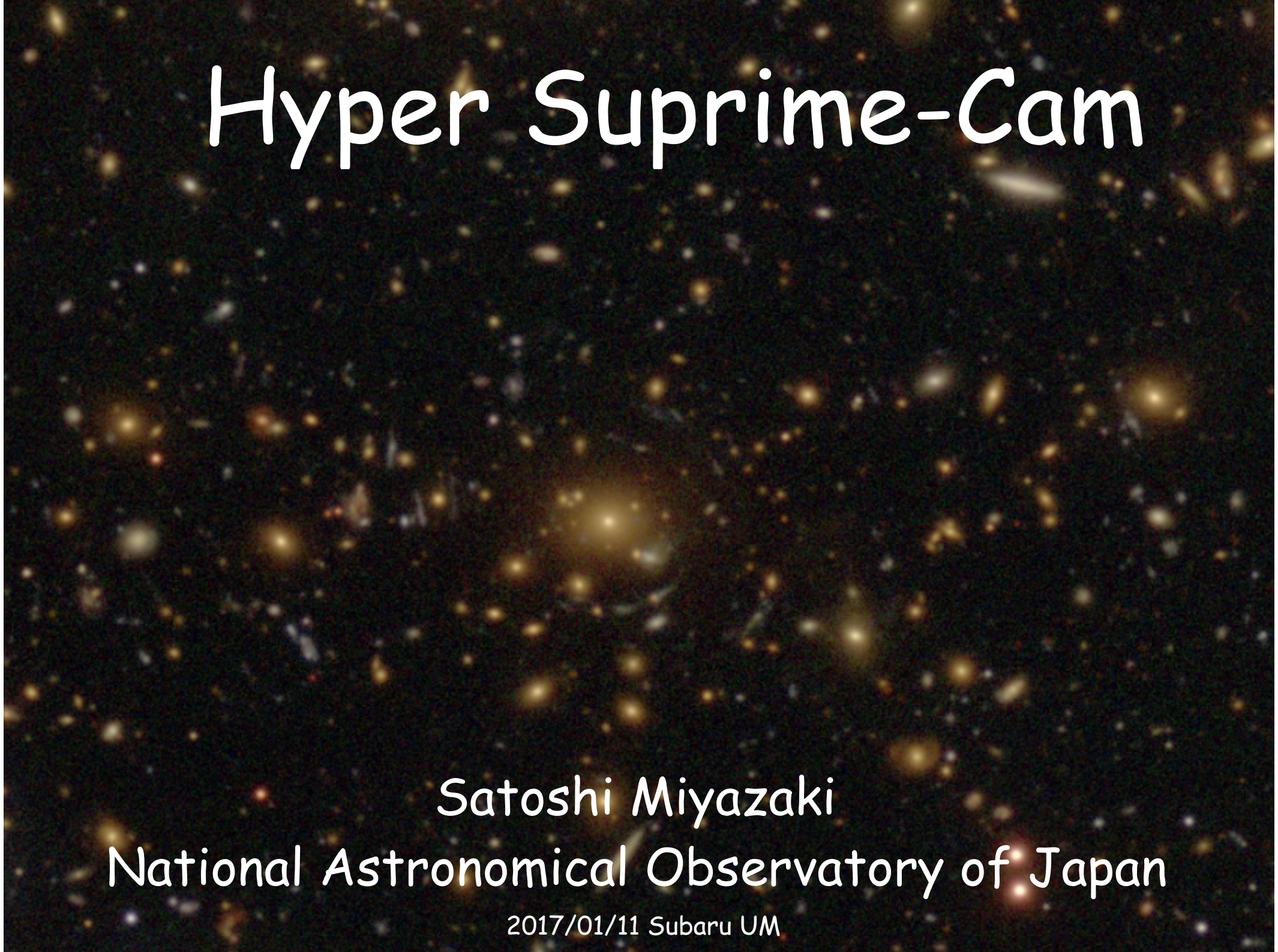
Hyper Suprime-Cam



Satoshi Miyazaki
National Astronomical Observatory of Japan

2017/01/11 Subaru UM

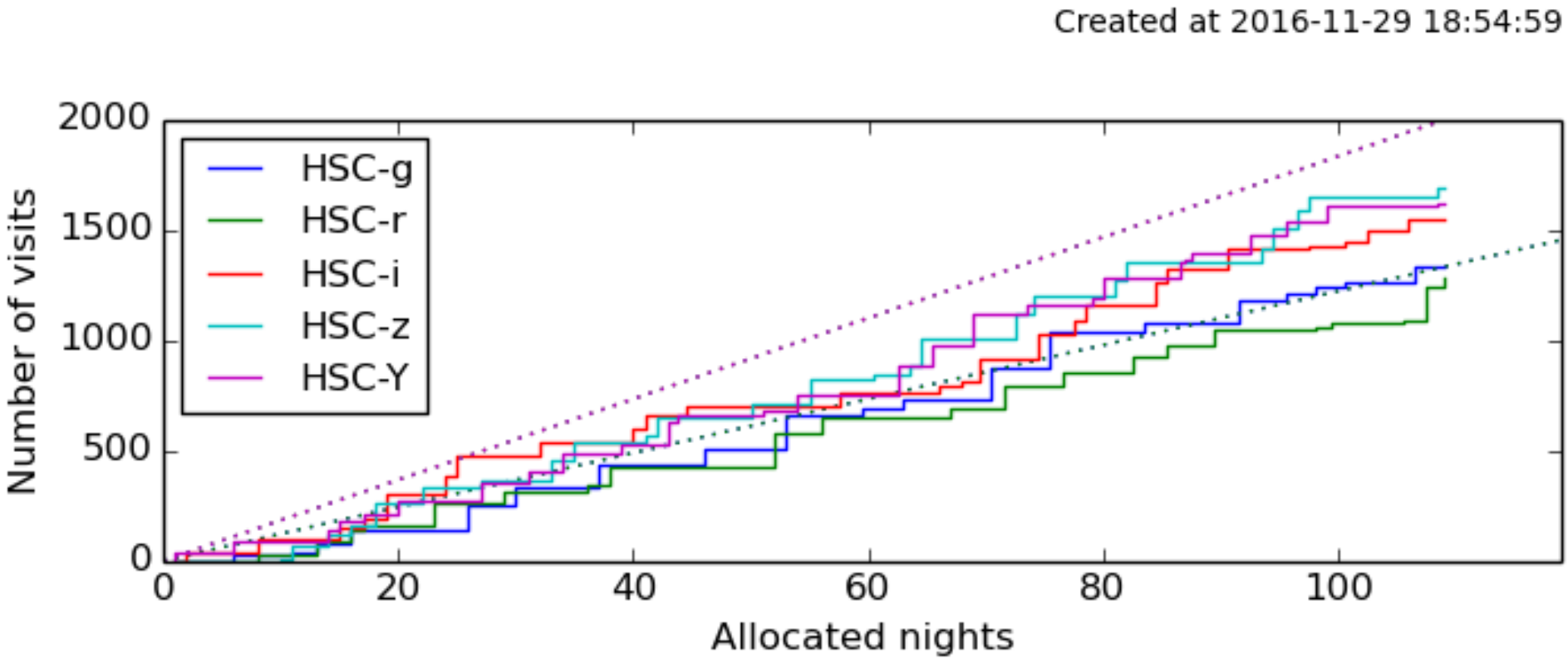
HSC Project Update

Bad News:

- Recent Filter Exchanger Failure
  - Maintenance next fall during M1 coating
    - Calibration System installation at the same time

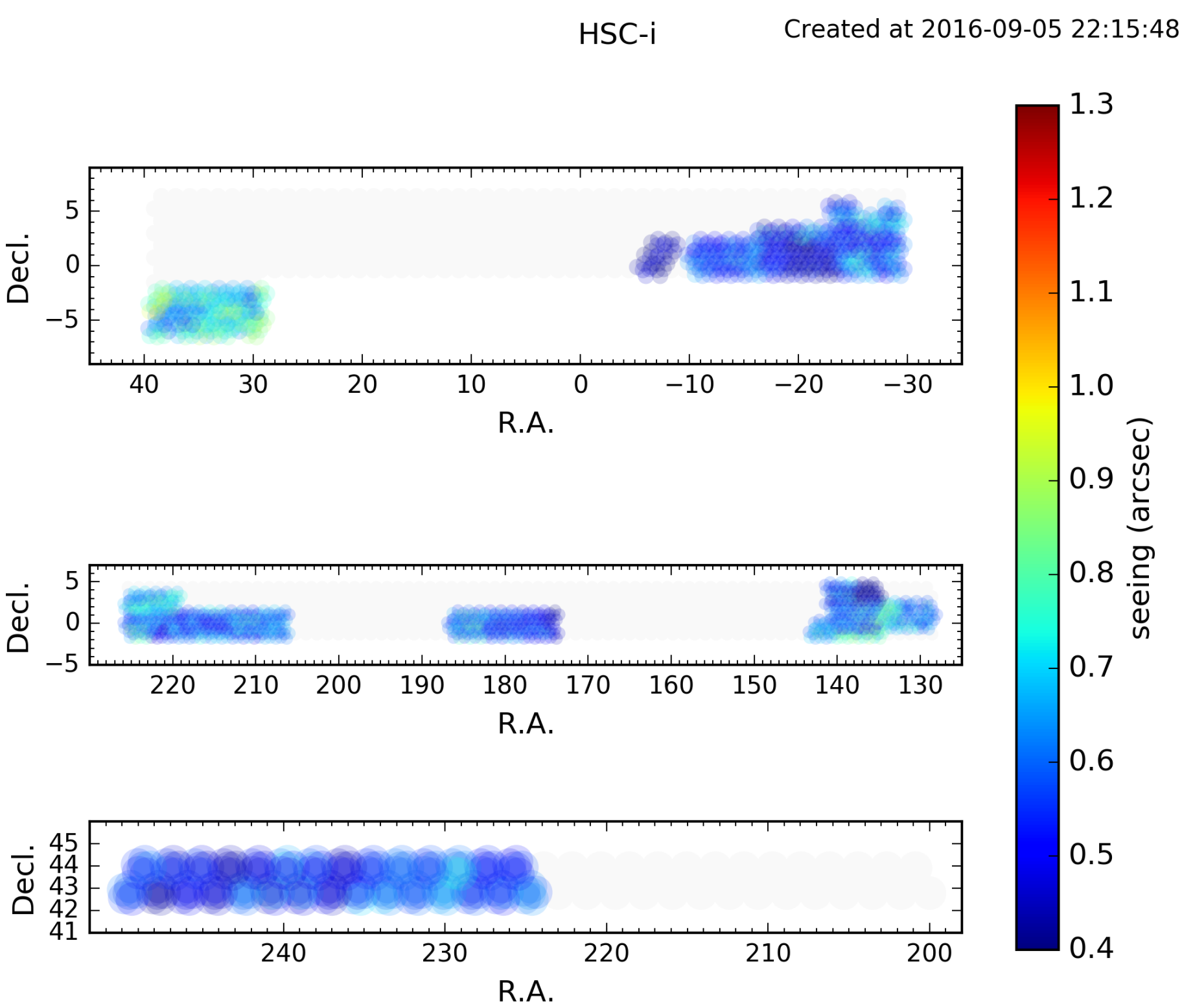
HSC Project Update

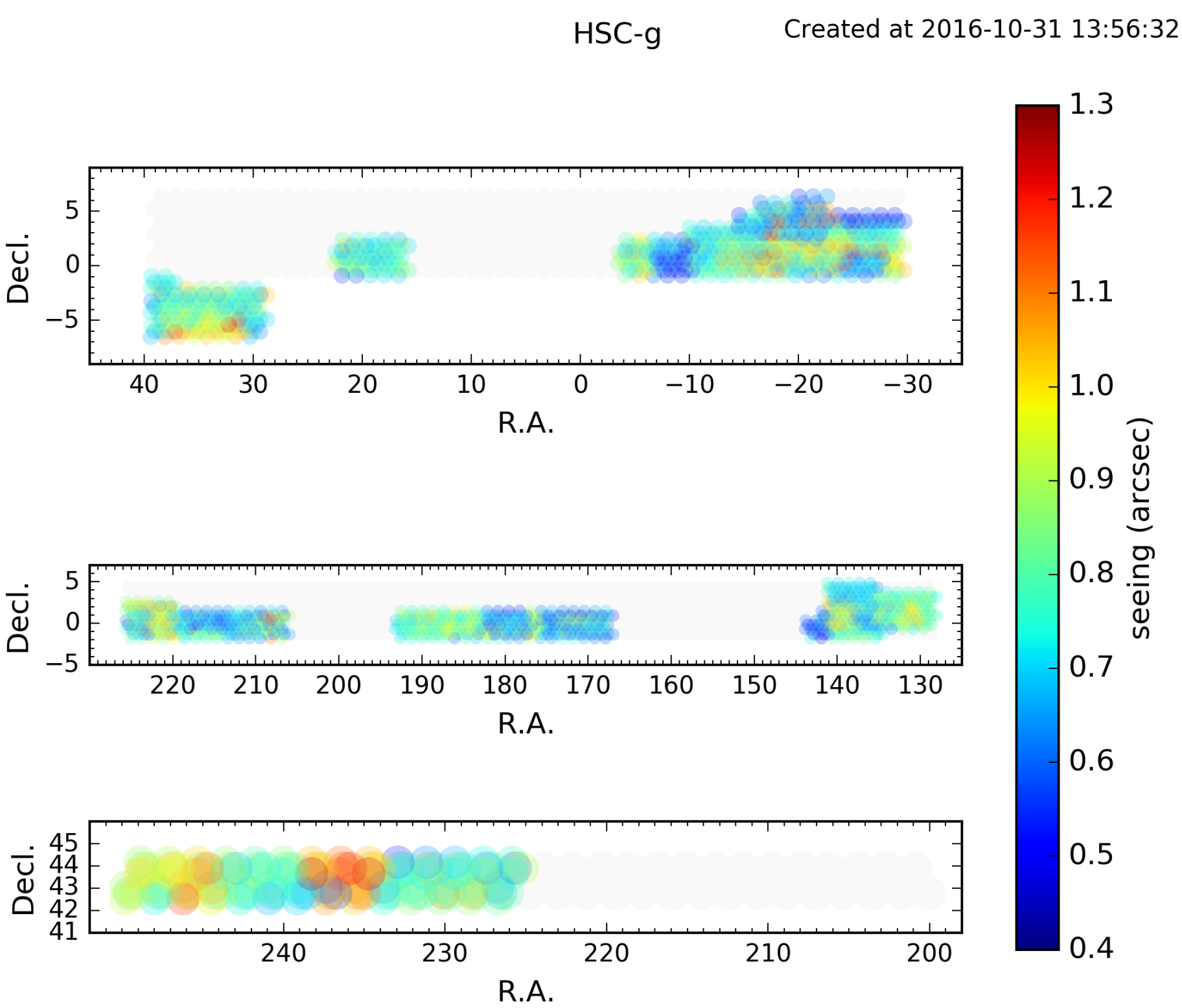
Good News:

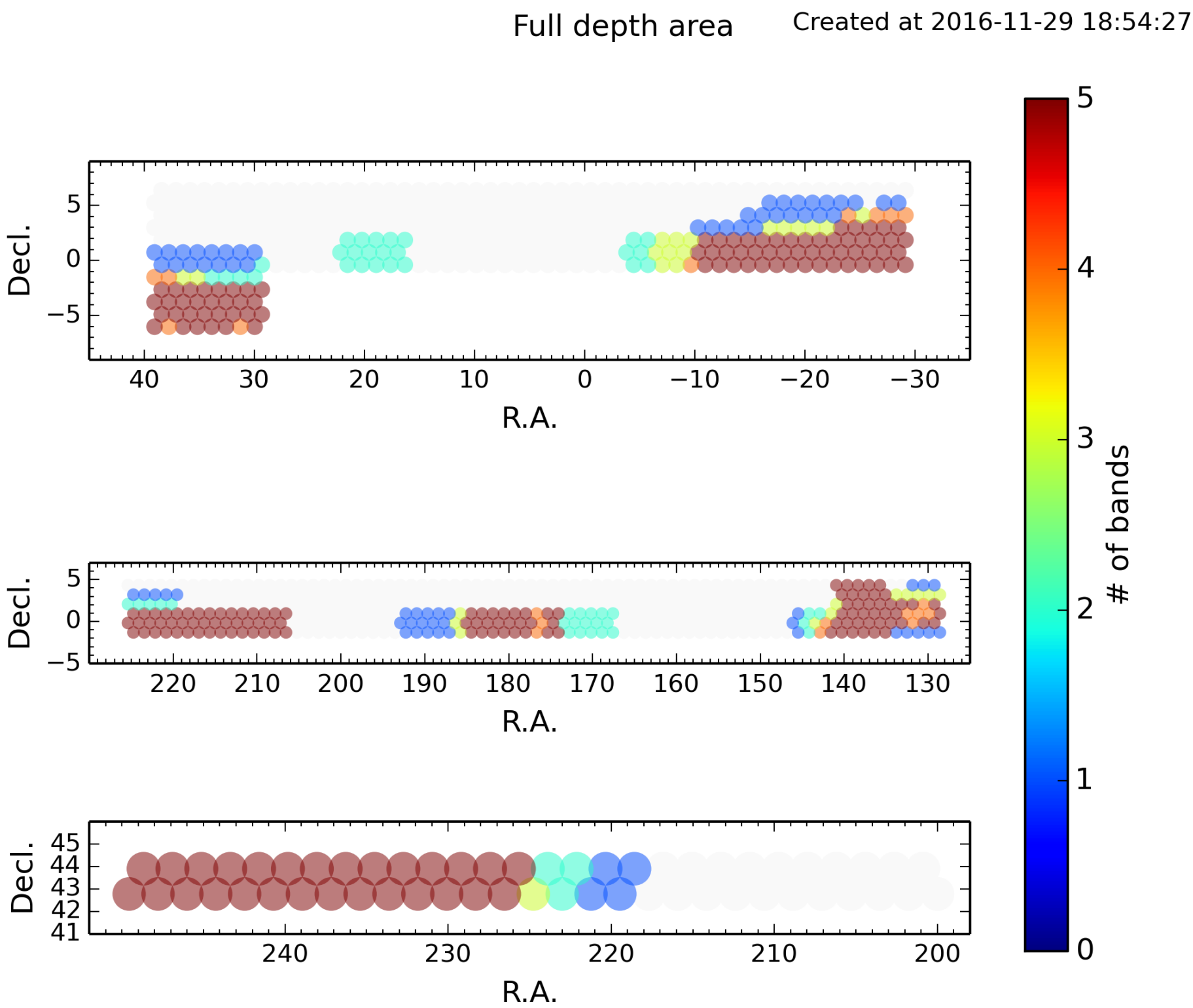


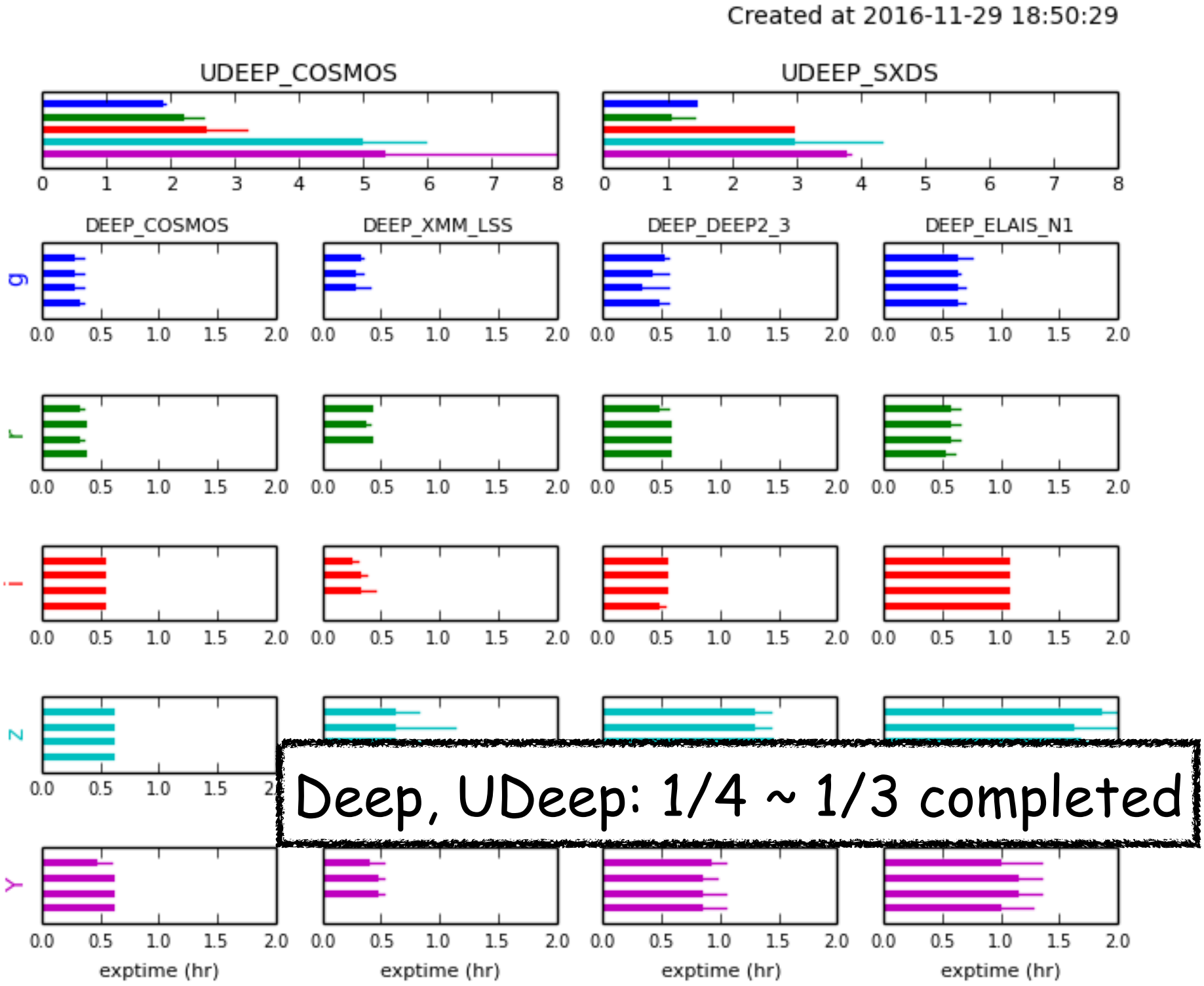
Dotted lines:
Expected observing speed to finish all
Wide field pointings within 300 nights

1400 deg^2 by 2019E ?


HSC-i
Created at 2016-09-05 22:15:48
Decl.
R.A.
seeing (arcsec)
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4


HSC-g
Created at 2016-10-31 13:56:32
Decl.
R.A.
seeing (arcsec)
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4


Full depth area
Created at 2016-11-29 18:54:27
Decl.
R.A.
# of bands


Created at 2016-11-29 18:50:29
UDEEP_COSMOS
UDEEP_SXDS
DEEP_COSMOS
DEEP_XMM_LSS
DEEP_DEEP2_3
DEEP_ELAIS_N1
g
r
i
z
Y
exptime (hr)
Deep, UDeep: 1/4 ~ 1/3 completed

Comparison

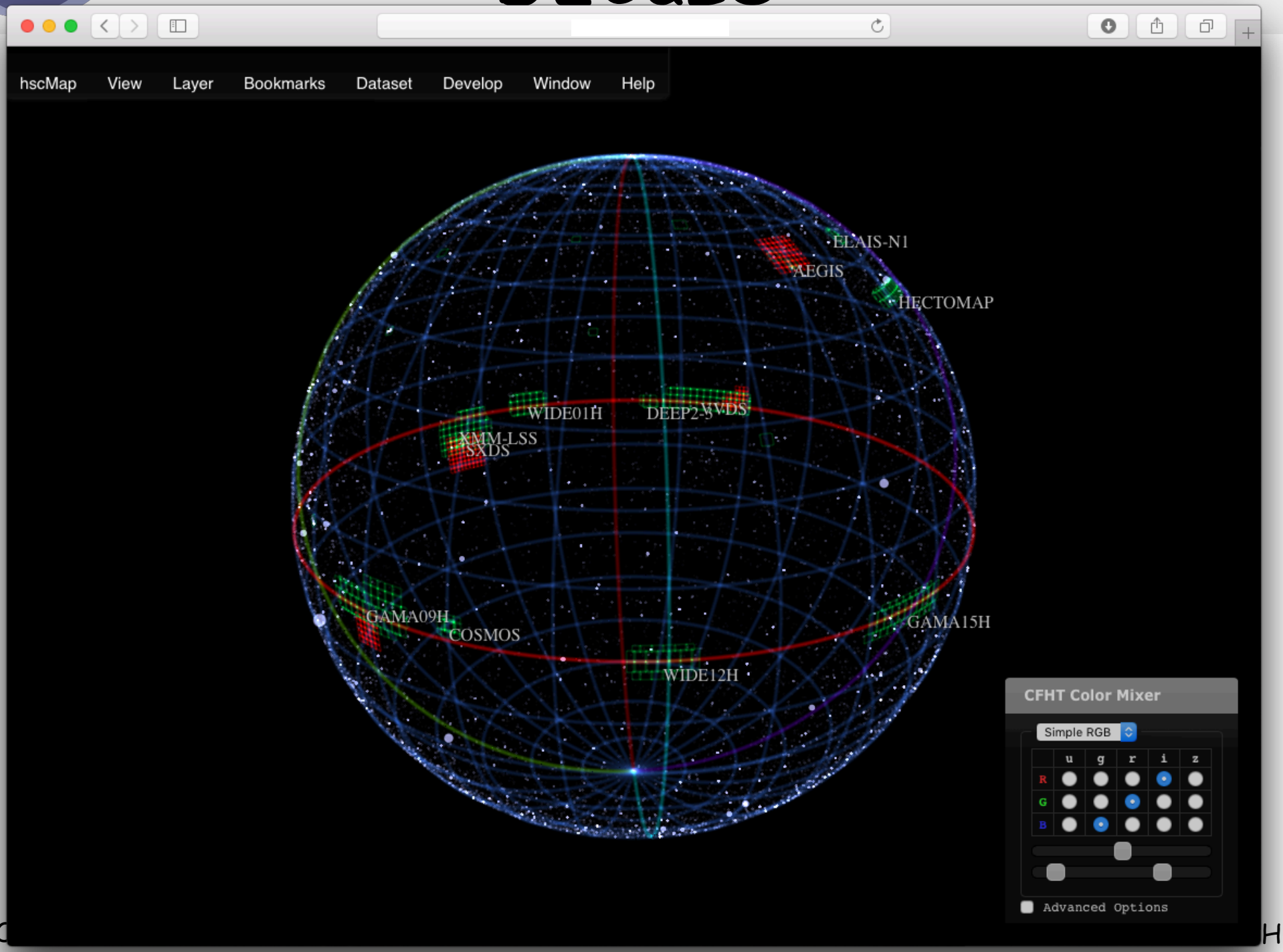
Survey	Type	Epoch	Bands	Lim. Mag.	deg^2	N/S	Seeing (arcsec)
DENIS	NIR	1997-03	iJK	$K \approx 12$	20000	South	3
SDSS	Visible	2000-05	*ugriz*	$r \approx 22.7$	14500	North	1.2
CFHT RCS2	Visible	2002-09	*grz*	$r \approx 24.8$	830	N+S	0.9
CFHTLS Wide	Visible	2003-12	*ugriz*	$r \approx 25$	157	North	0.9
2MASS	NIR	1997-01	*JHK*	$K \approx 14.3$	All sky	N+S	1.5
UKIDSS	NIR	2005-12	*YJHK*	$K \approx 18.4$	7500	North	0.9
WISE	Mid-IR	2010-12	$3.4-22\mu m$	$W1 \approx 17$	All Sky	N+S	6
Pan-Starrs 3π	Visible	2010-14	*grizy*	$r \approx 22.8$	30000	N+S	1.1
SkyMapper	Visible	2009-	*uvgriz*	$r \approx 22.0$	20000	South	2.5
VST ATLAS	Visible	2011-	*ugriz*	$r \approx 22.7$	4700	South	0.9
VST KiDS	Visible	2011-	*ugri*	$r \approx 24.6$	1500	South	0.7
VISTA VHS	NIR	2010-	YJK_s	$K_s \approx 18.4$	18000	South	0.7
VIKING	NIR	2010-	$zYJHK_s$	$K_s \approx 19.5$	1500	South	0.9
DES	Visible	2013-	*grizy*	$r \approx 25.0$	5000	South	0.9
DECaLS	Visible	2015-	*grz*	$r \approx 23.6$	9000	North	1.2
HSC Wide	Visible	2015-	*grizy*	$r \approx 26.0$	1400	South	0.7

Table 1 Recent Optical and NIR extragalactic imaging sky surveys with an area of > 100deg^2. Magnitude limits are quoted in r_{AB} and K_{Vega}.

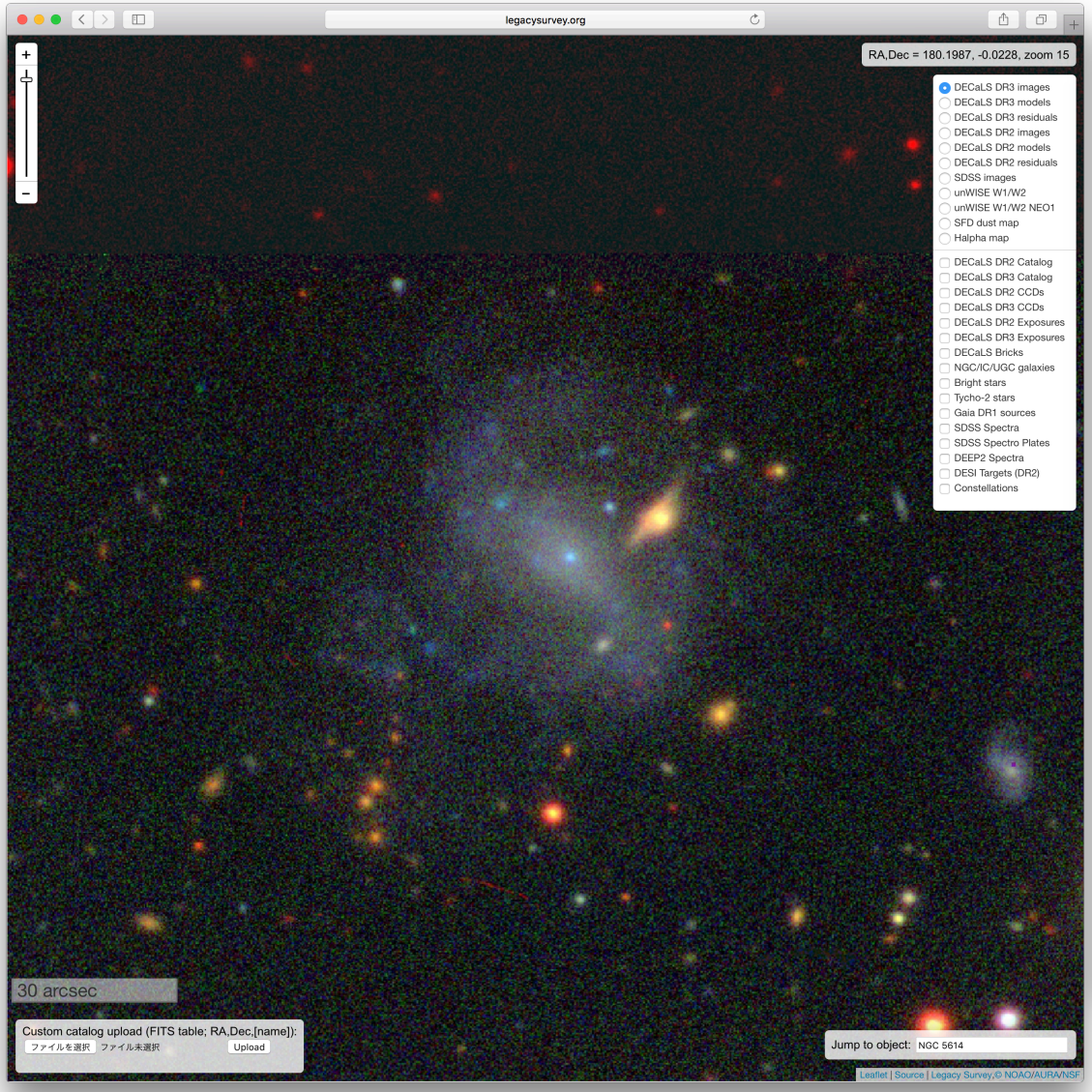
Comparison

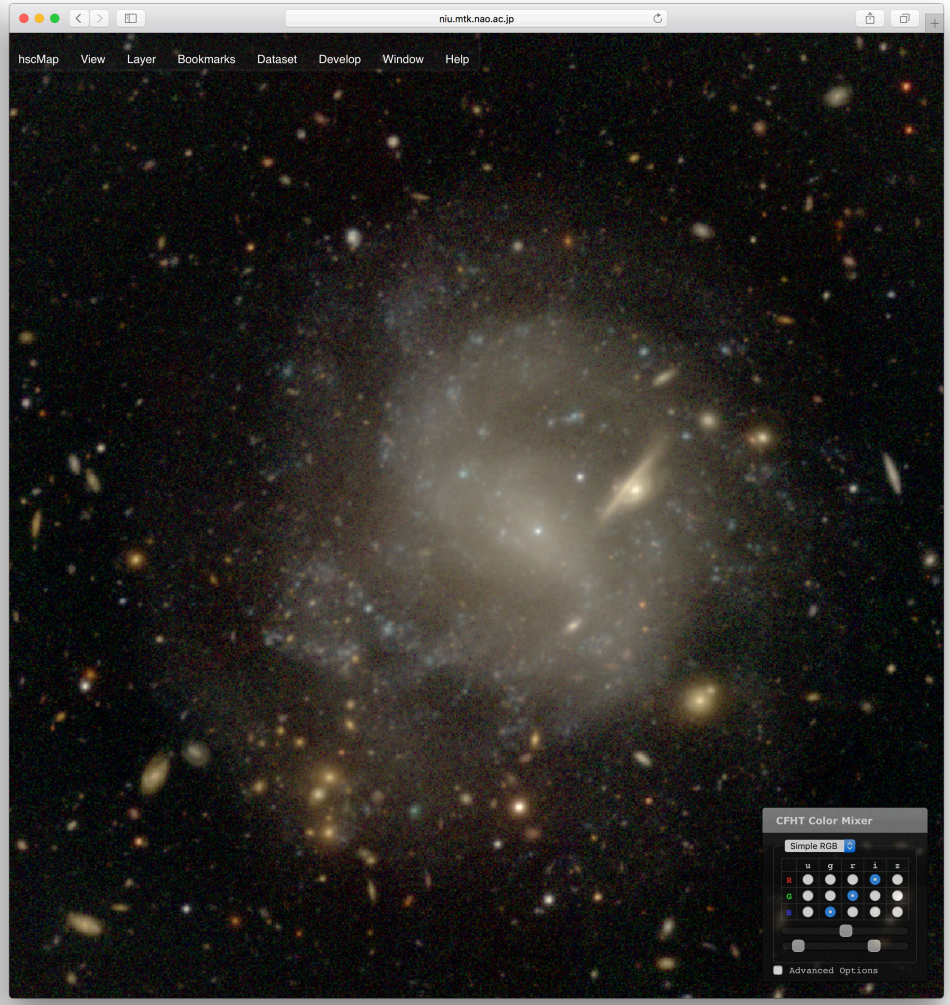
DES	Visible	2013-	*grizy*	$r \approx 25.0$	5000	South	0.9
DECaLS	Visible	2015-	*grz*	$r \approx 23.6$	9000	North	1.2
HSC Wide	Visible	~~2015-~~ 2014-	*grizy*	$r \approx 26.0$	1400	~~South~~ N/S	0.7

DECaLS


hscMap
View
Layer
Bookmarks
Dataset
Develop
Window
Help
ELAIS-N1
AEGIS
HECTOMAP
WIDE01H
DEEP2-3
VVDS
XMM-LSS
SXDS
GAMA09H
COSMOS
WIDE12H
GAMA15H
CFHT Color Mixer
Simple RGB
u
g
r
i
z
R
G
B
Advanced Options

Comparison

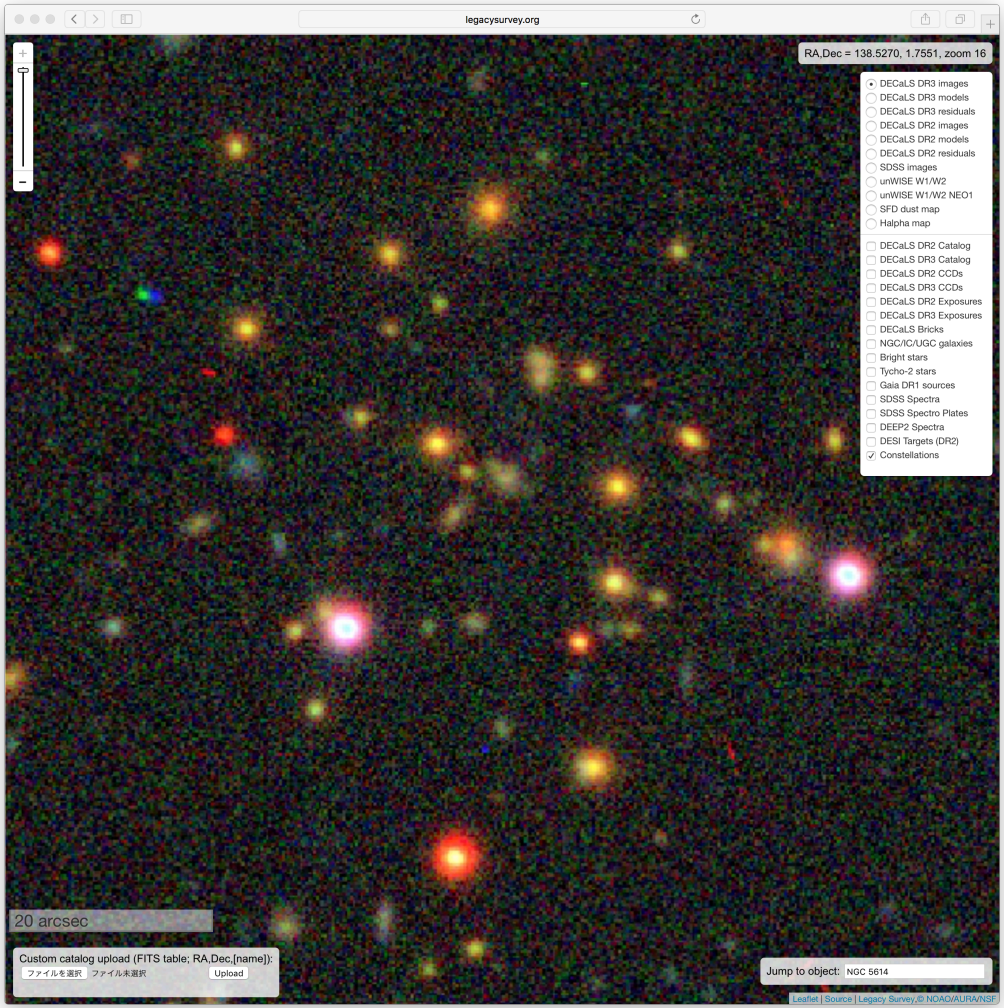


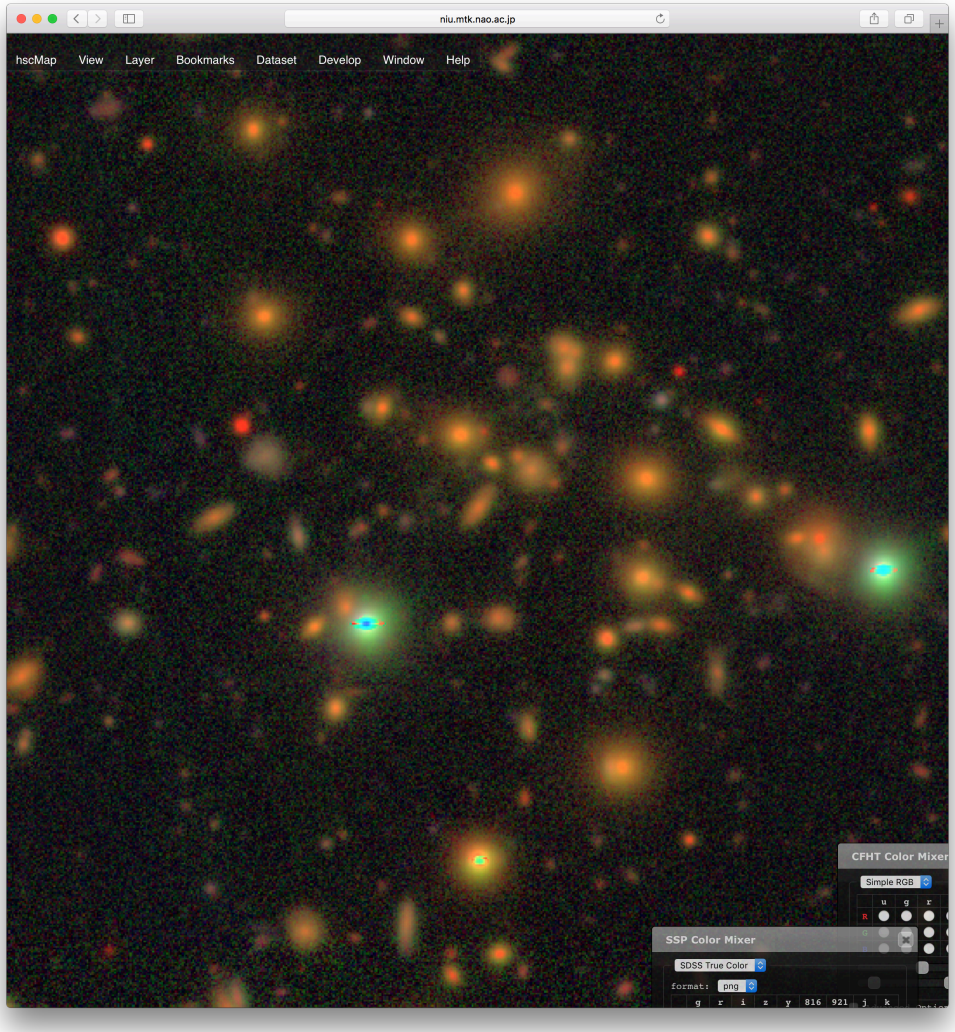


NAOJ

HSC

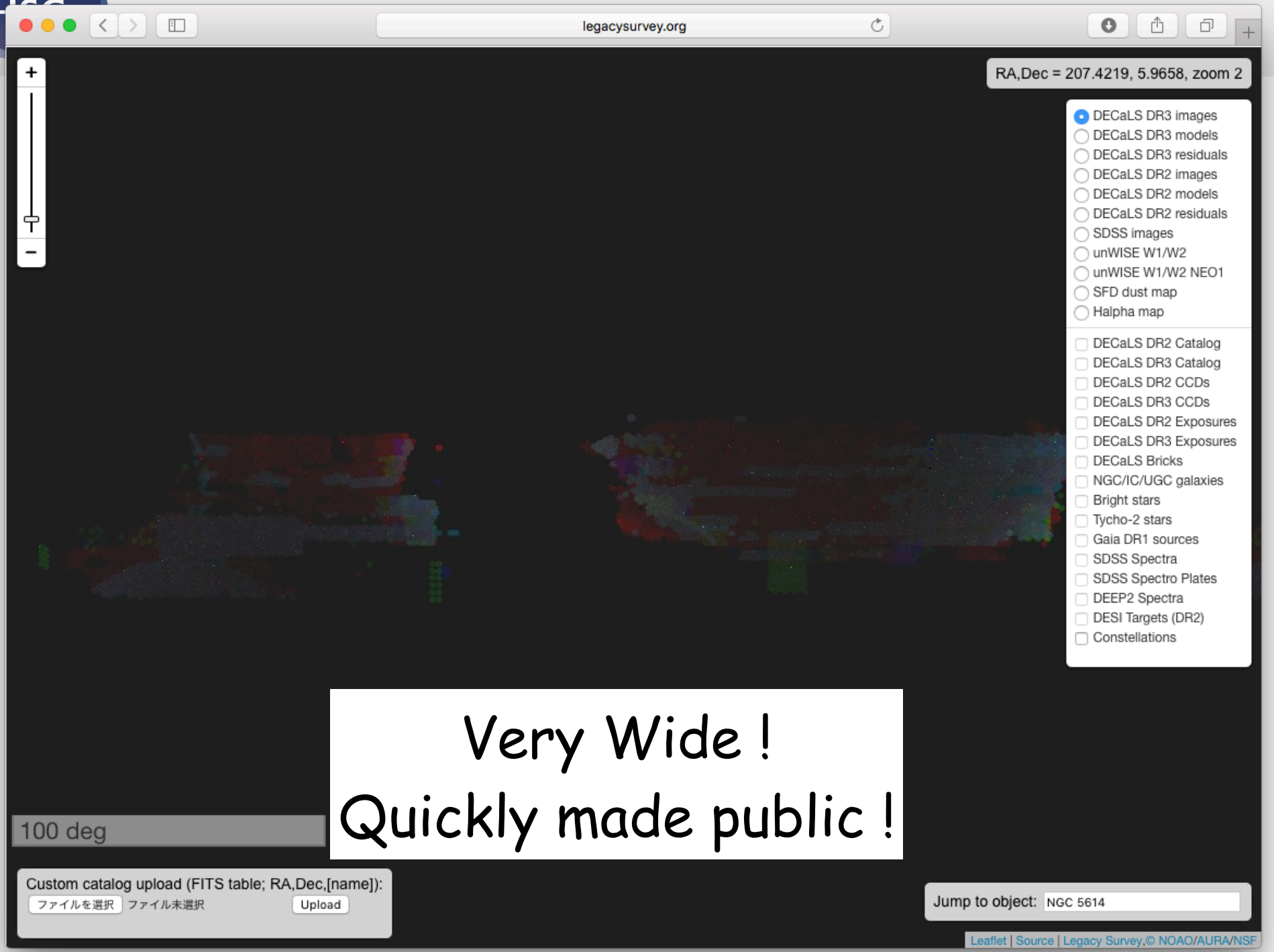
Comparison





NAOJ

HSC


legacysurvey.org
RA,Dec = 207.4219, 5.9658, zoom 2
DECaLS DR3 images
DECaLS DR3 models
DECaLS DR3 residuals
DECaLS DR2 images
DECaLS DR2 models
DECaLS DR2 residuals
SDSS images
unWISE W1/W2
unWISE W1/W2 NEO1
SFD dust map
Halpha map
DECaLS DR2 Catalog
DECaLS DR3 Catalog
DECaLS DR2 CCDs
DECaLS DR3 CCDs
DECaLS DR2 Exposures
DECaLS DR3 Exposures
DECaLS Bricks
NGC/IC/UGC galaxies
Bright stars
Tycho-2 stars
Gaia DR1 sources
SDSS Spectra
SDSS Spectro Plates
DEEP2 Spectra
DESI Targets (DR2)
Constellations
Very Wide !
Quickly made public !
100 deg
Custom catalog upload (FITS table; RA,Dec,[name]):
ファイルを選択
ファイル未選択
Upload
Jump to object:
NGC 5614
Leaflet | Source | Legacy Survey,© NOAO/AURA/NSF

Survey Speed

Camera	CCD	AOmega	in operatio
DECam	BI-FD	30.0	2012
HSC	BI-FD	91.3	2012
LSST	BI-DD	347.8	(2020?)

Paper Due in 1.5 Months !

Technical papers:
Camera: Miyazaki
Survey Design: Takada and Strauss
Data Release: Tanaka
Shear Catalog: Mandelbaum
Pipeline: Bosch
Photo-z: Tanaka
Huang: Synpipe 1
Murata: Synpipe 2

Low-z Galaxy working group:
Andy Goulding: Morphology of AGN hosts
Johnny Greco: UDGs in groups (tentative)
Masao Hayashi : NB-selected emission-line objects
Jean Coupon : magnification bias up to z~2
Atsushi Nishizawa: red fraction of culster galaxies
Hung-Yu Jian : galaxy population in clusters

High-z galaxy working group:
- Yuichi Harikane, "Galaxy-Dark Matter Halo Connection Revealed by the Subaru Hyper Suprime-Cam Survey"
- Yoshiaki Ono, "The Bright End of the Galaxy Luminosity Functions at z=4-7 based on the Subaru Hyper Suprime-Cam Survey"
- Akira Konno, "First Results of Subaru/Hyper Suprime-Cam 24deg^2 Narrowband Survey: Lya Luminosity Functions at z=5.7 and 6.6"
- Hisakazu Uchiyama, "Correlation between protoclusters and quasars at z~4"
- Jun Toshikawa, "Systematic Search of Protoclusters at z~4 in the Subaru Hyper Suprime-Cam Survey"
- Takatoshi Shibuya, "Subaru Hyper Suprime-Cam Narrow-Band Survey for Lya Emitters: Selection and Lya Properties for Lya Emitting Objects at z~6-7"
- Takatoshi Shibuya, "Optical and NIR Spectroscopic Observations for z~6-7 Very Luminous Lya Emitters Identified in the Subaru Hyper Suprime-Cam Survey"
- Masami Ouchi, "Clustering of Lya Emitters at z=~6-7 Revealed by Early Subaru Hyper Suprime-Cam Survey"
- Akio K. Inoue, "A simulation of Ly-alpha emitters in the reionization epoch for the Subaru Strategic Program with Hyper Suprime-Cam"

Strong lensing Working Group:
* SUGOHI I: Photometric and Spectroscopic Search for Strong Lenses in the HSC Survey, A. Sonnenfeld et al.
* Hunting with CHITAH: Strong-lens candidates from the first-year data of the Hyper Suprime-Cam survey (tentative) J. Chan et al.
* Joint SL and WL analysis of HSC group/cluster lenses (tentative) A. Jaelani et al.
* Mass distribution of group-scale lenses from HSC (tentative) A. More et al.

AGN working group:
- He, Akiyama et al: Clustering analysis of z~4 quasars
- Matsuoka et al: Spectroscopic identification of z~6-7 quasars (SHELLQs Paper II)
- Akiyama, He, Ikeda et al: Luminosity function of z~4 quasars
- Shirasaki, Strauss: The environment of quasars at intermediate redshifts
- Terashima: X-ray bright optically faint sources
- Onoue: Galaxy environment around multiple QSO system

Cluster working group:
** Hironao Miyatake: ACTpol xc HSC
** Elinor Medezinski: Planck xc HSC
** Miyaoka-san and Nobu: x-ray properties of selected HSC clusters
** Masamune Oguri: camira cluster sample
** Hung-Yu: on quenching of galaxies in clusters
** Yen-Ting Lin: evolution of BCG, stellar mass function, and radio galaxies in camira
** Atsushi Nishizawa: red fraction evolution
** Surhud More: splashback radius -- although this may be merged with Atsushi's paper above, still TBD

Galactic Archeology Working Group:
Halo Structure using BHB stars

Weak lensing working group:
Mandelbaum: Shear catalog
Miyatake: Cosmological constraints by CMASS/BOSS galaxy clustering and the HSC-BOSS galaxy-galaxy weak lensing measurements
Miyatake: Weak lensing measurement of ACTPol clusters
Medezinski: Weak lensing measurement of Planck clusters
Medezinski: Source selection for cluster weak lensing
Leauthaud: Comparing light profiles of massive galaxies and WL measurements with hydro sims
Speagle: Application of FRANKENZ (Josh's photoz code) to HSC and validation using g-g lensing
Mandelbaum: GREAT3-like simulations paper
Miyazaki: shear selected clusters
Oguri: Wide area mass maps in 2D and 3D
Oguri: Mass-richness relation of CAMIRA clusters

Solar System working group:
Yoshida & Terai: Jupiter trojans (to ApJ?)
Terai & Yoshida: Hilda group (to ApJ?)
Terai: Colors of known TNO's

PASJ Special Issue

Public Data Release

February 2017

~ 100 deg^2 Full depth