

The Sagittarius Stream and the Virgo Overdensity

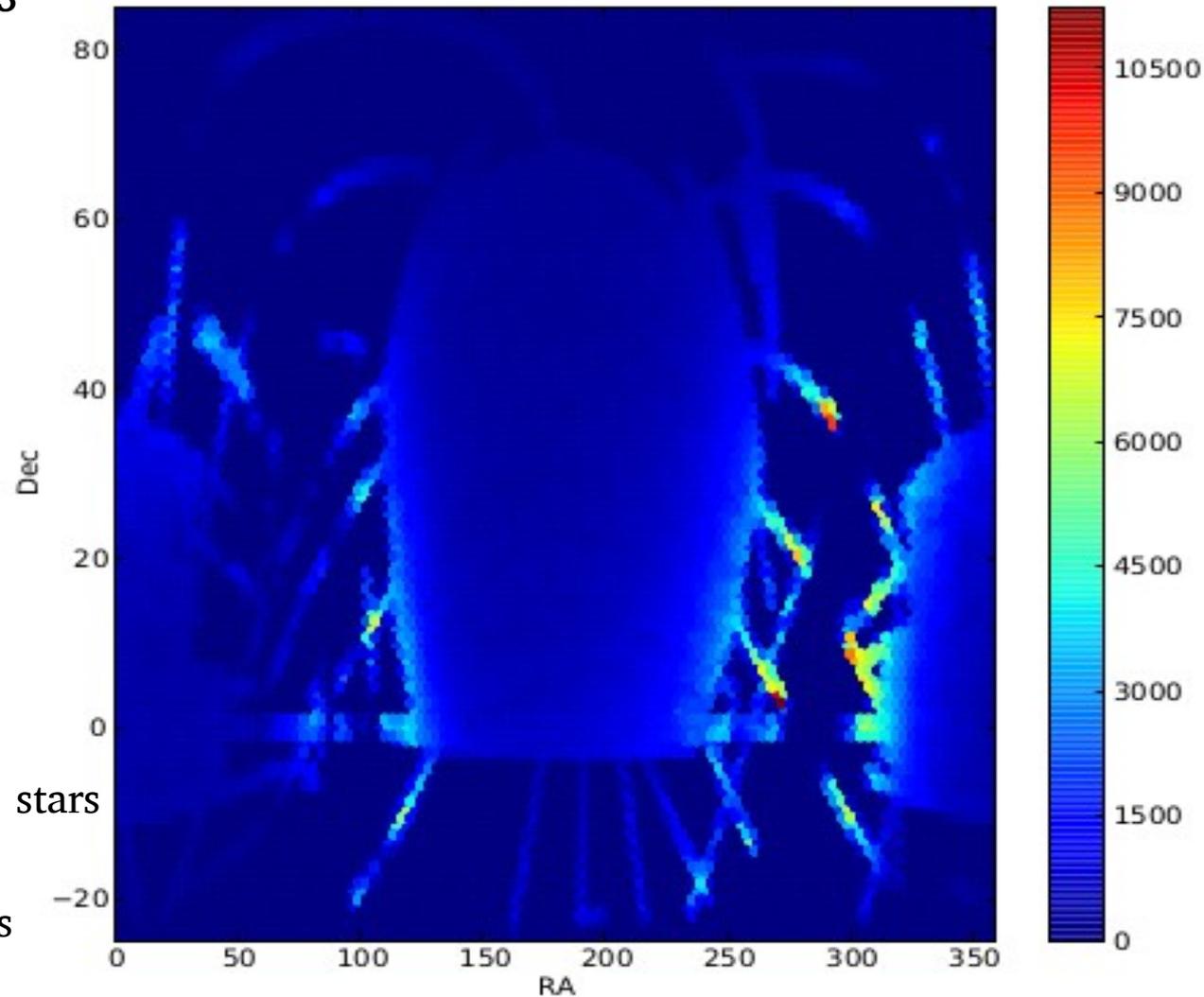
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Star Density Plot

Osar 2013

Distance (kpc)	$M_i = 0.283$	$M_i = 0.2716$
5	13.778	13.766
10	15.283	15.272
20	16.788	16.777
30	17.669	17.657
40	18.293	18.282
50	18.778	18.766
60	19.174	19.162
70	19.508	19.497
80	19.798	19.787

- Color cuts are spectral ranges of RC stars
- Plot of i-magnitude RC stars
- Northern and Southern Galactic Caps
- SDSS Sky Server Data
 - Arianna Osar's Query



Red Clump Stars

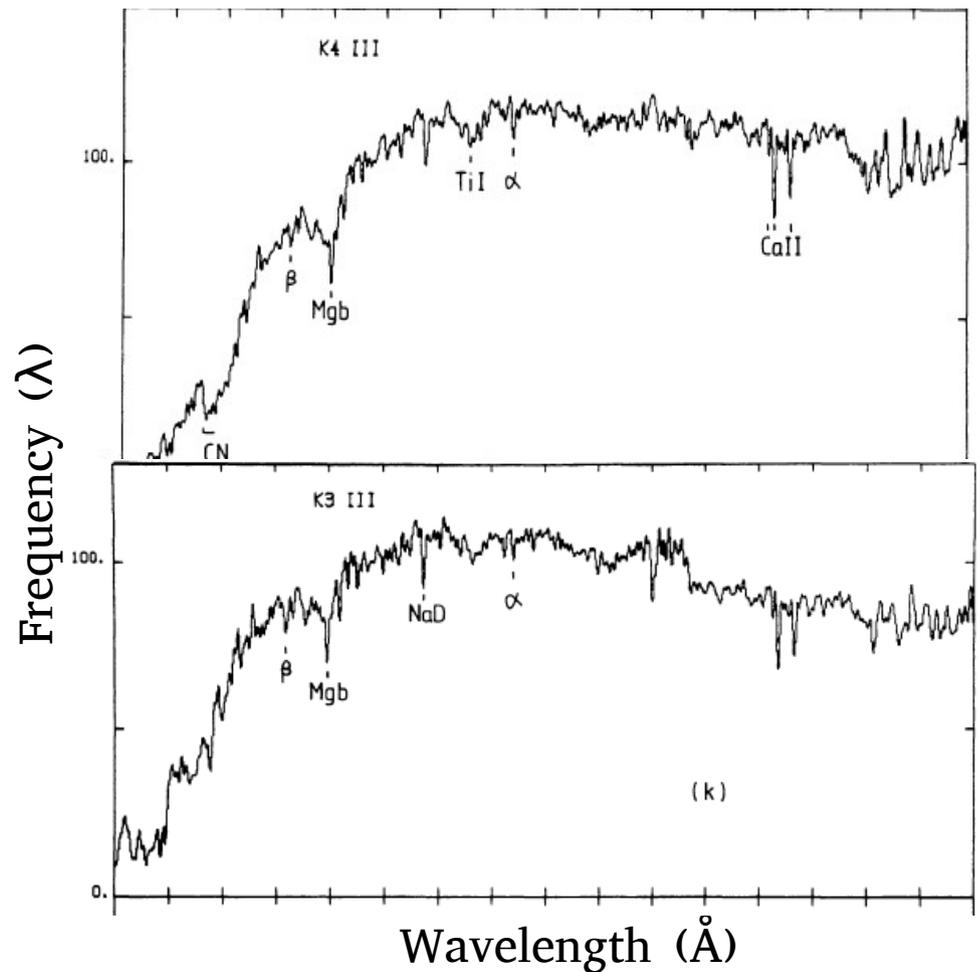
Osar 2013

Color	Main 1 G8III	Main 2 K2III
<i>g-r</i>	0.668	0.845
<i>r-i</i>	0.228	0.31
<i>i-z</i>	0.123	0.186

Color	Main 1 G0III	Main 2 wK1III
<i>g-r</i>	0.439	0.736
<i>r-i</i>	0.147	0.272
<i>i-z</i>	0.054	0.105

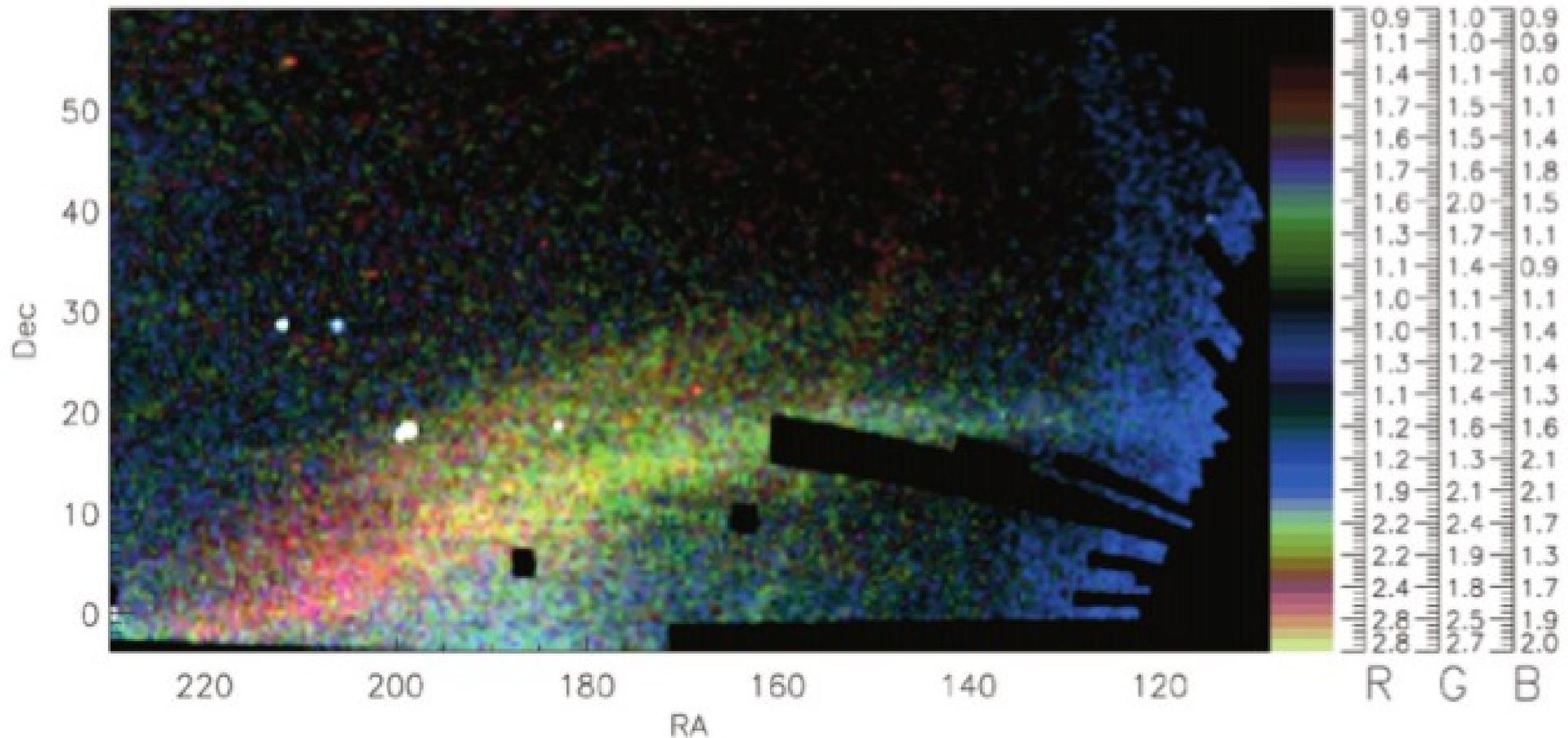
- Color Cuts used for Background Subtraction
 - Metallicity used to search for RC stars
- RC stars are good distance indicators
 - Small range of absolute magnitudes
- RC star spectrum are similar to K main sequence stars
 - RC stars are giants

Pickles 1985



“The Field of Streams: Sagittarius and its Siblings”

Belokurov et al.
2006



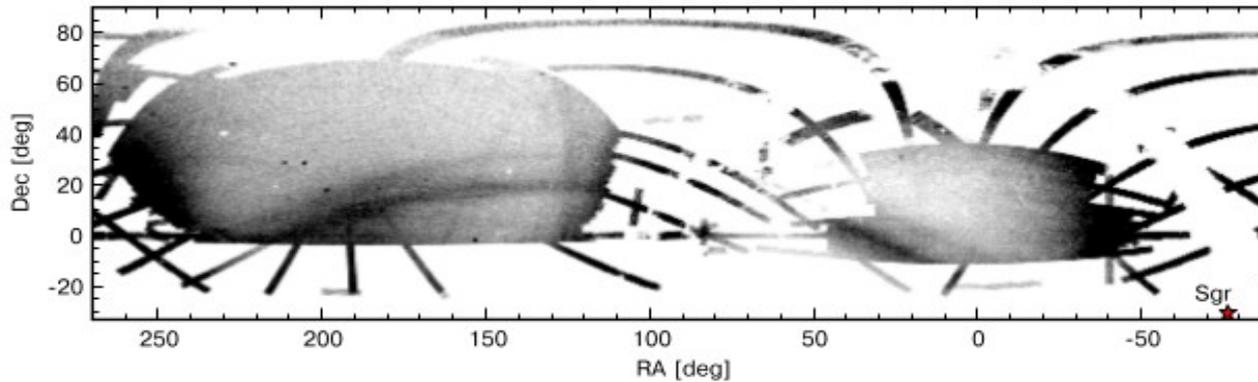
Sagittarius Stream, Orphan Stream, and Monoceros Ring

*Plot of SDSS stars ($g - r < 0.4$)

“The Sagittarius Streams in the Southern Galactic Hemisphere”

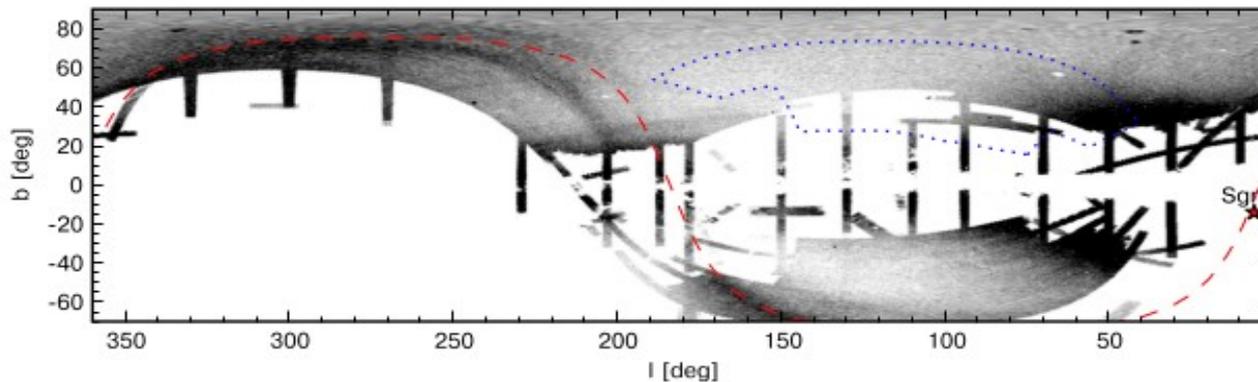
- Plot of MSTO Star Density

Equatorial Coordinate System

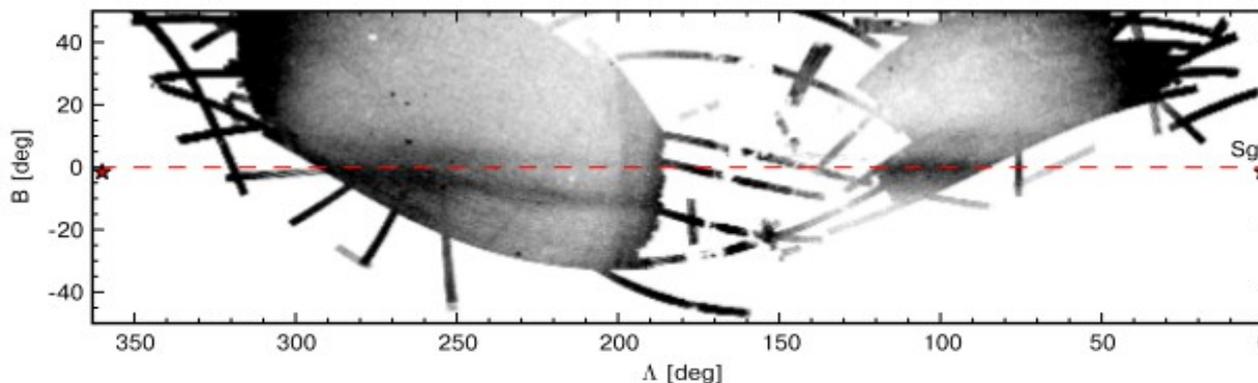


- Shows:
 - Sgr Stream
 - Galactic Bulge
 - Galactic Plane
 - Sgr Dwarf Galaxy

Galactic Coordinate System

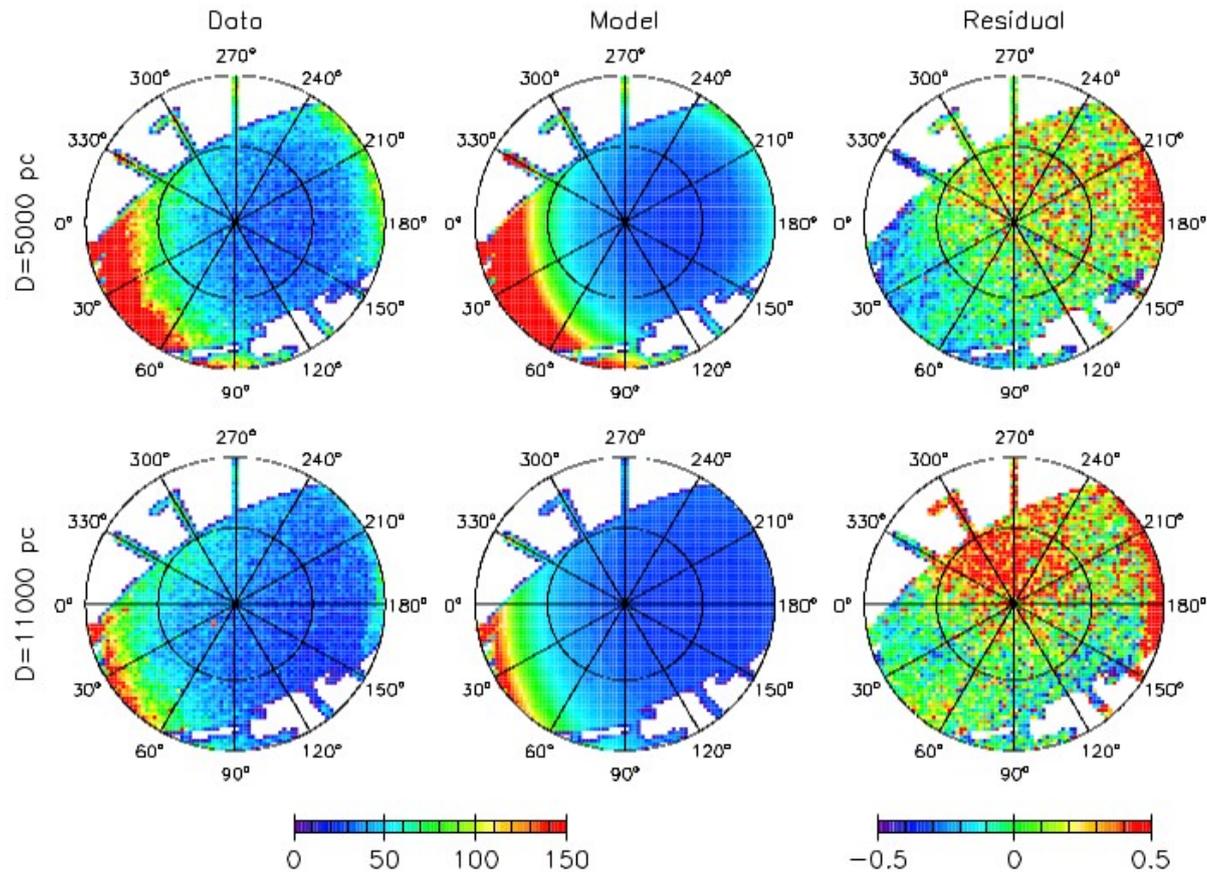


Sgr Dwarf Coordinate System



Koposov et al. 2012

“Update on the Nature of Virgo Overdensity”

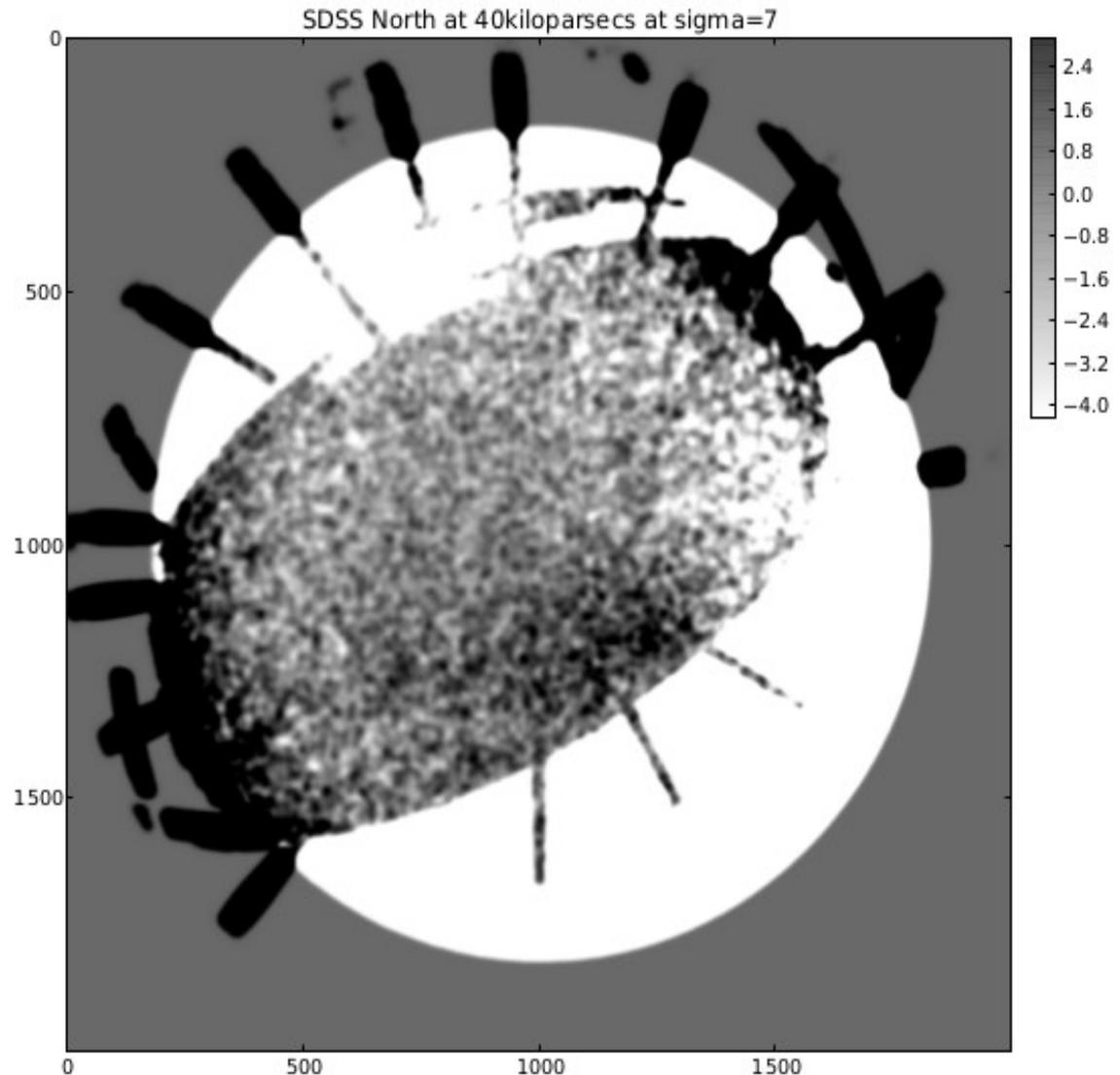


- Data – Model = Residual
- Hard to see VOD in Data
 - Big range of densities of F stars/deg²
- Similar method to how our graphs with SDSS data are made

Bonaca et al. 2012

SDSS Data: Northern Galactic Hemisphere Distance Slices

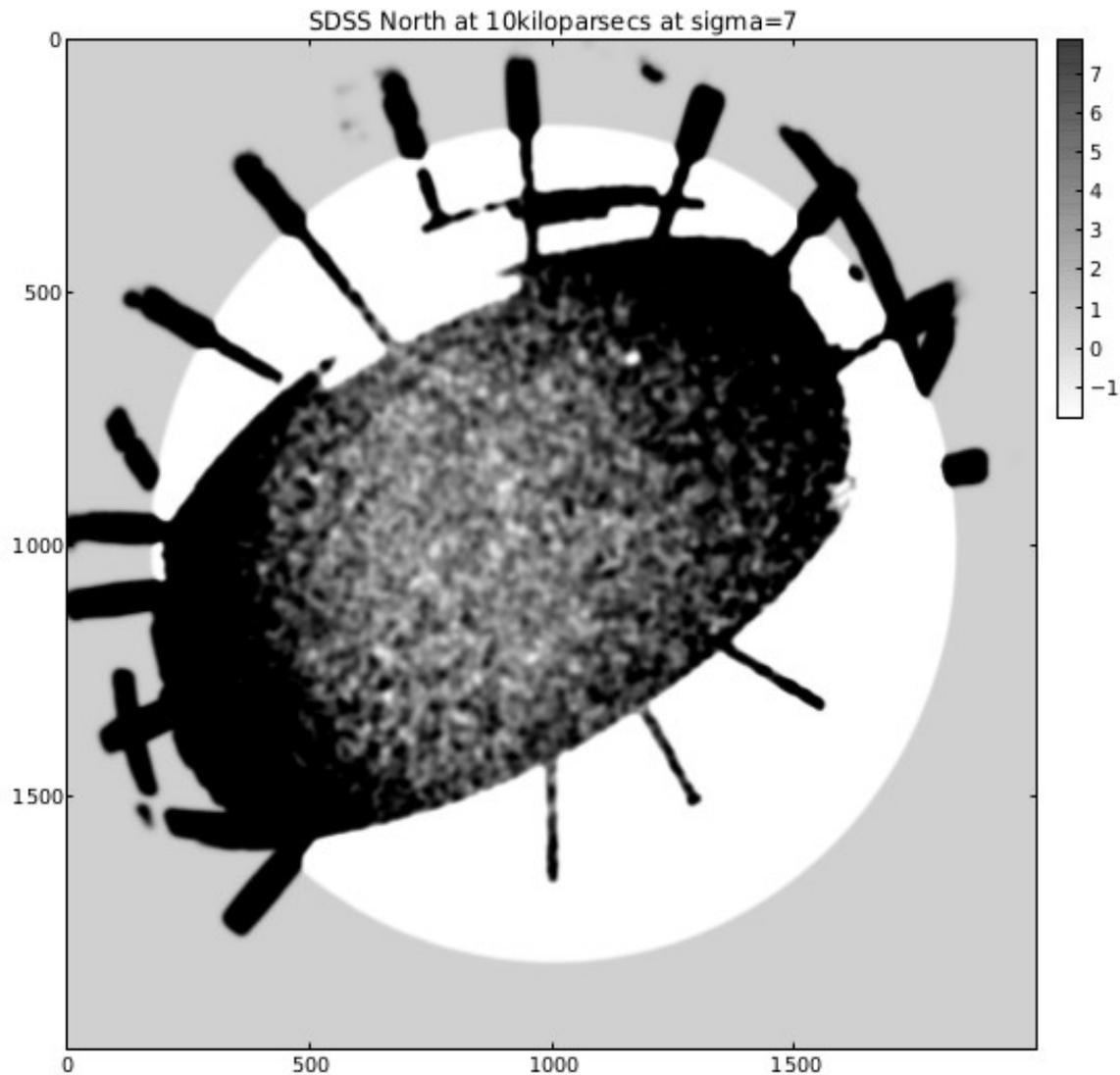
- White/Black
 - Saturation
 - No data/model
- Black Spots
 - Globular Clusters
 - Dwarf Galaxies
- Smoothed
 - To see features better
- Visible
 - Sgr Bright Arm
 - Matched Pila-Diez
 - VOD



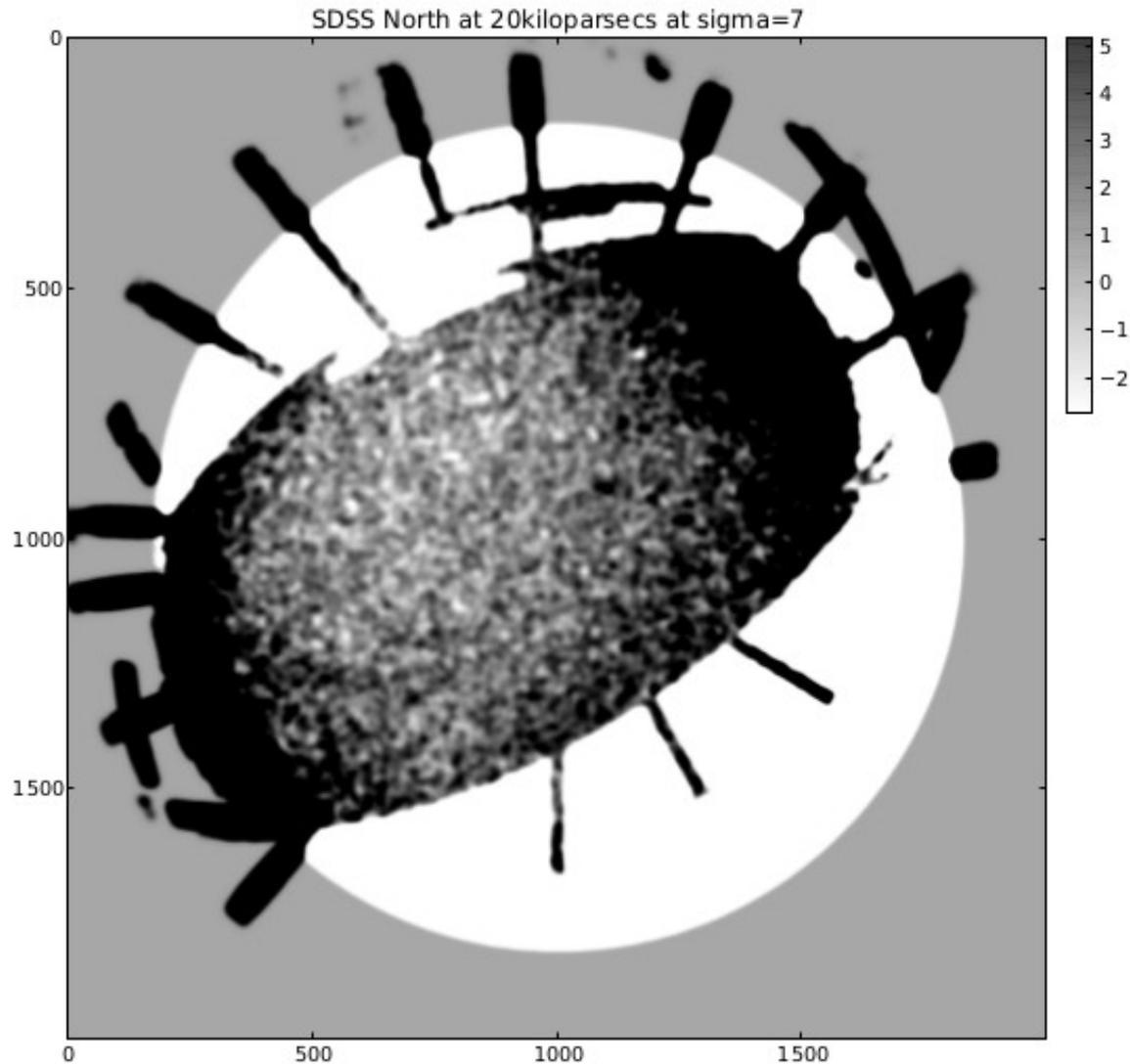
Questions?

- Special thanks to Dr. Annis
 - Opportunity and Guidance
- Also Tiger Shi
 - Helping with making graphs

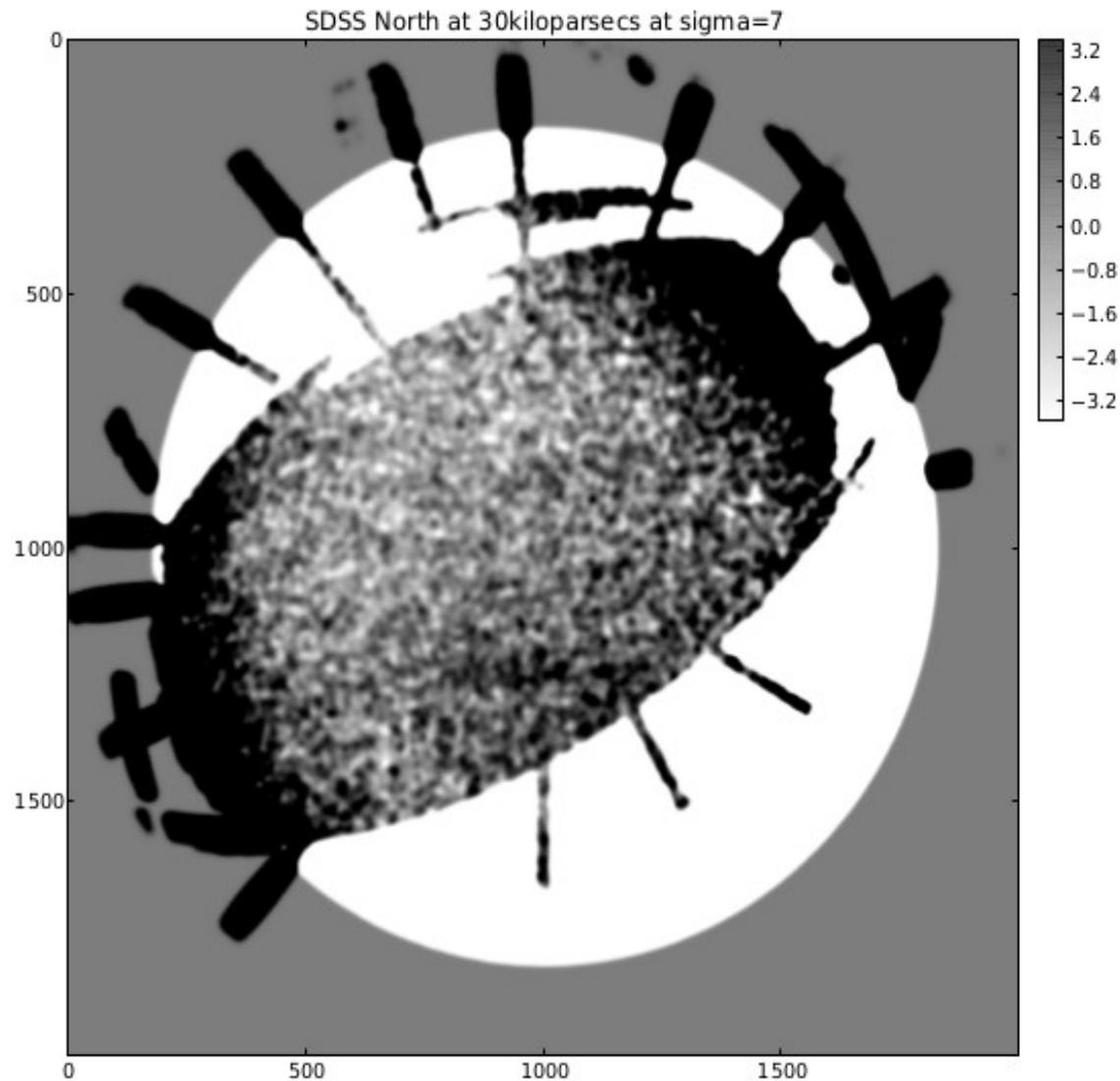
SDSS Northern Galactic Cap 10-20 kpc Slice



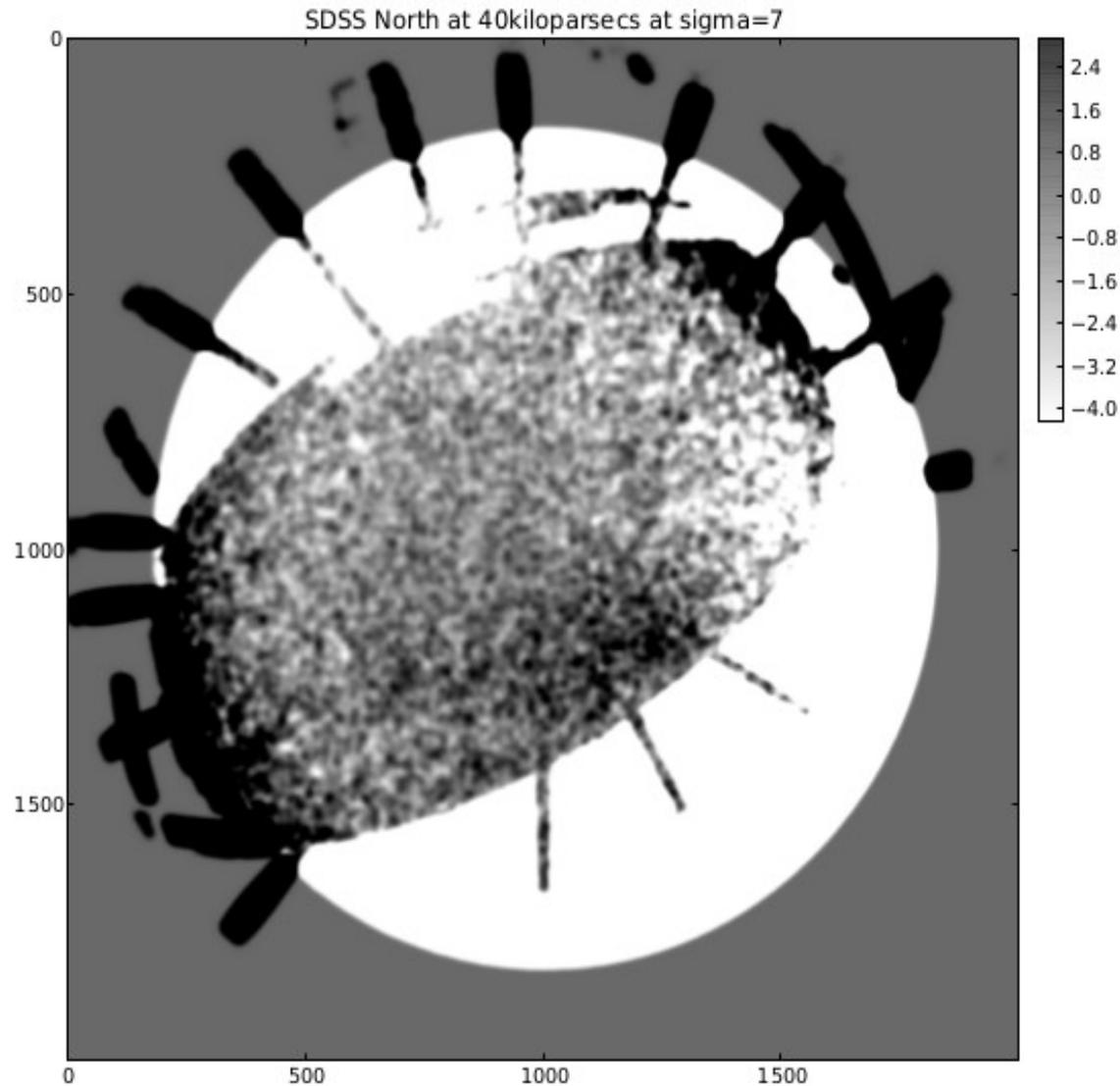
SDSS Northern Galactic Cap 20-30 kpc Slice



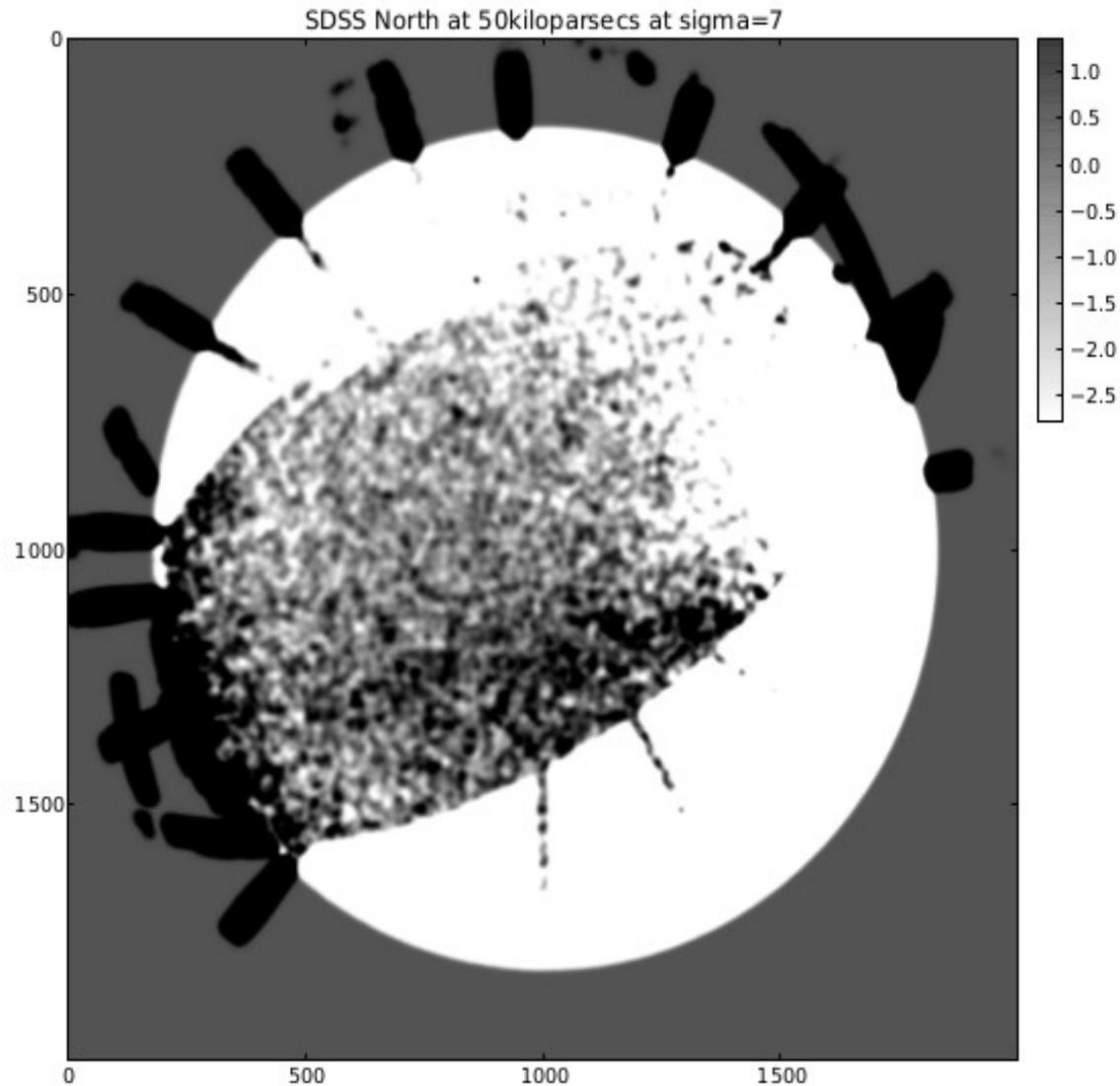
SDSS Northern Galactic Cap 30-40 kpc Slice



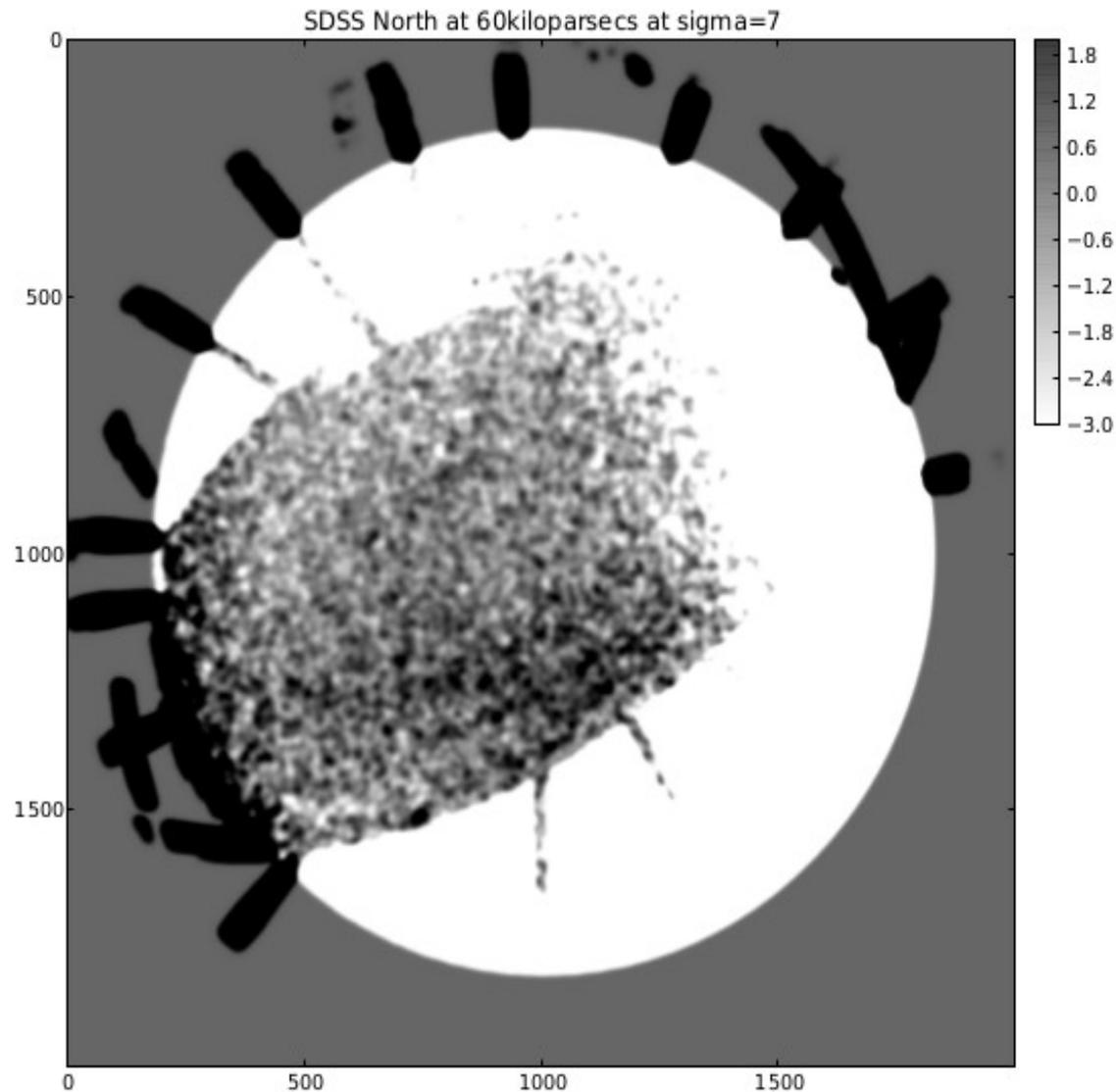
SDSS Northern Galactic Cap 40-50 kpc Slice



SDSS Northern Galactic Cap 50-60 kpc Slice



SDSS Northern Galactic Cap 60-70 kpc Slice



SDSS Northern Galactic Cap 70-80 kpc Slice

