



# Taiwan Medium Deep stacks

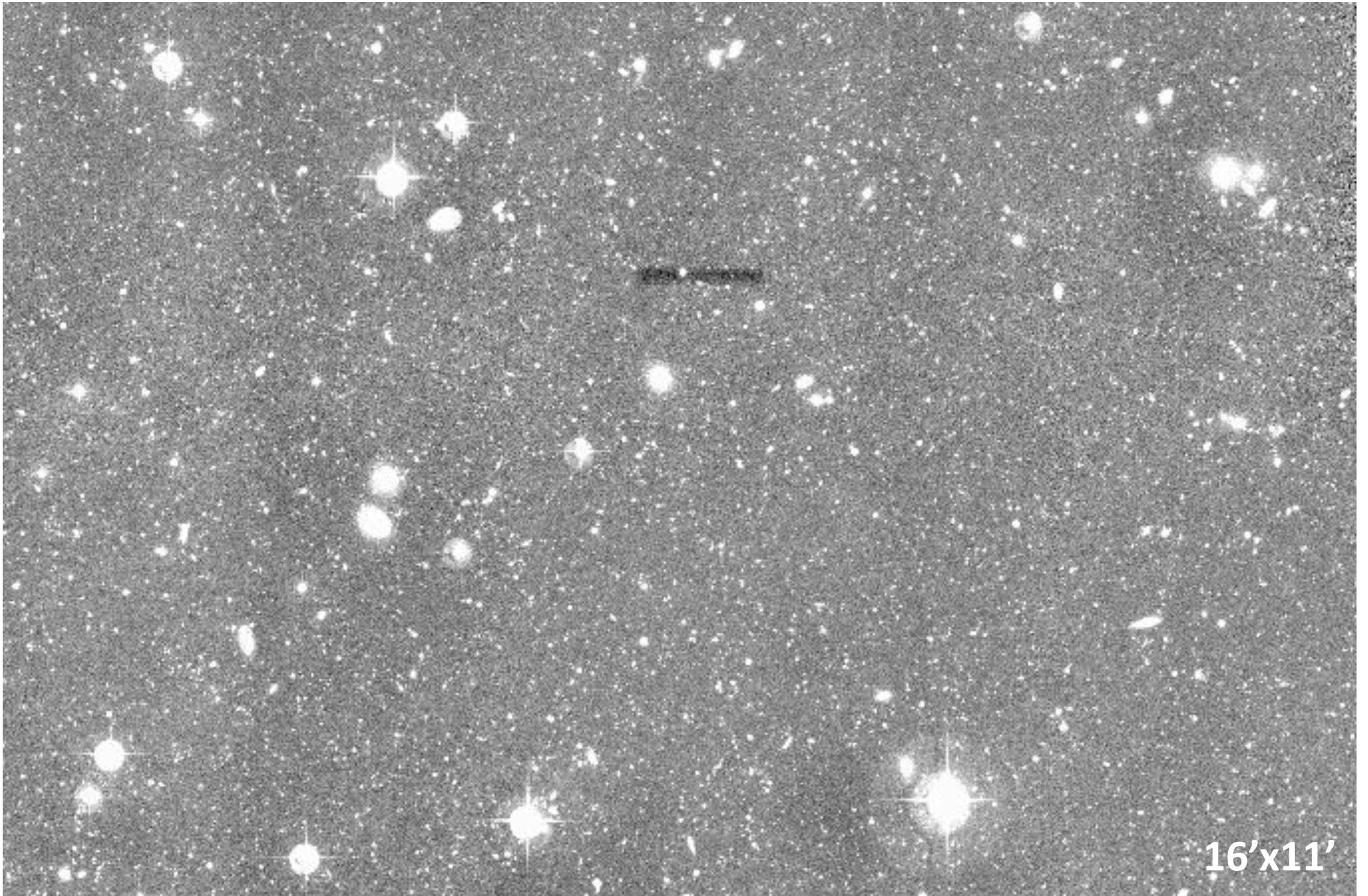
Seb Foucaud (NTNU, Taiwan),

Chin-Wei Chen, Lihwai Lin, and Jean Coupon (ASIAA, Taiwan),

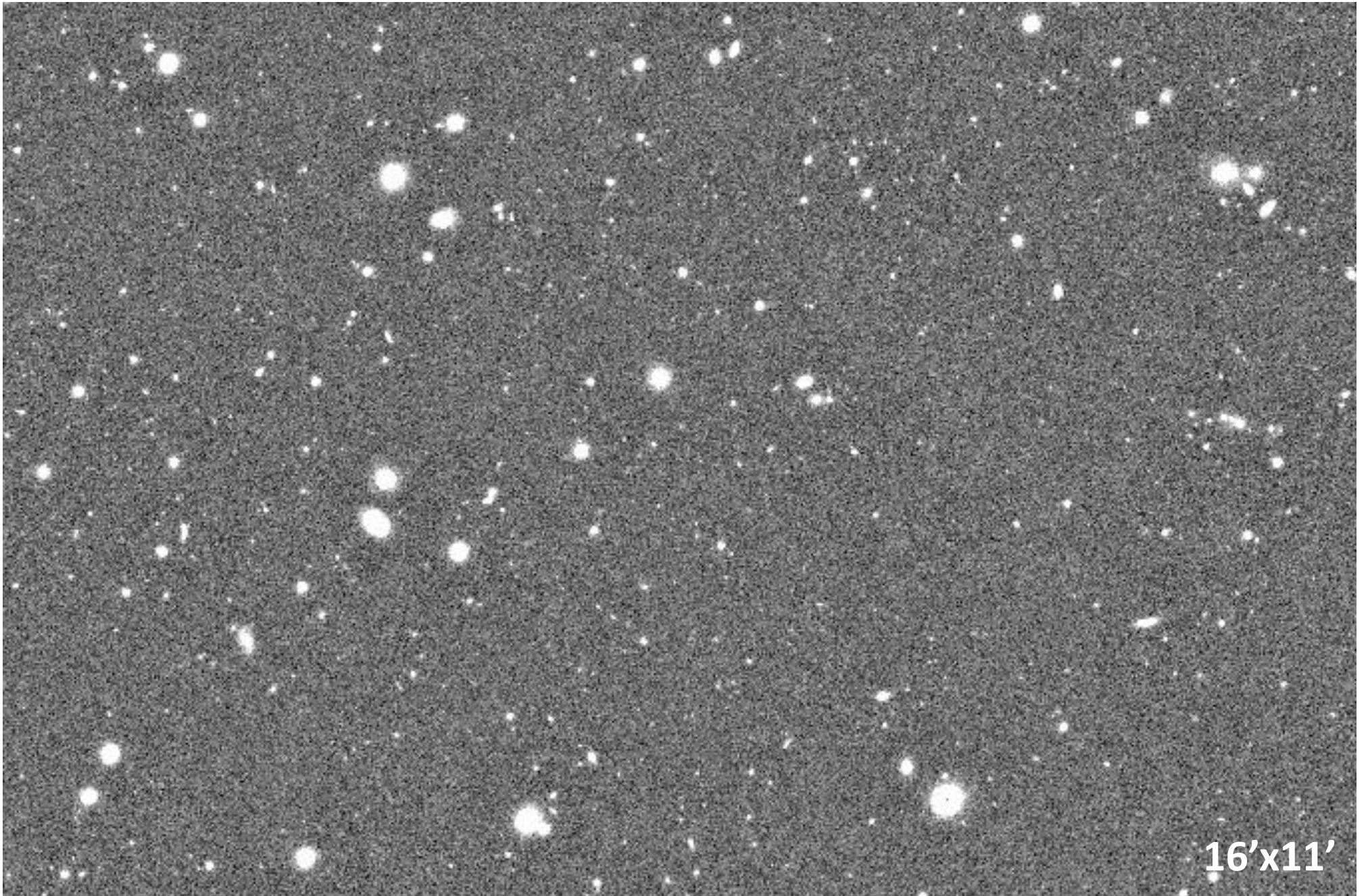
# Data and stacking procedure

- Stacked together all **nightly stacks** taken from 2010/04 to 2011/12
- Typically 20 frames (each nightly stack is 8 warps)
- Quality control (reject ~15%):
  - Rejecting bad images with masked area (if >50% image have pixels==0)
  - Rejecting badly extinct images (impossible to extract enough stars!)
  - Determine PSF using `PSFex`
  - No real seeing selection (<2.0", more stringent with g-band?)
  - Incomplete headers (no initial wcs / y-band only)
- Astrometric and Photometric calibration with SDSS-DR7, using `SCAMP` (Bertin et al. 2002) – further QC here if issues
- Median stacking with `SWarp` (Bertin et al. 2002)
- Plan to do  $4\sigma$ -clipped mean stacking with `SWarp` (modified by S. Foucaud) – need iterative masking procedure
- Catalog extracted with `SExtractor` (Bertin & Arnouts 1996)
- Dual-mode with i-band as detection image

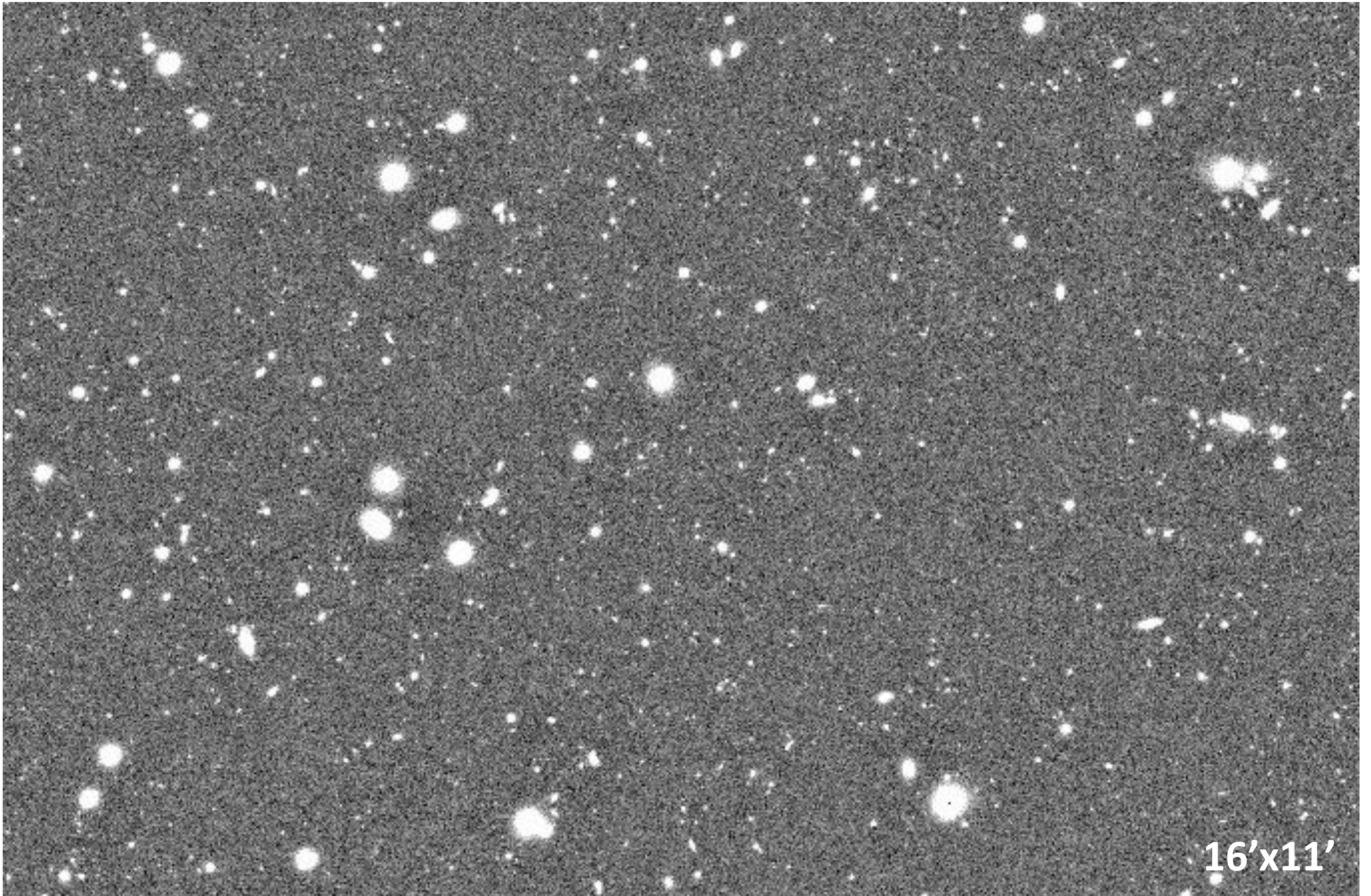
# Example of images (MD07 ugrizy)



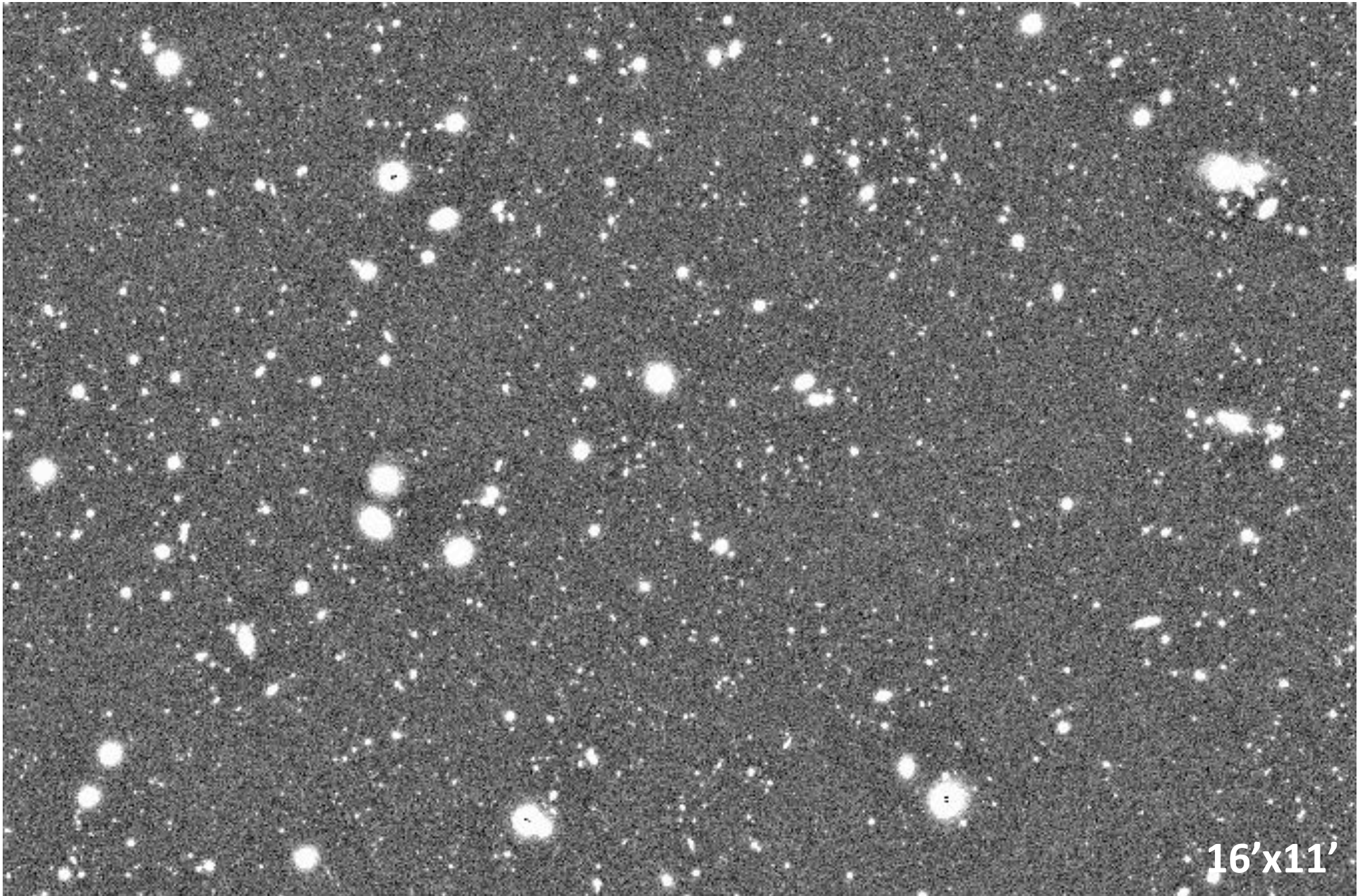
# Example of images (MD07 ugrizy)



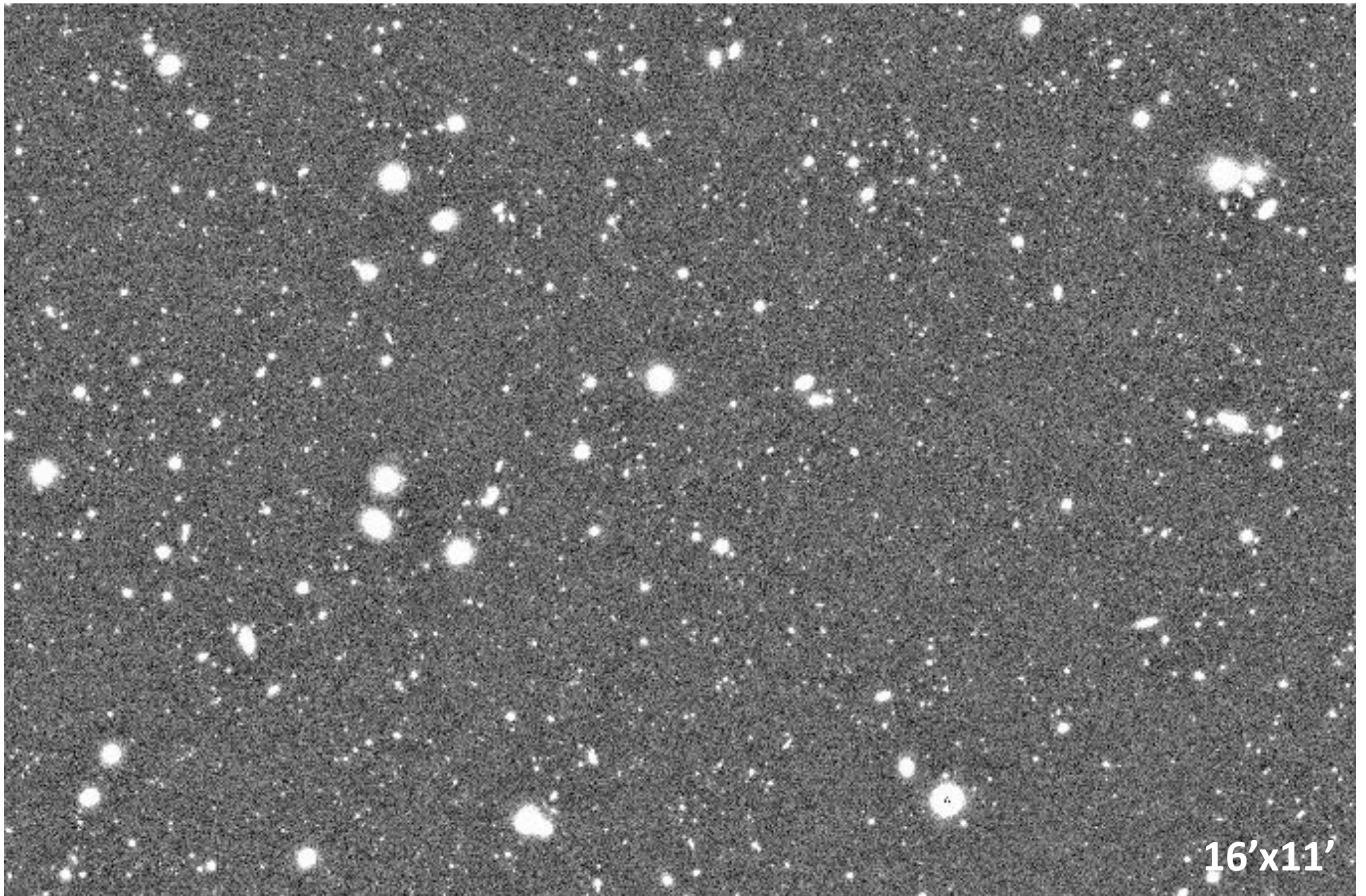
# Example of images (MD07 ugrizy)



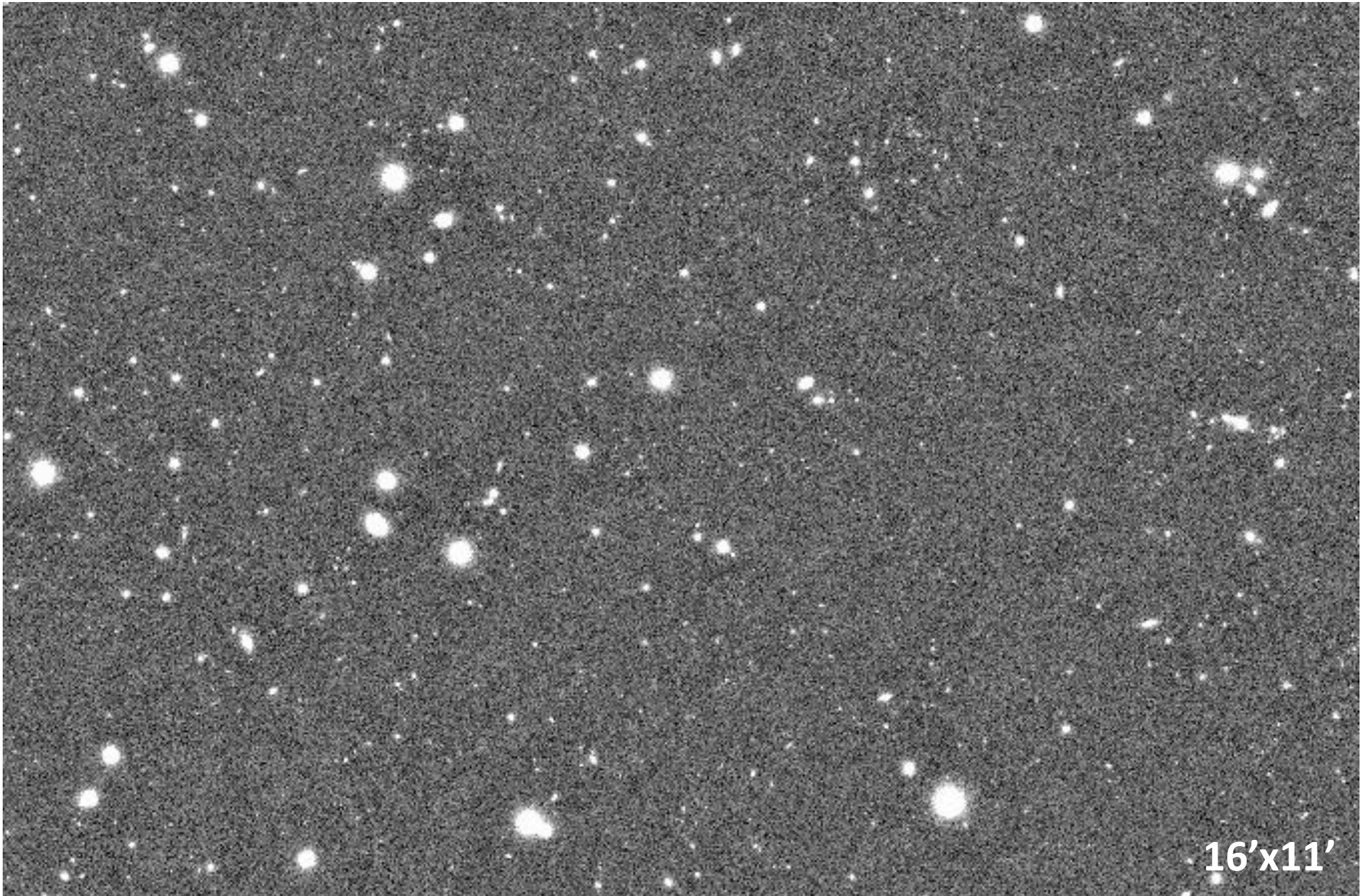
# Example of images (MD07 ugrizy)



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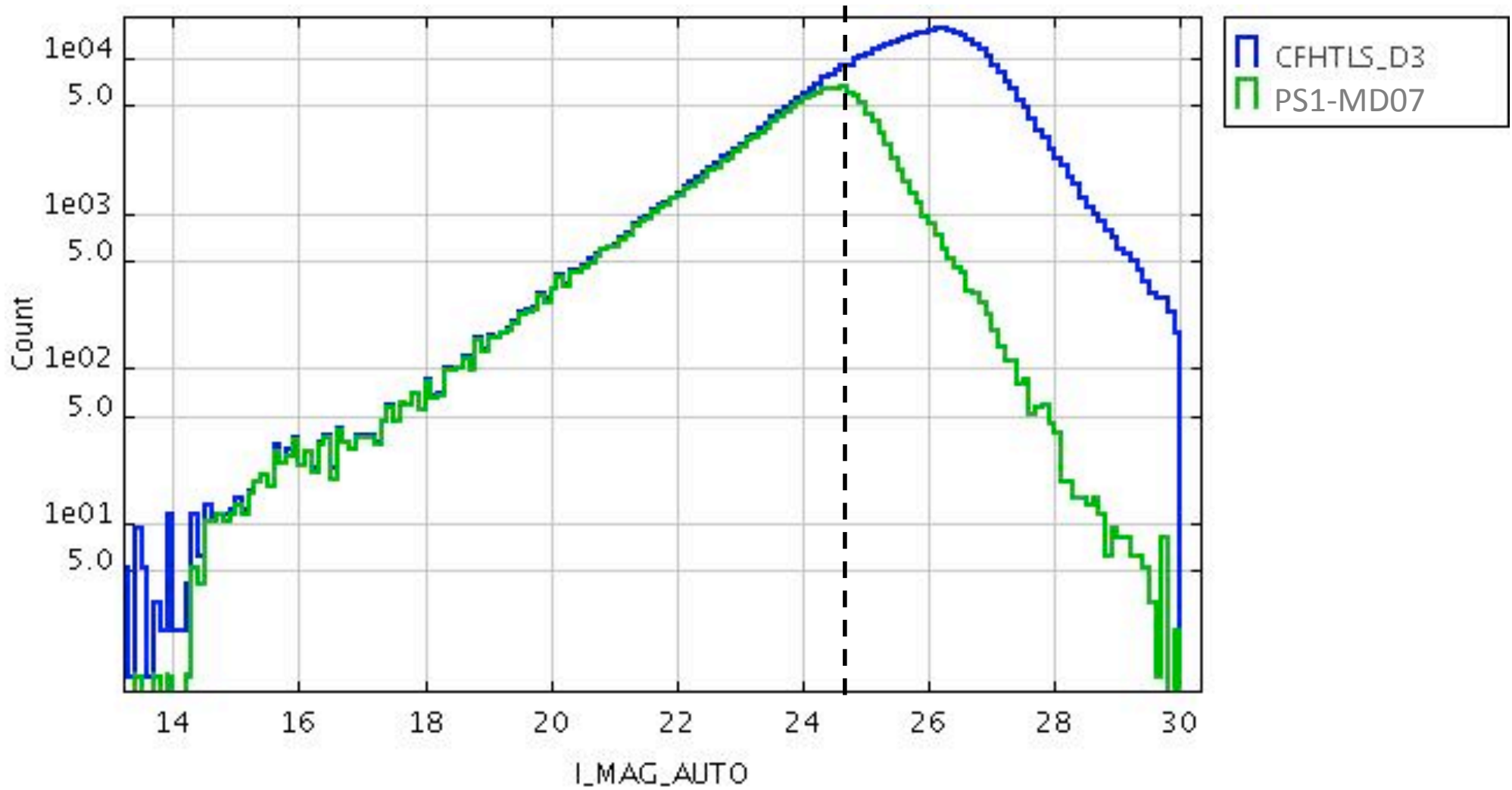


# PSF matching and seeing improvement (MD04-g)

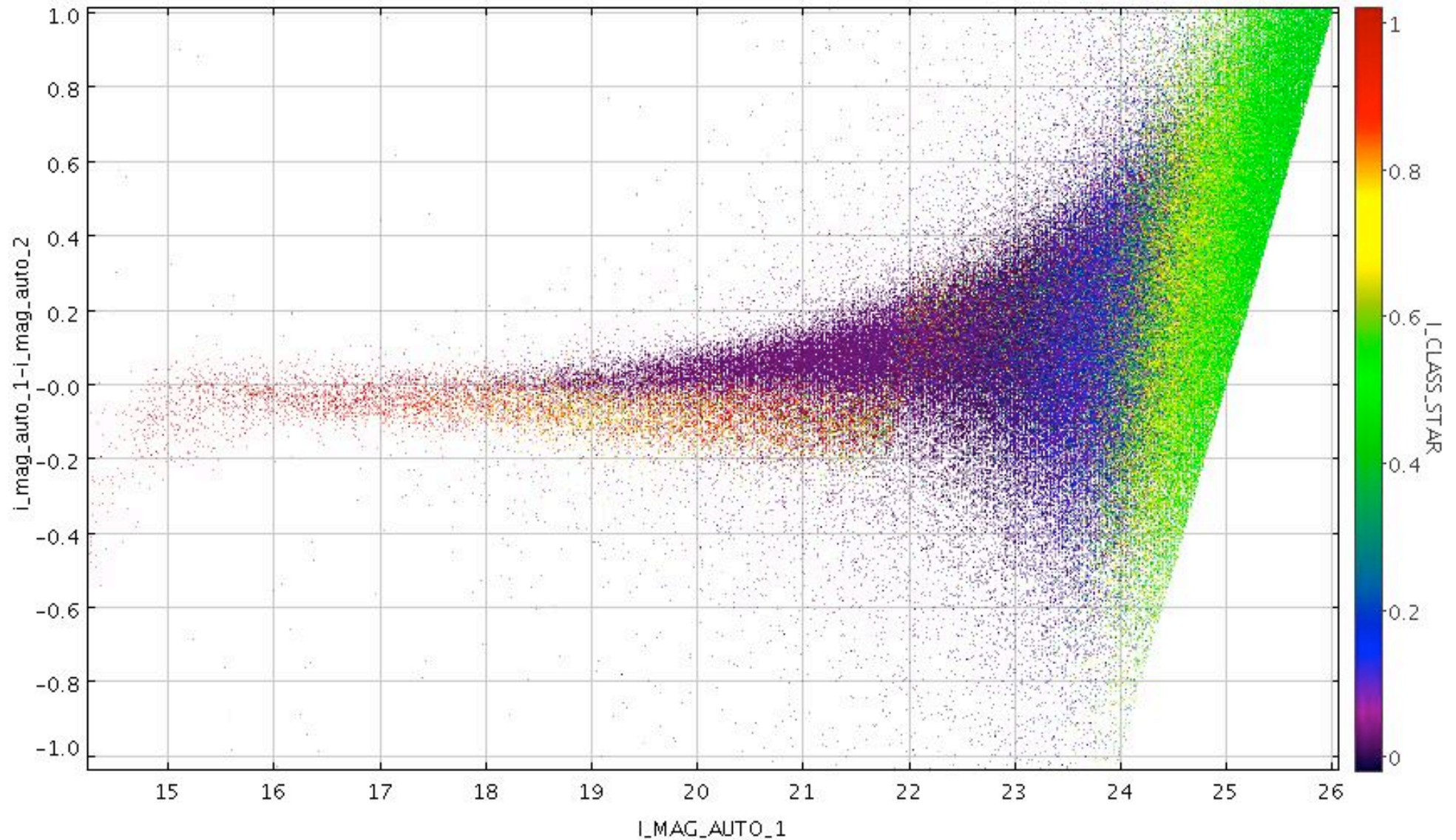
Skycell	Seeing cut	# frame	seeing	depth
065	None	20	1.27±0.11	24.99±0.03
	1.6"	15	1.15±0.07	24.92±0.04
	1.4"	10	1.13±0.09	24.67±0.05
066	None	20	1.24±0.08	24.93±0.05
	1.4"	15	1.18±0.10	24.84±0.06
	1.2"	11	1.12±0.06	24.57±0.04
077	None	20	1.26±0.07	24.93±0.03
	1.6"	14	1.19±0.09	24.84±0.04
	1.4"	11	1.15±0.06	24.56±0.02
078	None	20	1.19±0.04	24.94±0.02
	1.4"	15	1.12±0.06	24.71±0.02
	1.2"	10	1.06±0.07	24.57±0.03

**CHEERS!**

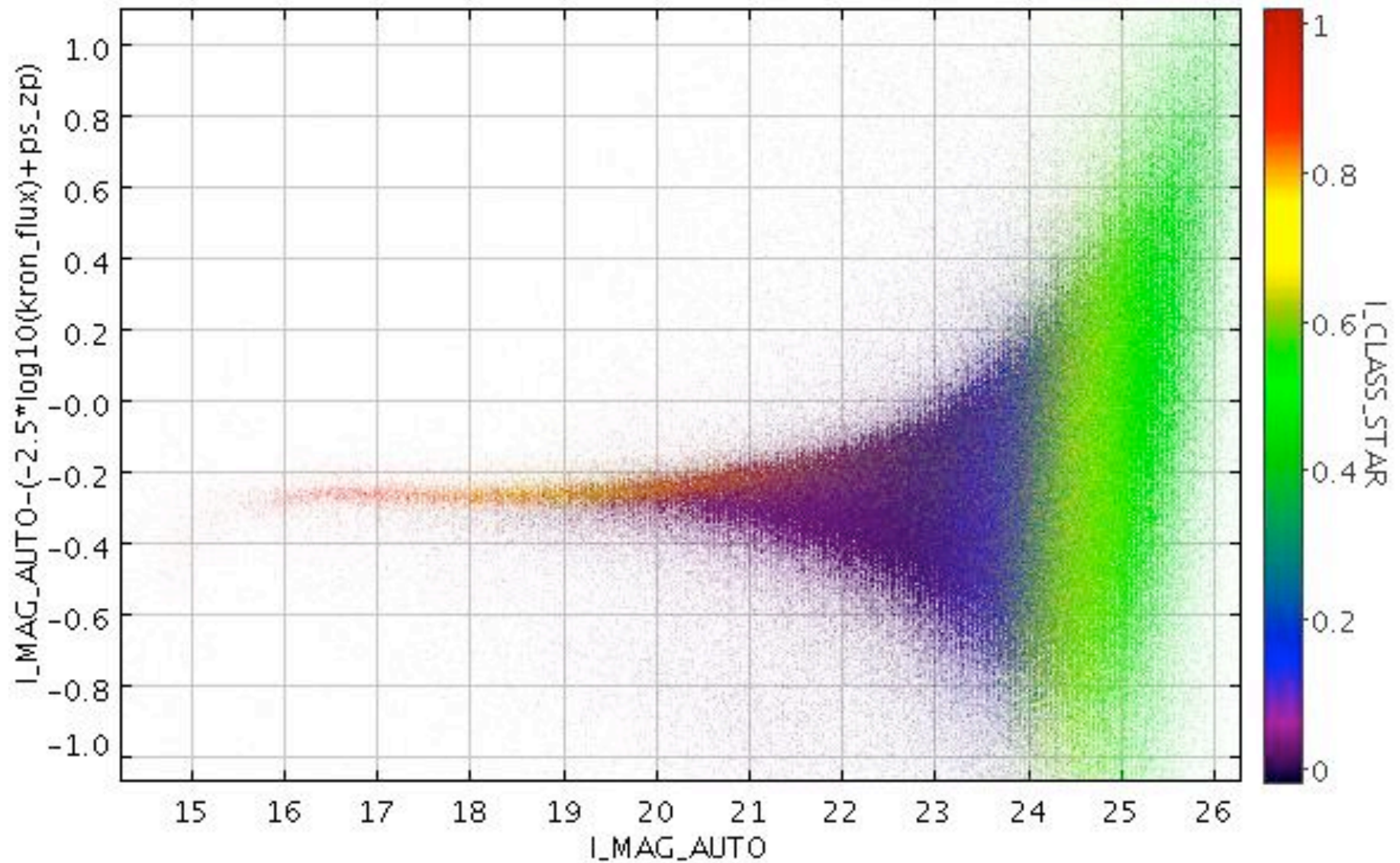
# PS1-MD07-TW vs CFHTLS (i-band)



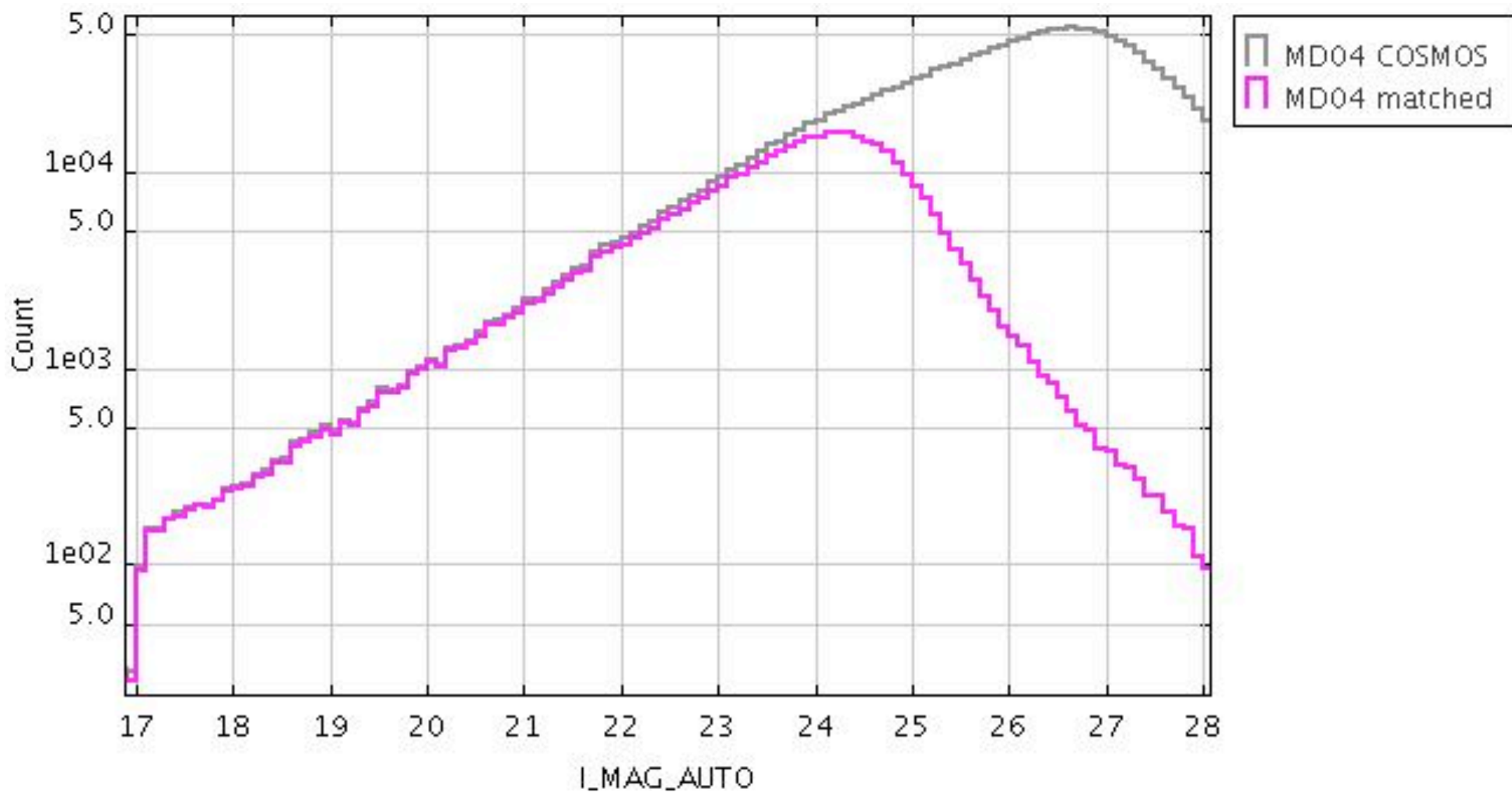
# PS1-MD04-TW vs COSMOS (i-band)



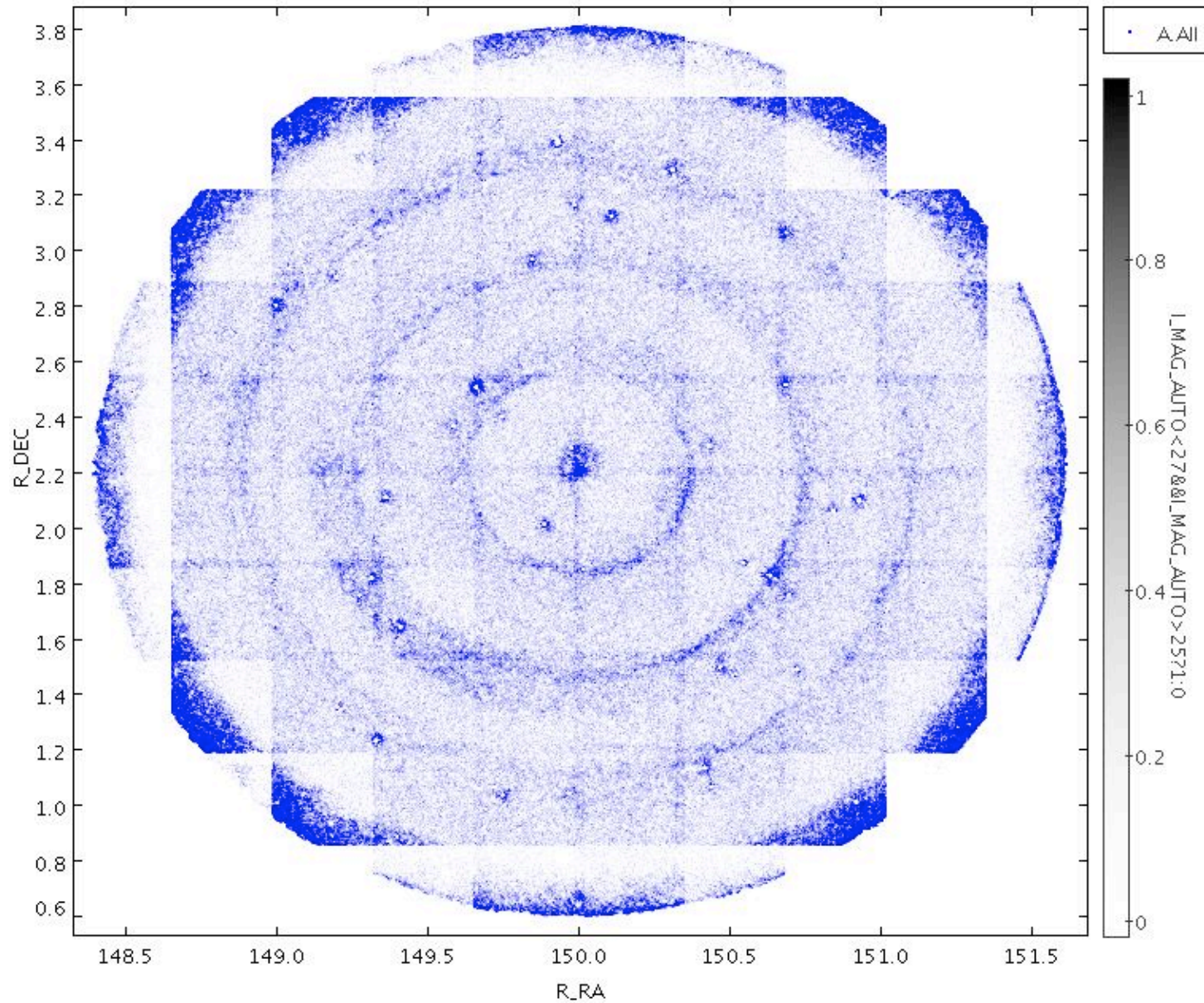
# PS1-MD04-TW vs IPP (i-band)



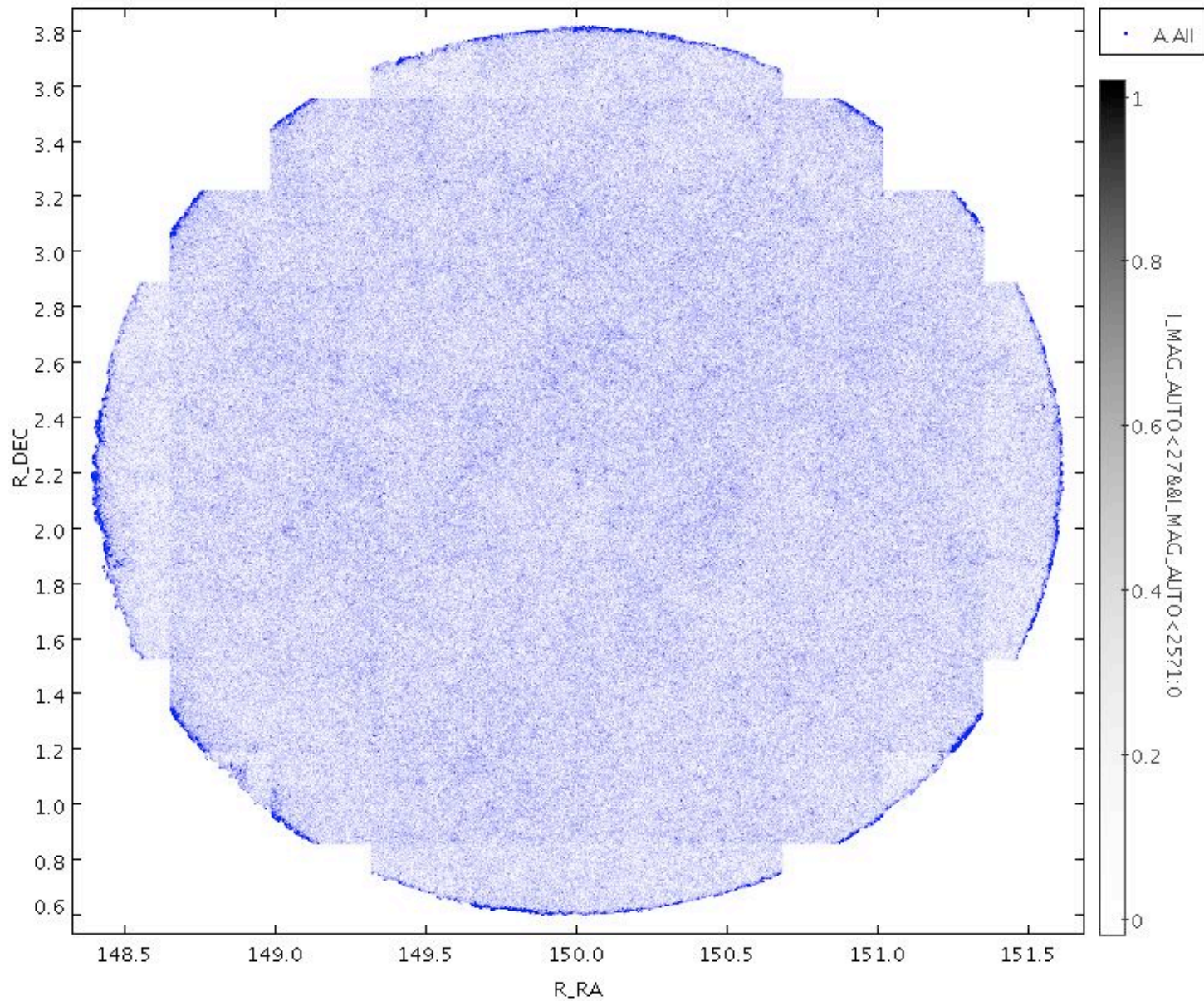
# PS1-MD04-TW vs COSMOS (i-band)



# PS1-MD04-TW (i-band)



# PS1-MD04-TW (i-band): $i < 25$





# PS1-MD07-TW (i-band)

