



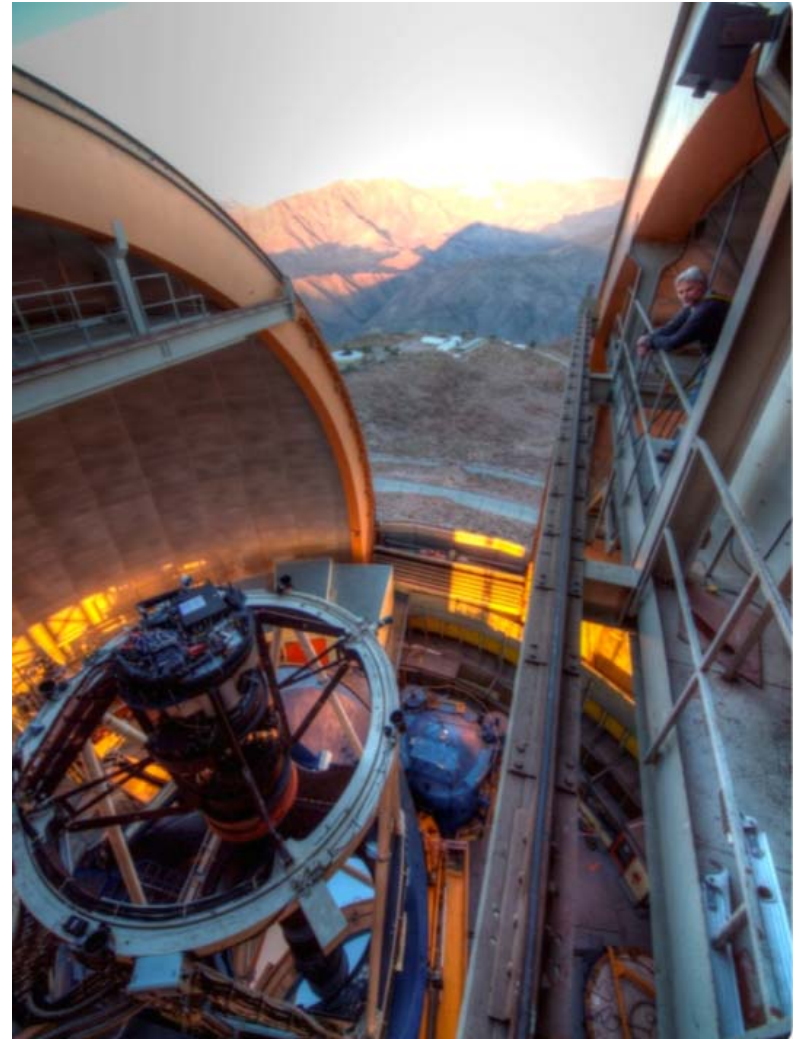
DARK ENERGY
SURVEY

Dark Energy Survey Operations

Tom Diehl, Eric Neilsen & many
others

All-Experimenter's Meeting
March 6, 2017

1



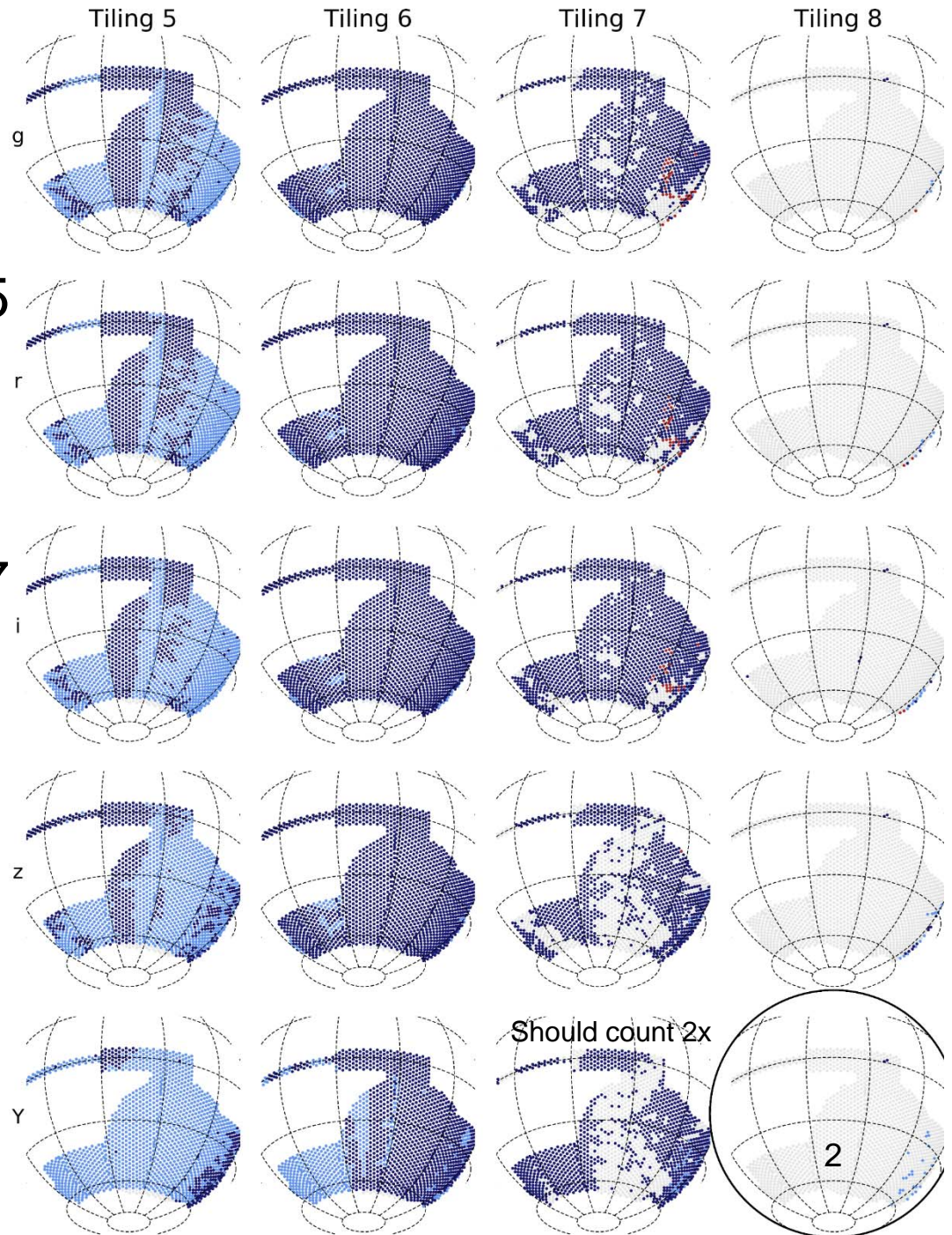


End Y4 Feb. 18, 2017

DARK ENERGY
SURVEY

- Finished Tiling 4 & Tiling 5 & Tiling 6 and good progress on Tiling 7.
- 16,217 good WF exposures. 17,211 if Tile 7 Y-band is counted 2x.
- 89% good in Y4 (typically 80-82% Y1-Y3)
- Observed most hexes at some time in Y4 (almost no Y4 holes)

Lt. Blue: end of Y3
Dark Blue: during Y4
Red: Last night (a ½ night)



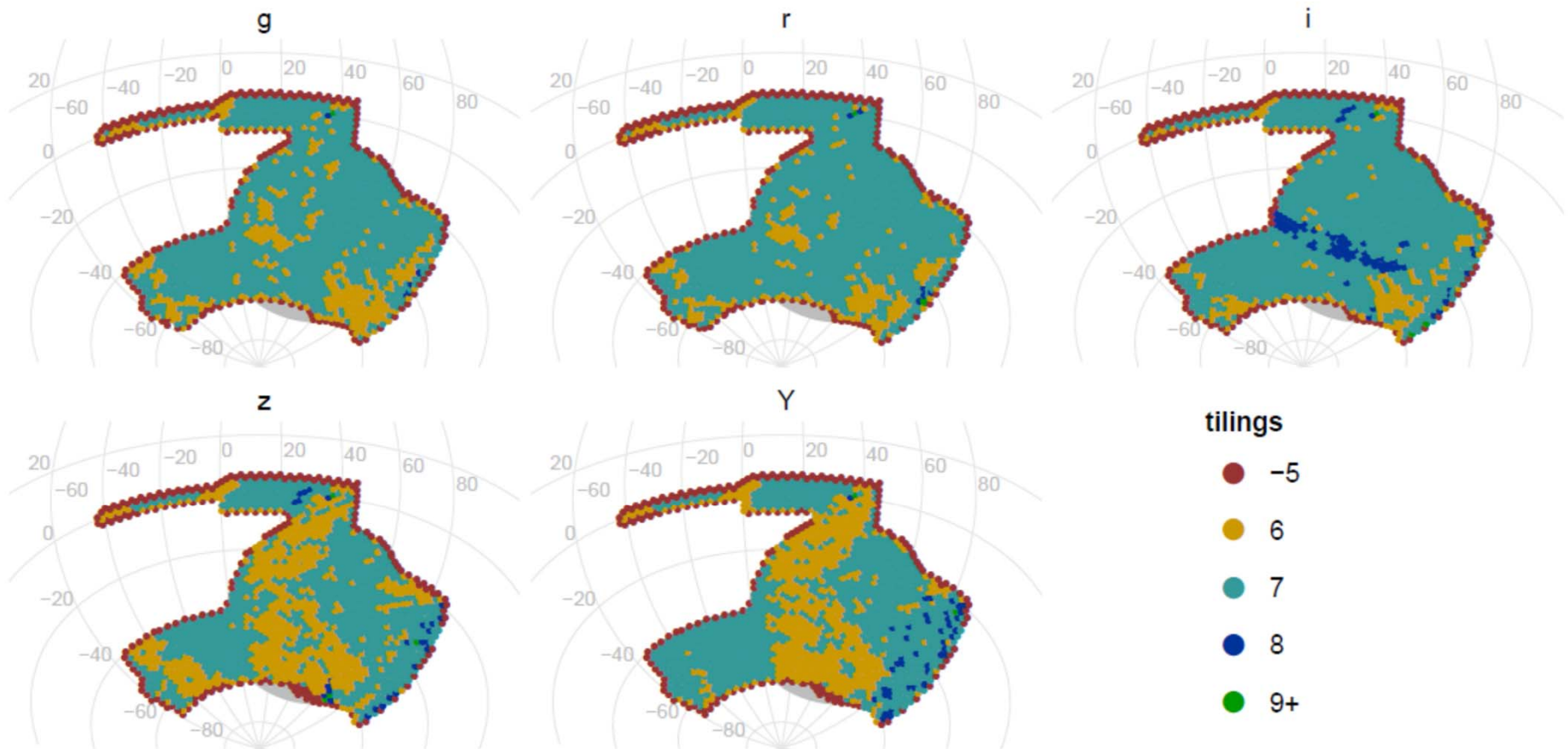


WF Status: completed tiles

02/18/17

DARK ENERGY
SURVEY

Compare to 2nd slide to see Y4 has been very good.



Y-band area with 7th tile is complete through 8 tiles (dark blue).

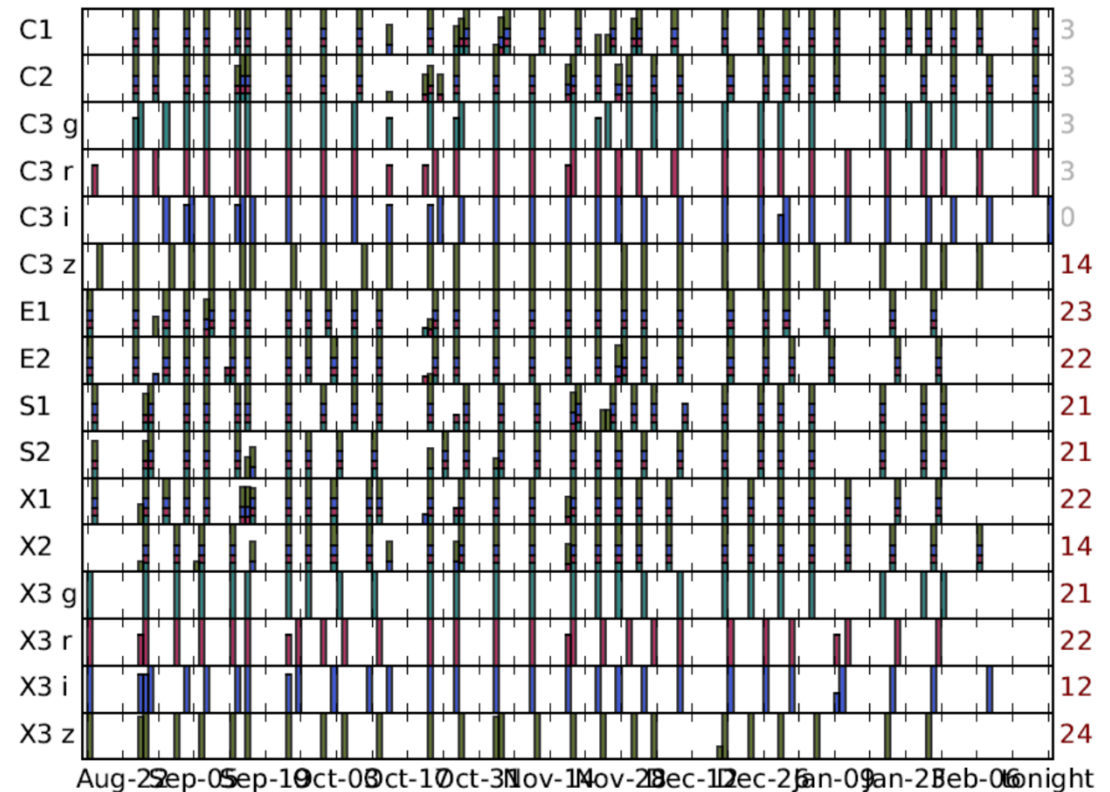


Good Y4 SN Cadences

DARK ENERGY
SURVEY

- Turned off SN deadman at the end of January. Observe SN only when seeing isn't so good.
- In Feb. we observed a few fields one more time and the C-fields ~twice each.
- In Y4 ~30% of observing time went to SN.

02/18/17



Typically, in Y1 – Y3, 19 to 23 good SN sequences per field. In Y4: 24 to 28.
Thanks, Eric Morganson, for the help with this stat.

DES Y4: 76 full nights and 68 half nights.

Feb 18, 2017

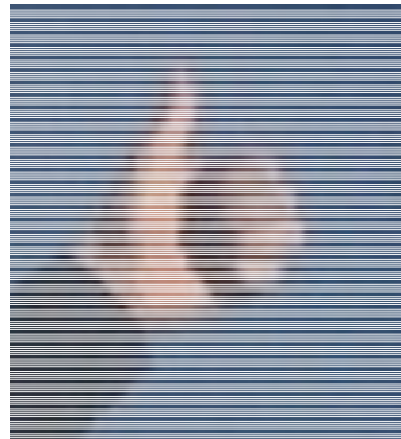
Aug 13, 2016





DARK ENERGY
SURVEY

“The Skinny” on DES Year 4



Originally scheduled for 5 observing seasons,
DES is asking for a “Y5.5” to make up the lost ½-season.



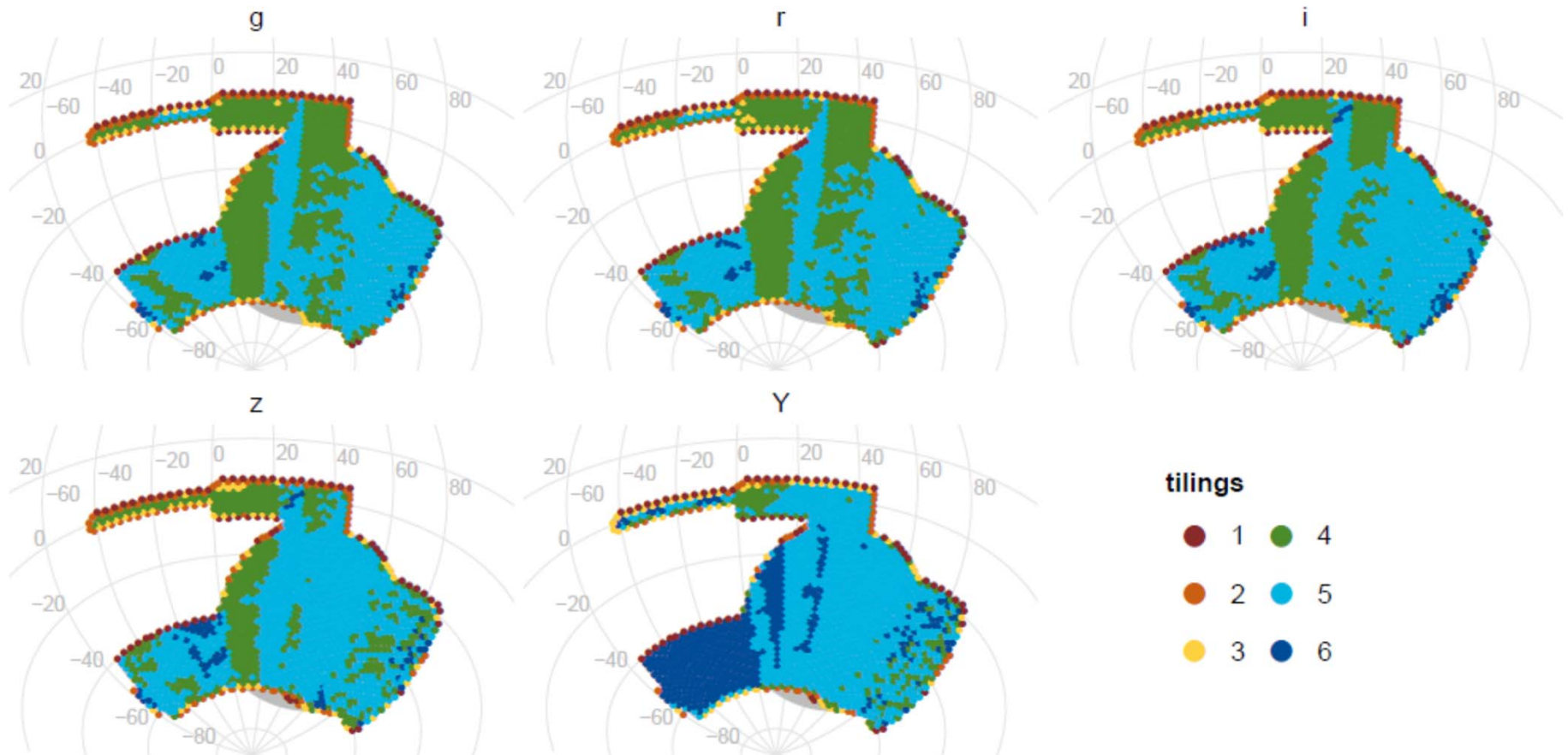
DARK ENERGY
SURVEY

Extra Slides



End of Y3 WF Survey Status by Filter

DARK ENERGY
SURVEY



We got 60% of our expected average season in Y3.
Plus side: 4-6 good exposures in the full survey field.
Quality not quite as good on the West side.



Observing Summary

(up-to-date through end of a very good Y4)

DARK ENERGY
SURVEY

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 Aug.	6 $\frac{1}{2}$	63 $\frac{1}{4}$	87	$\frac{1}{2}$	0	12
Y4 Sep.	21 $\frac{1}{2}$	221 $\frac{1}{4}$	97	0	2	1
Y4 Oct.	18 $\frac{1}{2}$	177	84	0	1	15
Y4 Nov.	24	209	98	0	1	1
Y4 Dec.	21 $\frac{1}{2}$	174 $\frac{1}{2}$	82	7*	5**	6
Y4 Jan.	12	102	90	0.2	1.2	8.4
Y4 Feb.	6	55	90 $\frac{1}{2}$	$\frac{1}{2}$	1	8
Y4 Total	110-2	1011 $\frac{1}{2}$	90.2%	1.4%	1.8%	6.4% ₉

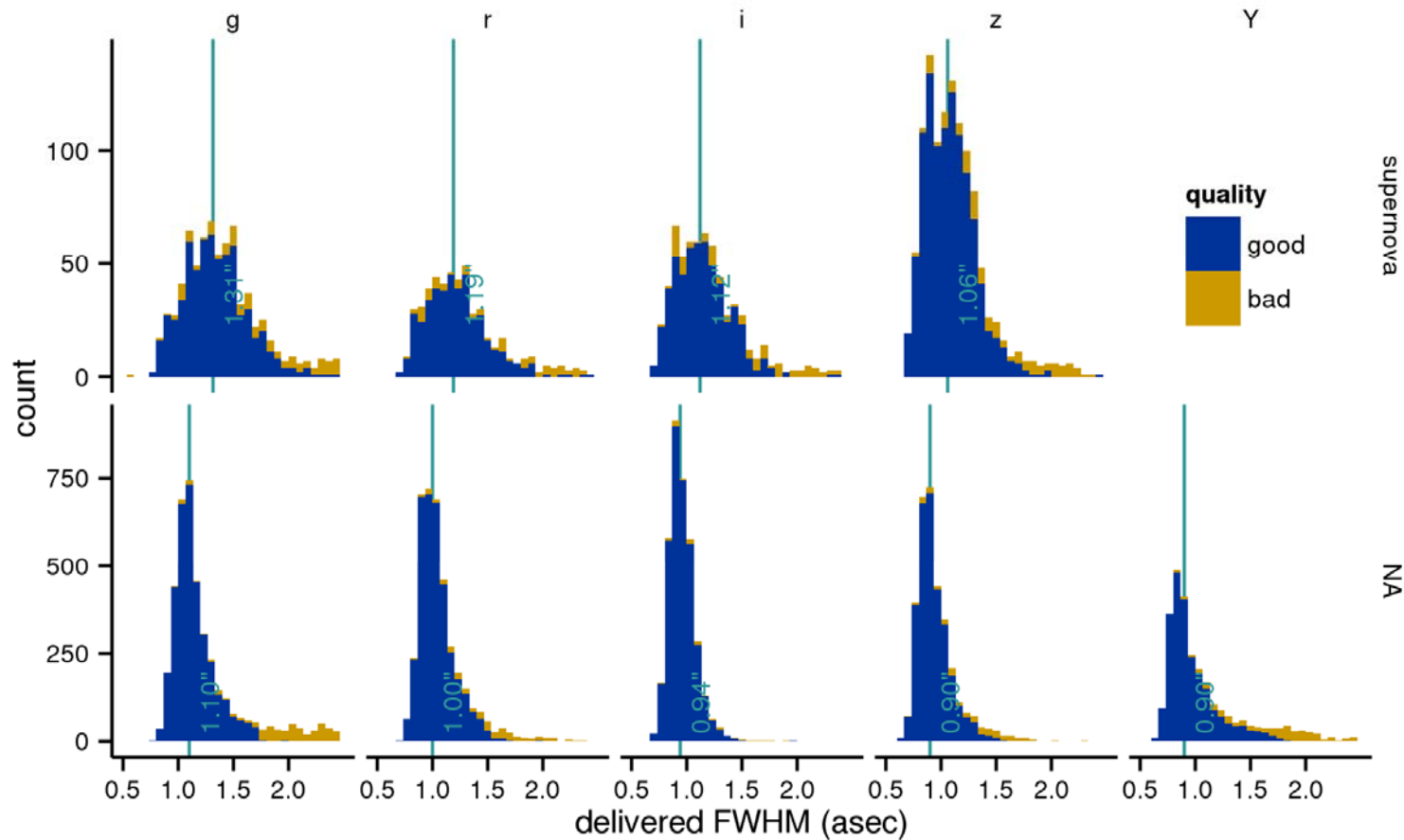
* hexapod, camera vacuum ** sitewide power



Y4 Delivered PSF (FWHM)

DARK ENERGY
SURVEY

Median WF FWHM for good exposures more like Y2, improved over Y3.



Median FWHM projected to i-band @ zenith for All Good WF = 0.92"



DARK ENERGY
SURVEY

Additional Data

Generally from json scripts

- Alhambra Deep 1 for PZ's (~2 hrs)
 - RA/DEC ~ 36.33/0.023
 - Shallow: 900s each in grizY-band
- Cosmos (Alhambra-Deep 2) for PZ's (~ 1 night)
 - RA/DEC ~ 150.03/2.28
 - Deep: 3300 s each gri,
 - Shallow: 900 s each ugrizY-band
- Star Flats (2 hrs)
- Two nights of Long TOO
- Internal TOO odds and ends



DARK ENERGY
SURVEY

Bragging Rights in Y4

[https://cdcvns.fnal.gov/redmine/projects/desops/wiki/Bragging_rights_\(ie_seeing_records_etc\)](https://cdcvns.fnal.gov/redmine/projects/desops/wiki/Bragging_rights_(ie_seeing_records_etc))

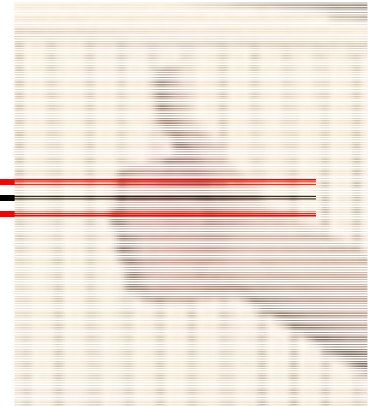
Check out the link to find out who was observing.

Record		Value	Date
FWHM r	2 nd best	0.73"	9/21/16
FWHM z	best	0.63"	11/5/16
FWHW Y	Best of best	0.61"	11/5/16
FWHW Y	2 nd best	0.66"	11/15/16
Darkest g	best	-0.36M	1/19/17
Darkest r	best	-0.54M	1/19/17
Darkest i	2 nd best	-0.77M	1/19/17
Teff z	best	1.91	9/7/16
Teff z	best	2.22	1/19/17
Teff Y	2 nd best	2.63	1/19/17
Shutter Open	2 nd best	79.3%	8/24/16
Most Sci exp	best	300	9/27/16

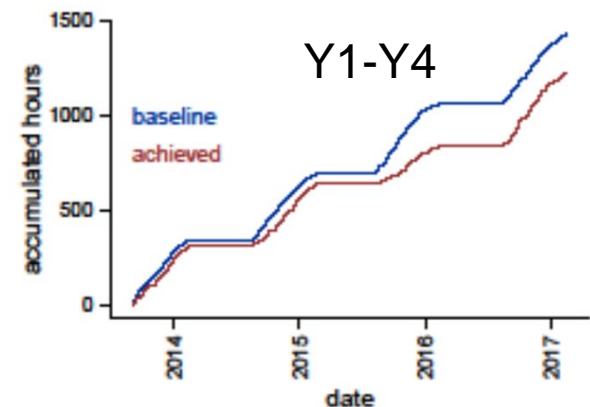
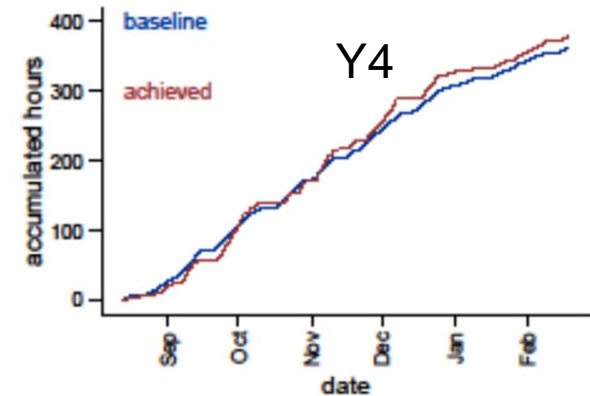


DARK ENERGY
SURVEY

DES Y4 Summary:



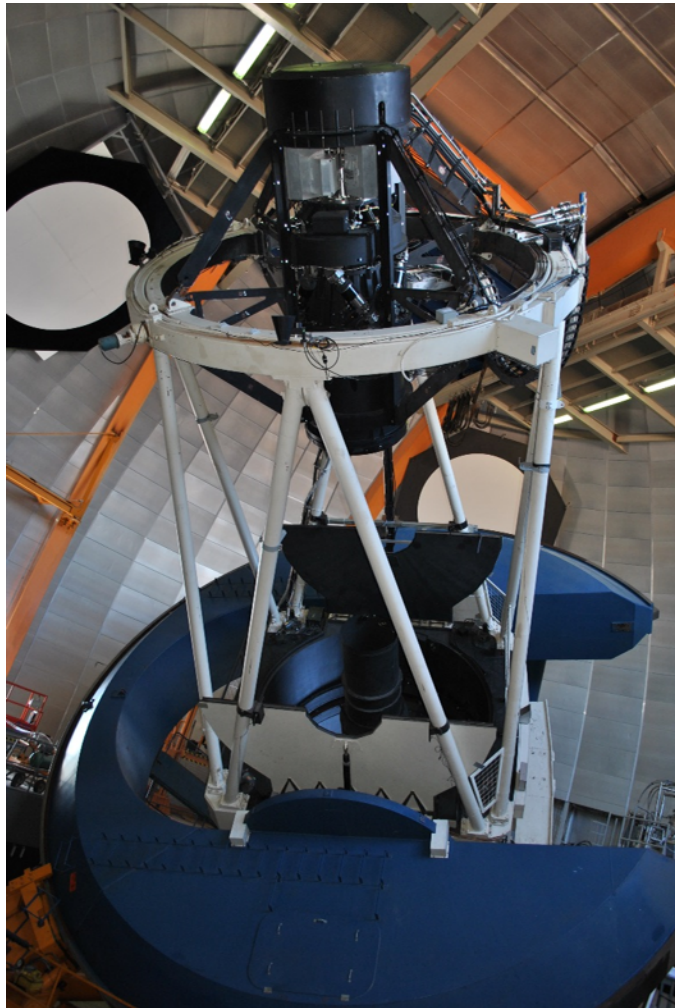
- DES Y4 was the best so far, better than the expected average.
 - Still we are $\sim 1/2$ season behind in WF
 - Best SN season so far.
- Y-band is farthest ahead.
- z-band is farthest behind.
- We'll be planning adjustments to observing strategy and procedures. Discuss at UoC in June.
- I big thank-you to CTIO Staff and DES Observers.



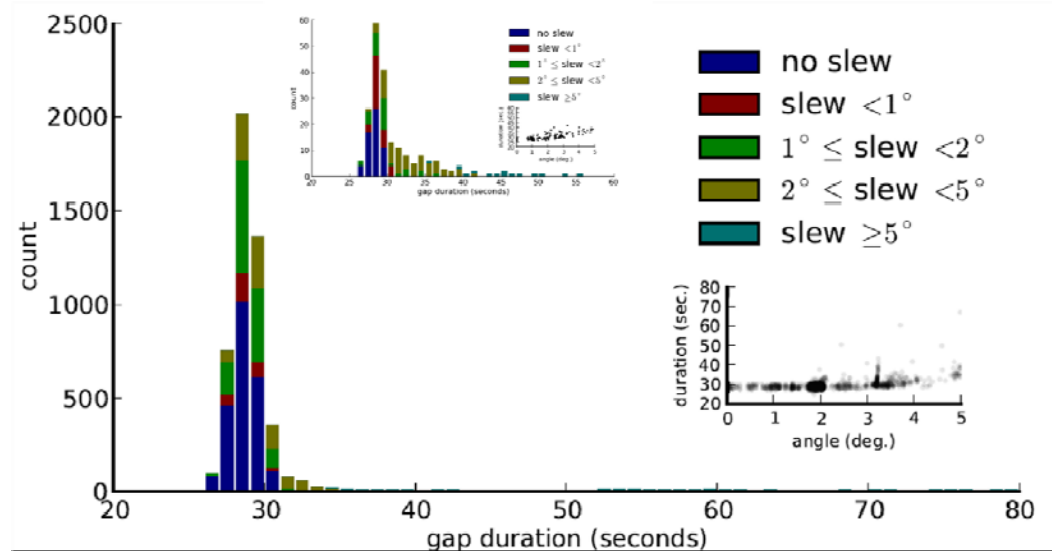


Camera & Telescope Status

DARK ENERGY
SURVEY



- Camera & Telescope are working with high reliability.
- Active control of the 34,000 lb Blanco Primary Mirror is working!
- Telescope is slewing faster in Y4 => improved efficiency





DARK ENERGY
SURVEY

Status of auxiliary systems

- ✓ GPSMon monitors precipitable water vapor in the atmosphere
- ✓ CTIO DIMM (2) measures true seeing
- ✓ RasiCam (all-sky IR camera) measures cloud cover, informs Calibration WG if photometric conditions.
- ✓ aTmCam measures atmospheric transmission in 4 filters.

