

July-2014: SPT-E SVA-1 calibration

Jim Annis

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COMPARISON WITH GOLD v1.02

The SVA1 gold catalog, file `sva1_gold_1.0.2_catalog_basic.fits`, was joined against the psf magnitudes, file `sva1_gold_1.0.2_catalog_psf.fits`, for stars (modest star/galaxy separator) between $15 < i < 19$. This was taken as a reference catalog, and the yacal catalog was compared to it.

The comparison showed a clear gradient, which could be removed via subtracting a declination component: $\delta m = -0.0121(\delta + 61) + 0.085$, and then a right ascension component: $\delta m = -0.003(\alpha - 65) + 0.030$.

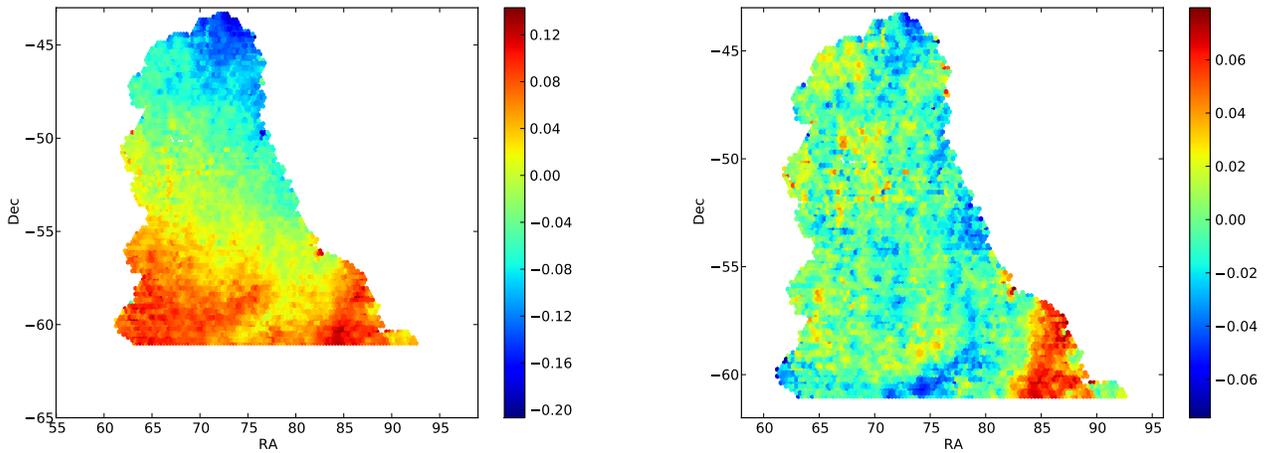


Figure 1: Left: Spatial plot of yacal-gold, showing a strong gradient. Right: Spatial plot of yacal-gold, after removal of the gradient and with a 5-iteration $3\text{-}\sigma$ sigma clipping. A 5-iteration $3\text{-}\sigma$ sigma clipping in the central area ($65 < \alpha < 77$) and $-57 < \delta < -47$) gives a 21.5 mmag dispersion. The scale is in magnitudes.

REMOVING THE DEREDDENING

We will correct the stars from the Gold v1.0.2 catalog for reddening. Here we use the Planck dust map from Boris to apply reddening back into the Gold star catalog.

Then, we find the internal residuals map, and the residuals map when compared with the reddened Gold v1.02 star catalog. The earlier attempt, with the gradient removal of the dust, had 22mmag; this shows 38mmag residuals.

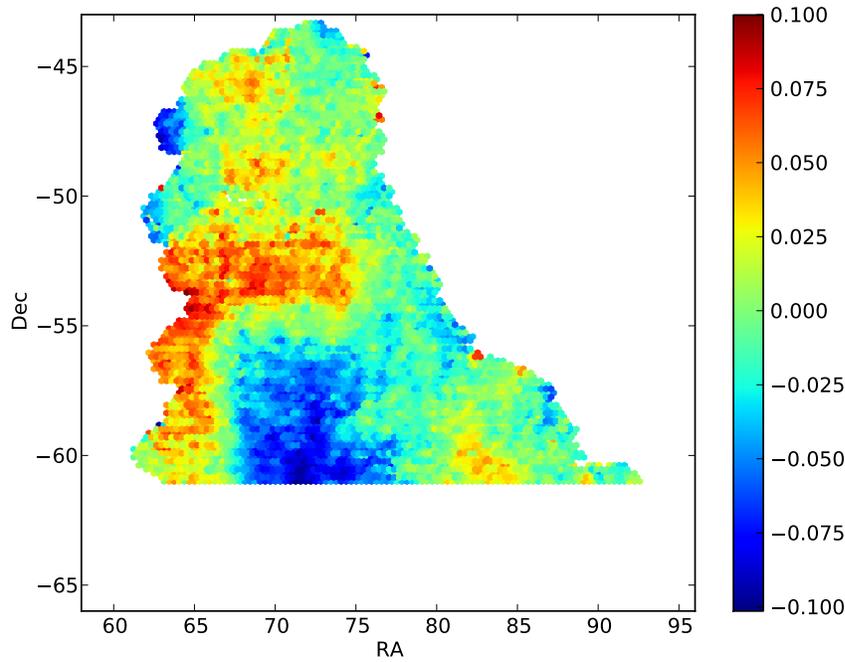


Figure 2: Spatial plot of ycal-gold, after a 5-iter, 3- σ clip. Before the clipping the $\sigma=38.2$ mmag; after the clipping $\sigma=36.6$ mmag. There is a 4.66 mag offset between ycal try2 and Gold v1.0.2; this ycal says nothing about. The map scale is in magnitudes.

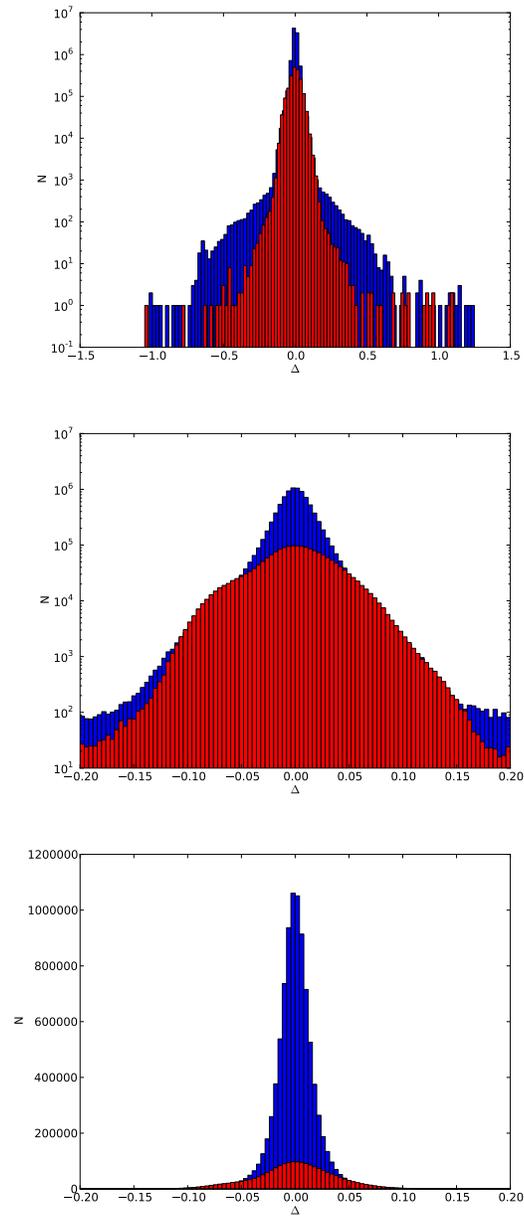


Figure 3: Histogram of the Δ -model, blue, and the yacal-gold, red. The middle panel is the same, zoomed in. As this is a log plot, one reads the middle plot as saying the blue histogram is quite sharply more peaked than the red. The bottom plot shows the linear version. The map scale is in magnitudes.