

CFHTLS

December , 2004

Terapix procesing activities

Schedule:

- November 16: release T0001
- Dec.-Jan. : release T0002
 - Deep, Wide and Very wide 20031/B+2004A/B +
 - new pre-calibrated 2003A/B data +
 - new astrometric tool
- Release updates: each 6 month
- End 2005: fully PSF homogenised release

PIs:

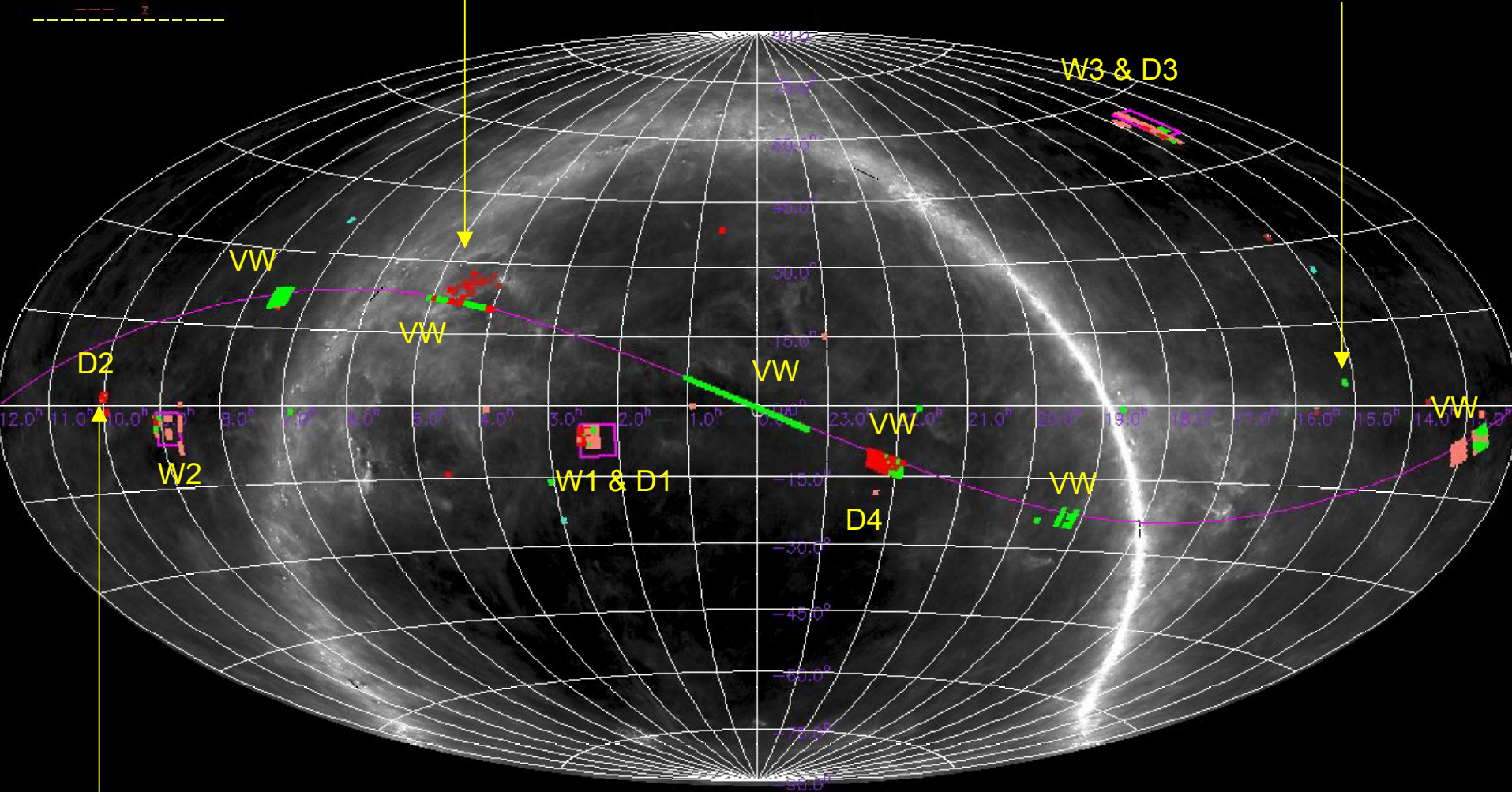
- On going work: 25% of Terapix activities:
 - Le Fèvre, Dougados, Demers, Cayatte, Mellier, Petitjean, Seymour, Davidge, Sanders, Robin

CFHTLS: start July 2003, end August 2008



Dougados 03BF09

Mellier 03AF19



Le Fèvre 03BF27: Cosmos

Terapix/Skywatcher : all data 03A-03B : 4200 Megacam images

+command line : skywatcher

Qfits and Terapix products for each megacam image

-> Acces to Qfits pages to CFHTLS registered users

Quality assessment page for each megacam image: sent to CADC

Quality Assessment summary table of input data derived from the Terapix quality assessment tool "QualityFITS". These data are provided for ALL CFHTLS-related images that enter into the Terapix processing.

This front panel can be used to select images according to your preferences

Search	Display	QF Version	Filename	Object / Field	RunId	Filter	DateObs Min & Max	Node	Grade (*)
Go	10	1.10		oz			2003 03 22 2004 07 25		
Reset	RA Min & Max 0h 00m 12.75 2h 55m 50.13	Dec Min & Max -24 22 03.29 66 36 31.30	Master flat	Master mask	Exposure time Min 1.02 Max 1200.15	Airmass Min 1 Max 2.912	Seeing Min 0.560E Max 4.318E	Bkg Min -3.54 Max 23.0301	

(*) Comments are from Terapix visual control. Grades are Terapix visual image quality control and ranking using the following level:
A = Good,
B = acceptable (see comment),
C = serious problem. Rejected for further processing steps (see comment)

Weightmaps and Idac catalogues for each megacam image: sent to CADC

All 10 images displayed. Use the form to select more or less [\[Export the whole result in CSV \(ASCII file in Comma Separated Values\)\]](#)

Thumbnail	Image	Object	RunId	Filter	ExpTime (s)	CFHT SkyProbe	Utc obs	Skyprobe	RA	Dec	Airmass	ZP	Median seeing (")	Median bkg (mag/arcsec ²)	Grade (*)	Comment (*)	File	Path	Node
	625703p	Pre-W3 66	03AL05	z	180	2003-03-22	13:35:04	0.072	14:08:43.70	53:35:30.9	1.234	26.007	0.8954	20			I-W-C data/pix3/raid/processing/03AL05/z.MP9601		pix3

Qfits and Terapix products for each megacam image

-> Acces to Qfits pages to CFHTLS registered users

Data and meta-data sent to CADC for each individual megacam image:
e.g. 707502p.fits

```
707502p_bkg_histo.png
707502p_bkg_histo.ps
707502p_bkg_m.png
707502p_diag.fits.fz
707502p_ell.png
707502p_flag.fits.fz
707502p_fwhm_histo.png
707502p_fwhm_histo.ps
707502p_gal_histo.png
707502p_gal_histo.ps
707502p.ldac
707502p_m_med.png
707502p_m.png
707502p_psf_m.png
707502p_rhmag_gal.png
707502p_rhmag.png
707502p_rhmag_star.png
707502p_star_histo.png
707502p_star_histo.ps
707502p_weight.fits.fz
707502p_wmm_med.png
707502p_wmm.png
707502p.xml
```

Filter		
Name	Number	%
MP9301	193	3%
MP9401	1709	33%
MP9601	1028	20%
MP9701	1729	33%
MP9801	449	8%

Grade		
Value	Number	%
not graded	796	15%
A	2370	46%
B	1409	27%
C	519	10%
D	73	1%

Node		
Name	Number	%
pix2	3	0%
pix1	201	3%
pix2	105	2%
pix3	305	5%
pix4	191	3%
pix5	948	18%
pix6	994	19%
pix7	951	18%
pix8	910	17%
pix9	500	9%

Node		Grade (*)	
22	---	---	---
25	---	---	---
Bkg			
0.560E	ms	-3.54	
4.318E	ms	23.0301	

(*) Comments are from Terapix
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B = acceptable (see comment),
C = serious problem. Rejected for further processing steps (see comment)

All 10 images displayed. Use the form to select more or less [\[Export the whole result in CSV \(ASCII file in Comma Separated Values\)\]](#)

Thumbnail	Image	Object	RunId	Filter	ExpTime (s)	CFHT SkyProbe	Utc obs	Skyprobe	RA	Dec	Airmass	ZP	Median seeing (")	Median bkg (mag/arcsec ²)	Grade (*)	Comment (*)	File	Path	Node
	625703p	Pre-W3 66	03AL05	r	180	2003-03-22	13:35:04	0.072	14:08:43.70	53:35:30.9	1.234	26.007	0.8954	20	A B C D		I-W-C	data/pix3/aid/processing/03AL05/r_MP9601	pix3

CFHTLS T0001 Nov. 16 Release



CFHTLS Release T0001: summary table.

by **FMA** - Updated December 1st, 2004

Back to [Terapix T0001 main page](#).

TERAPIX release products

Details given in [explanatory table](#)

- ▶ Release reference identification : **T0001 - Nov. 12, 2004**
- ▶ CFHTLS Deep fields: D1, D2, D3 and D4

Selection criteria:

- ▶ Data obtained between June 1st, 2003 and July 22, 2004
- ▶ Terapix Class : A or B
- ▶ Exp. time > 60 sec.
- ▶ Seeing < 1.1" , except for u (<1.4")
- ▶ Airmass < 1.4
- ▶ D4-z data missing : astrometric solutions do not match other filters. Data will be released later.
- ▶ Magnitudes are AB MEGACAM instrumental system.

- Total selected : 906 images + 906 weightmaps
- Total exp. Time : 101 hrs

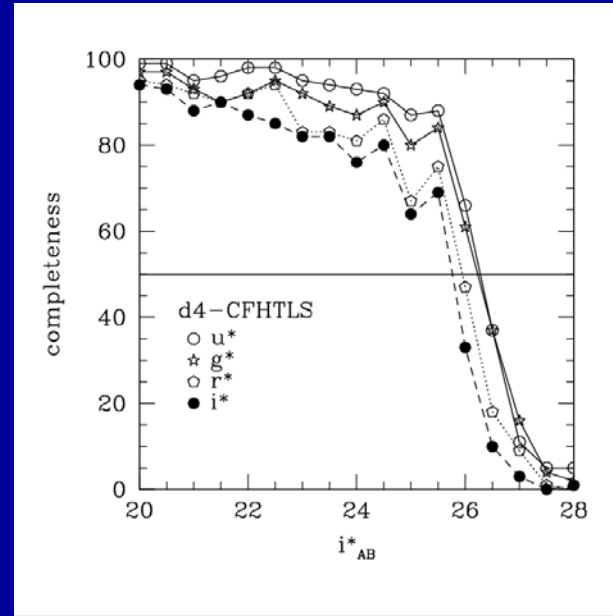
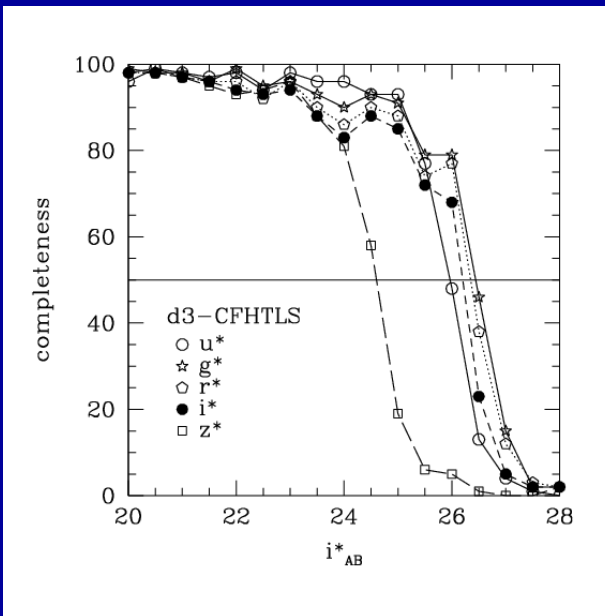
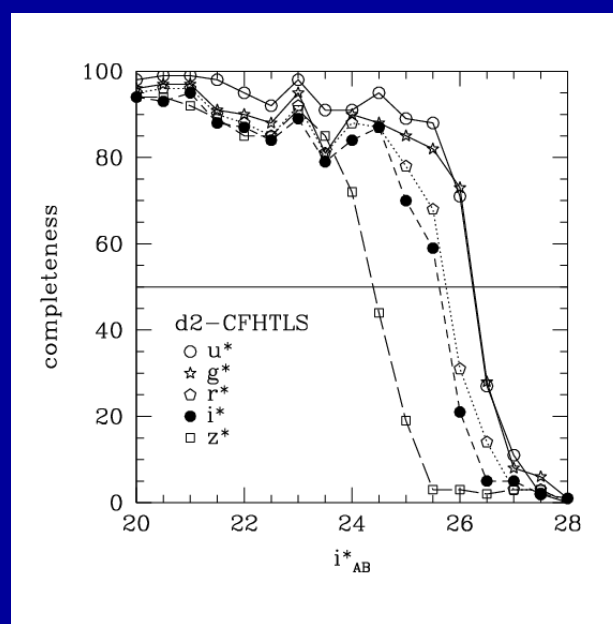
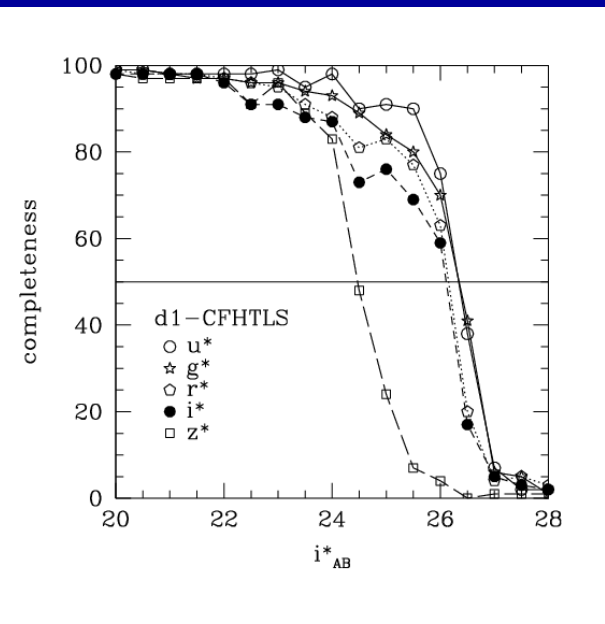
CFHTLS Field	CFHTLS Deep synoptic D1					CFHTLS Deep synoptic D2					CFHTLS Deep synoptic D3					CFHTLS Deep synoptic D4				
Filter	u	g	r	i	z	u	g	r	i	z	u	g	r	i	z	u	g	r	i	z
Stacked image (FITS. Selected images are listed in *.lst files)	Y	Y	Y	Y	Y	Y (CCD#03 missing)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
RA , DEC (J2000)	02:25:59 , -04:29:40					10:00:28 , +02:12:30					14:19:27 , +52:40:56					22:15:31 , -17:43:56				
Nb files stacked	16	37	48	100	34	7	24	17	38	28	7	37	64	127	42	28	56	78	118	-
Exp. time (s)	10560	7515	17280	52000	12240	2520	5400	6060	18500	10080	4620	8010	20820	59640	15120	16680	11250	26400	58800	-
Seeing (")	1.15	0.98	0.87	0.88	0.86	0.88	0.98	0.89	0.95	0.84	0.88	0.95	0.93	0.92	0.85	1.05	0.99	0.85	0.88	-
Mag. ZP	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	30.	-
Pixel size (")	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	0.1860	-
Image size (pix.)	20404 x 21547					20324 x 21442					19486 x 20482					20397x21475				
Effective FOV (=area in deg ²)	0.80					0.69					0.77					0.77				

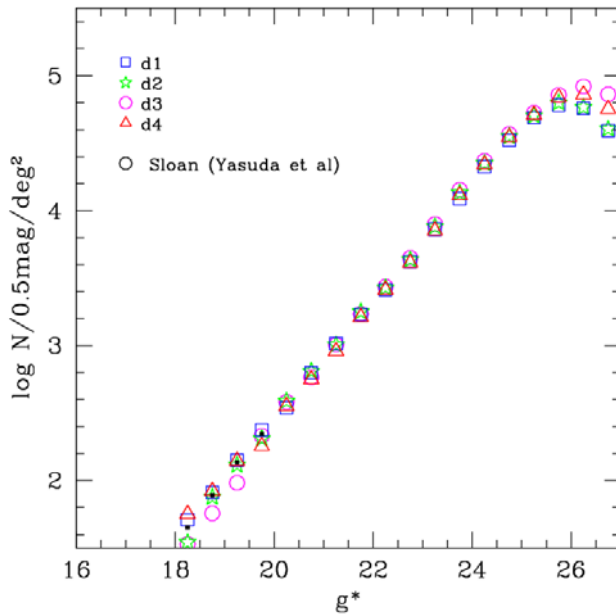
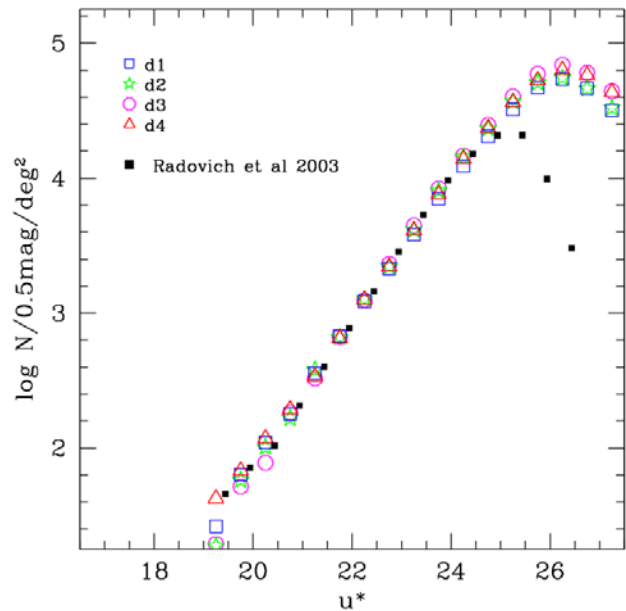
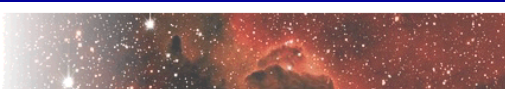
->Release pages at Terapix and CADC



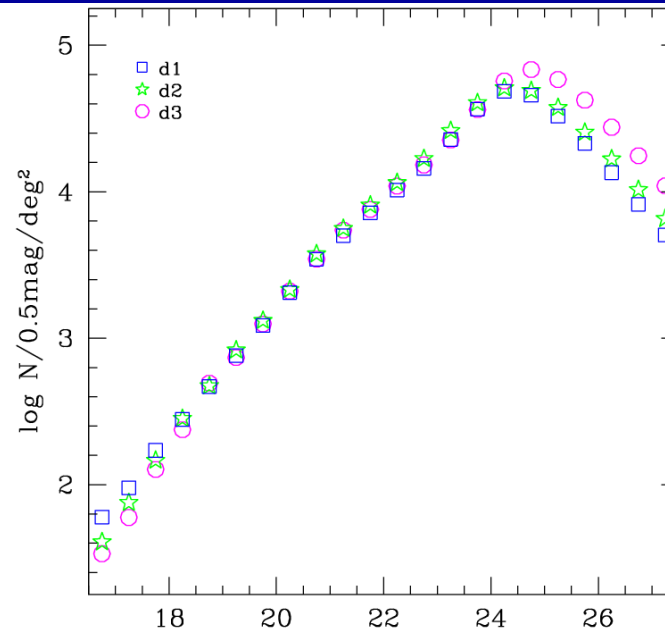
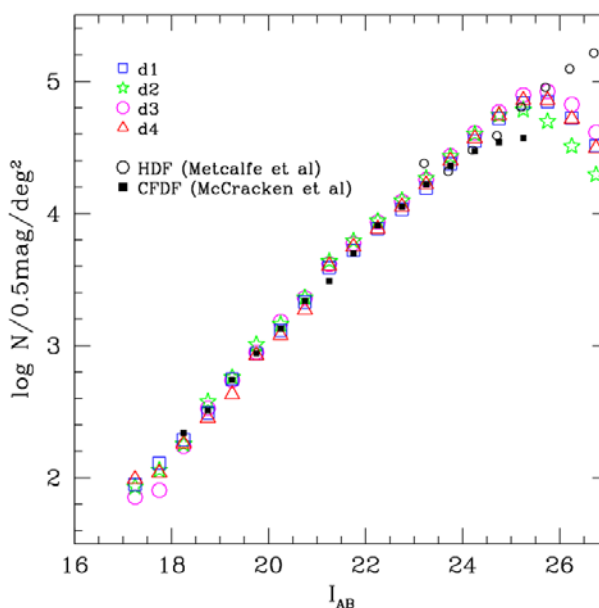
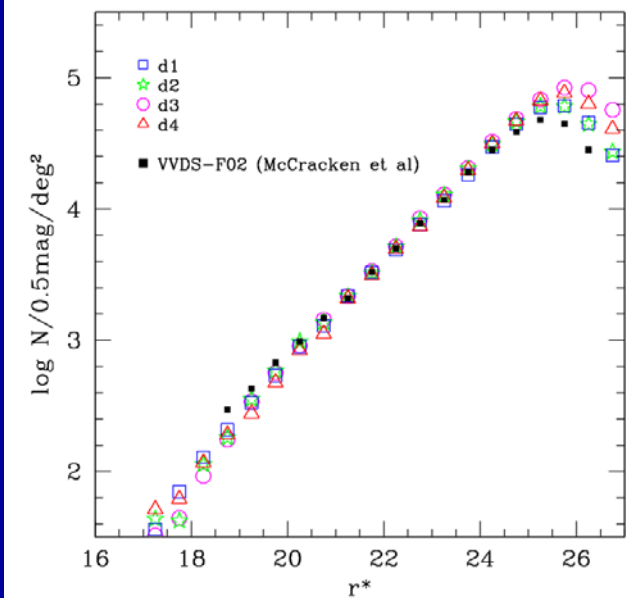
T0001: Completeness

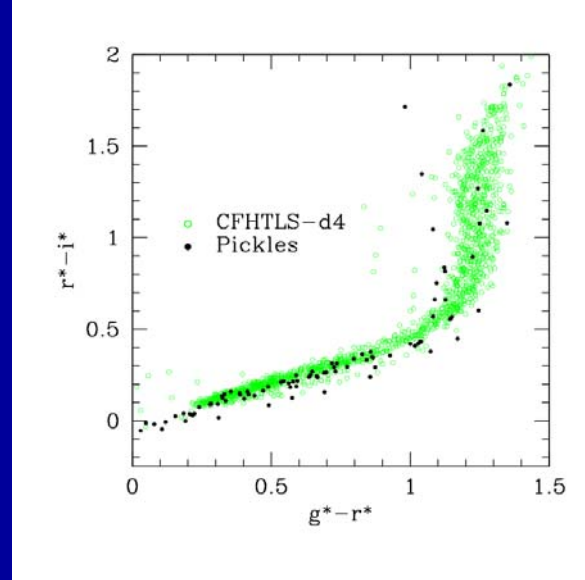
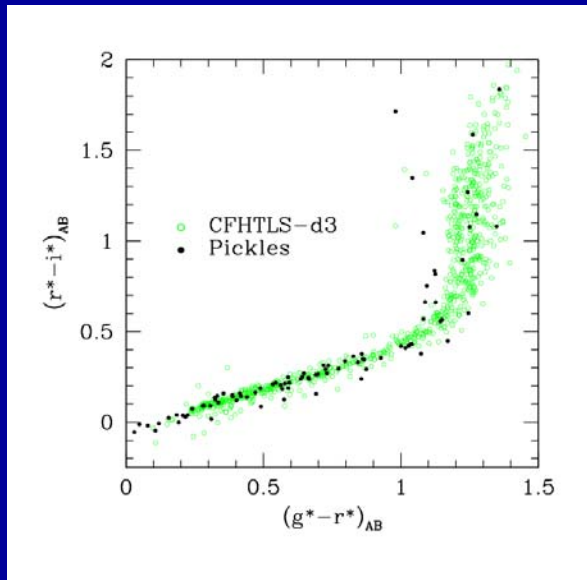
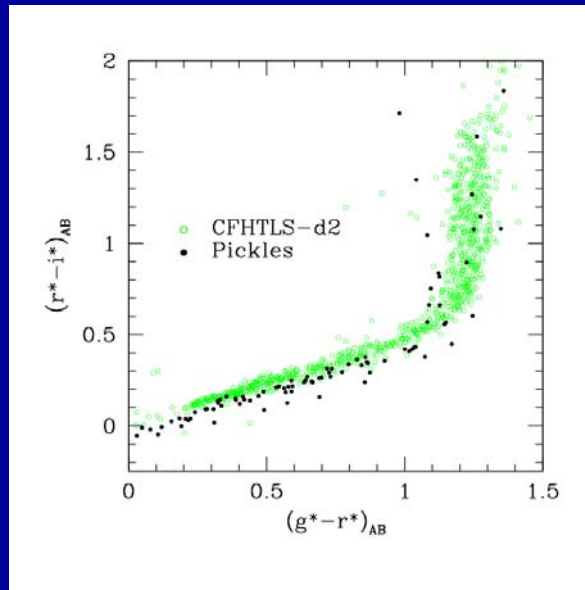
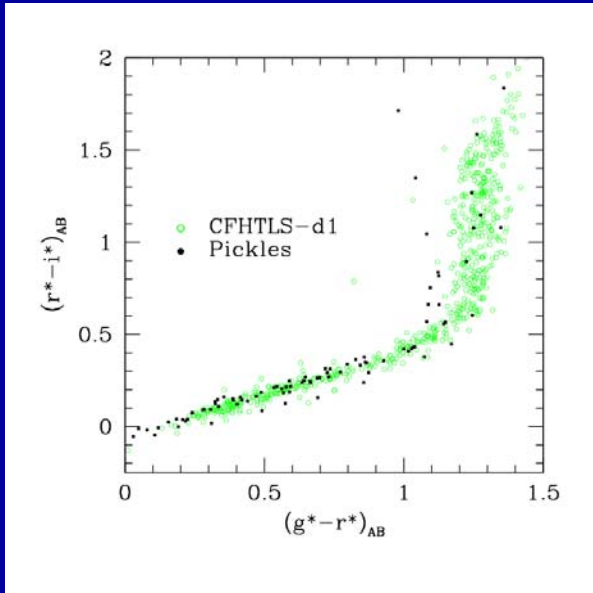
Z band: all ready except D4





T0001:
Galaxy
counts
 Z band: all
 ready except D4



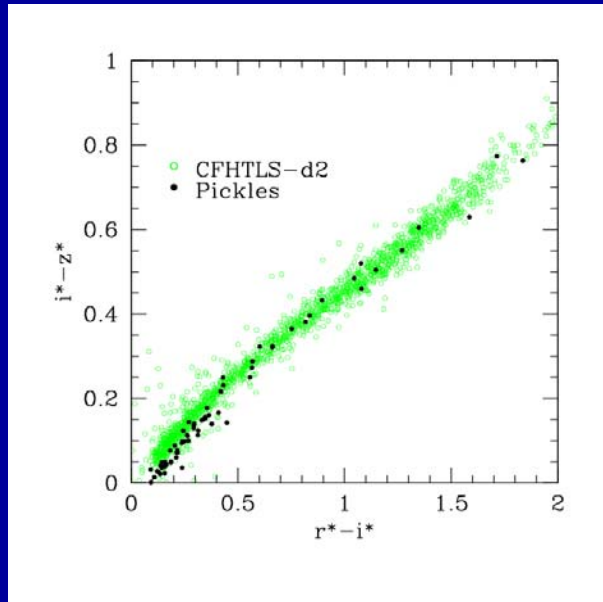
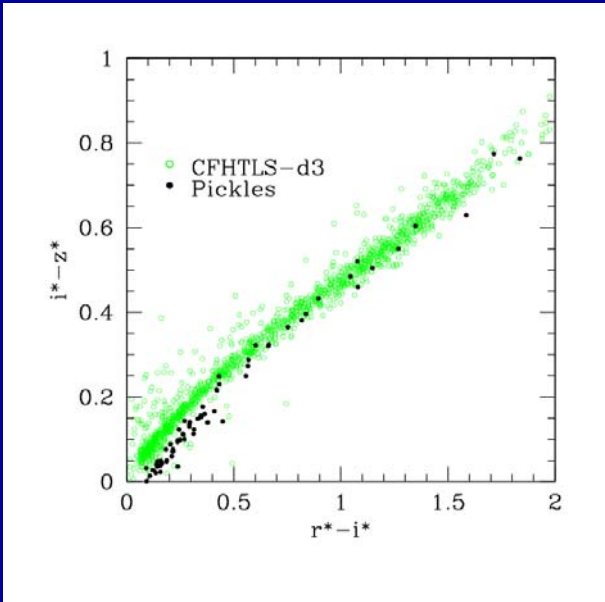
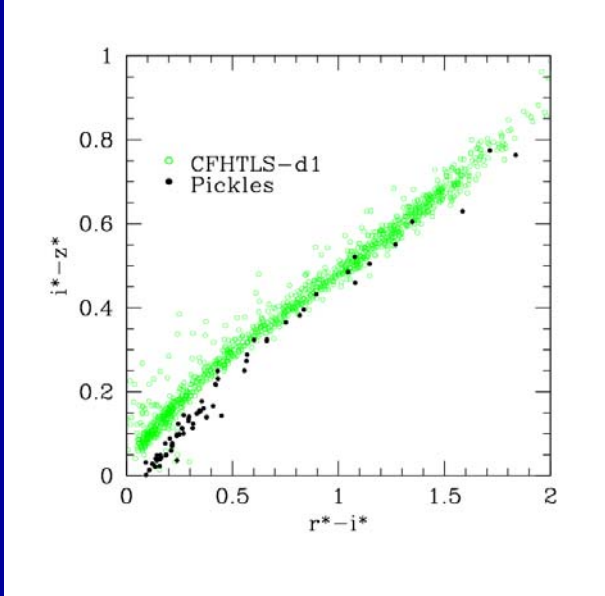


T0001: gri stellar color-color tracks

Pickles's track
indicative (shift
due to
metallicity)



T0001: riz stellar color-color tracks

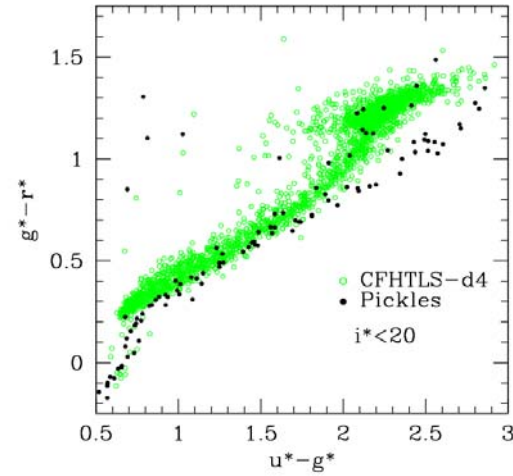
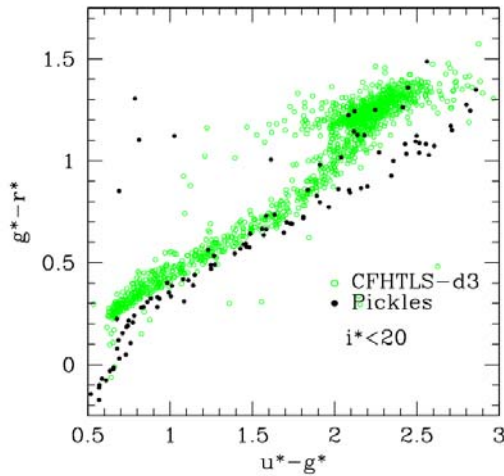
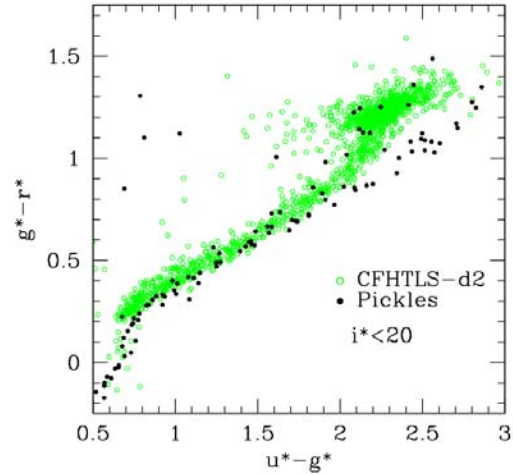
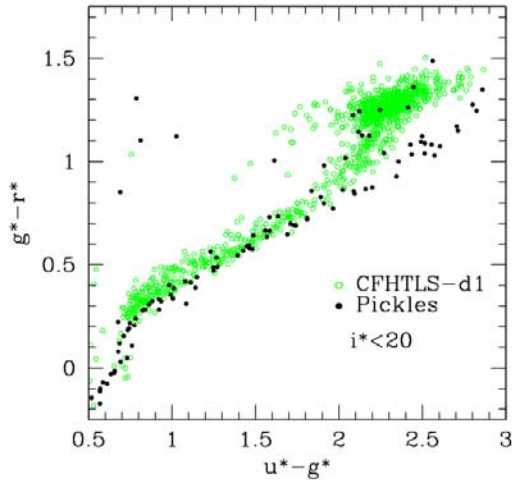


Pickles's track
indicative: no
atmospheric
and E(B-V)
corrections

D4-z missing



T0001: ugr stellar color-color tracks

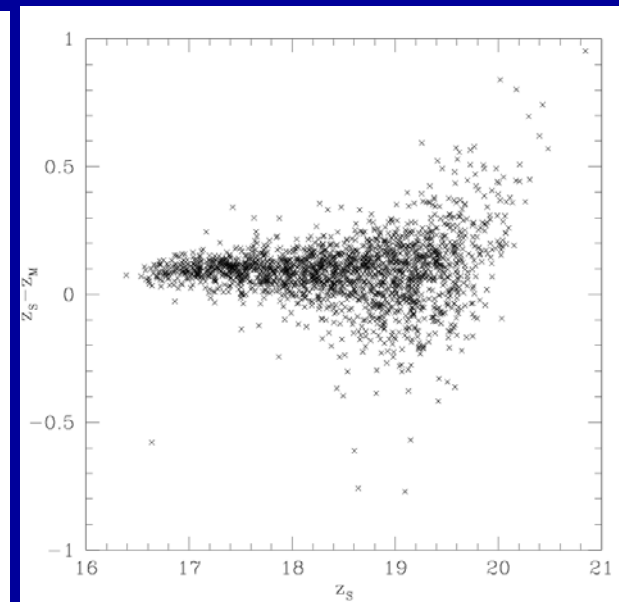
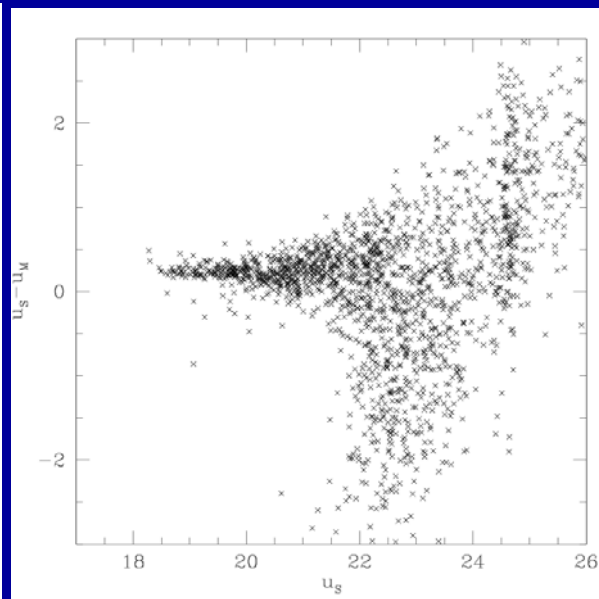
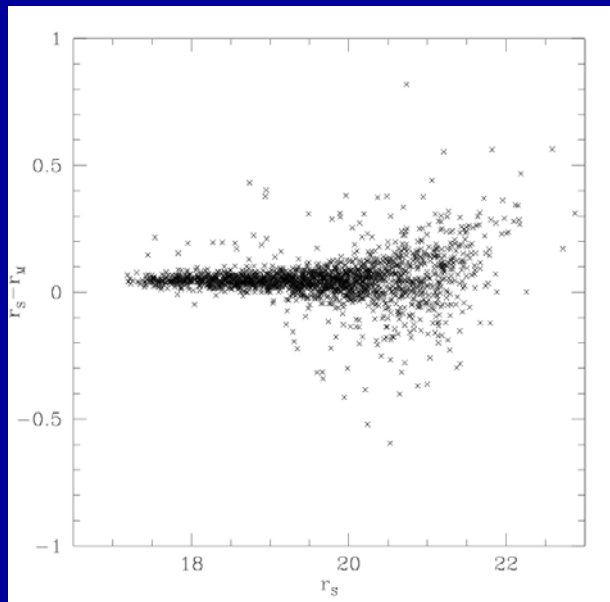
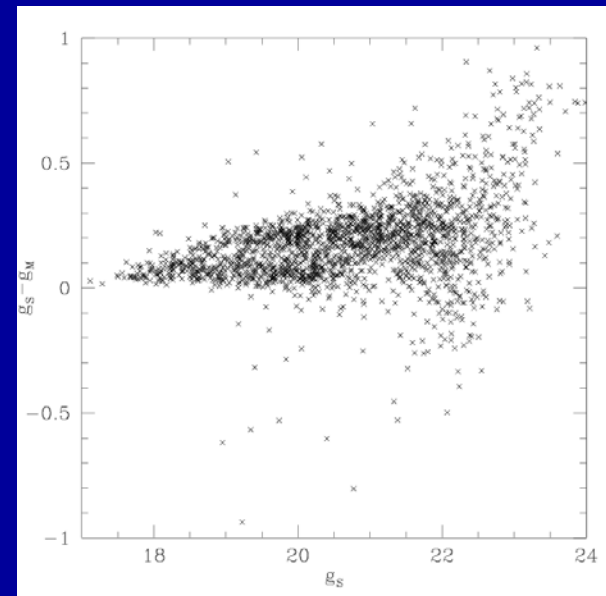
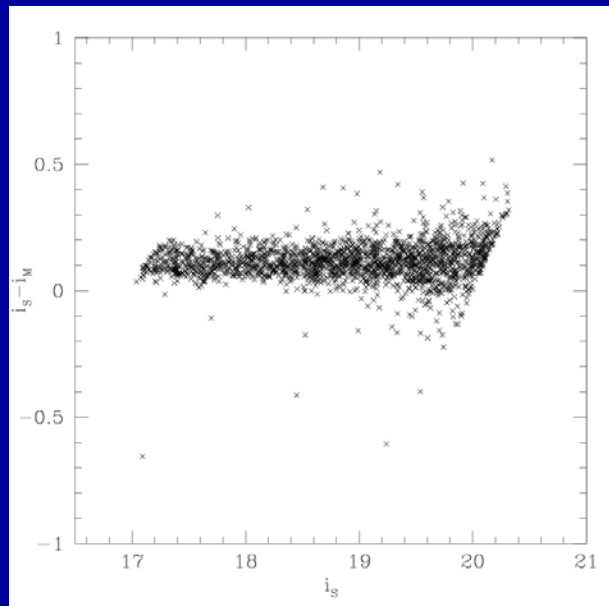


Pickles's track
indicative: no
atmospheric nor
E(B-V)
corrections



T0001: Photometric calibration: SDDS vs. CFHTLS

Offset only to use of
MagAuto
Terapix and C. Marmo

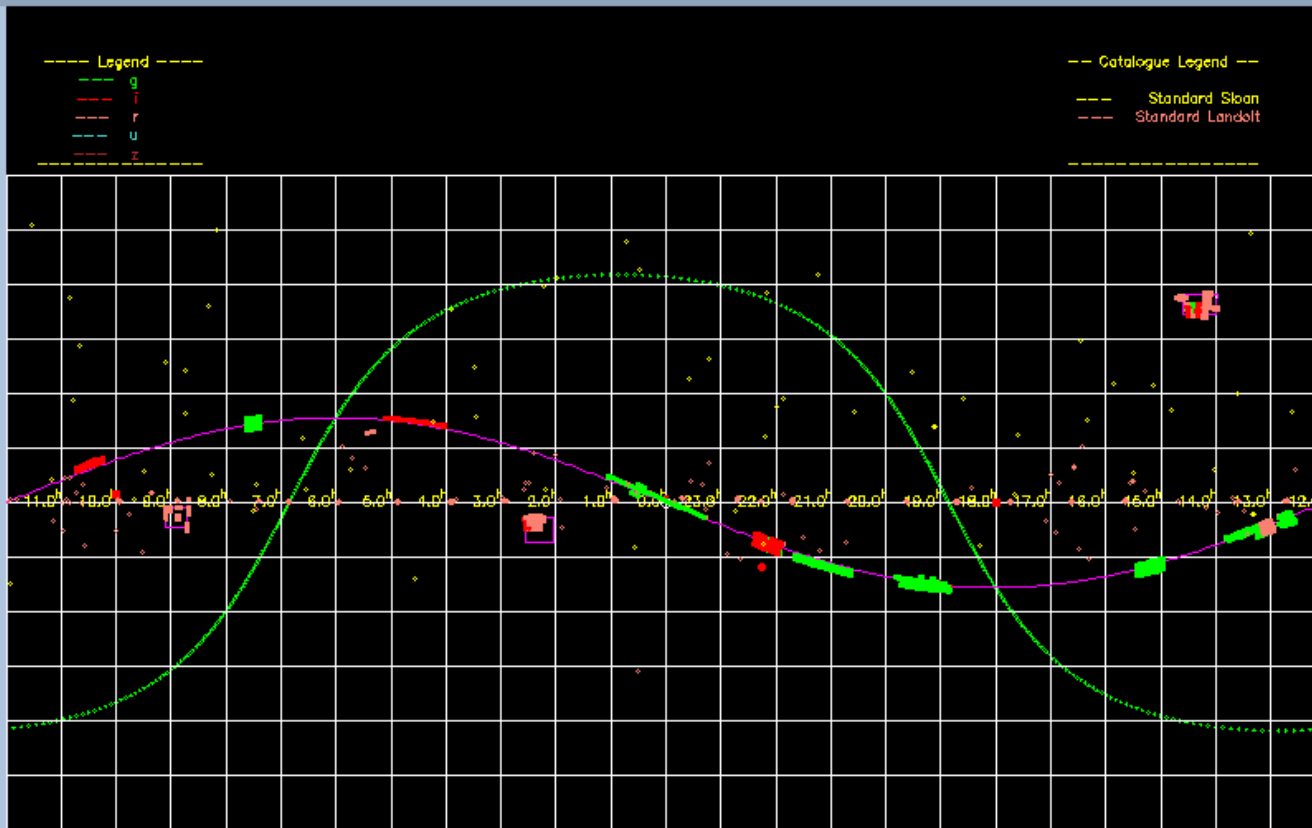


T0002 release in progress

Release identification: T0002. Delivery date; Dec. 2004 - Jan. 2005

- Data between June 1st 2003 and Oct. 22, 2004
- D1, D2, D3, D4, W1, W2, W3 + VW
- u,g,r,i,z
- About 6000 CFHTLS images (+ weightmaps)
- Use new master flats for 03B data
- Exp. time > 60 seconds
- Seeing < 1.1''; except u (<1.4 '')
- Airmass < 1.4
- Class Terapix (output image quality): A ou B
- u,g,r,z stacks aligned to i-band stacked images

T0002 sky coverage



command line : shynashier -s png -p CAR -s wide+verywide+presurvey+deep -H 0 -M 0 -S 0 -l 0 -m 0 -S 0 -s 1

Statistics on image

Select a QF image

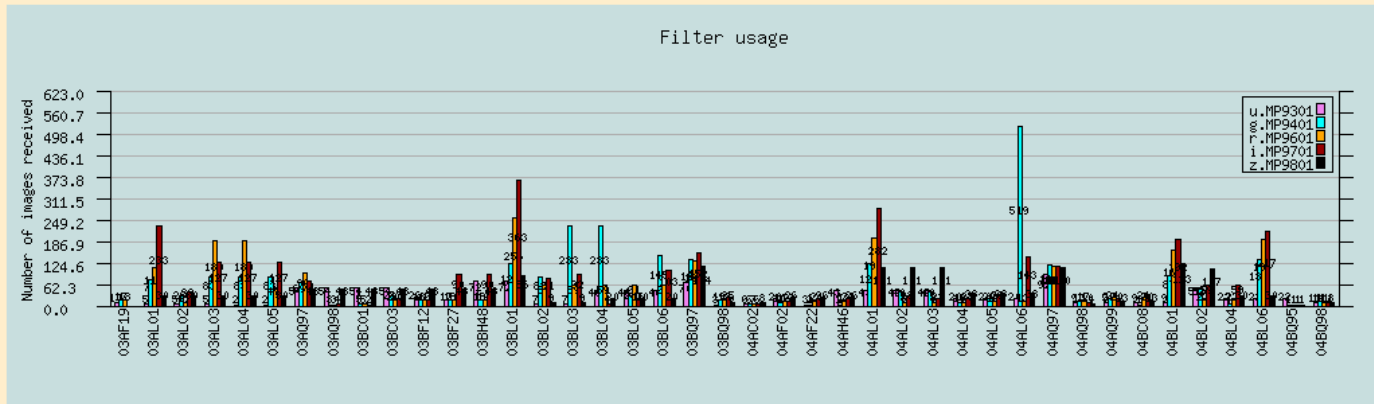
number of images plotted: 5854 images
u.MP9301 : 152 images
i.MP9701 : 2031 images
z.MP9801 : 554 images
g.MP9401 : 1787 images
r.MP9601 : 1330 images

[Download list of images](#) or [pdf report](#)

Terapix/ SkyWatcher: CFHTLS follow up

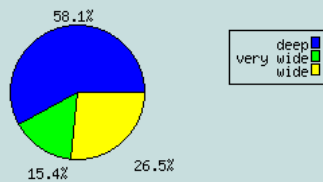
T0002: statistics

Data transfer - progress report updated automatically

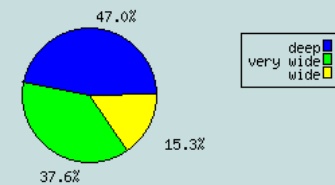


The figure above shows the number of images received by filter and by runid.

CFHTLS total int time pie diagram (Total : 482.4 hours)
(402 science+ 80 calibration)



CFHTLS images pie diagram (Total : 5854 images)



T0002: Validated Data as of Oct. 22

Field	u*	g'	r'	i'	z'	hours
1hr grey s/n=10 AB	25.20	25.7	25.3	24.9	23.9	
D1	2.57	5.50	15.49	31.72	10.1	65.38
D2	1.28	2.13	5.75	11.46	3.00	23.62
D3	1.28	5.59	15.13	33.41	9.01	64.42
D4	7.90	7.94	17.42	37.08	15.6	85.94
W1	9.99	14.72	8.09	23.17	7.33	63.3
W2		4.17	3.06	0.69		7.92
W3		9.45	3.91	12.75		26.1
V Wide		22.6	11.74	34.07		68.4

Total: 402 hrs (T0001: 101 hrs)

On going T0002 release

This front panel can be used to select images according to your preferences

Search	Display	Release version	Filename	Object	Filter	Processing Date Min & Max	Node	Grade (*)
Go	10	0002		D		2004 11 22 2004 12 01	pix1	
Reset	RA Min & Max	Dec Min & Max		Exposure time		Seeing	Bkg	
	00 h 47 m 07 s 22 h 22 m 02 s	+23 ° 47 ' 43 " 53 ° 53 ' 07 "		Min 90.05 Max 70210.59		Min 0.66 Max 1.13	Min -0.83 Max 5.5901	

(*) Comments are from Terapix visual control. Grades are Terapix visual image quality control and ranking using the following level :

- A = Good,
- B = acceptable (see comment),
- C = serious problem (see comment)

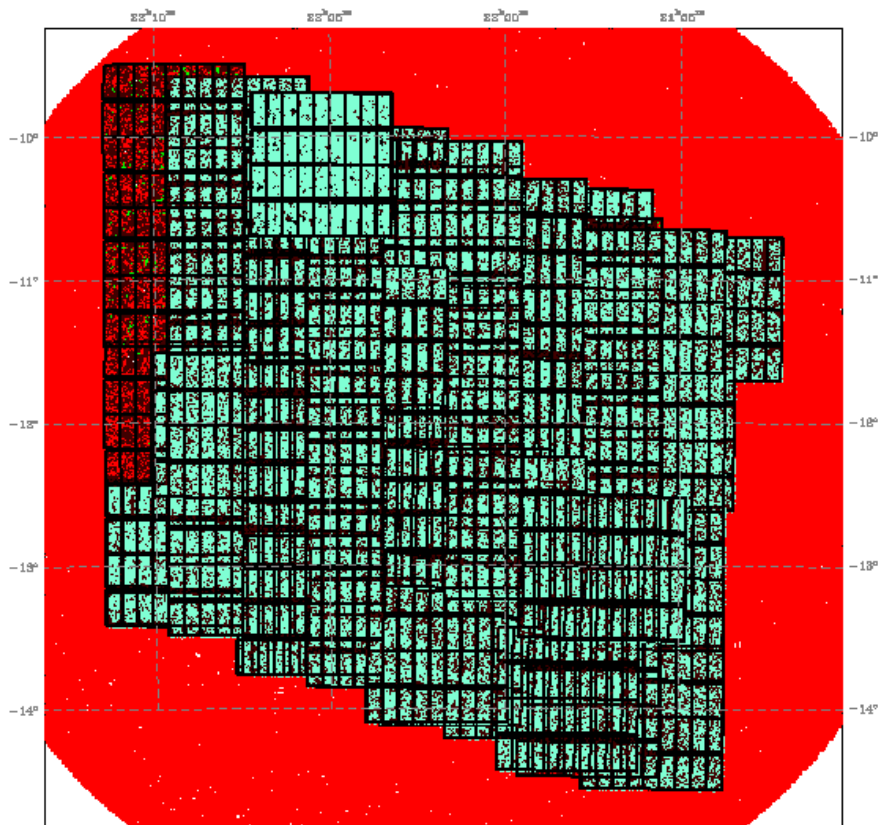
Only images displayed (107 total). Use the form to select more or less [\[Export the whole result in CSV \(ASCII file in Comma Separated Values\)\]](#)

<input type="checkbox"/>	<input type="checkbox"/>	Thumbnail	Sample (*)	Image	Stack Mode	Release Version	Processing Date	RunID	Filter	Object	Ra	Dec	Tot Exptime	Release Date	Median Seeing	Median bkg	Spica processing	Output Quality Assessment	Sent to CAD/C	Note	Comment	File (**)	Node
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_D_g_022600-043035	4	0002	2004-11-26	03BL01	g	D	02:26:00	-04:30:35	7112	2006-05-01	0.98	1.85	Y	Y	N	A B C D		I-W-C	pix7
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_D_g_100028+021219	4	0002	2004-11-26	03BL01	g	D	10:00:28	02:12:19	4051	2006-05-01	0.98	-0.37	Y	Y	N	A B C D	Plantage Scamp?	I-W-C	pix7
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_022848-055054	4	0002	2004-11-26	03BL05	i	W	02:28:48	-05:50:54	620	2006-05-01	0.81	1.86	Y	Y	N	A B C D		I-W-C	pix5
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_023028-060606	4	0002	2004-11-22	03BL02	i	W	02:30:28	-06:06:06	1240	2006-05-01	0.86	1.86	Y	Y	N	A B C D		I-W-C	pix5
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_023034-052417	4	0002	2004-11-25	03BL02	i	W	02:30:34	-05:24:17	620	2006-05-01	0.79	1.4	Y	Y	N	A B C D		I-W-C	pix5
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_023104-061103	4	0002	2004-11-22	03BL02	i	W	02:31:04	-06:11:03	1860	2006-05-01	0.84	1.77	Y	Y	N	A B C D		I-W-C	pix5
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_023117-064010	4	0002	2004-11-27	03BL02	i	W	02:31:17	-06:40:10	3100	2006-05-01	0.79	1.64	Y	Y	N	A B C D		I-W-C	pix5
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_023138-064229	4	0002	2004-11-28	03BL02	i	W	02:31:38	-06:42:29	3720	2006-05-01	0.8	1.52	Y	Y	N	A B C D		I-W-C	pix5
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_135933+533400	4	0002	2004-11-30	03AL02	i	W	13:59:33	53:34:00	1860	2006-05-01	0.84	1.75	Y	Y	N	A B C D		I-W-C	pix1
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_141753+521944	4	0002	2004-11-26	03AL02	i	W	14:17:53	52:19:44	1860	2006-05-01	0.78	1.22	Y	Y	N	A B C D		I-W-C	pix1
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_141753+524940	4	0002	2004-11-25	03AL02	i	W	14:17:53	52:49:40	3721	2006-05-01	0.77	1.15	Y	Y	N	A B C D		I-W-C	pix1
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_141754+532321	4	0002	2004-11-25	03AL02	i	W	14:17:54	53:23:21	3721	2006-05-01	0.8	1.21	Y	Y	N	A B C D		I-W-C	pix1
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_141754+535307	4	0002	2004-11-29	03AL02	i	W	14:17:54	53:53:07	1860	2006-05-01	0.81	1.44	Y	Y	N	A B C D		I-W-C	pix1
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_142349+520553	4	0002	2004-11-29	04AL02	i	W	14:23:49	52:05:53	4341	2006-05-01	0.84	1.23	Y	Y	N	A B C D		I-W-C	pix5
<input type="checkbox"/>	<input type="checkbox"/>		E-P	CFHTLS_W_i_142353+523833	4	0002	2004-11-25	04AL02	i	W	14:23:53	52:38:33	3101	2006-05-01	0.85	1.25	Y	Y	N	A B C D		I-W-C	pix5

T0002: sample astrometry

CFHTLS_VW_g_215913-114923

Group #1: detections



Internal Stats (All)

dAXIS1	0.07442
dAXIS2	0.06573
chi2	19.2585
ndets	1595883

Internal Stats (High S/N)

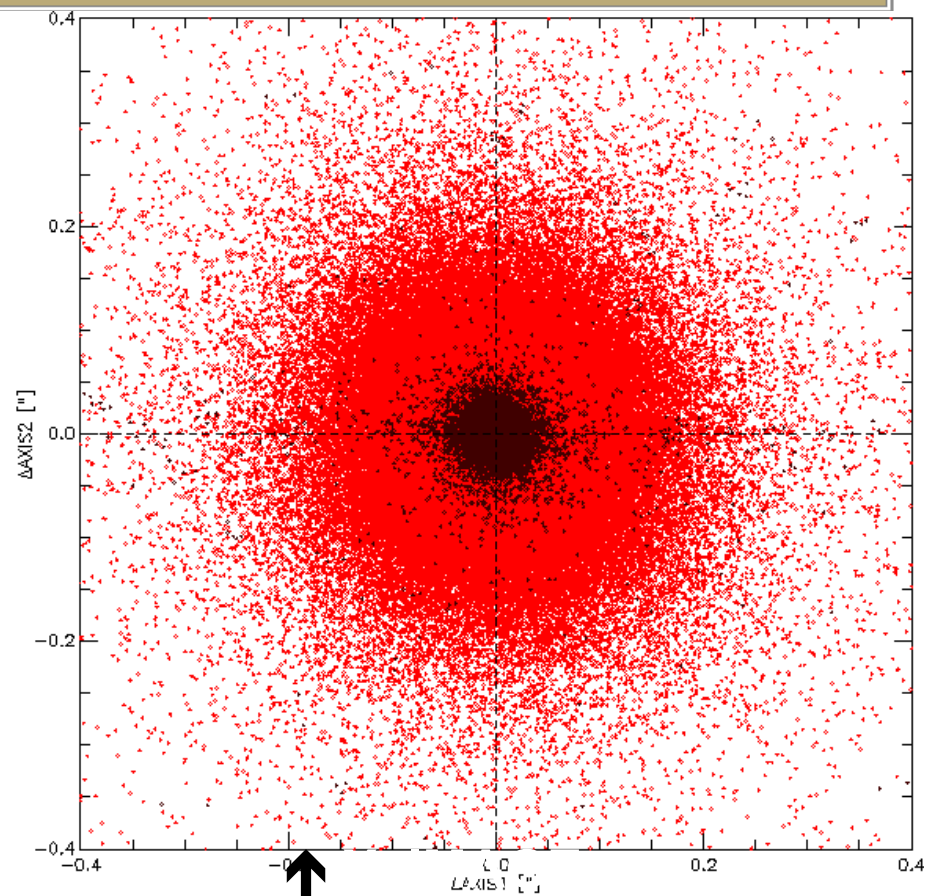
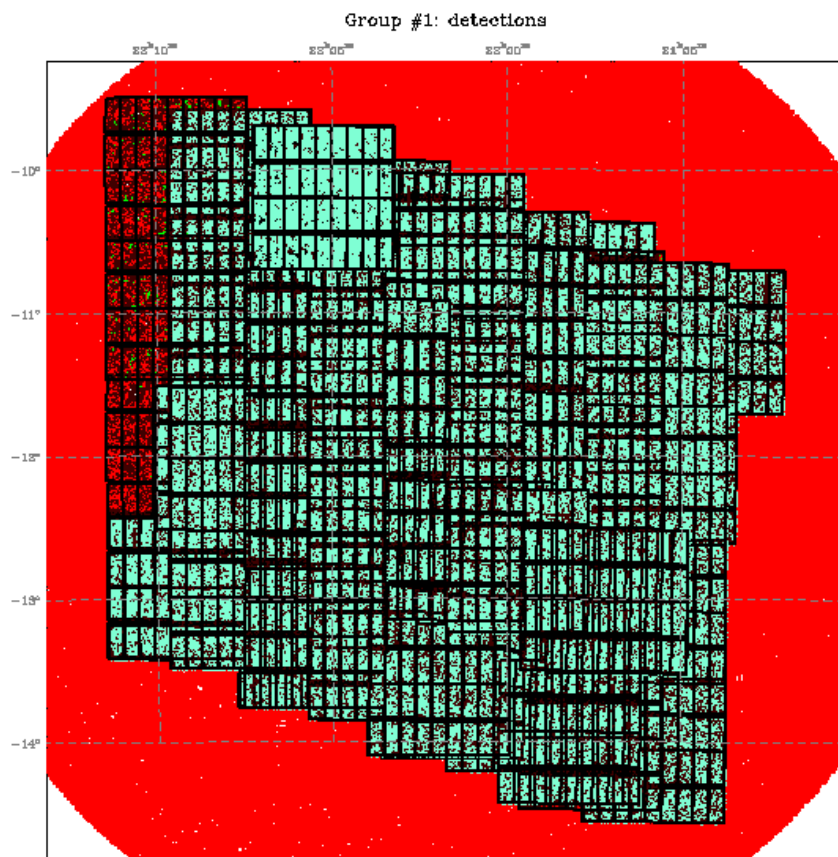
dAXIS1	0.04793
dAXIS2	0.03106
chi2	56.0307
ndets	346432

External Stats (All)

dAXIS1	0.31918
dAXIS2	0.31569
chi2	21.7578
ndets	116957

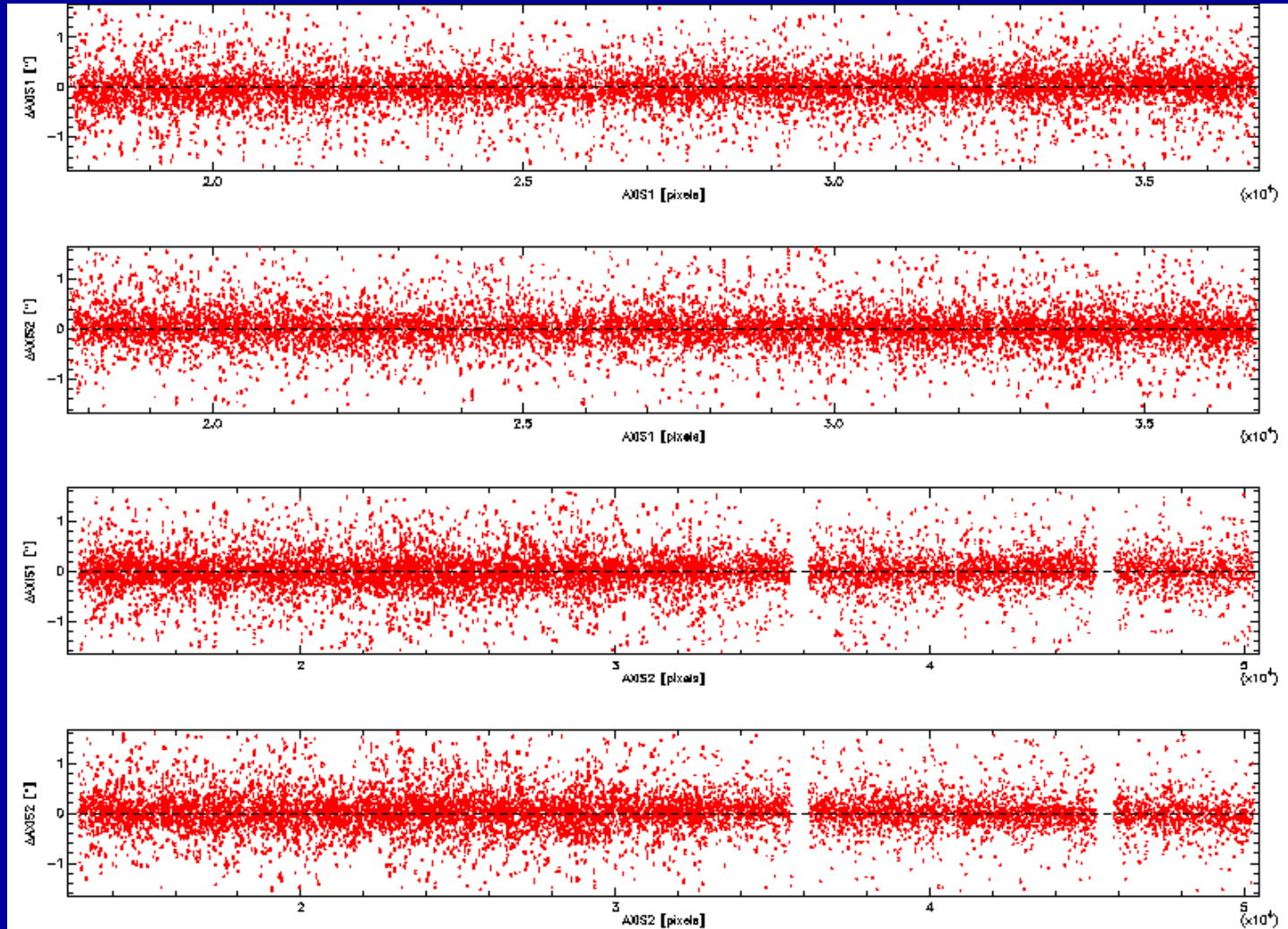
External Stats (High S/N)

dAXIS1	0.23375
dAXIS2	0.23157
chi2	17.1922
ndets	61563



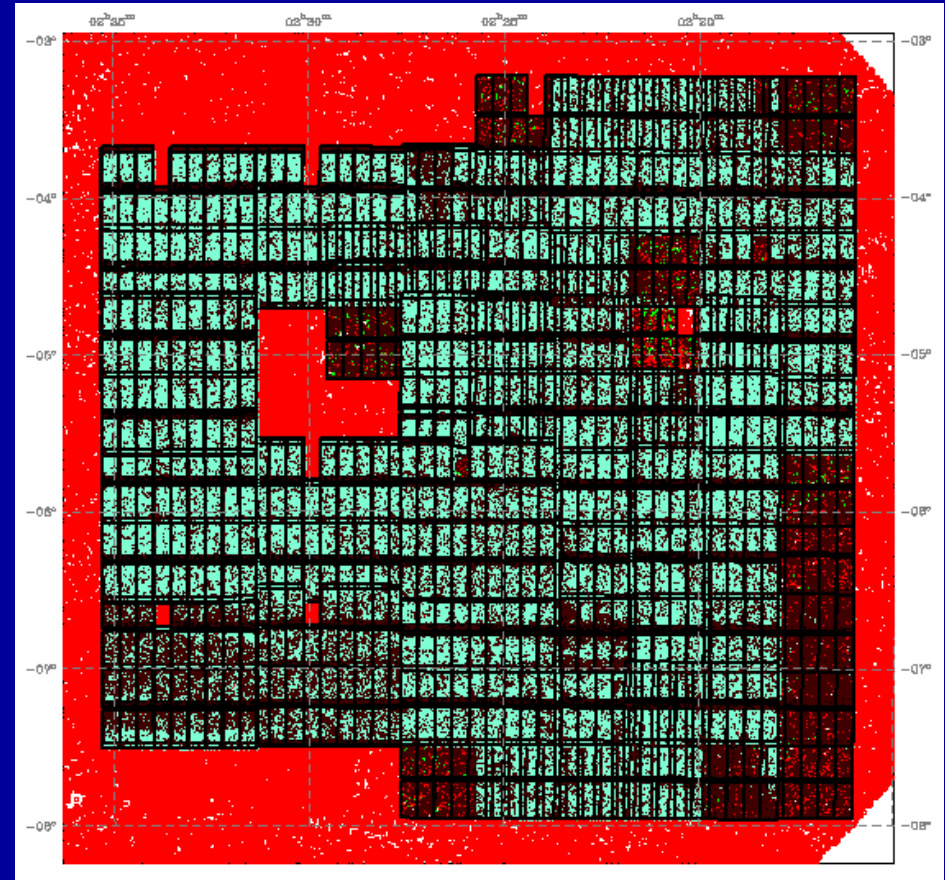
$\sigma_x = 21$ mas

Next releases: Comparison with the reference catalog (USNO-B1)

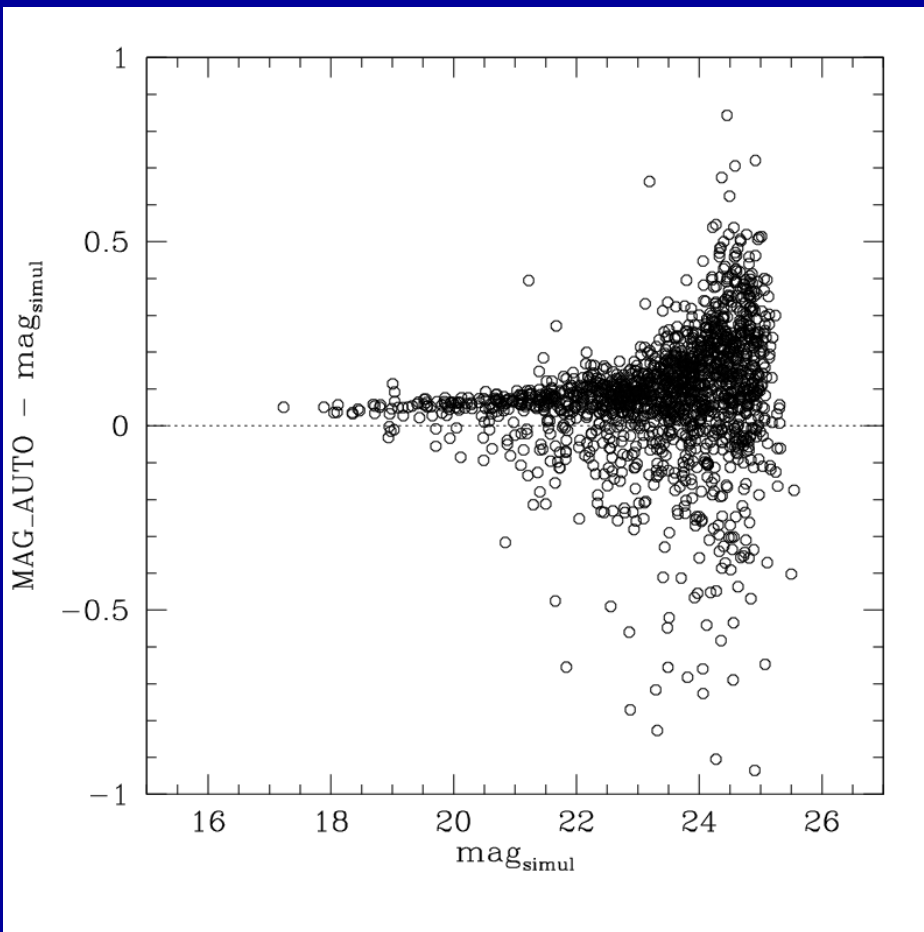


T0002 release: Astrometry: SCAMP

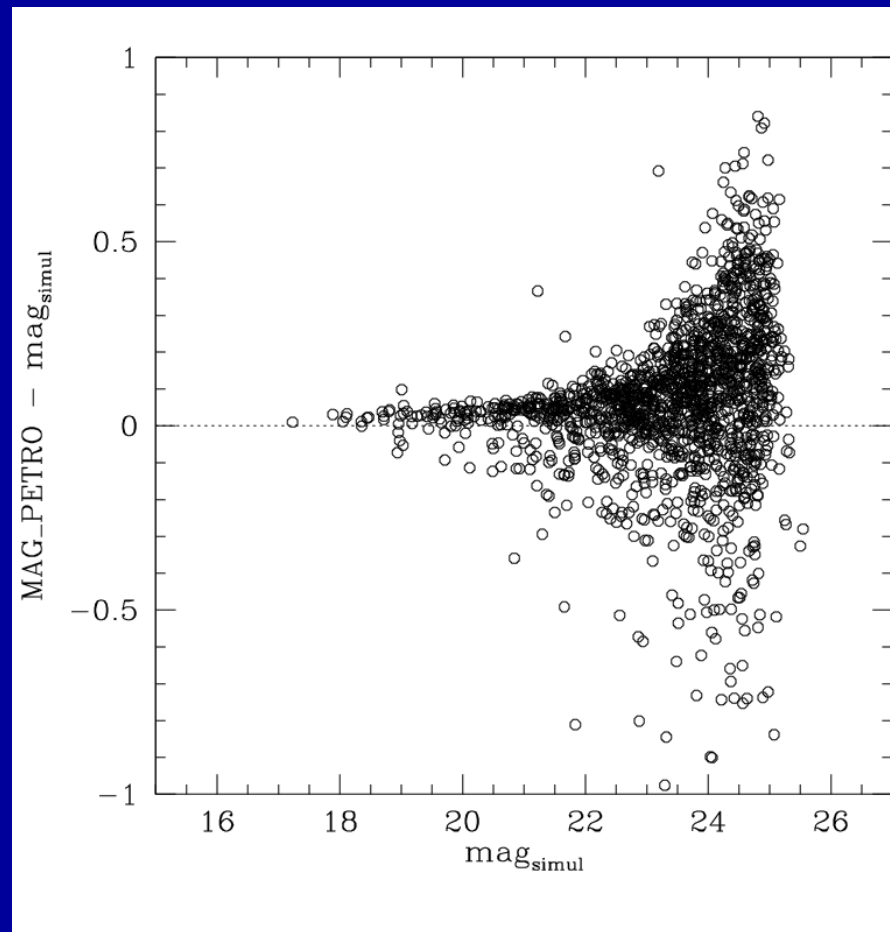
- Compute astrometric and photometric solutions from a series of image catalogs
- Robust pattern matching recovers pixel scales, frame position angle, chirality and shift (up to ~ 1 deg with USNO-B1).
- « Global » solutions derived simultaneously from hundreds of exposures from different instruments
- Flexible choice in the degrees of freedom
 - Manage various survey strategies and instruments.
 - Handle simultaneously several instruments (or filters) and sky areas
 - Special mode for MEGACAM to fix the jittering CCD positions derived by CFHT
- Processing time is about 15s/MEGACAM exposure



Next releases: Petrosian magnitudes in SExtractor: accuracy measured on a simulated galaxy field



↑ **MAG_AUTO:**
 Δm ⌚ 0.06



↑ **MAG_PETRO:**
 Δm ⌚ 0.03

Current software developments: identifying large image defects

- **Defectix**: Automatic identification of large image artifacts (**A. Baillard**)
 - Pattern recognition with machine learning (unsupervised+supervised)
 - Trained with simulated and real data superimposed to sky images
 - Bright star halos
 - Diffraction spikes
 - Satellite trails
 - “Comet tails”
 - Residual fringe patterns
 - <5 minutes per MEGACAM exposure (vs 5 hours by hand)

