

U @ OATS

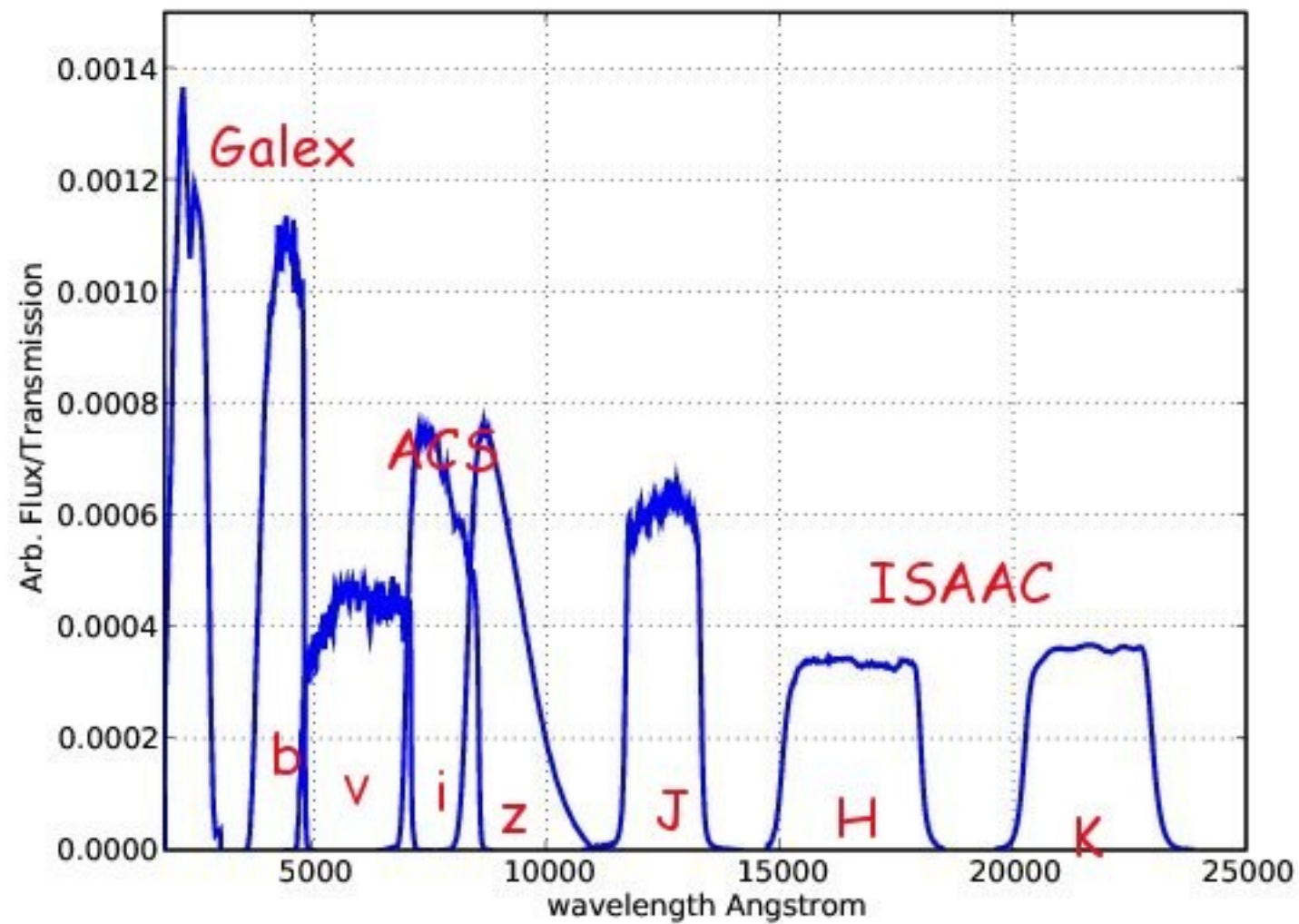
- *GOODS (again!)*
- *Clusters*

GOODS

- The beginning: AXAF (Chandra)
- ... then Spitzer & HST ...
- OATS was/is in the game! (P.T.,M.N.)
- Coll. ESO,STScI,NOAO & al.

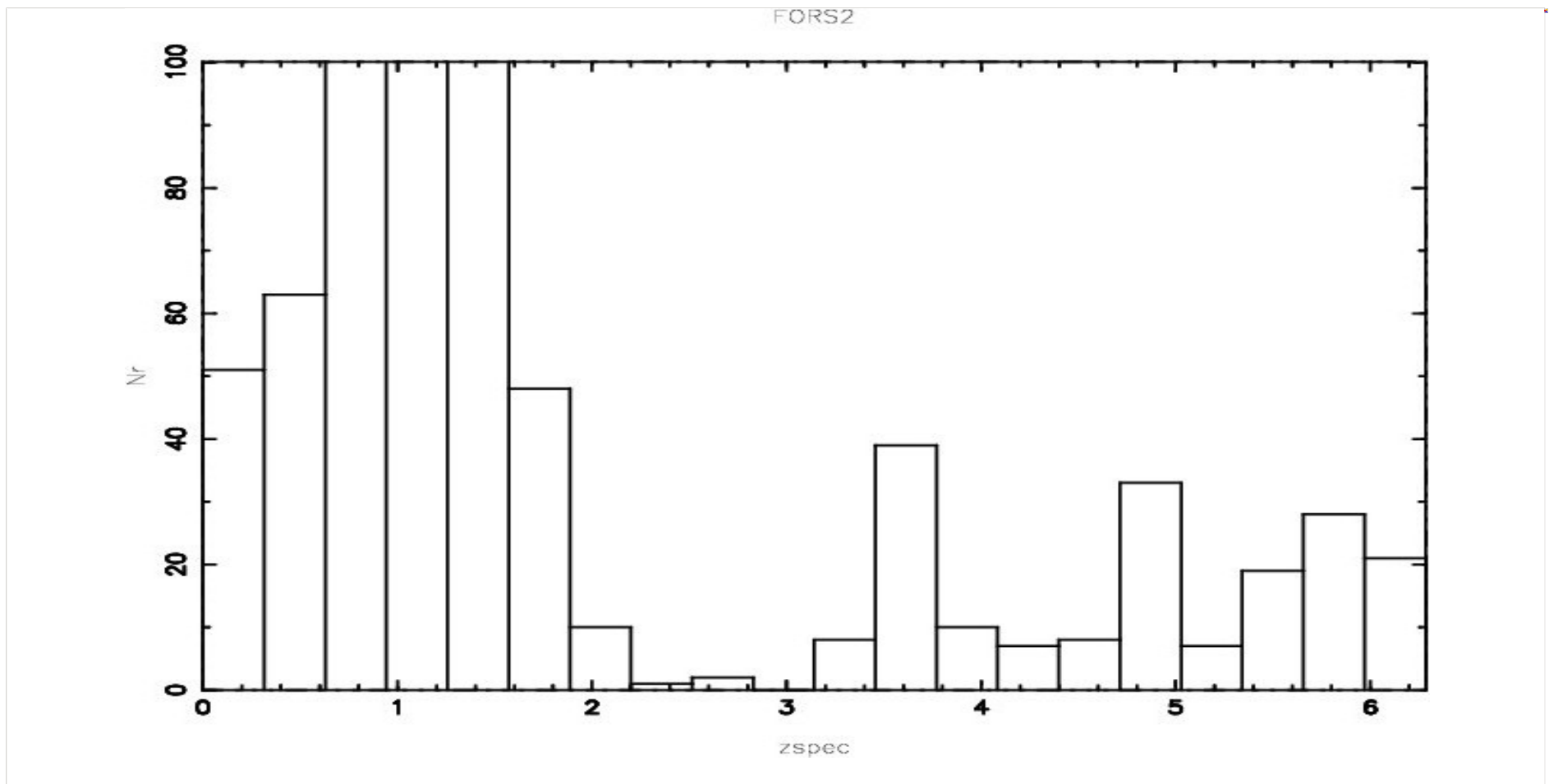
GOODS goals

- “Follow mass assembly history”
- “Census of massive black holes”
- “Origin and Evolution of the Hubble sequence”
- ...
- K20 (mag $K_s < 20$)
- *GMASS* (Galaxy Mass Assembly ultra-deep Spectroscopy, 4.5 Spitzer selection)



Target selection

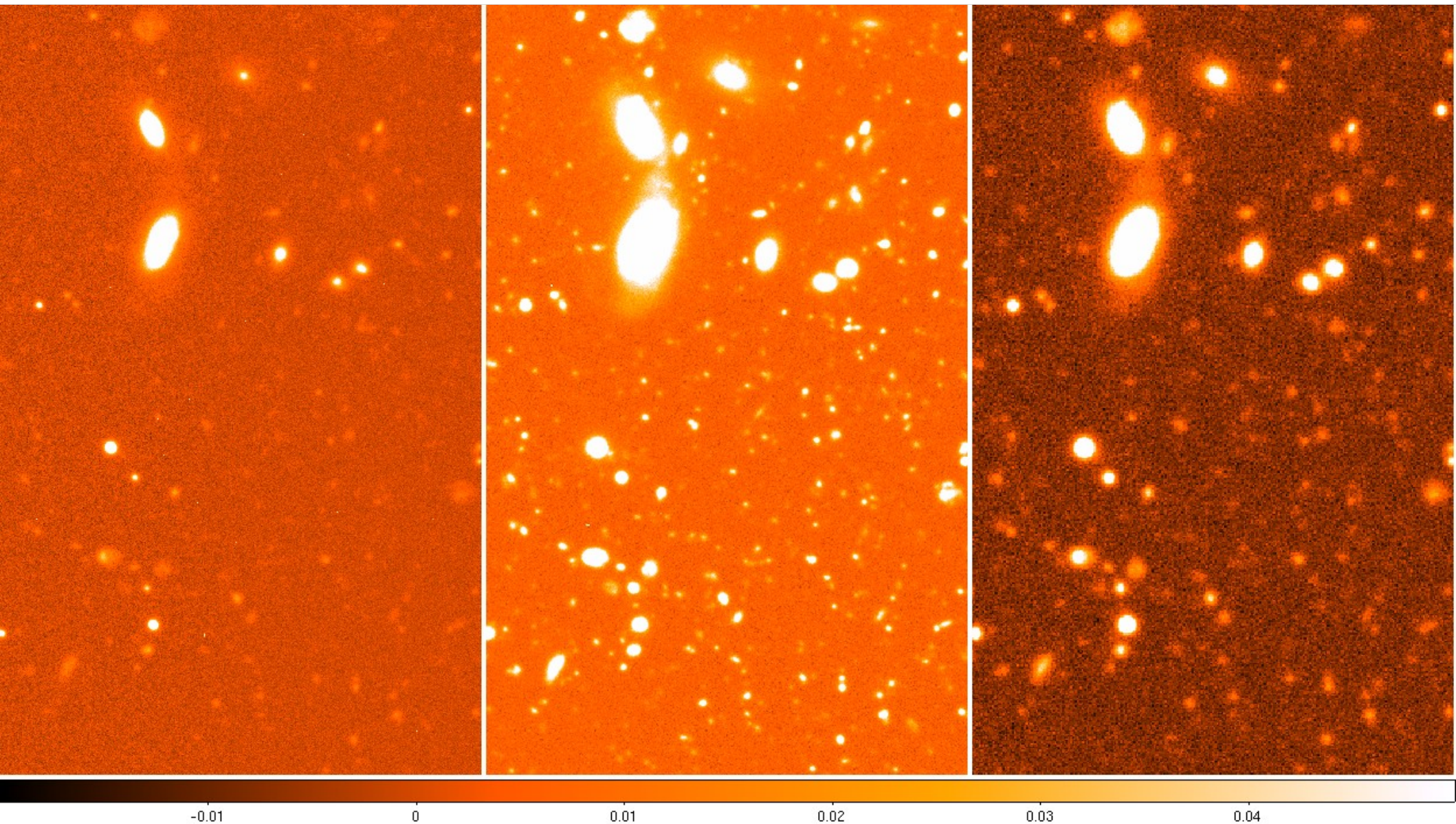
- **Mostly colour-colour based (e.g. FORS2 spec, Vanzella et al.)**



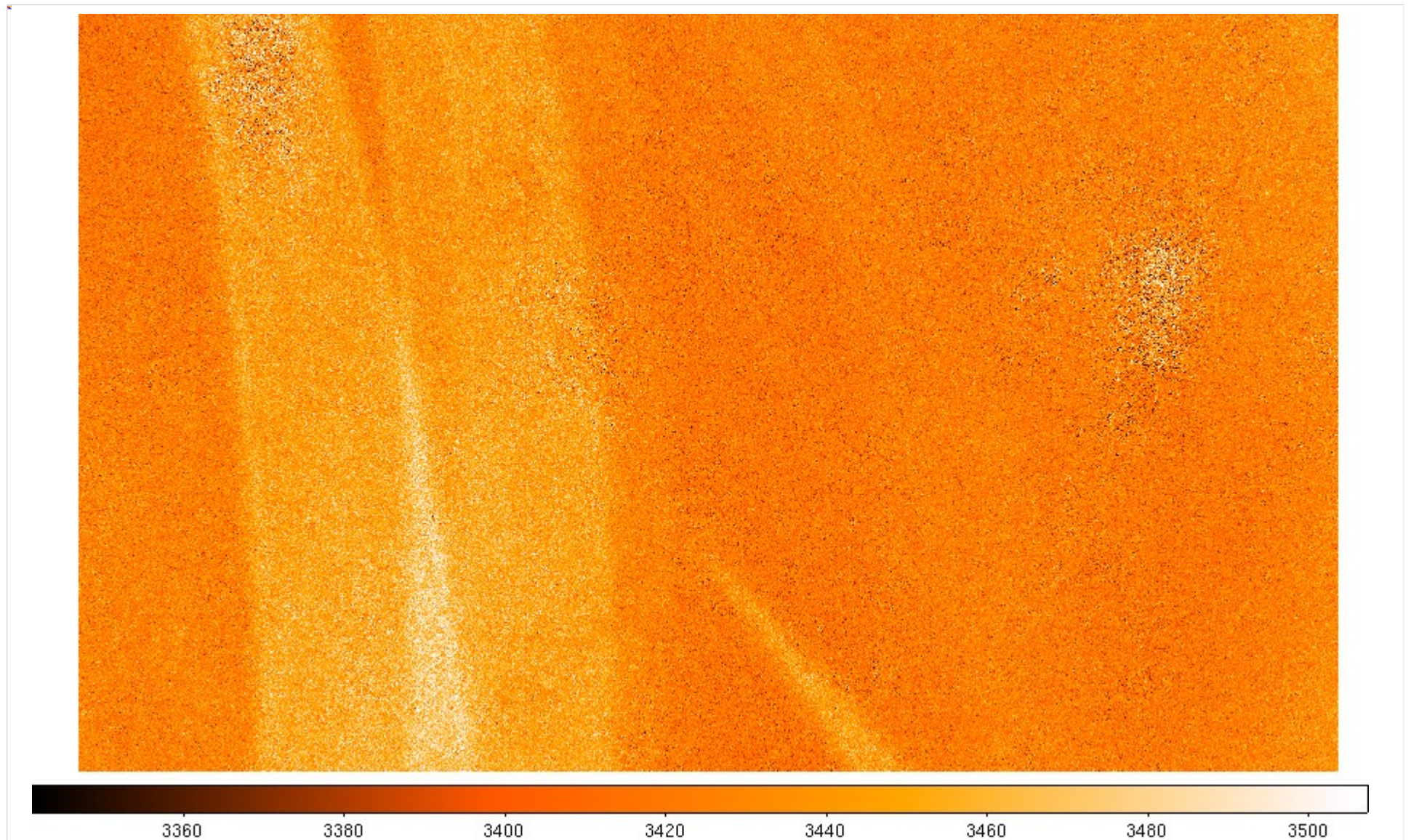
We need U!

- *>20 hrs @ "blind" WFI (EIS)*
- *CTIO Mosaic II*
- *40 hrs VIMOS@VLT between 2004 and 2006 (L.P. 168.A-0485(C), P.I. C.Cesarsky)*

SUSI2 – VIMOS - CTIO



Subtle is the camera...



A solution ...

- ***Wavelets: UDWT***

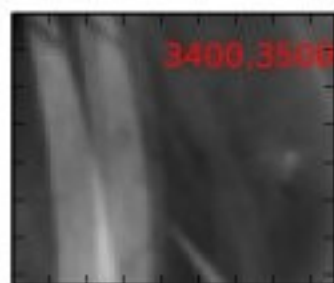
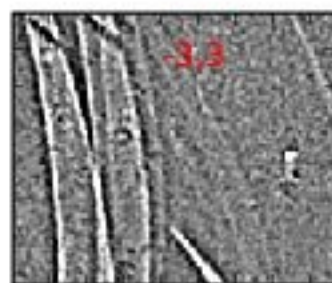
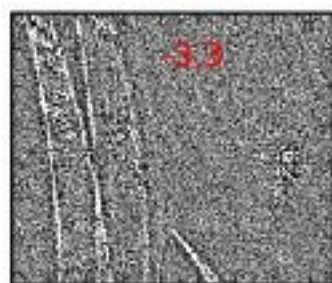
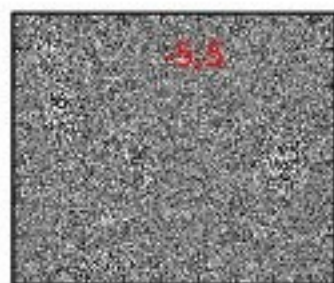
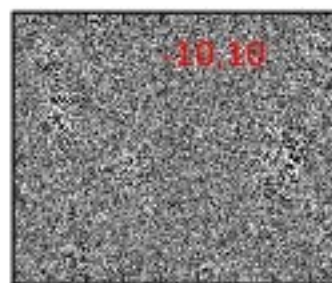
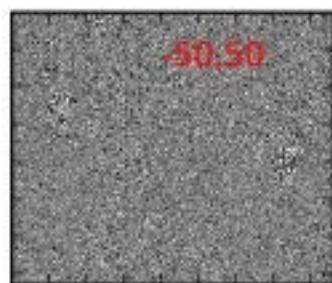
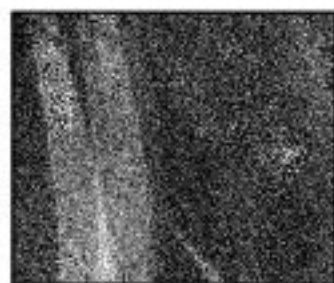
$$I_{j+1}(n, m) = \sum_k \sum_l h(k, l) I_j(n + 2^{j+1}k, m + 2^{j+1}l) \quad (0 \leq j \leq J - 1).$$

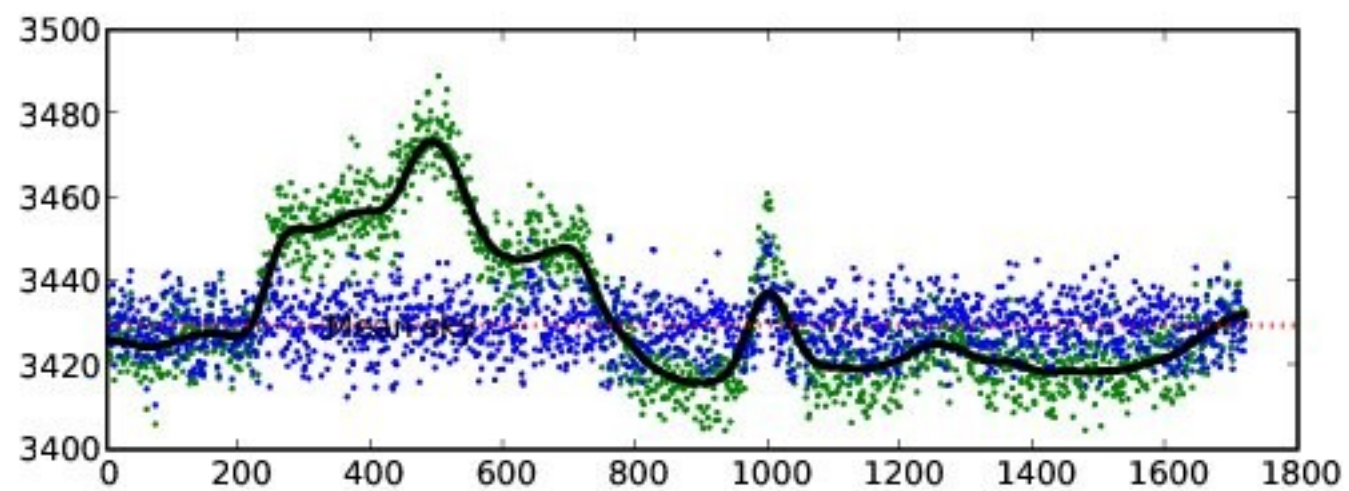
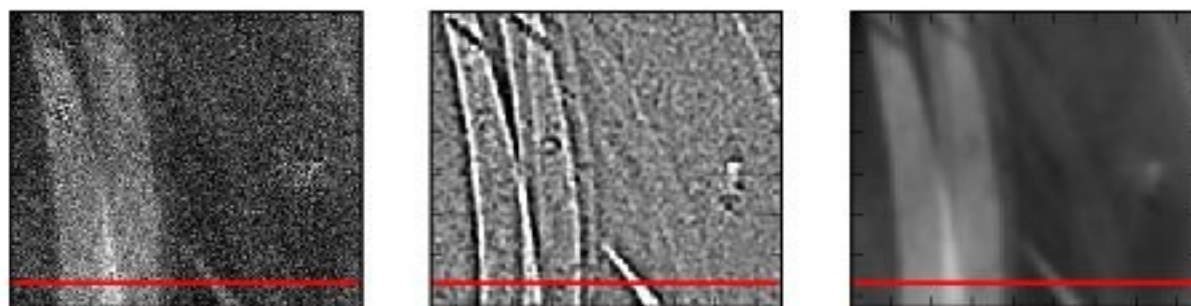
$$h(k, l) =$$

$$\frac{1}{256} \cdot \begin{bmatrix} 1 & 4 & 6 & 4 & 1 \\ 4 & 16 & 24 & 16 & 4 \\ 6 & 24 & 36 & 24 & 6 \\ 4 & 16 & 24 & 16 & 4 \\ 1 & 4 & 6 & 4 & 1 \end{bmatrix}$$

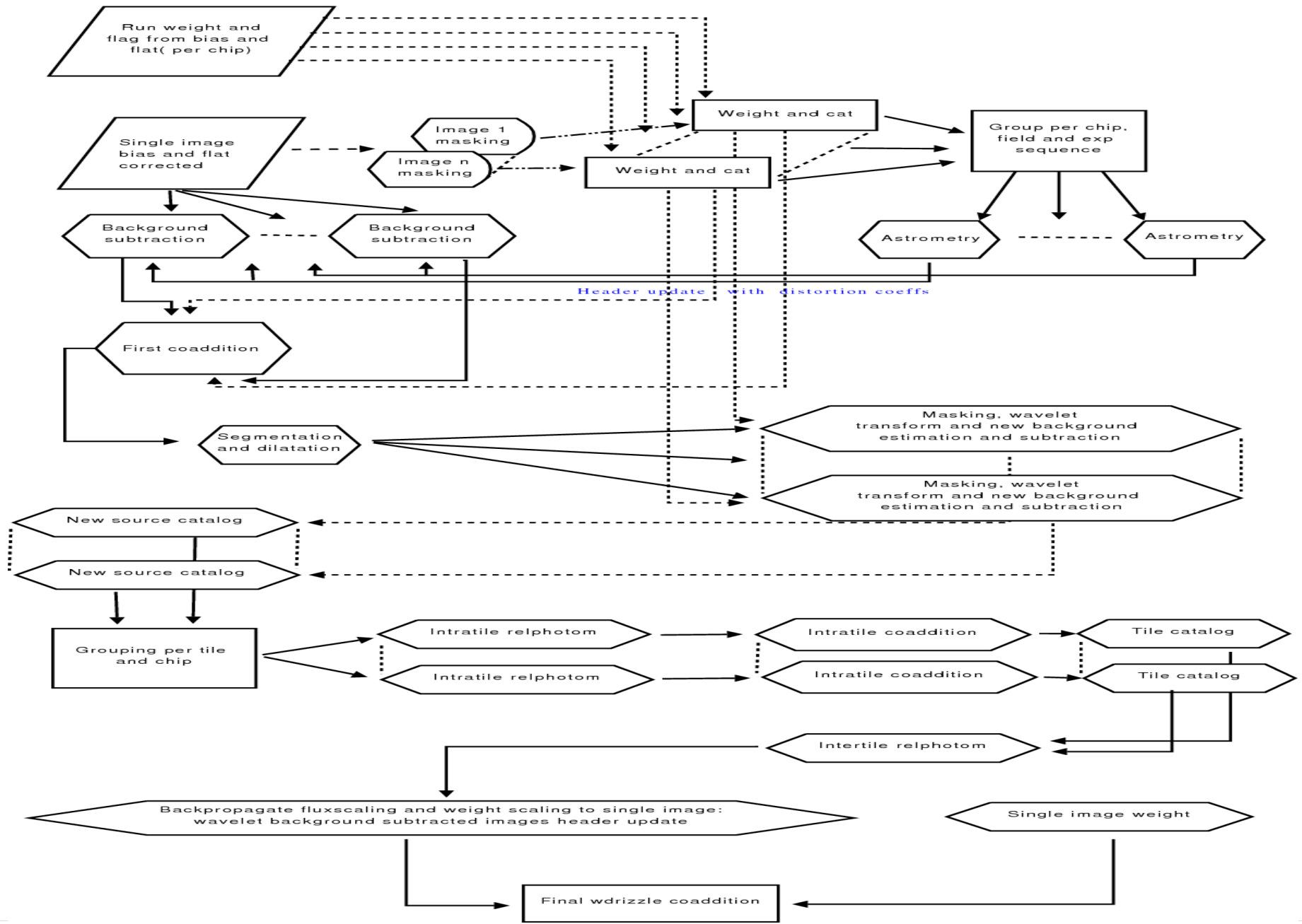
$$\omega_{j+1}(n, m) = I_j(n, m) - I_{j+1}(n, m)$$

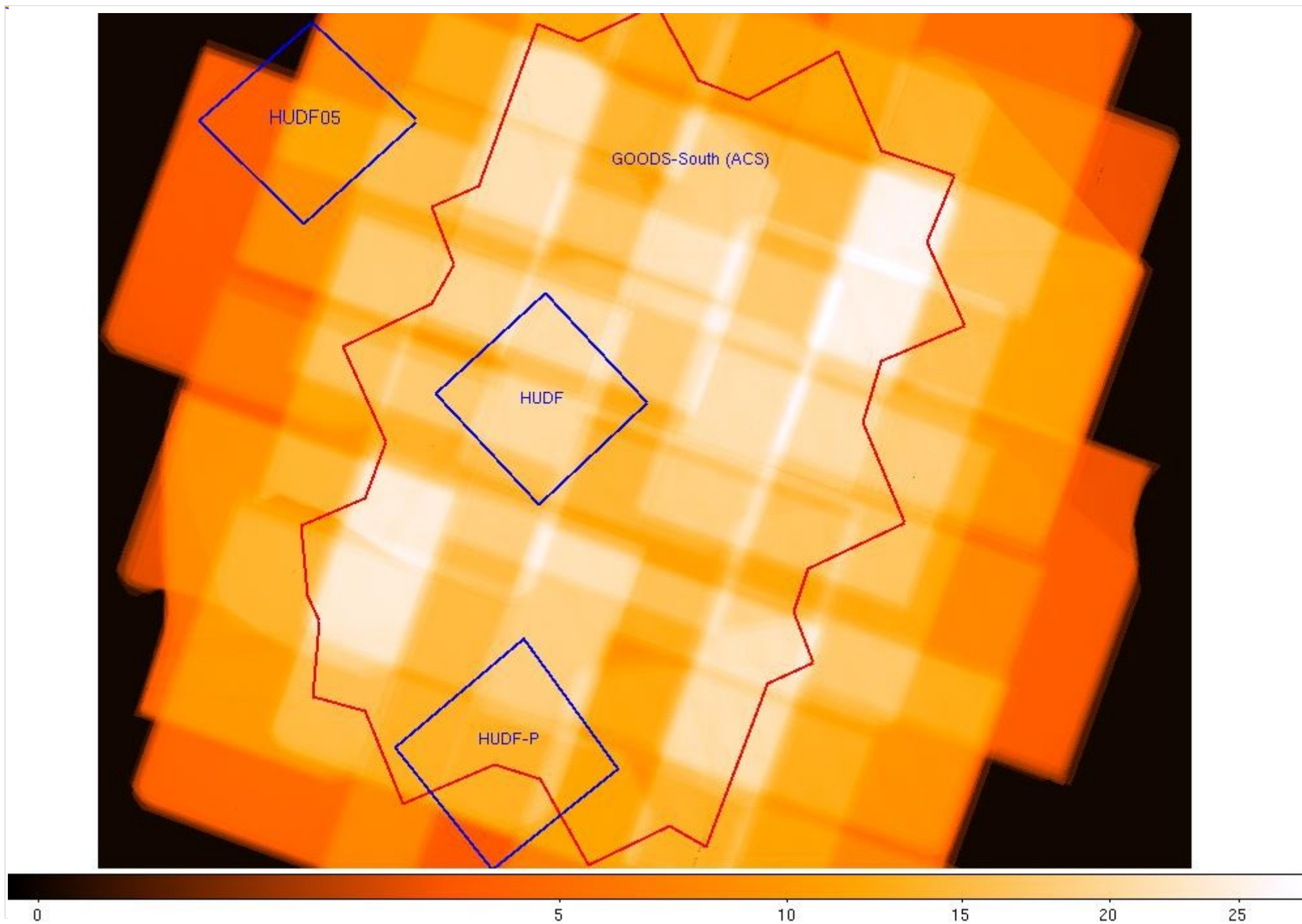
$$I_0(n, m) = I_J(n, m) + \sum_{j=1}^J \omega_j(n, m)$$



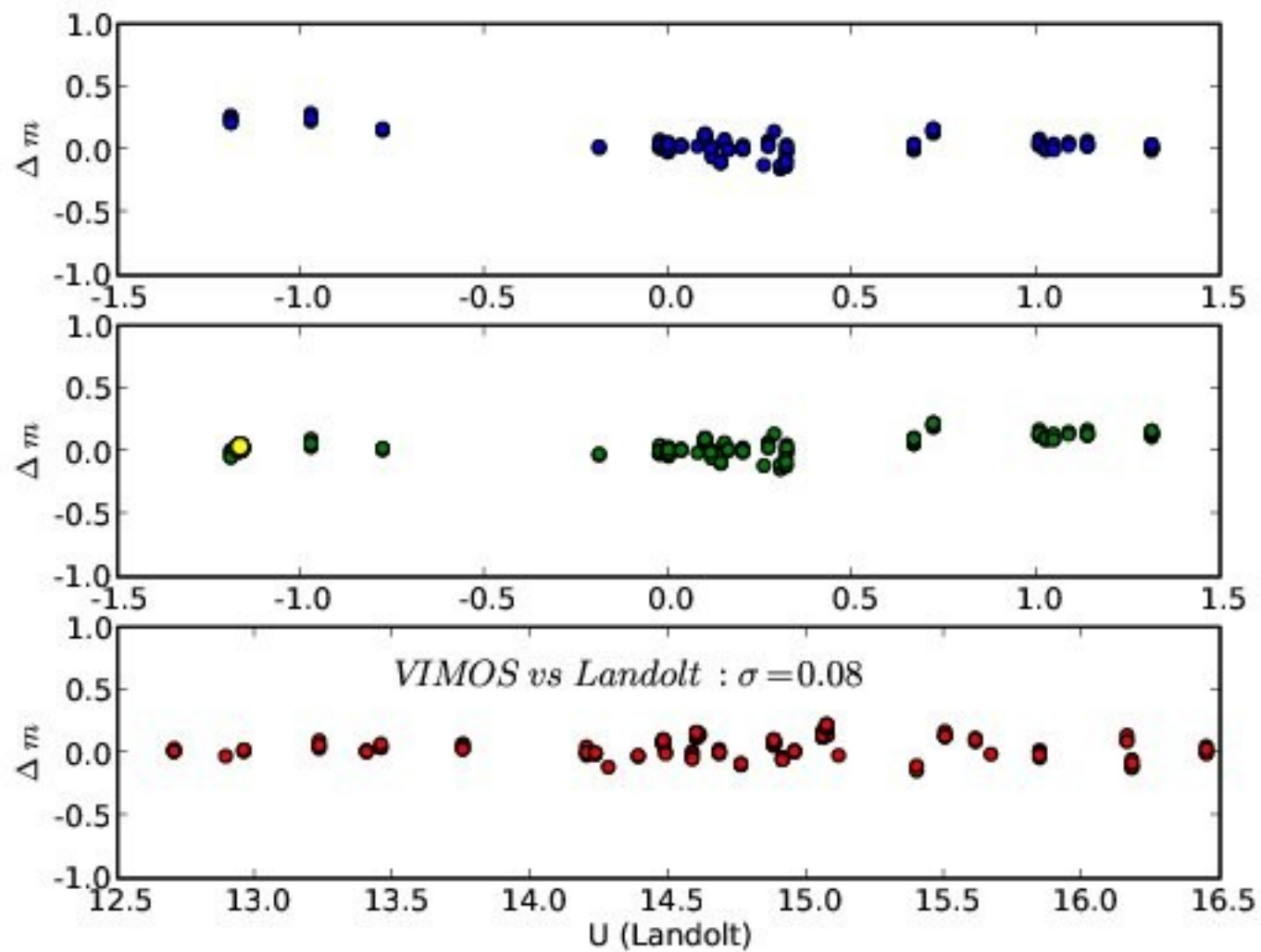


The resulting steps

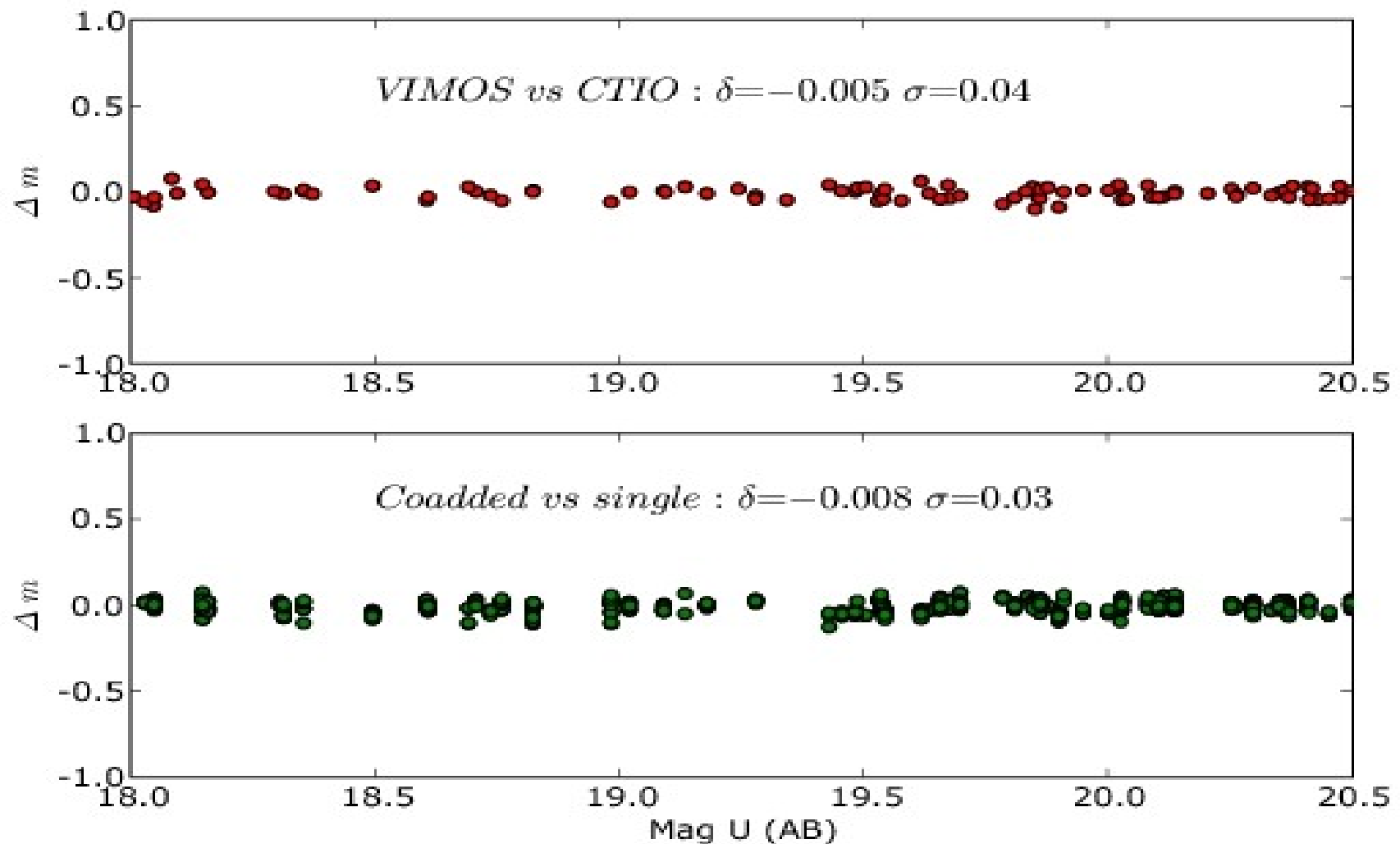




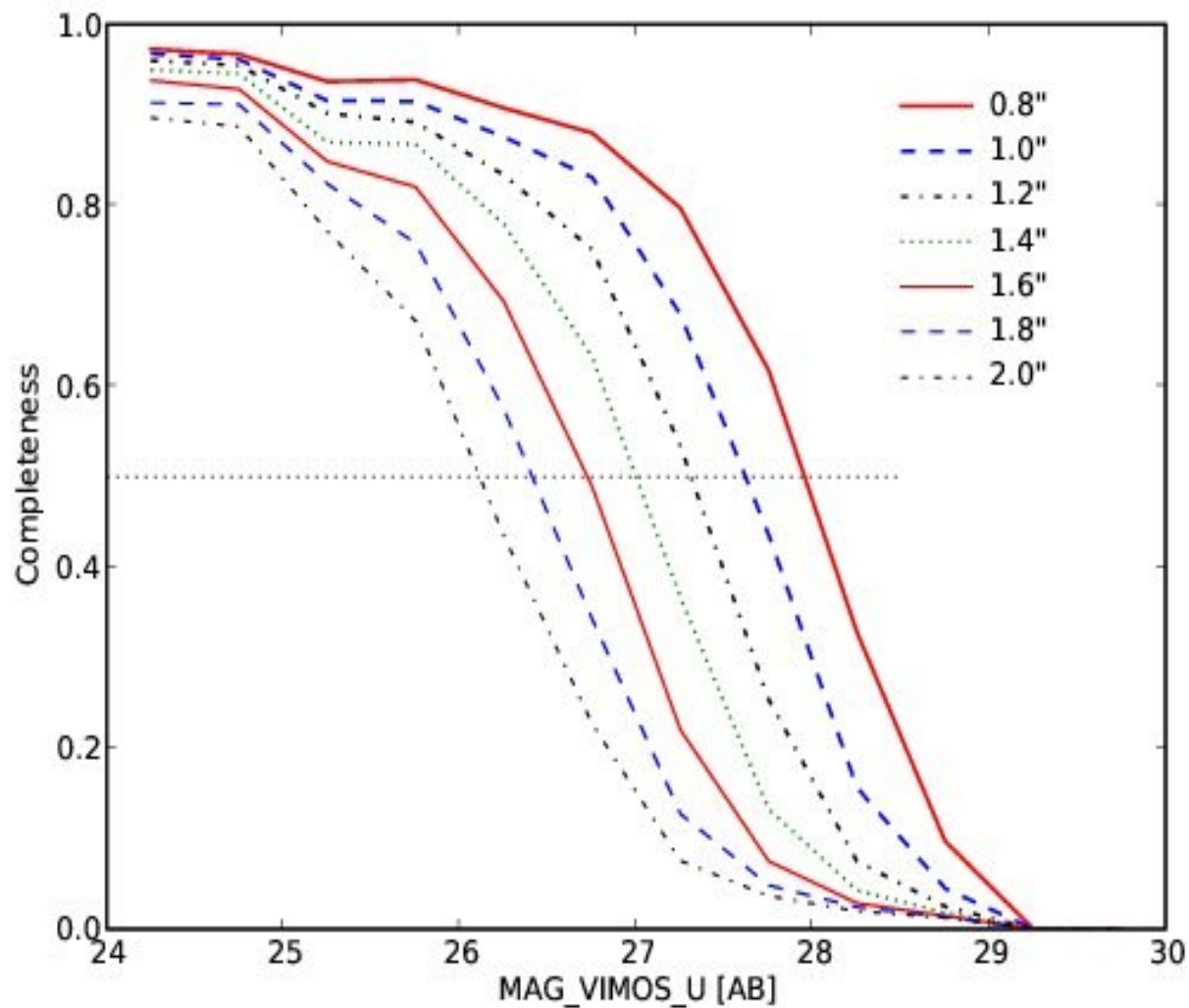
Zpt, please!



External & internal checks

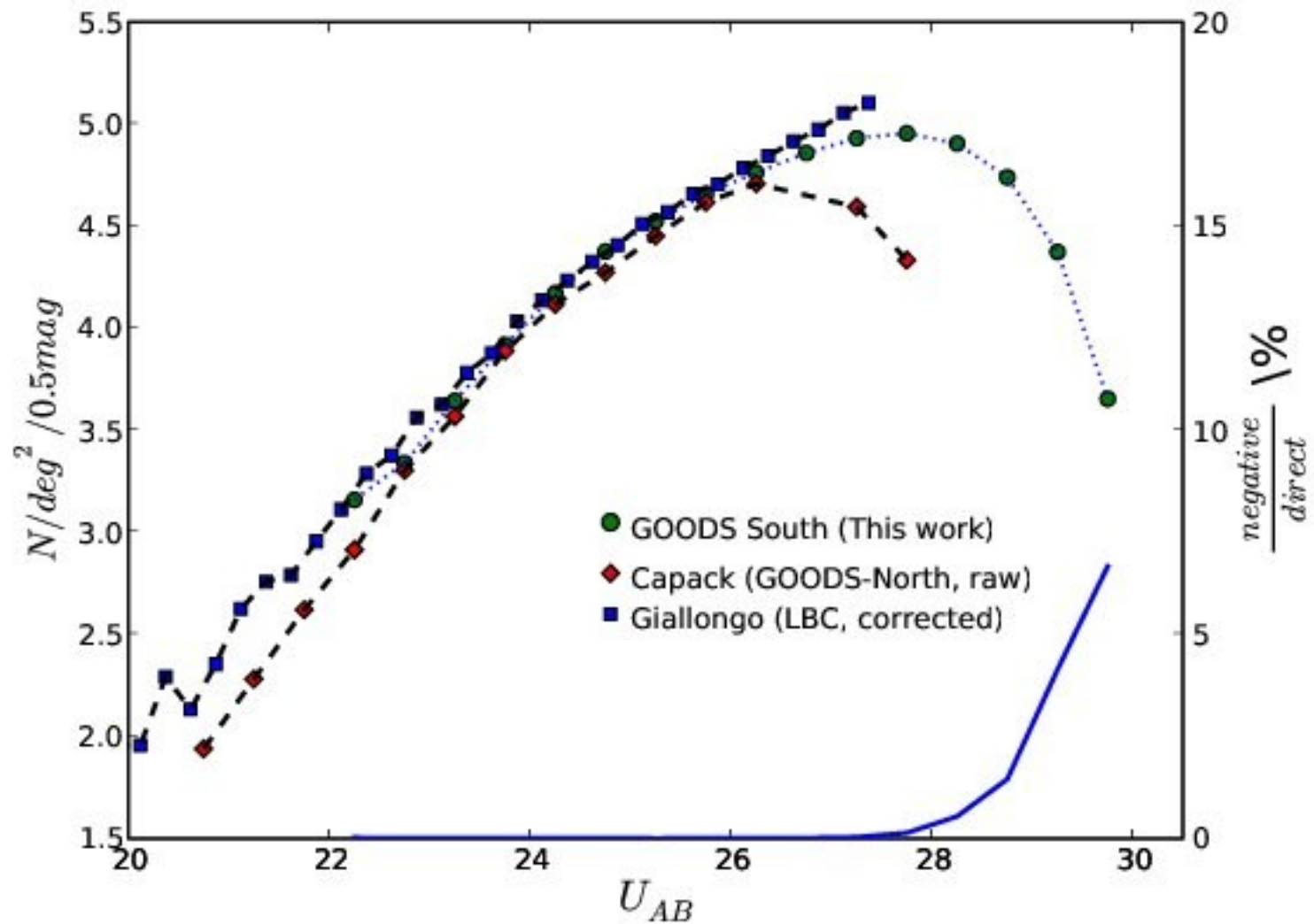


Depth from simulations

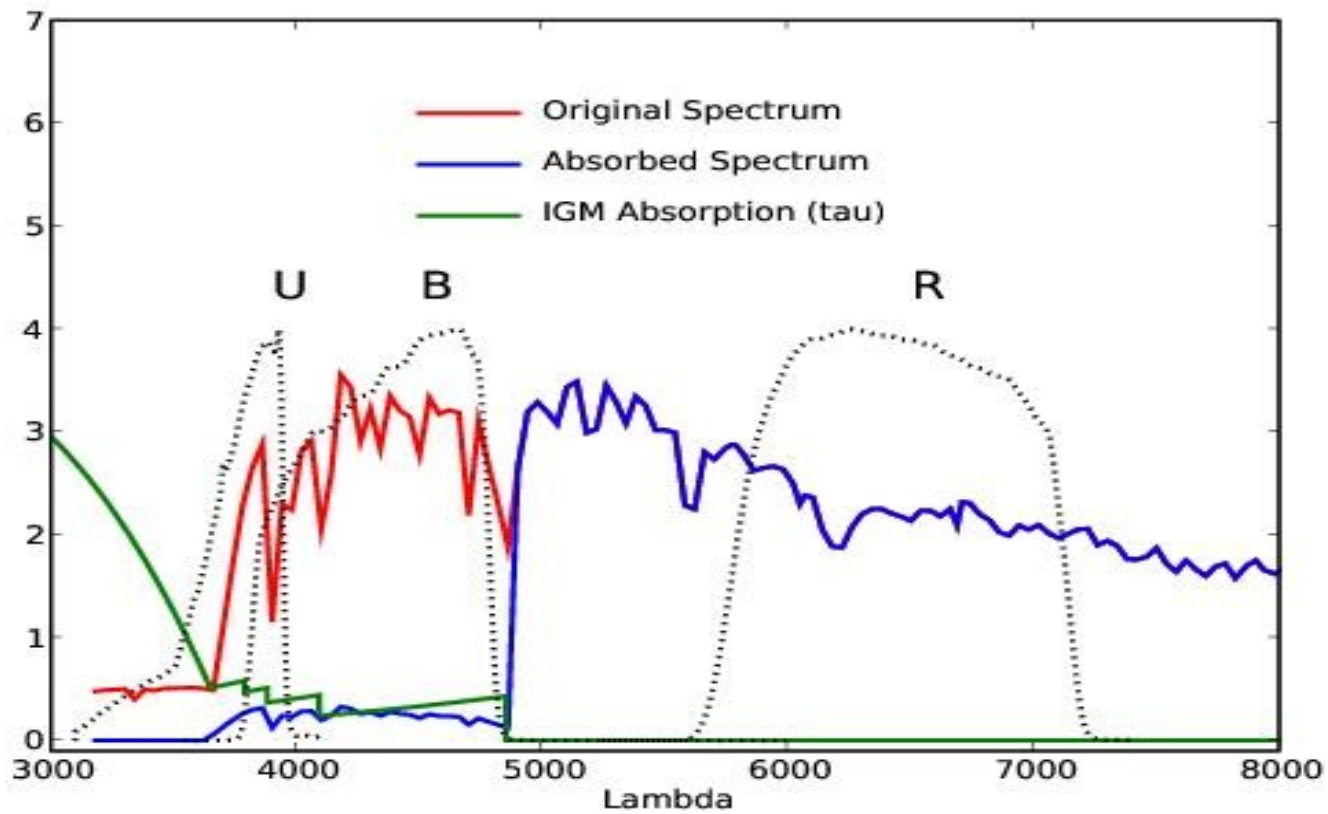


28 → -14 @ 0.5
→ -16 @ 1.0
→ -18 @ 2.0

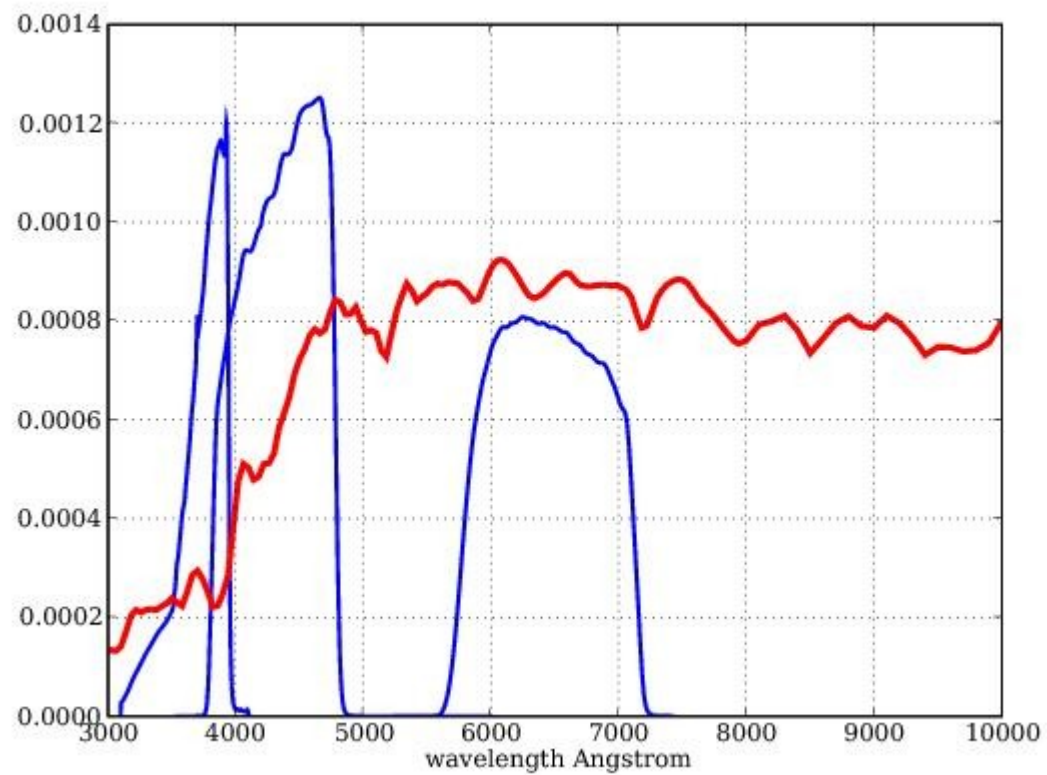
Deep enough?



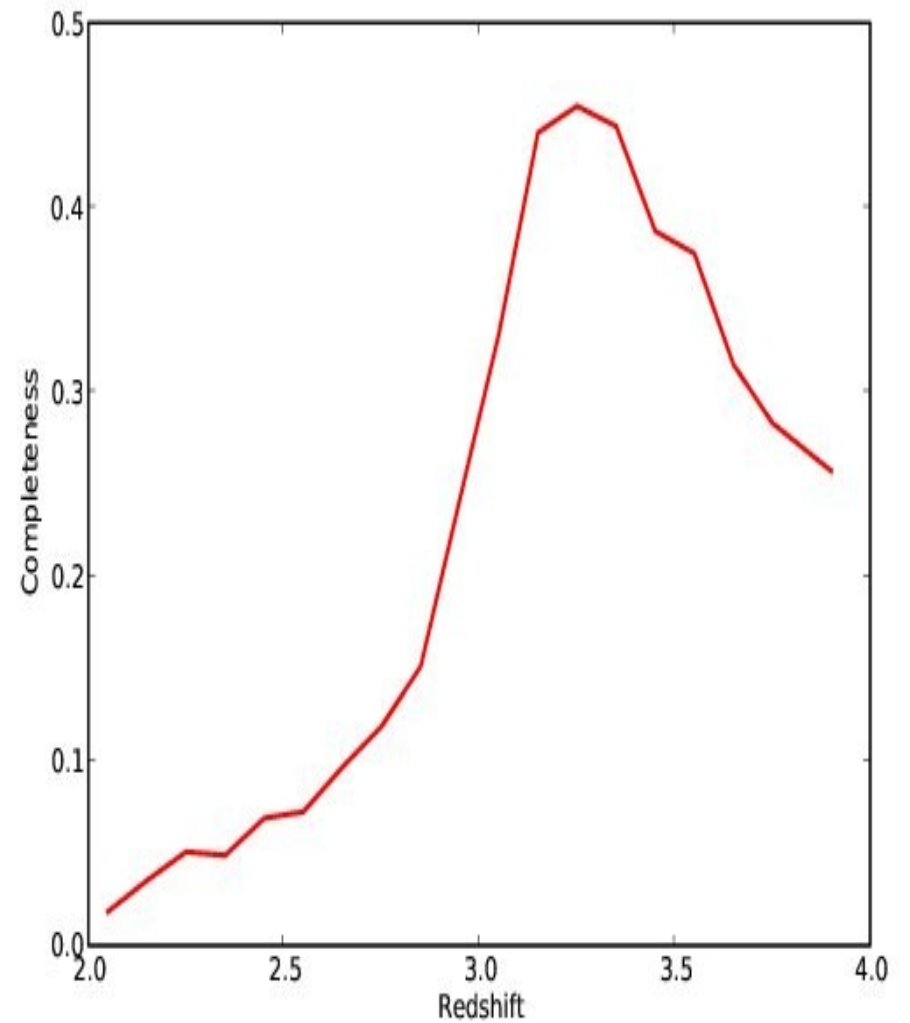
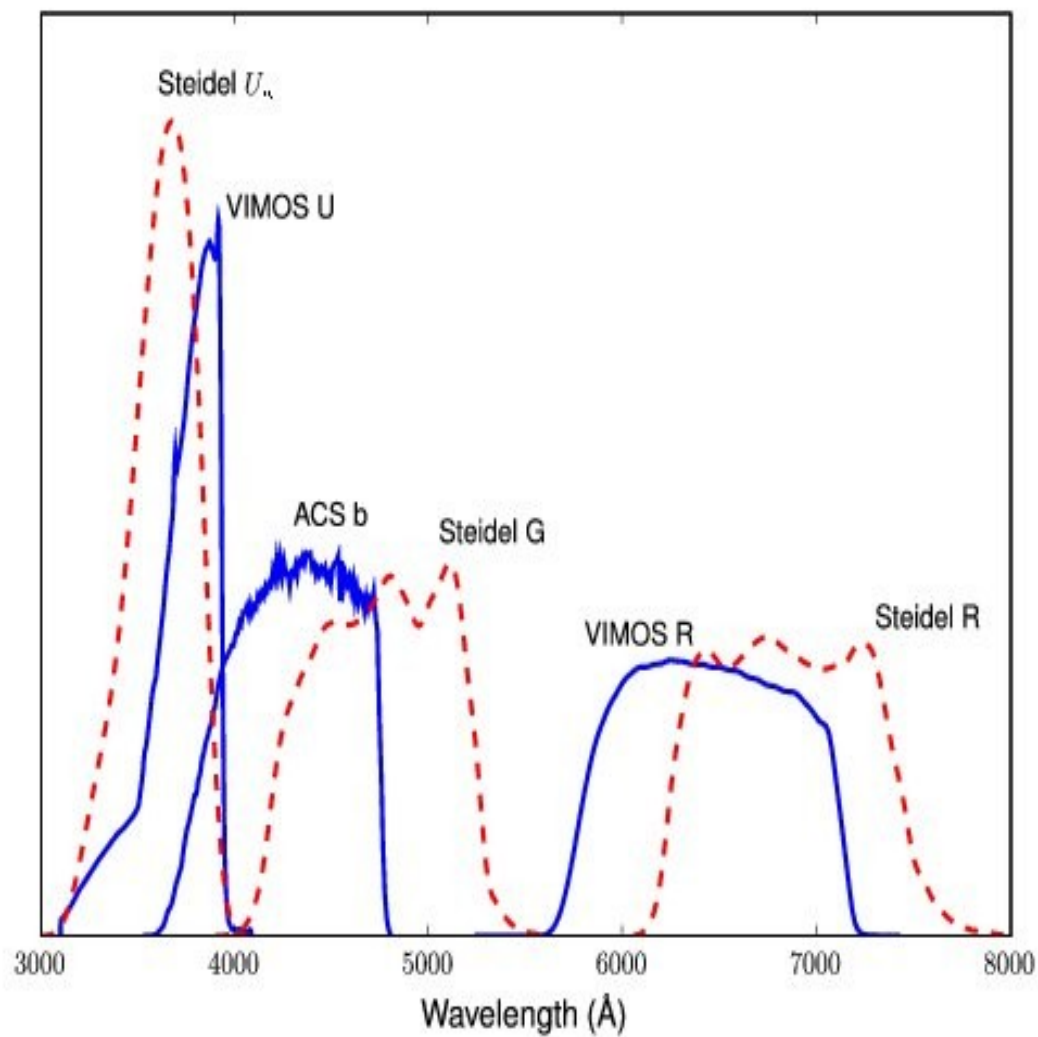
Selecting the candidates



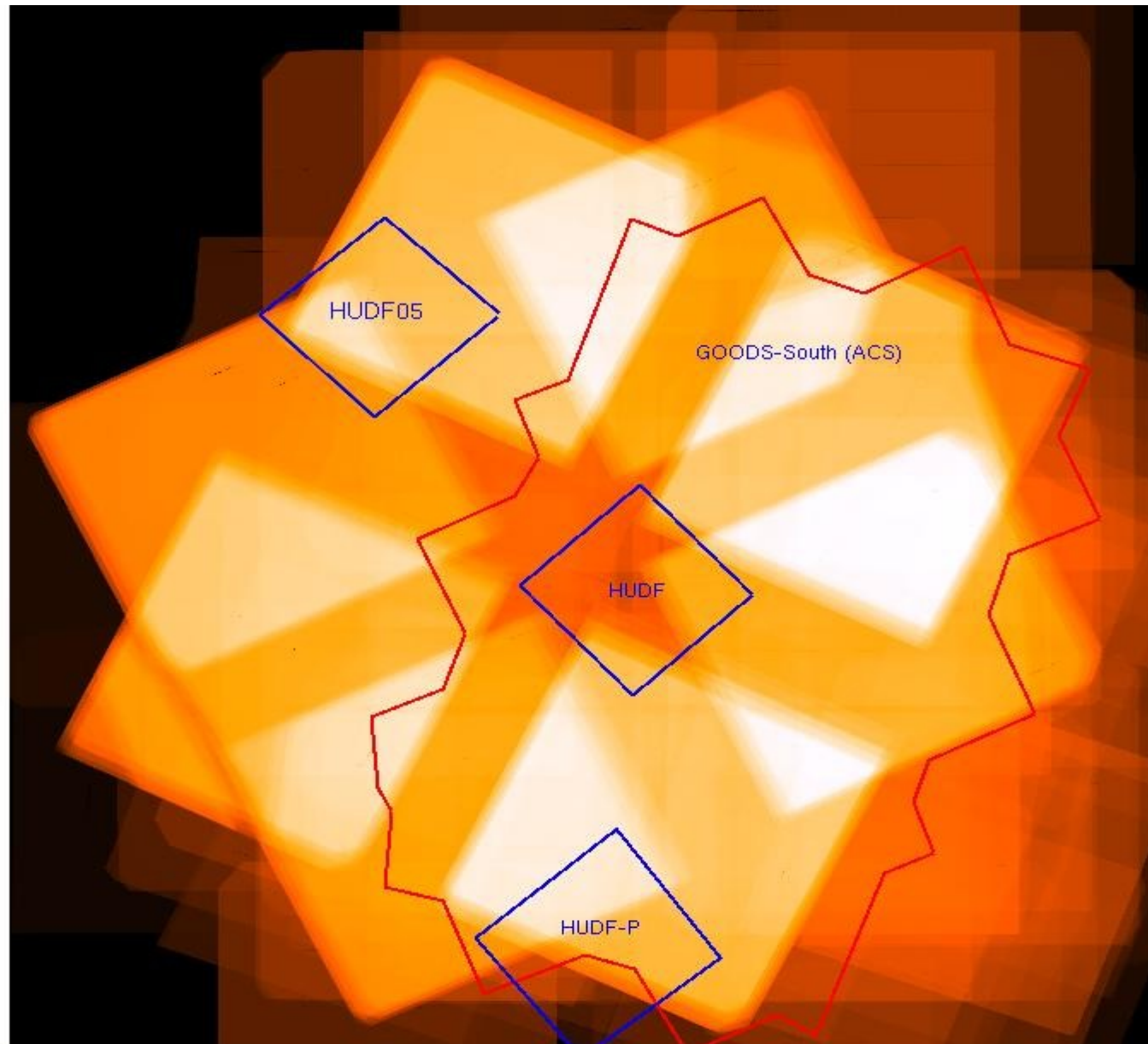
Pesty interlopers

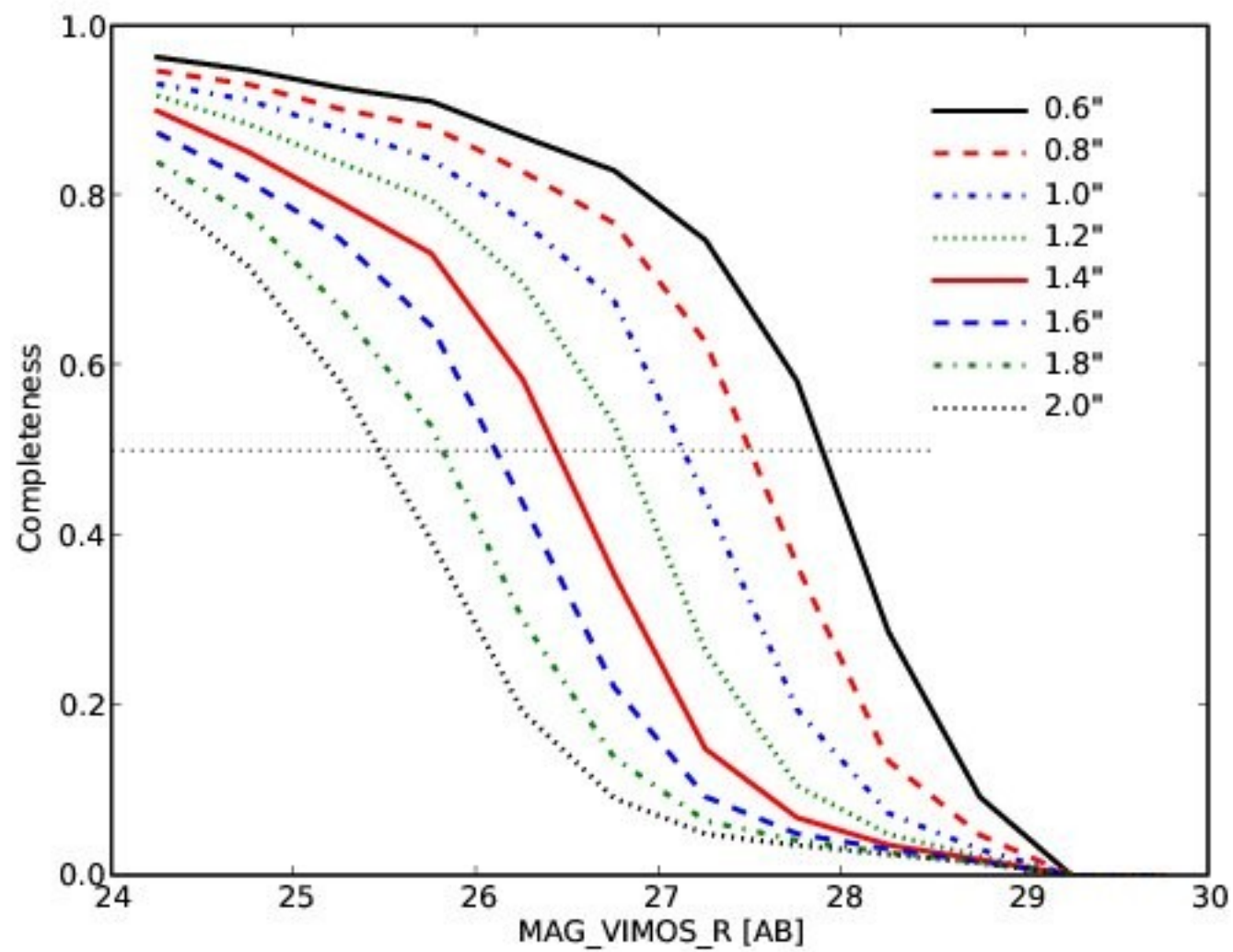


$z \sim 3$

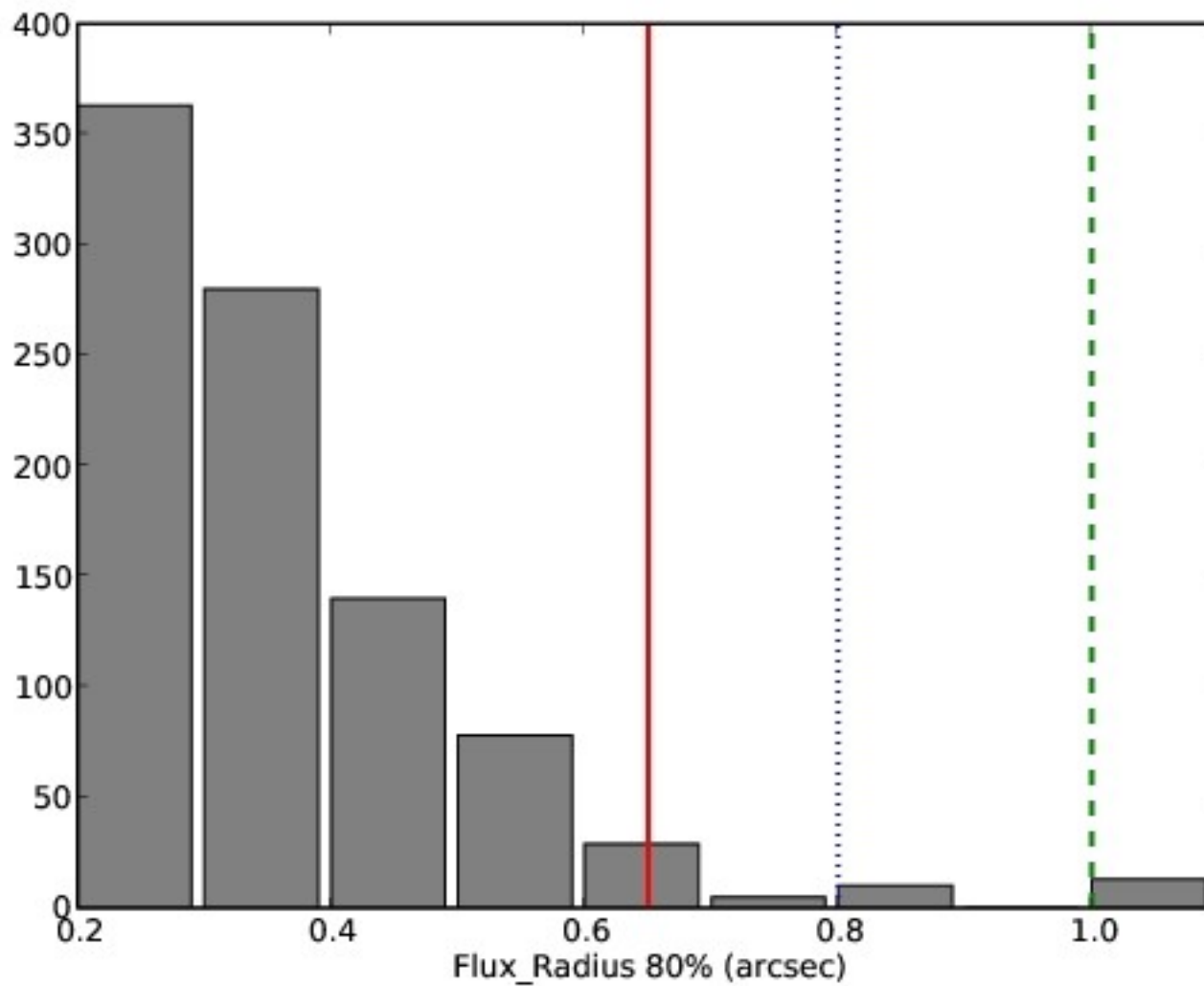


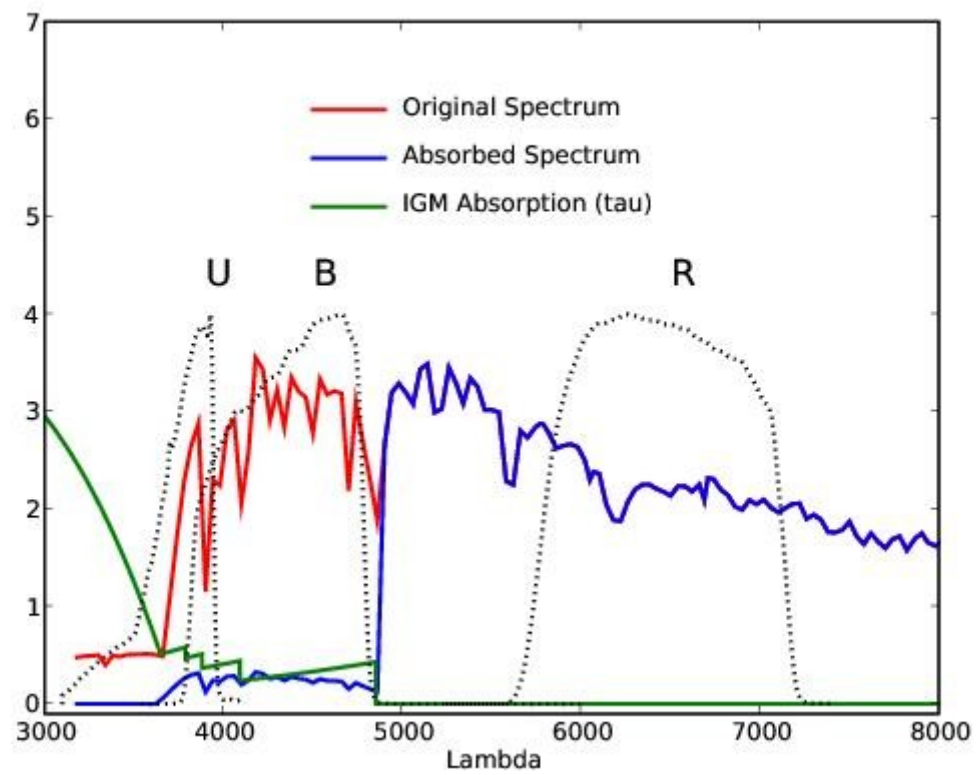
*VIMOS again (R band, need robust photometry,
data from 11 different programs)*



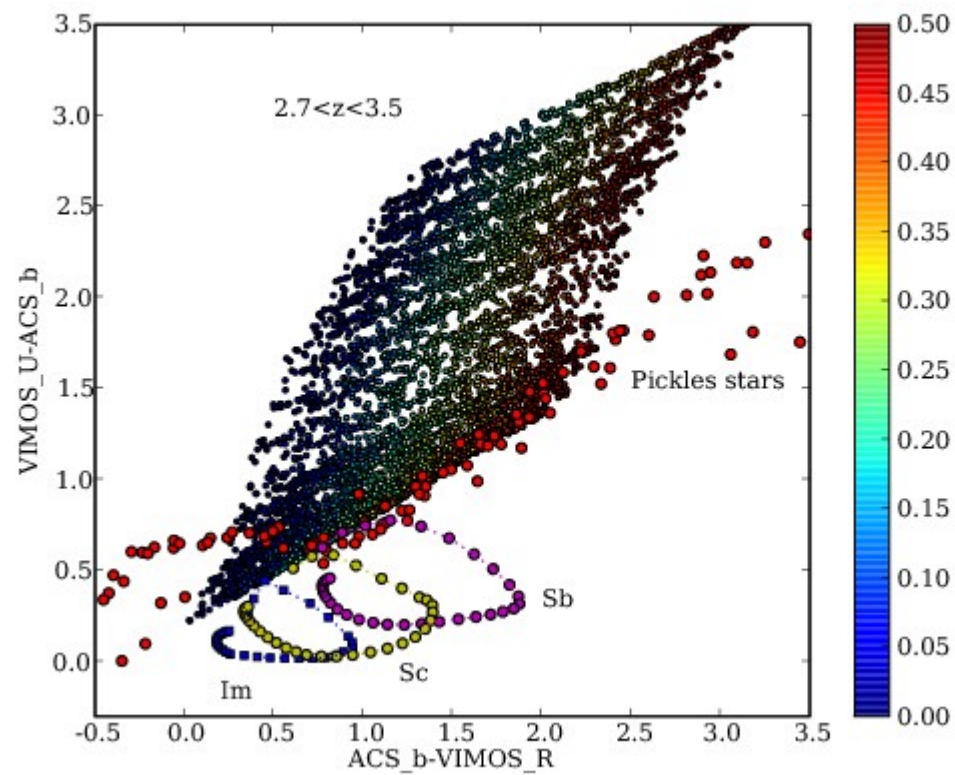


U drop “size”

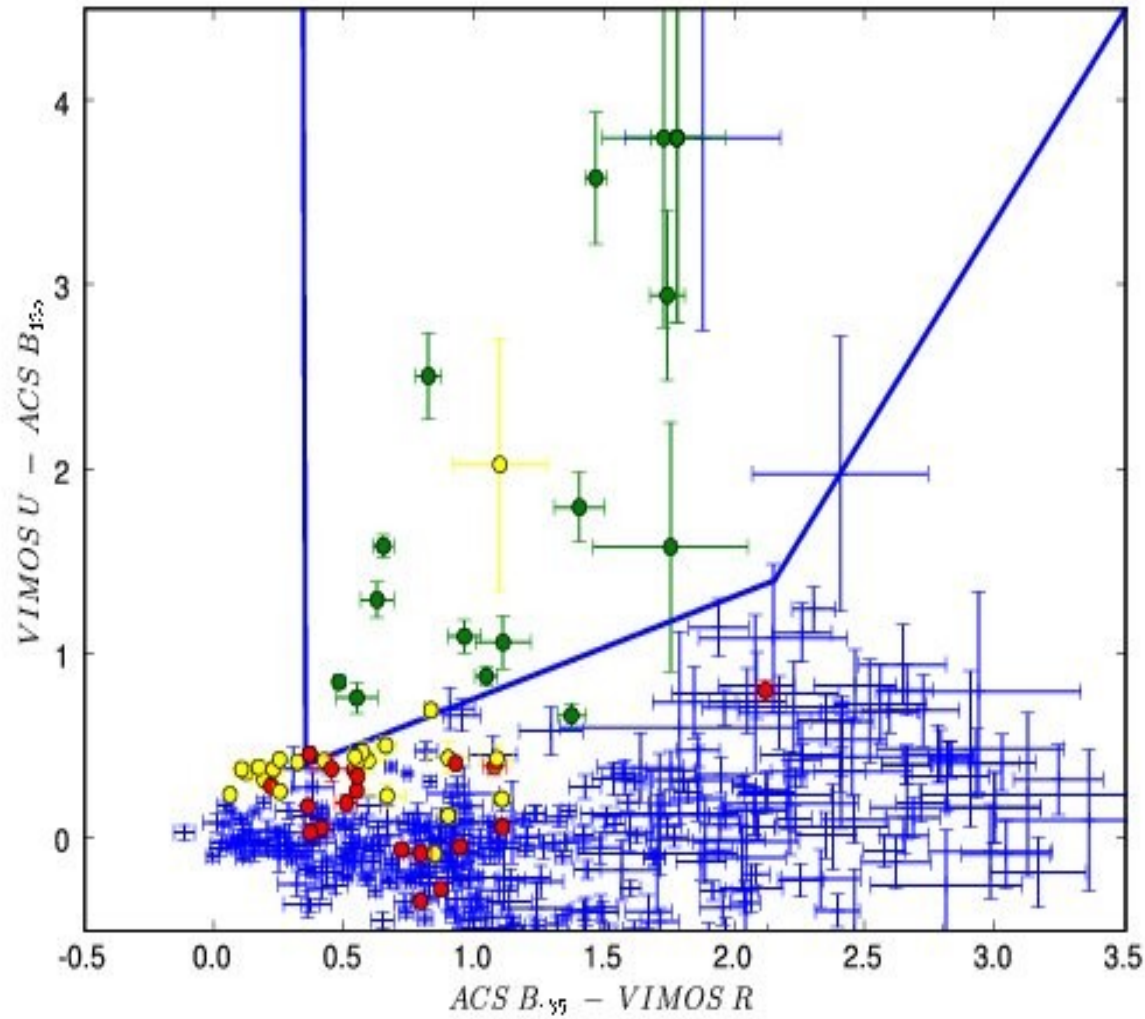




Simulations to define the selection box



LBGs



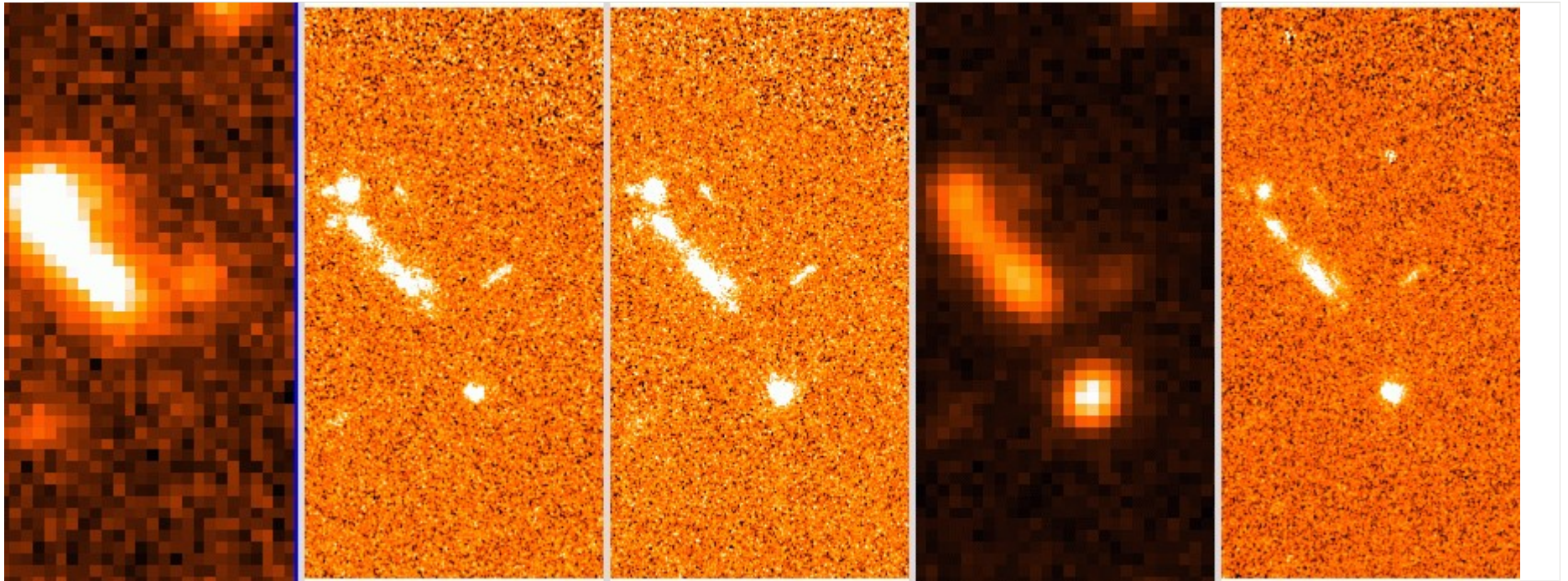
$z > 2.8$ (VIMOS)

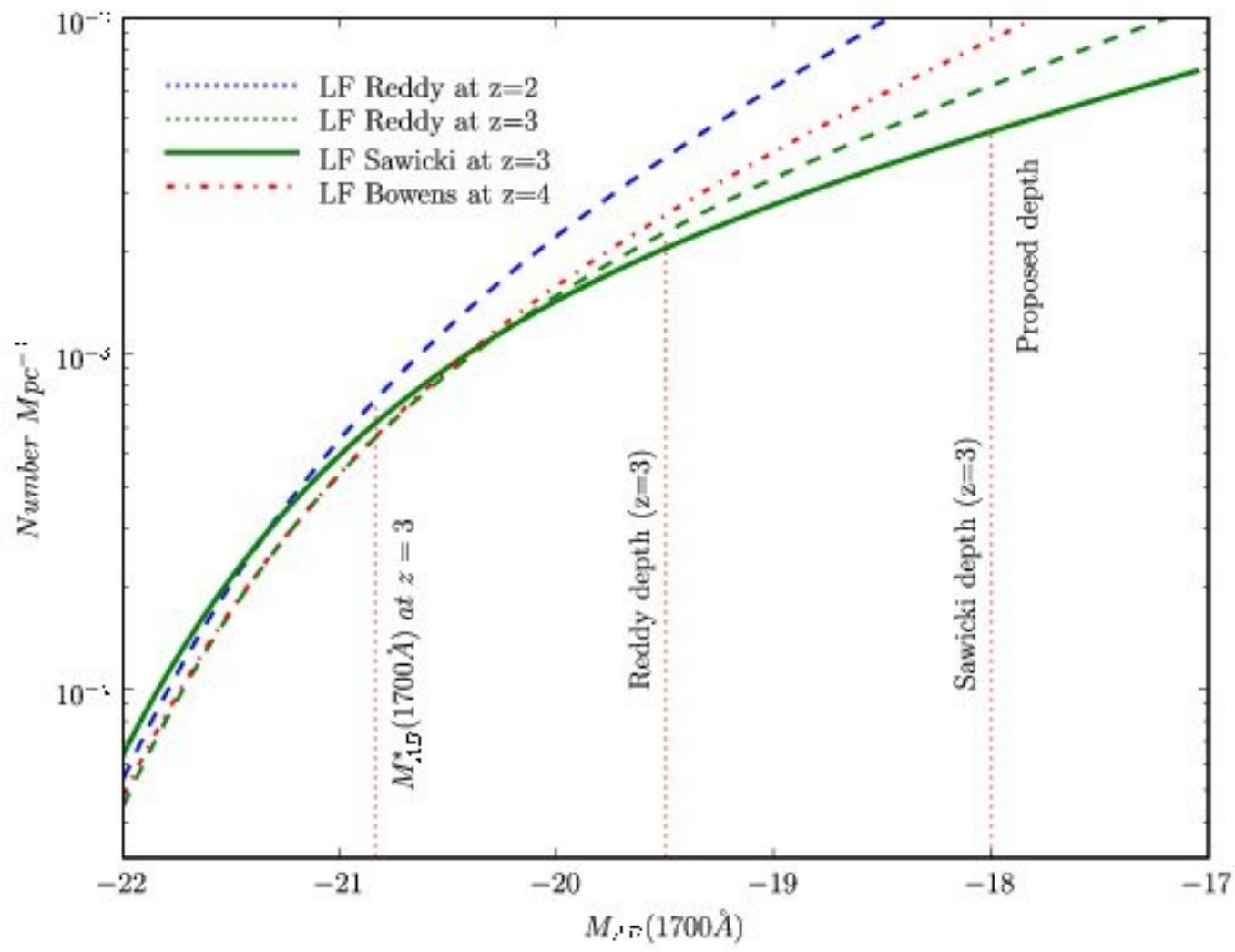
$2.0 < z < 2.8$

$z < 2.0$

FORS2

Example (z 3.4)





U drops number counts

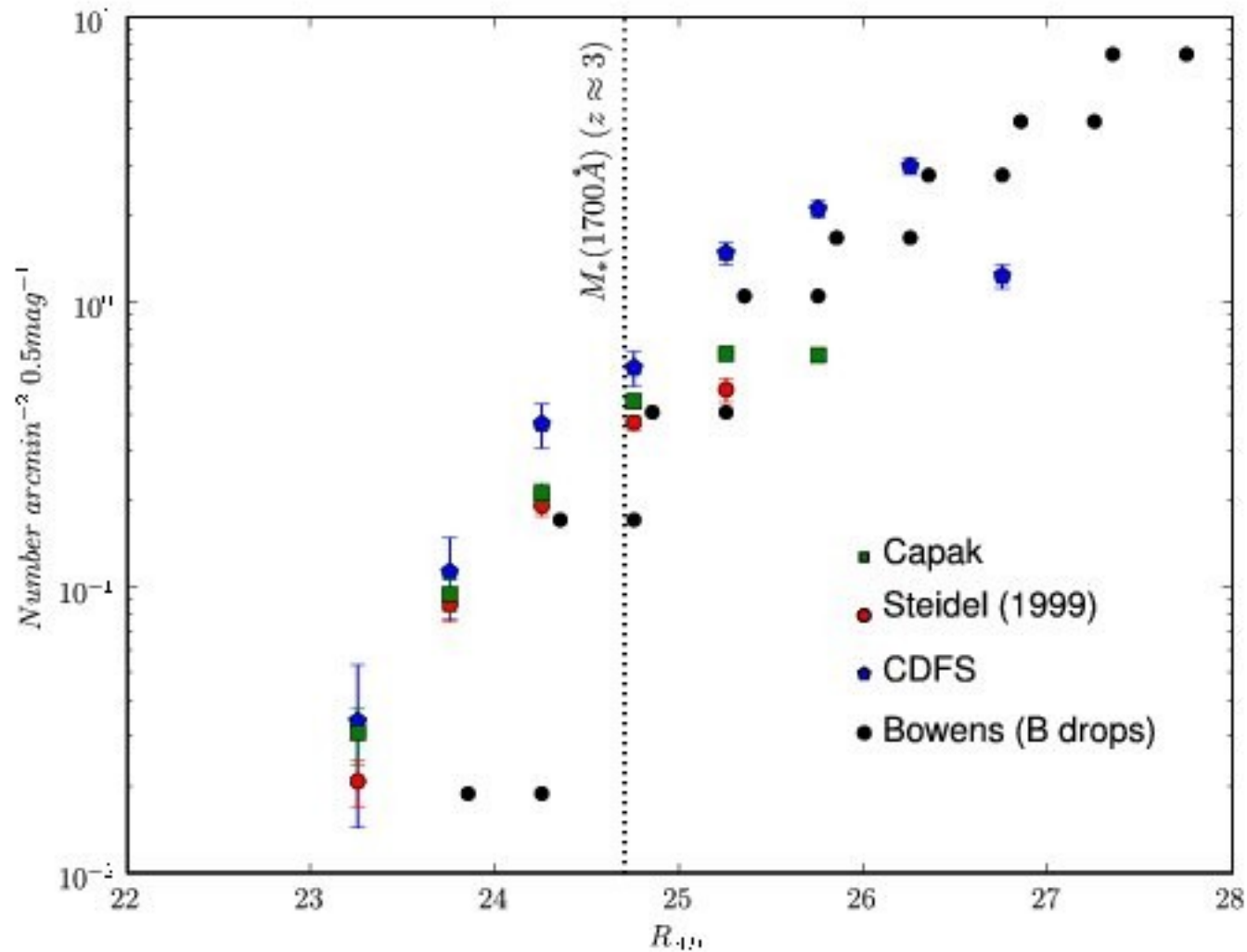
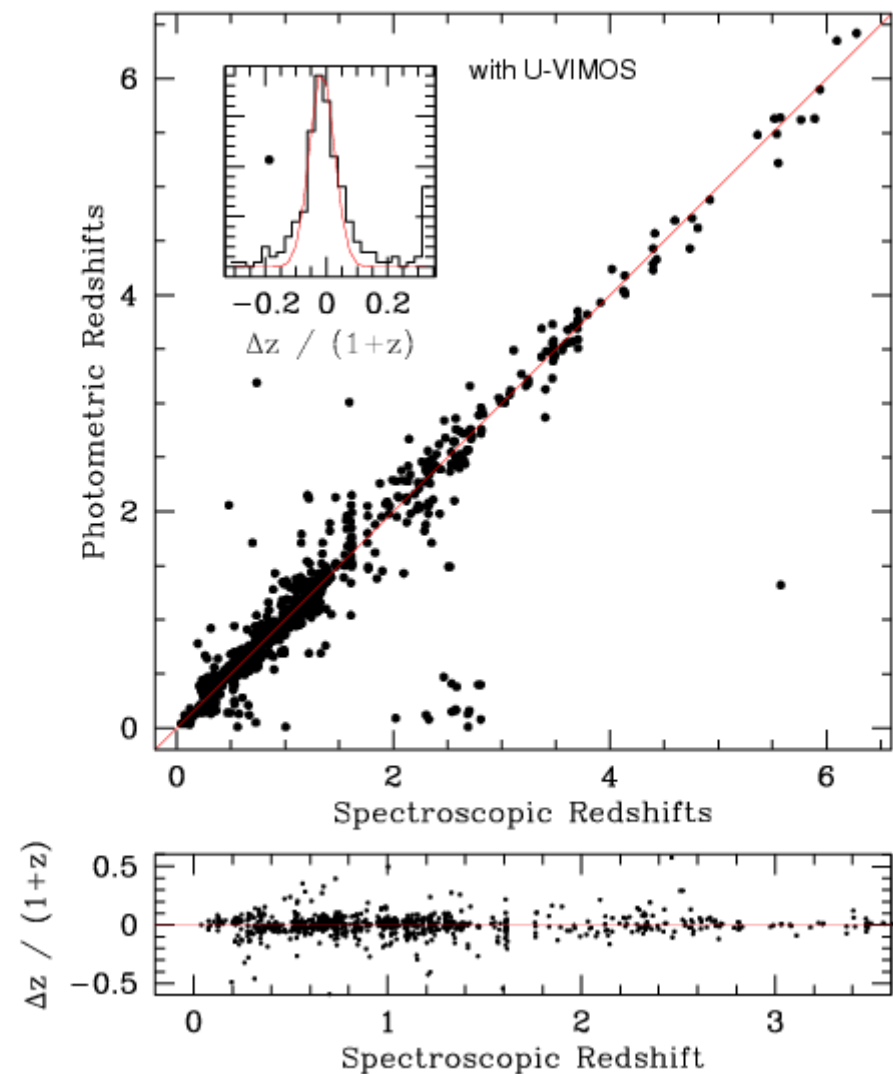
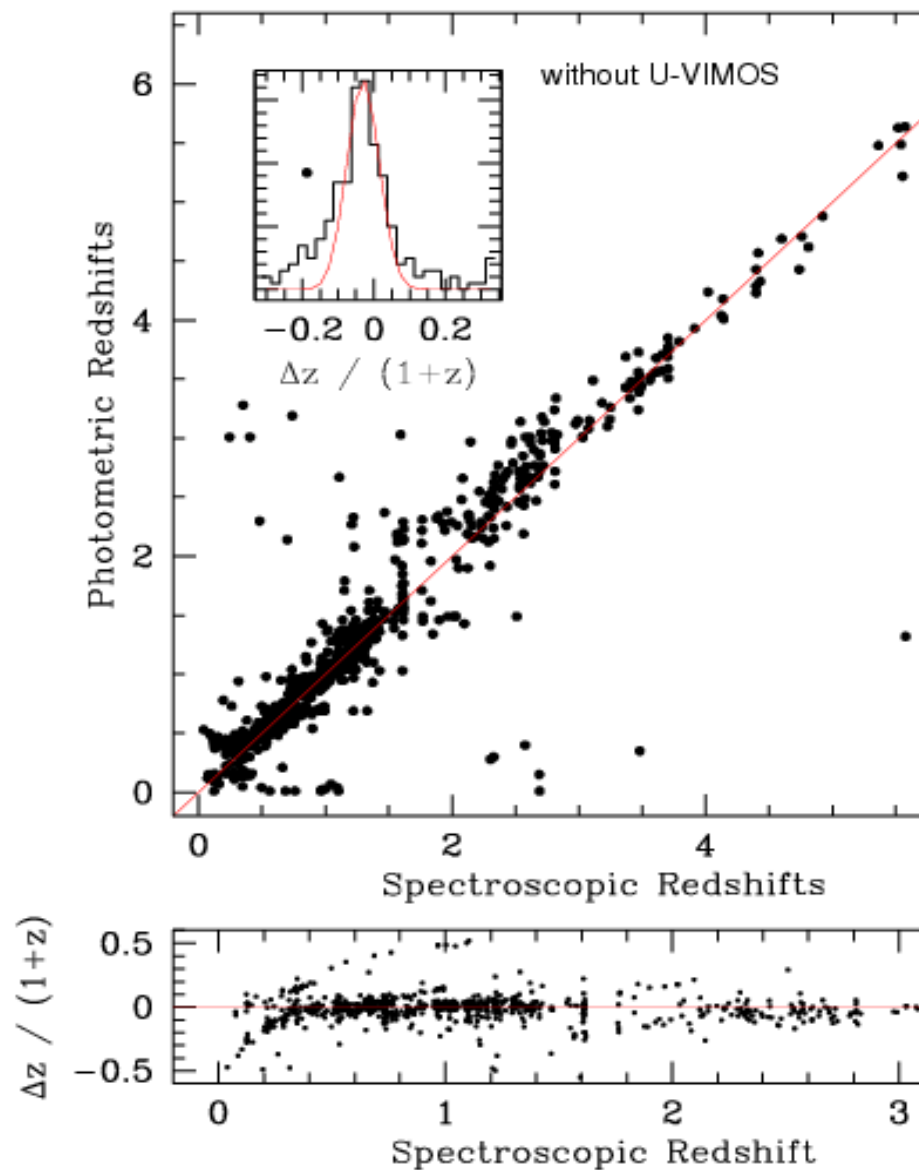
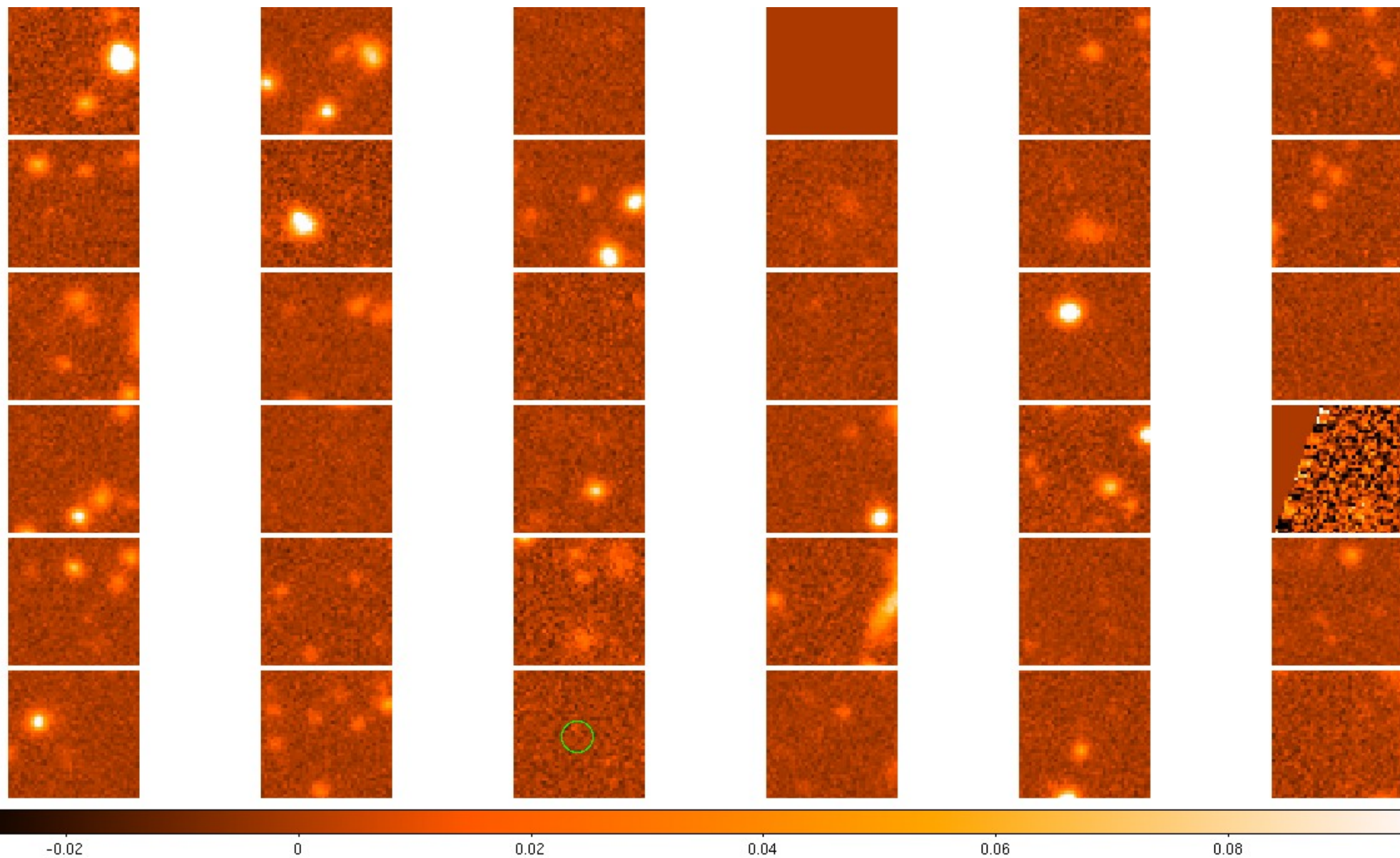


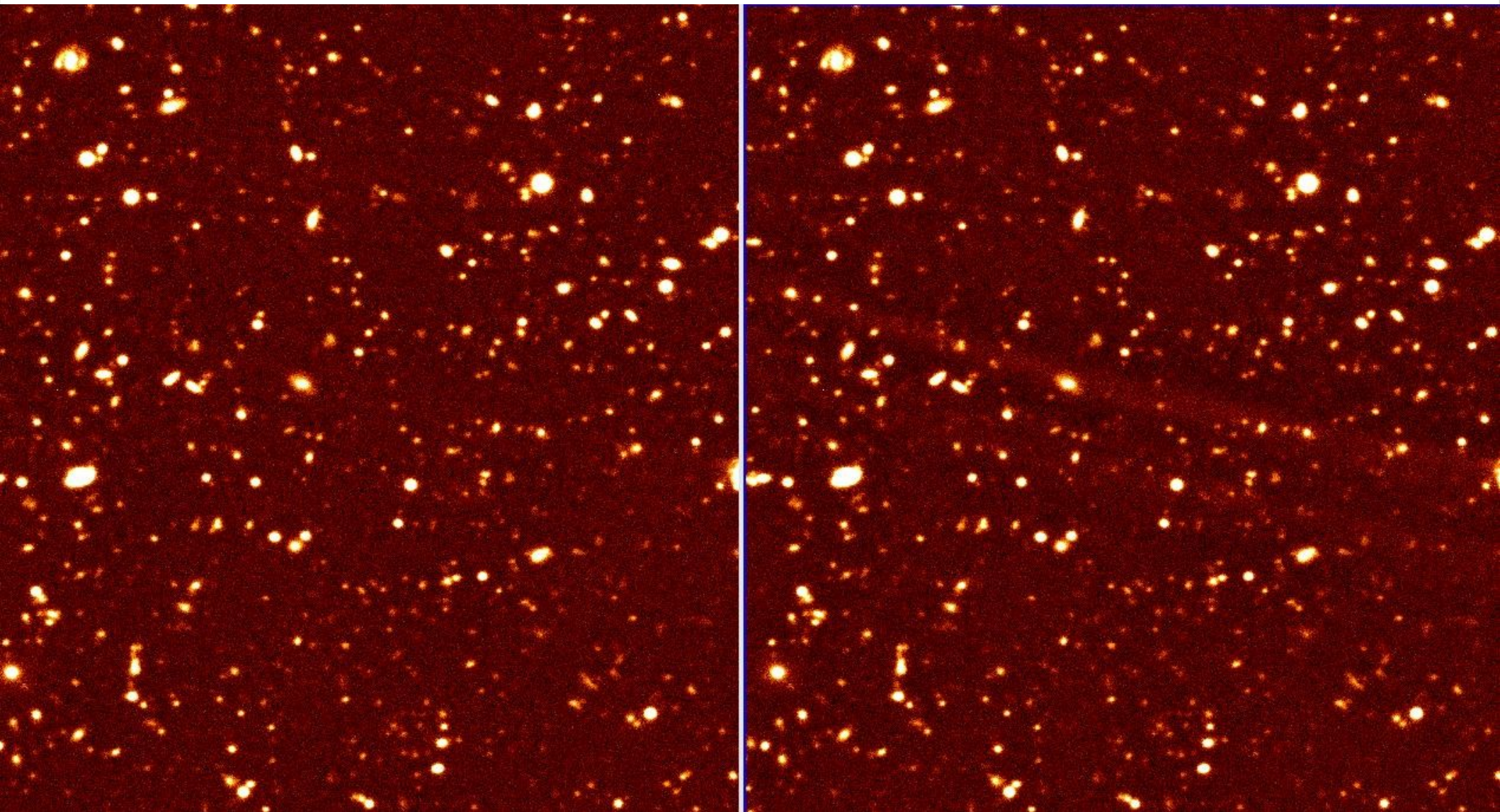
Photo z & U band (A.Grazian-OAR)



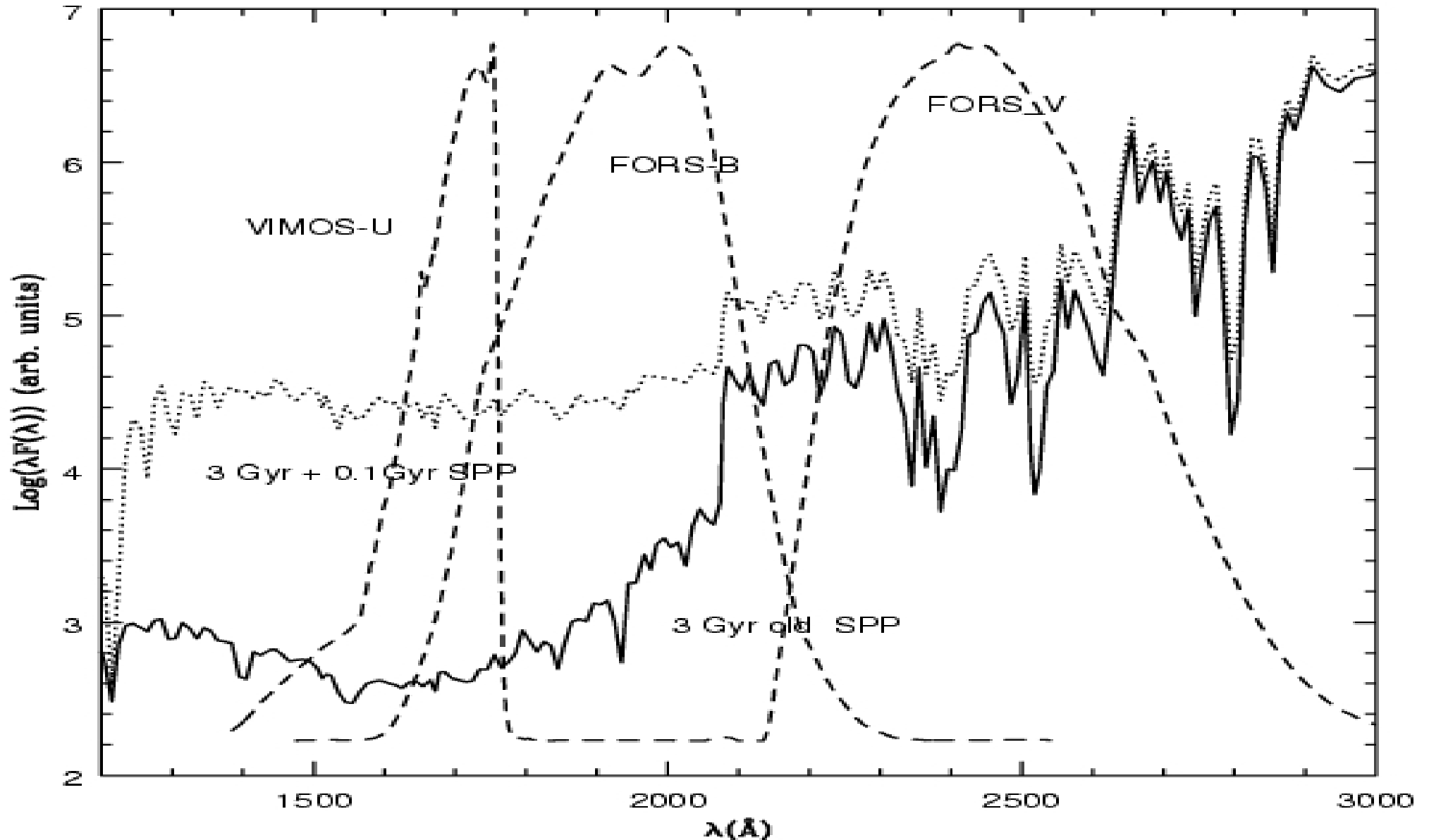
Lyman continuum



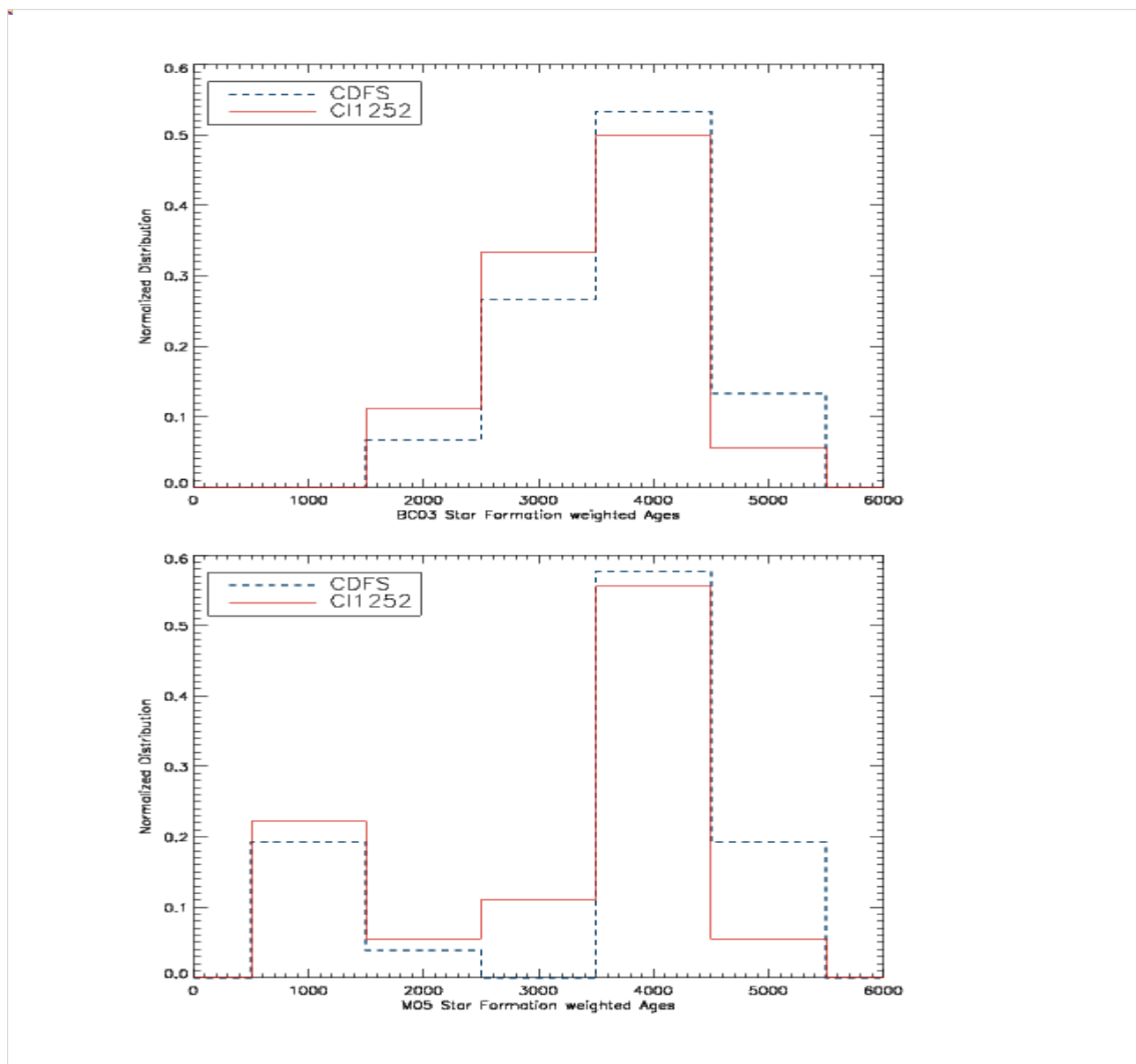
From "field" to clusters (2006/8, 26 hrs, P.I. M.N.,
coll. ESO [P.Rosati et al], JHU)



Residual star formation event(s)?



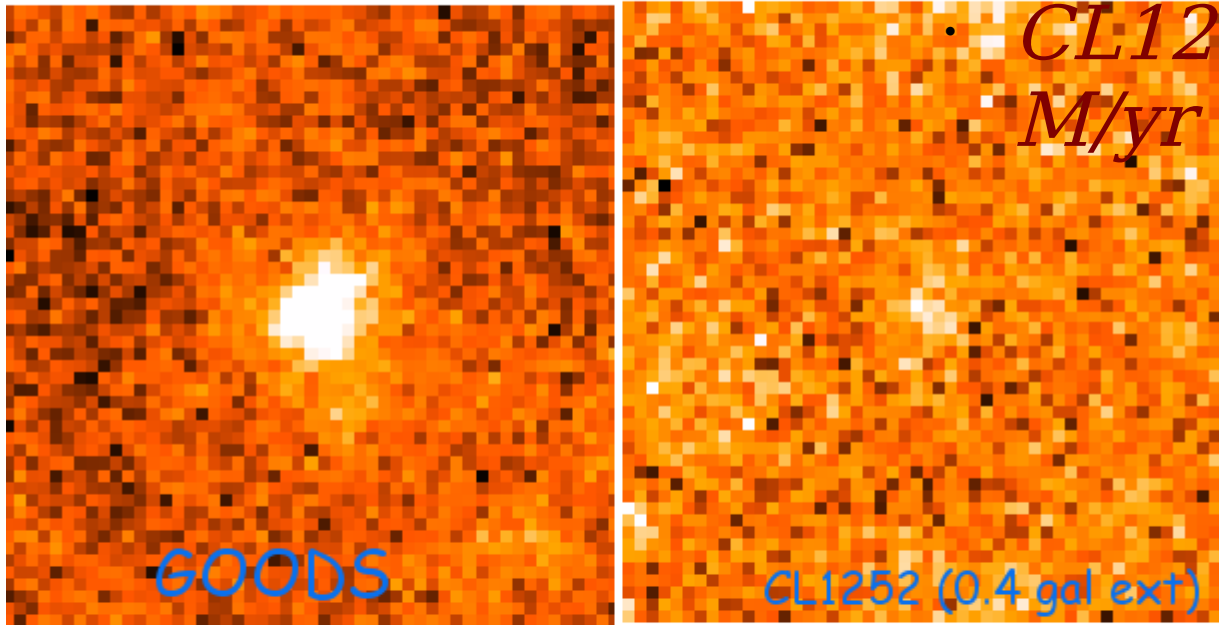
GOODS vs CL1252 @ $z \sim 1.24$



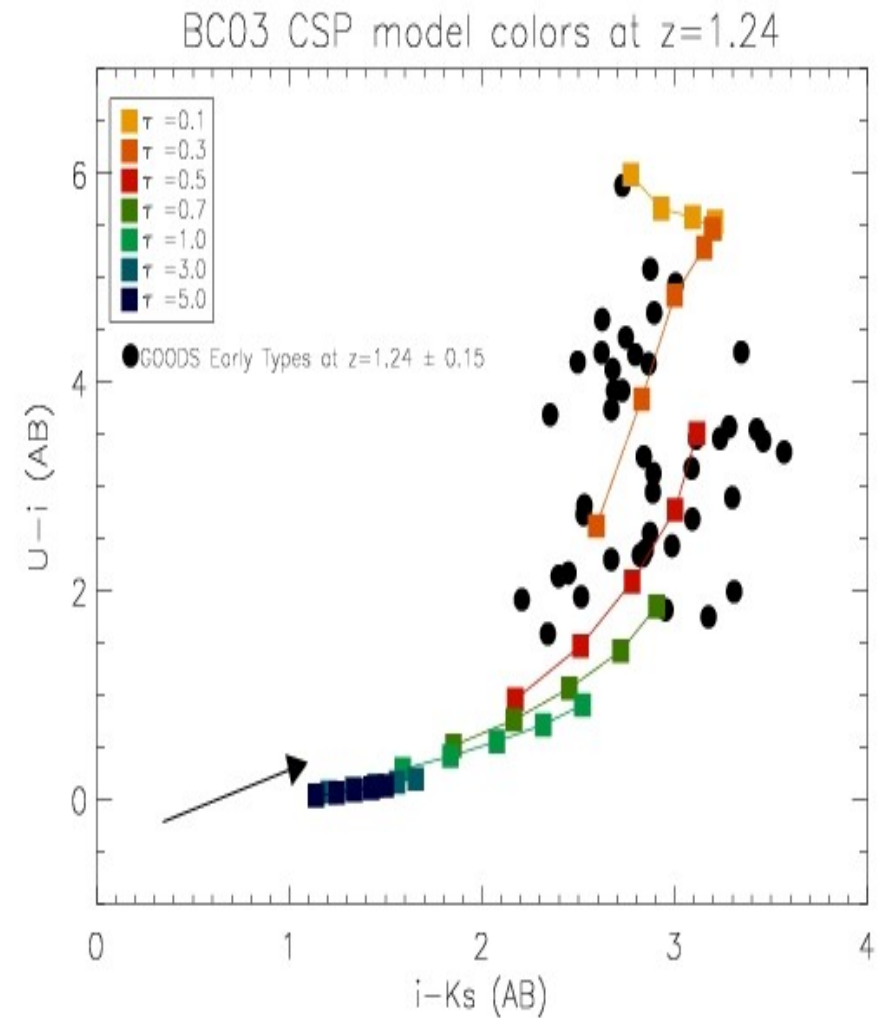
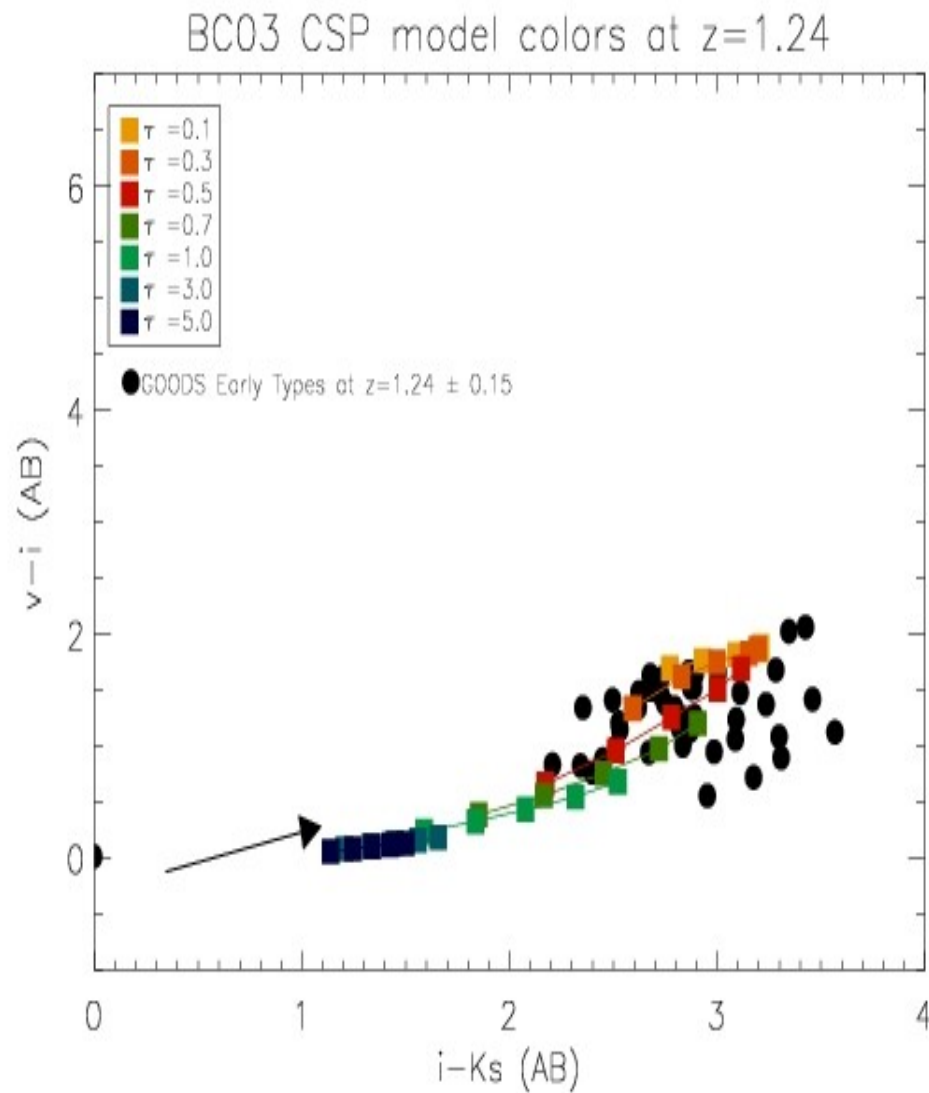
GOODS vs CL1252

- *GOODS 27.46*

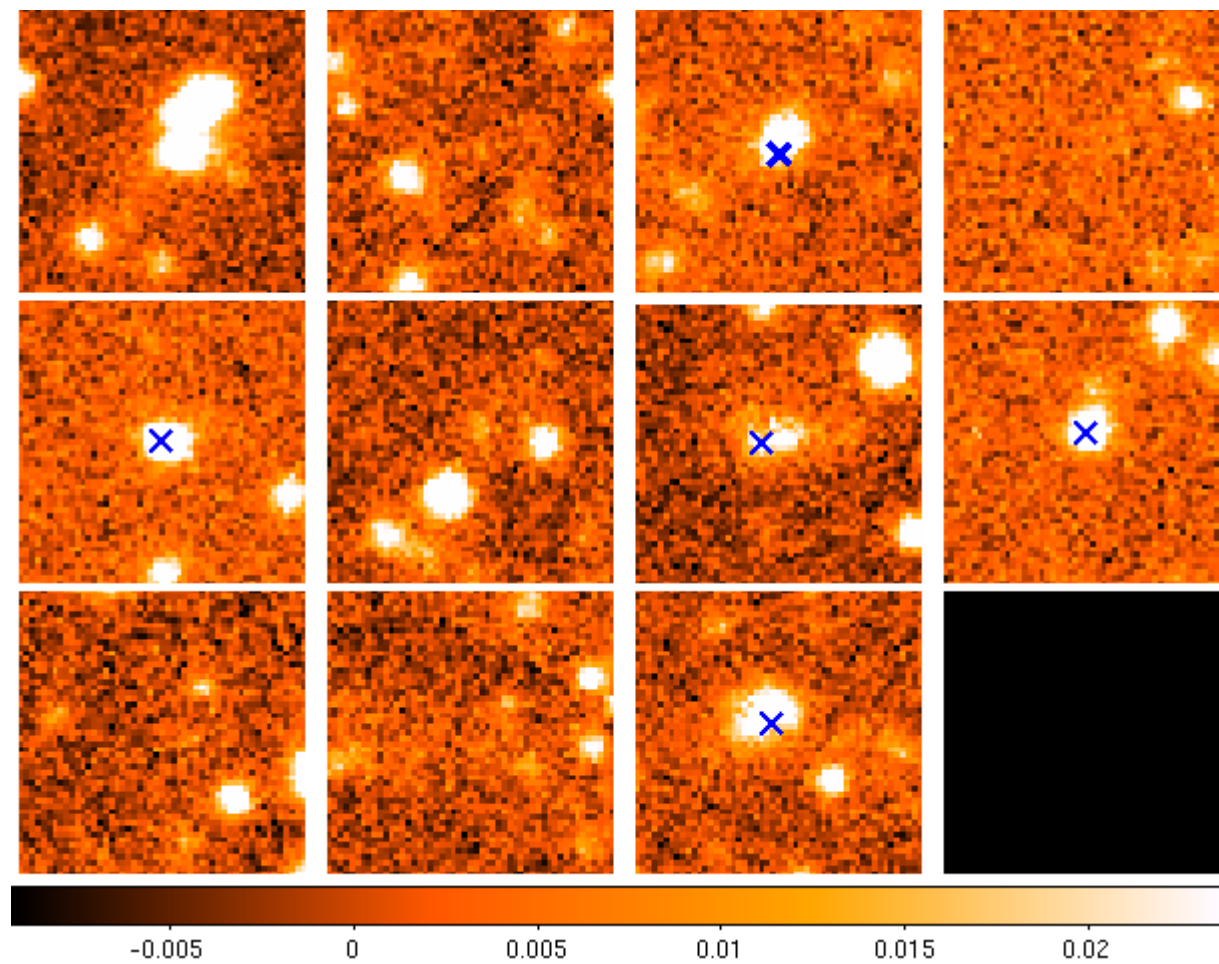
- *CL1252 28.3 $\rightarrow$ 0.2
M/yr SFR*



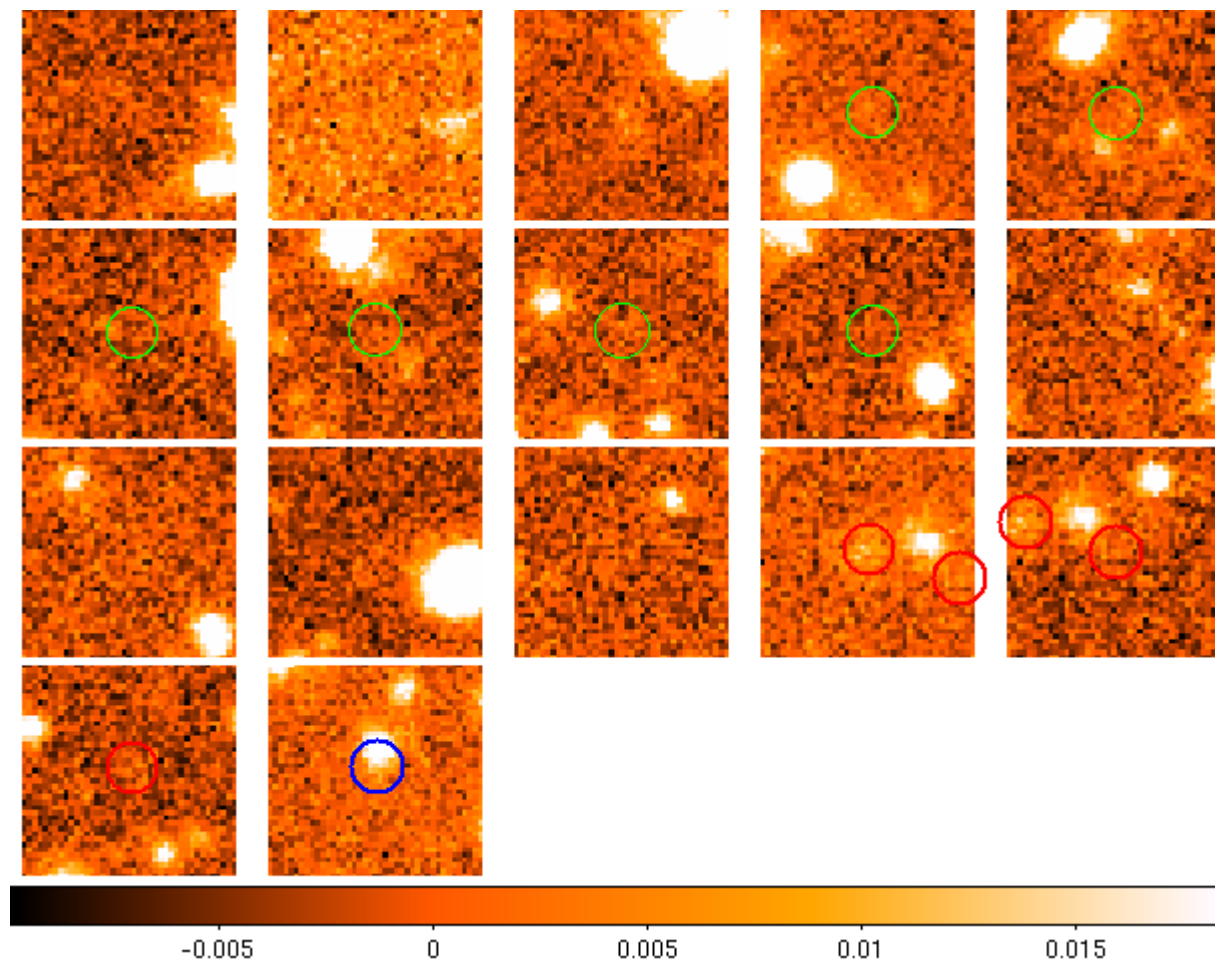
SFH & age



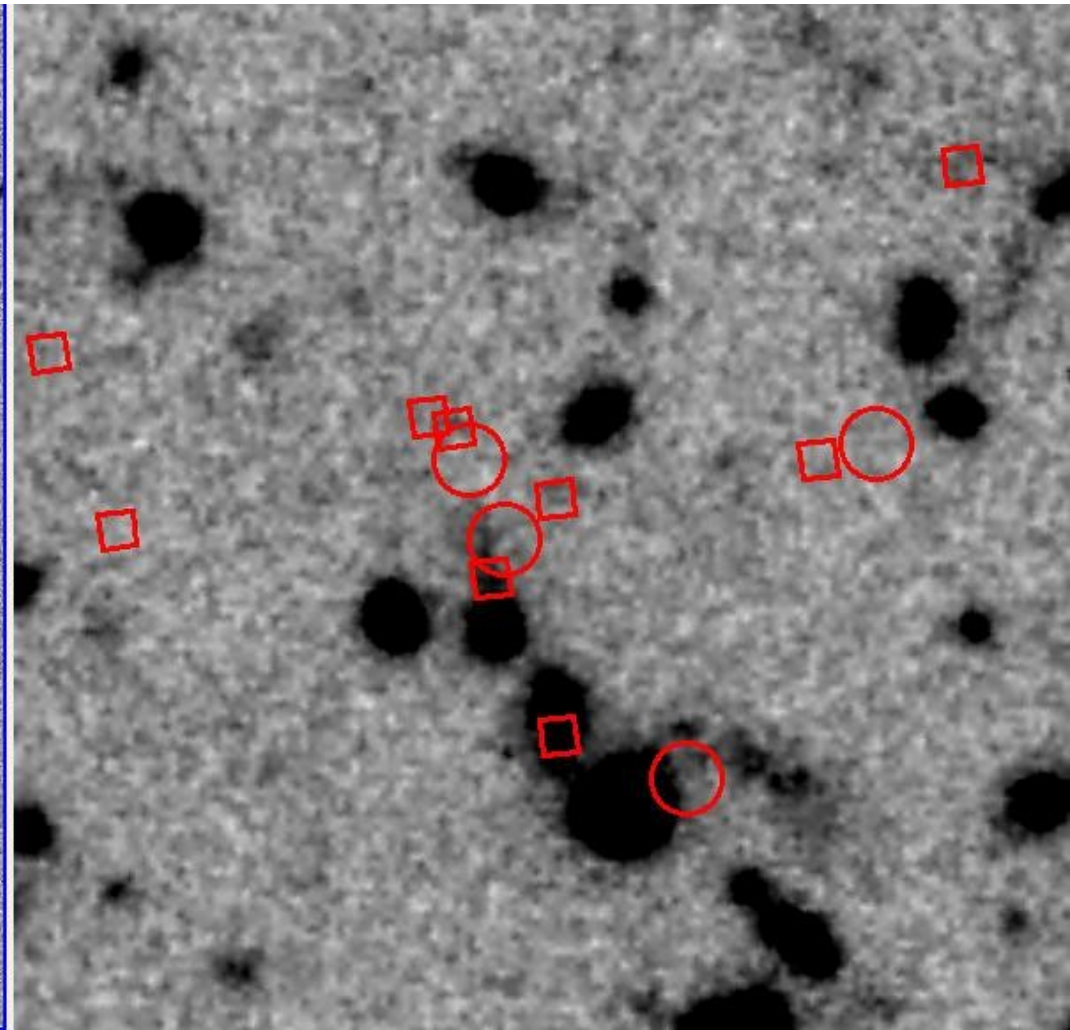
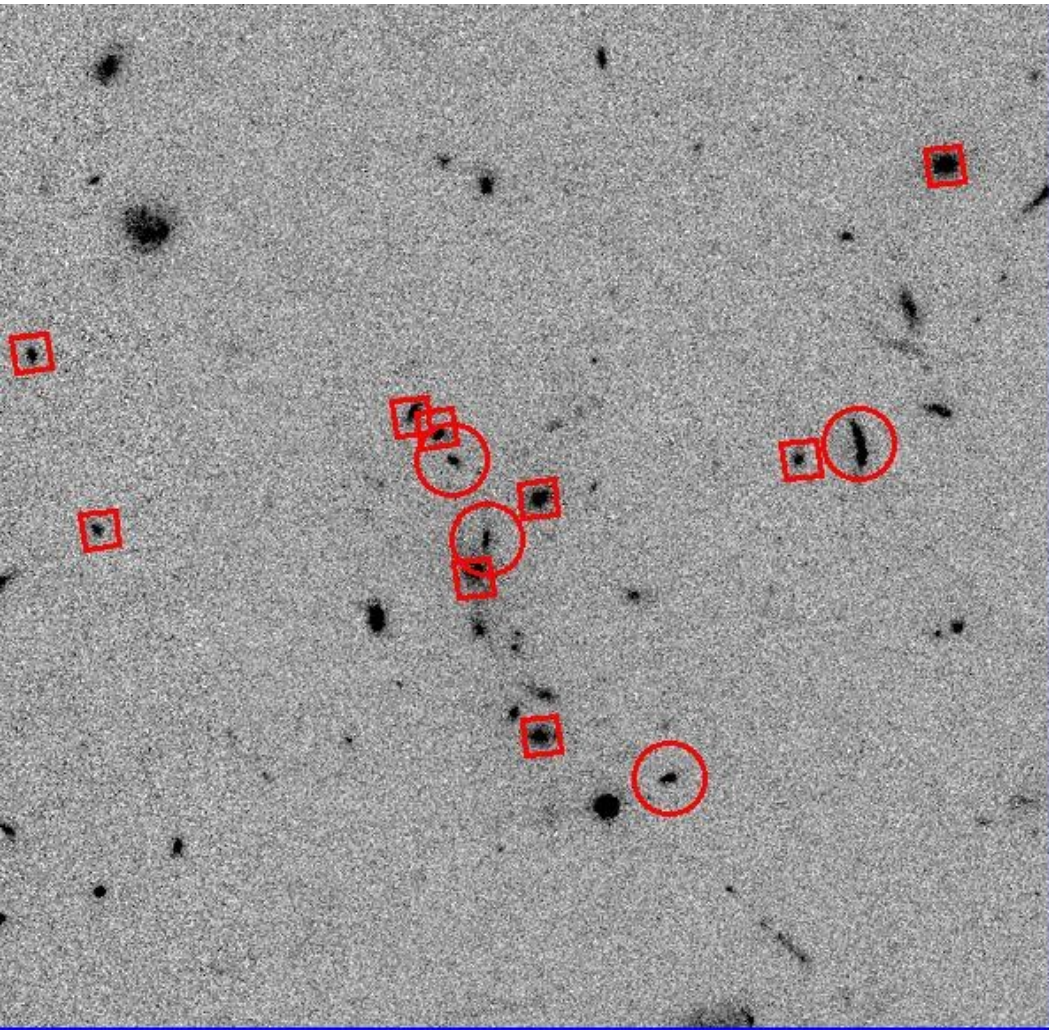
DRG (Kriek et al, 2008)



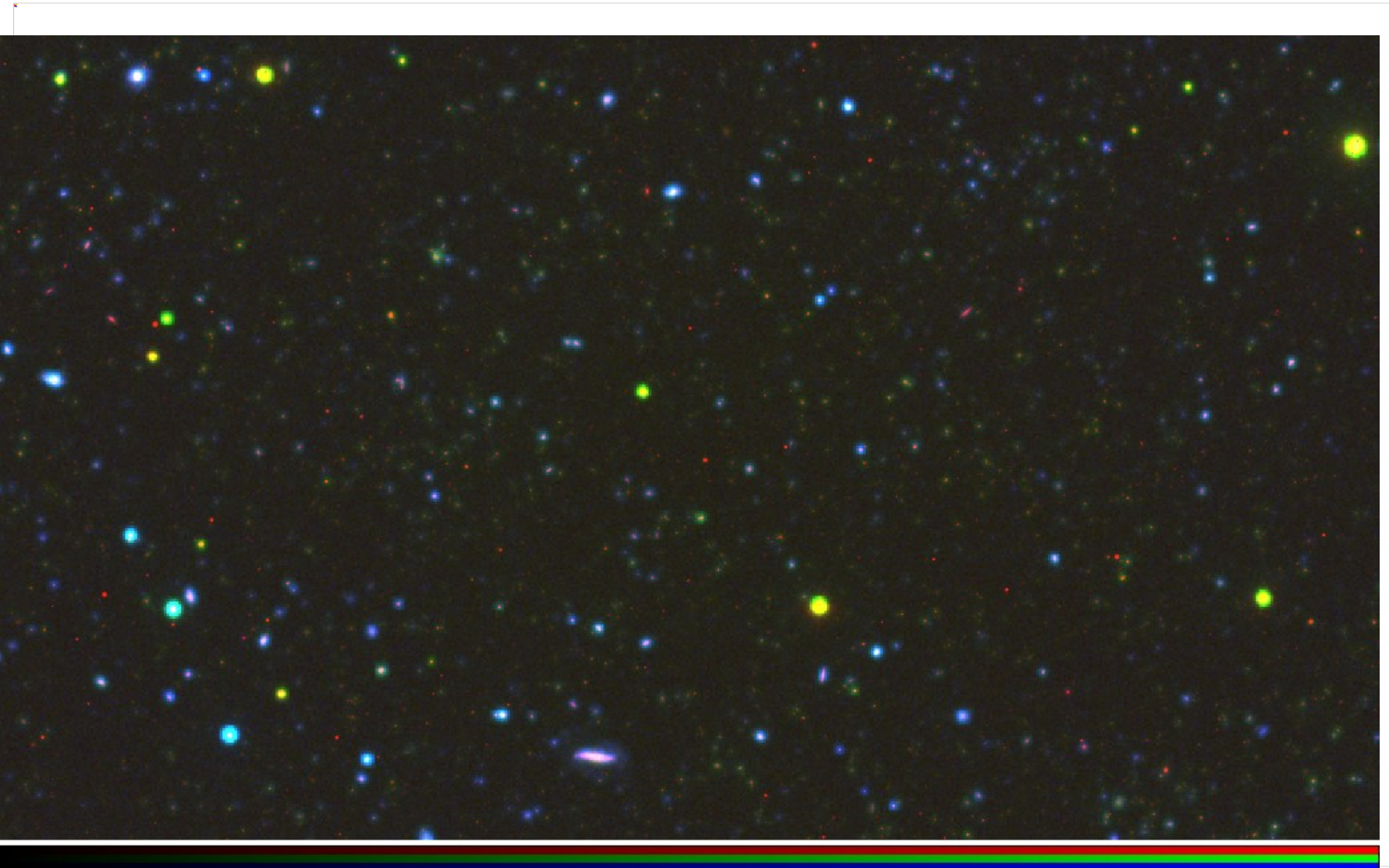
GMASS, K20



XMM2235 ($z=1.39$)



Galex - VIMOS



VIMOS vs CTIO (z)



Astrometry



I bands

