Emiliano Merlin – Edinburgh Nov 25th 2015

T-PHOT new features (next release, version 1.6.8)

- Global constant background subtraction
- Local background subtraction (with templates) (used on FF K and IRAC)
- Flux prioring
- Straightforward aperture photometry (stand-alone module)
- Aperture photometry on “clean” neighborhood (with cells-on-objects method)
- Local / individual kernels (used on S-CANDELS)
- Statistics on the residual image
- Some (deep) revision on the architecture
- Quick calibration script for background and RMS (to be used for GoodsS)
- Kernel production?
- … Anything else, sir?

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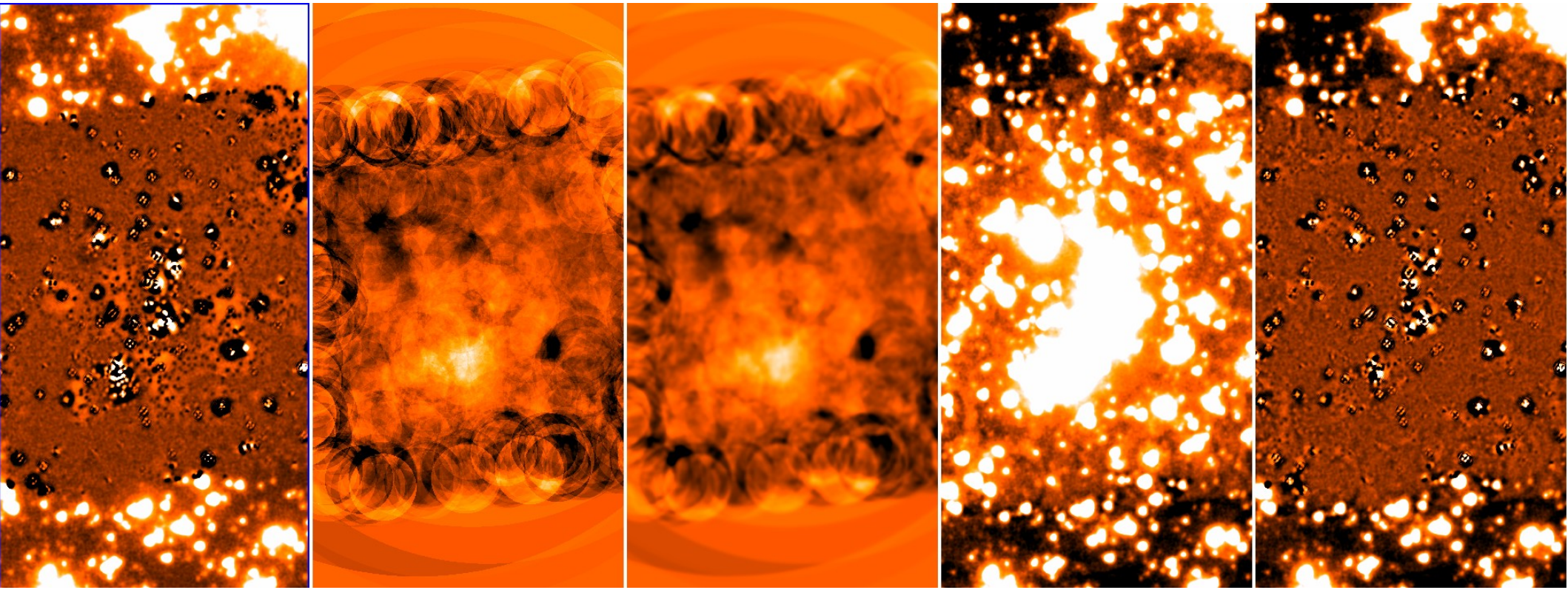
→ Which is the best way to use it? Or, what we are measuring *exactly?* Ongoing...

- opposite trends when compared to ISO and AUTO flux: which “configuration” in the parameters space gives best/worse results?

- 4 possible methods for photometry:
* standard template fitting
* fixed circular apertures on LRI
* fixed circular apertures on “clean neighborhood”
* color with smoothed HRI

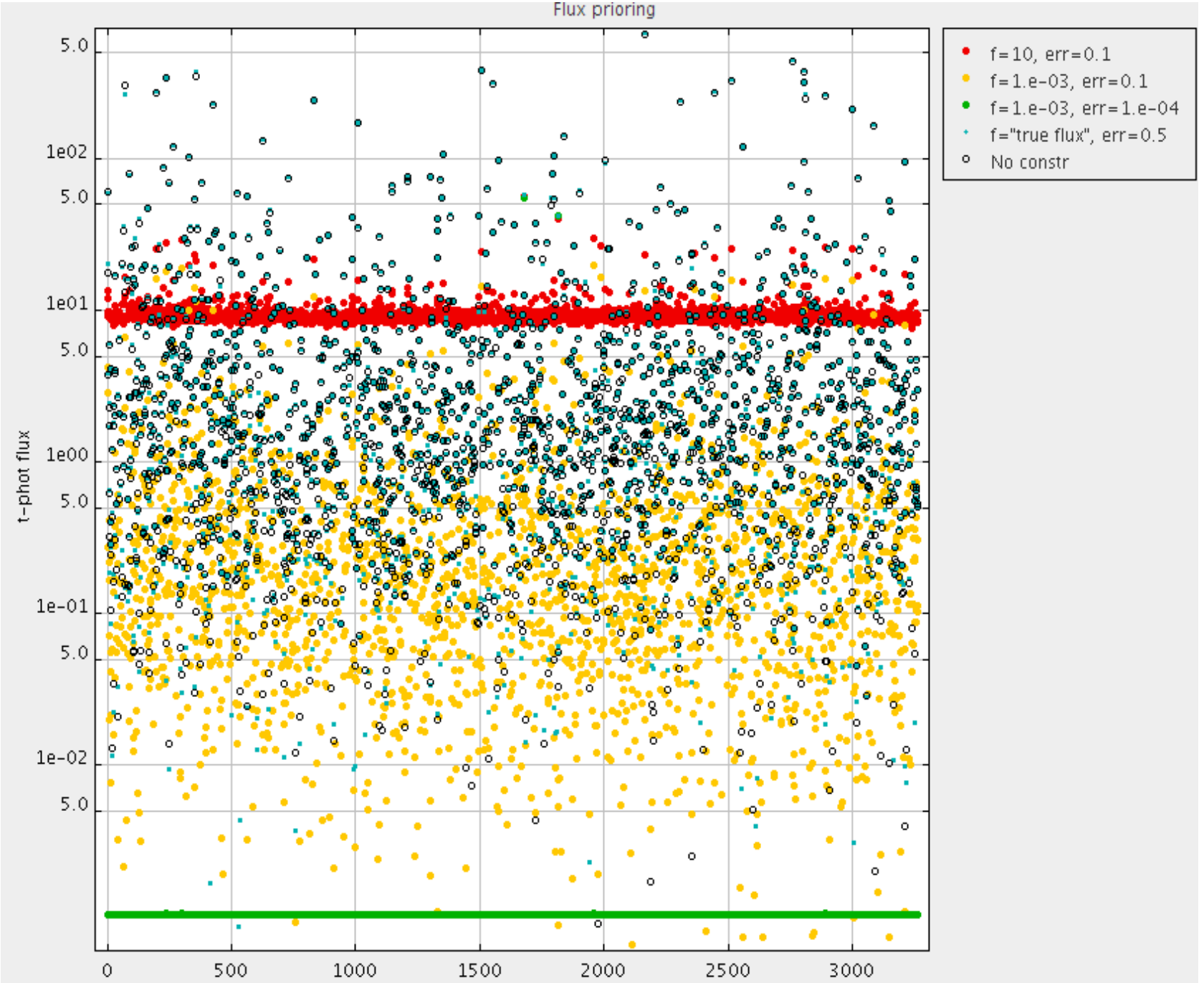
Tests ongoing on Euclid simulated images

- Local background subtraction:
+ template-based local bkgd sub (in use on FF)



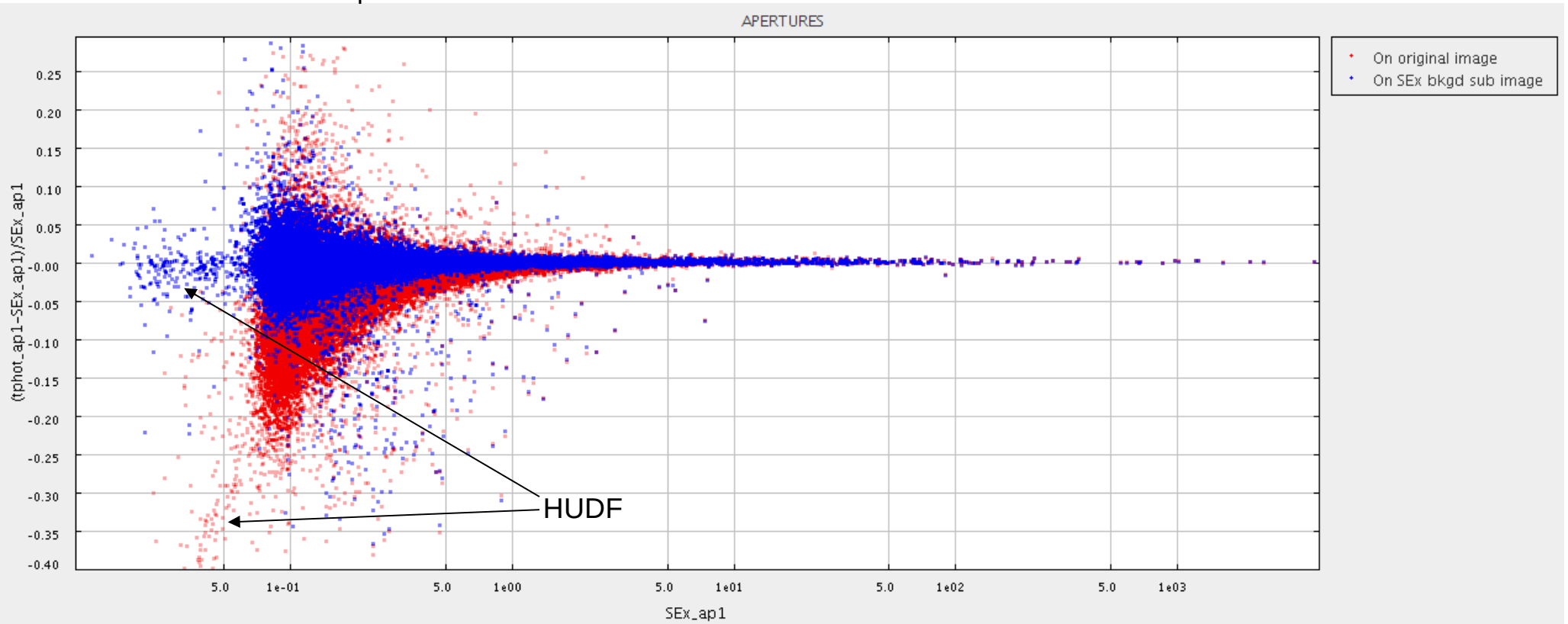
Each source is fitted with a “twin” template having top-hat circular shape. While the fluxes of individual templates might be the result of spurious numerical accomodation, the sum of all is consistent with a reasonable background and can be (smoothed and) subtracted from the LRI before proceeding to a final run (so that covariance matrix is correct)

Flux prioring

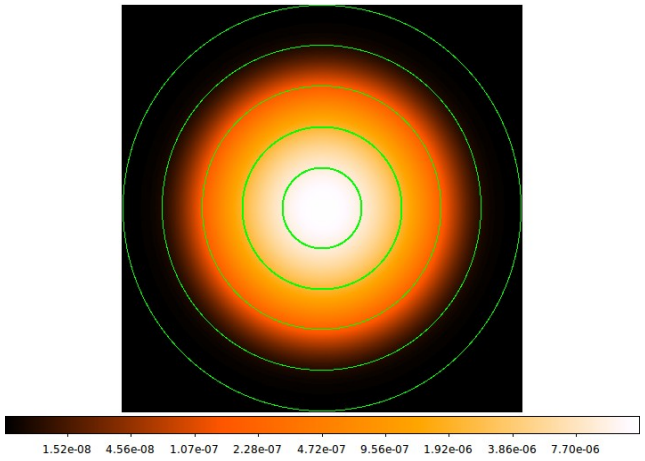


Aperture photometry (quick stand-alone module)

Test on Goods-S H160 patch



Test on Gaussian

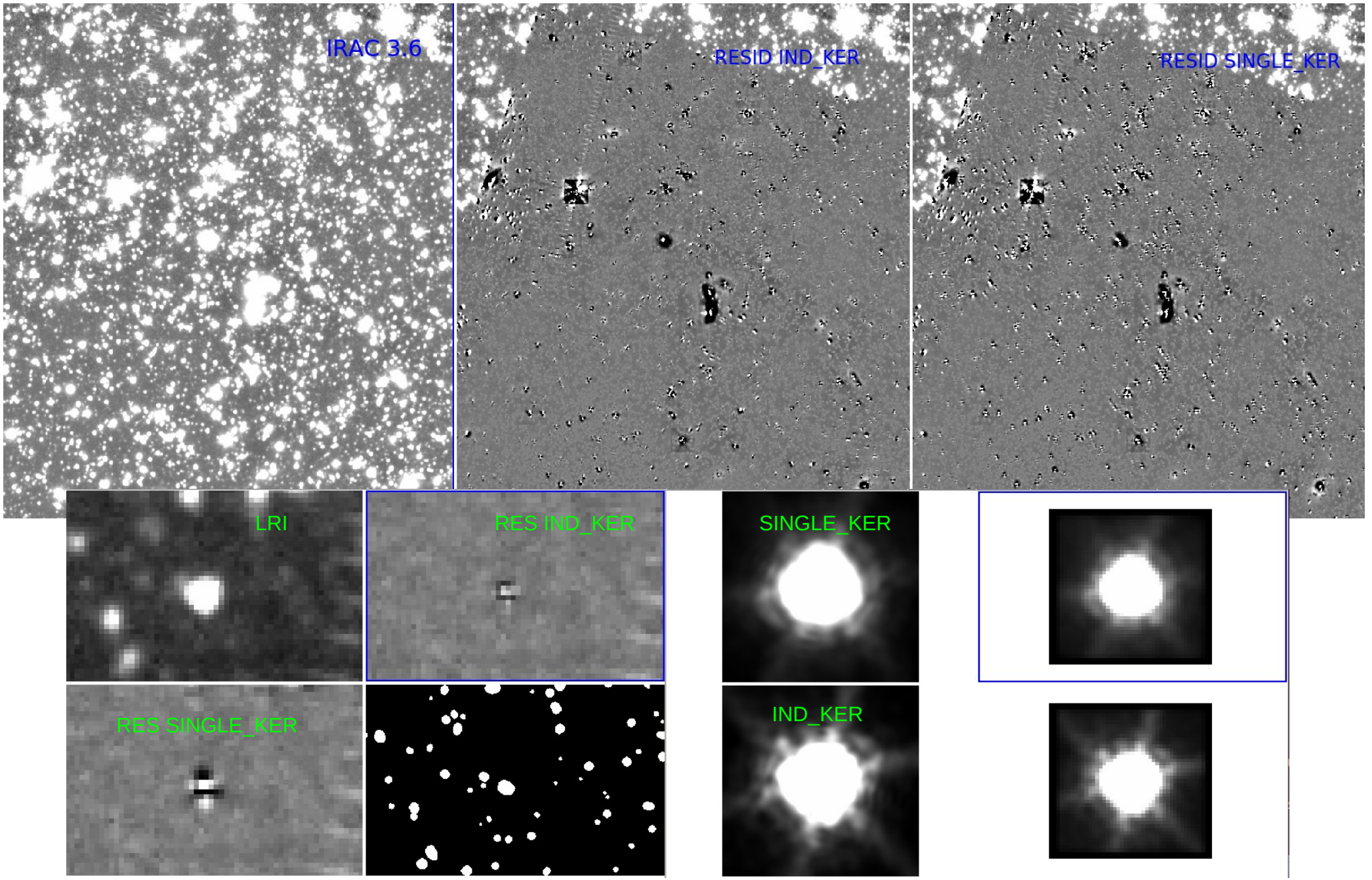



```
# id ap1 ap2 ap3 ap4 ap5 err_ap1 err_ap2 err_ap3 err_ap4 err_ap5
1 0.393475 0.864664 0.988891 0.999665 0.999997 0.627402 0.930211 0.995141 1.001089 1.001960
```

```
-:---  tphot_aper.out   All L3     (Fundamental)

Volume in Nsigma:
1: 0.3934693402873666
2: 0.8646647167633873
3: 0.9888910034617577
4: 0.9996645373720975
5: 0.999996273346828
```

S-CANDELS with individual kernels (using supermap by Ross)



Statistics on residuals

id	x	y	xmin	ymin	xmax	ymax	f	errf	mean	median	std	kurt	mean_in	median_in	std_in	kurt_in	mean_out	median_out	std_out	kurt_out
1	1990.460000	1196.260000	1947	1158	2037	1251	56.867140	0.403411	0.001860	0.000553	0.006664	6.598540	-0.005677	-0.006235	0.009708	-0.732695	0.001988	0.000596	0.006526	6.993707
2	1910.200000	1194.820000	1877	1161	1945	1228	-0.330197	0.291848	-0.000002	-0.000288	0.003730	7.381629	0.000230	0.000563	0.001654	-0.651091	-0.000006	-0.000304	0.003758	7.273456
3	1765.730000	1197.080000	1728	1160	1803	1236	4.016038	0.357910	-0.000791	-0.000895	0.003409	0.166629	-0.000008	-0.000368	0.002185	-0.244428	-0.000805	-0.000909	0.003427	0.151327
4	1998.300000	1201.810000	1961	1165	2046	1251	24.670220	0.359326	0.001347	0.000256	0.006165	6.019977	-0.000648	-0.000571	0.006353	-1.161287	0.001378	0.000259	0.006157	6.129786
5	1892.380000	1210.500000	1852	1172	1931	1247	6.111691	0.398935	-0.000196	-0.000251	0.003132	-0.023582	0.000145	0.000495	0.003039	0.142655	-0.000203	-0.000269	0.003133	-0.019150

