



DARK ENERGY
SURVEY

Dark Energy Survey Operations

Tom Diehl & many others
All-DES Meeting
Sept. 17, 2017





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Outline

- Status of the Dark Energy Camera & Auxiliary Systems
- Y5 Observing Progress
- Summary

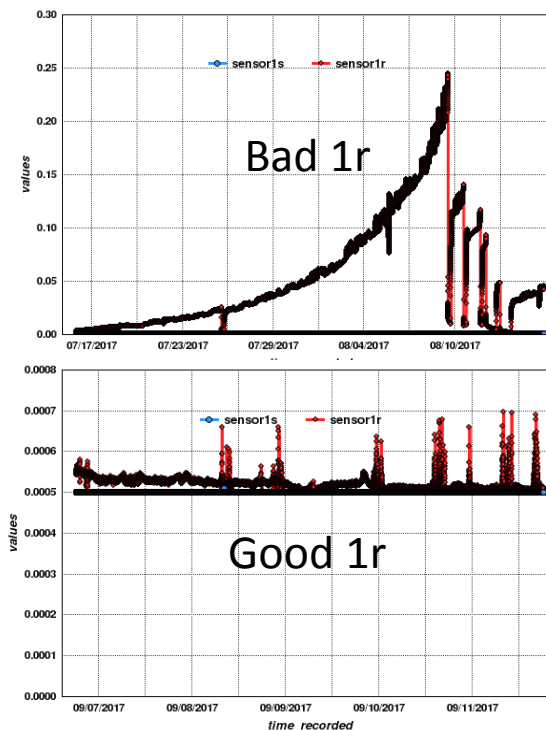




DES Operations: DECam

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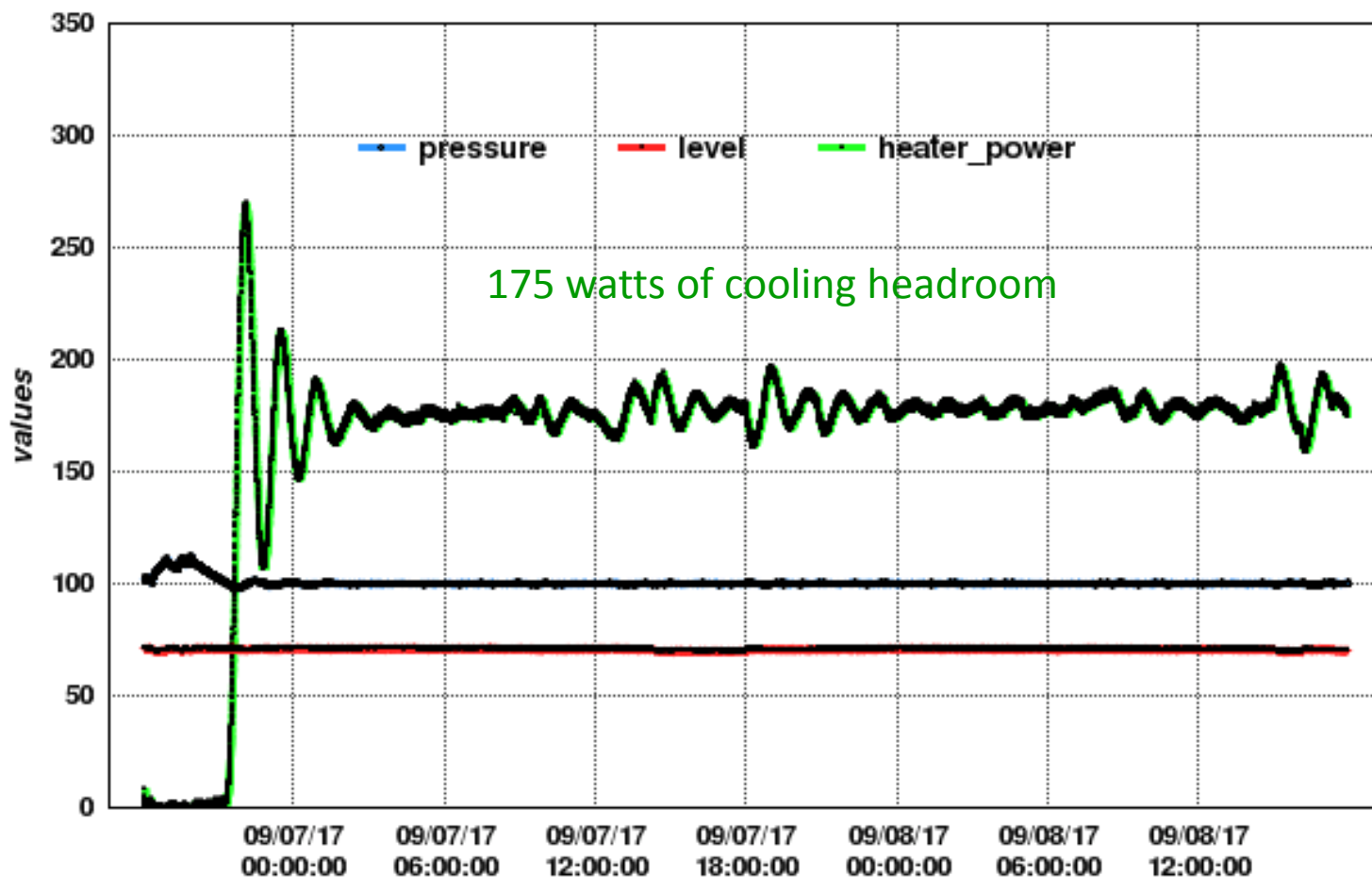
- The Dark Energy Camera was ready at start of Y5.
- Engineering Work successes week of July 10th
 - A. Lathrop and O. Alvarez
 - Remove LN2 pump #2 (VESPEL plastic bearing cages) after 8 ½ months.
 - Install LN2 pump #1 (VESPEL plastic bearing cages). Replace in 12 months.
 - Service the vacuum-jacketed LN2 transfer lines
- Engineering Work week of Sept. 4th
 - A. Lathrop and O. Alvarez
 - Remake the vacuum-jacketed LN2 transfer line 1R internal connection, replacing Teflon gasket with a VESPEL gasket





LN2 system operation stable, closed-loop

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This is really the first time it has been operating as designed.



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Auxiliary Detectors @ CTIO

- ✓ GPSMon monitors precipitable water vapor in the atmosphere (UC)
- ✓ CTIO DIMMs (there are 2) measure the “true” seeing
- ✓ RasiCam (all-sky IR camera) measures cloud cover, informs Calibration WG if photometric conditions. May ‘16 maintenance by Kevin Reil (SLAC).
- ✓ aTmCam measures atmospheric transmission in 4 filters (TAMU)
 - #4 (water vapor) had problems lately for a few days. Support team has fixed it?

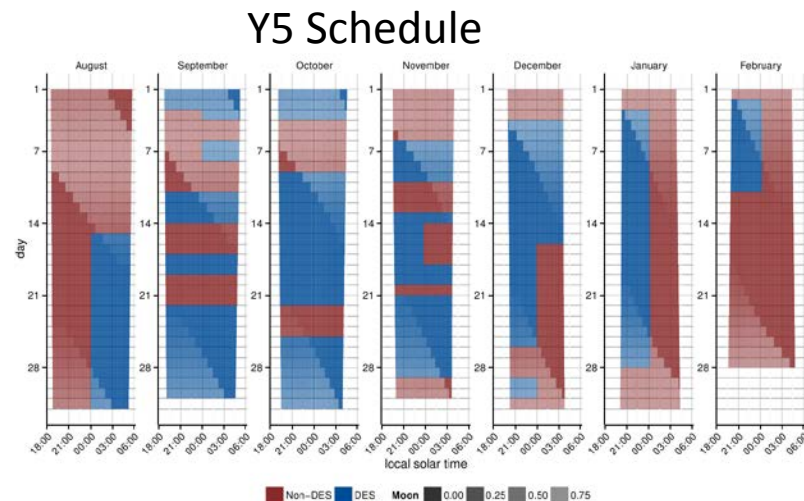




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Preparing for Y5

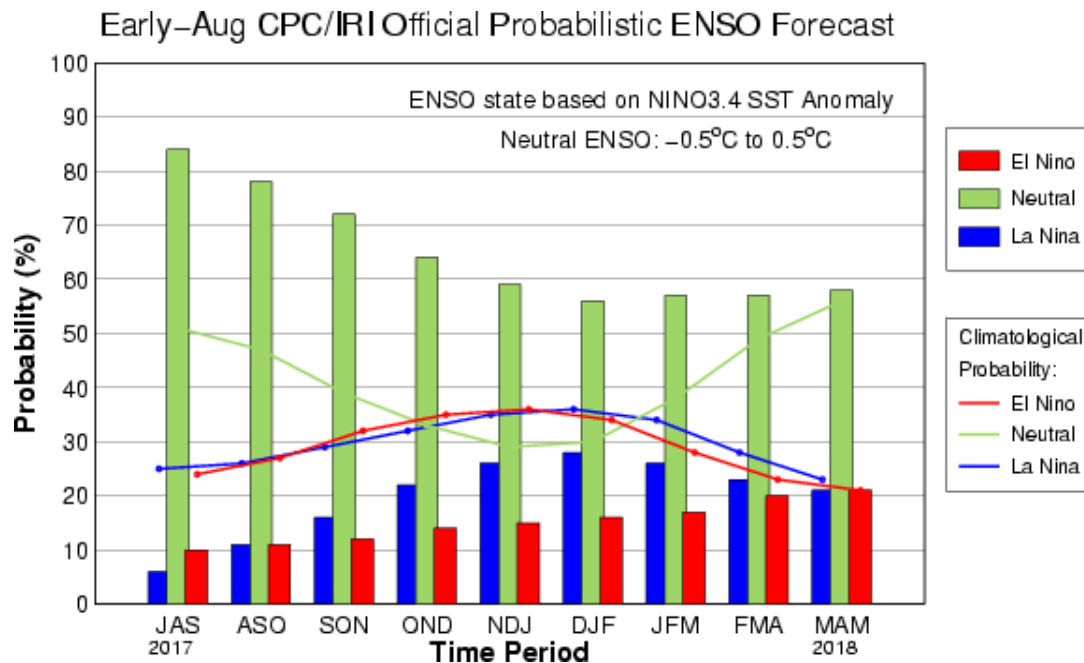
- DES Y5 started Aug. 15th
 - Start w/ 2nd-half nights
 - Steady full nights ~ mid-Sept.
 - 1st-half night ~ mid-December.
 - 102 night-equivs in Y5
- Tweaks to observing strategy
 - SN as usual
 - Concentrate on finishing WF tilings 7 (only a bit to go) to 9 (barely started)
 - More priority to z-band (over Y-band) in good but moony conditions
 - Twilight-time low-z SN1a observing, special WD observations, Observe Alhambra Fields in u-band.
 - Ice Cube and GW TOO's





Planning the Y5 Weather

- We need a strong Y5 observing season so as to not lose any more ground on the “Original Plan”
- We’ve demanded a “neutral” or “La Nina” year (as opposed to “el Nino”) from NOAA. Forecast is good and is trending positive.





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DES Observing in Y5

- Y5 observation are staffed at the mountaintop by DES Collaborators.
- Typically 2 observers on ½-nights and 2 to 3 observers on full-nights.
- Now have capability to do remote observing from vROC, provided internet to Chile is OK
- CTIO requires that we send observer(s)





Observing Efficiency Y5

- Y5 Started as planned on August 15, 2017
- Through 9/16 we've observed 16 night-equivalents.
- 35 of 172 DES observing hours, mostly dark time, were dedicated to TOO's. Those are finished and LIGO is turned off for now.

Season	# Nights	Total (HRS)	Observing (%)	Lost Camera (%)	Lost Telesc. (%)	Lost Weather (%)
Y1	105	888 $\frac{1}{4}$	85	3	2	10
Y2	105	928 $\frac{3}{4}$	84	$< \frac{1}{2}$	$< \frac{1}{2}$	15
Y3	105	969 $\frac{3}{4}$	66	1	3	30% 😞
Y4	108	1011 $\frac{1}{2}$	90% 😊	1.4%	1.8%	6.4% 😊
Y5	16	172 $\frac{1}{4}$	88%	0	~0	12%

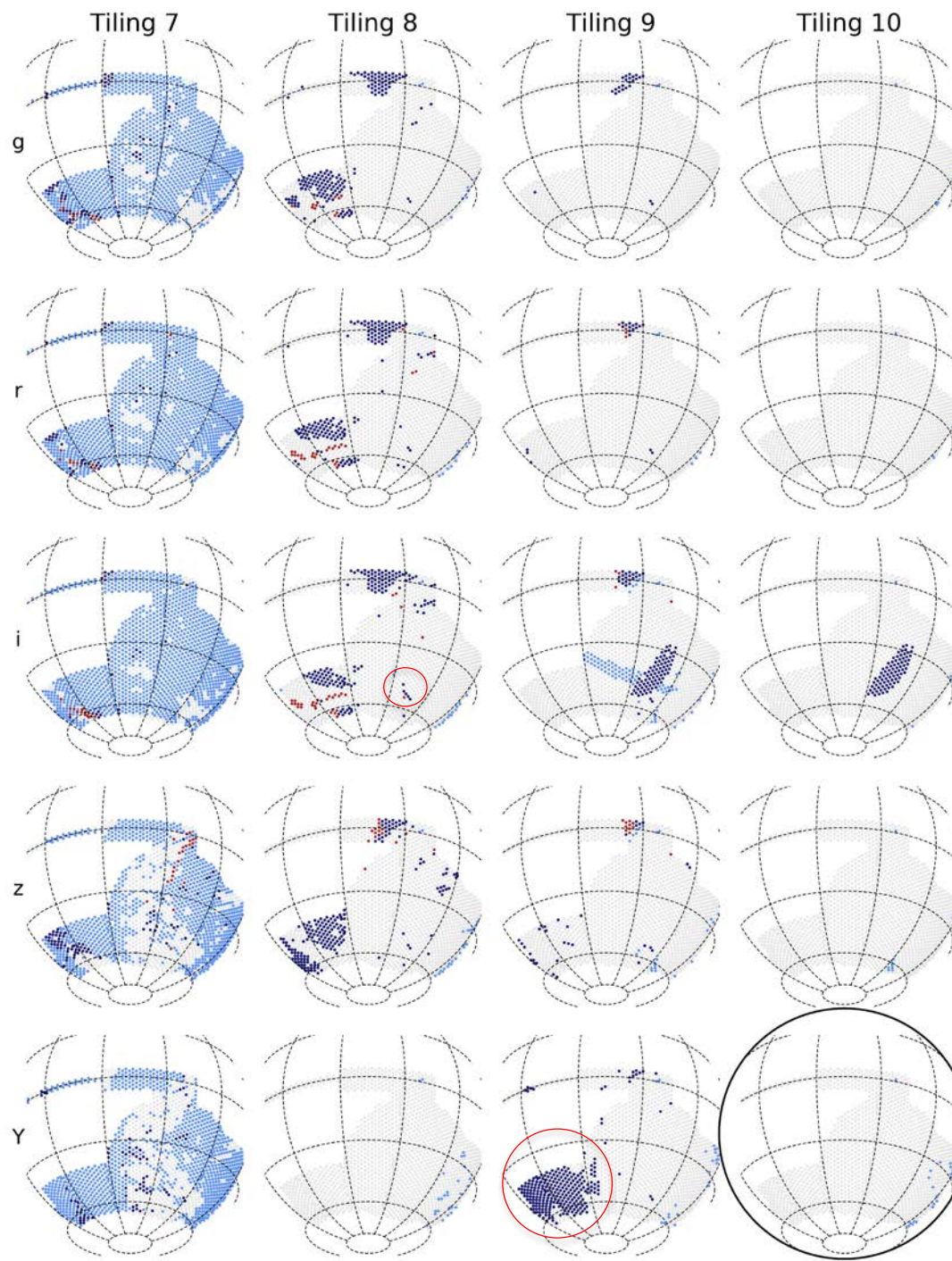


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WF Progress in Y5

Through Sept. 16, 2017

- We are pretty far behind the Y5 WF expected pace.
- We'll begin to make up ground if the weather stays good.
- Y5: The red or dark blue spots in Fig.
- Red circles: 10 tilings done !

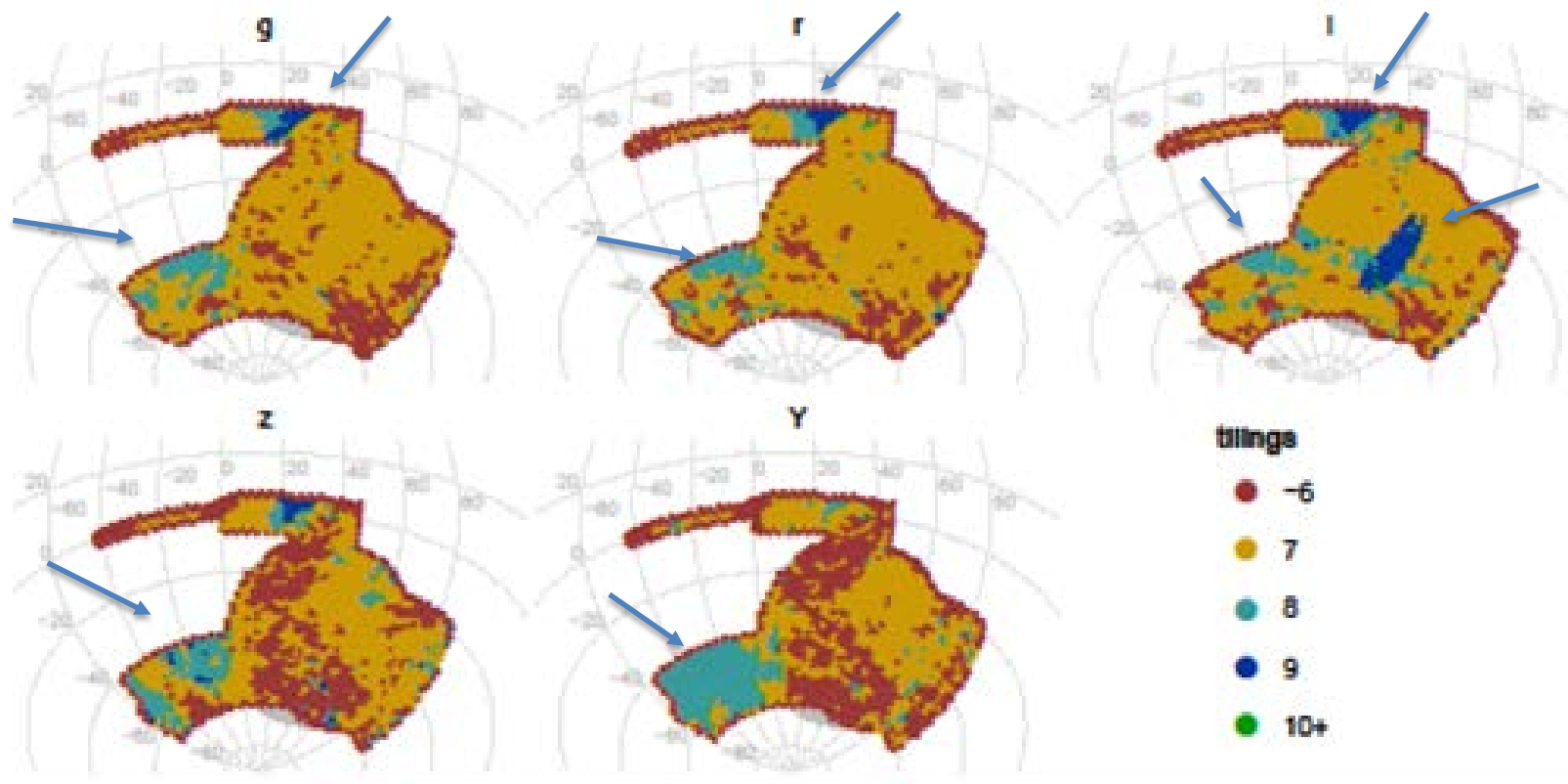




WF Progress in Y5

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Through Sept. 16, 2017

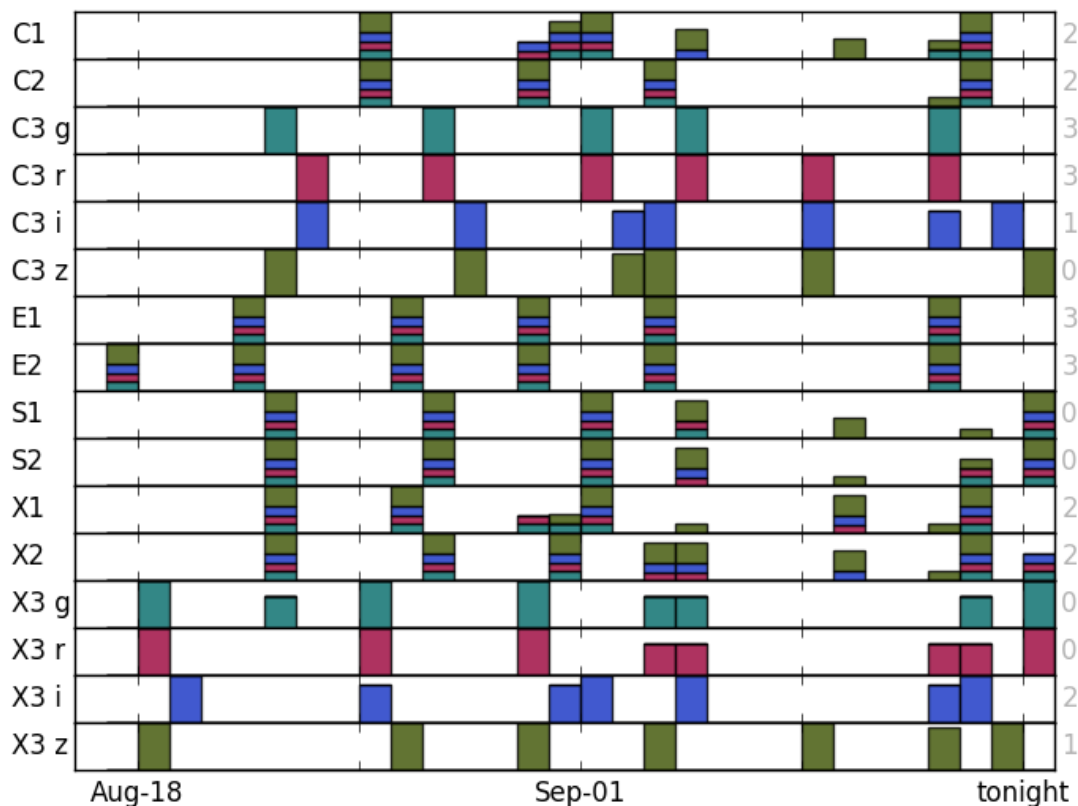




SN Progress in Y5

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Through Sept. 16, 2017 (start Y5)



- 10 SN Fields: “C1, C2, C3, E1, E2, S1, S2, X1, X2, X3”
- Fields that end in “3” are “deep” fields
- Y1 to Y3: 19-23 good SN sequences per field.
- In Y4 that was 24 to 28! 😊
- Normally ~30% time is spent on SN observations
- Some problems in Y5

How Many Supernovae did we find?



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Summary

- DECam and Blanco are doing great.
- Survey strategy adjustments and procedural changes were planned in advance of Y5
- DES Y5 observations have started and are going well
- Will need Y5.5 to finish original observing plan.



Thank-you to Y5 Observers