

What is the Dark Energy Survey (Currently)

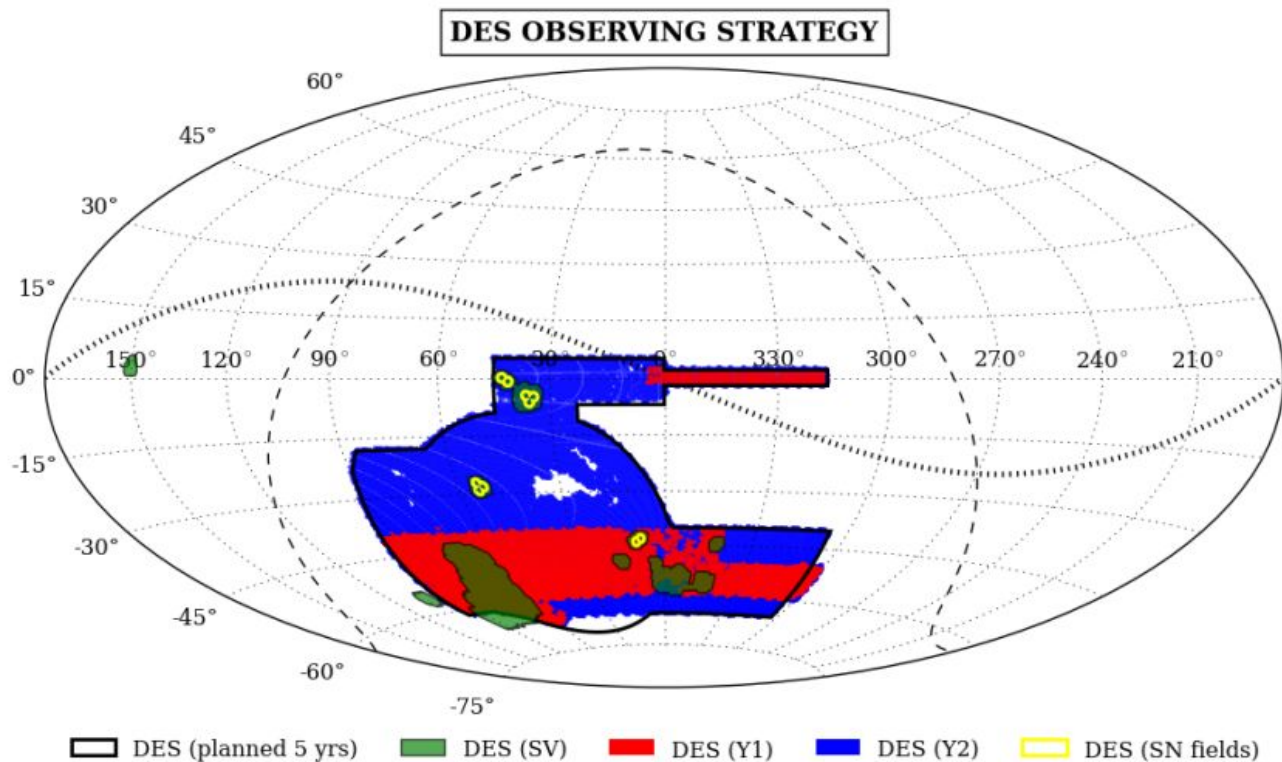
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NCSA-Illinois Survey Science Meeting
January 26, 2017

DES: The Goal

- Probe Dark Energy (expansion history of universe
 - Baryon Acoustic Oscillation, Clusters
 - depth, photo-z
 - Weak lensing
 - depth, photo-z, image quality
 - Supernovae
 - depth, calibration, cadence
- Large survey (5000 square degrees) with a largish telescope (CTIO 4m) at a good site (Cerro Tololo, Chile)
- SDSS and PS1 were large surveys with smaller telescopes at inferior sites

DES: The Plan

- 5 years
- 5000 Square degrees,
- grizY filters
- Area: SPT, Stripe 82, Convenient South
- Limiting mag roughly 24.5 in g, 23.5 in z
- Typical image quality 0.9"



Supernova/Variability Fields

- We observe Supernova fields
 - Seeing exceeds 1.3"
 - Every 7 days
- 24th magnitude
- Conveniently Located
 - C: CDF-South
 - E: ELAIS S1
 - S: SDSS Stripe 82
 - X: XMM-LSS fields
- 25-30 observations/year

Field	Deep or Shallow	Field Center (deg)	
		R.A.	Decl.
C1	shallow	54.2743	-27.1116
C2	shallow	54.2743	-29.0884
C3	deep	52.6484	-28.1000
E1	shallow	7.8744	-43.0096
E2	shallow	9.5000	-43.9980
S1	shallow	42.8200	0.0000
S2	shallow	41.1944	-0.9884
X1	shallow	34.4757	-4.9295
X2	shallow	35.6645	-6.4121
X3	deep	36.4500	-4.6000

Table 9

The location of each supernova field in right ascension and declination.

Reality

- Weather has been historically bad in years 1-3
 - Year 3 easily the worst ever
- Year 4 above average
- Seeing a little worse than expected (median more like 1")
- Still the greatest optical survey ever
- Ready for science!

Median 10σ Depth Comparison (add 0.6 for 5σ)

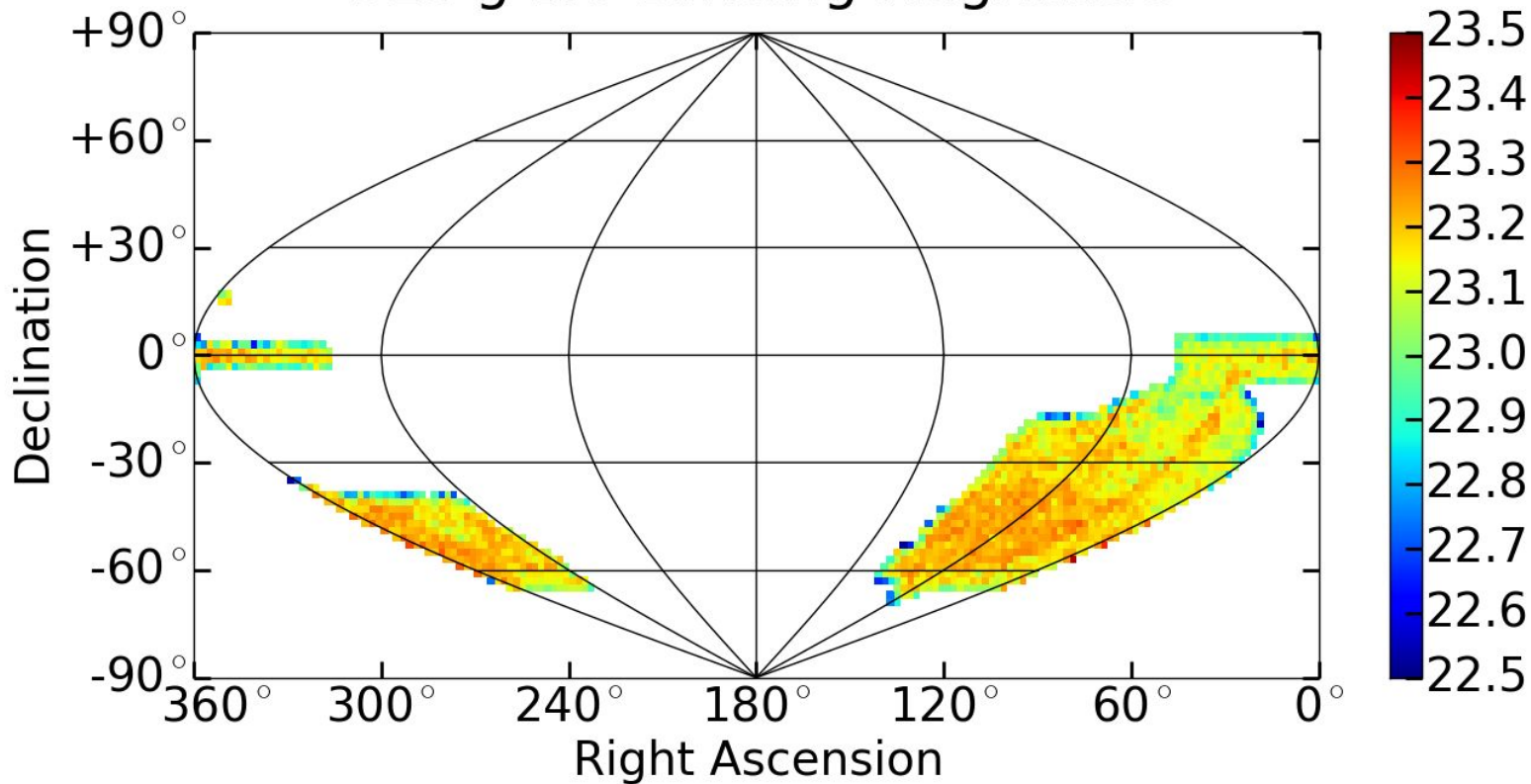
Band	u	g	r	i	z	Y
SDSS	21.2	21.7	21.8	21.2	19.9	
DES		23.2	23.0	22.4	21.8	20.4

DES typically 1.5 magnitudes deeper than SDSS

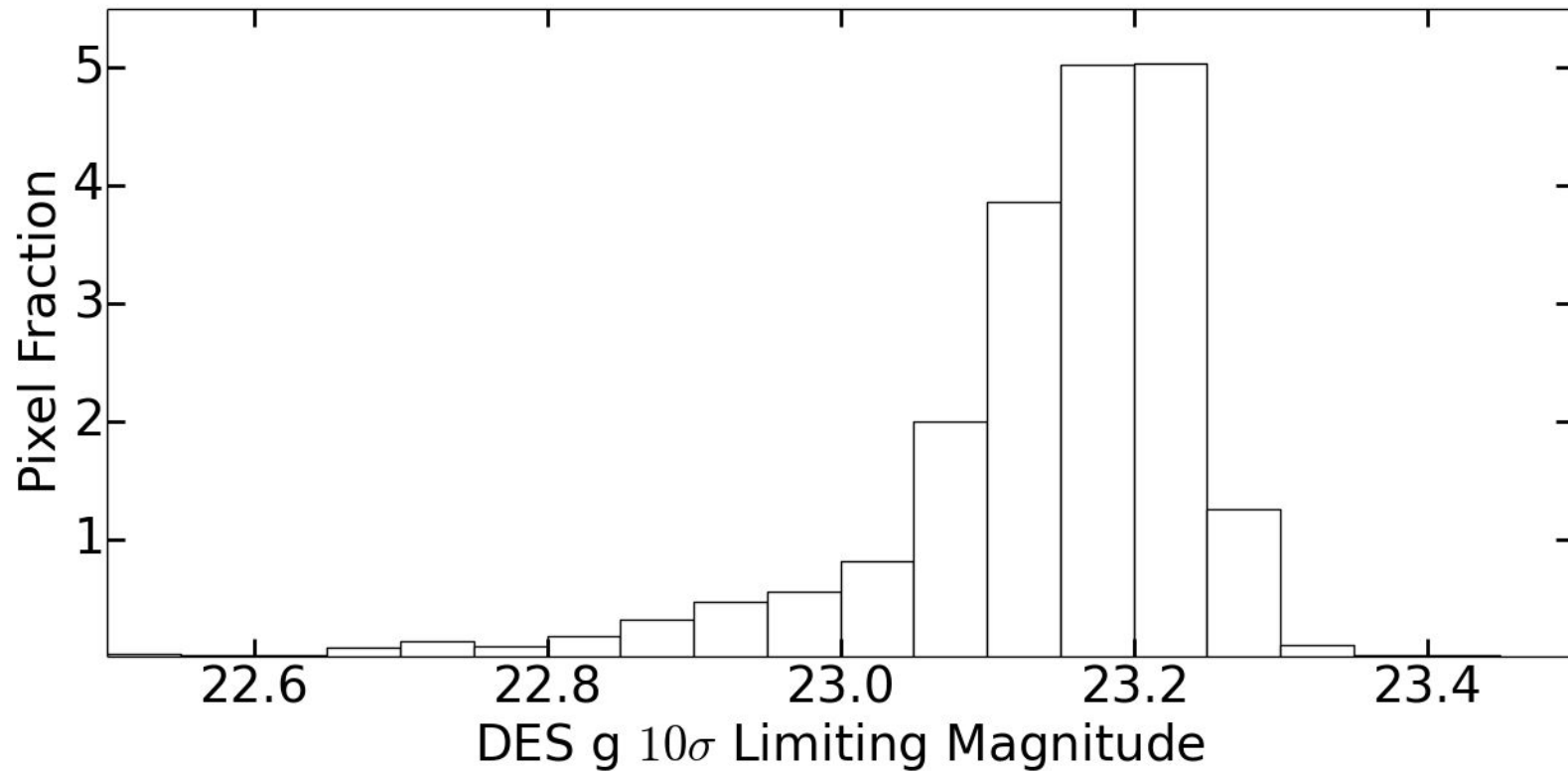
SDSS and PS1 are similar except in z (PS1 1 magnitude deeper)

DES Footprint and 10σ g Depth

DES g 10σ Limiting Magnitude



DES Footprint and 10σ g Depth



Available Data Products

- The Y3 internal release is basically DES
- Single epoch/coadd exposures
 - Via file system
 - Postage stamp server
- Single epoch/coadd catalogs
 - Oracle DB
- Supernova field light curves
 - I am just making fits files

