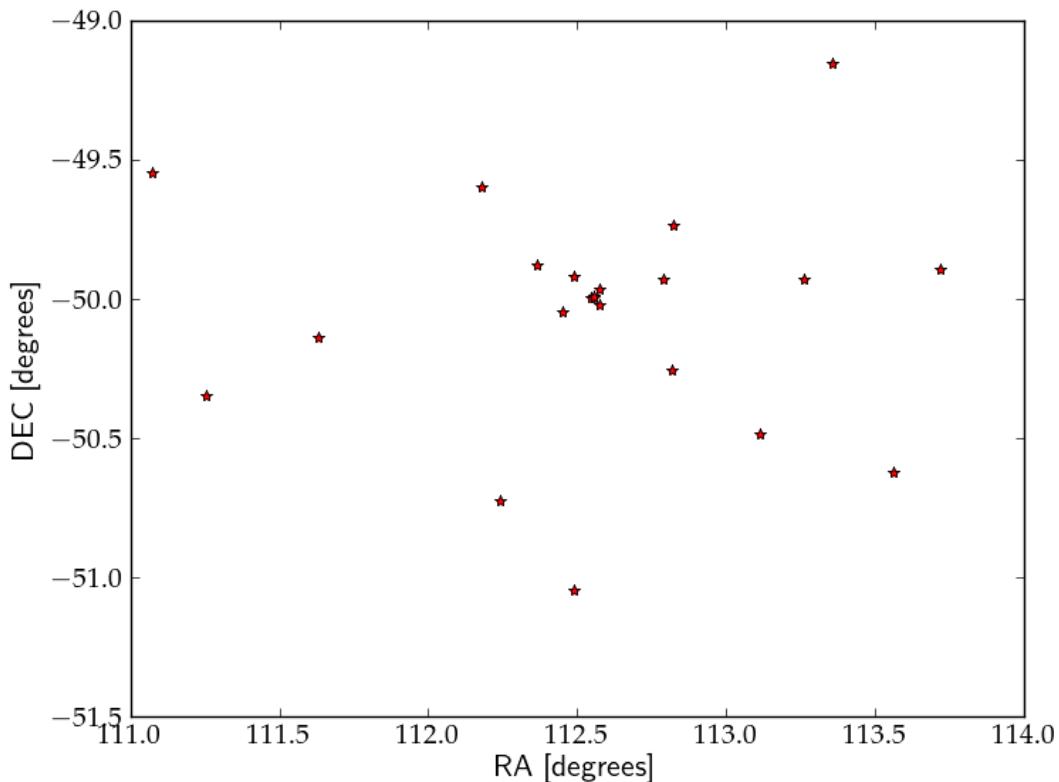


Star flats

N. Regnault
(LPNHE, Paris)

Data



- Two fields
 - 2012-11 (grizY)
RA $\sim 7^{\circ}30'$ DEC ~ -50
 - 2012-12 (grizY)
RA $\sim 6^{\circ}40'$ DEC ~ -34
- # dithering patterns
- In november, variable IQ + focus problems + (possibly) tracking problems.

Processing

- SNLS (LPNHE) pipeline (adapted to DECam images)
- From raw pixels + Dome Flat fields
 - Flats exposures stacked (median)
 - Stacks normalized w.r.t. One CCD, to preserve relative gains.
- Aperture photometry ($7.5 \times \text{sigma_PSF}$)
- Astrometry to USNO (for associations)
- CCD #N30 consistently failing (excluded from this study)

Model

- Model

$$m(x) = m(x_0) + \delta zp(x) + \delta k(x) \times col$$

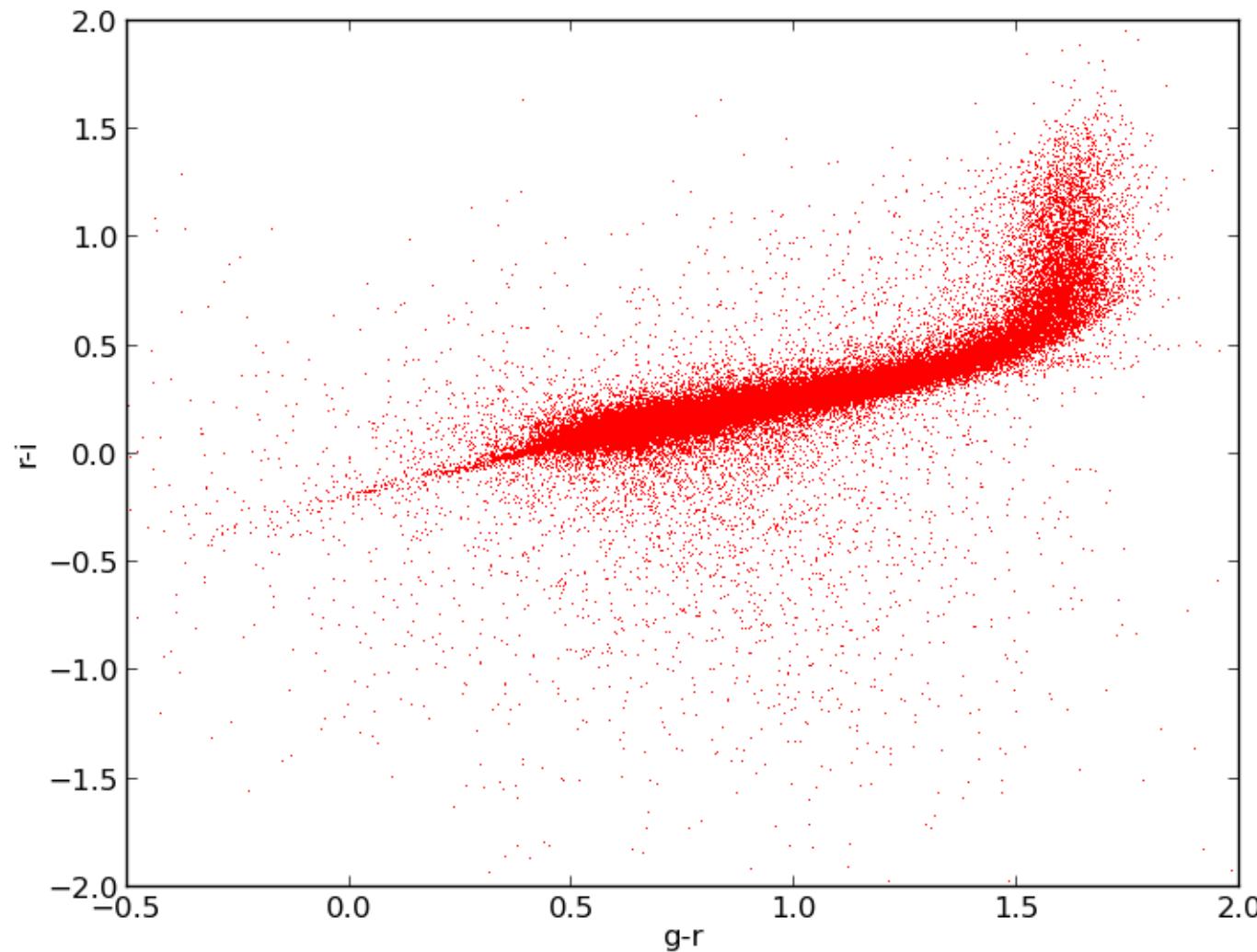
Star mags @ center
(~ 100,000 pars)

Maps
(~ 100 pars)

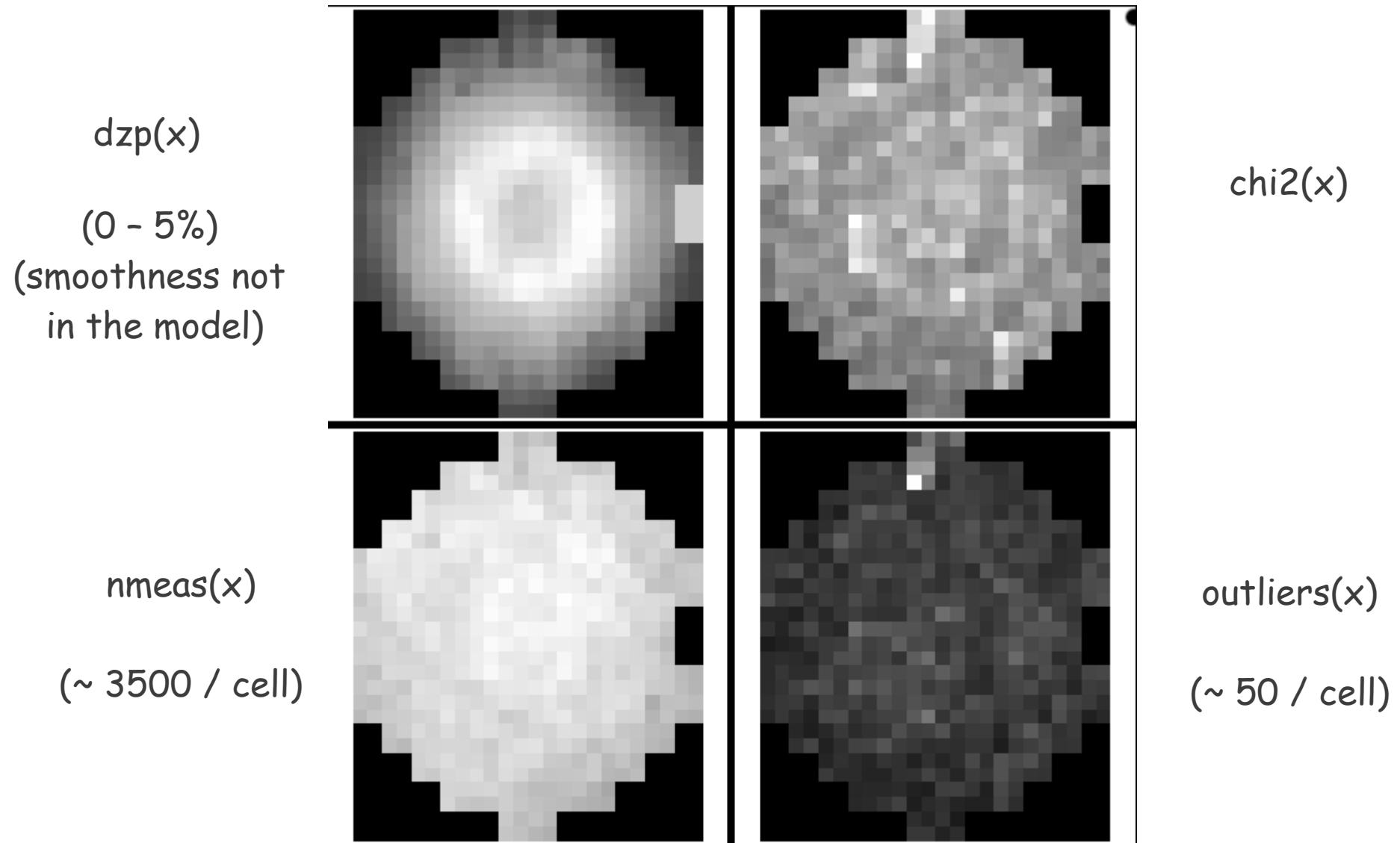
$g-i$
(from ZP estimates,
courtesy D. Tucker)

- One cell chosen as a reference ($\delta zp=0$, $\delta k=0$)
- Purely internal solution
→ no reference to external catalog.

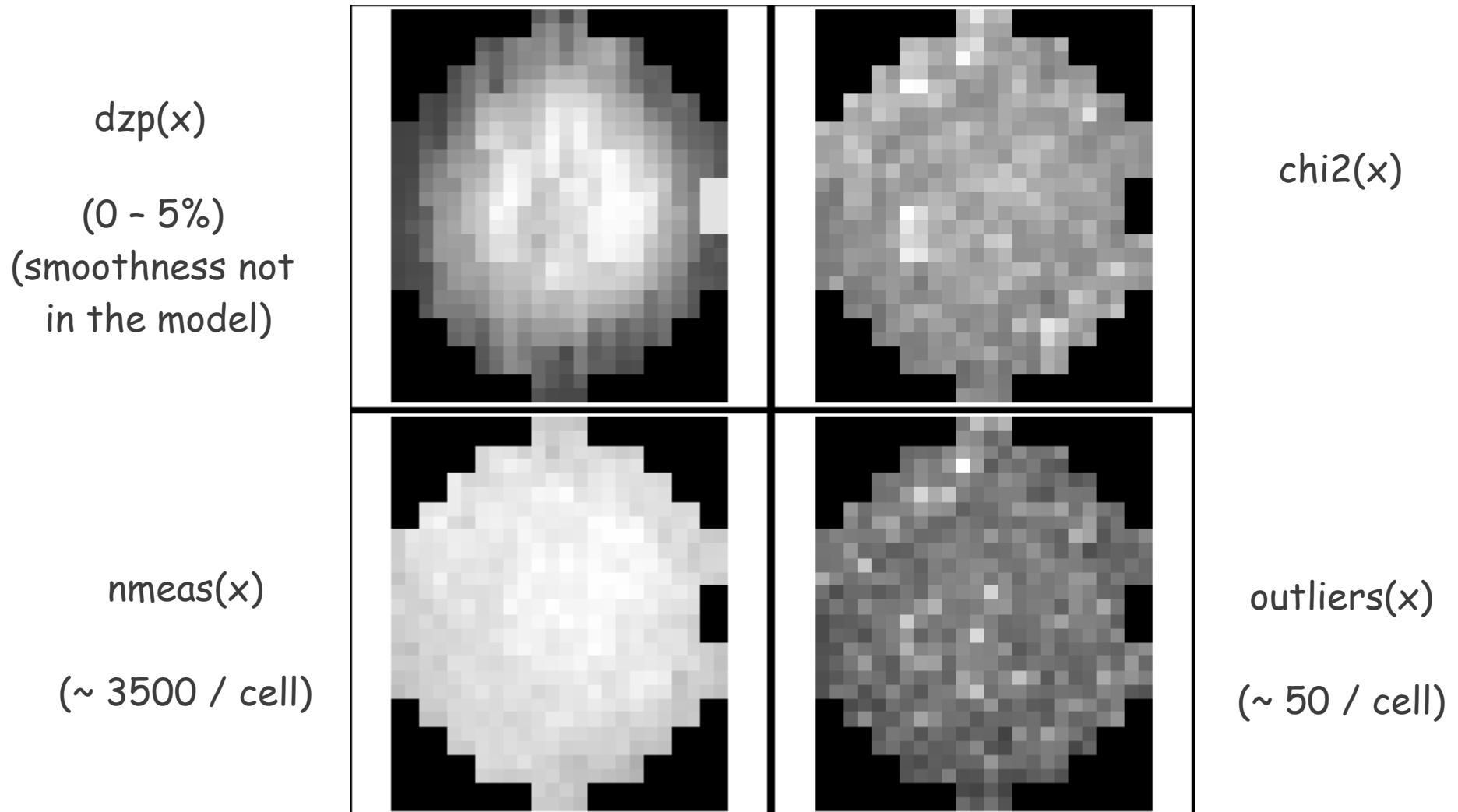
Color-color diagram (december field)



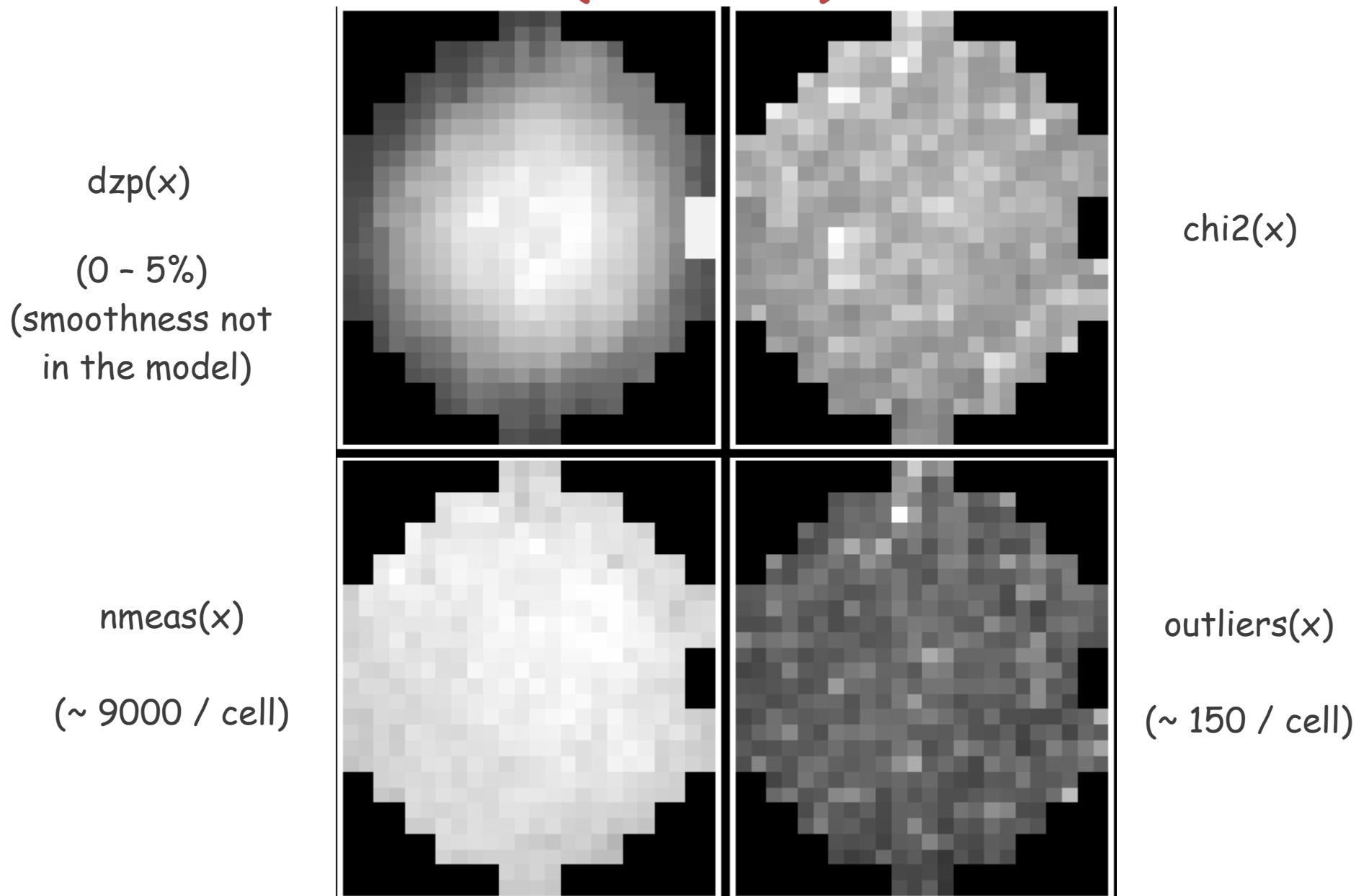
δzp only (*g*-band)



δzp only (r-band)

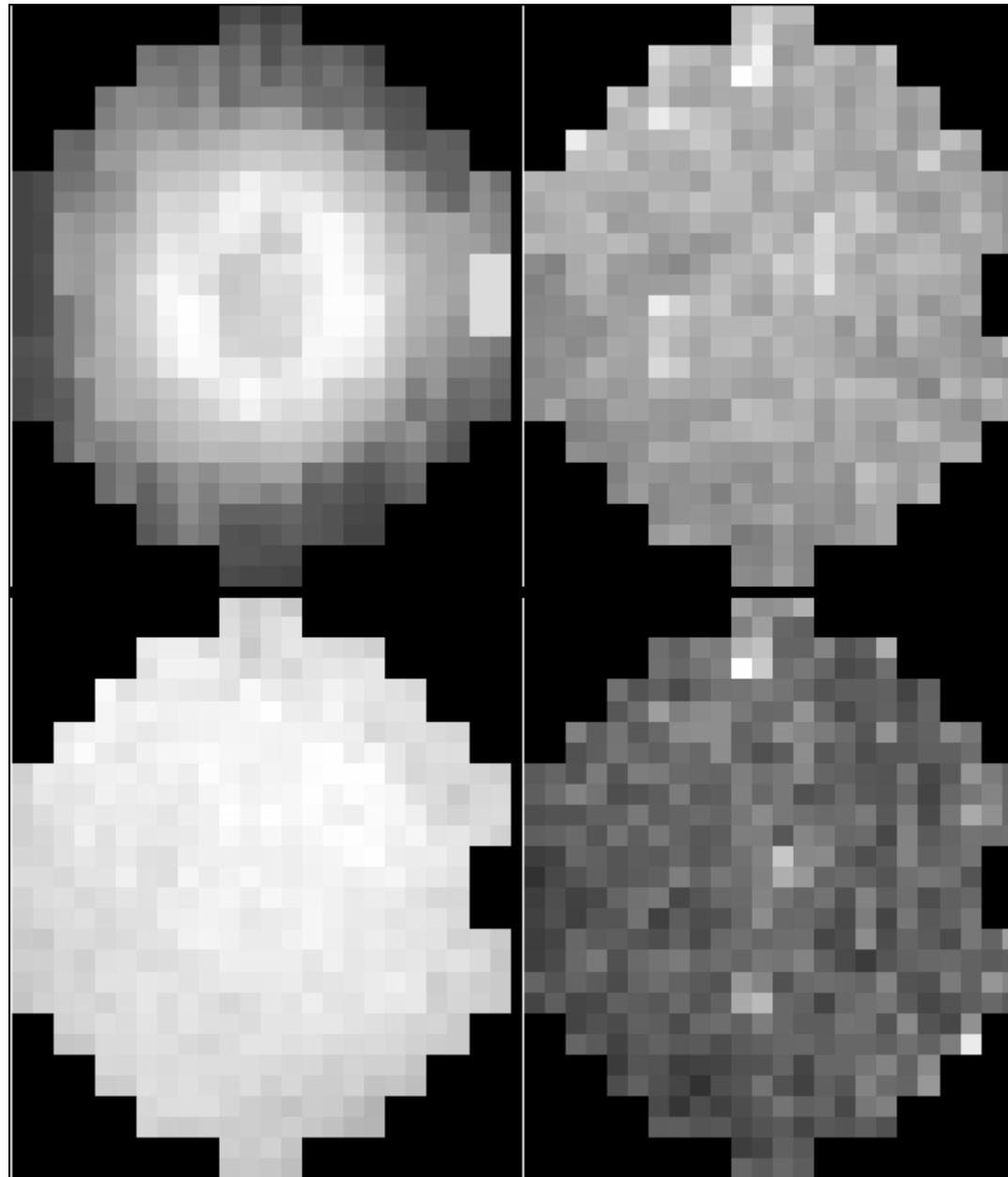


δzp only (i-band)



δzp only (z-band)

$dzp(x)$
(0 - 5%)
(smoothness not
in the model)

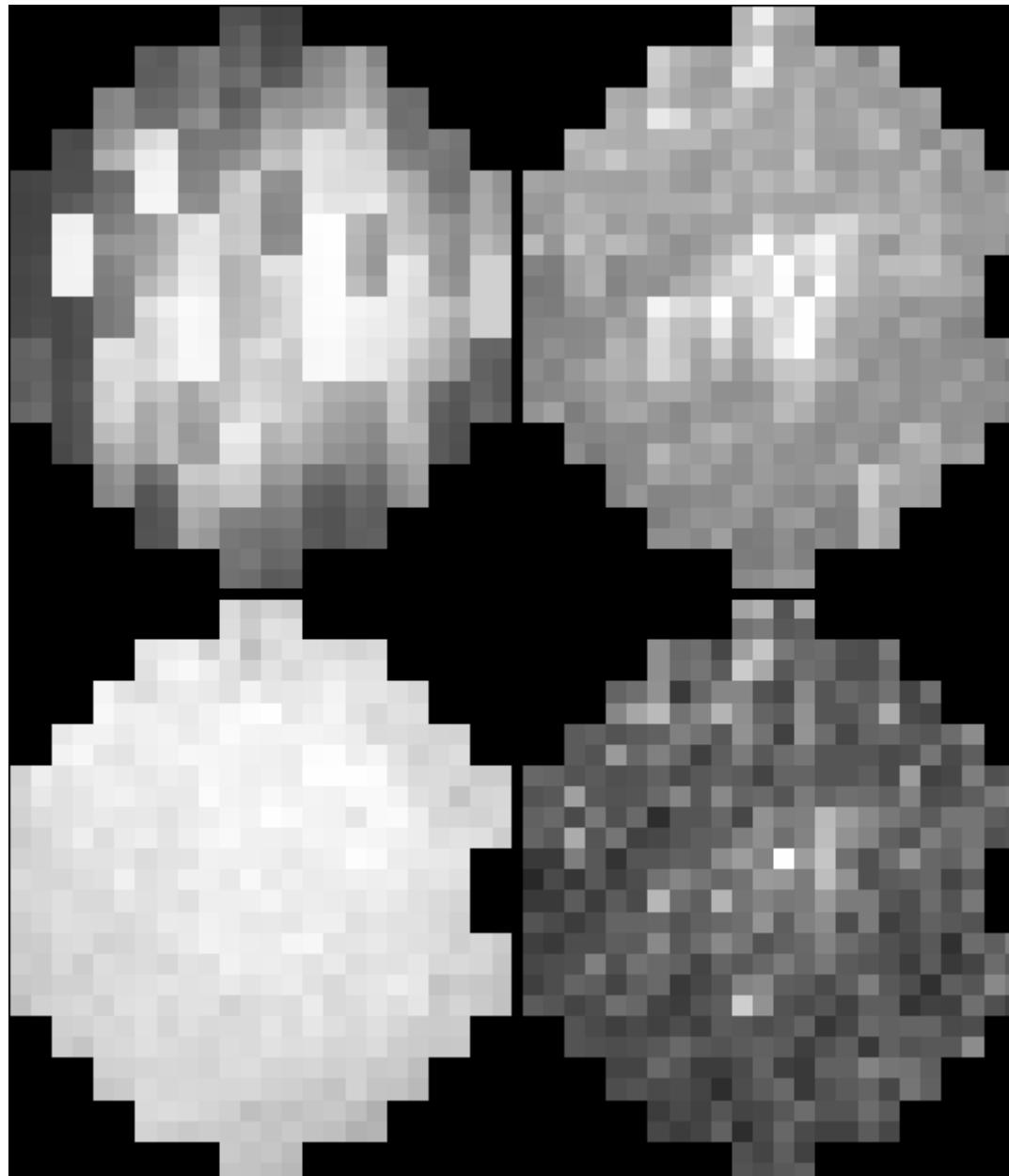


$\chi^2(x)$
outliers(x)
(~ 100 / cell)

δzp only (Y-band)

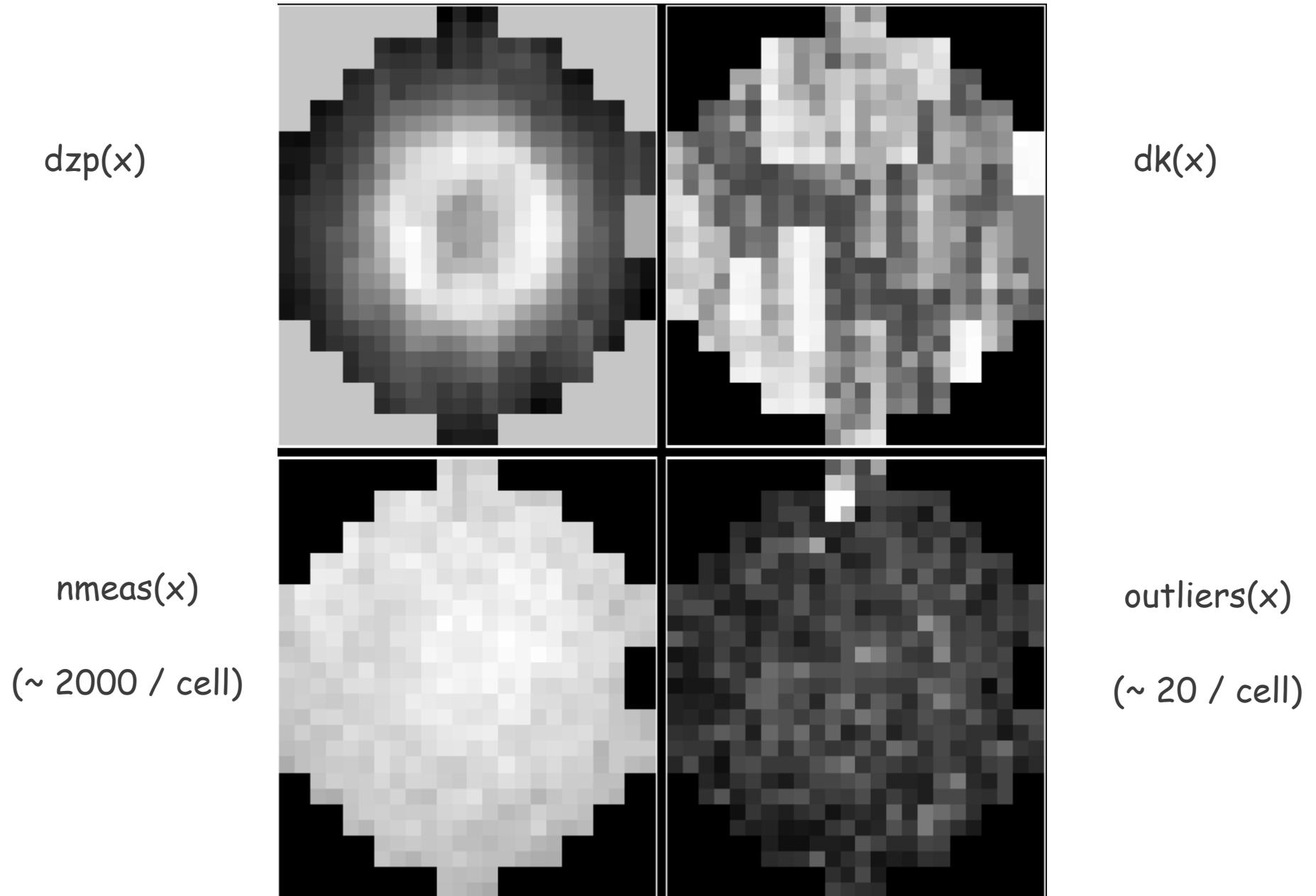
$\text{dzp}(x)$
(0 - 5%)
(notice individual
CCDs)

$n\text{meas}(x)$
(~ 5000 / cell)

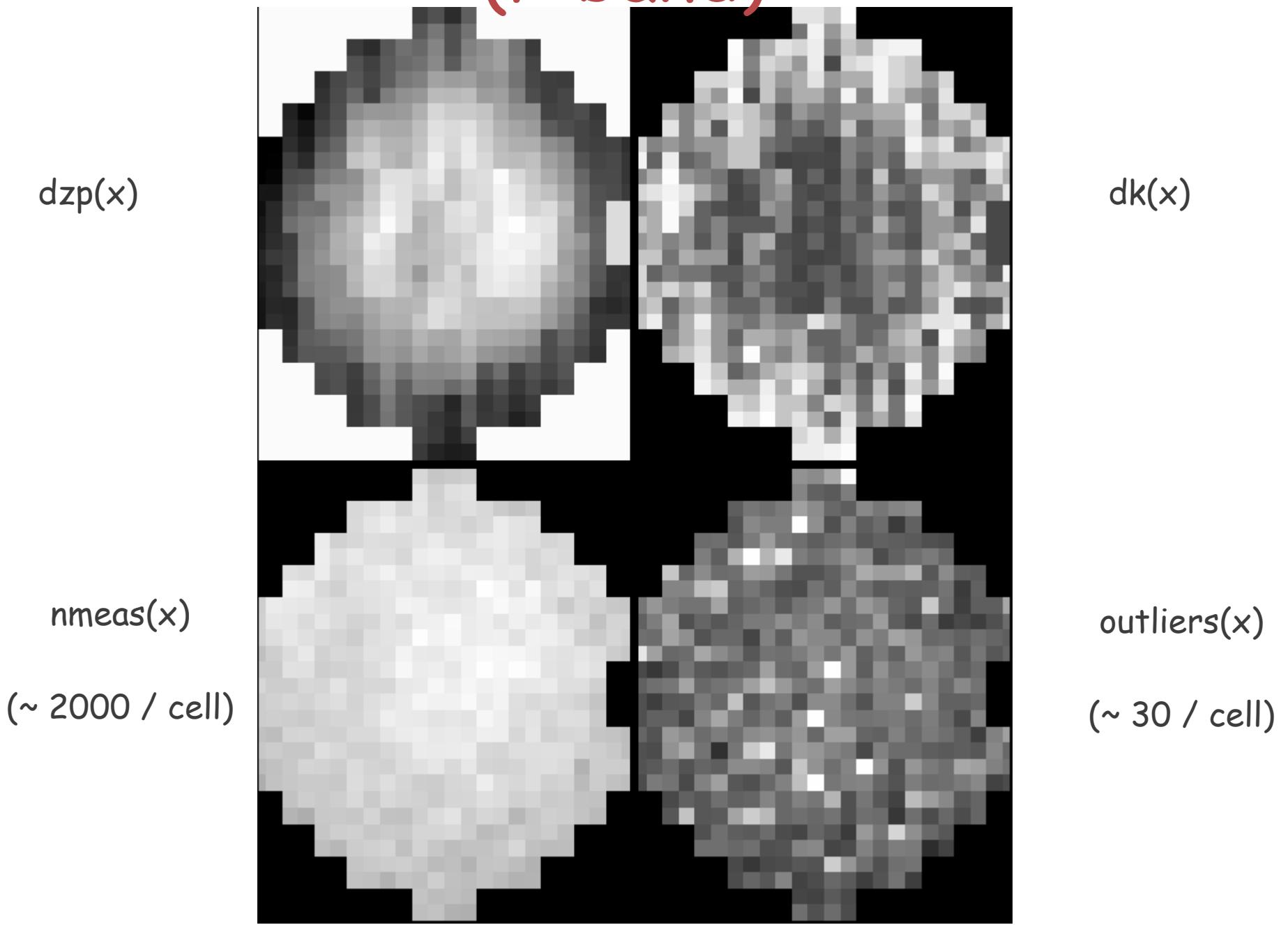


$\text{chi2}(x)$
 $\text{outliers}(x)$
(~ 50 / cell)

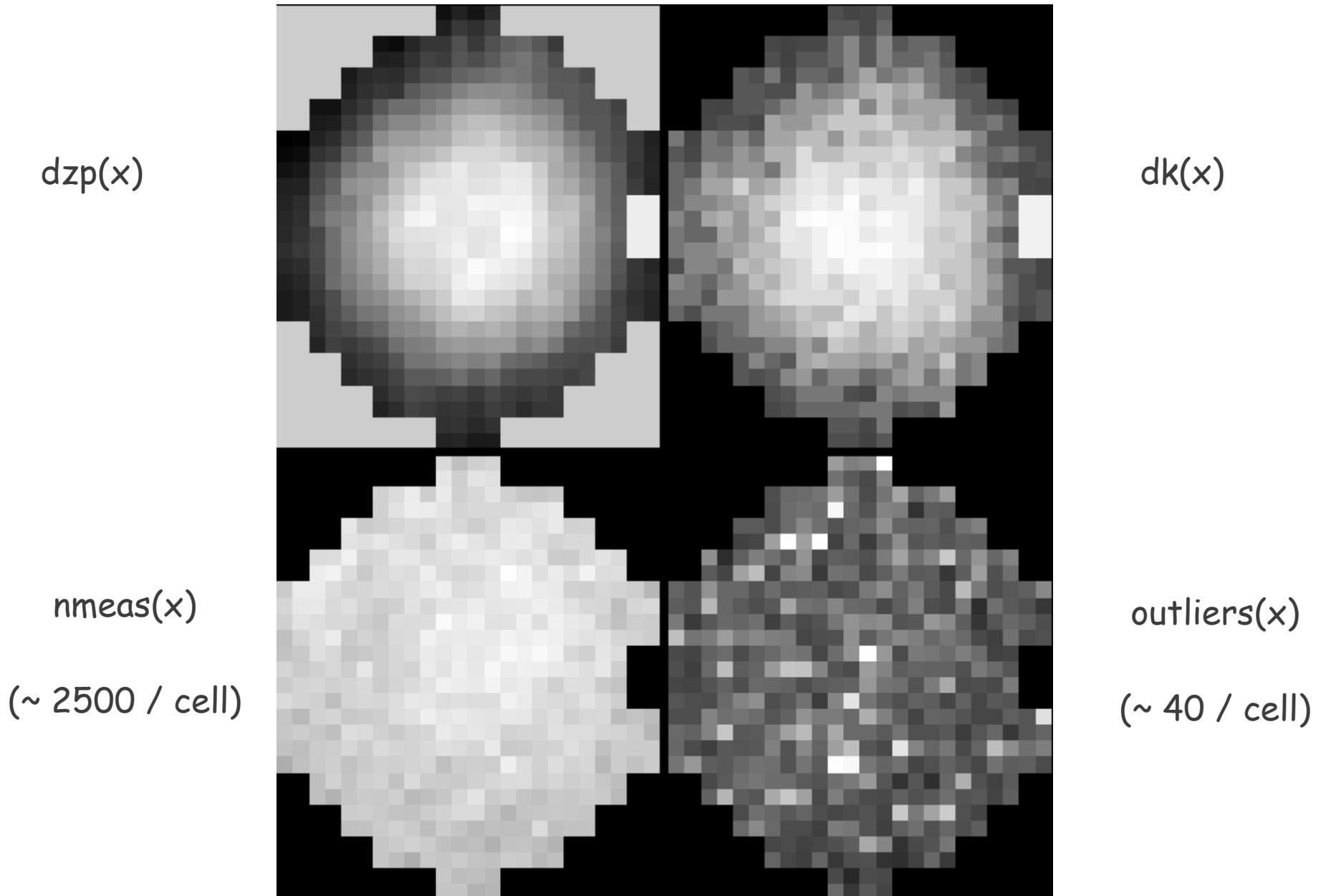
Dzp & dk terms (g-band)



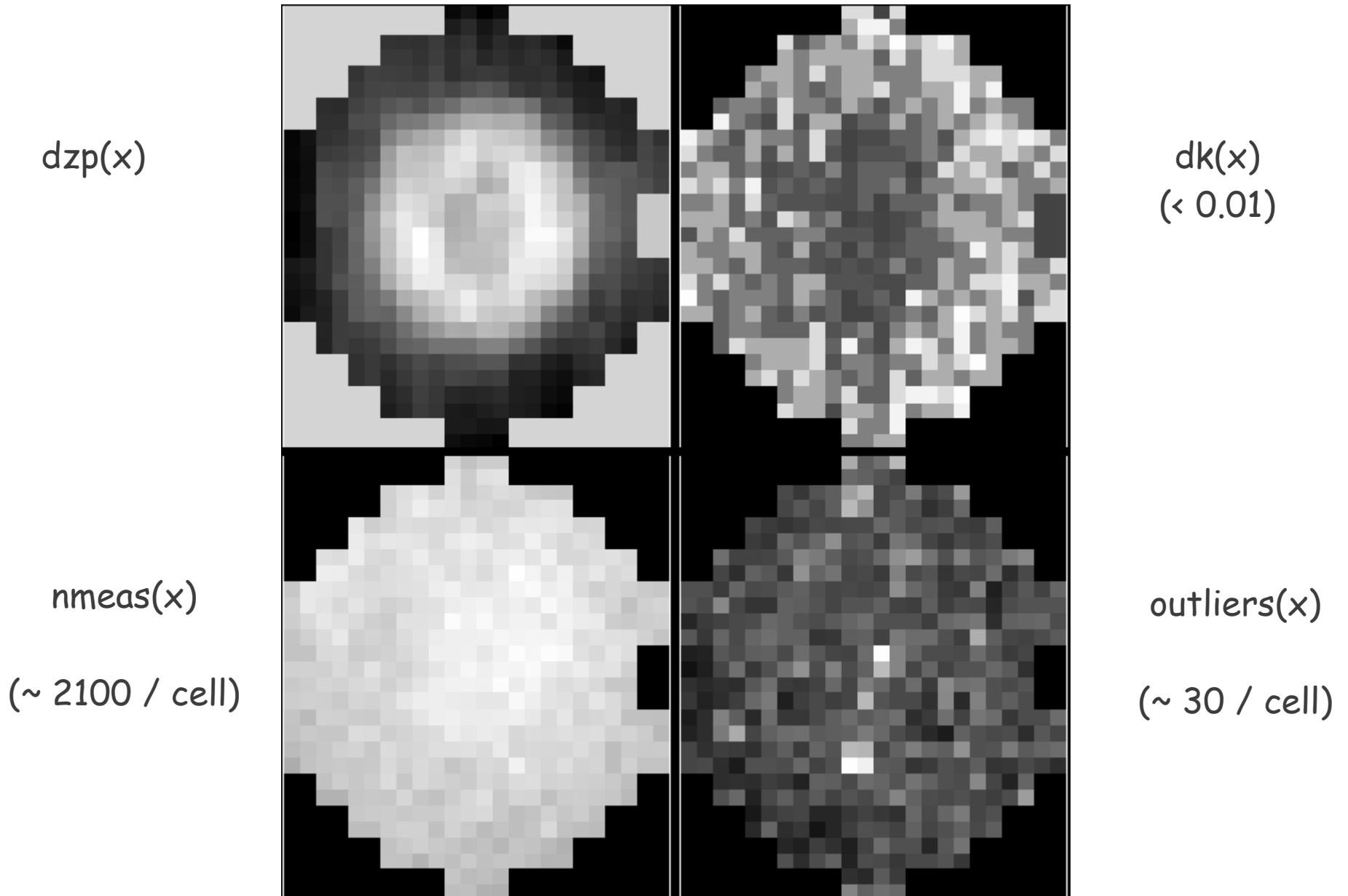
Dzp & dk terms (r-band)



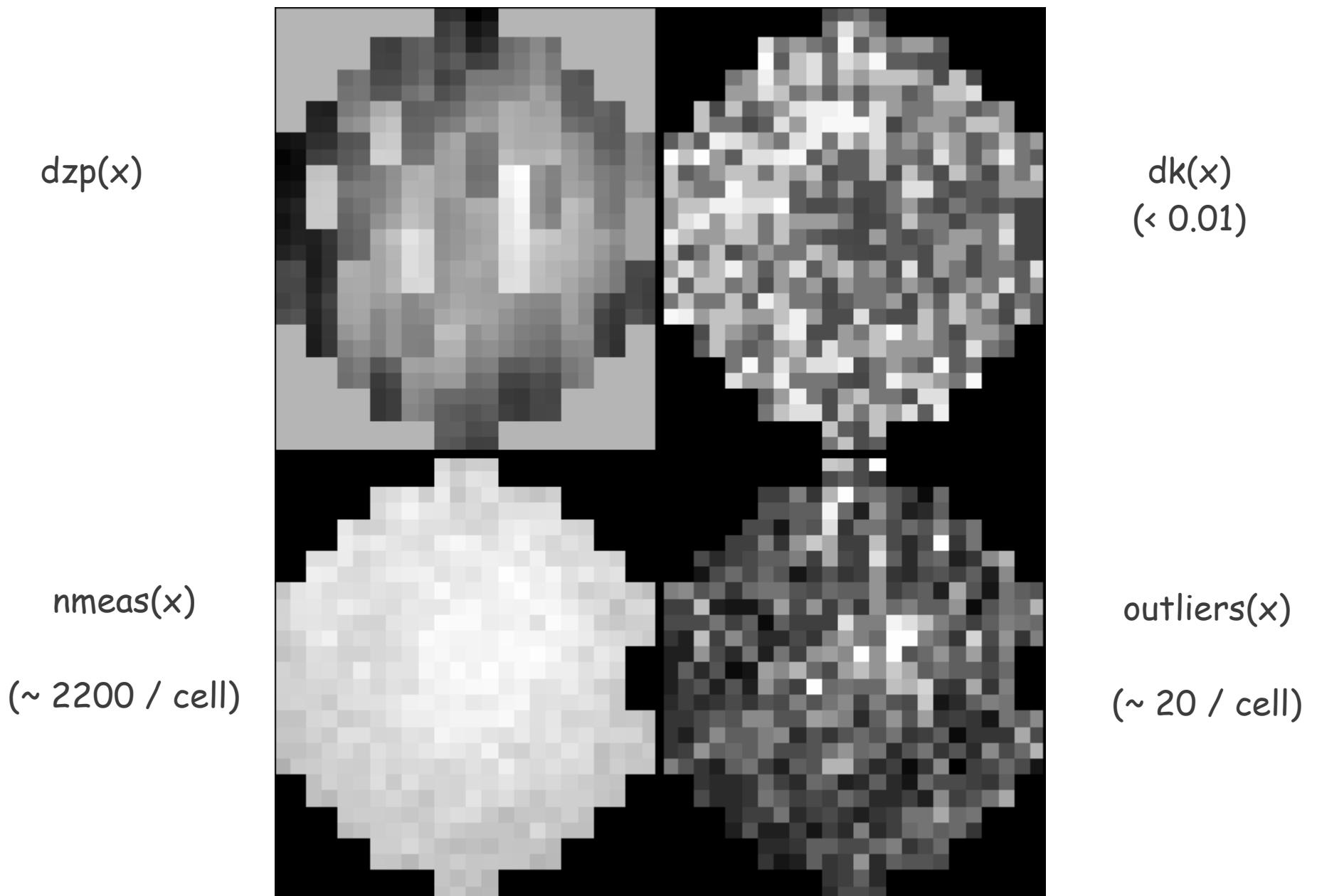
Dzp & dk terms (i-band)



Dzp & dk terms (z-band)



Dzp & dk terms (Y-band)



Conclusion

- Preliminary grids
 - $dzp(x) \sim 5\%$ variations over the focal plane
 - Ring shaped structure
 - to understand with DECal data !
 - ghosts ?
 - $dk(x)$ seem to display very small (but detectable) variations of the filter edges.
- To do:
 - Understand ring features
 - Compare different photometries (SNLS/sextaractor...)
 - Observe denser fields
 - Optimize dithering pattern.

