



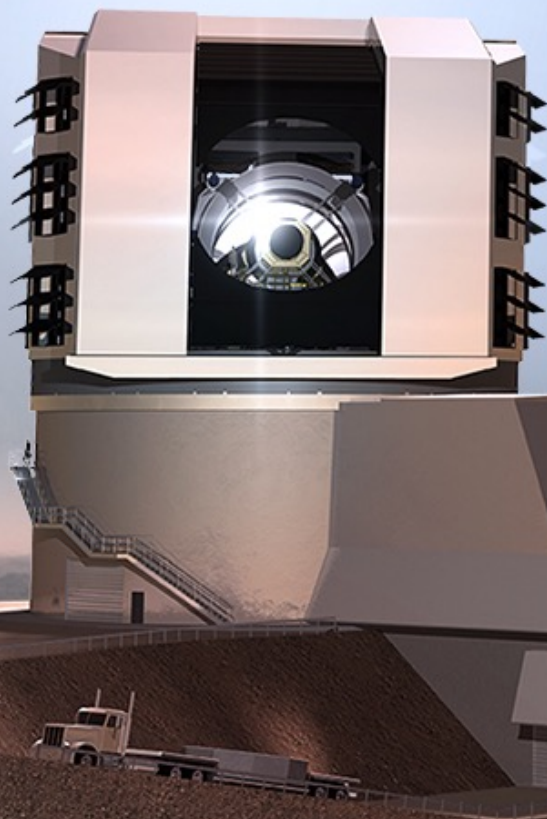
Upcoming opsim simulations, small body metrics, & white papers

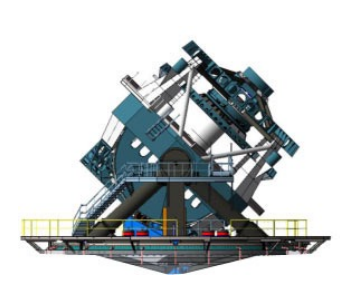
Survey Strategy Team:

Zeljko Ivezic, **Lynne Jones**, Owen Boberg (UW)

Scheduler Development Team:

Tiago Ribeiro, Francisco Delgado,
Andrew Heyer, Colin Winslow (NOAO)

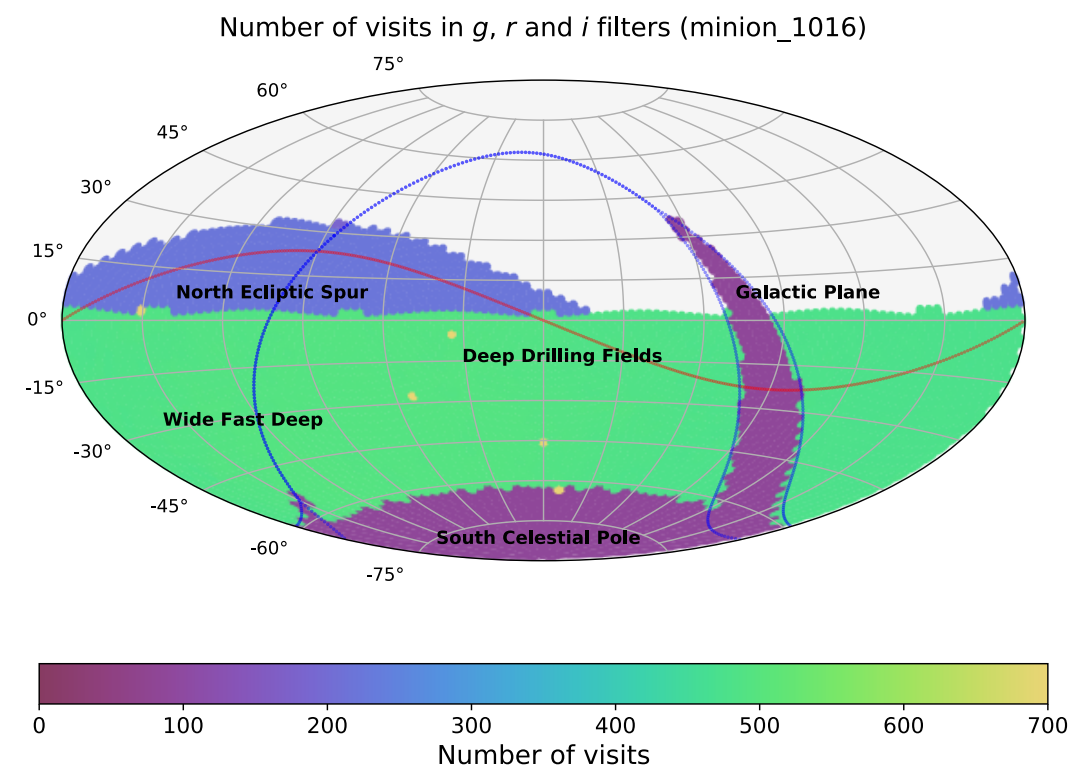


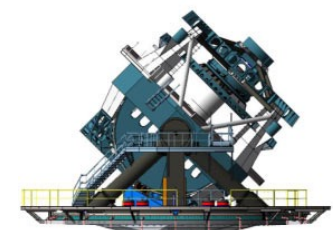


Upcoming release of “OpSim” v4



- OpSim = “Operations Simulation”
 - Provides detailed pointing history of LSST
 - Contains scheduler + simulated observatory
- New ‘v4’ scheduler
 - Can ‘balance’ time between proposals better so that proposals with fewer requested visits (SCP/GP) do not finish early [see figure for ‘proposal’ footprints]
 - Can add airmass and/or Hour Angle bonus (so scheduler ‘prefers’ higher airmass or lower HA fields)
 - Easier to explore rolling cadence options
- https://lsst-sims.github.io/sims_ocs/



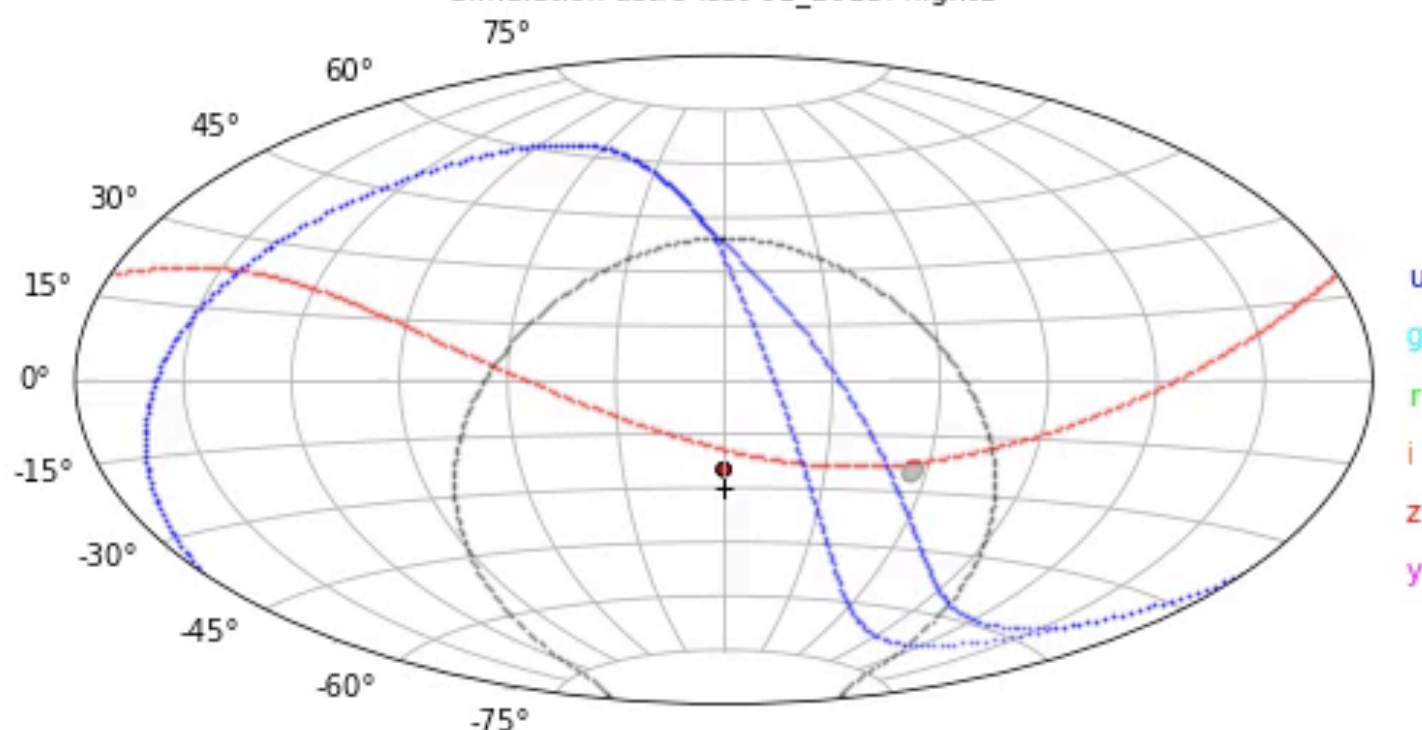


Example of first night of observations



Year 0 Day 0.3578

Simulation astro-lsst-01_2013: night1

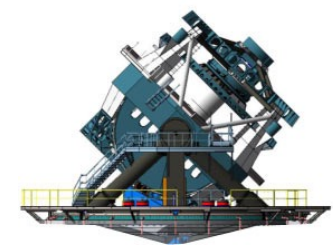


Aitoff plot showing HA/Dec of simulated survey pointings

- 20 deg elevation limit
- + Zenith
- Galactic plane
- Ecliptic plane
- Moon (Dark=Full)
(Light=New)

This movie illustrates the first night of observing in a preliminary opsim v4 run, where an Hour Angle bonus is used to ‘prefer’ observations near the meridian.

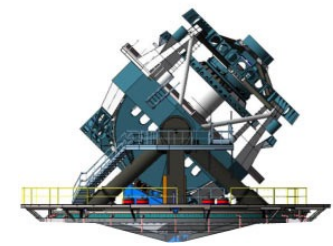
Movie available at
<https://youtu.be/tl3IF7hqAdM>



Please contribute small body metrics!



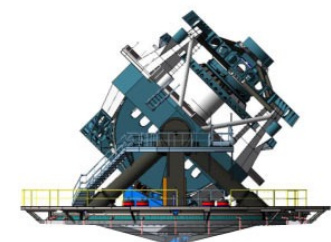
- Needed to evaluate science impact of changing observing strategies — preserve/improve our SSSC science
- Current metrics:
 - Completeness of population discovery
 - number of observations & observational arc
 - Fraction of population with likelihood of ‘color determination’, ‘light curve inversion’, ‘activity detection’
- Read more about metrics in the Observing Strategy White paper
 - github: LSSTScienceCollaborations / ObservingStrategy
 - <https://github.com/LSSTScienceCollaborations/ObservingStrategy>
 - solar system specific metrics are described in depth in chapter 3



Upcoming Survey Strategy Work



- Validate v4 and generate a new baseline run - this will mark official release of v4
- New versions of “Tier1” runs
 - see observing strategy white paper for description of these runs .. we may drop or change some of these as appropriate for current questions of survey strategy
- New rolling cadence examples
- Variety of DD examples, variations on “minisurveys” (Including North Ecliptic Spur!)
- These examples and variations are not intended to exhaust suggestions from community, just provide some input (variety of examples) for the upcoming calls for white papers
 - If you have suggestions, please add them at <https://github.com/LSSTScienceCollaborations/ObservingStrategy/blob/master/opsim/README.md> (link from Observing Strategy GitHub repo)



Survey Strategy / Community Input Timeline

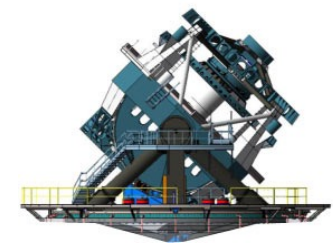


	Cadence Optimization	Calls to Community
2017	Start work on tools to run MAF & Opsim at scale	
	Rolling cadence experiments; DDF experiments/examples	Publish Observing Strategy white paper (OSWP) Call for DDF white papers (Dec)
2018	Rolling cadence experiments evaluated with OSWP metrics; Mini-survey experiments/examples	D
	DDF WP -> simulated surveys; mini-survey experiments	C (C
2019	Updated baseline with DDF + rolling cadence (June)	M Request for white paper and metrics update (Mar)
	Mini-survey WP -> simulated surveys;	White paper with metrics due (Aug)
2020	Finalize MAF and Opsim tools; deliver documentation and a series of simulated surveys to SAC; form SSC	
	Ask SAC and Survey Strategy Committee to recommend the initial observing strategy	
2021	Announce initial survey strategy and publish a baseline simulation that reproduces that strategy	

**Combine DD &
mini survey white papers:**

call - early 2018

due - late 2018



- The details of the call for white paper proposals on the survey strategy are still in development
 - Who should write white papers? Ideally, Science Collaborations do some vetting and combining of strategies before the white papers are submitted, to create proposals with stronger support.
 - What will the survey strategy group do with the white papers? We will try to simulate white paper survey suggestions, within scheduler constraints (and subject to white paper response levels). We may attempt to combine similar strategies to create runs that address multiple requests (eg. DD proposals addressing cosmological sample requirements + SN detection).
 - How can we evaluate and weigh the results of variations of the survey strategy? For this reason it is important to contribute quantitative metrics to evaluate the ‘success’ of a proposed observing strategy!