VST ATLAS

Mike Irwin, Bob Mann, Nigel Metcalfe, Tom Shanks et al

VST ATLAS Core Team

- CASU (Mike Irwin et al, Cambridge) does the basic reduction using the VST Data Flow pipeline
- Steve Maddox (Nottingham) leads the overall global calibration process
- Nigel Metcalfe + Peter Draper (Durham) – OB submission + QC on the ATLAS products
- WFAU (Bob Mann et al, Edinburgh) to provide archiving facilities, additional to the ESO archive

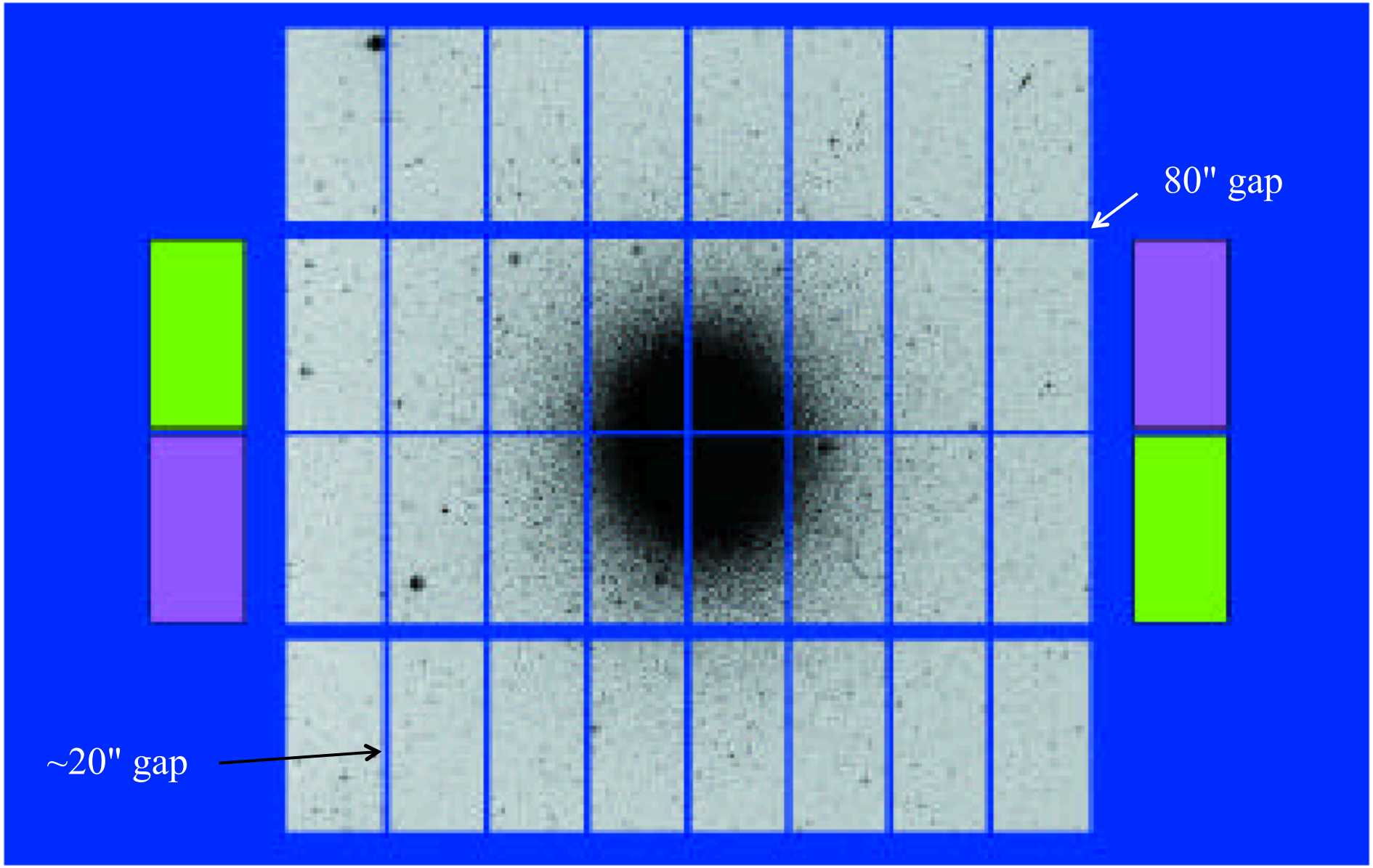
ATLAS Science Summary

- VST ATLAS – "Southern Sloan" – SDSS depth + ~1."2 resolution in ugriz over ~4500deg^2
- Cosmology Package to rival WFIRST!
  - BAO at z~1.5 via ATLAS+2dF UVX QSO clustering
  - BAO at z~3 via ATLAS+2dF QSO Lyman α forest
  - Gravitational Growth rate at z=1-3 via QSOs
  - ISW via LRGs
  - QSO Lensing vs galaxy ugrizYJHK photo-z
- Other Science
  - Stellar Streams + Galactic Archaeology
  - Z~7 QSOs via ATLAS+VHS z dropouts
  - Beyond the Great Attractor + Fornax etc

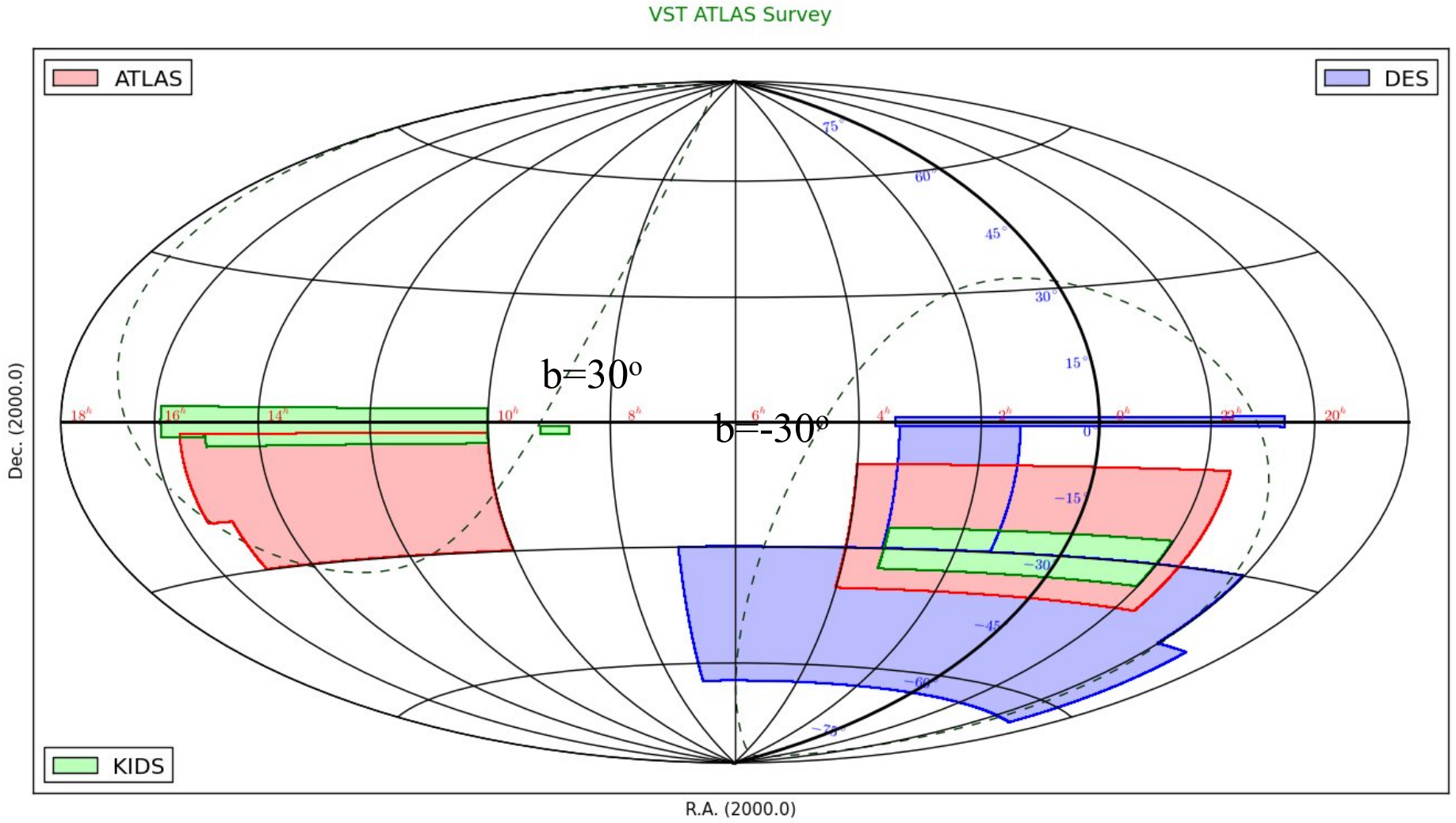
VST ATLAS Survey

- VST ATLAS (+VHS) → Southern SDSS in ugriz(+YJHK)!
- Exposures u: 2x60s, g: 2x50s, riz: 2x45s – one filter per hourly concatenations – ugr (dark), iz (gray.bright)
- 2-tile dither – 84" in Dec, 24" in RA
- Offsets 58' in RA and Dec – 2' overlap
- 1"-1."4 seeing – better than SDSS median 1."4 –complements KIDS
- No guide star needed so no overhead
- ~45 nights per year for 2 years – accelerated!
- Footprint ~2500deg^2 in SGC and ~2000deg^2 in NGC

OmegaCAM



VST ATLAS Survey Area

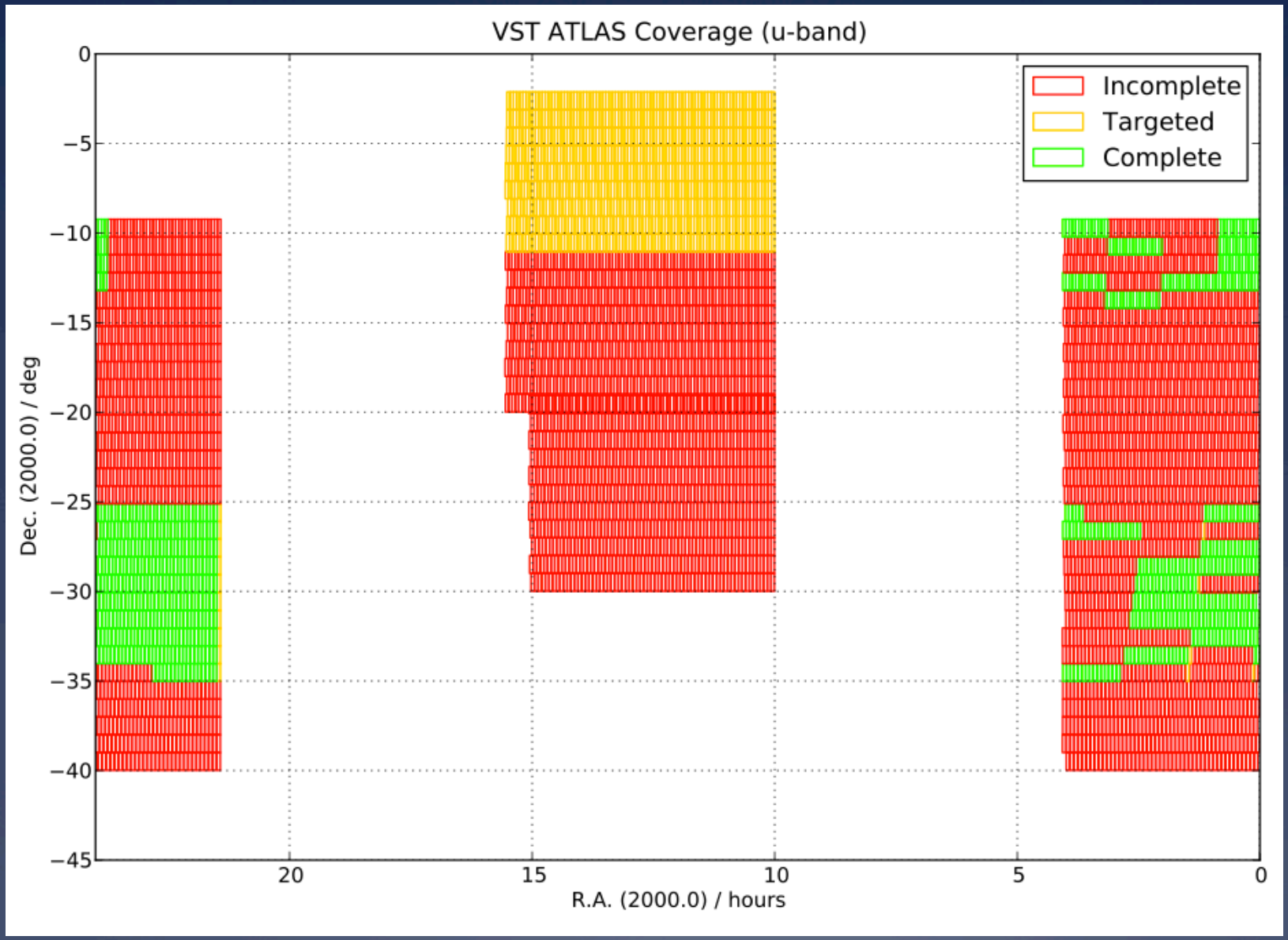


VST ATLAS Status

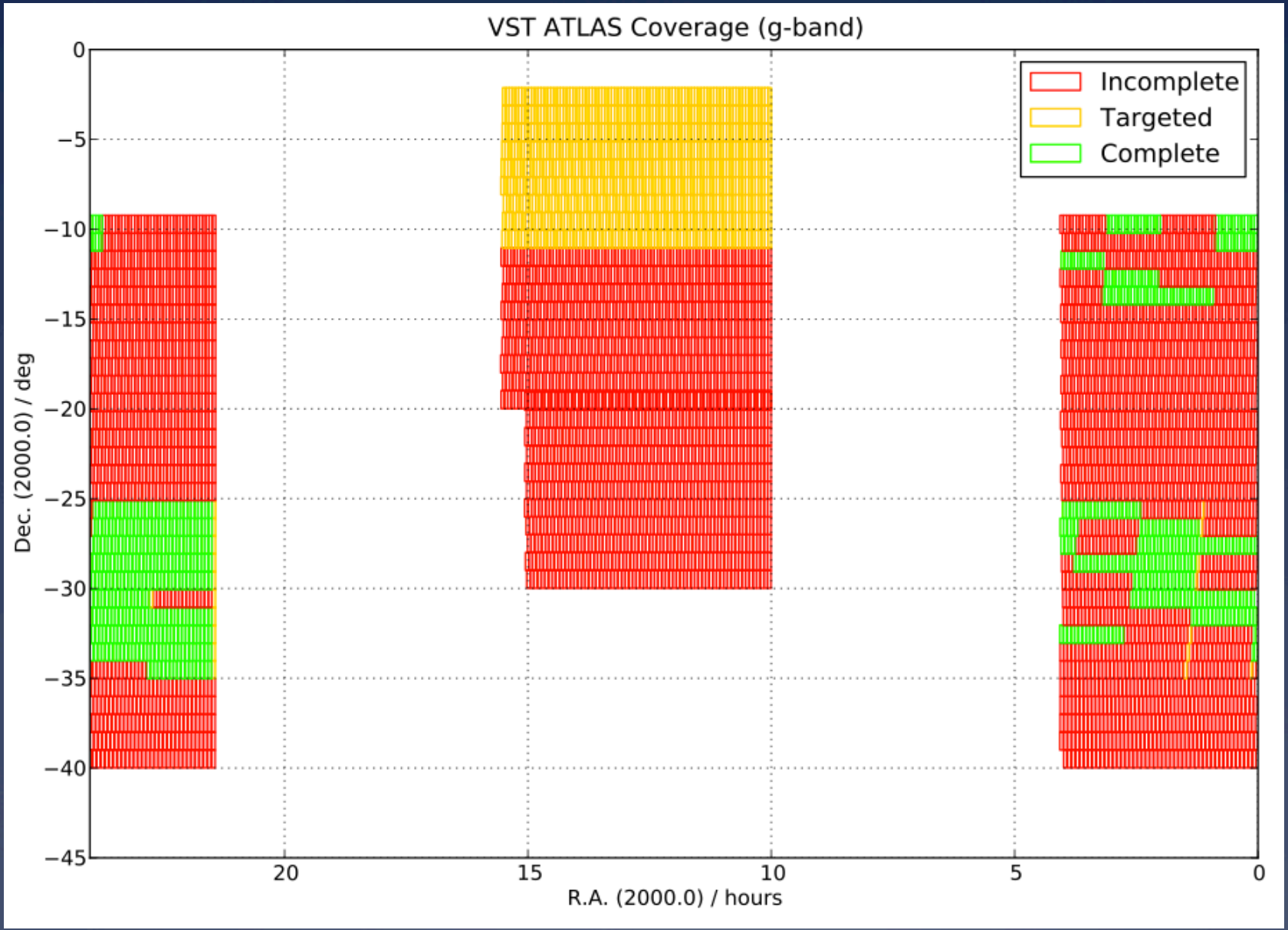
	21h30			02h30	
15	u,g,r	g,i			-25
14	i,z	u,g,r			
13	u,i,z	u,g,r	u,r,i		
12	u,i,z	u,g	u,r,i,z	u,g,r,i,z	
11	u,g,r	u,g,r	i,z	u,g,r,i,z	-30
10	u,i,z	u,g,i,z	u,g,r,i,,z	u,g,r,i,z	
9	u,g,r,i,z	u,g,i,z	u,g,r,i,z		
8	u,g,r	u,g,i,z	u		
7	u,g,r,i,z	g,i			
6	u,g,r	i	i		-35
	1	18	35	52	

Equivalent of ~400deg^2 ugriz observed in KIDS-S area since mid-August

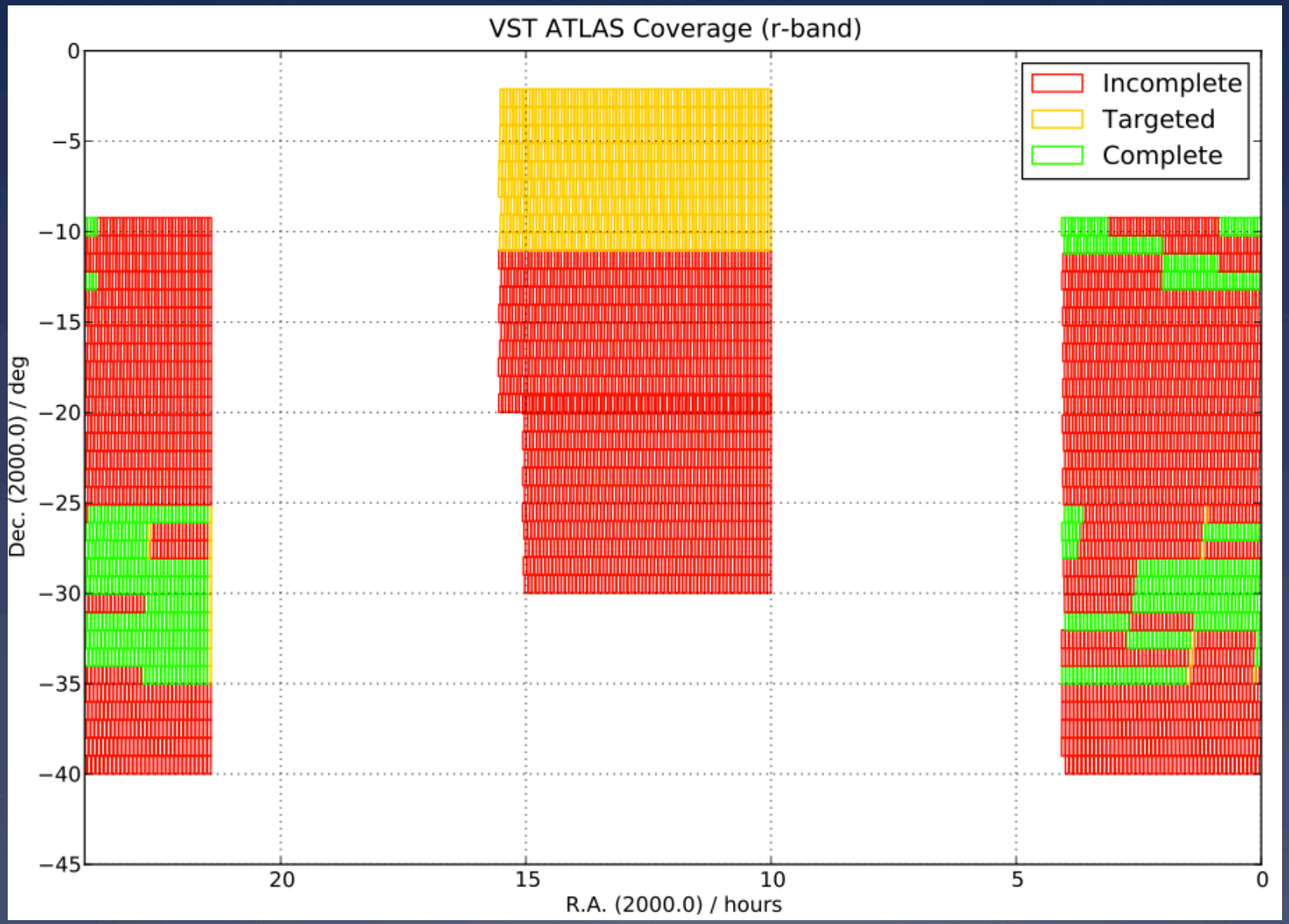
VST ATLAS Status



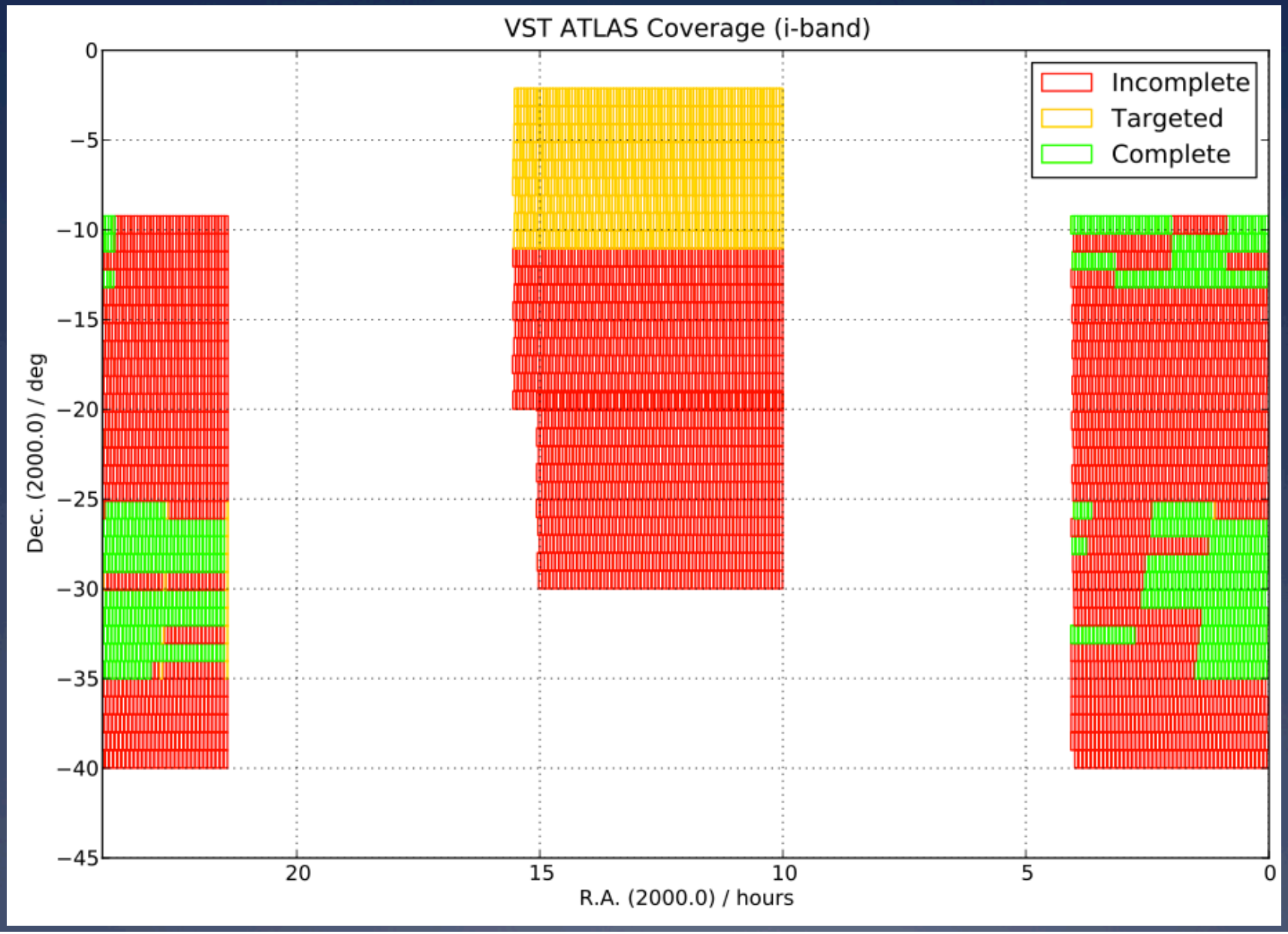
VST ATLAS Status



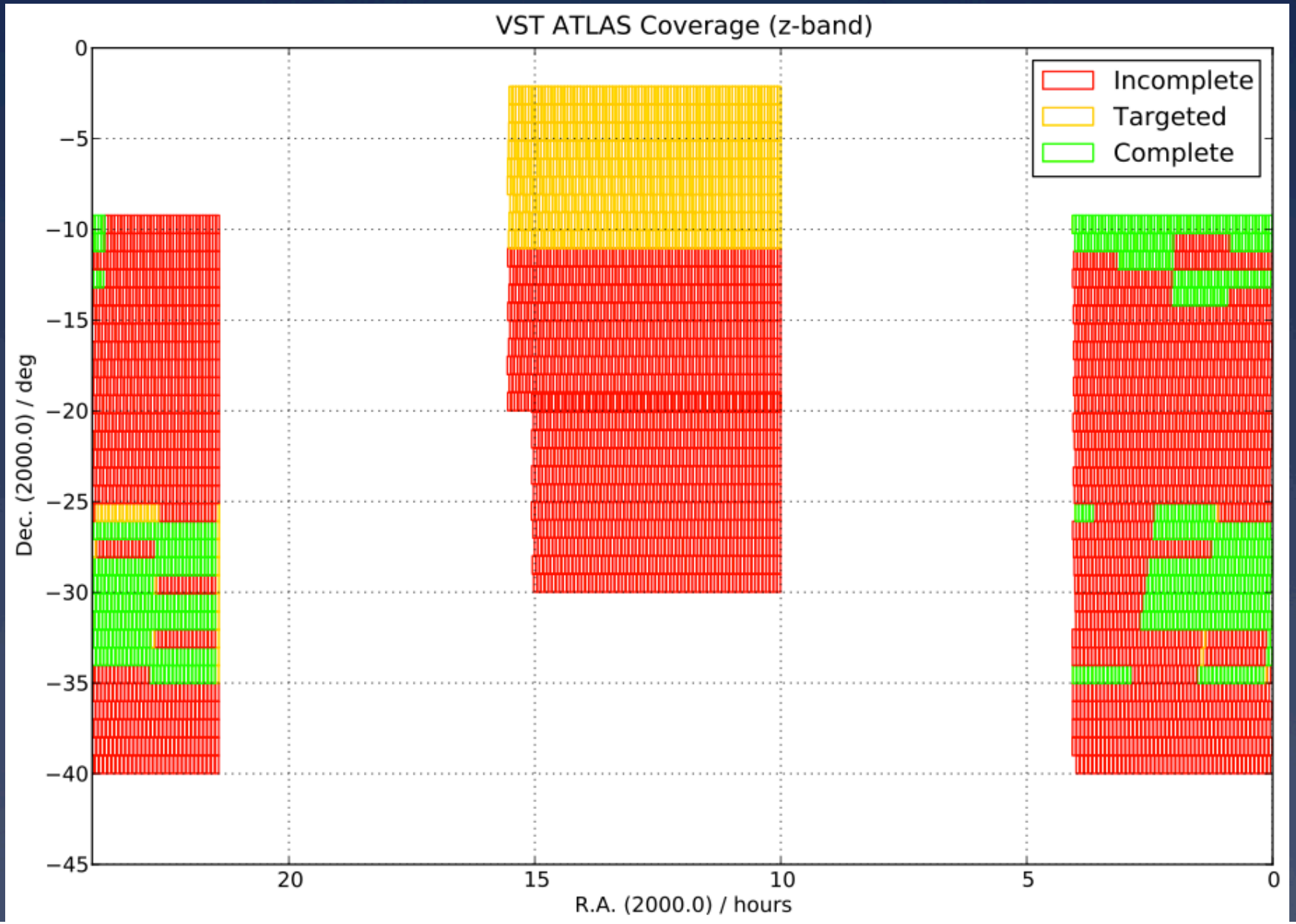
VST ATLAS Status



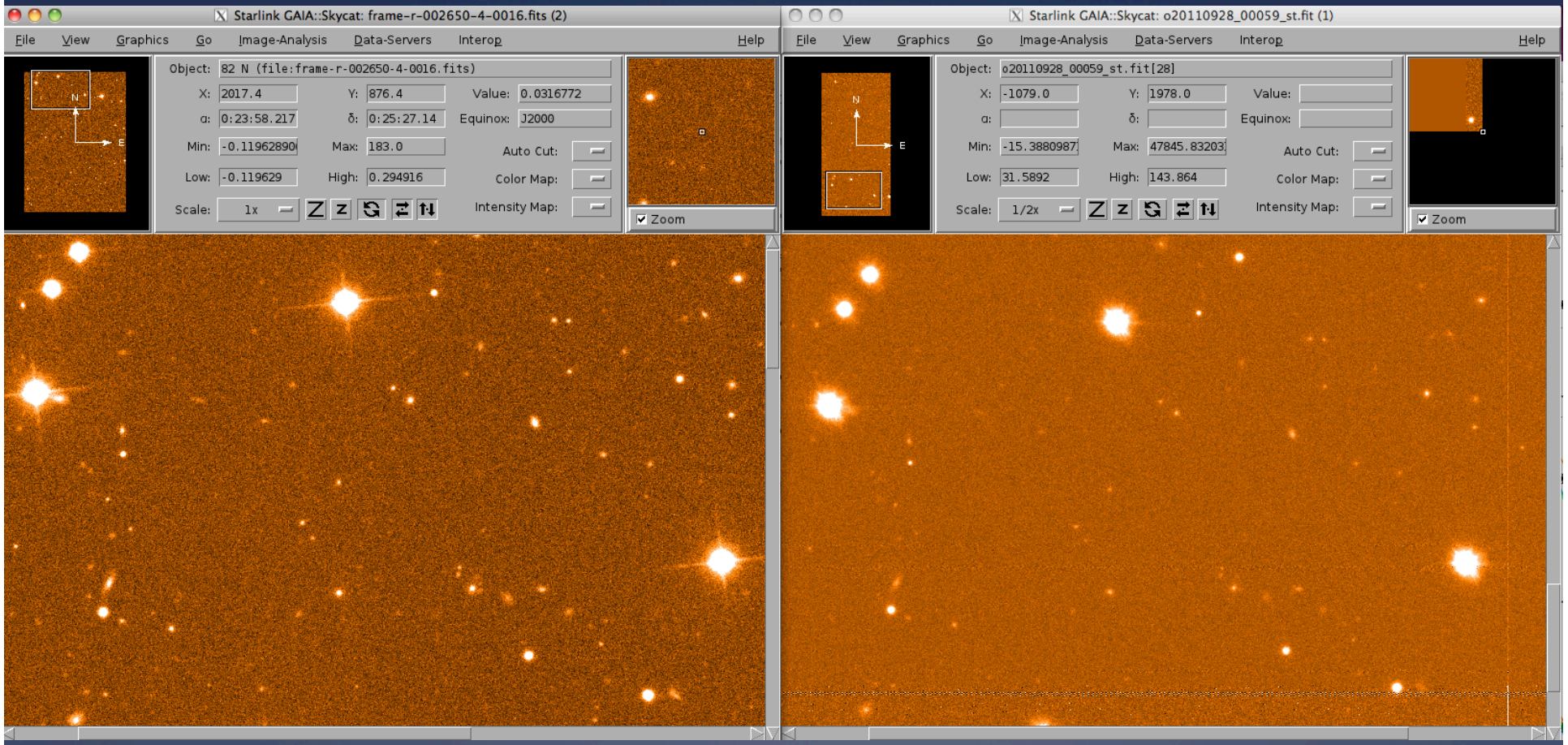
VST ATLAS Status



VST ATLAS Status

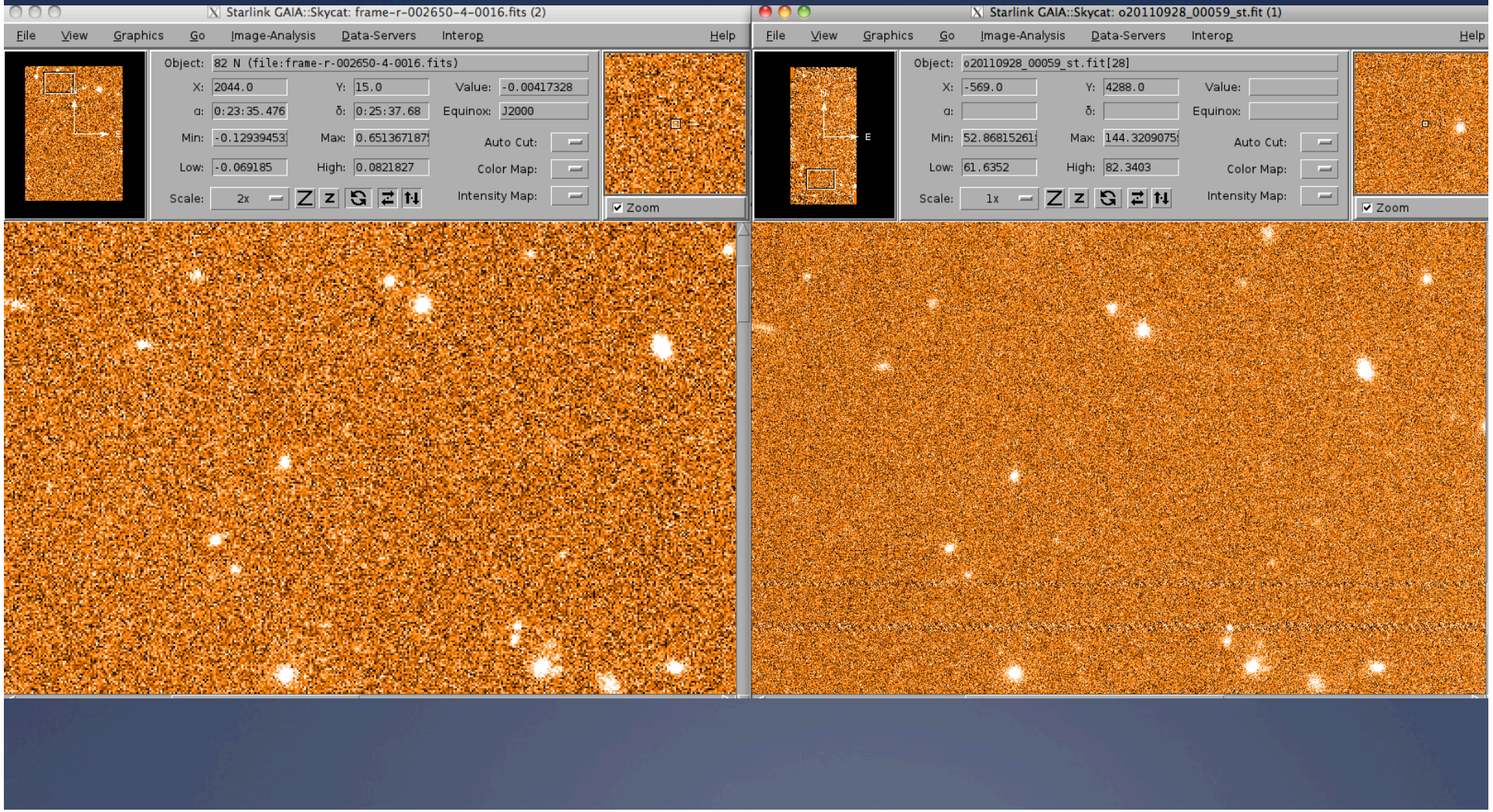


SDSS-ATLAS no-zoom - r

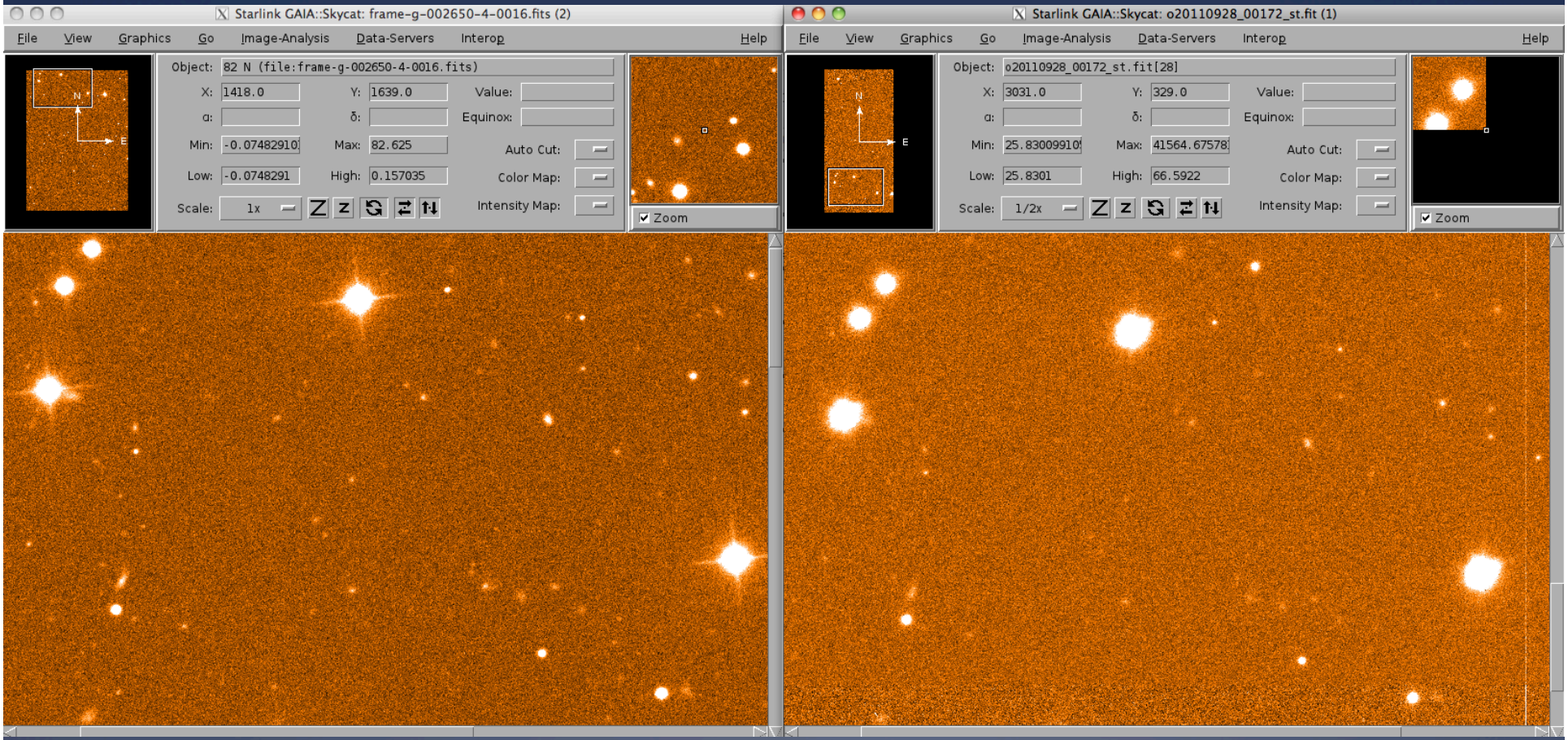


SDSS ATLAS

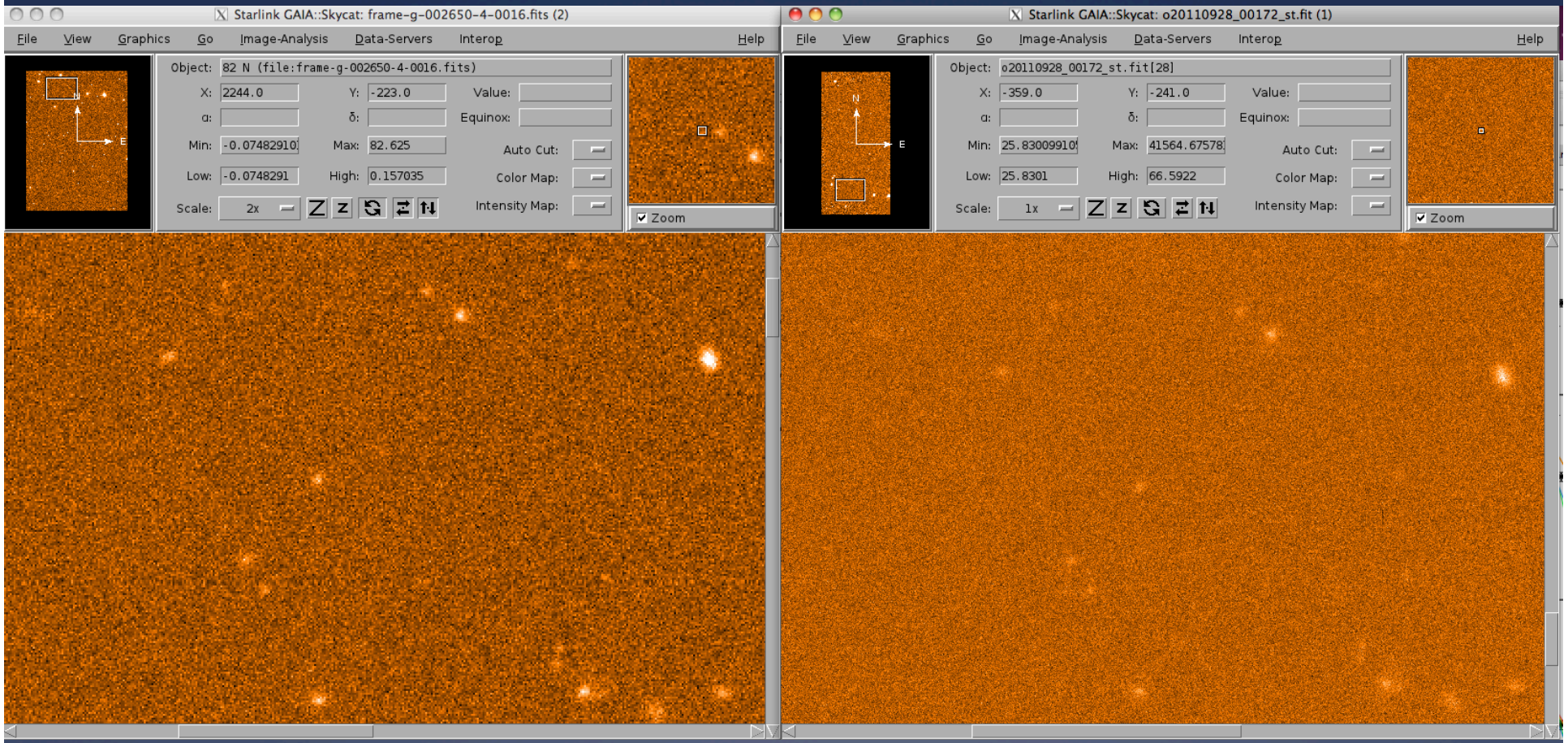
SDSS-ATLAS zoom - r



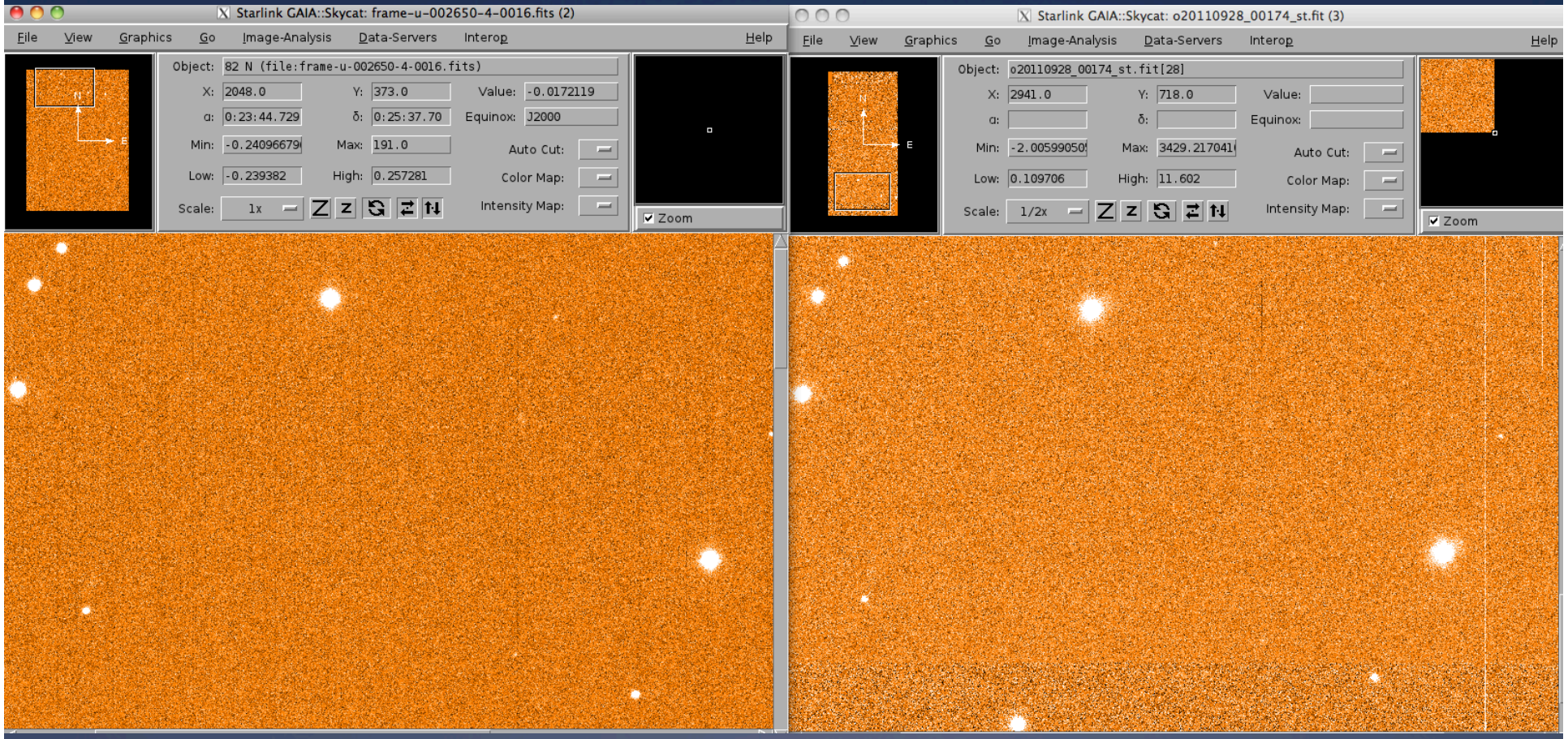
SDSS-ATLAS no-zoom - g



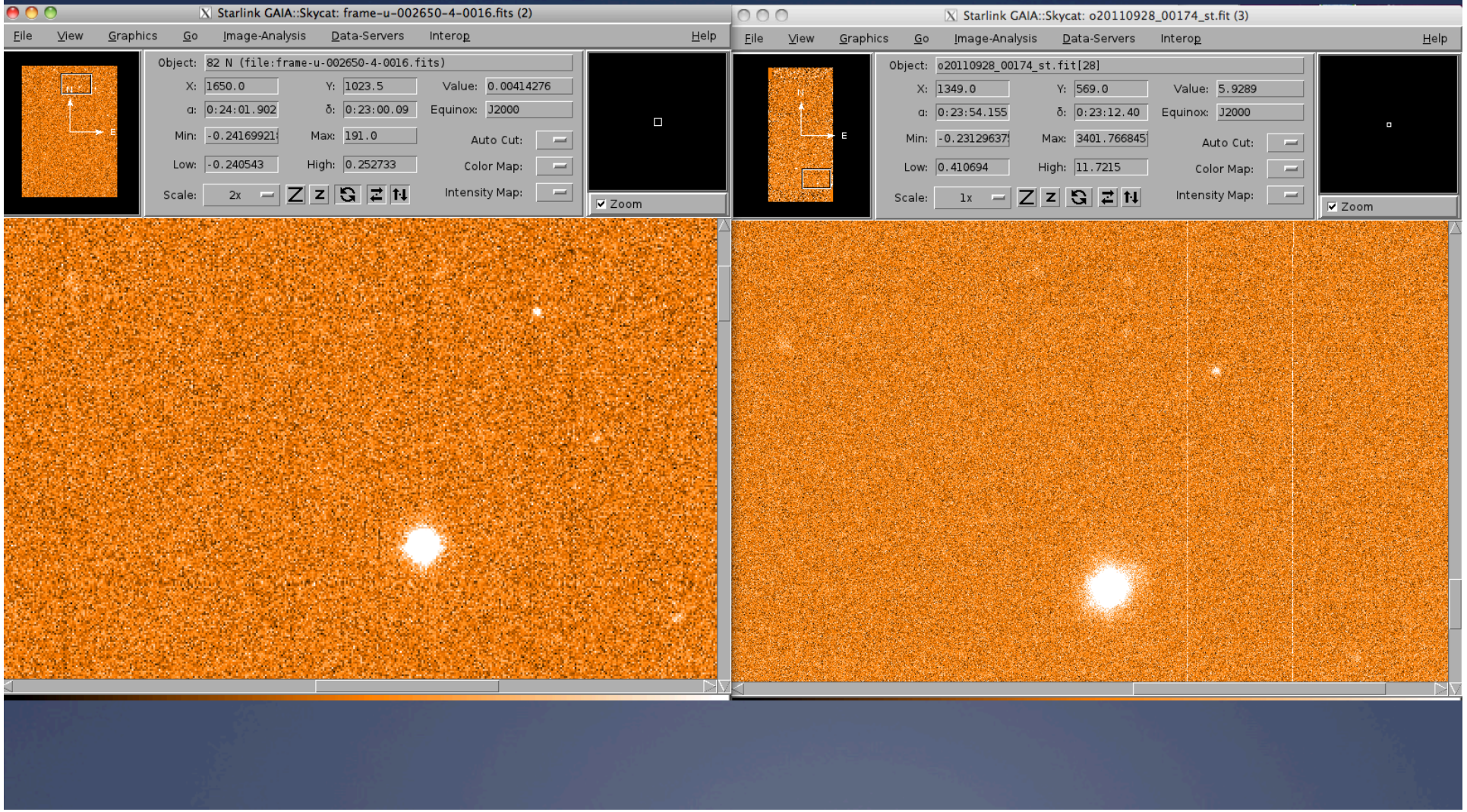
SDSS-ATLAS zoom - g



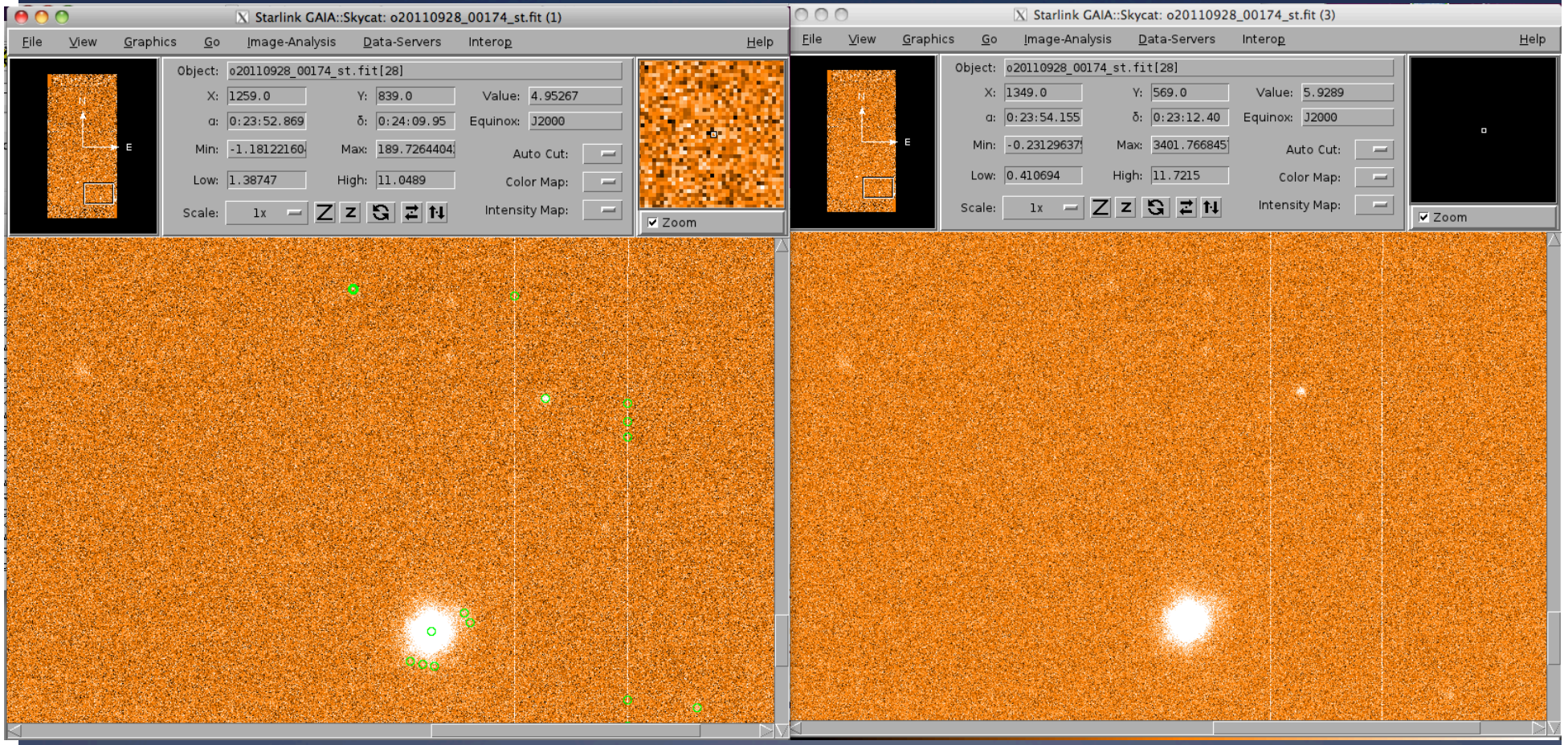
SDSS-ATLAS no-zoom- u



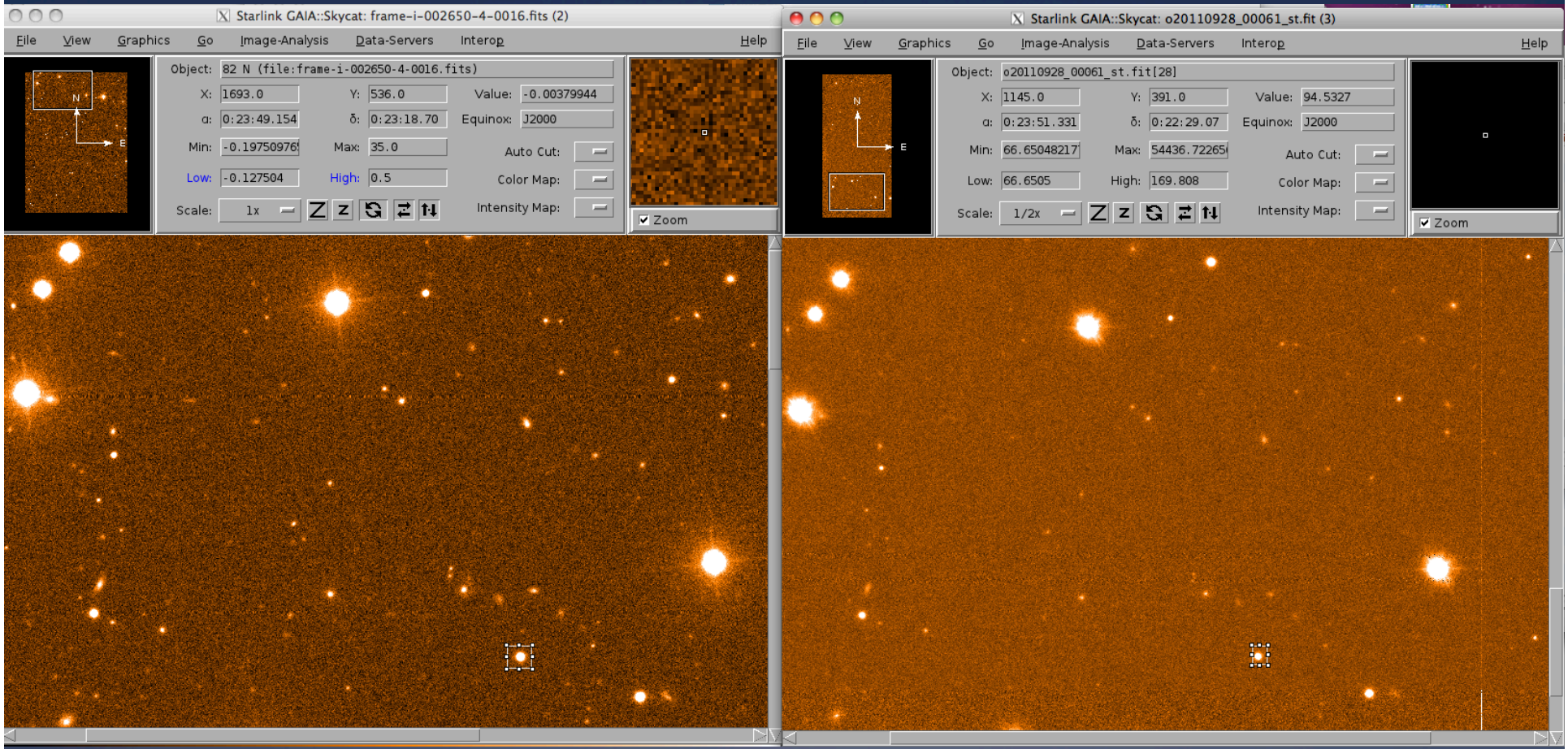
SDSS-ATLAS zoom - u



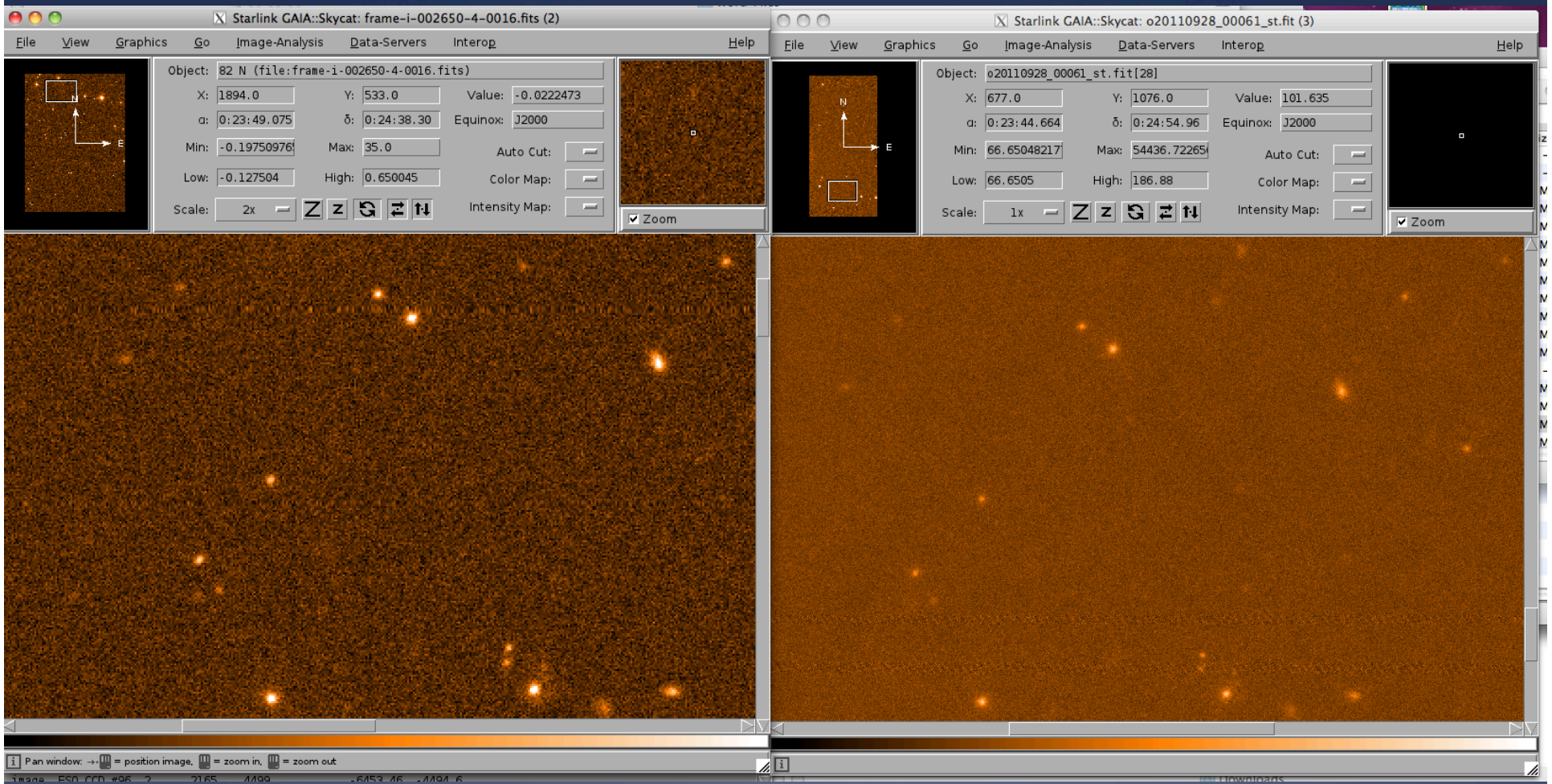
ATLAS CASU ids



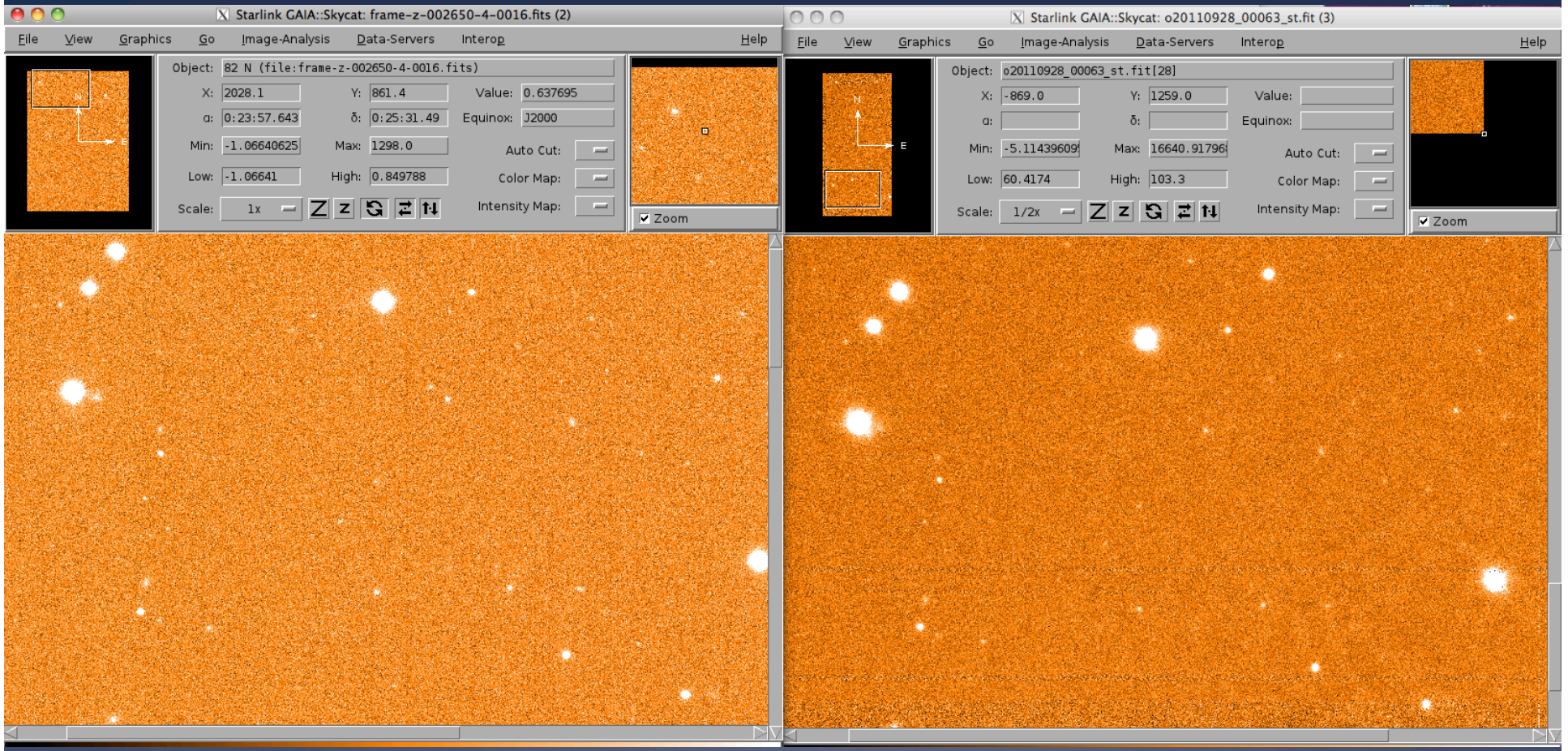
SDSS-ATLAS no-zoom - i



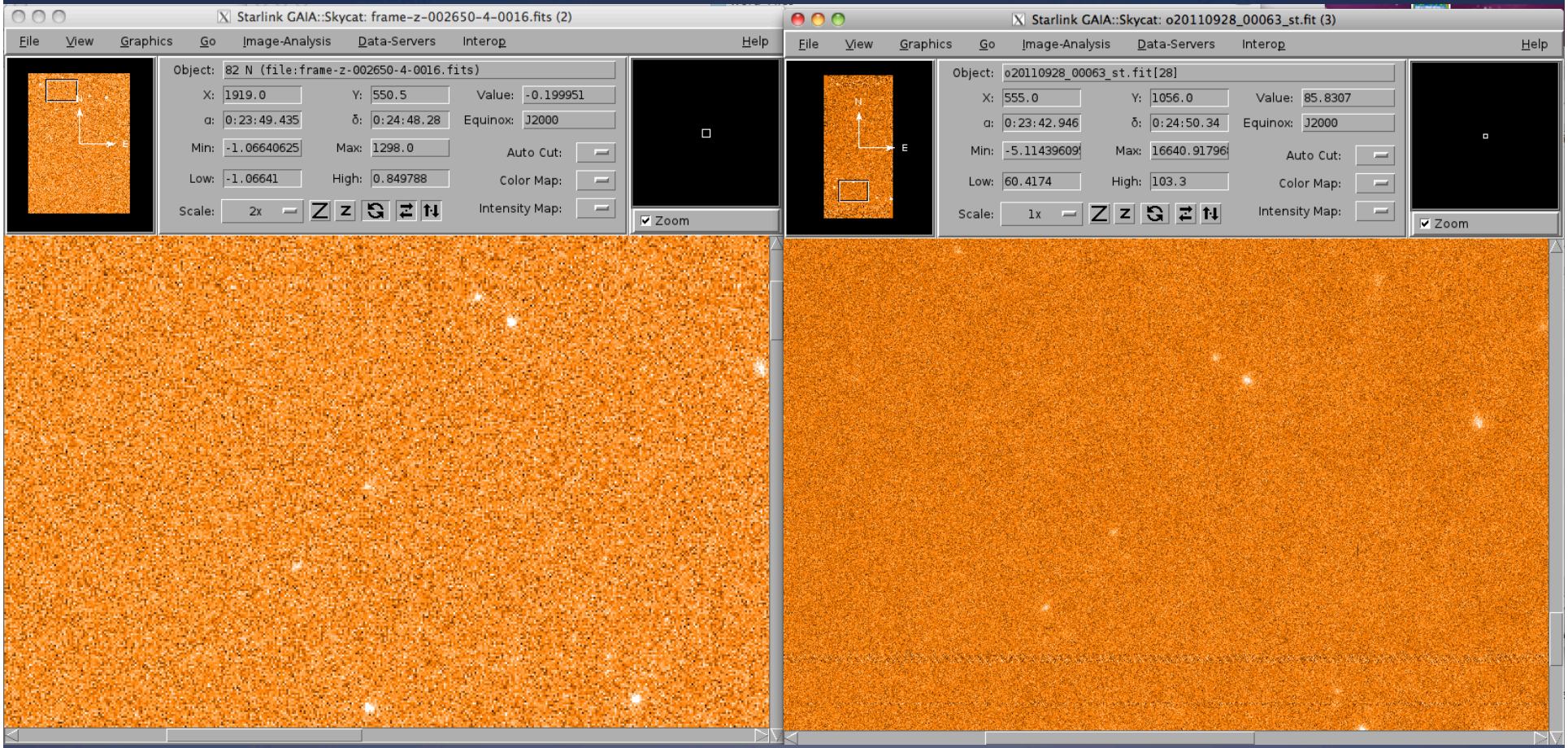
SDSS-ATLAS zoom - i



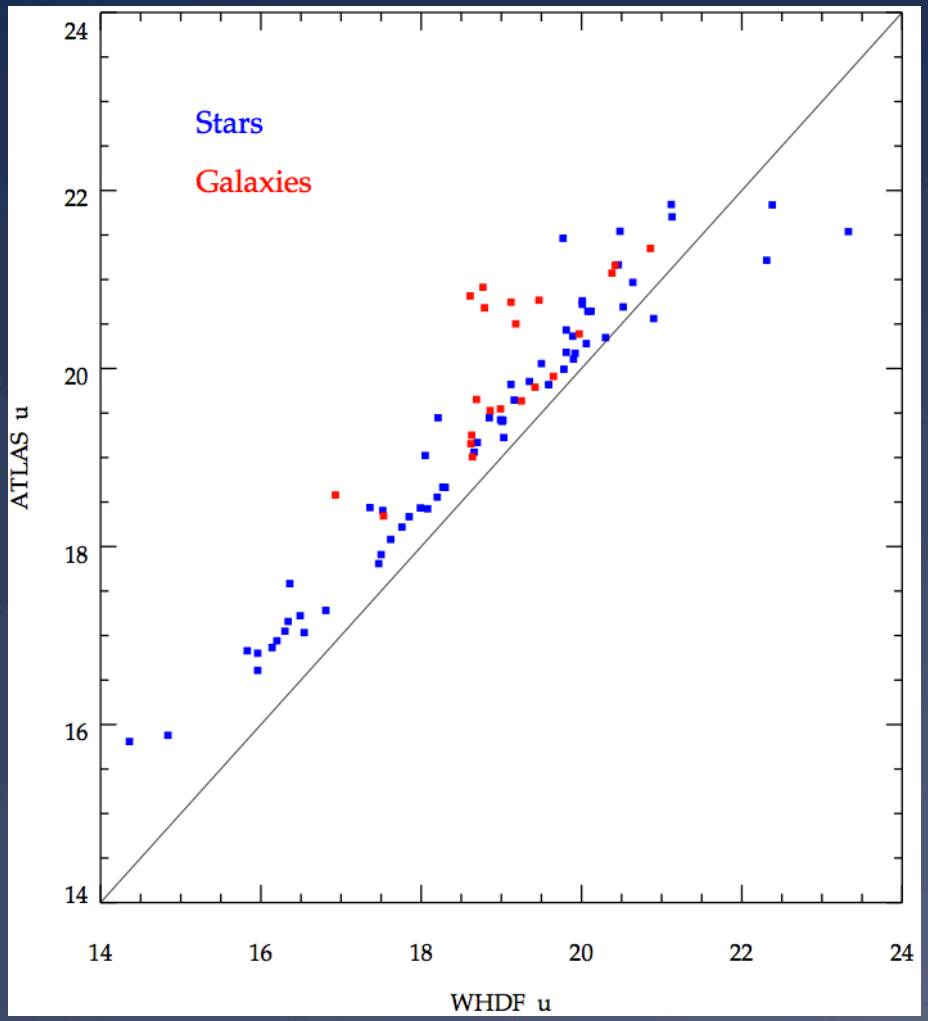
SDSS-ATLAS no-zoom - z

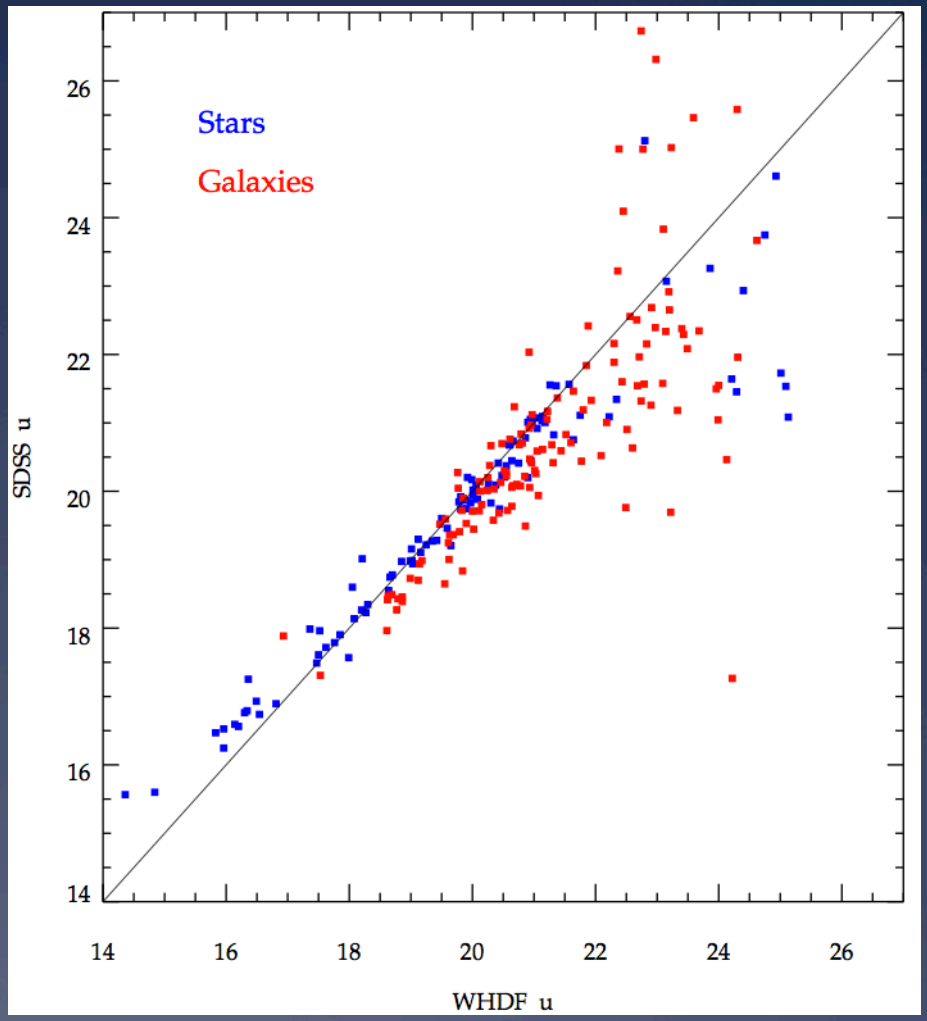


SDSS-ATLAS zoom - z

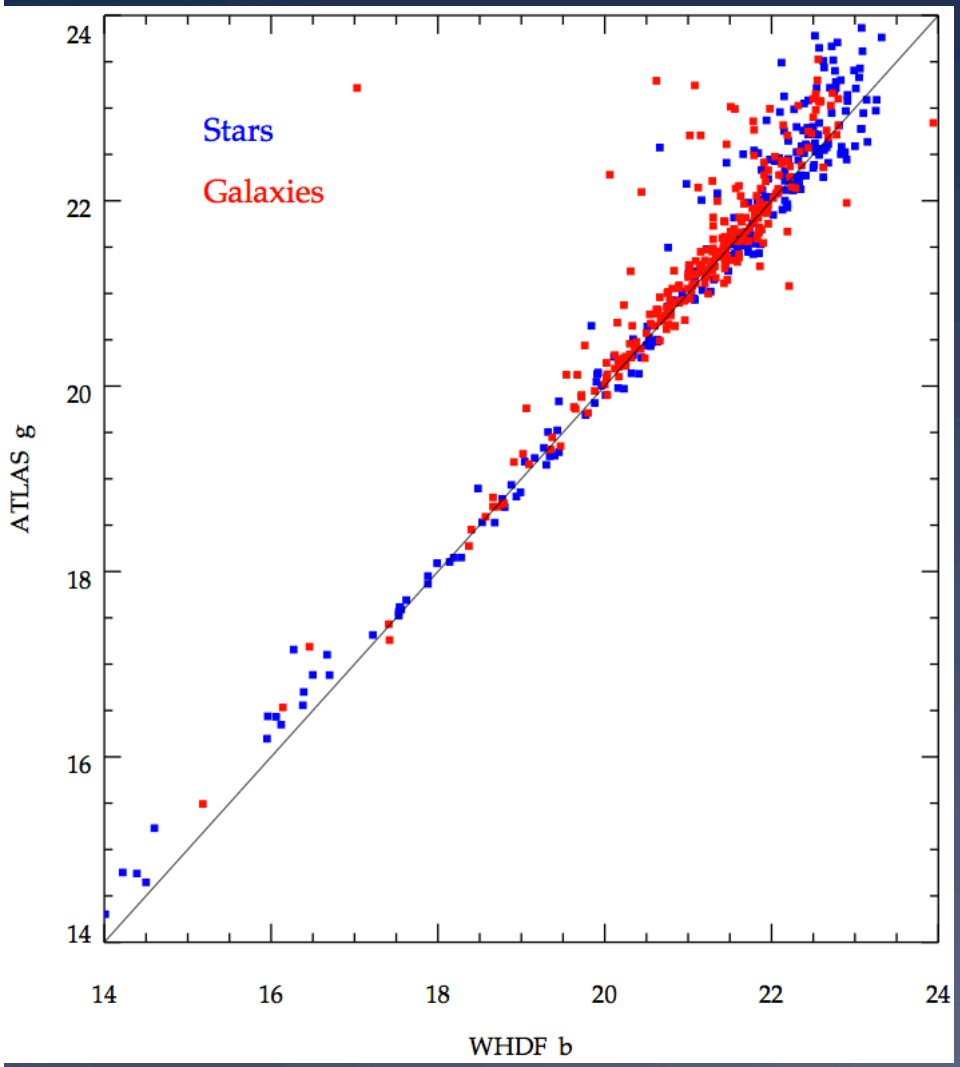


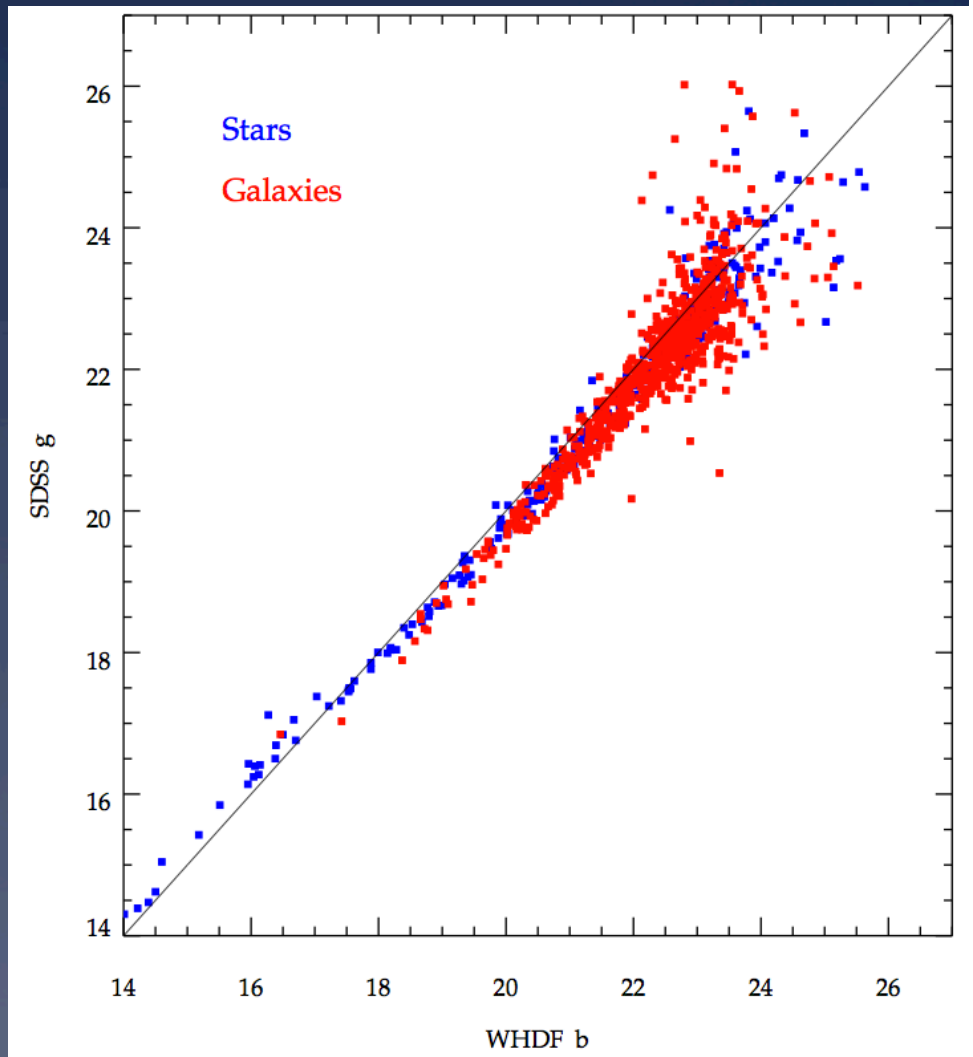
WHDF v ATLAS + SDSS - u



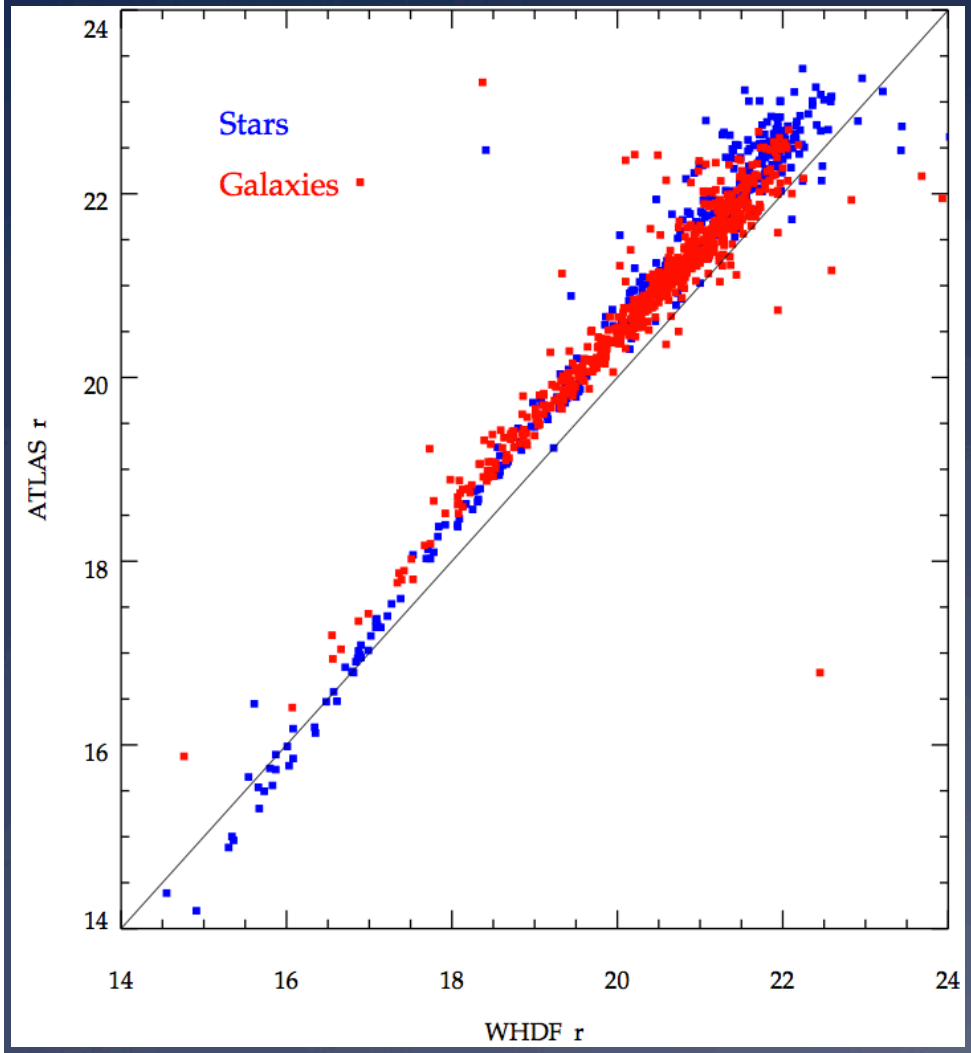


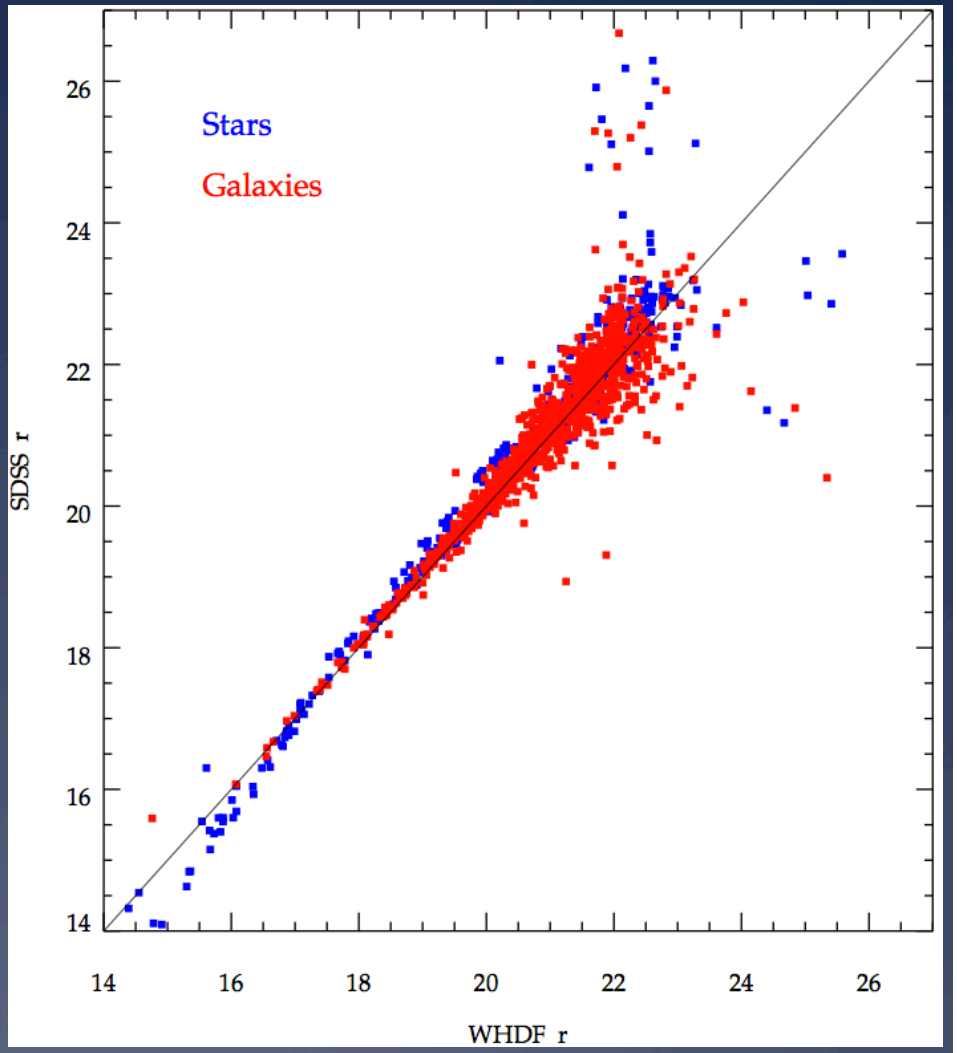
WHDF v ATLAS + SDSS – b vs g



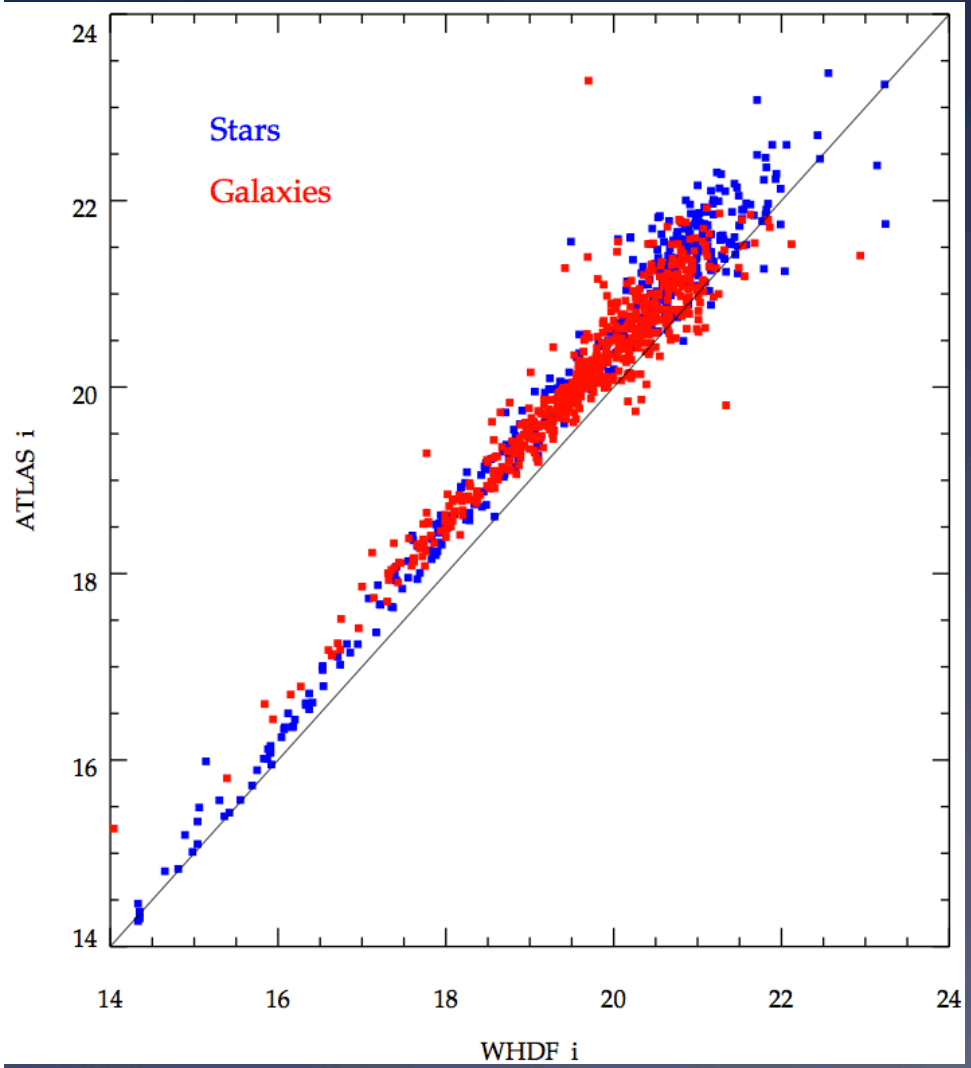


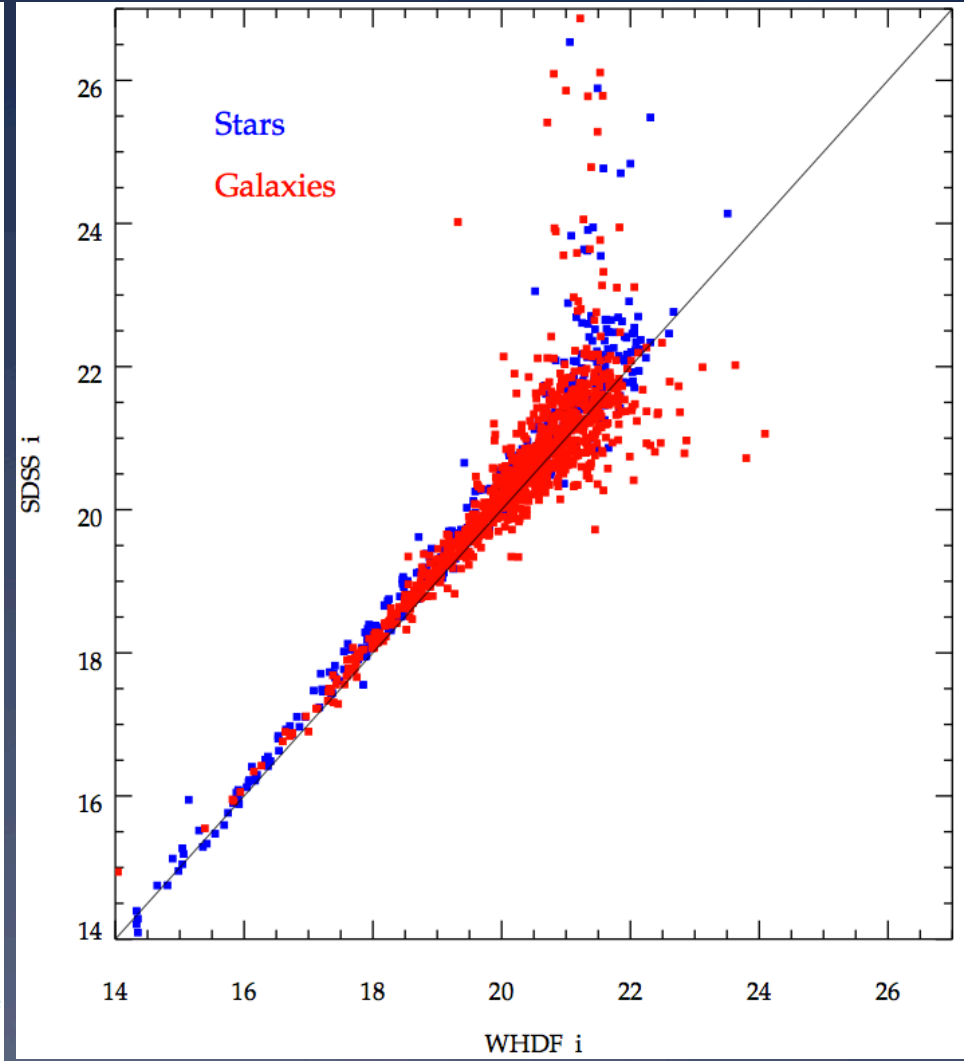
WHDF vs ATLAS+SDSS - r



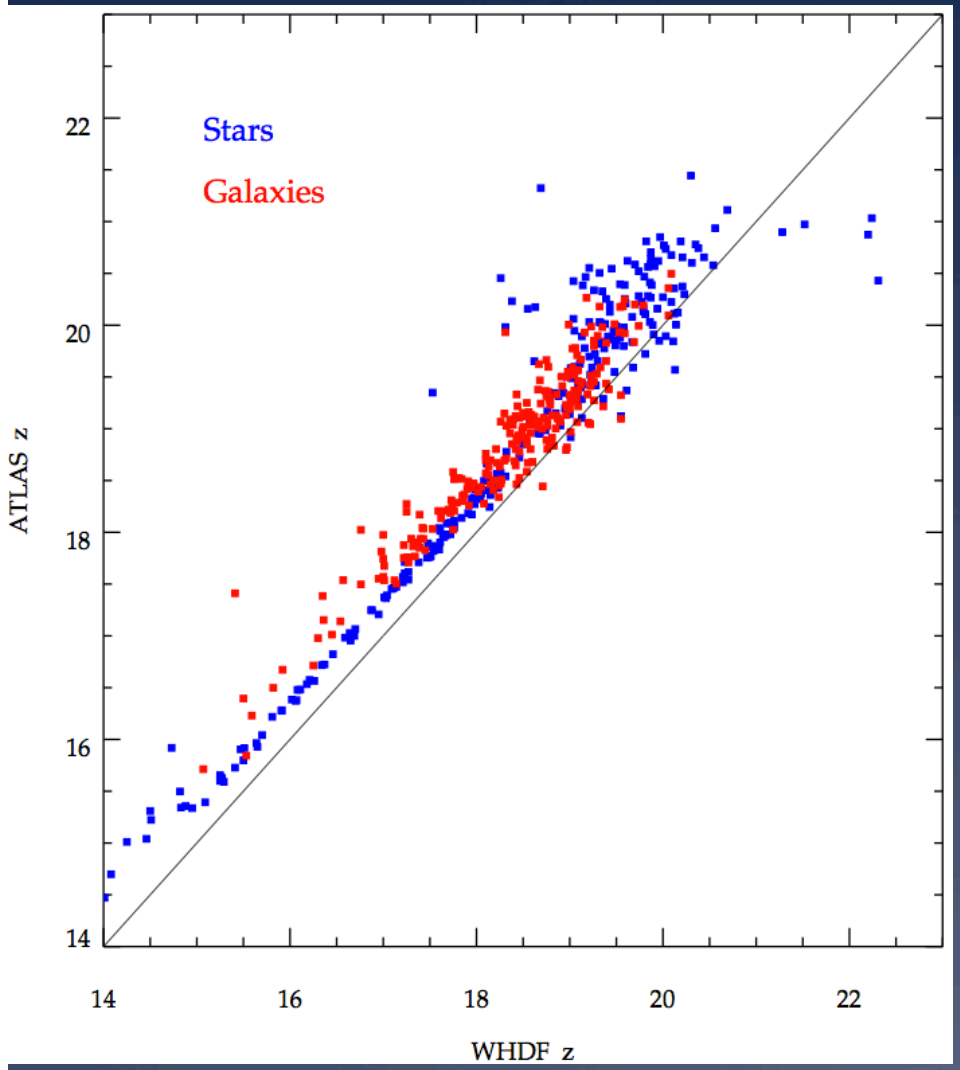


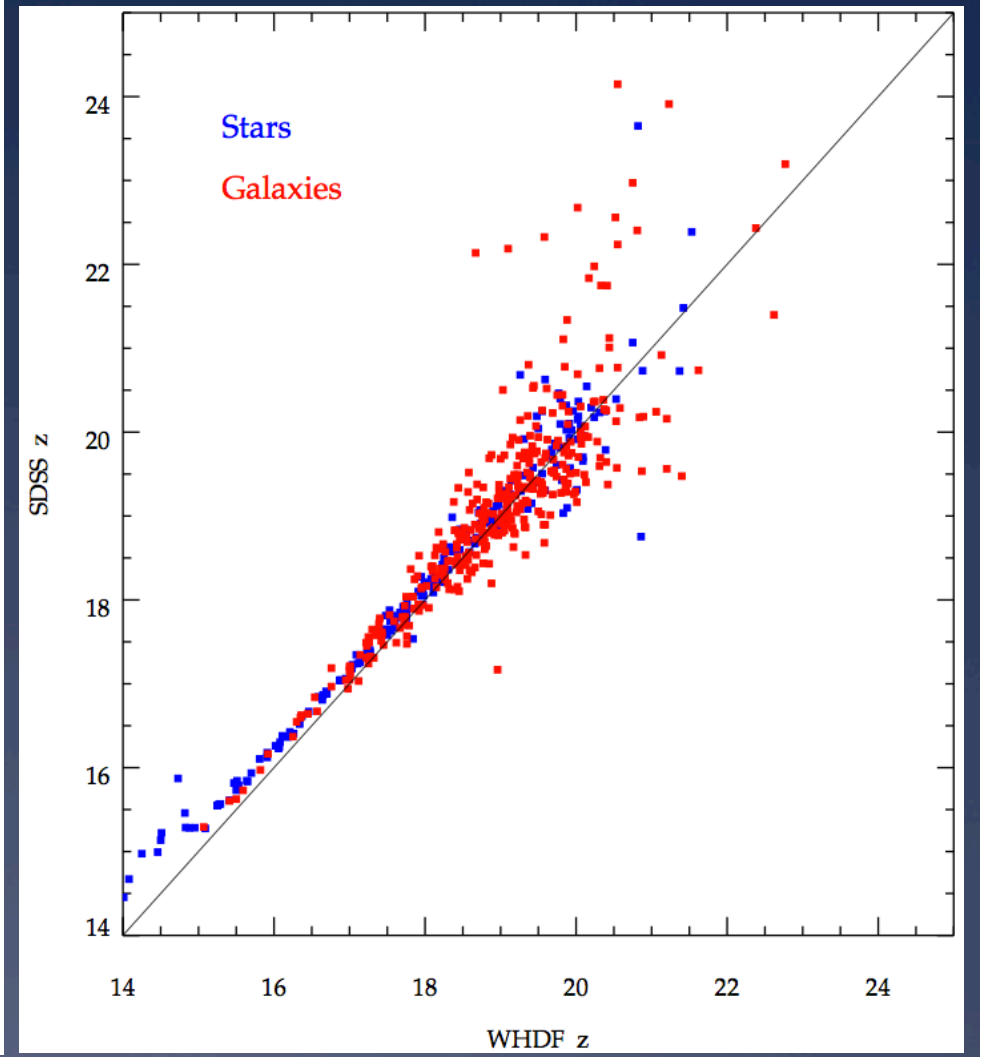
WHDF vs ATLAS+SDSS – i





WHDF vs ATLAS+SDSS – z





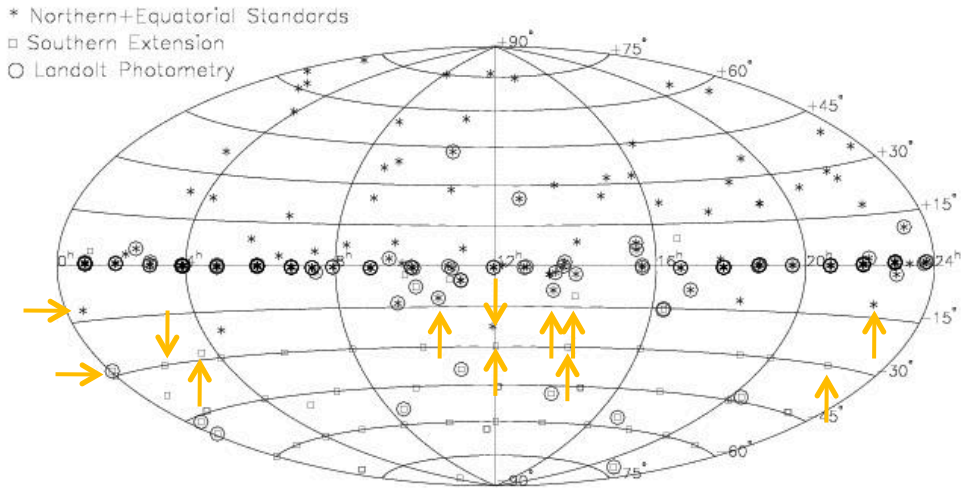
FNAL/CTIO ugriz standards

Southern Standard Stars for the u'g'r'i'z' System:

Main Page

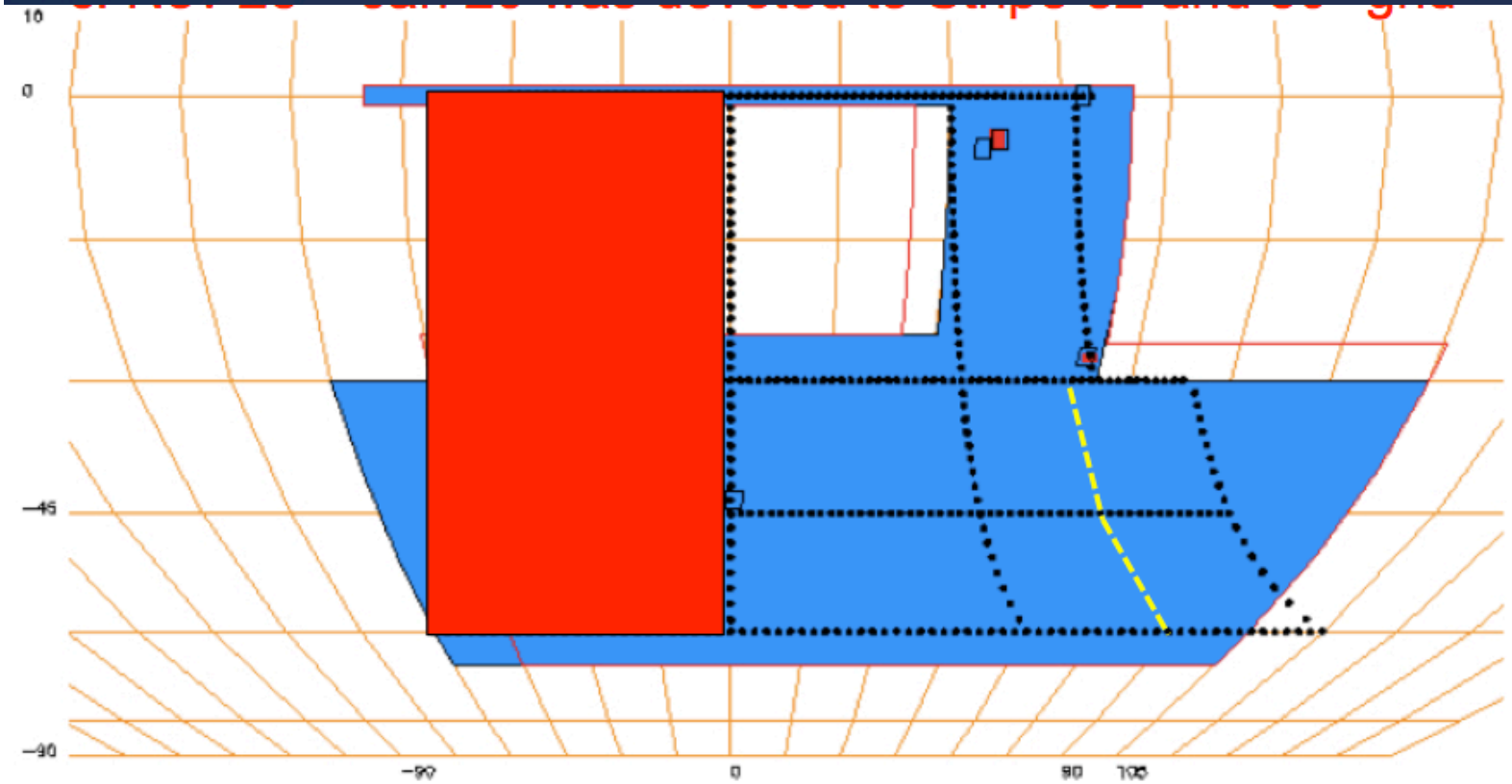
"Having a photometric system without standard stars is like measuring the distance from New York to Paris in meters without defining the length of the meter."

--Arne A. Henden & Ronald H. Kaitchuck
"Astronomical Photometry"
(copyright 1990, Willman-Bell, Inc.)



Locations of the 158 Smith et al (2002) primary standards (asterisks) and the 58 fields of the southern extension to the primary standard star network (unfilled squares). Circled symbols indicate u'g'r'i'z' standard stars or fields for which there are currently Landolt UBVRcIc photometry (Landolt 1973, 1983, 1992) or for which Landolt is currently obtaining UBVRcIc photometry (Landolt, in prep)

DES Pre-Cam calibration

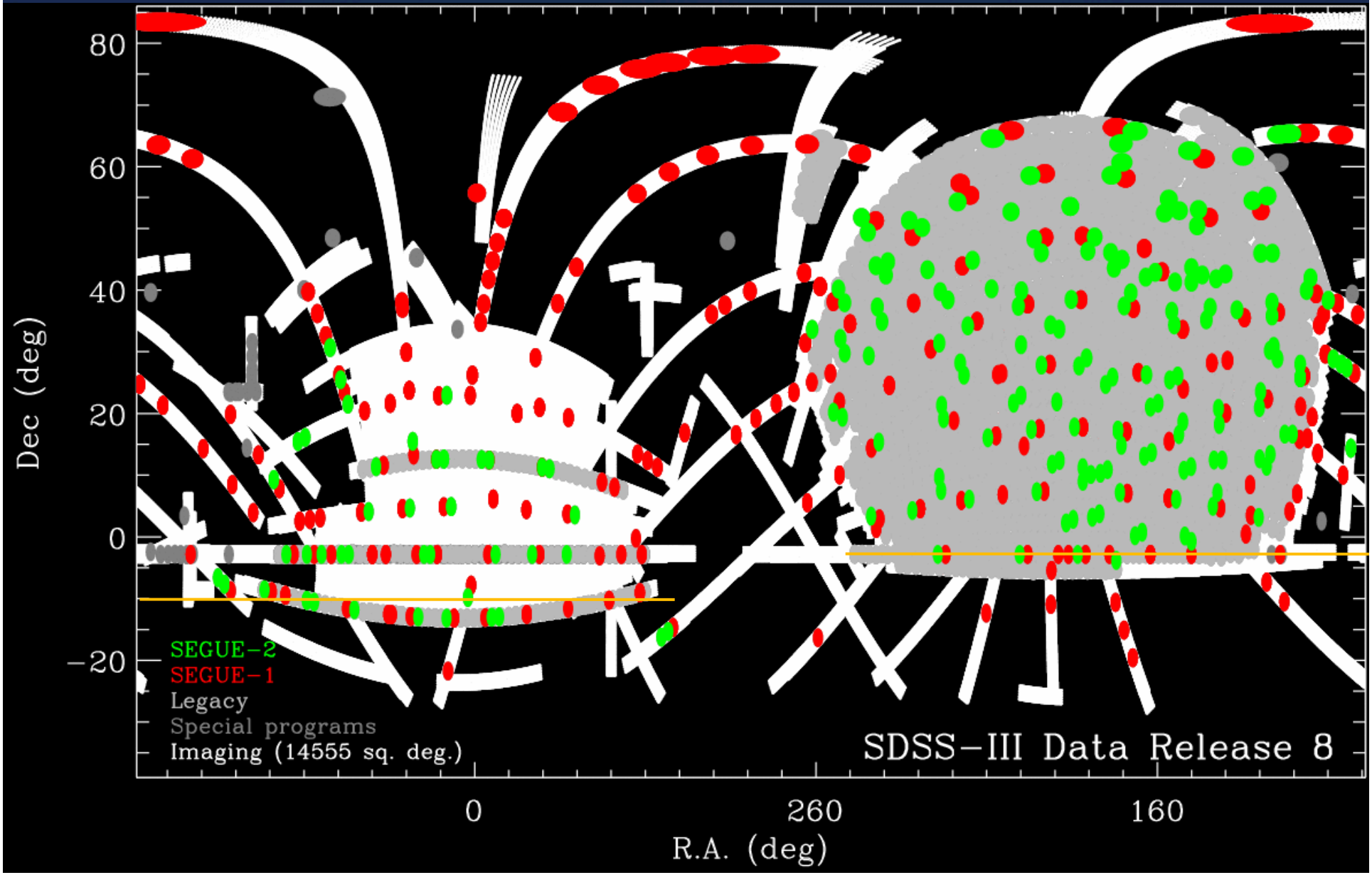


Stripe 82:
10x in *grizy*

30° grid:
6x in *gri*

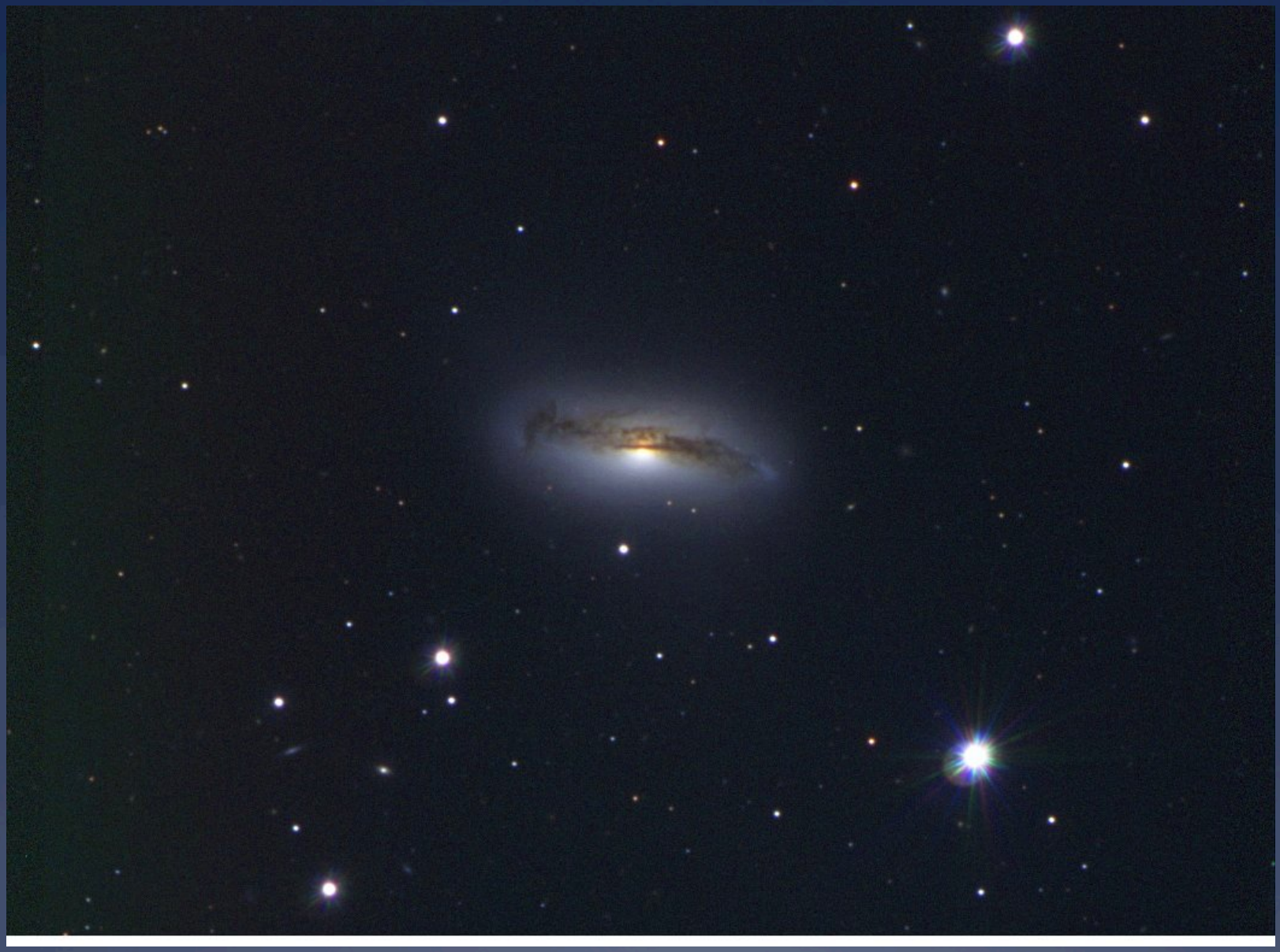
Curtis-Schmidt gri standards to g~18

SDSS Overlap

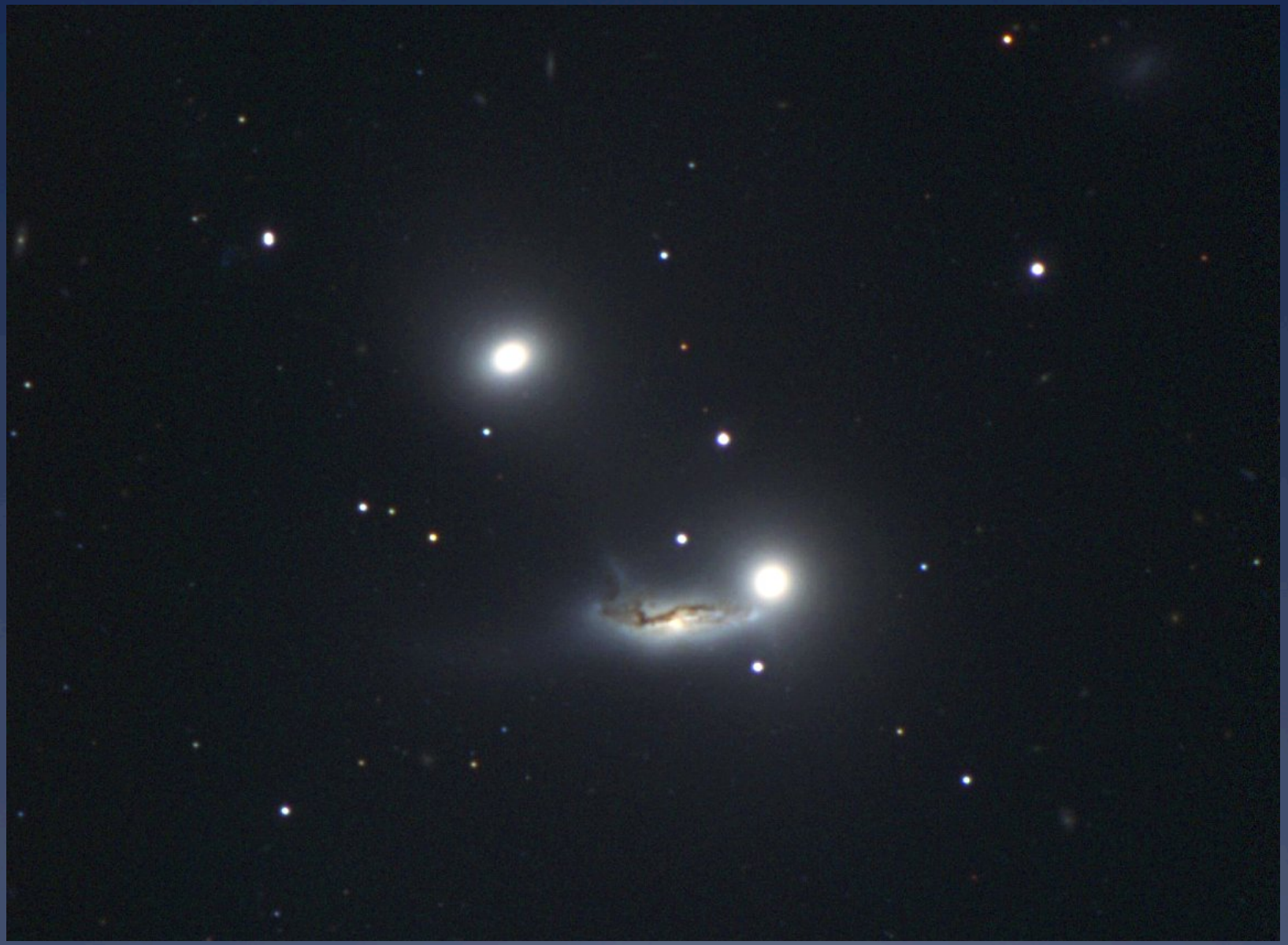


ATLAS – NGC289

ATLAS – NGC7172



ATLAS – NGC7173+4+6



Summary

- 500deg^2 surveyed by ATLAS in SGC KIDS-S already
- More or less achieving SDSS depth in ugriz
- Plenty of standards available to calibrate photometry…
- …..plus 2' overlaps to give global calibration
- Chilean proposal to double u exposure time submitted in P89
- CASU up-to-date with (preliminary) pipeline processing
- Some fields may need repeating due to 20" offset problem
- Otherwise congratulations and thanks to VST+OmegaCAM builders, ESO observers and CASU…