Ground based wide field optical/NIR images of BUFFALO clusters

BUFFALO Meeting 25-26.VI.2020 M. Nonino (INAF-OATs)

Near Infrared Wide field images

- *GCAV*: second generation ESO/VIRCAM Public Survey
  560hrs, 4m telescope (VISTA@Paranal, PI. M.N.)
  targets: 20 massive galaxy clusters in Y,J,Ks (0.2<z<0.9)
  depths: ~24 AB (Y,J) and 22.7-23 AB (Ks) 5 σ.
- ~80% complete
- Forthcoming release to ESO=> public of OBs, ~50% of the whole survey, images and catalogues..no full stacks (yet..)

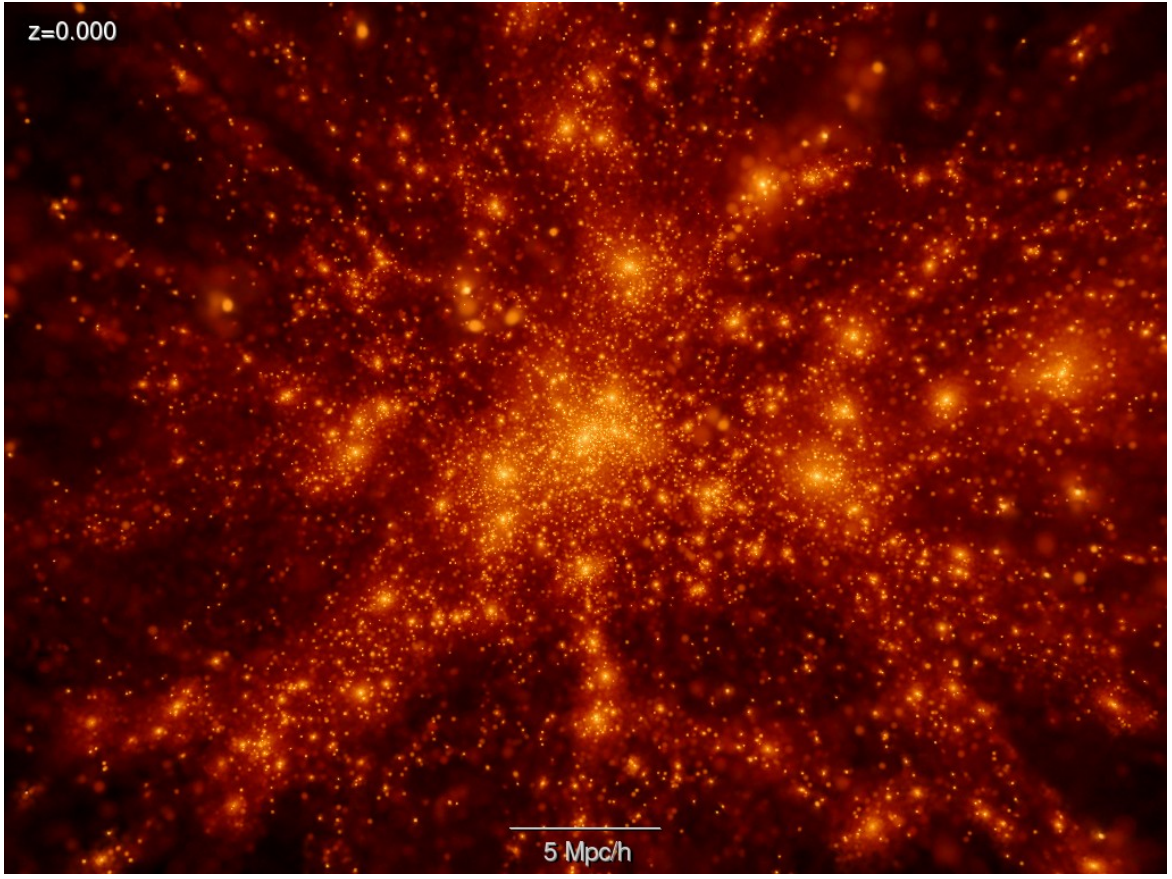
Abell2744
MACSJ0416.1-2403
PLCKG287.0+32.9
RXCJ1347.5-1145
RXCJ1514.9-1523
Abell2163
PLCKG004.5-19.5
RXCJ2248.7-443143
ACT-CLJ0102-49151
WHLJ243324-8.477
RXCJ0600.1-2007
Abell370
Abell 1300
RXCJ2211.7-0350
SPT-CLJ0254-5857
RXCJ2129.6+0005
RCS2J2327.6-020437
MS0451-0306
MACSJ0553.4-3342
SMACSJ0723.3-7327

12 RELICS
2 CLASH
2 others

~25 Mpc

~1.3˚

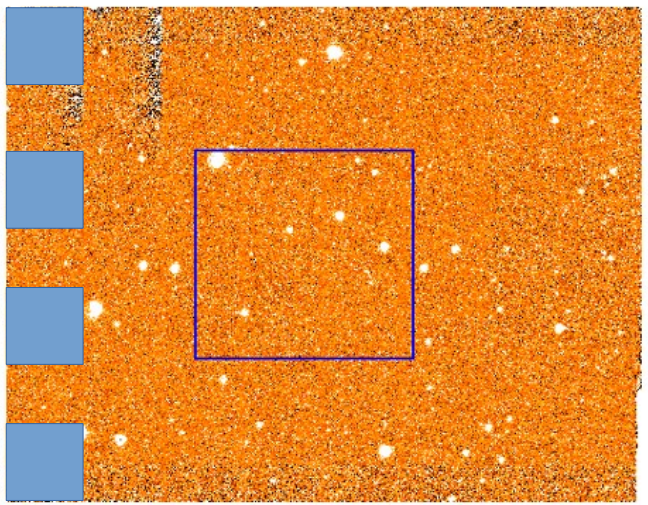
simulations..



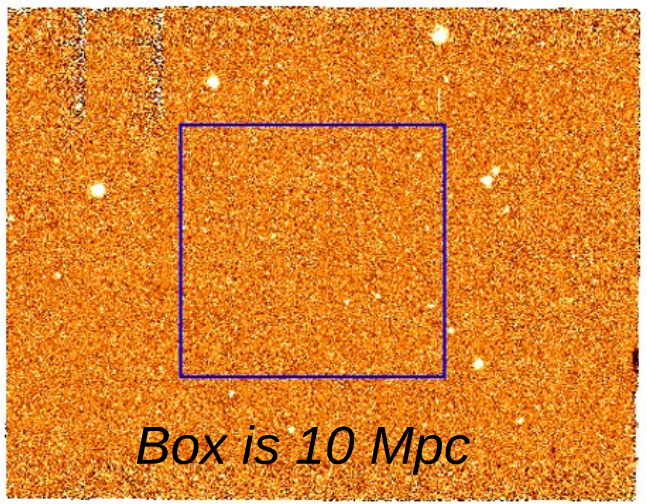
K. Riebe, MUSIC – MultiDark resimulations

Complete BUFFALO clusters (Y,J,Ks)
~ 2-3 hrs/pixel

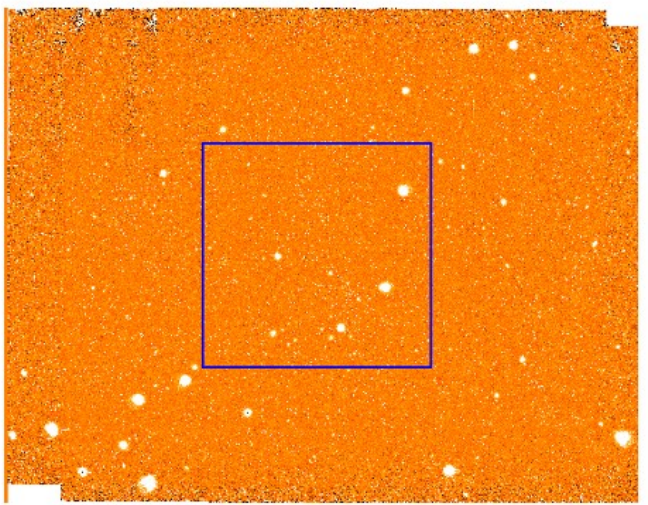
MACSJ0416



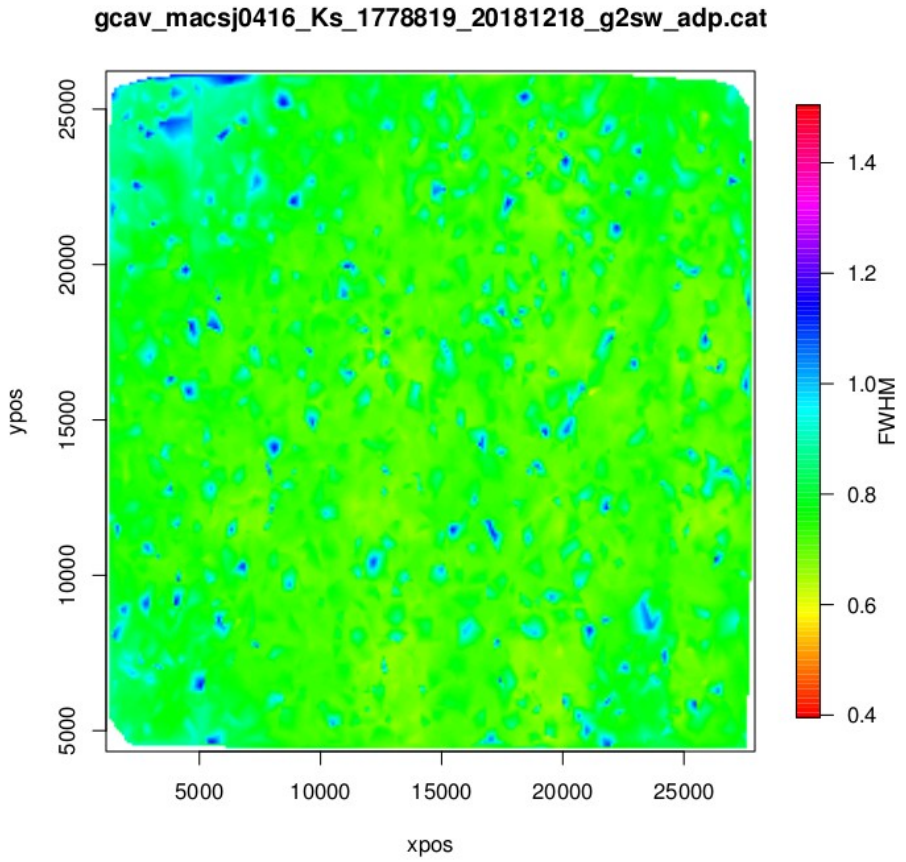
Abell2744

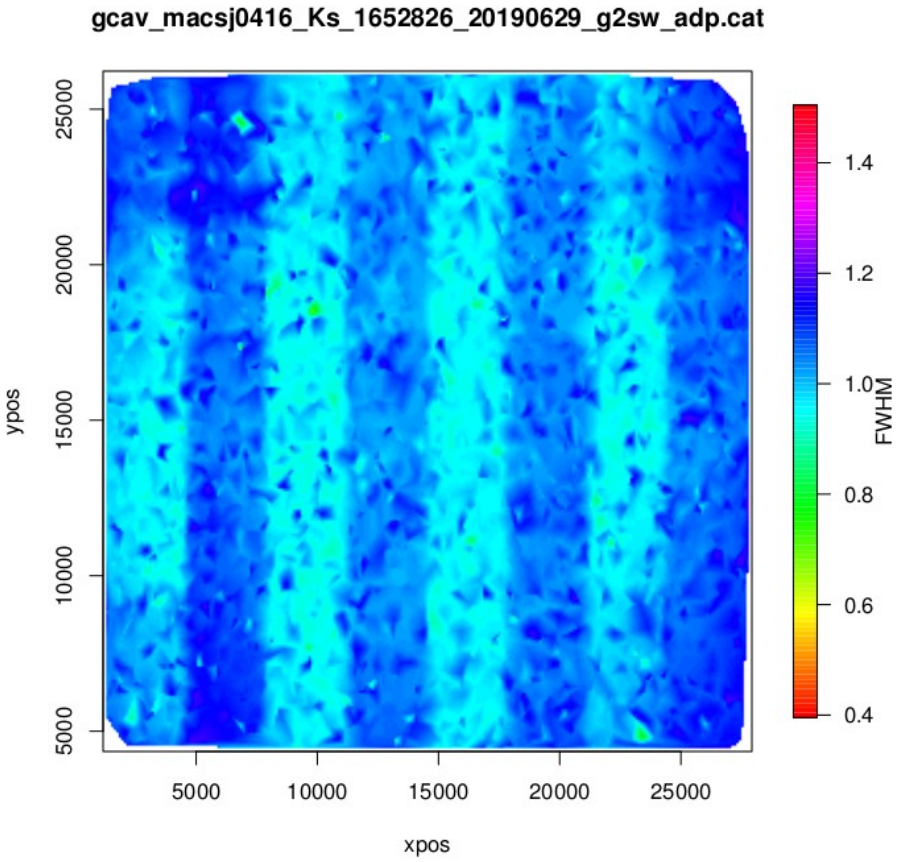


RXCJ2248

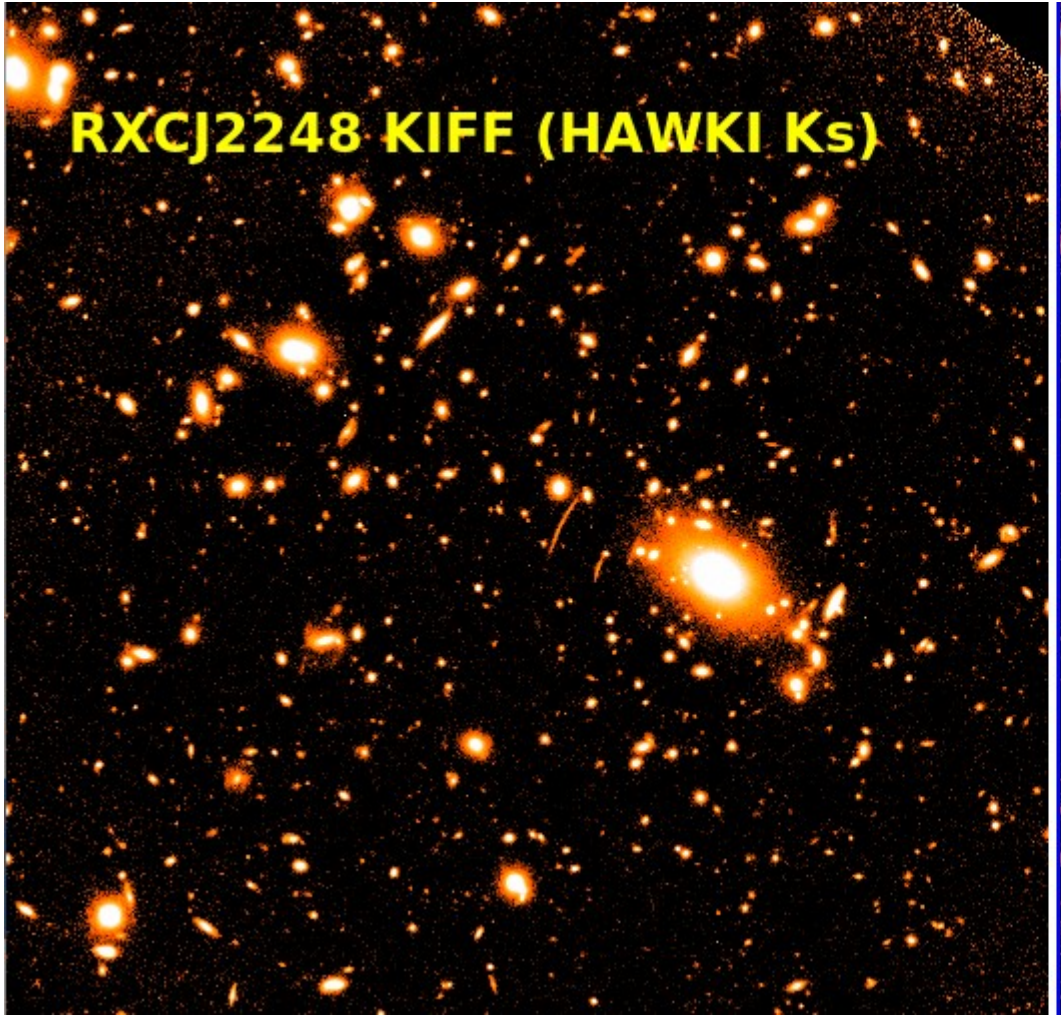


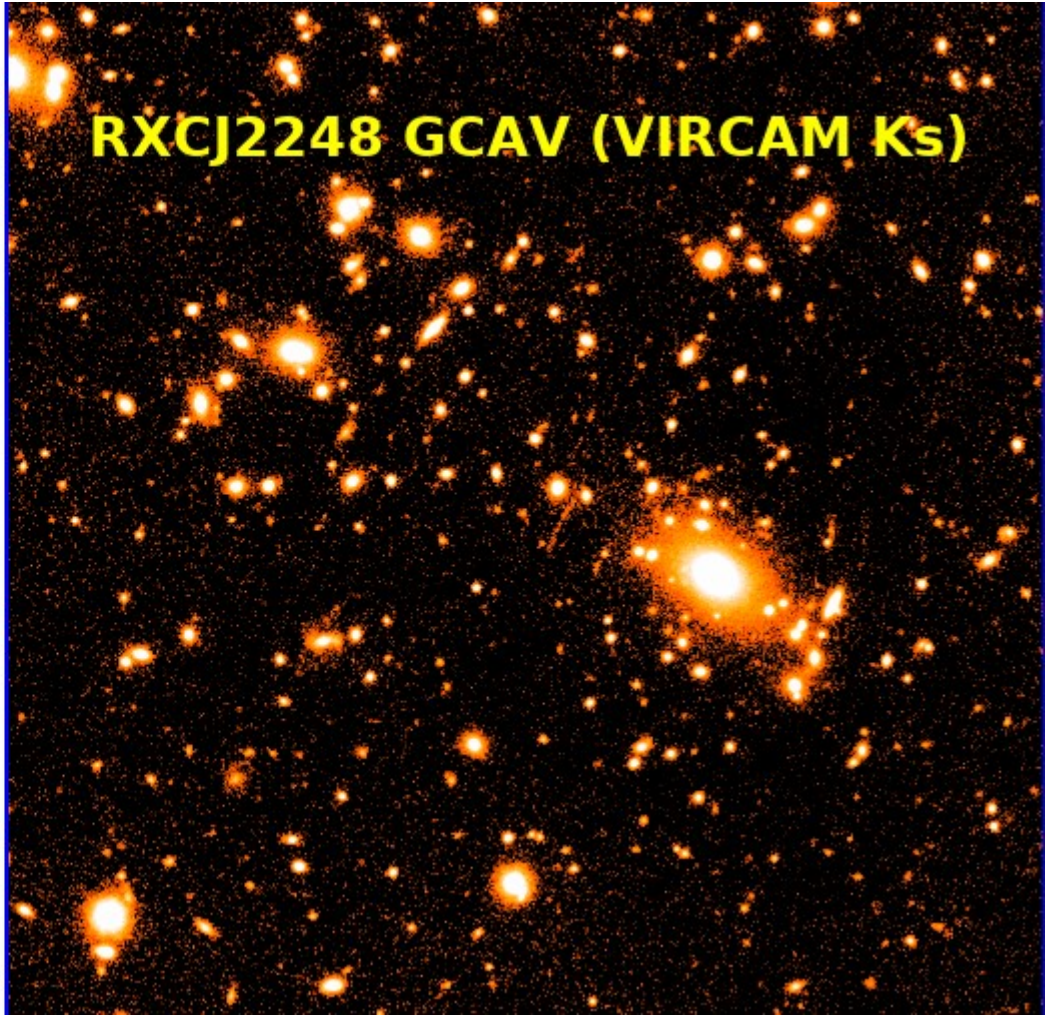
Good and constant FWHM vs changing conditions during the 1 hour long OBs

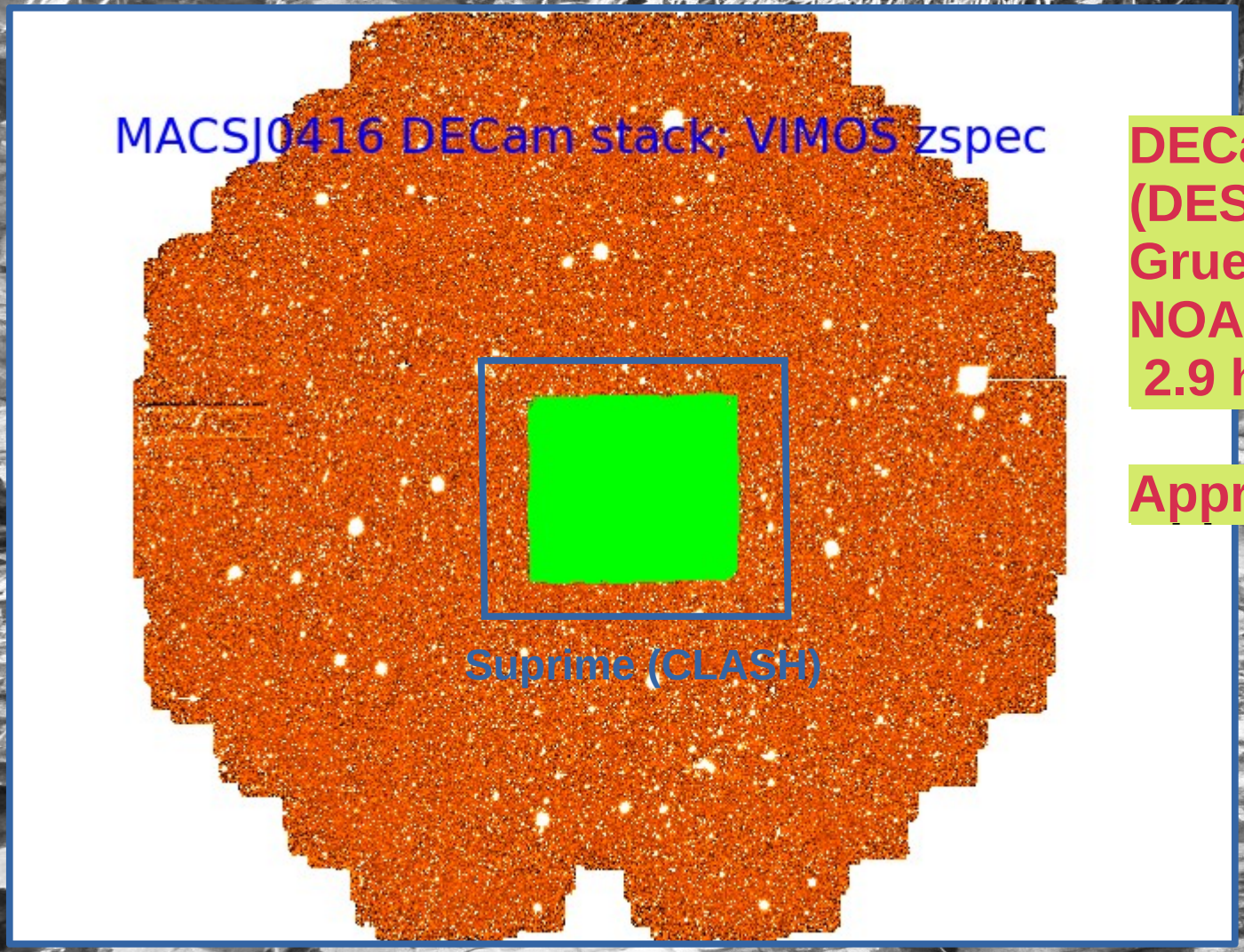




Hints on GCAV data .. VIRCAM FOV is >80 times HAWKI..

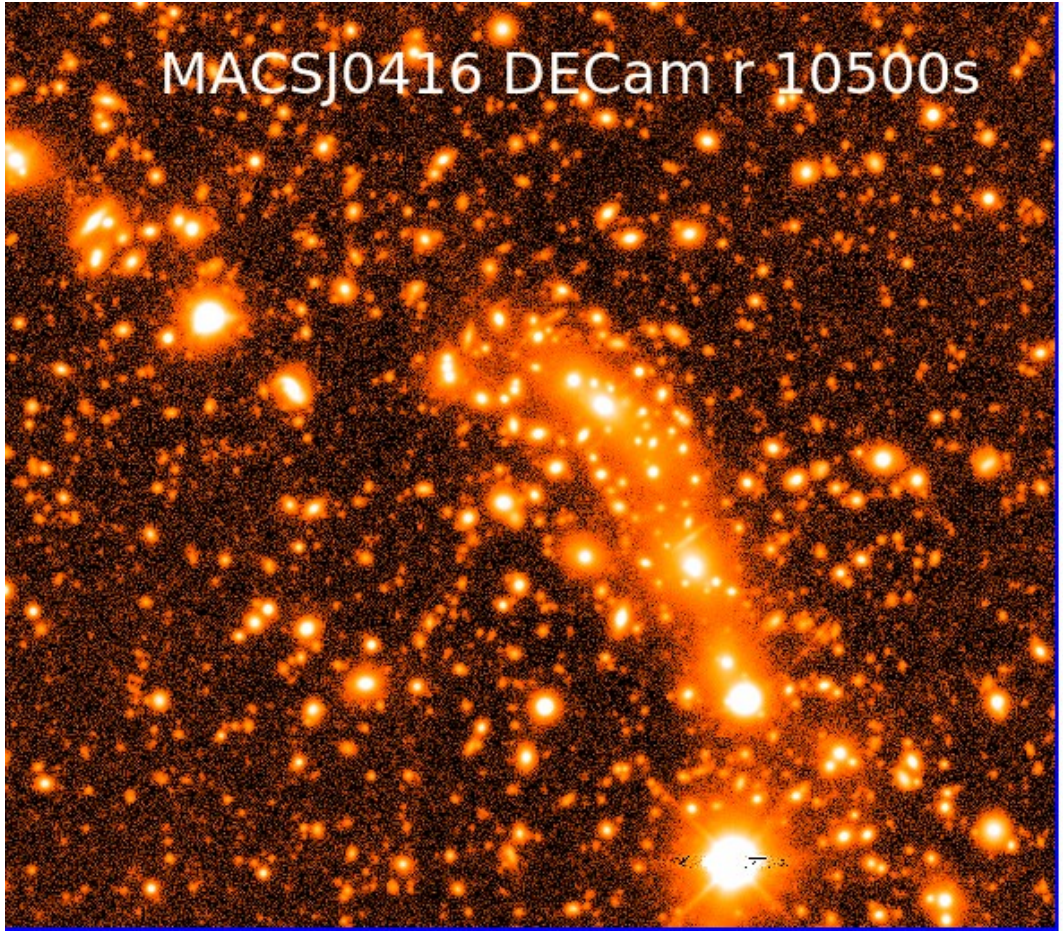




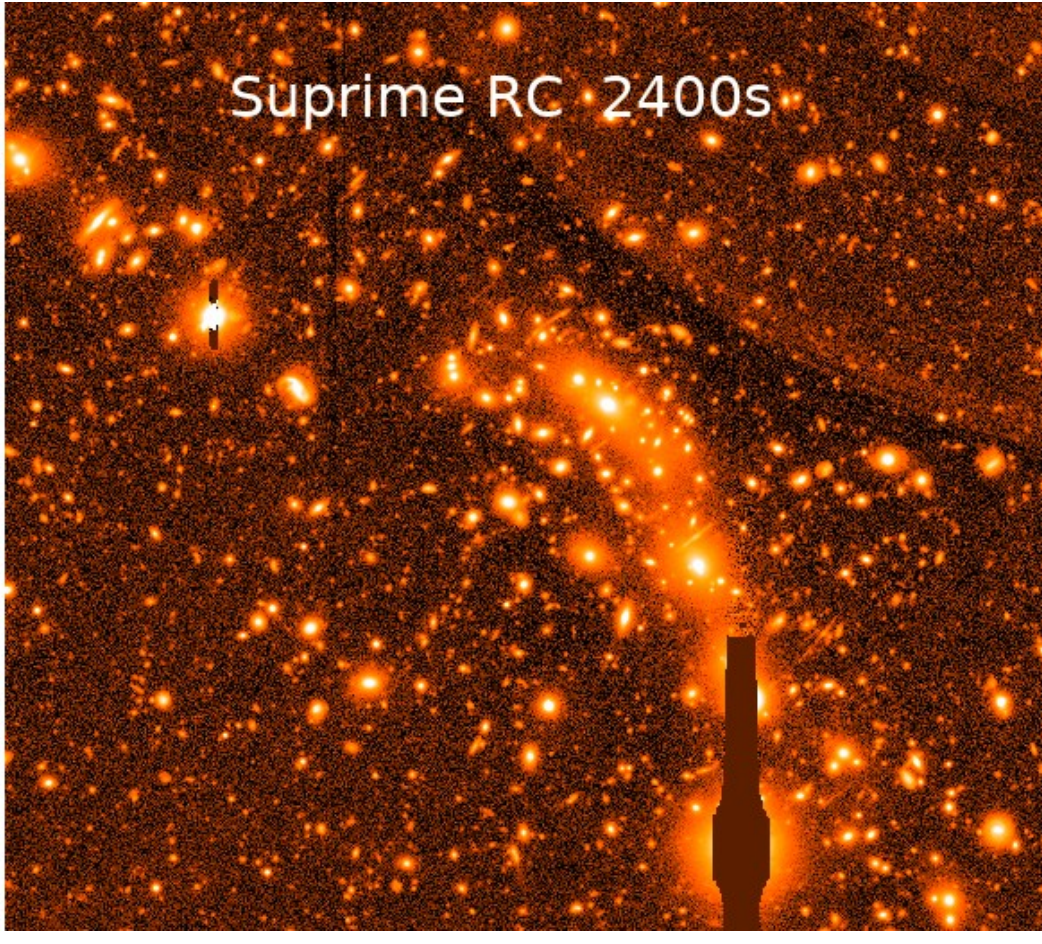


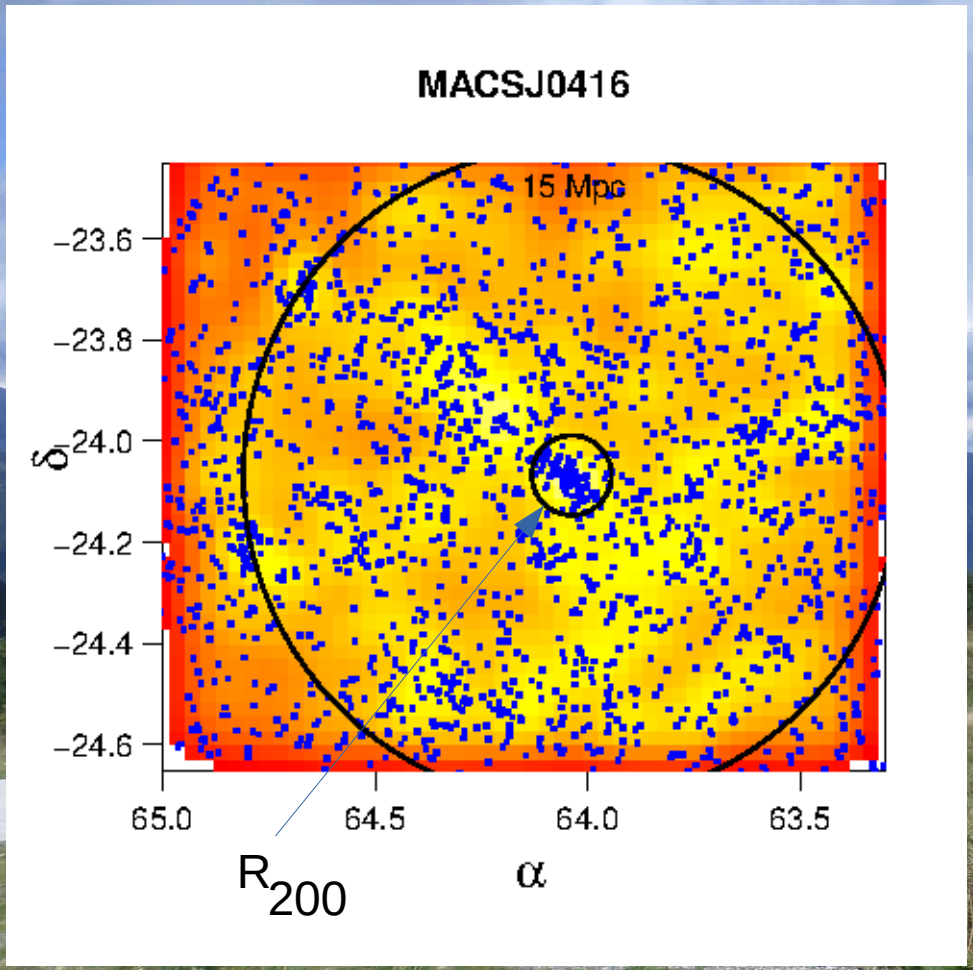
DECam data
(DES & special thanks to D. Gruen).
NOAO archive
2.9 hrs, ~1” PSF

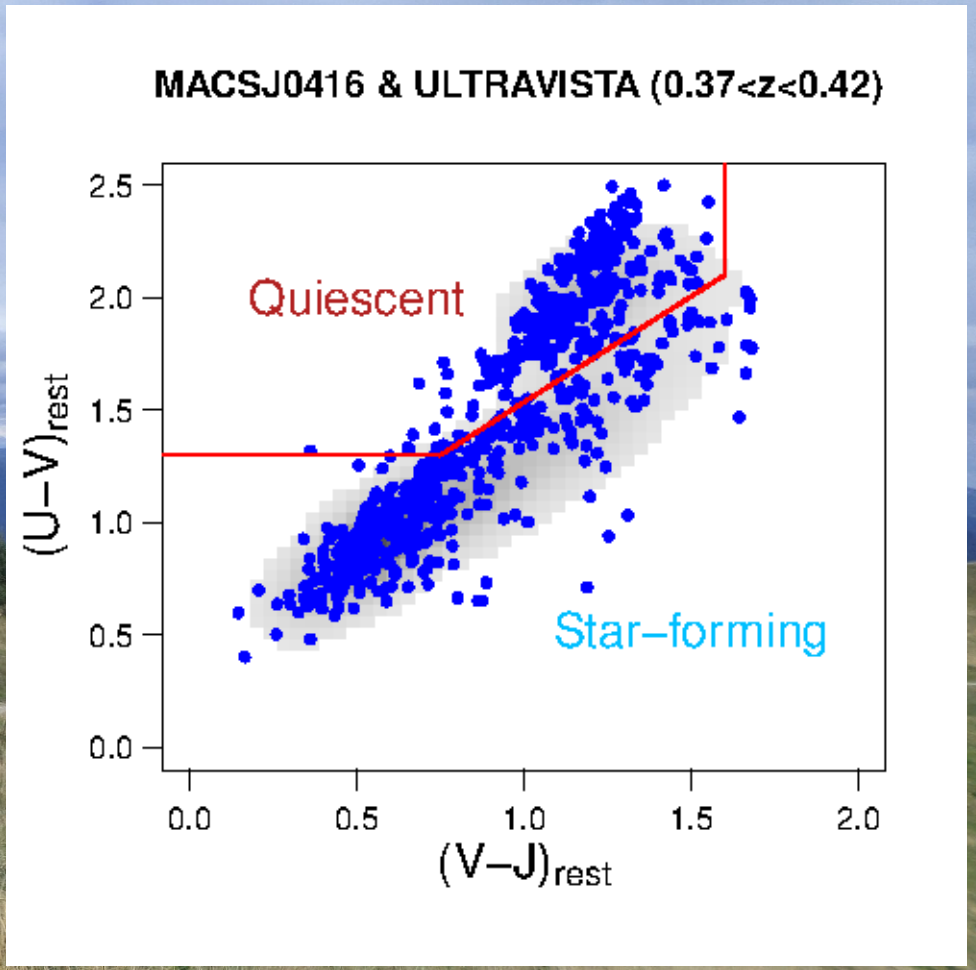
Approx depth in r > 26 AB



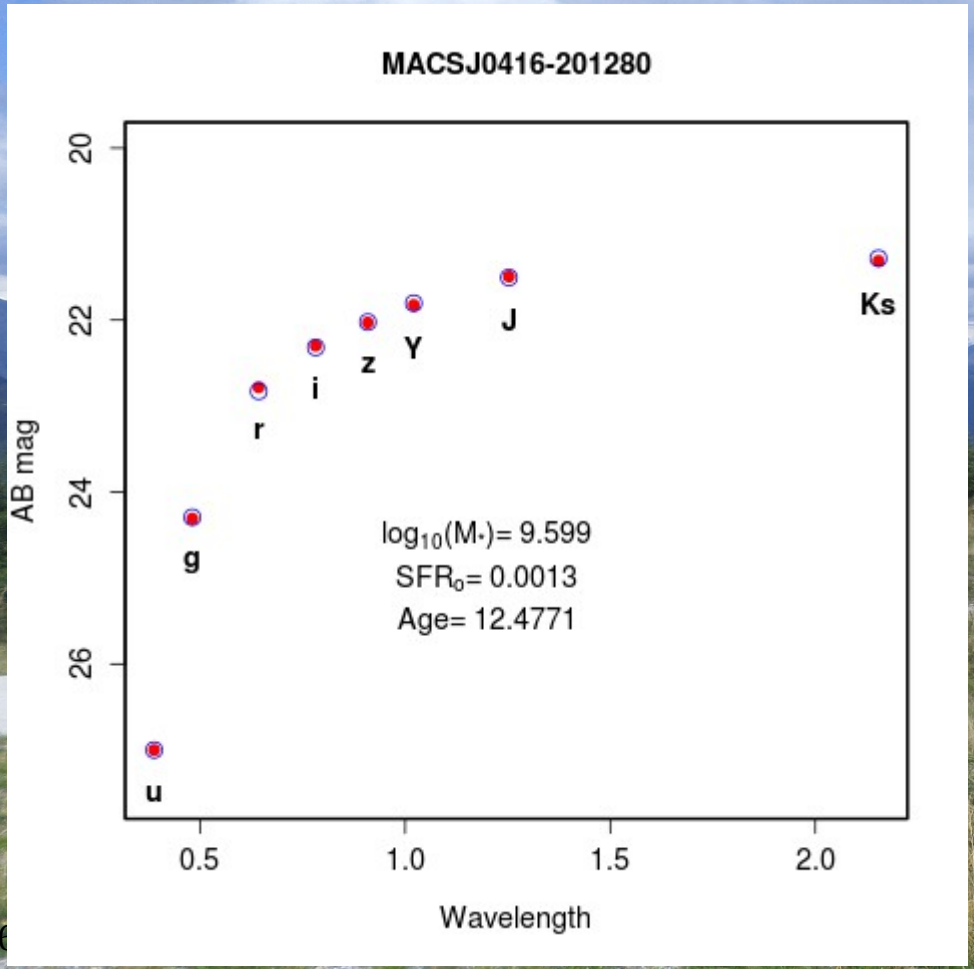
CLASH W.L.

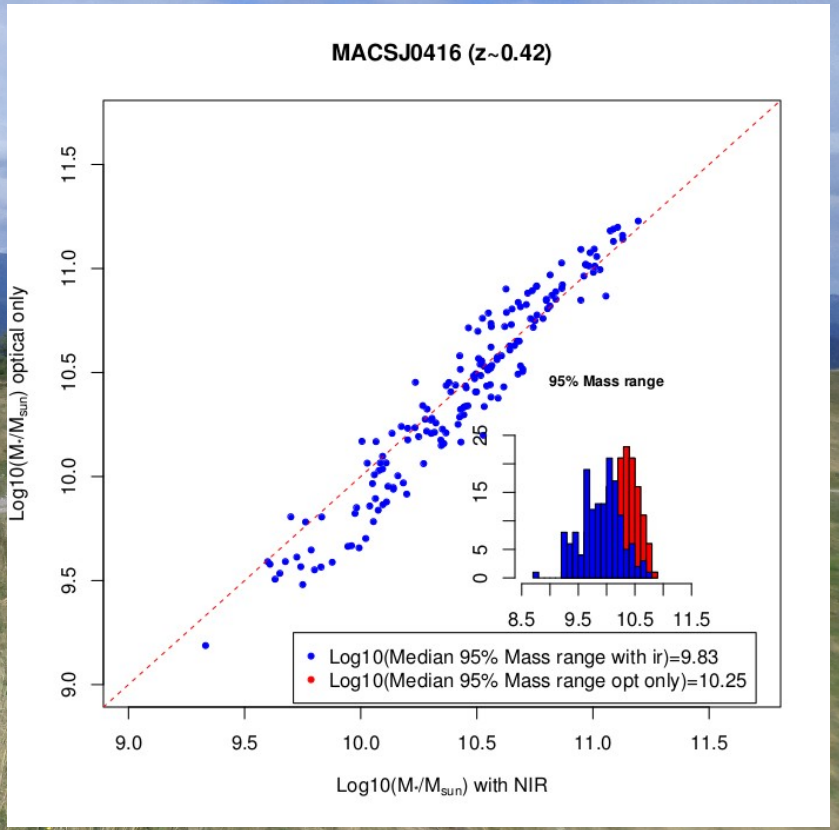



MACSJ0416
15 Mpc
−23.6
−23.8
−24.0
−24.2
−24.4
−24.6
δ
65.0
64.5
64.0
63.5
α
R200


MACSJ0416 & ULTRAVISTA (0.37<z<0.42)
Quiescent
Star−forming
2.5
2.0
1.5
1.0
0.5
0.0
(U−V)rest
0.0
0.5
1.0
1.5
2.0
(V−J)rest

Example: “classical” SED over a very wide variety of messy environments

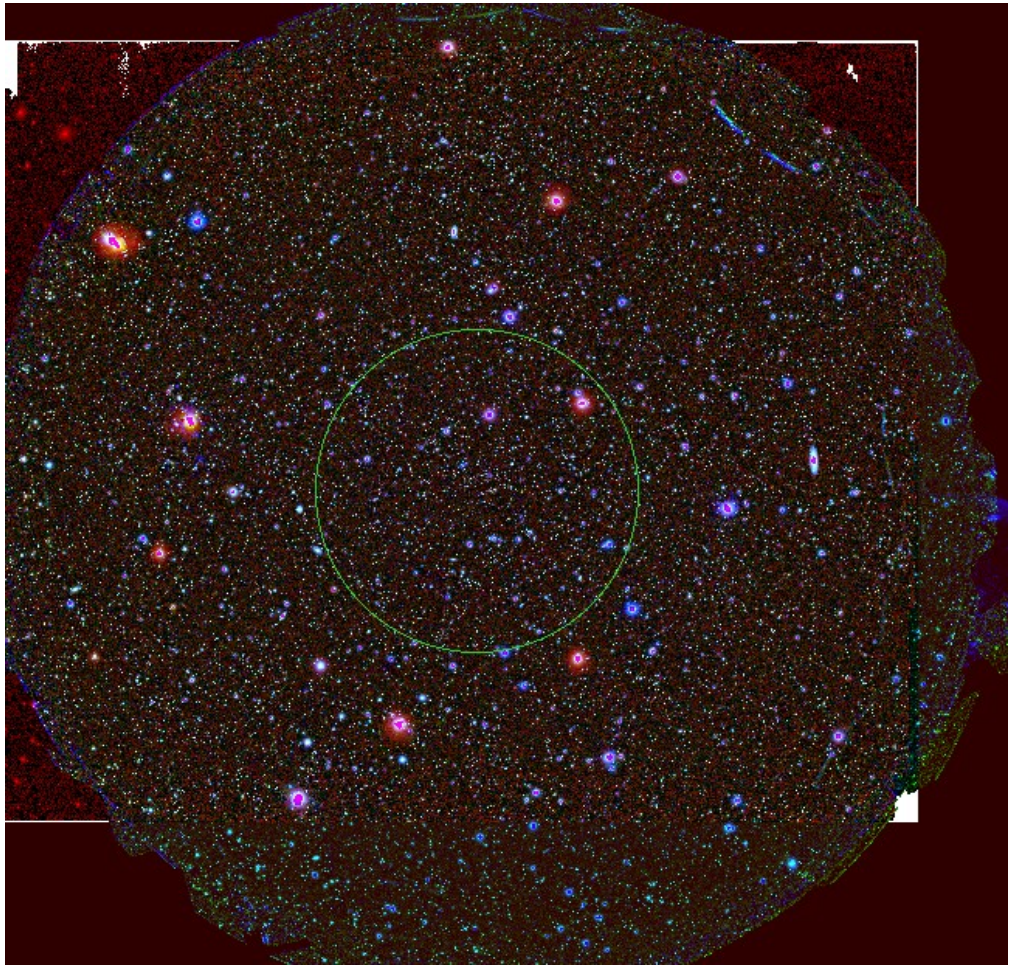




Optical/NIR ground based wide field imaging

- **NIR is (partly) homogenous, assuming Abell 370 will be completed.**
- **Optical is mixed: Suprime, DECam, Megaprime, ESO-WFI;**
- **GAME @VST (2.5 m), P.I. A.Mercurio has/is observing 2-3 BUFFALO clusters (RXCJ2248,MACSJ0416, Abell2744(?)) in u,g,r,i with FOV ~1deg^2**
- **Spatially limited z-spec!**

RELICS RXCJ0600 hyper r2,i2+Ks



RELICS WHLJ24 g,i2+Ks