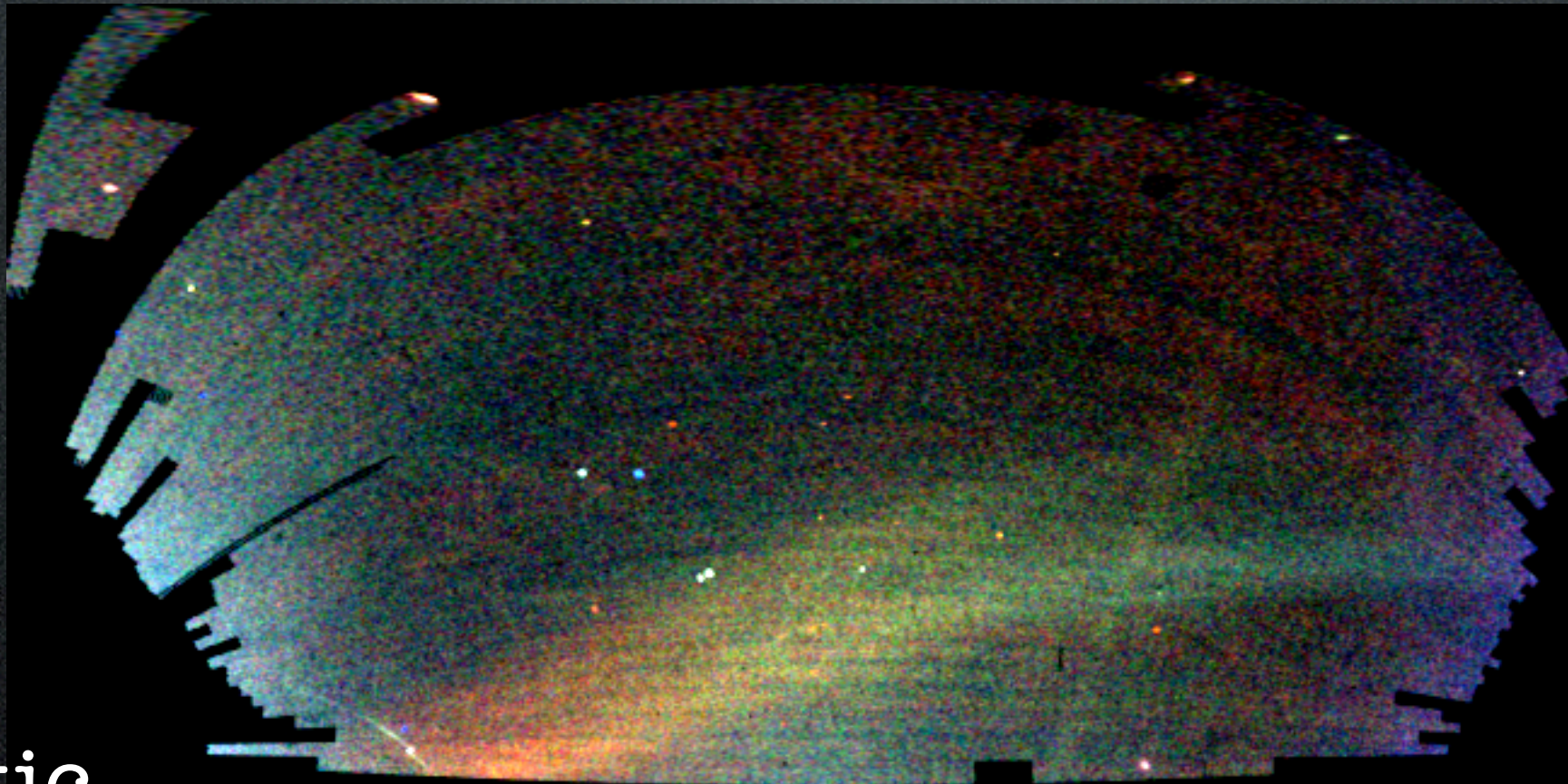


The Complex Structure of the Outer Disk: Monoceros in PS1

Colin Slater, Eric Bell

Eddie Schlafly, Eric Morganson,
Hans-Walter Rix, Nicolas Martin
+ The Pan-STARRS1 Consortium

“Field of Streams”

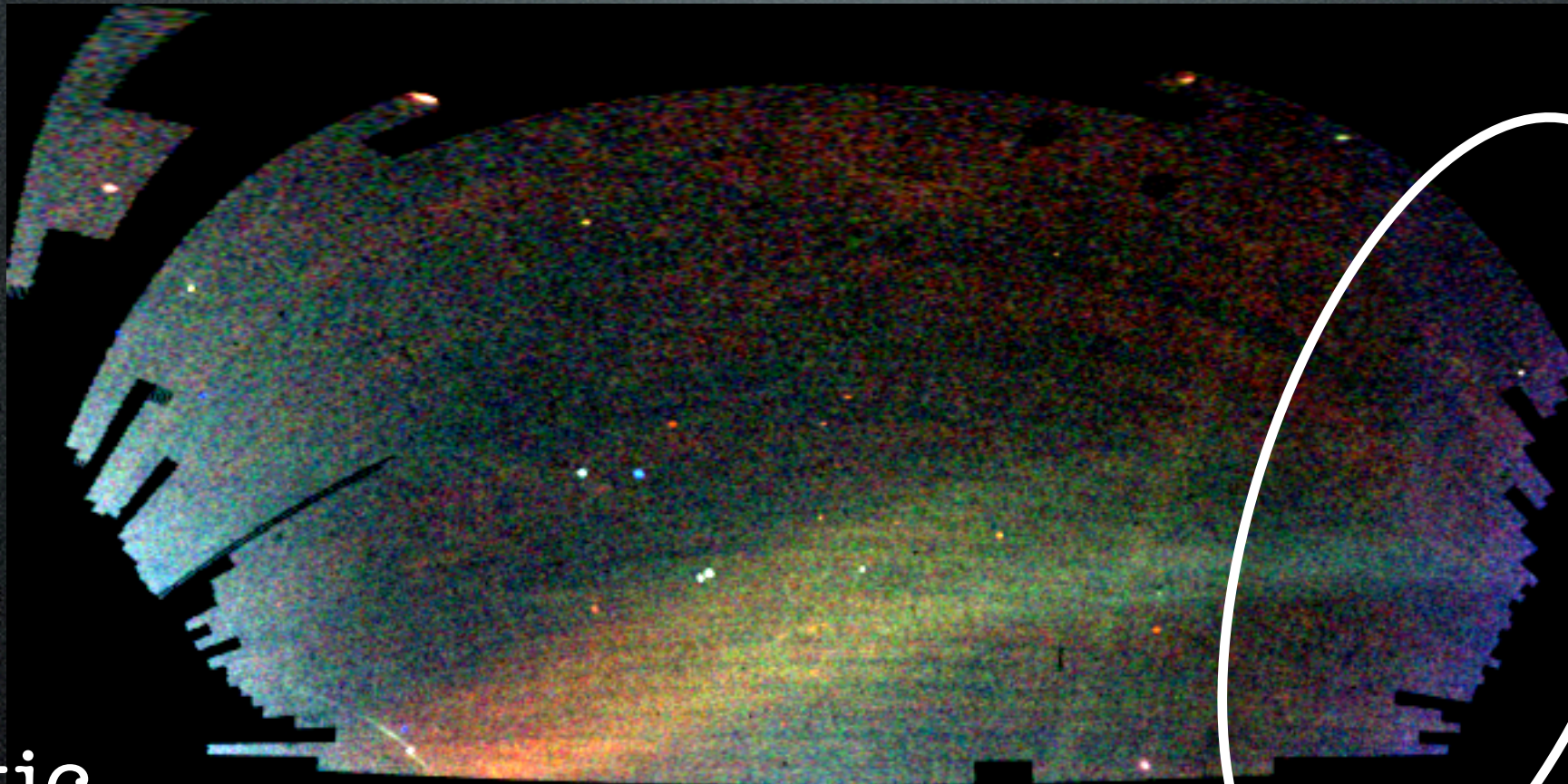


Galactic
Center

Anticenter

Belokurov et al. (2007)

Monoceros Ring



Galactic
Center

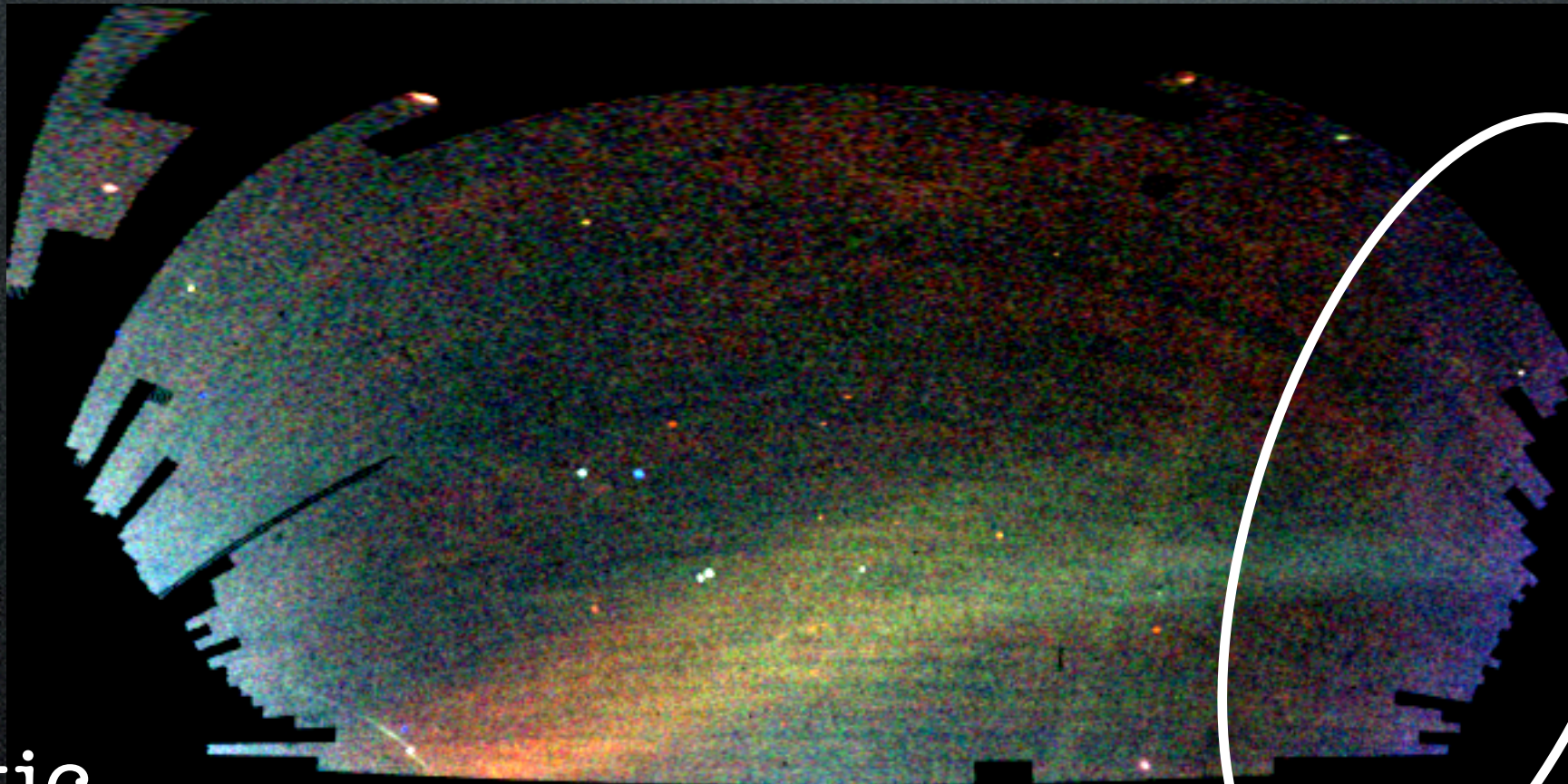
Anticenter

Belokurov et al. (2007)

- But what is Monoceros?
- Disk? Stream? Both?
- Where did it come from? Where does it go?

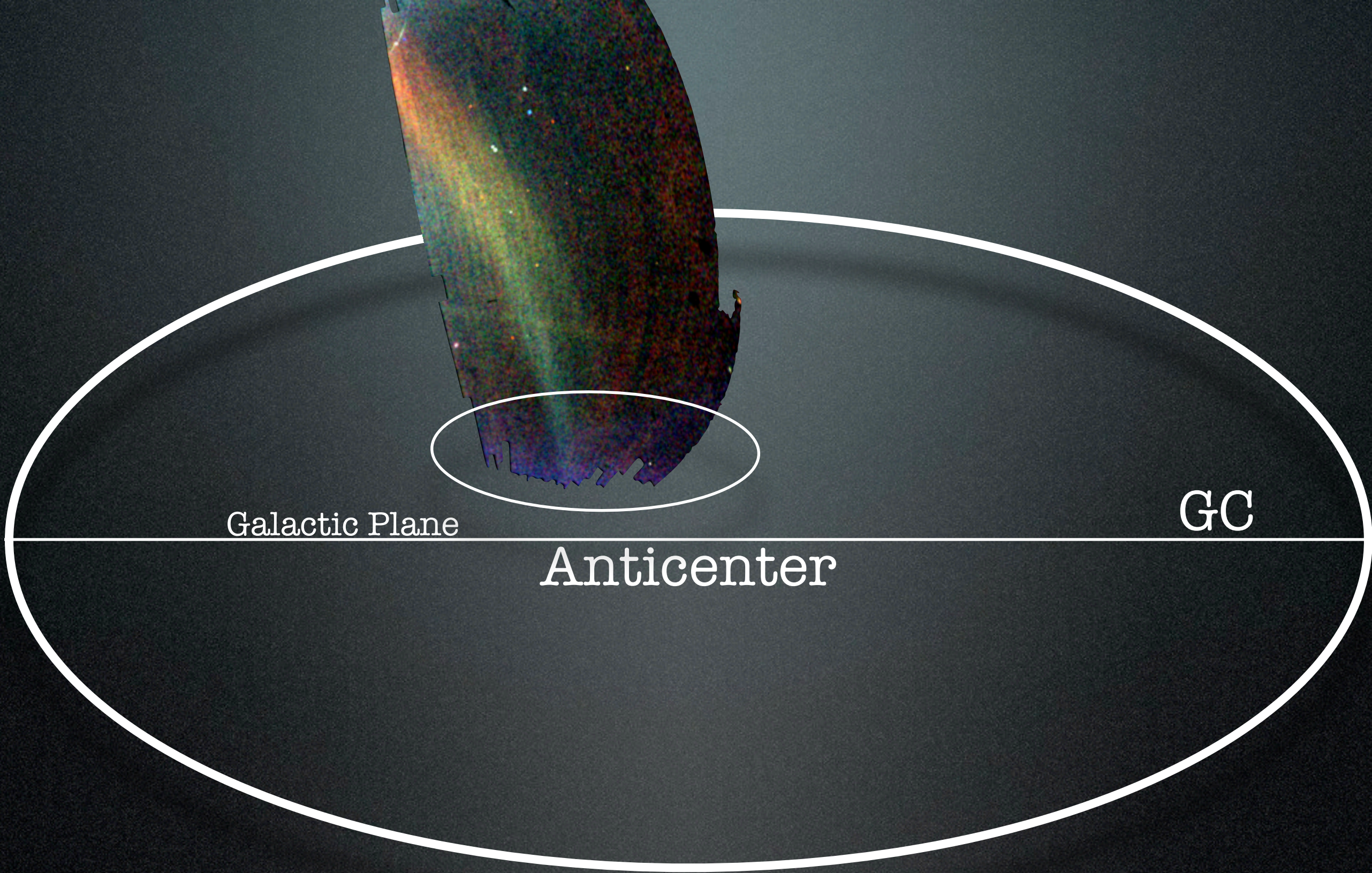
- What do satellite-disk interactions look like? What range of behaviors? What input parameters matter?
- Is this “unique” to the MW?
- Good test cases + good simulations are the key, we have poor intuition otherwise.

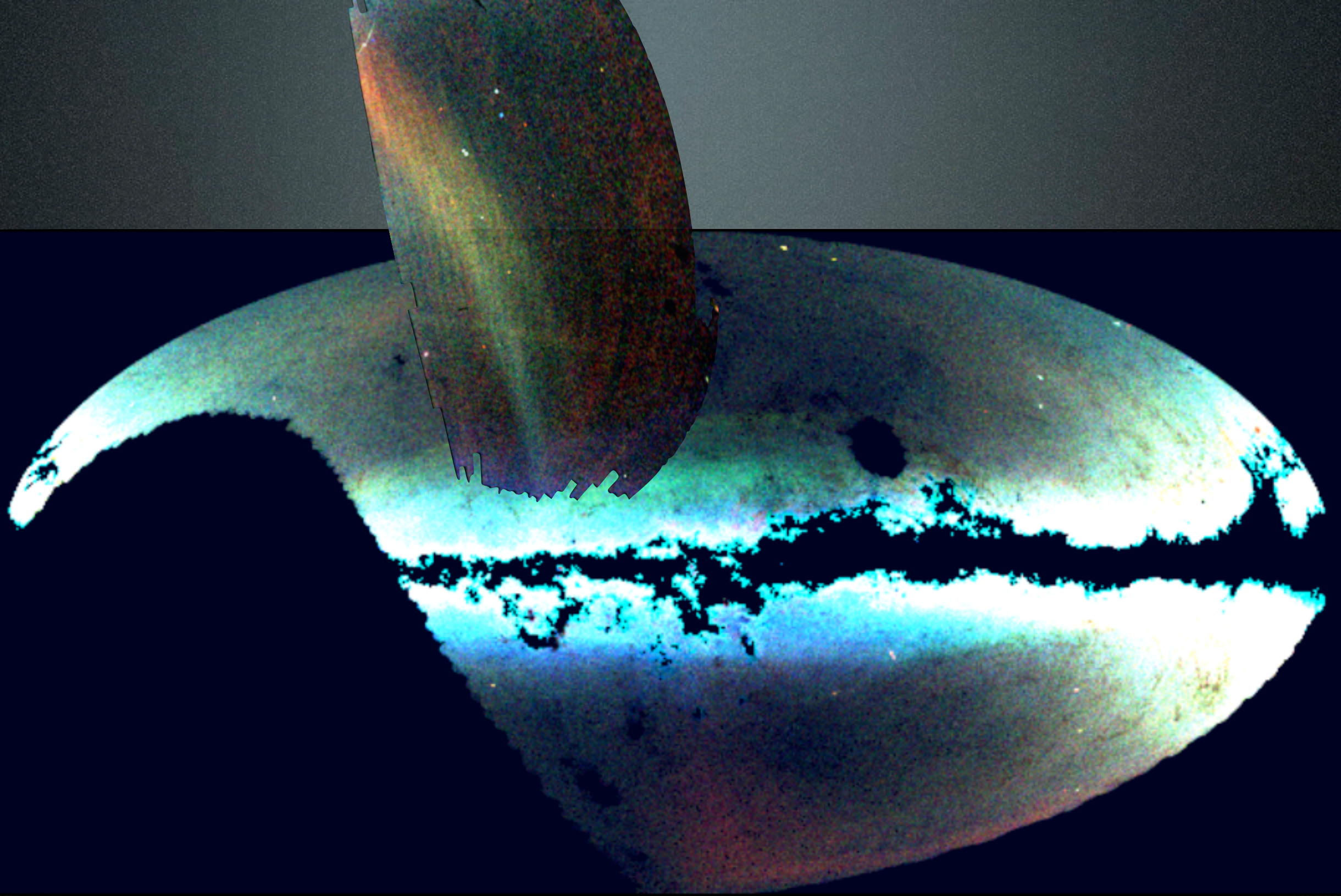
Monoceros Ring

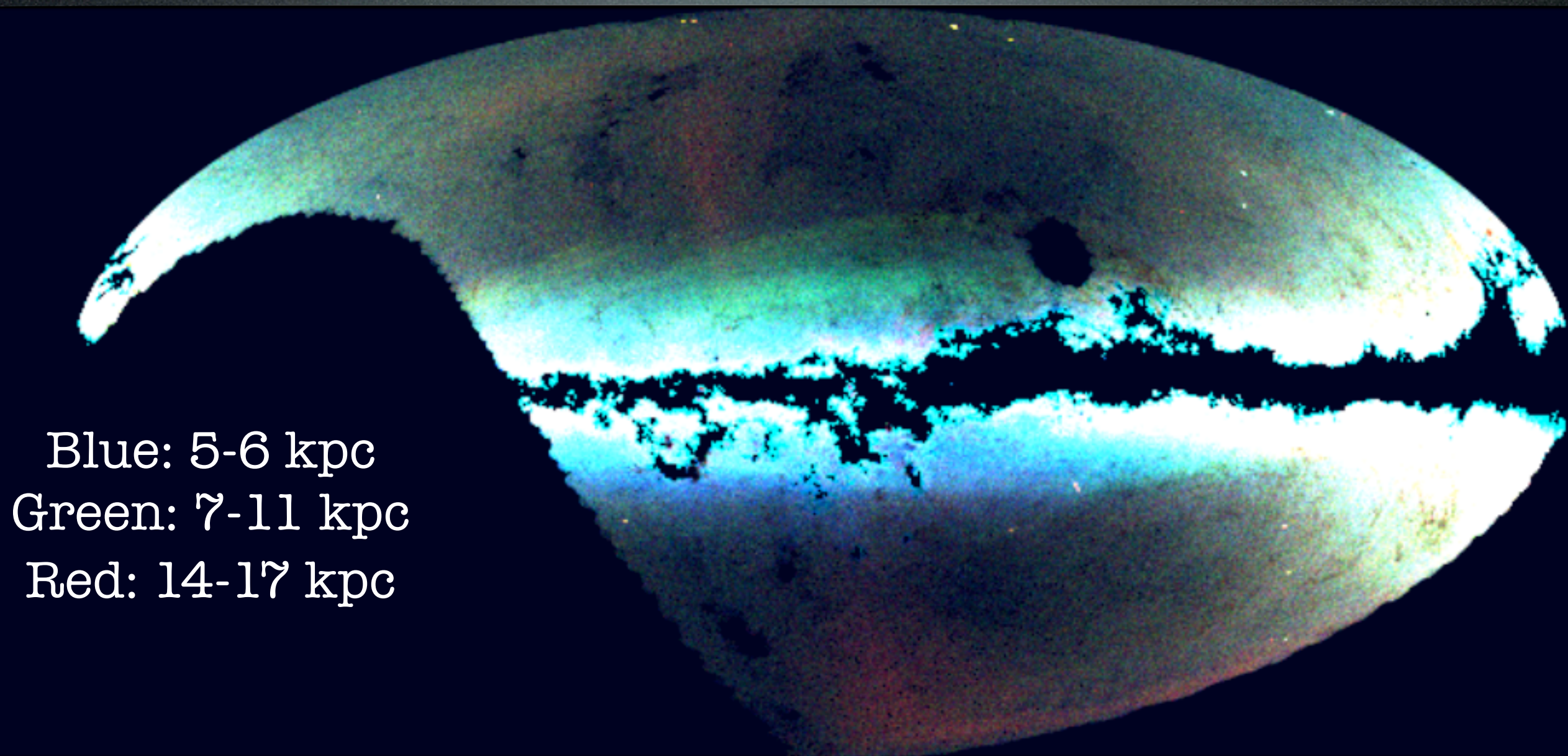


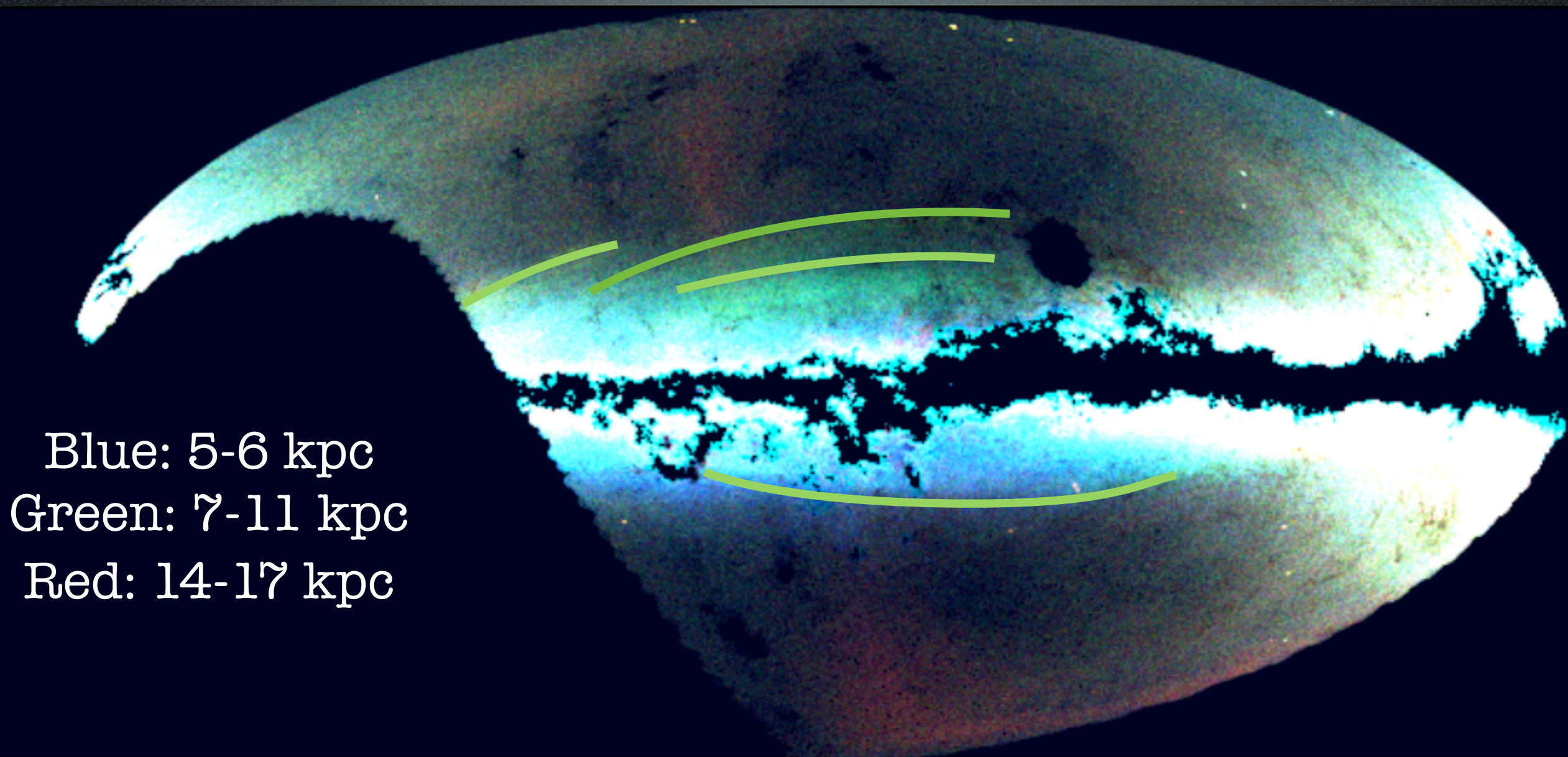
Galactic
Center

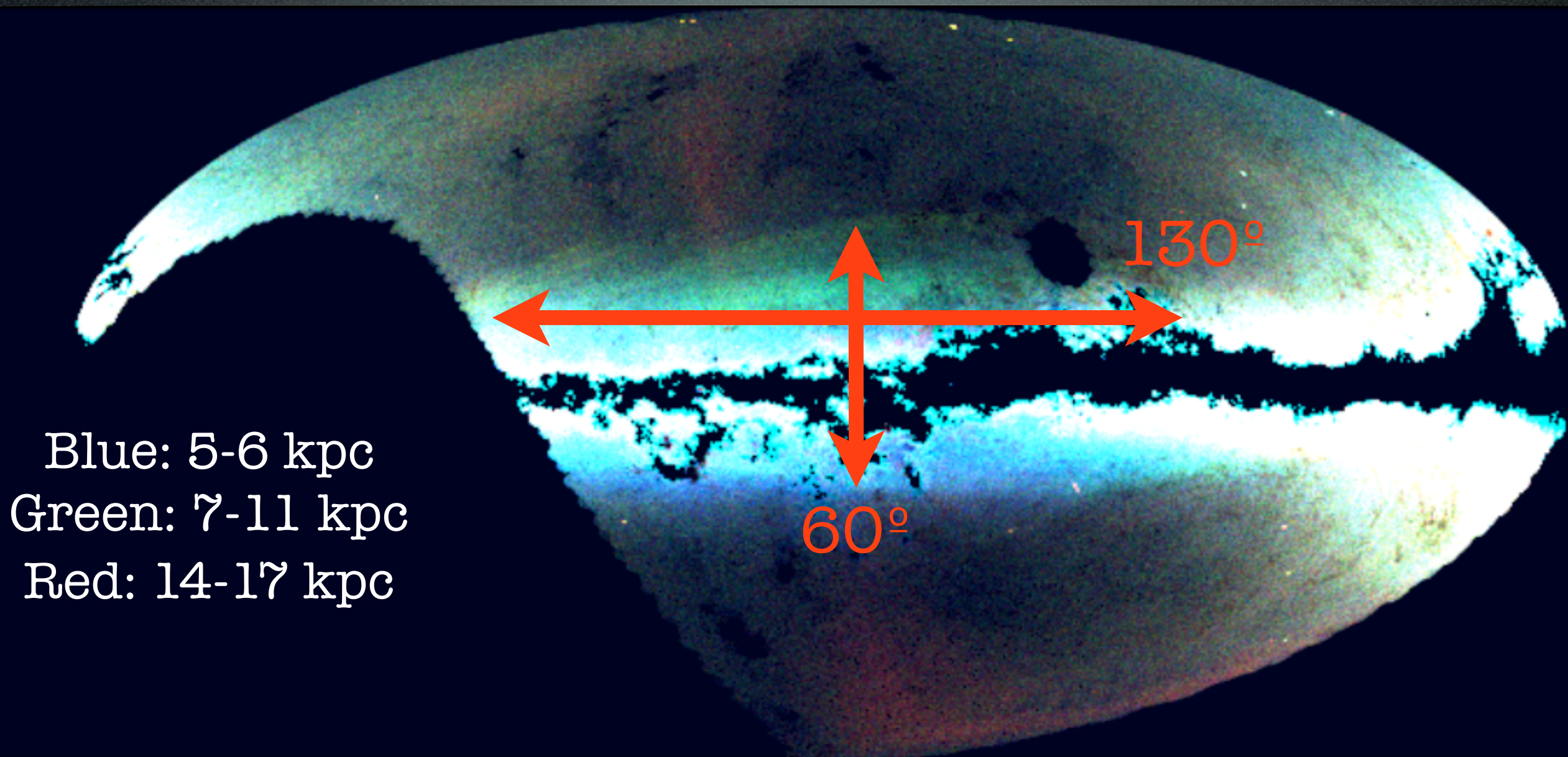
Anticenter

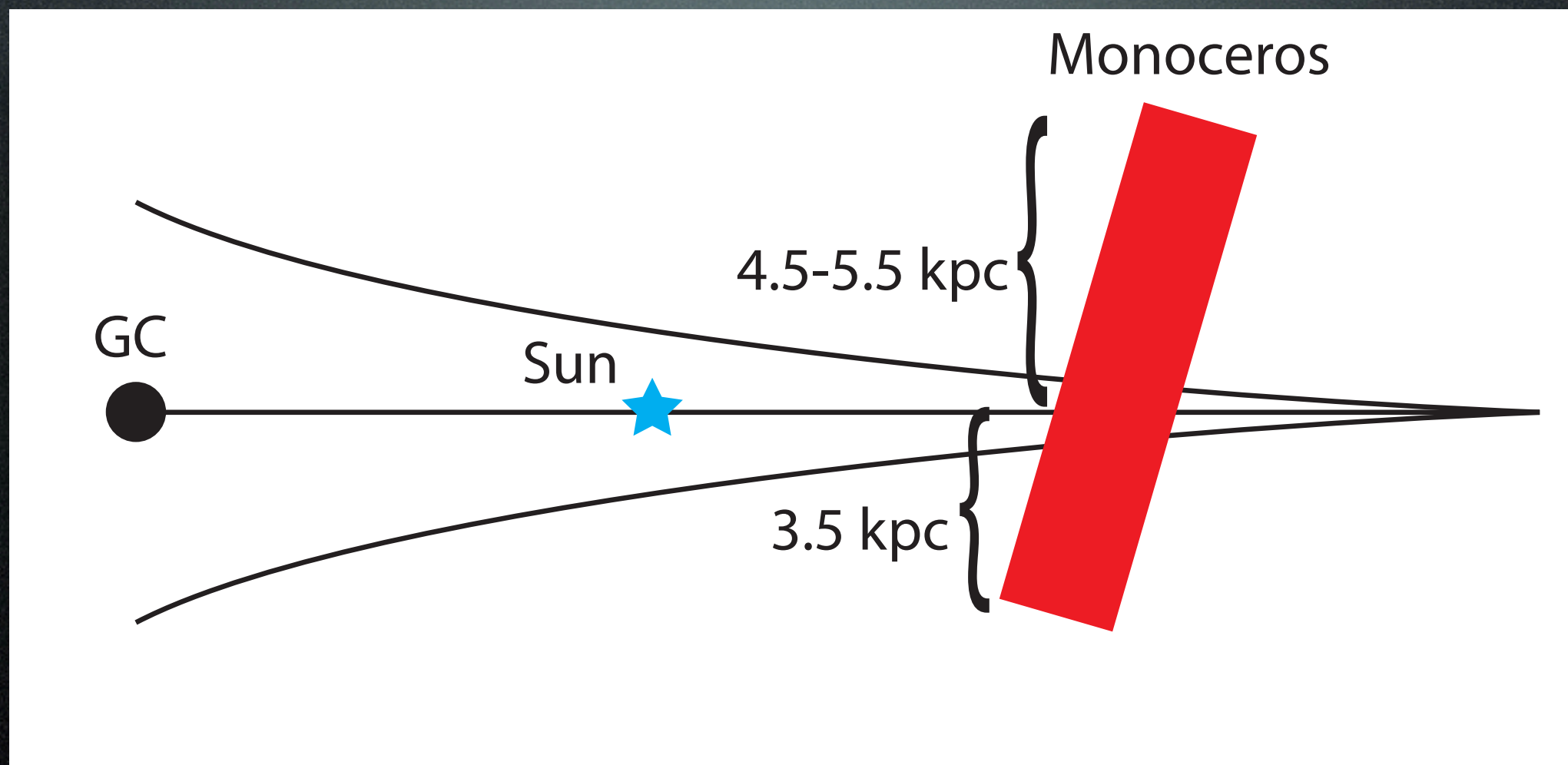








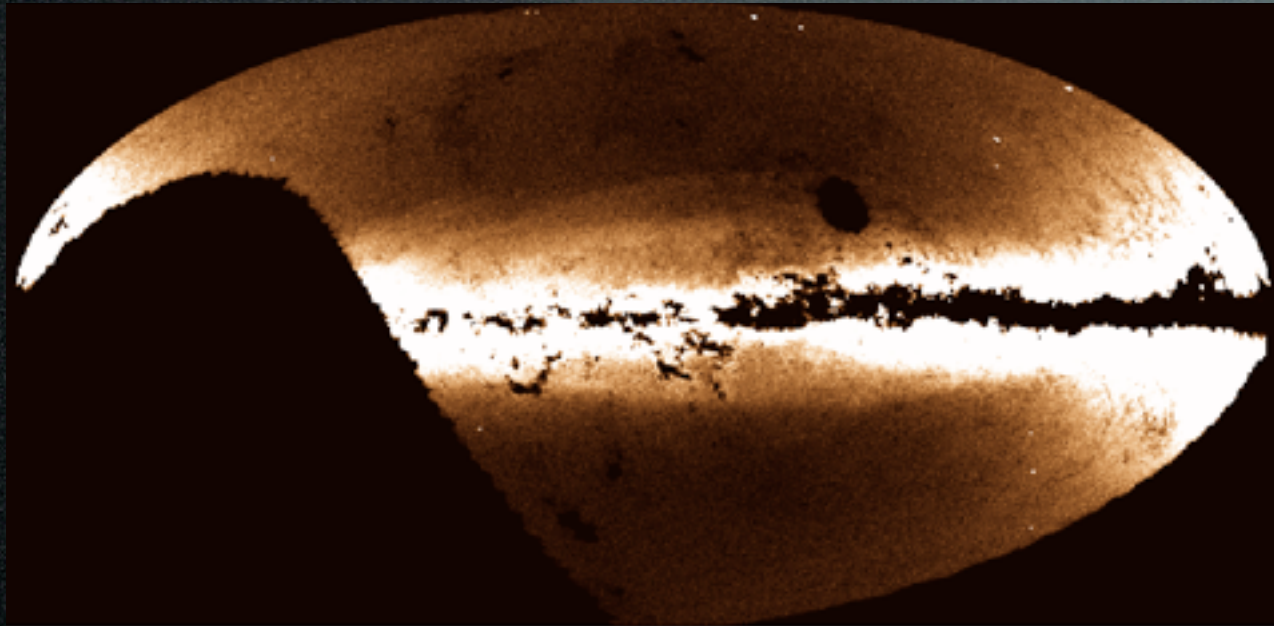




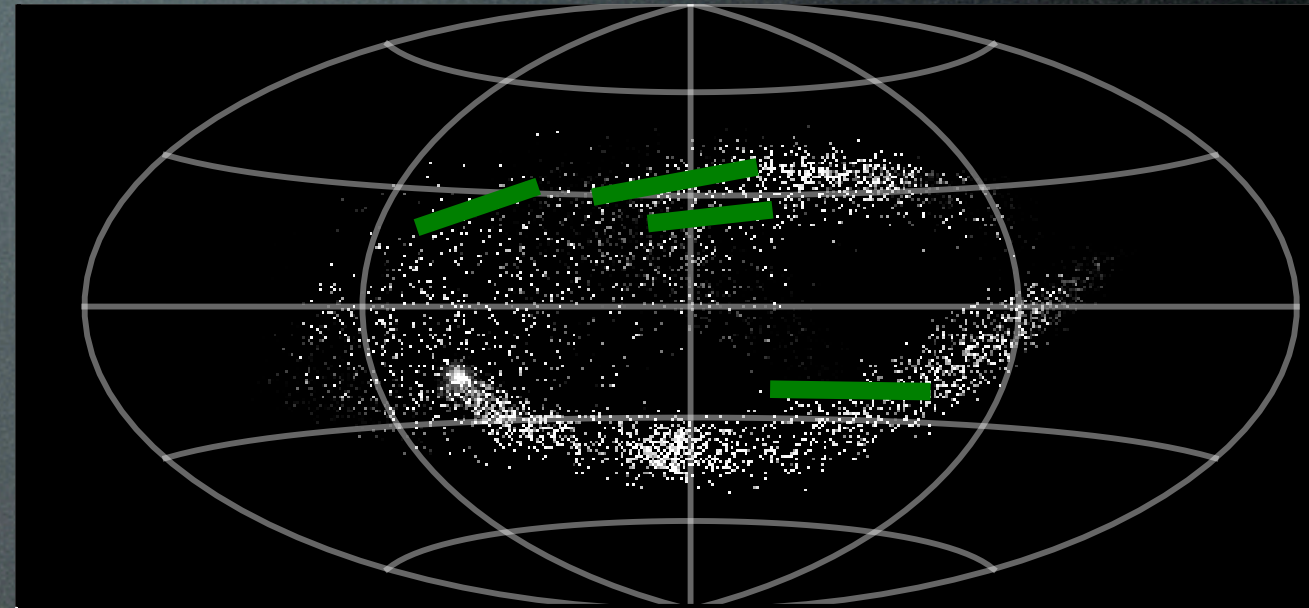
- Lots of morphological information present in the maps (Thanks PS1!)
- How do we use this information?
- Two models to test: Accreted satellite (Peñarrubia) and disrupted disk (Kazantzidis)

Accreted Satellite Model

Mid-Distance Slice



Observed
7-11 kpc slice

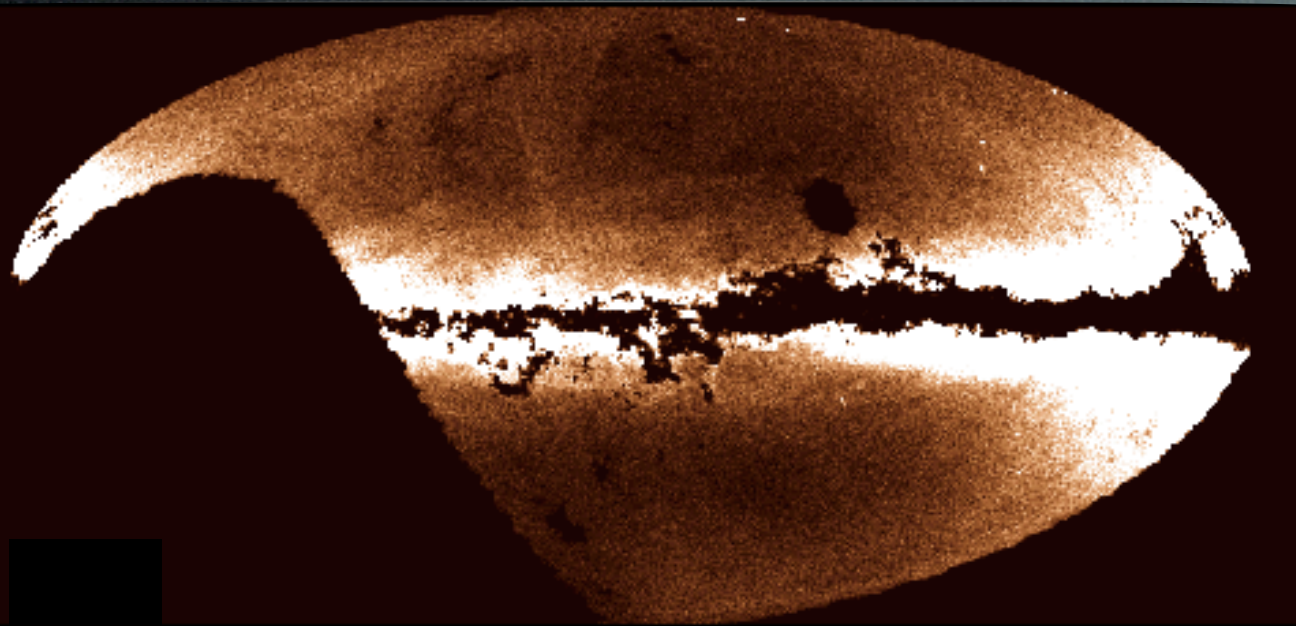


Model

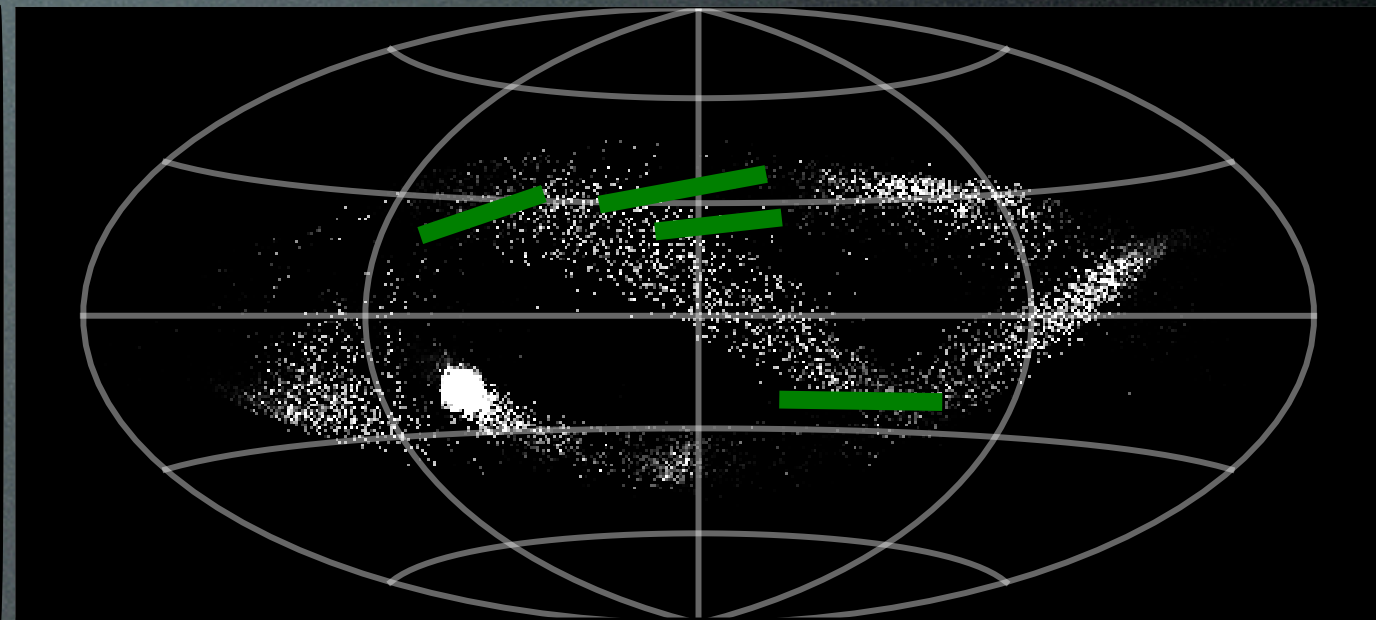
Sharp edge, North and South - ✓

Accreted Satellite Model

Far Slice



Observed
14-17 kpc slice

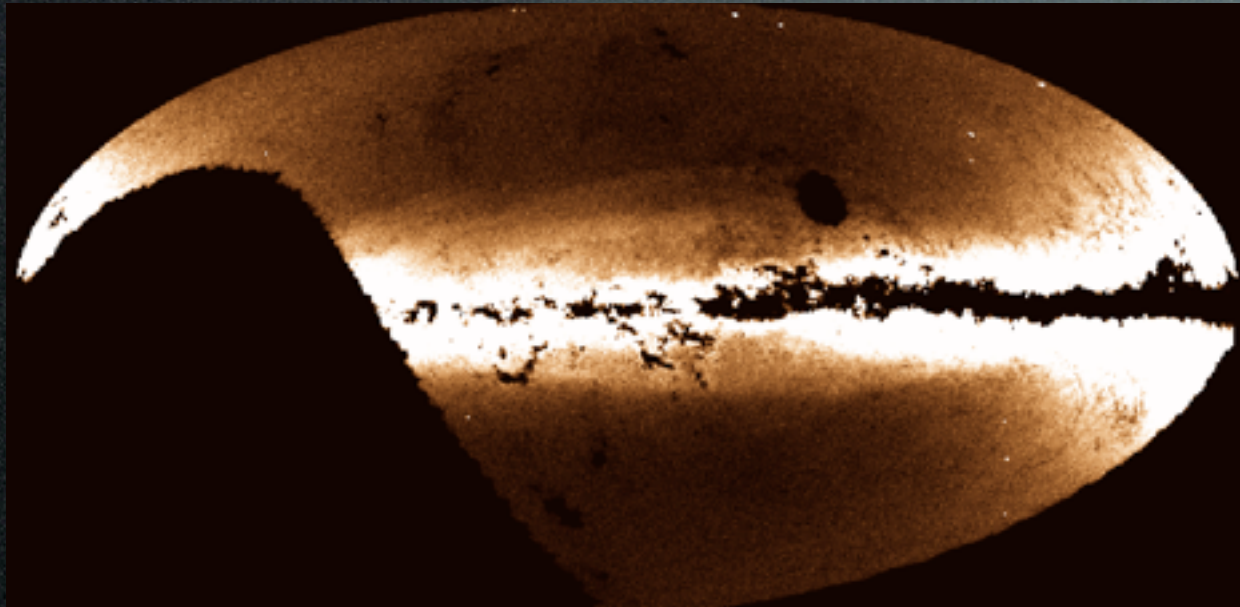


Model

Sharp edge, North and South - ✓

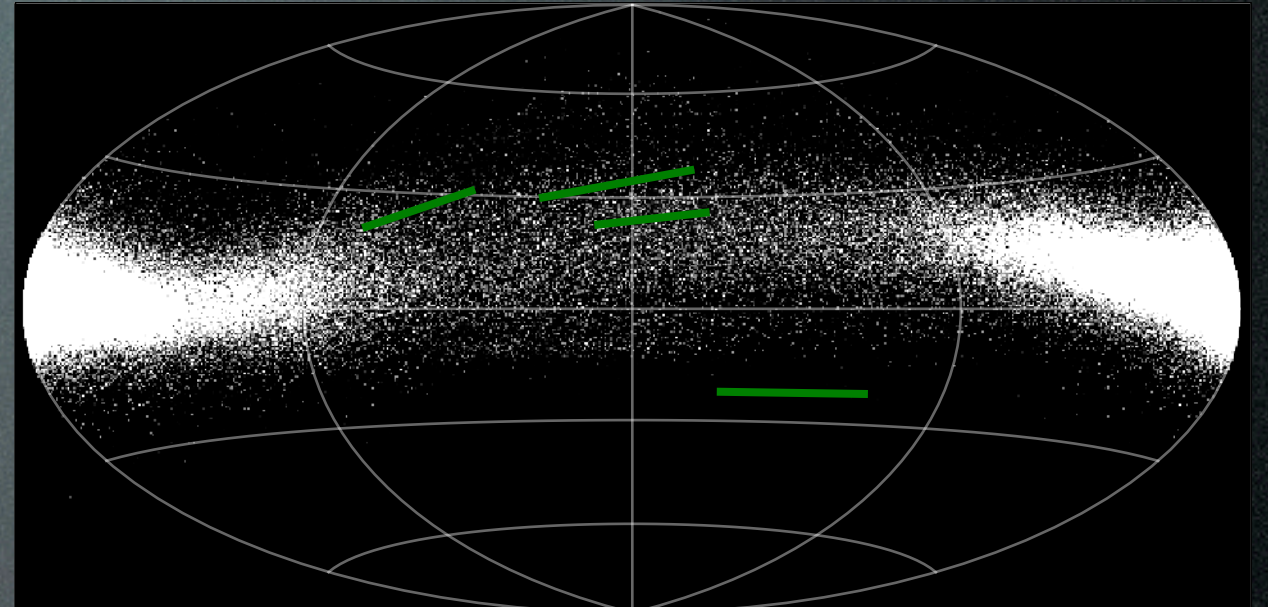
No distant material observed - ✗

Disrupted Disk Model



Observed

7-11 kpc slice



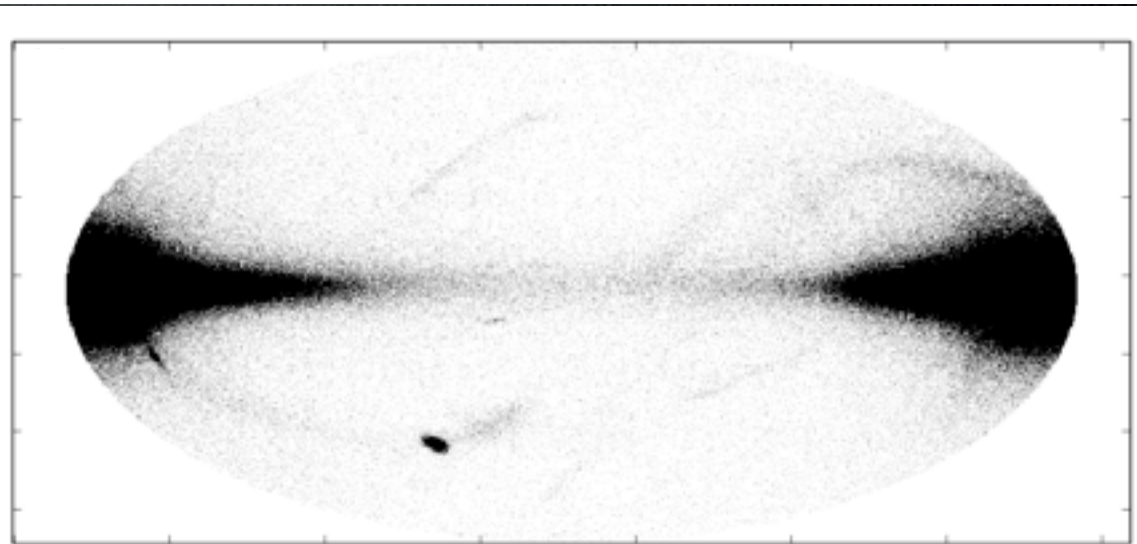
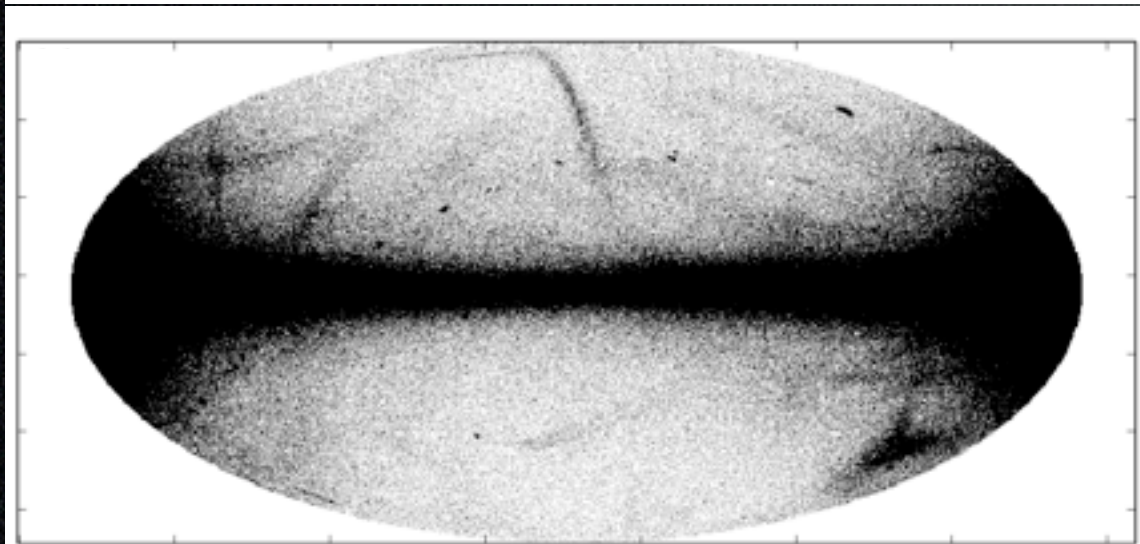
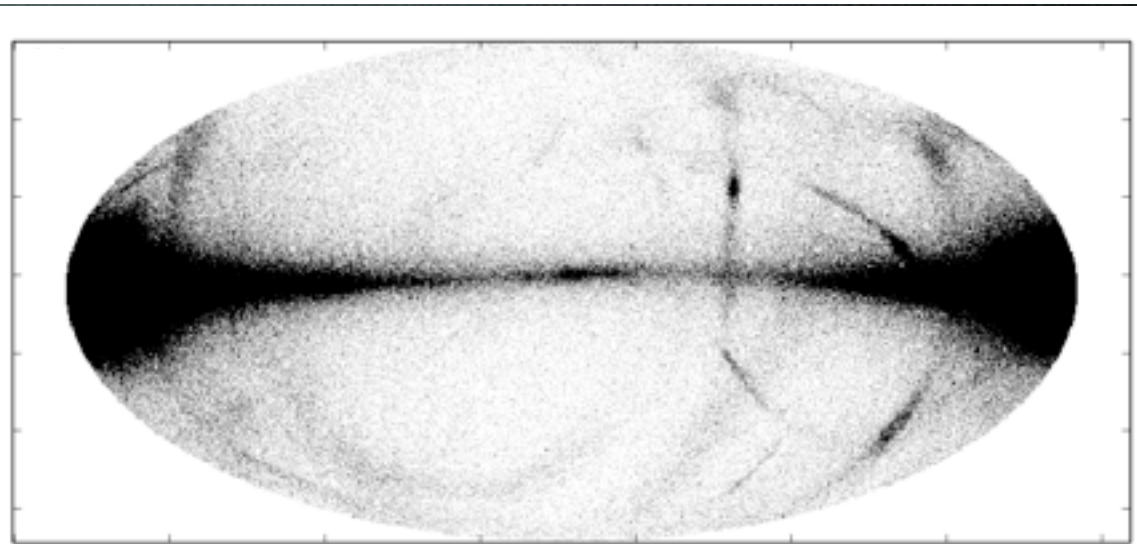
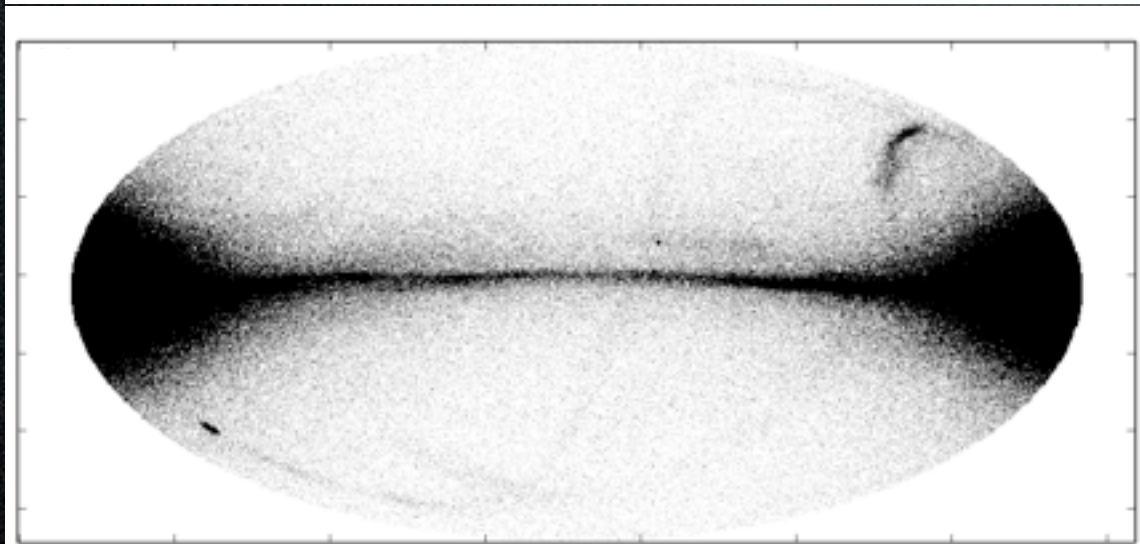
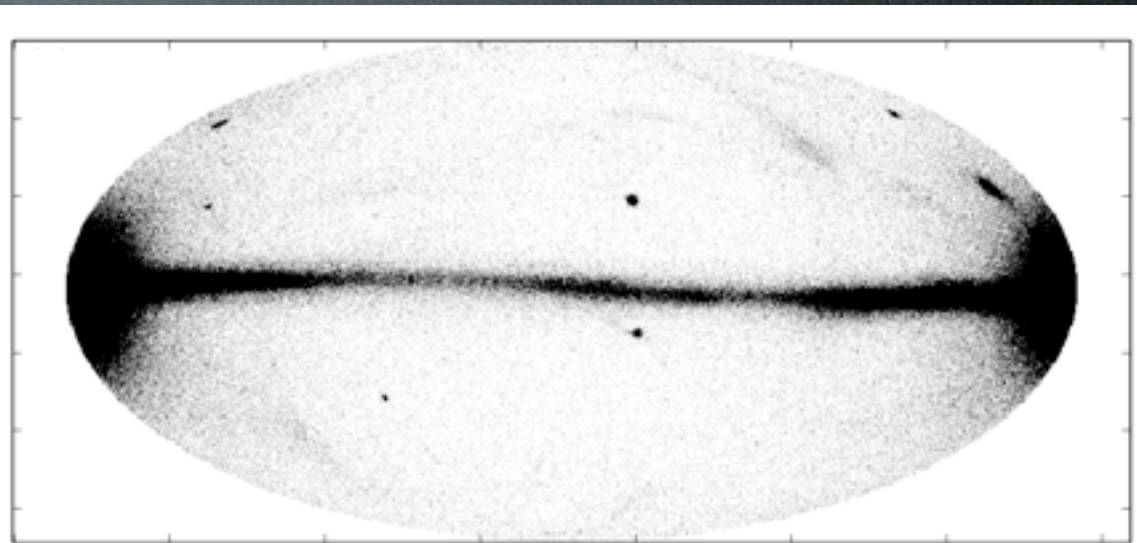
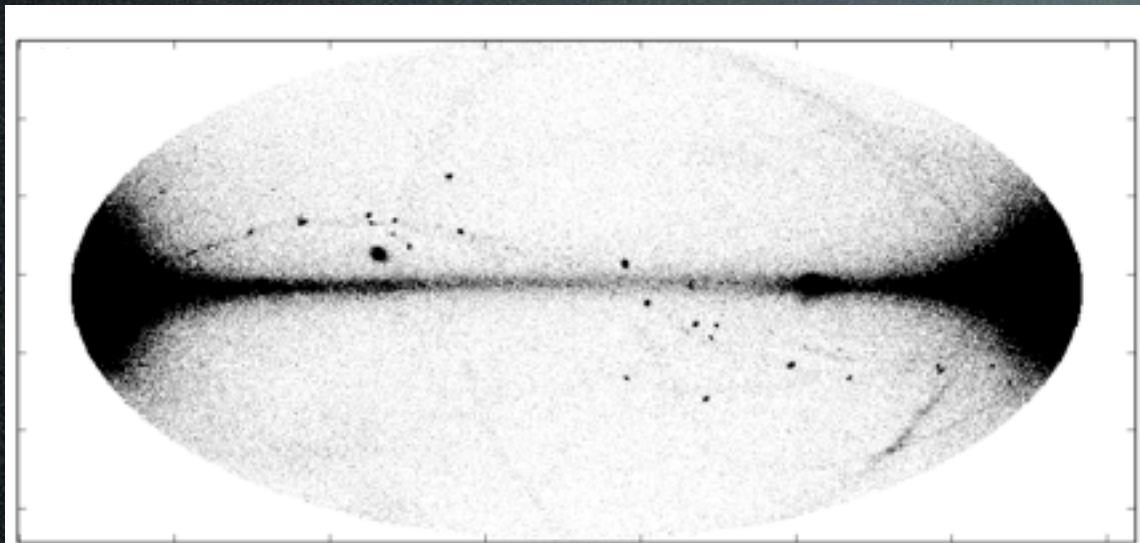
Model

Right height above the plane - ✓

Entire disk is severely warped - ✗

Kazantzidis et al. (2008)

- Current models give a first attempt at decoding Monoceros, but no answers yet.
- We are observations-rich and models-poor!
- Pushing towards cosmological simulations rather than controlled experiments.



Simulations from Martig et al.

