VISTA data quality assessment at TERAPIX

Henry McCracken (IAP/TERAPIX)
*with invaluable assistance from **Patrick Hudelot**, Yuliana Goranova, Yannick Mellier, Rich Bielby Emmanuel Bertin and the TERAPIX team*

Vista meeting IoA, 27-28th January 2010

Processing vista data at TERAPIX

▸ We downloaded processed data from CASU

▸ SV data: VIDEO (Y) and VIKING (YJHK, ~10 deg^)

▸ UltraVISTA dry-run data: Y,K-band

▸ We ran qualityFITS on all input data: this makes weight-maps, catalogues, and provides initial quality assessment

▸ We re-compute astrometric solutions with SCAMP using 2MASS

▸ Finally we use SWARP to combine images and weight maps using the astrometric solution from SCAMP

▸ Needed carefully to mask the bad pixels to ensure the astrometric solution is not perturbed by outlier pixels

qfits-output

Stacking images

▸ We use a lanc3 interpolator and stacks are combined using the weight-maps derived using qualityFITS

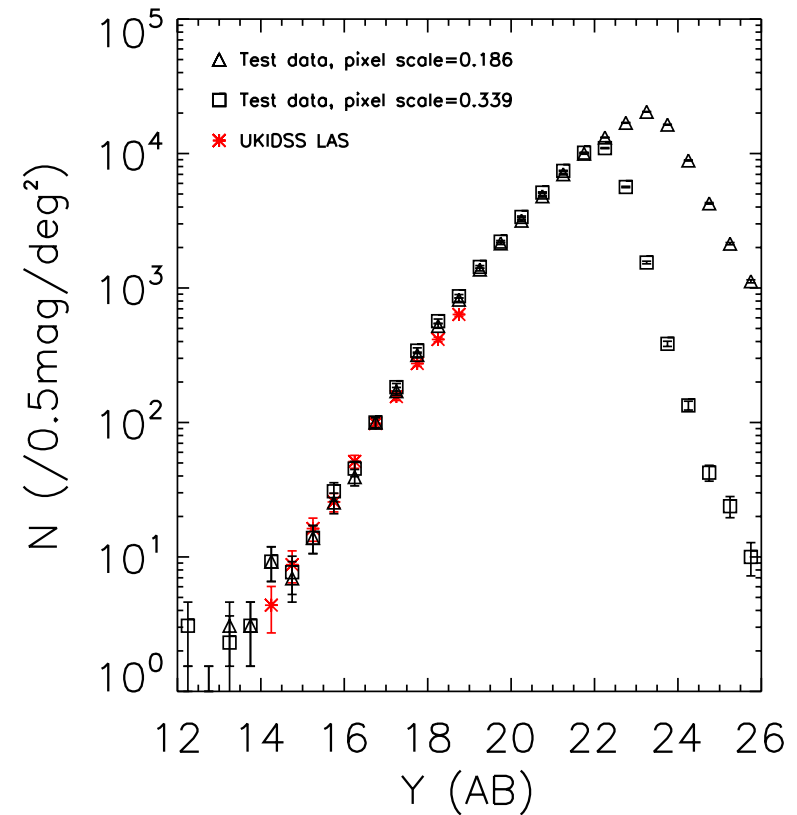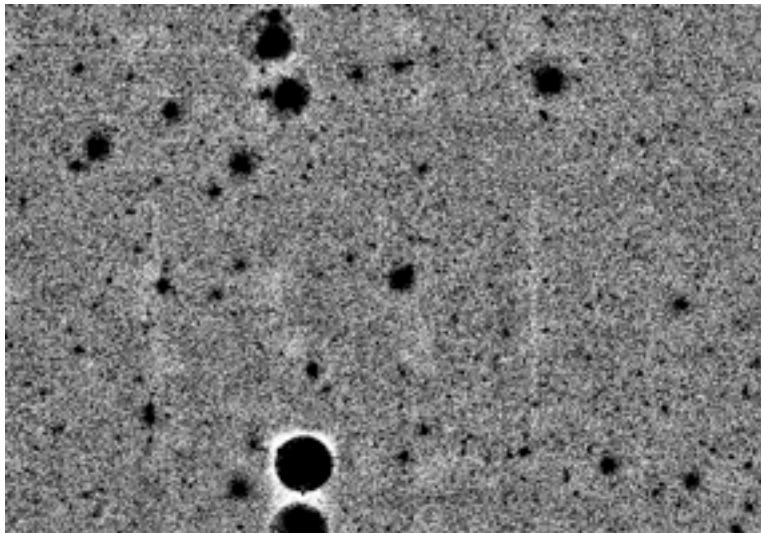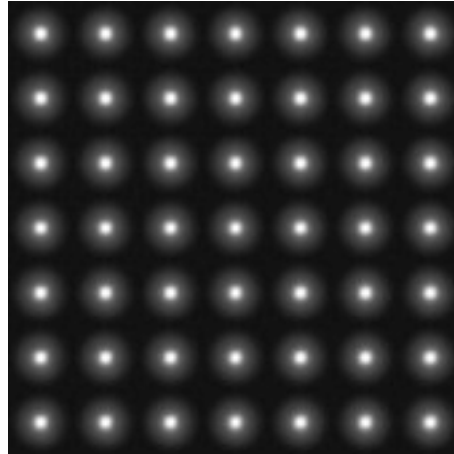▸ Some images are undersampled, so it's important to choose a smaller pixel scale compared to the default
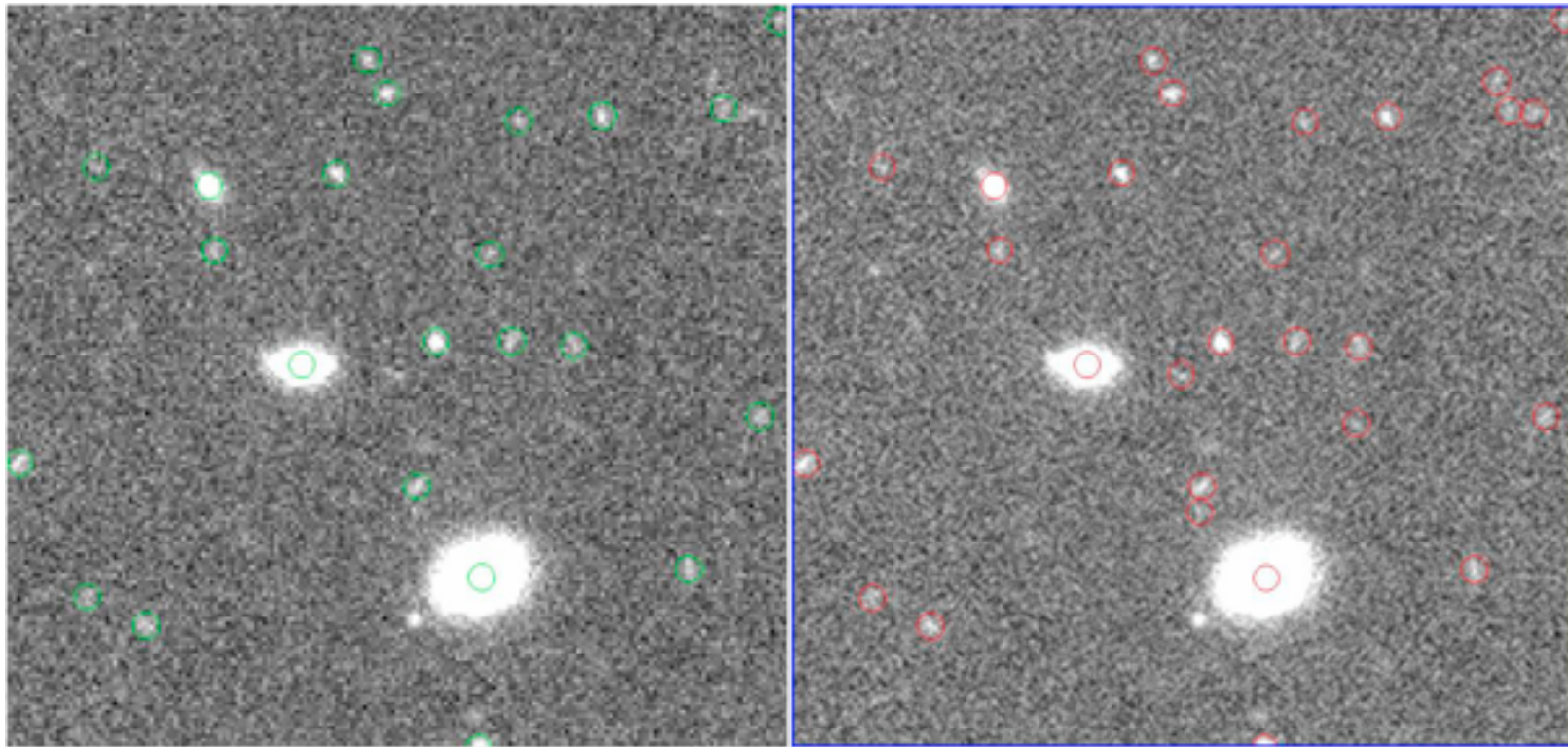
Vista meeting IoA, 27-28th January 2010

VIDEO-SV data

- ▸ Mosaic of PSFs over the final stack

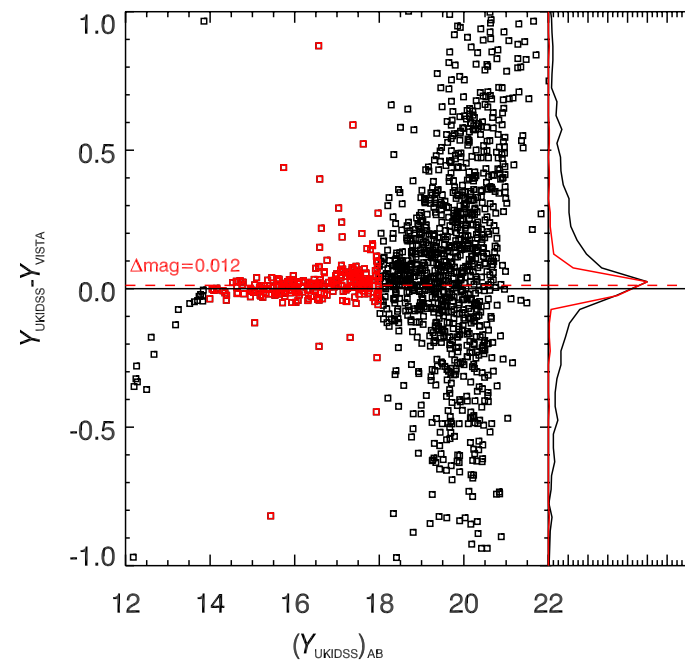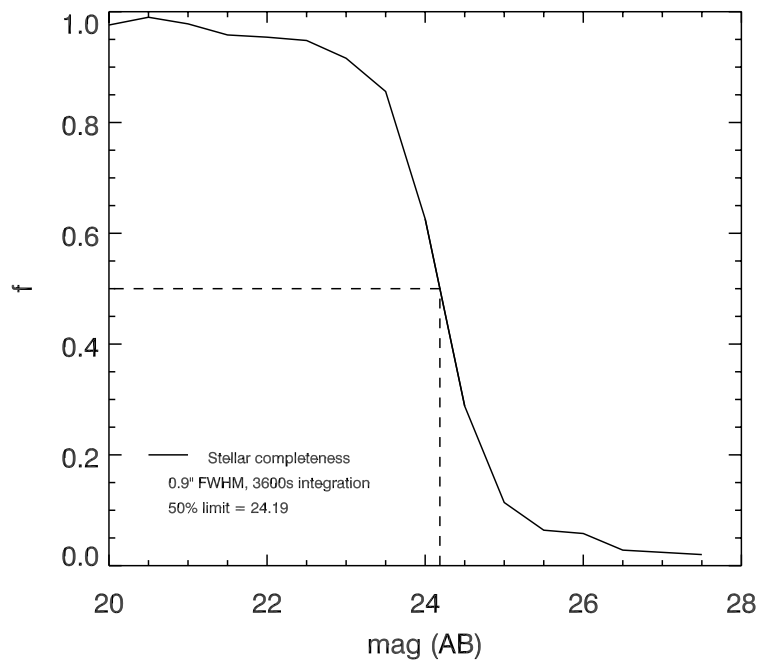- ▸ Video Stack does show some sky-subtraction residuals

- ▸ Y-band counts compared to UKIDSS LAS

Uvista-COSMOS:Y

▶ COSMOS field extensively studied in near-IR: J (wfcam) and KsH (wircam); excellent test field for VISTA


```
ETC results:
Time per object for signal-to-noise      : 3600.0 (s)
Total object signal-to-noise             :     3.1
```
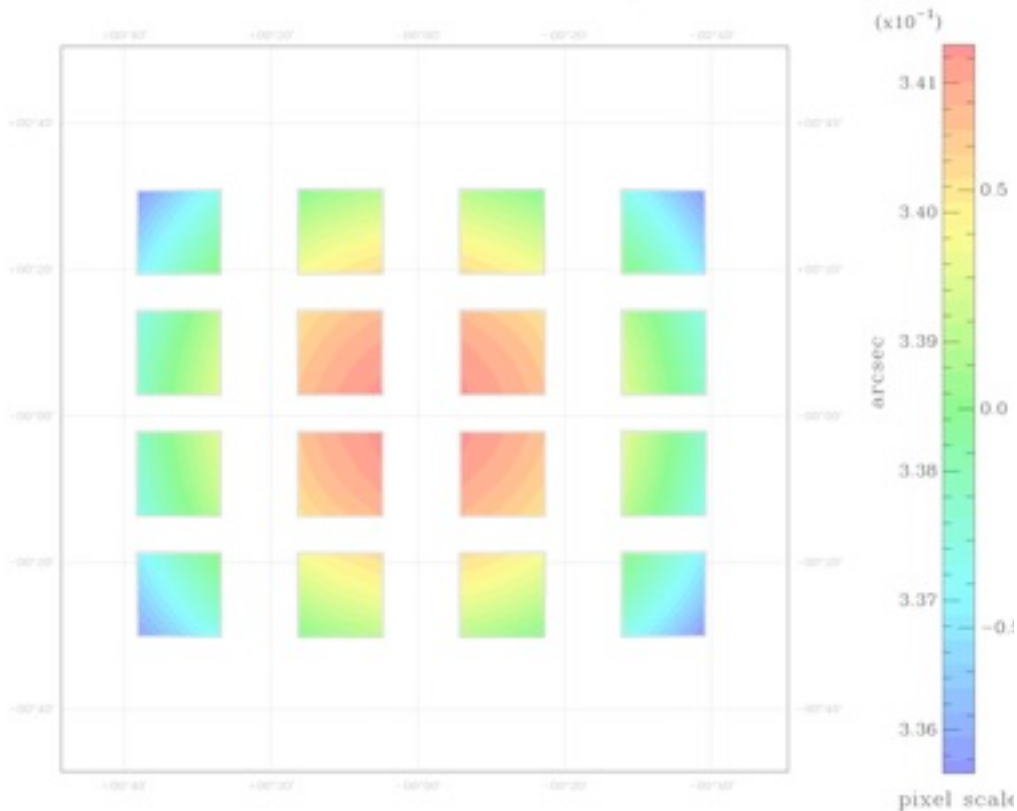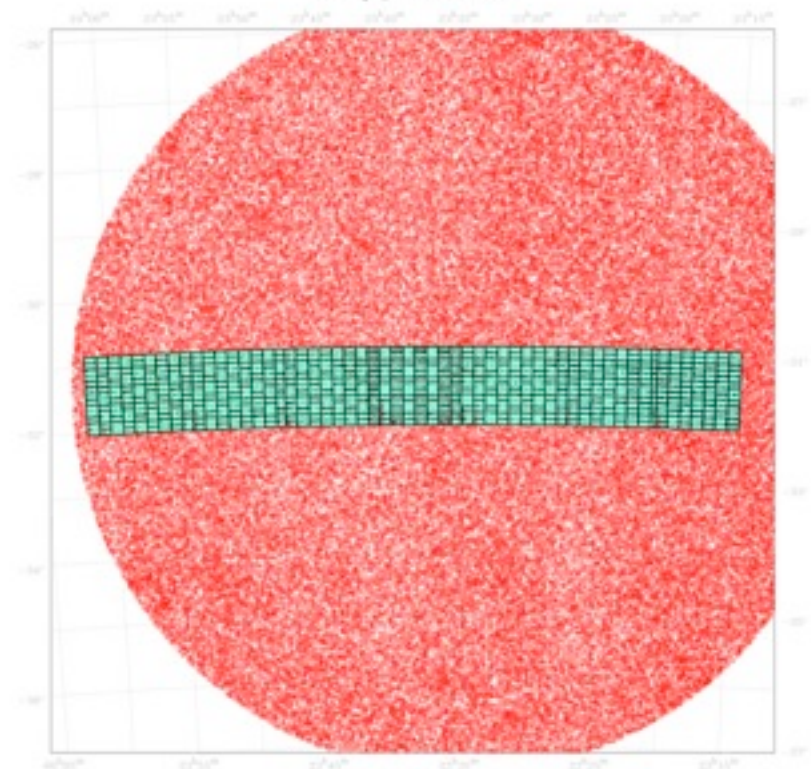
Astrometric solutions for VIKING

▶ Viking data covers a large field of view with many separate pointings
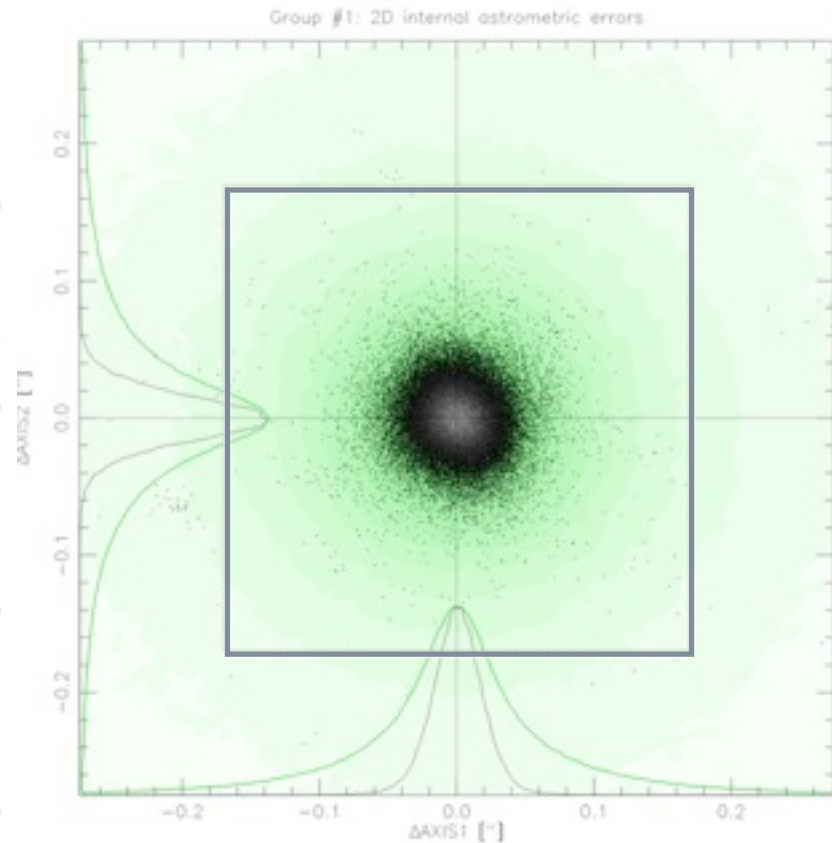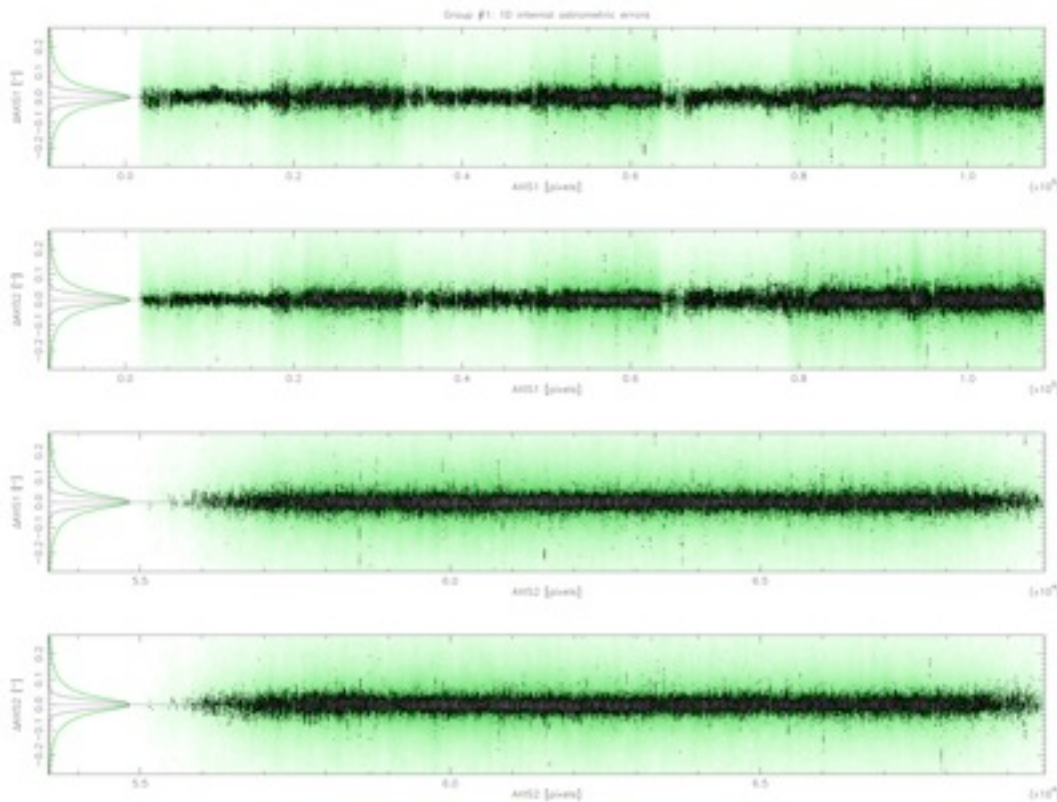

Instrument A1: distortion map

Group #1 detections

Astrometric solutions (II)

▶ Internal sigma ~0.02"!

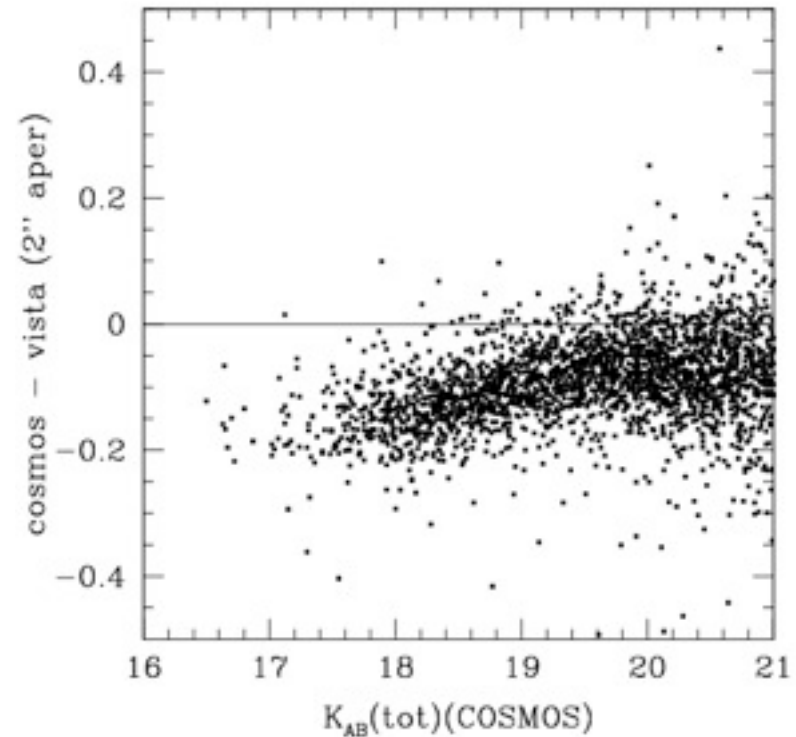# VIKING SV stack

Vista meeting IoA, 27-28th January 2010
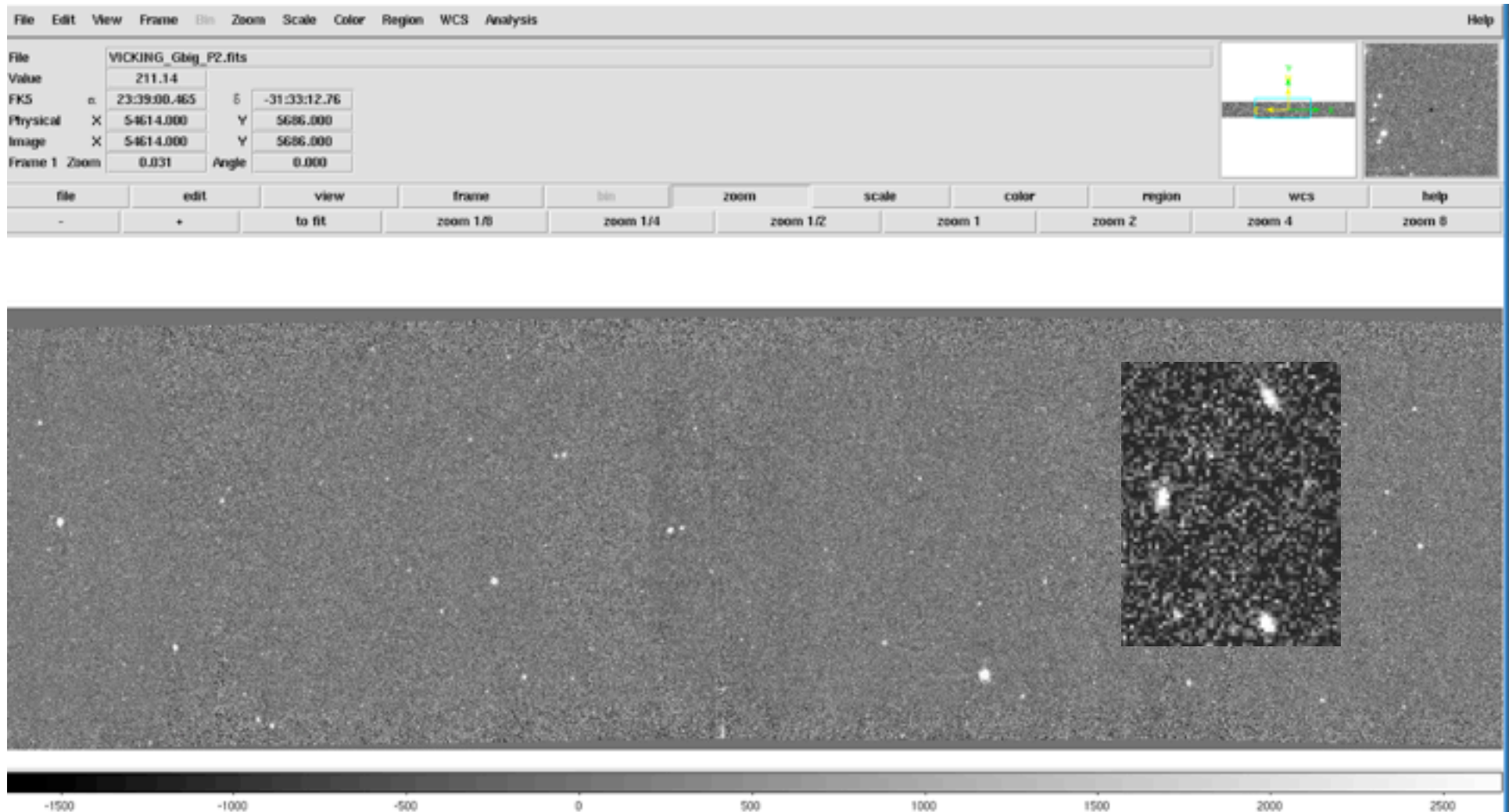
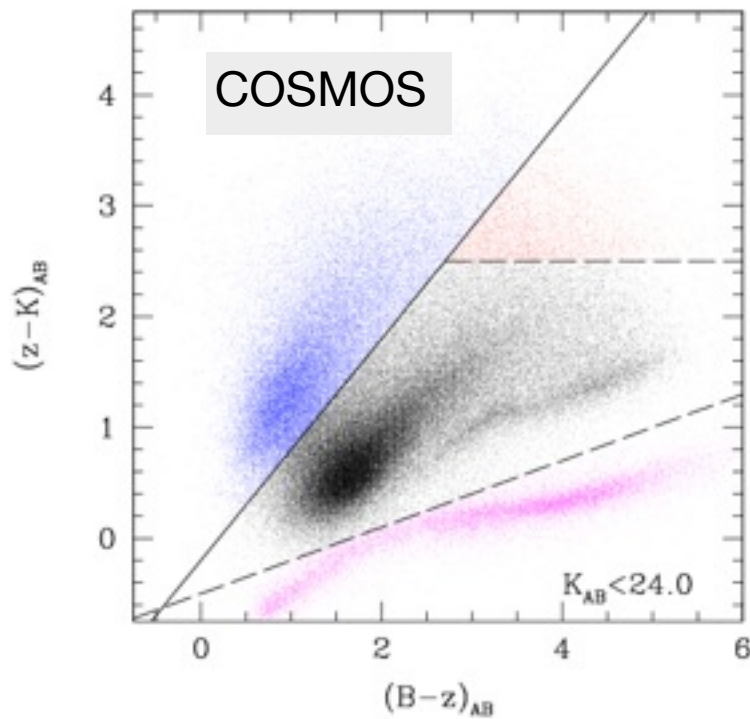Friday, January 29, 2010

COSMOS Ks data

▸ COSMOS field well studied; existing multi-colour extensive (near IR data in JHK; COSMOS field)

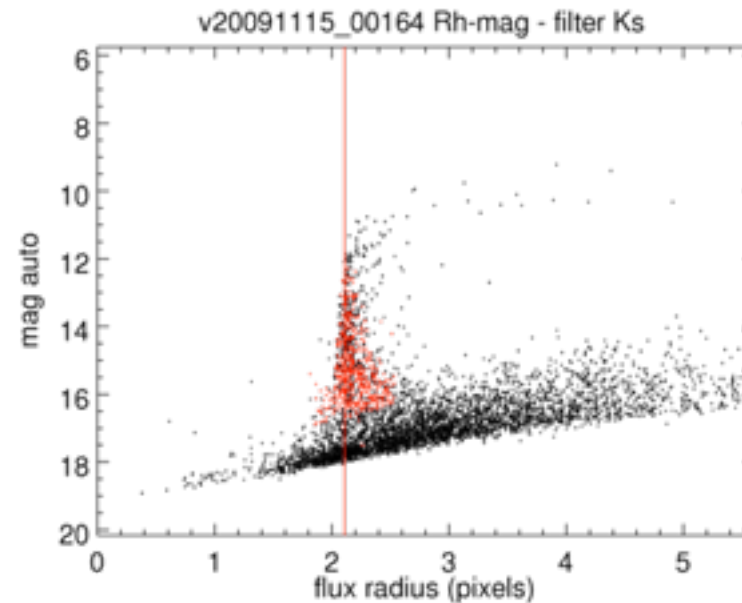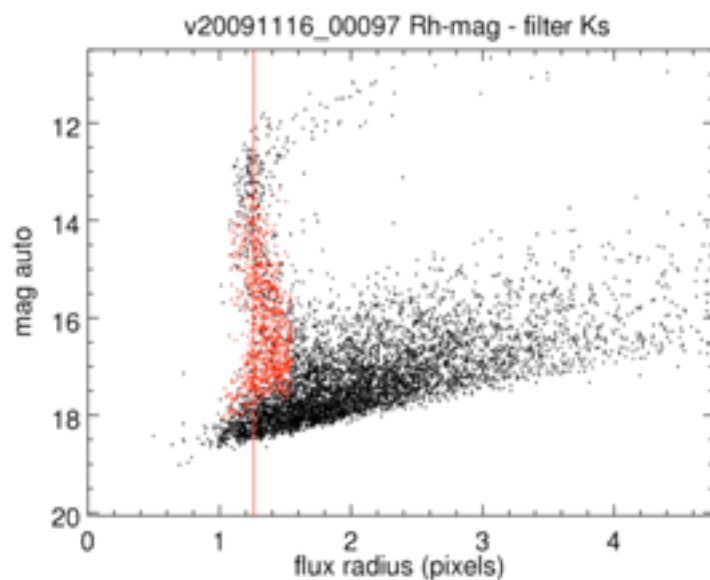▸ Compare in detail stellar magnitudes with stars selected in the BzK diagram

Combining marginally sampled data..

▶ "S-shaped" flux-radius figure in very good seeing data; obviously care should be taken combining this other data

▶ Images can be undersampled

VIKING SV data (Ks)

Questions for CASU/ESO

▸ Will the PA be fixed?

▸ Dark haloes seen around some objects: is this a sky-subtraction issue?

▸ Wedges / circles around bright objects: could this be problematic for even unsaturated objects

▸ **How are sky frames computed**: what is the size of the gliding window (in minutes)

▸ What is the destriping algorithm?

▸ What is the **zero point uncertainty**, and would be possible to have a zero-point for each image?

▸ It would be nice at least to know which images were photometric or not: could this information be provided by ESO/CASU via a web interface / text file?

▸ For observers / reducers: some data is undersampled: be careful!

▸ Access to pre-reduced data **before sky subtraction?**

Vista meeting IoA, 27-28th January 2010