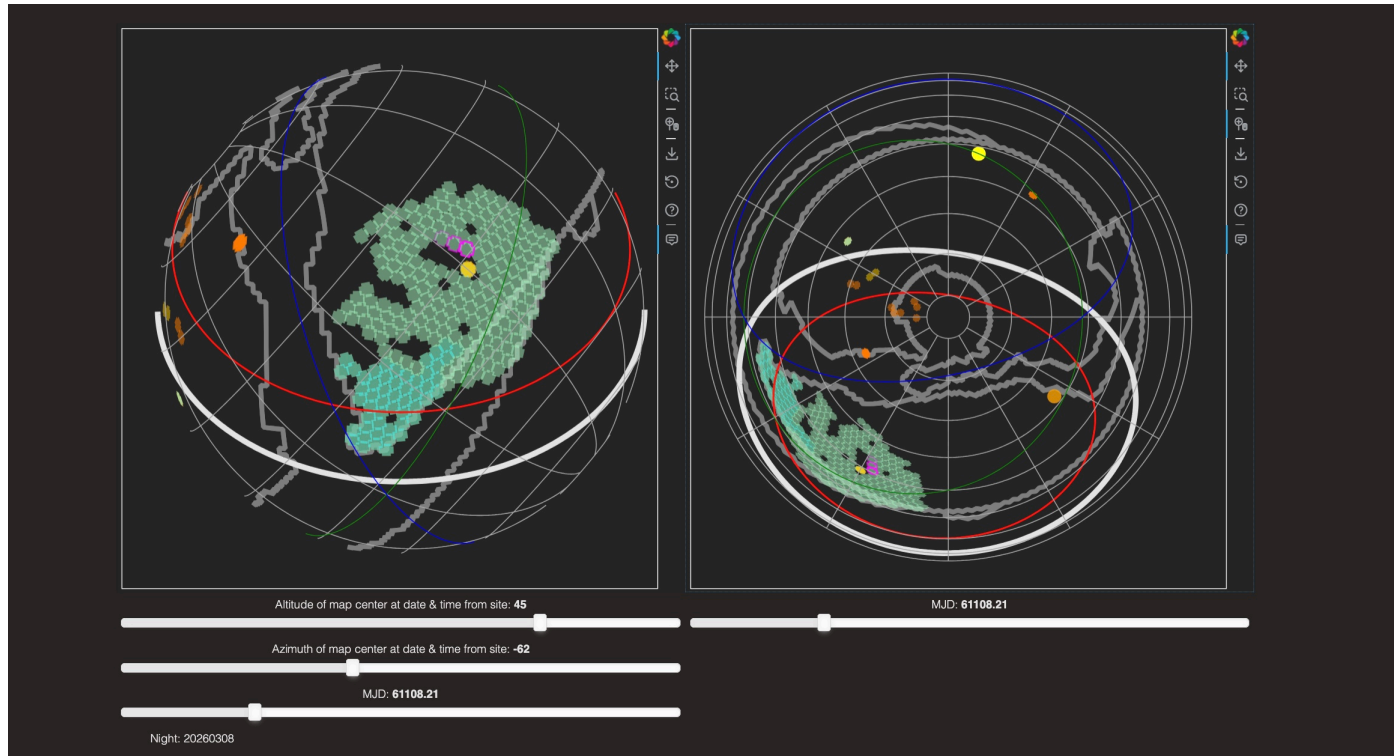


Figure 20. The Visit Map page displays larger versions of the planispheric and armillary projections of the exposures taken during the time frame with additional sliders to navigate the data.

6. FUTURE IMPROVEMENTS

The Nightly Digest continues to be improved upon as we work with Observing Specialists, summit support staff, and project scientists to understand their evolving needs as Rubin Observatory moves through commissioning and into operations. One major feature in development is the automation of a unified Observatory Status, with input from Observing Specialists. This new control system feature has been integrated with the Observing Specialists' interface LOVE and the scheduling component of the control software. With this new telemetry data collected from the EFD the Nightly Digest will improve the way we report and visualize our Time Accounting applet [Fig 9], Time Loss card, and our in-development Time Loss page. This information will be automatically time based and serves as another use of a timeline, specifically that users would like to see on our main summary page.

Timelines have become increasingly popular with our users and we continue to arrange our visualizations to include them in more pages that would leverage a timeline-based display, as they have recently been added to our Data Log page. We continue to solicit feedback from our user base and work to integrate and unify the different logging tools that each team uses, so that Nightly Digest may become a launching pad towards more detailed debugging tools. A prominent upcoming priority is the implementation of automated report generation built

directly from the metrics summarized within the dashboard. Developing a minimum useful product for these operational reports will allow technical leads and stakeholders to easily export and share high-level summaries of a given observing window.

Our future milestones prioritize user experience and performance tuning to make the dashboard more performant, fully include AuxTel’s data across all application pages, and evaluate the long-term scope of the platform’s availability. While the Nightly Digest is currently optimized as a project-internal tool for engineering and summit diagnostics, future operational phases will determine whether to maintain this internal focus or adapt elements of the dashboard for wider community access.

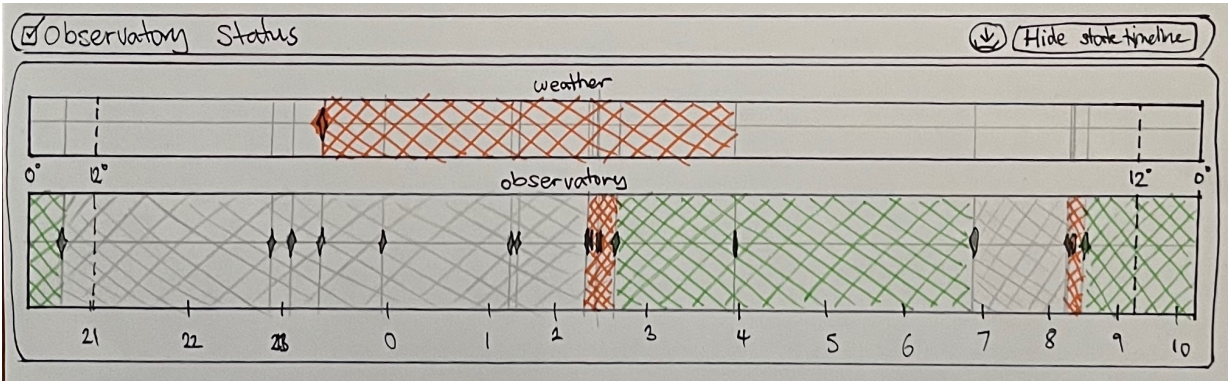


Figure 21. Hand drawn designs for Observatory Status timeline and applet to show the design process and many ideas are developed while only some make it into the application.



Figure 22. Digitally created models of each applet are used to visualize the color scheme before finalizing the designs, as shown here in this time accounting horizontal bar chart.

7. CONCLUSION

In the past two years, the logging team and Nightly Digest application have made significant steps towards unifying the electronic logging landscape at Rubin Observatory. Users now have a landing page to understand the progress and status of the previous nights’ observing time, and look back to compare with other time periods. Questions about exposure volume, quality and efficiency of exposures taken, context around operations, and information about interruptions can now be easily identified and understood by technical and scientific audiences. The Nightly Digest continues to be improved based on user feedback and integrates developing systems to support summit staff and Rubin Observatory operations.

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