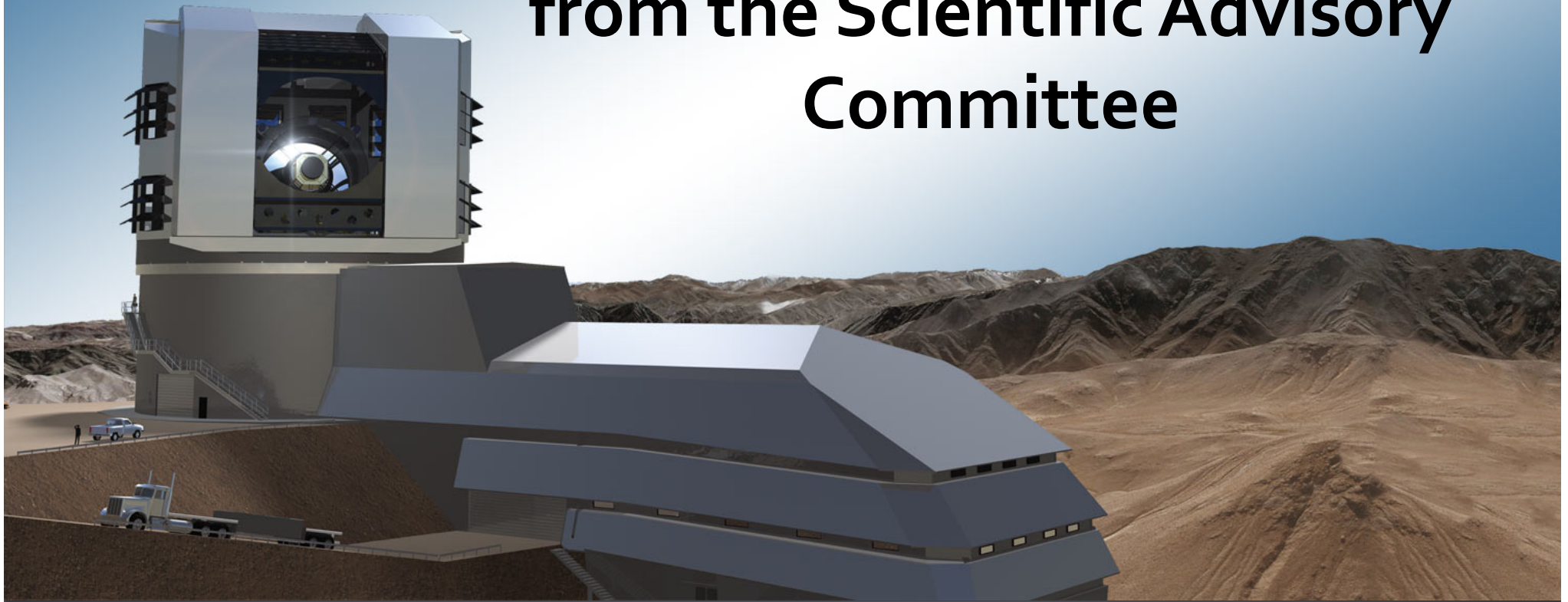


Call for white papers on LSST Cadence : status report from the Scientific Advisory Committee



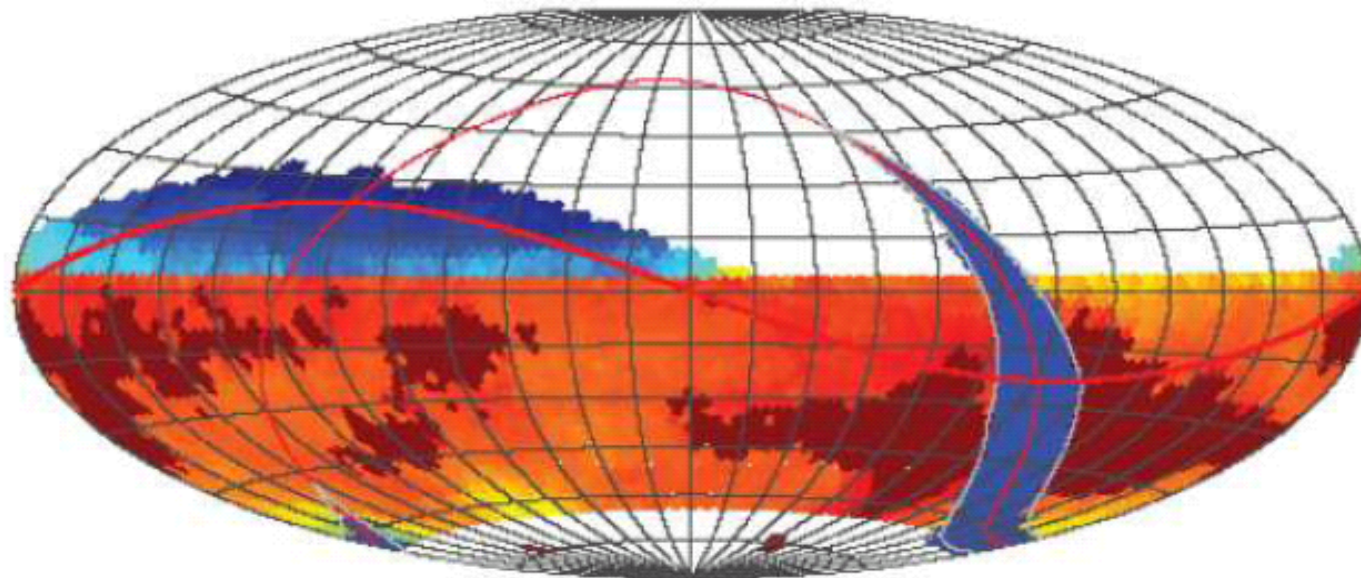
<https://project.lsst.org/groups/sac/>

LSST Basics



Feb 2019

- Ten year survey from late 2022
- 9.6 sq. deg Field of View
- annular primary 6.5m effective



LSST Science requirements doc :
Minimum Science Requirement of
825 visits per field
137 visits per filter per field

Call for White Papers on Survey strategy

- 46 received (30 Nov 2018)
- Given to the SAC to review
- Advocate a broad range of science opportunities
- Limitation of 10 yrs of survey time – total advocated time much more
- Inevitable conflicting demands of
 - Extragalactic sky
 - MW plane
 - Mini-surveys including the DDFs

LSST SAC

■ Chair : Michael Strauss

Timo Anguita (Universidad Andres Bello, Chile)

Franz Bauer (Universidad Católica de Chile)

Rachel Bean (Cornell University)

Niel Brandt (Penn State University)

Mansi Kasliwal (Caltech)

David Kirkby (University of California Irvine)

Charles Liu (CUNY College of Staten Island/AMNH)

Amy Mainzer (Jet Propulsion Laboratory)

Meg Schwamb (Gemini Observatory)

Joshua Simon (Carnegie Observatories)

Stephen Smartt (Queen's University Belfast)

Anže Slosar (Brookhaven National Lab)

Michael Strauss (Princeton University; chair)

Lucianne Walkowicz (Adler Planetarium)

Risa Wechsler (Stanford University)

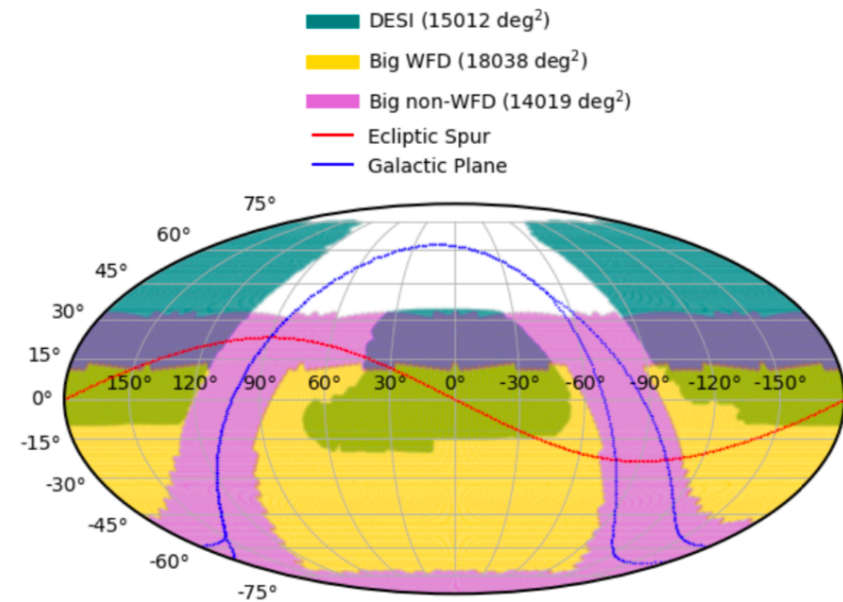
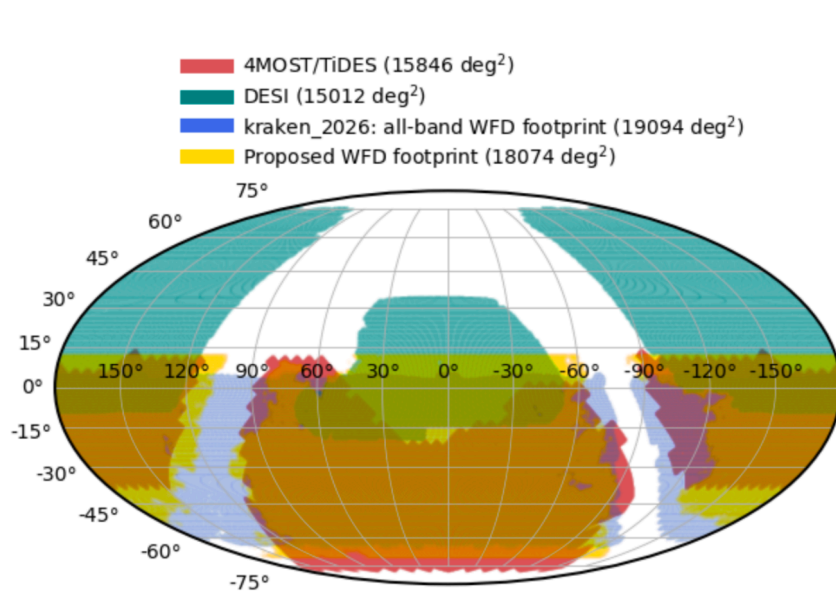
Summary of main themes emerging

- Footprint of “WFD” = the extragalactic sky
- Specific cadence for WFD : rolling cadence, shorter repeat visits in some filters
- Cadence proposals for MW plane (low b)
- Cadence and strategy for DDFs and some new ones
- “Mini-surveys” – or areas different to WFD and DDF
- Specialised observing modes (e.g. ToOs)

Task for SAC

- Recommend a new set of OpSim runs that would cover most of the feasible White Paper proposals
- **Not** picking the winners and losers
- Publicly available report (search for LSST SAC)
- OpSim runs to finish by December 2019
- Project to stand up a “Survey Strategy Committee” which will make recommendations to project

WFD = extragalactic sky + Milky Way plane/bulge



DESC WFD footprint

$$-72^{\circ} < \delta < +12^{\circ}$$

Olsen "Big sky"

With cut on $E(B-V)$ or $|b|$: what constitutes "WFD" ?

Major issues

- Rolling Cadence for “WFD” – split sky into 2, 3 (or even 6) dec strips. One strip per year
- But 6-8 years of this : others devoted to ensuring uniform coverage
- 3 day cadence for MW : but costs 23-45% of survey
- Going from 2 x 15sec snaps to 1x30 sec : gain 7% efficiency (i.e. a mini-survey)

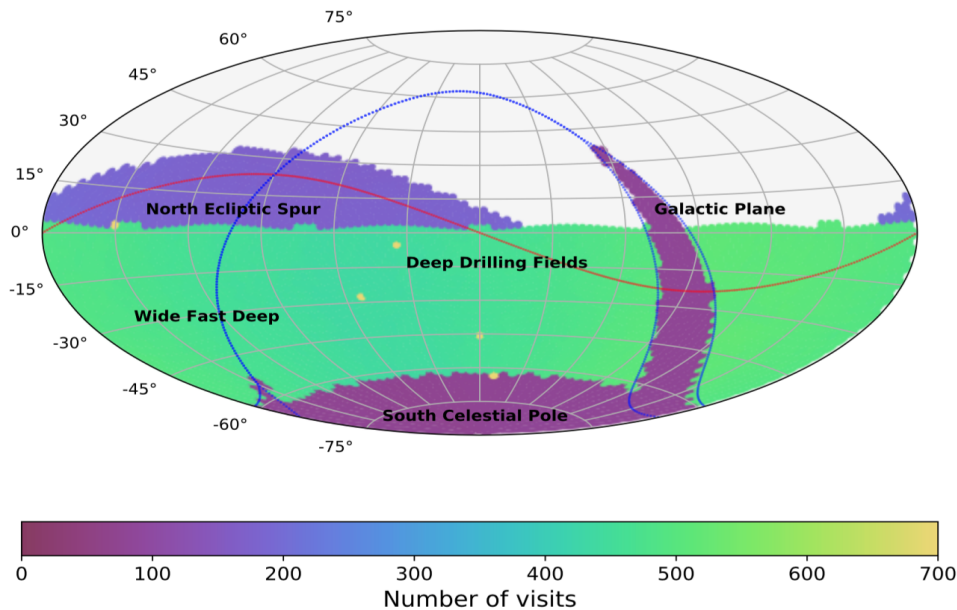
Recommendations

- Accommodate most White Paper requests in some way
- Large suite of OpSim runs – various rolling cadence and 4 WFD footprints
- Different MW strategy to WFD (bulge and disk)
- Some tests on DDF strategies
- Nothing “killed-off” by SAC (wasn’t our brief)

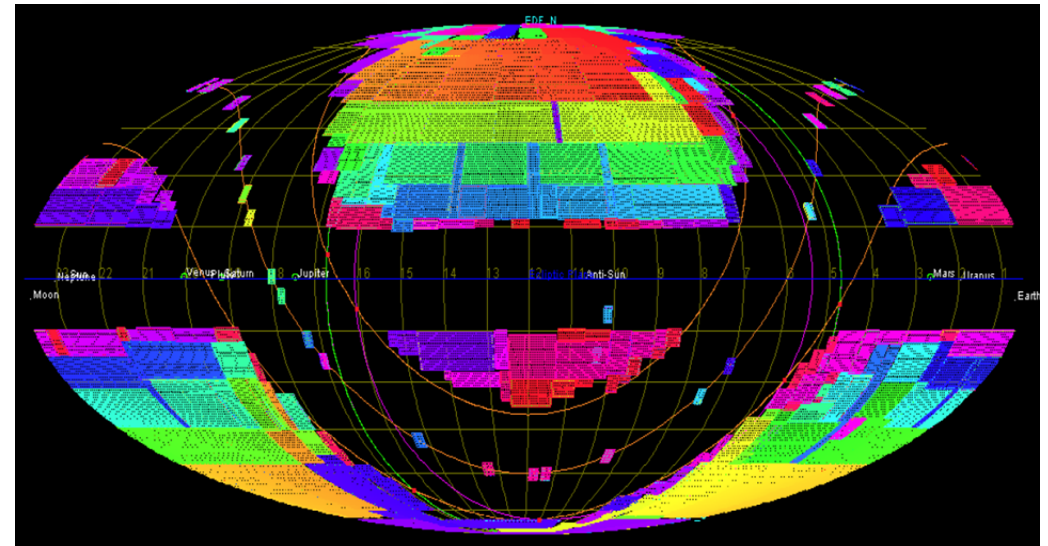
UK strengths in data management

LSST

Number of visits in *g*, *r* and *i* filters (baseline-2018a)



VISTA + EUCLID



Optical (ground)

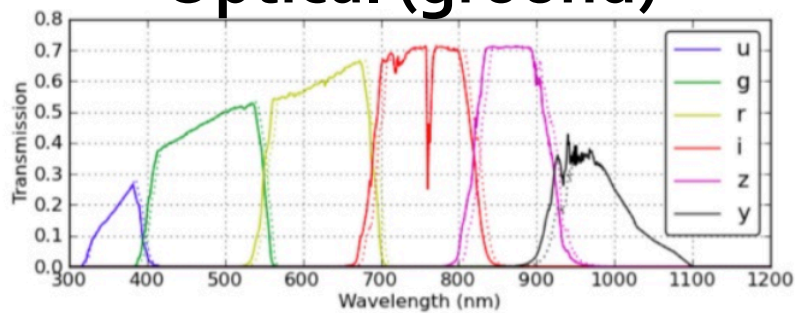
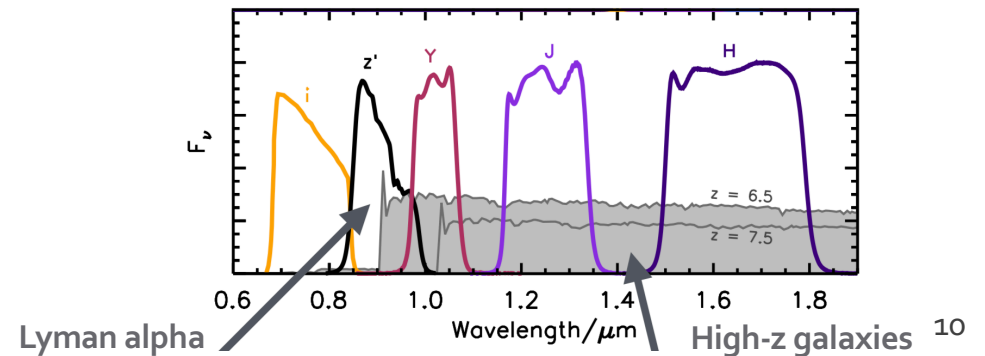


Image credits : LSST, ESO, EUCLID, M. Jarvis

Infra-red (ground+space)



Lyman alpha

High-z galaxies ¹⁰