



ACES and Dust Ridge Cloud C JWST

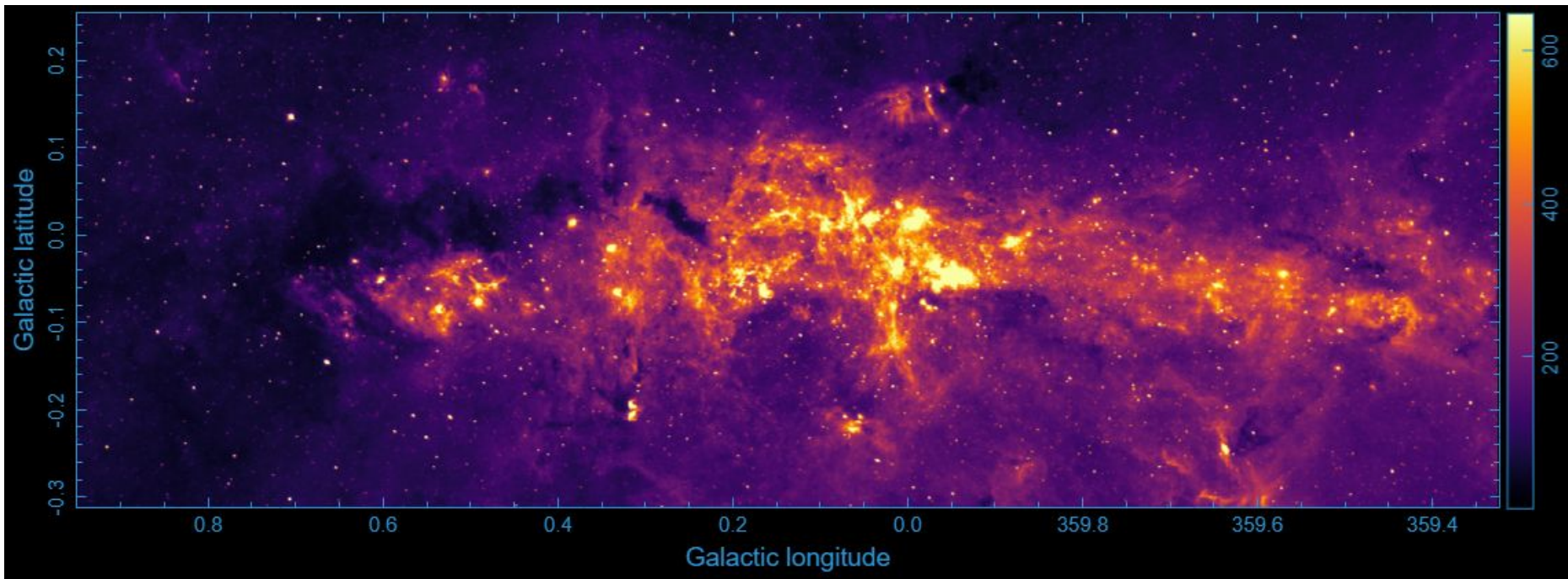
Savannah Gramze



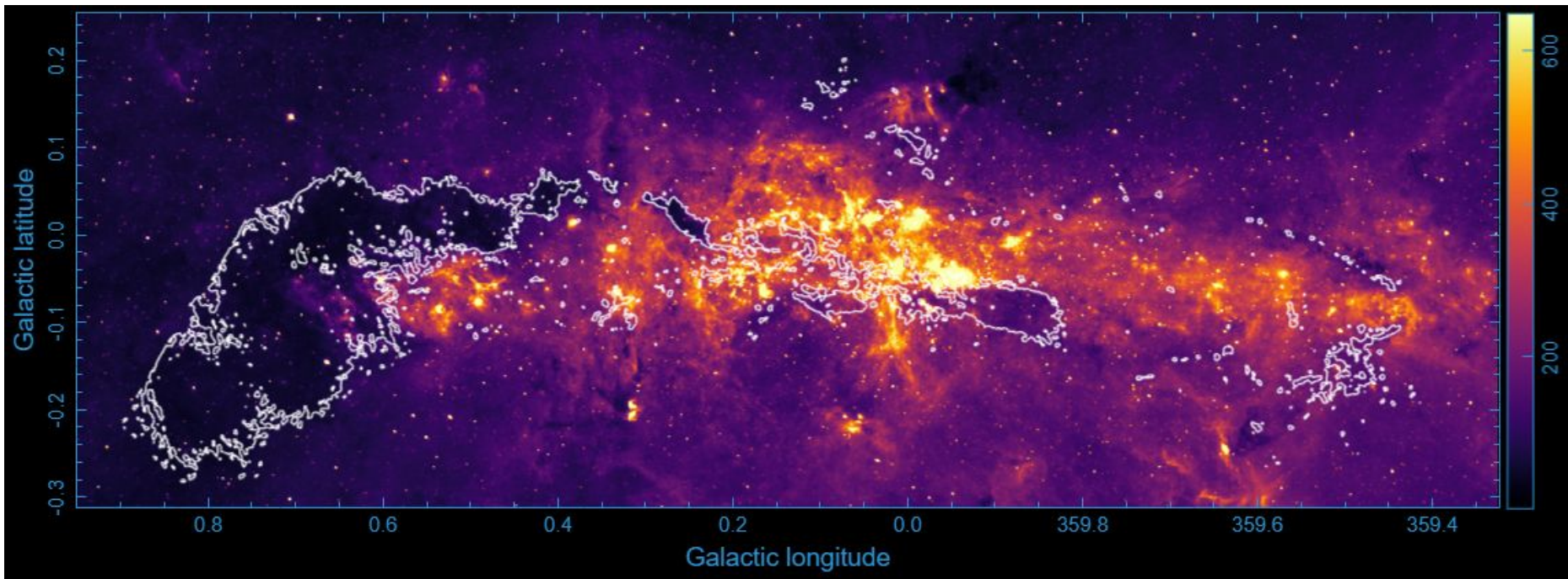
Introduction

- Savannah Gramze
- PhD Student
- University of Florida
- Advisor: Adam Ginsburg
- WP1 and WP2
- Research Interests:
 - Star Formation in the Galactic Center Dust Ridge
 - Galactic Center Structure and Dynamics
- Hobbies: Playing Pokemon, Sculpture, Digital Art, Writing

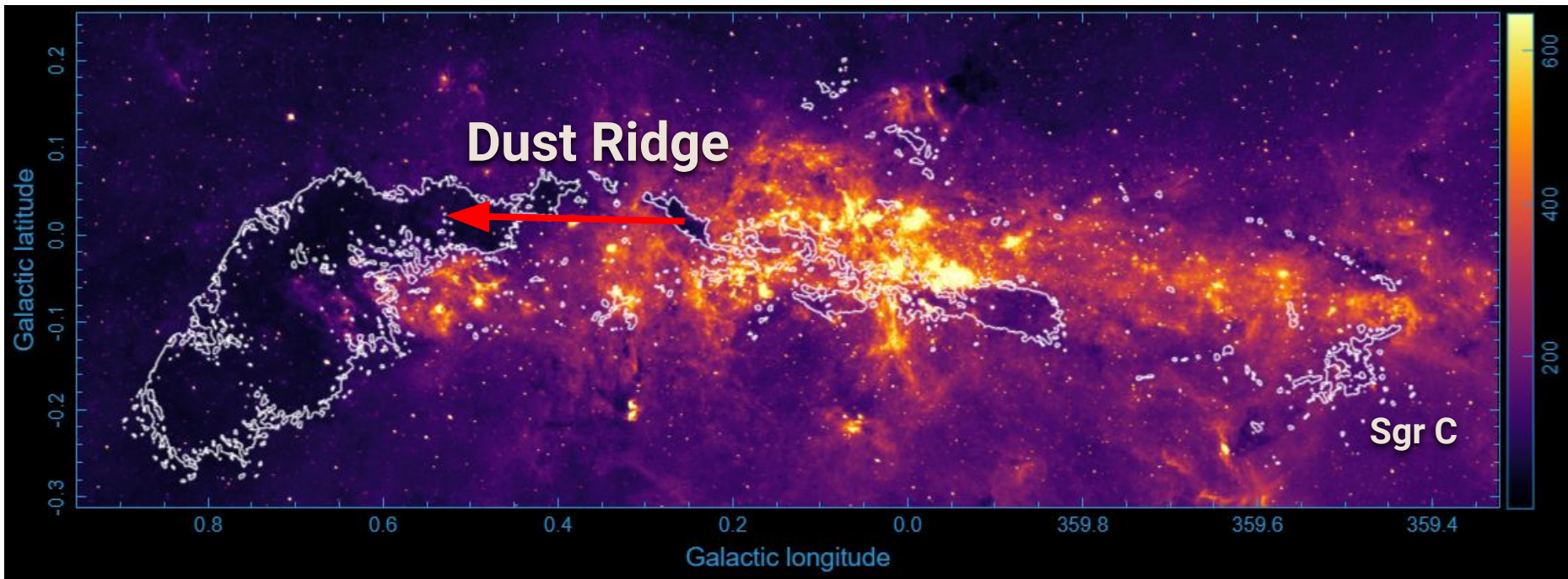




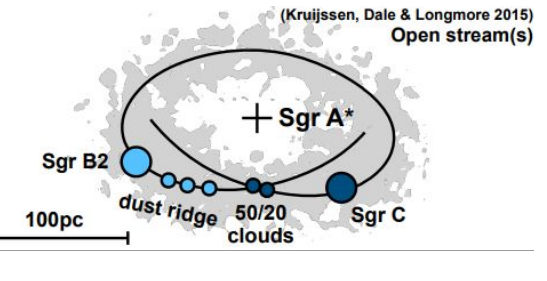
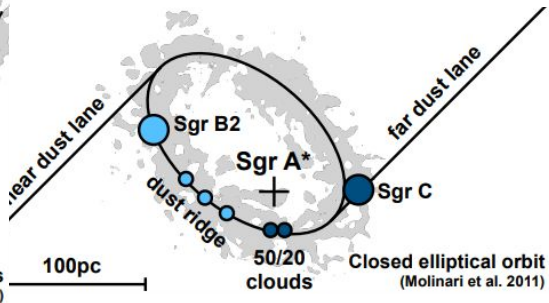
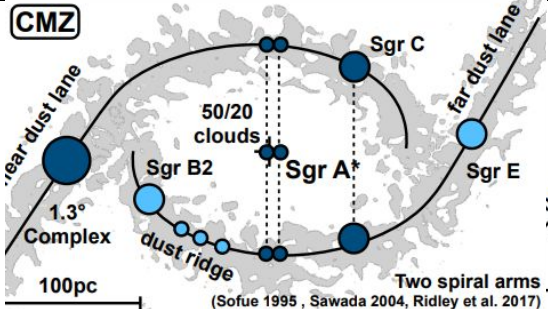
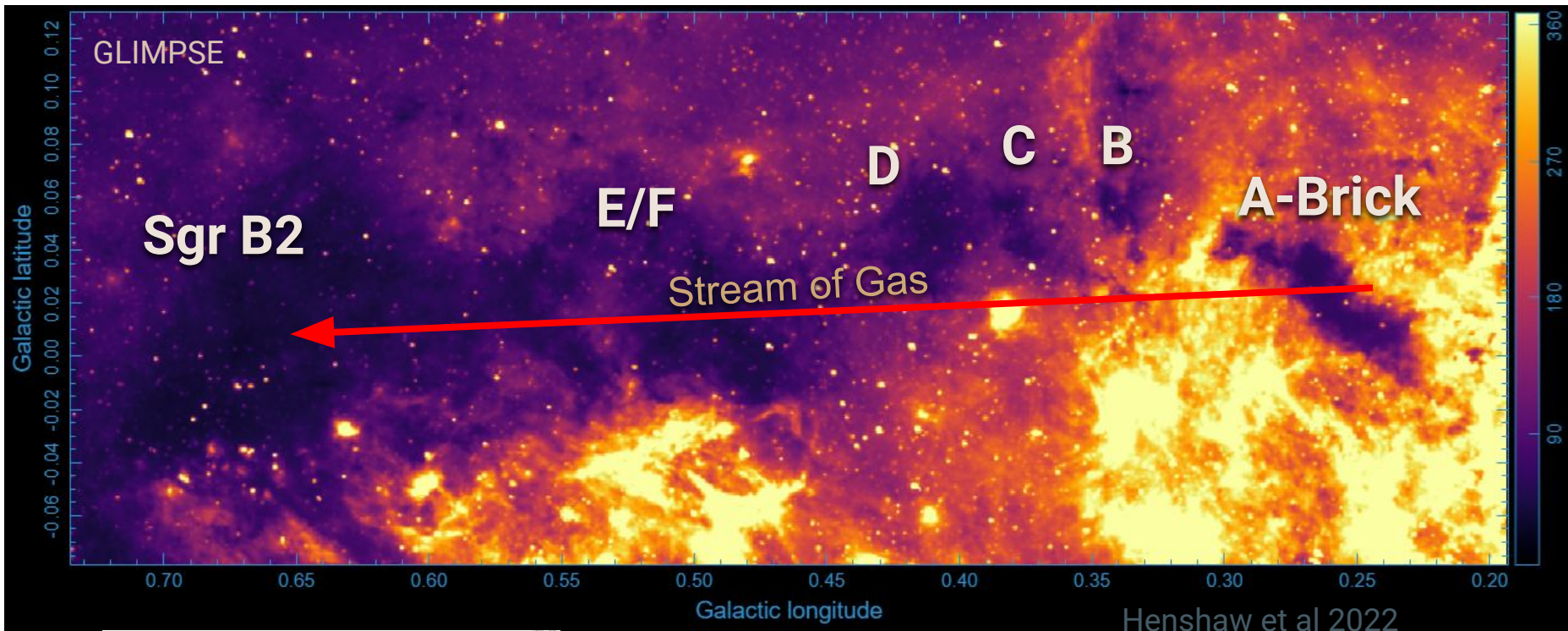
Spitzer 8.0 μm

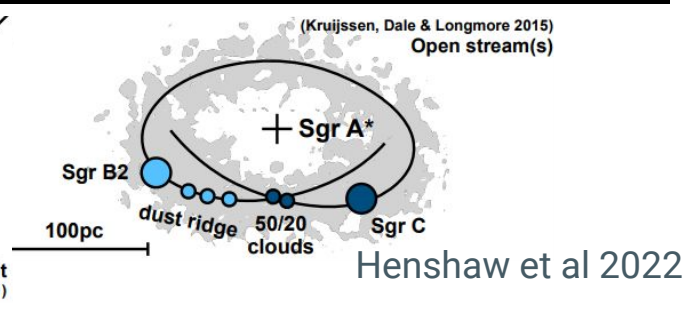
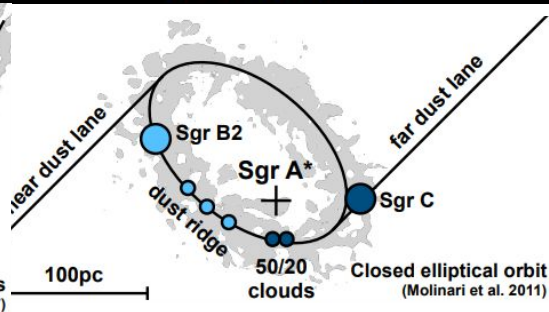
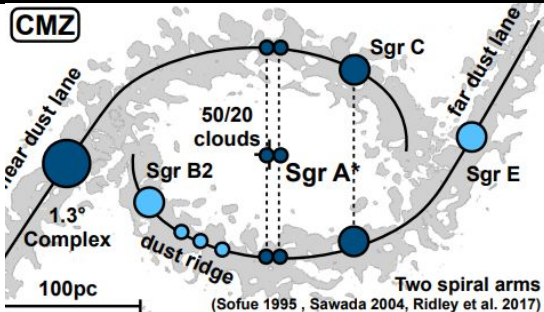
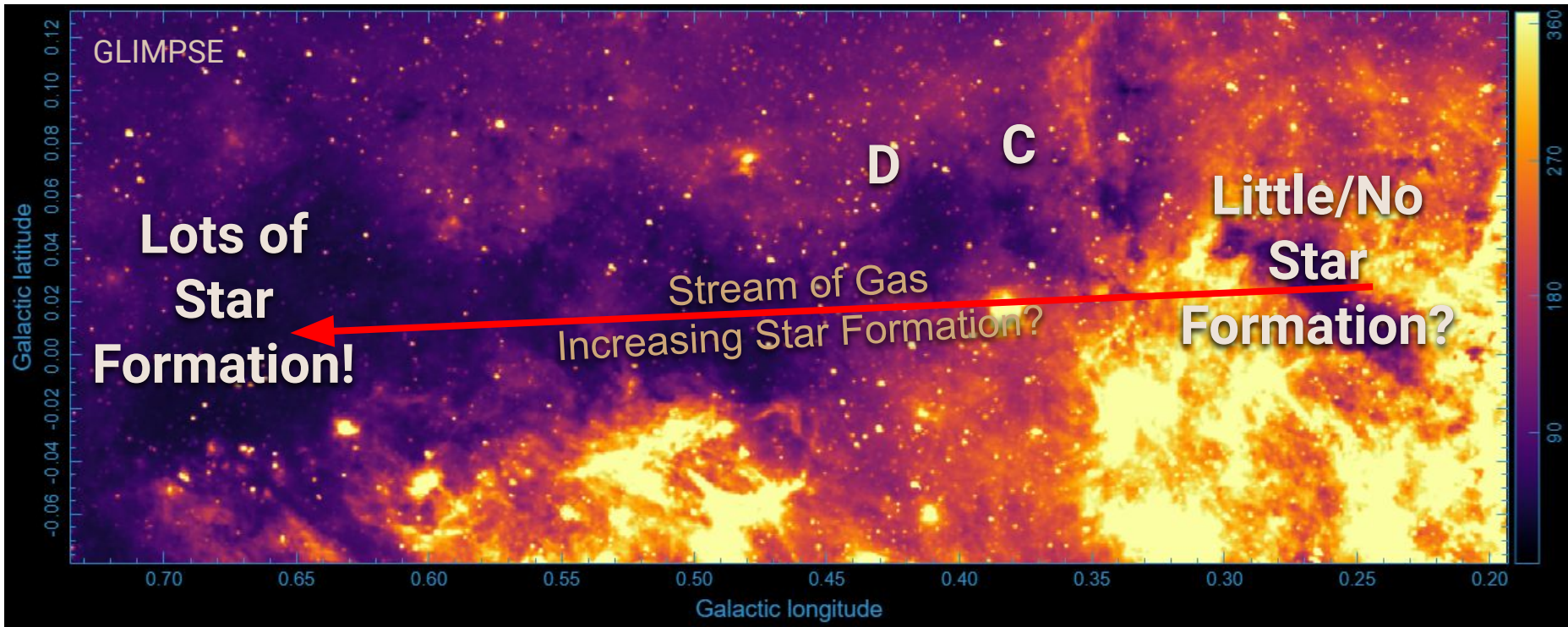


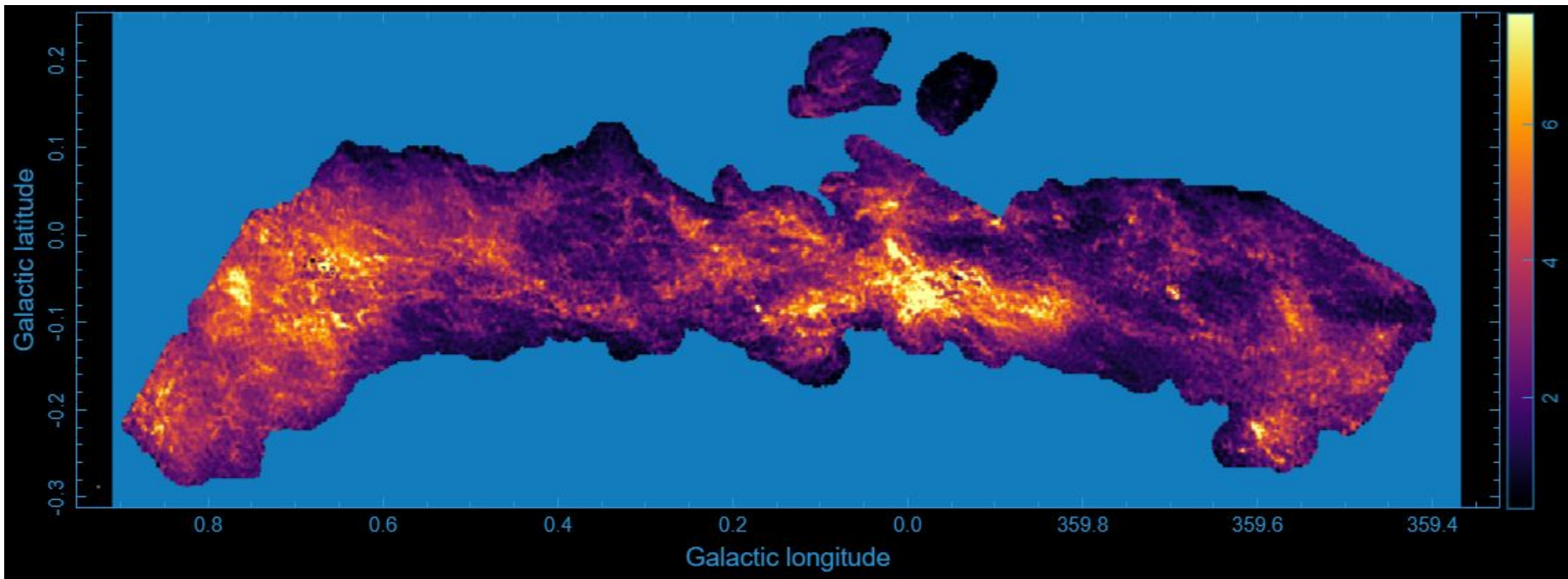
HNC 4-3



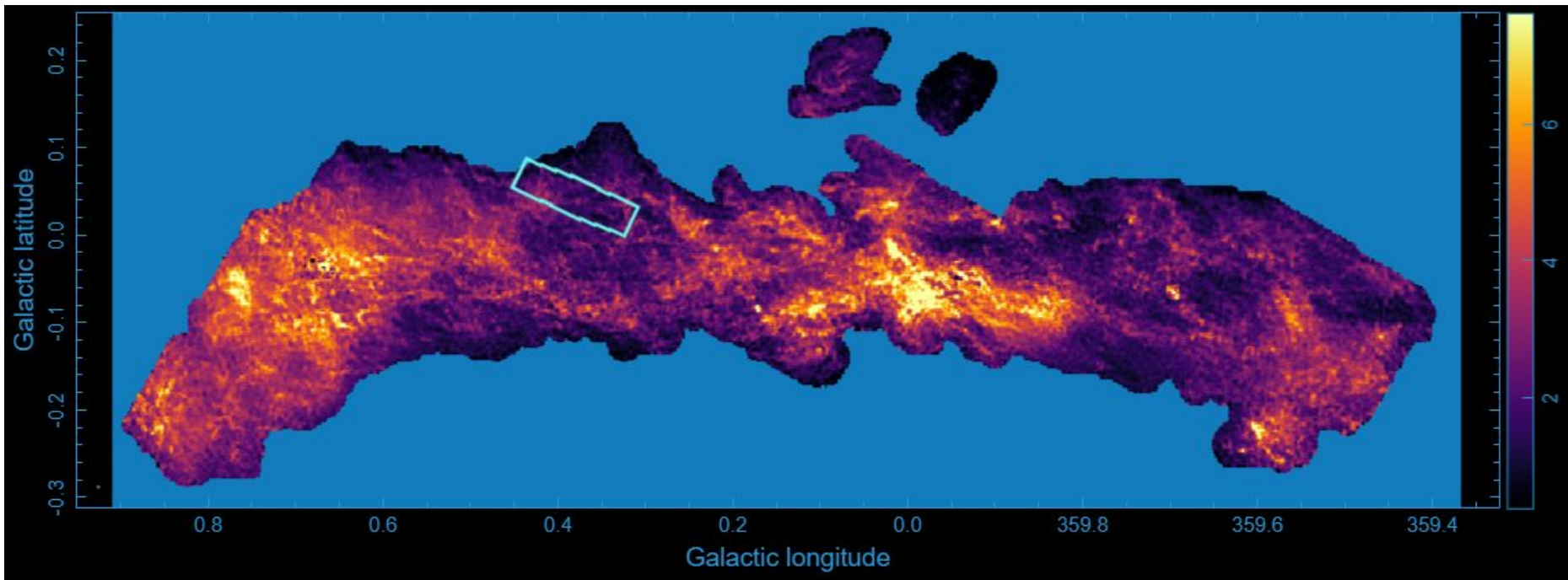
Dust Ridge



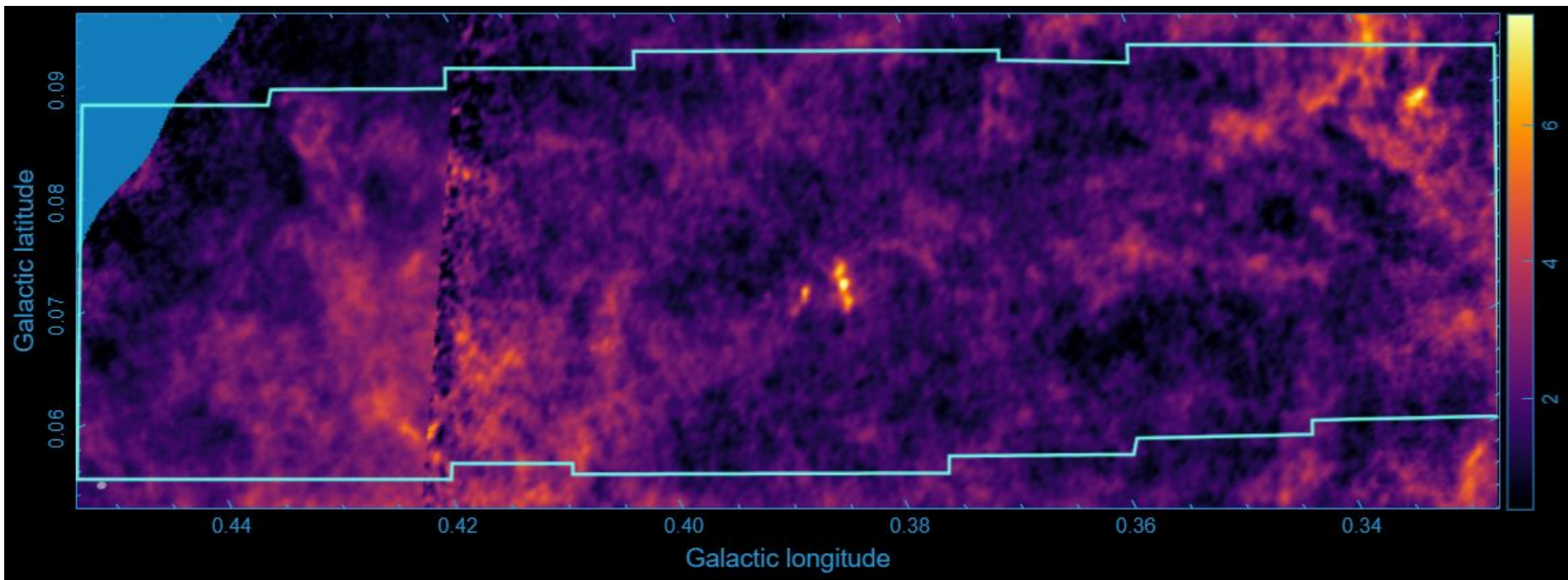




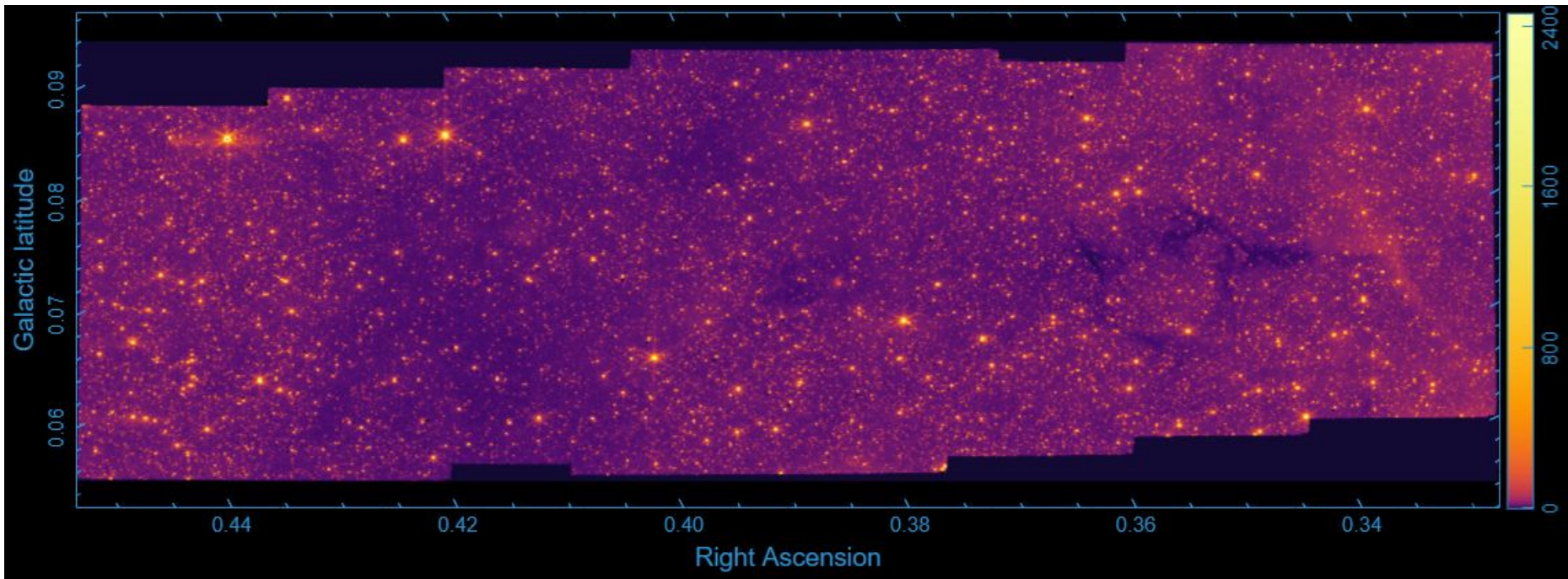
CS 2-1 Integrated Intensity



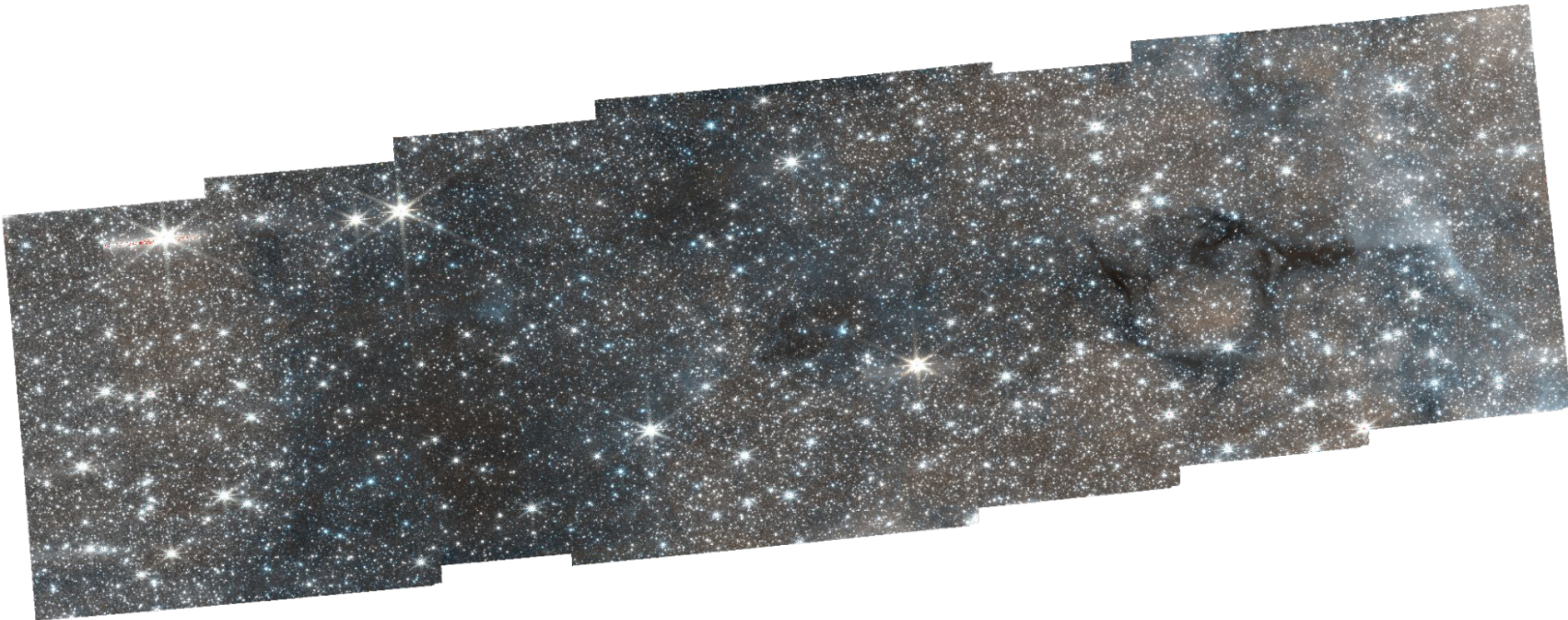
CS 2-1 Integrated Intensity



CS 2-1



JWST Nircam F405N



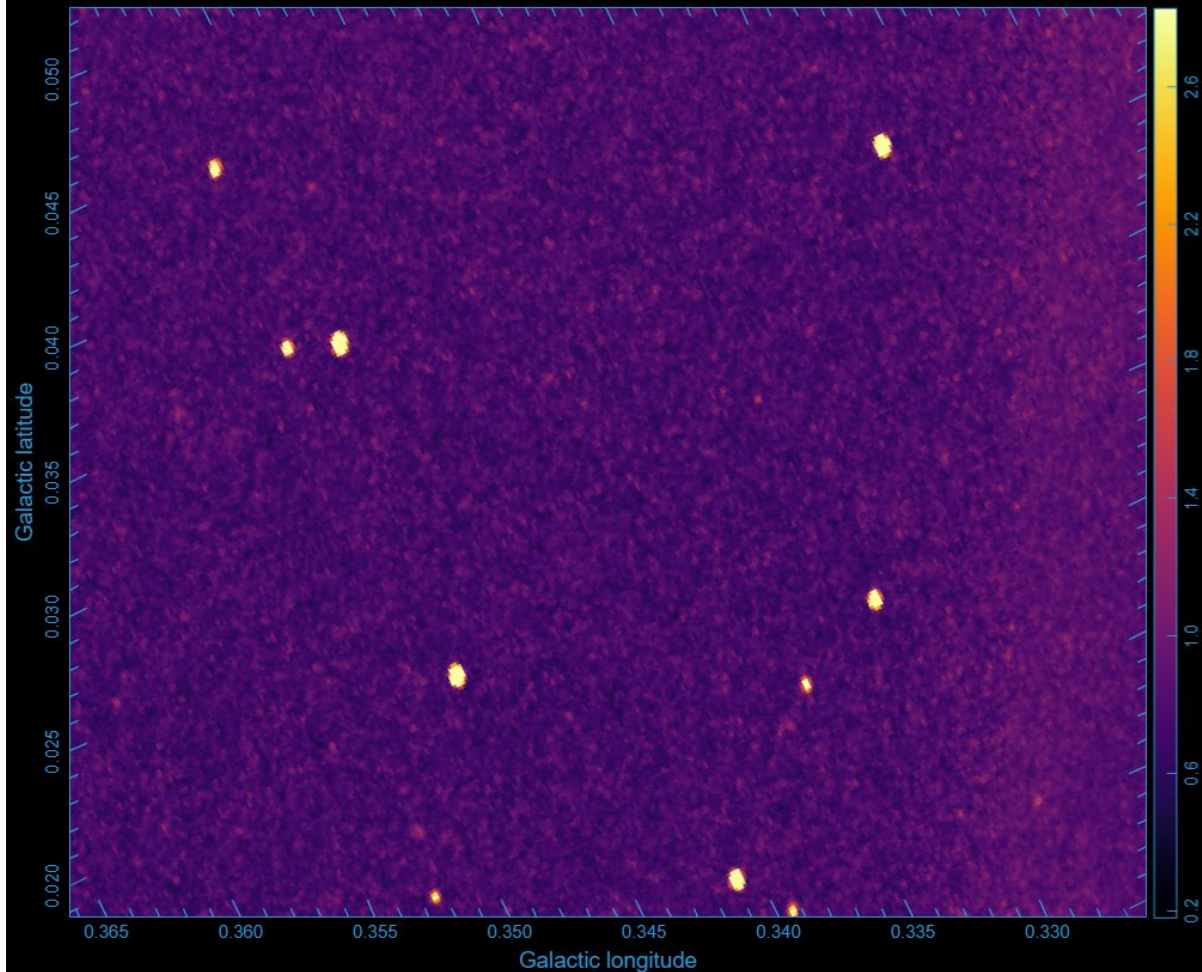


Use Cases for ACES Data Products



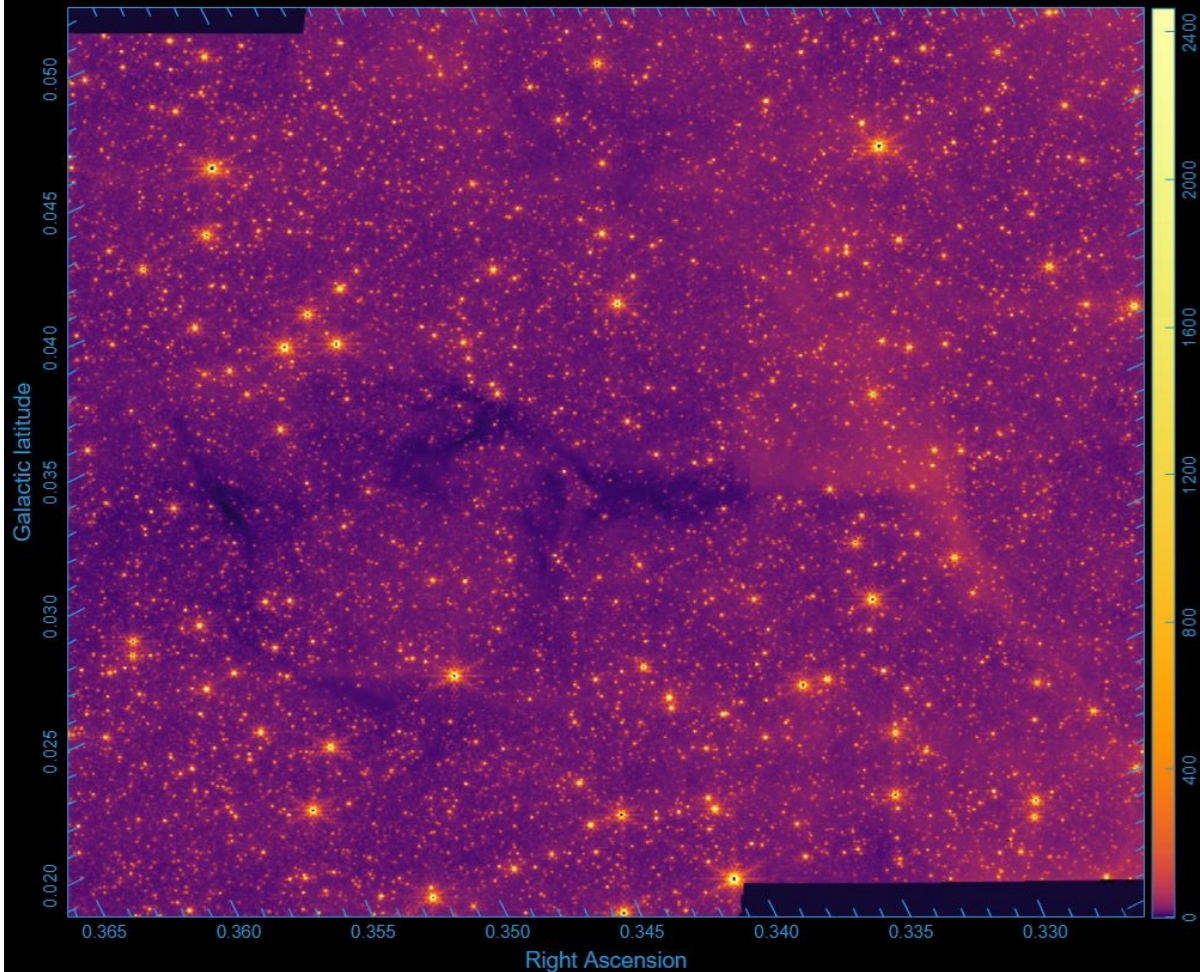
SiO 2-1 v=1 Maser Catalog

- SiO masers are generally found in the atmospheres of AGB stars
- AGB stars are very bright in IR data!
- ACES observes these masers across the whole Galactic Center
- A catalog of these masers could be used for astrometric correction of JWST and other IR observations of the GC

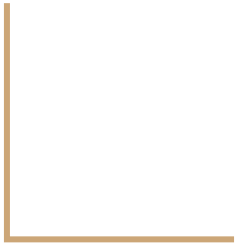


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Outflow Tracers



Declination

$-28^{\circ}35'10''$

20''

30''

40''

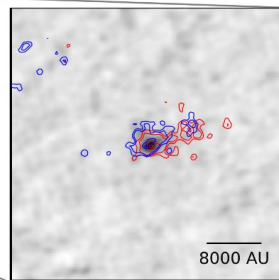
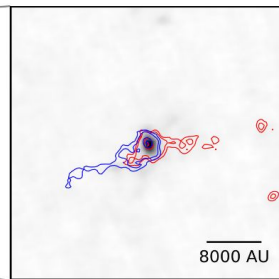
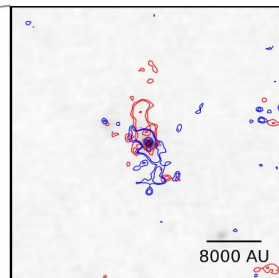
$17^{\text{h}}46^{\text{m}}23^{\text{s}}$

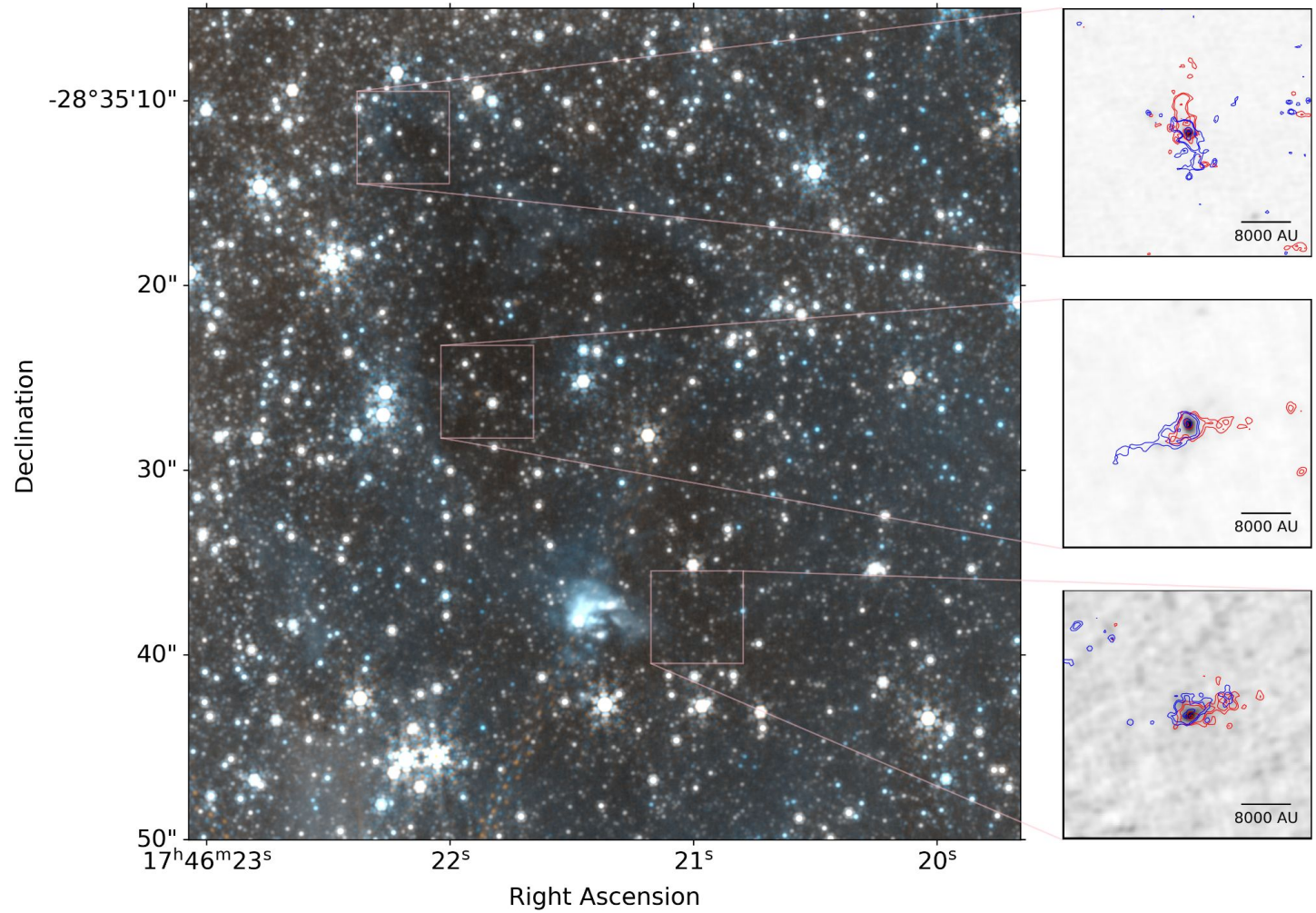
22^{s}

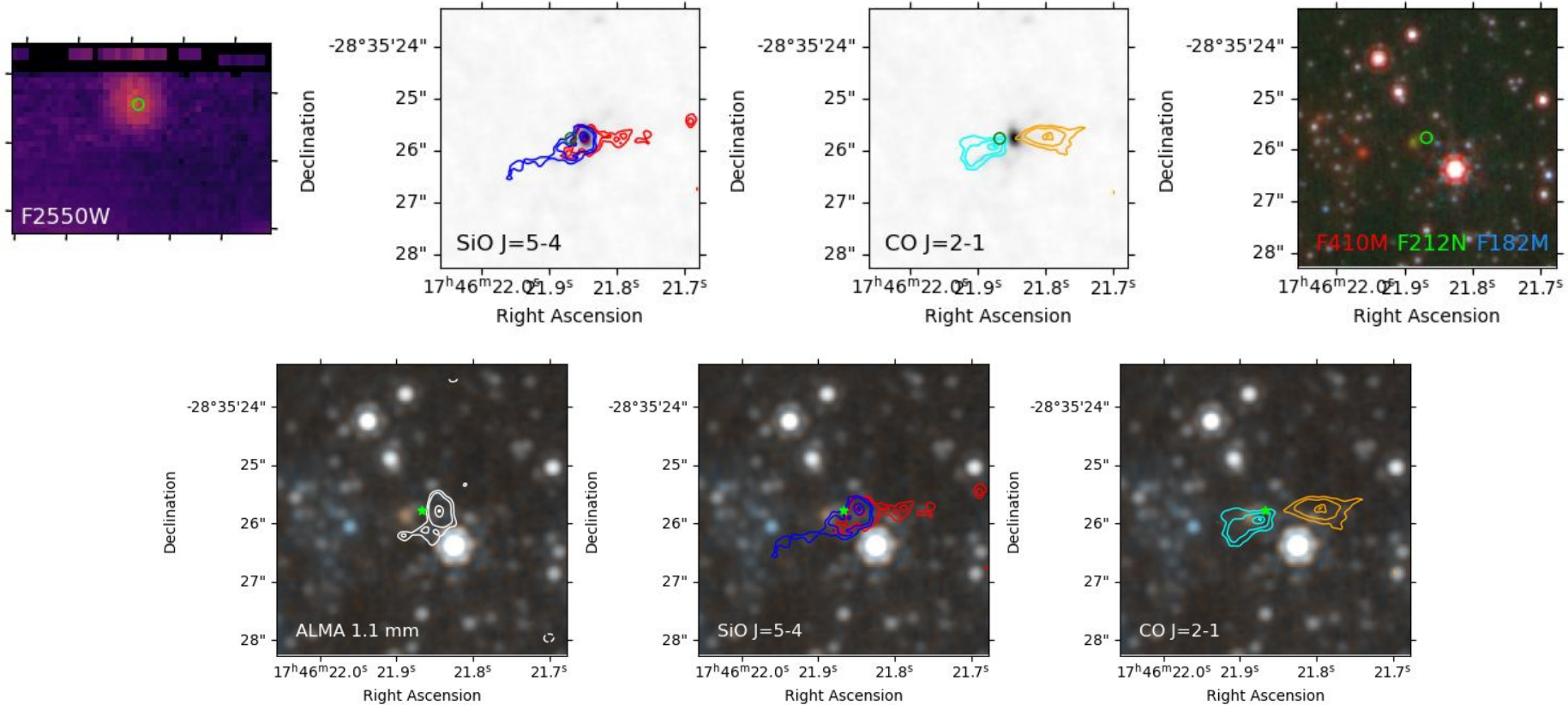
21^{s}

20^{s}

Right Ascension







Outflow Signature Association Between JWST & ALMA

Declination

-28°35'24"

25"

26"

27"

28"

F410M F212N F182M

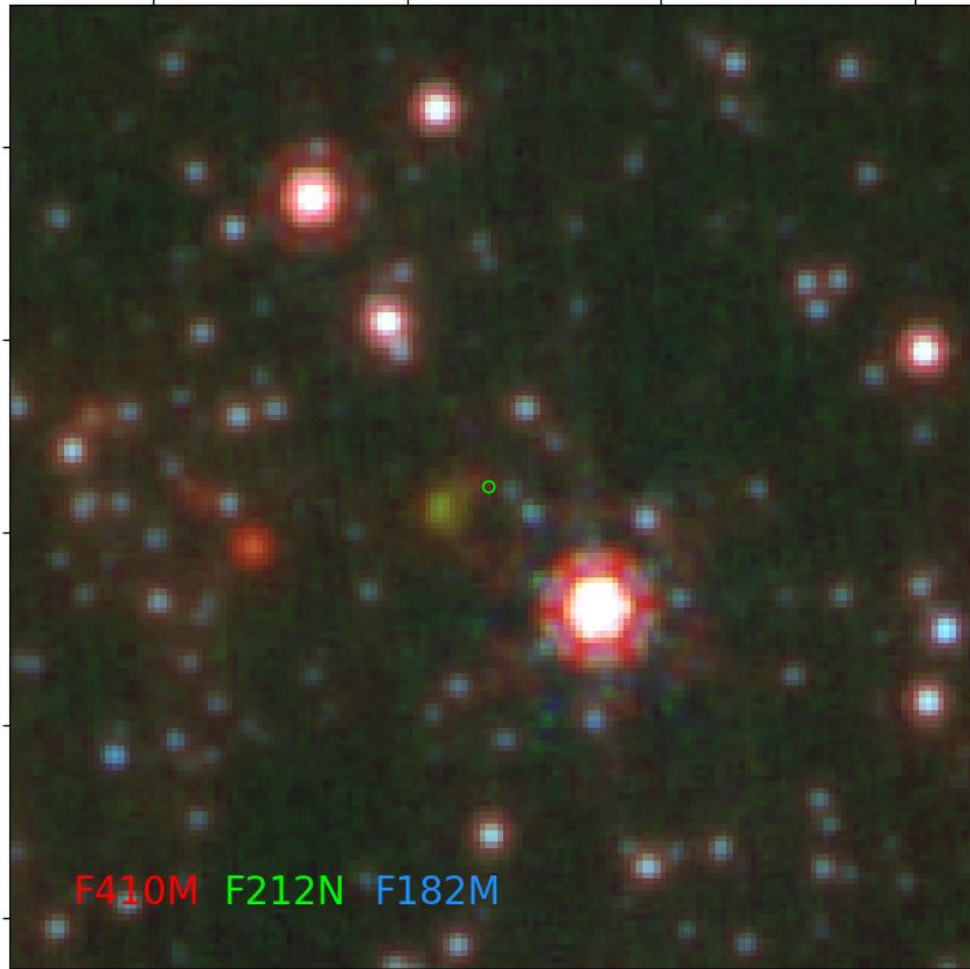
17^h46^m22.0^s

21.9^s

21.8^s

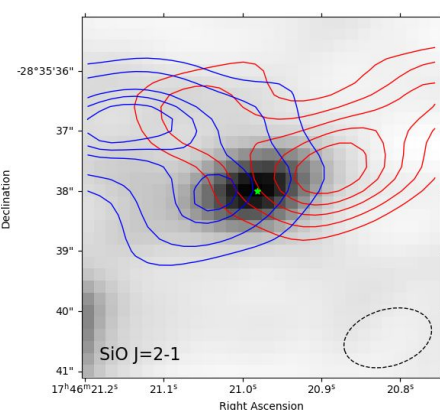
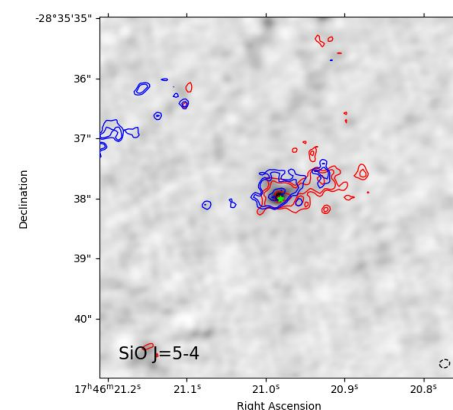
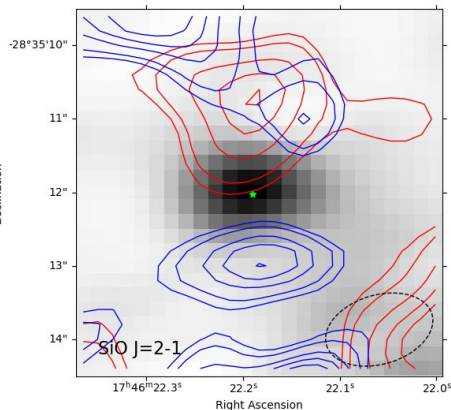
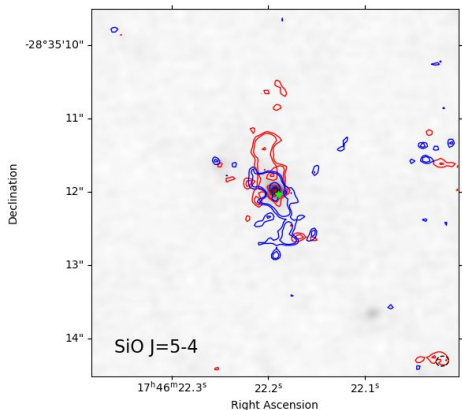
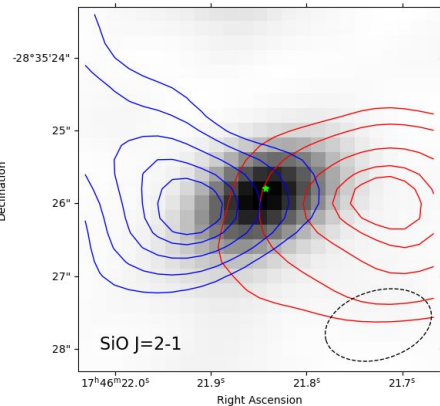
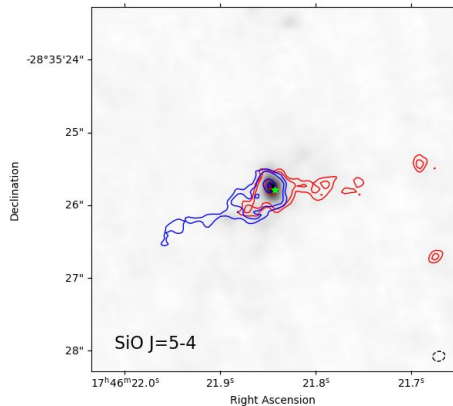
21.7^s

Right Ascension



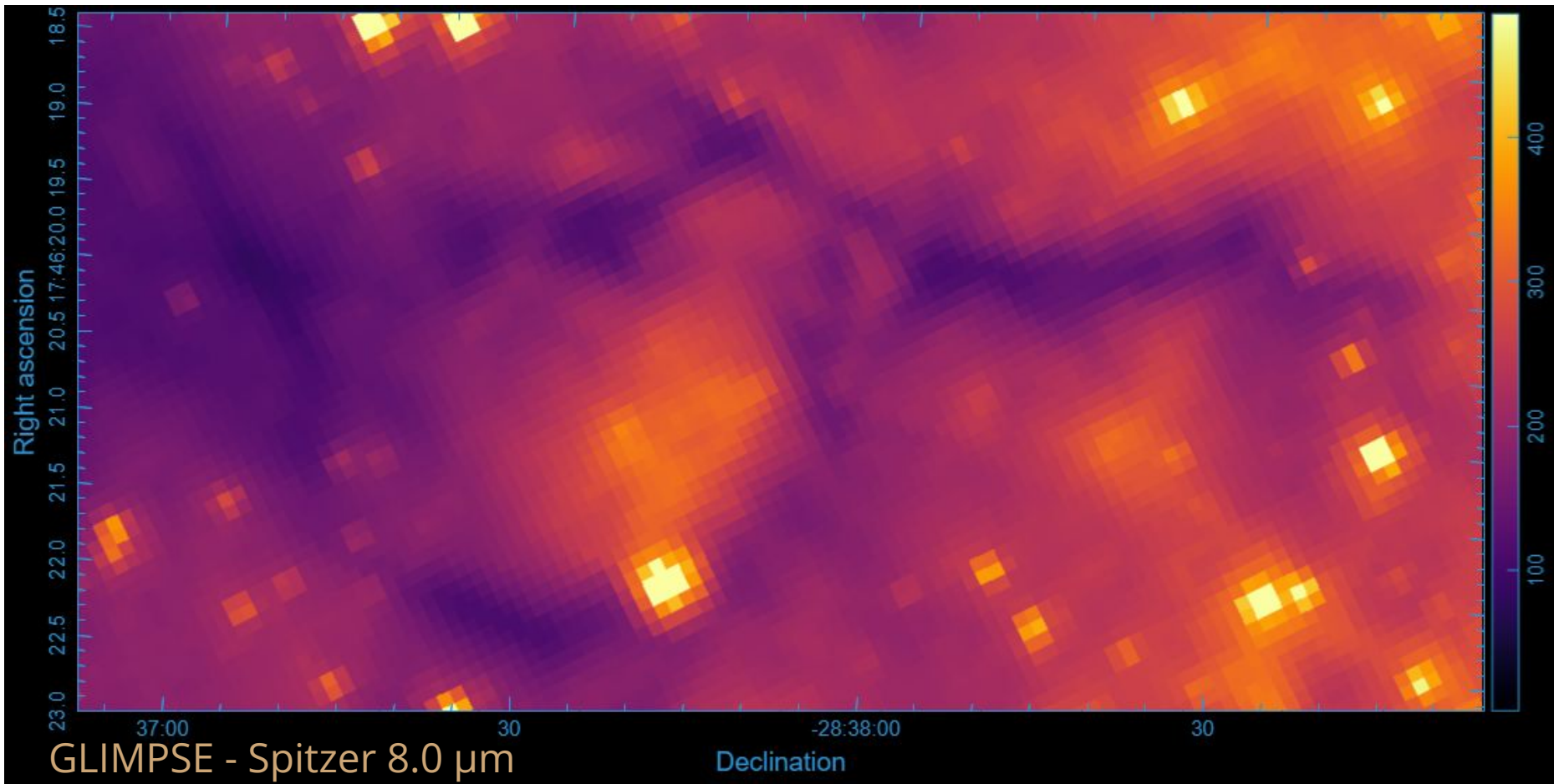
Outflow Tracers

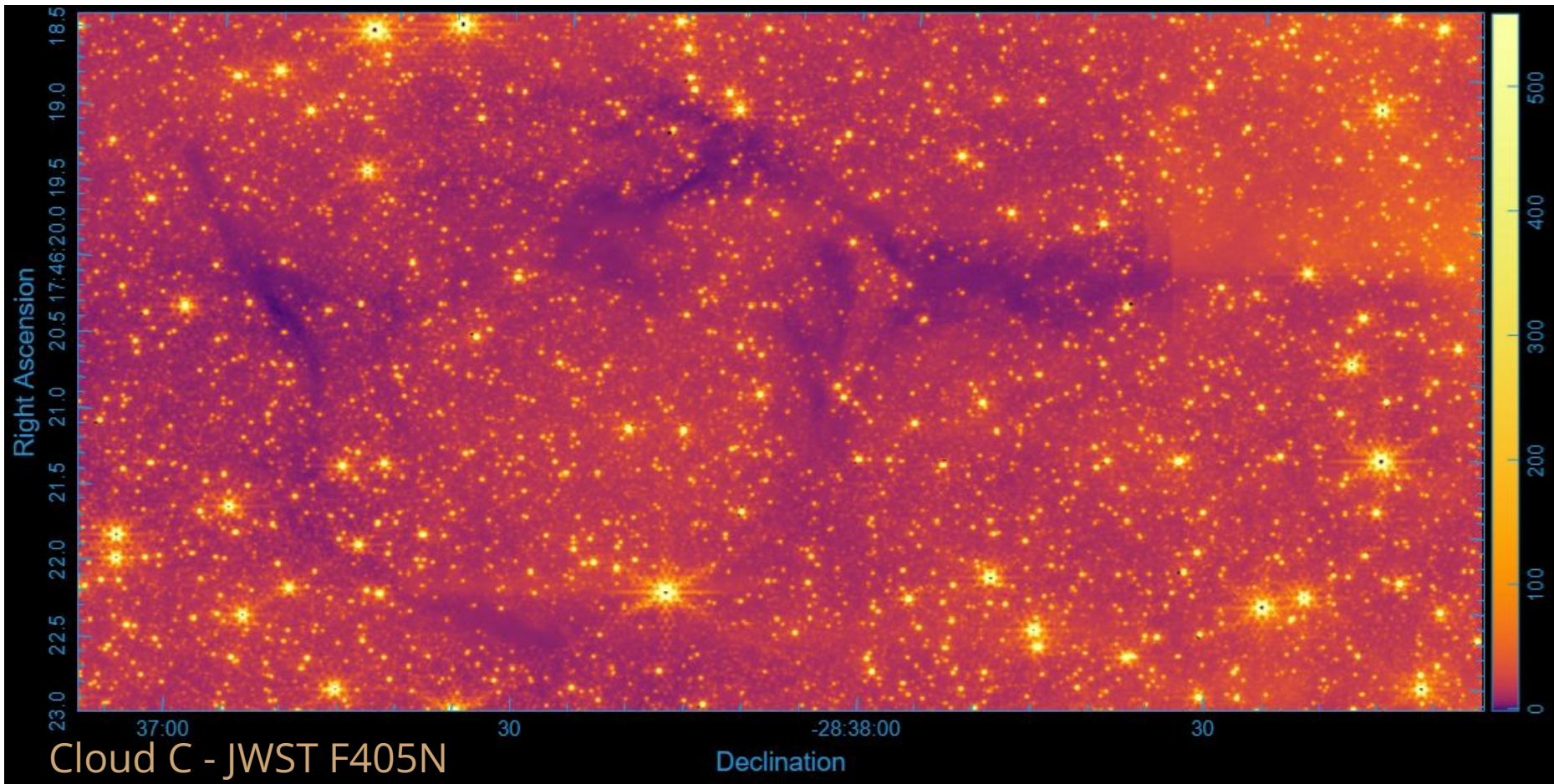
- ACES has several lines which act as outflow tracers
- When comparing ACES data with our ALMA data, we see that there is an association between outflow features.

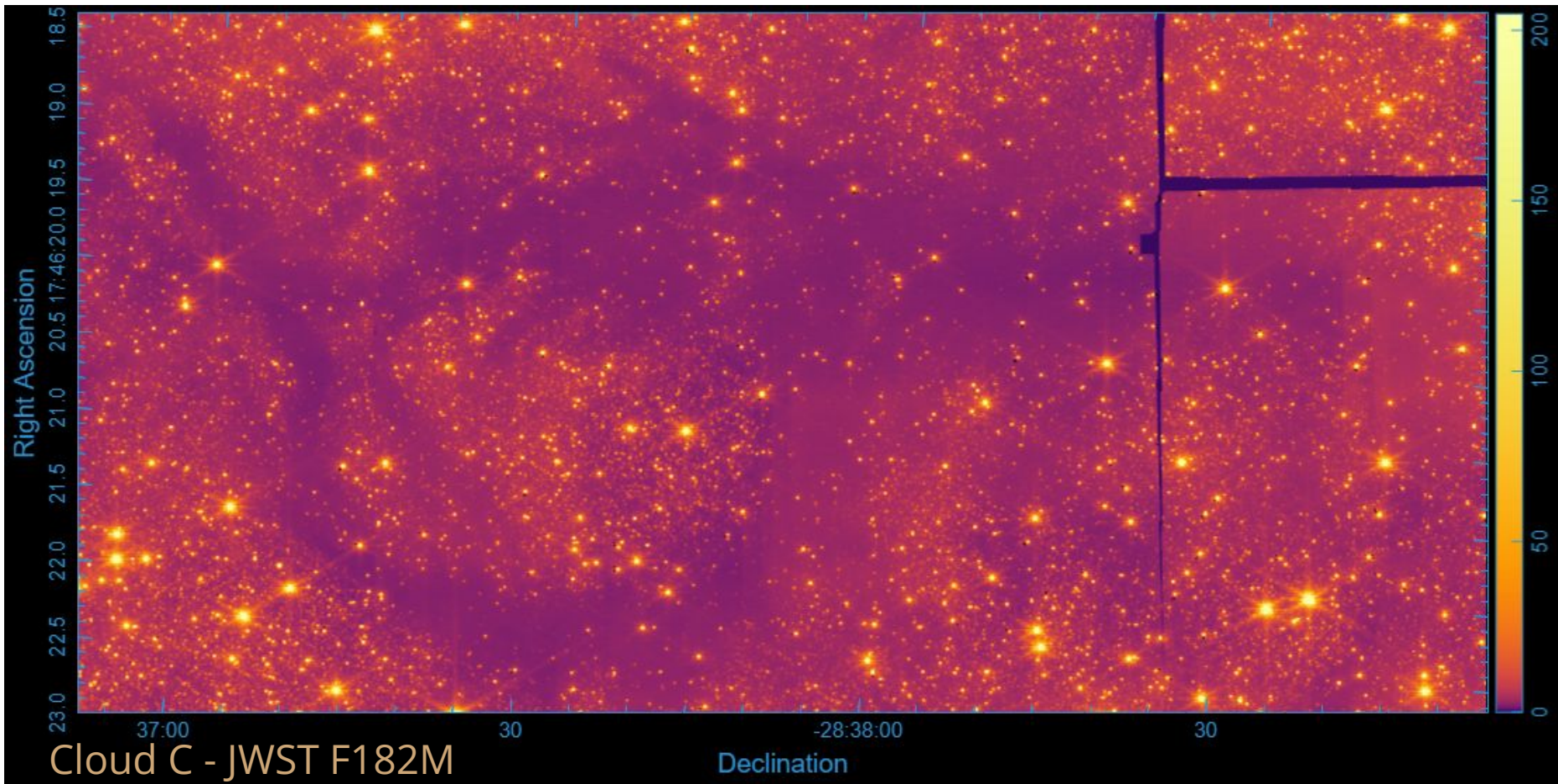




Spotlight: Star Forming Filament

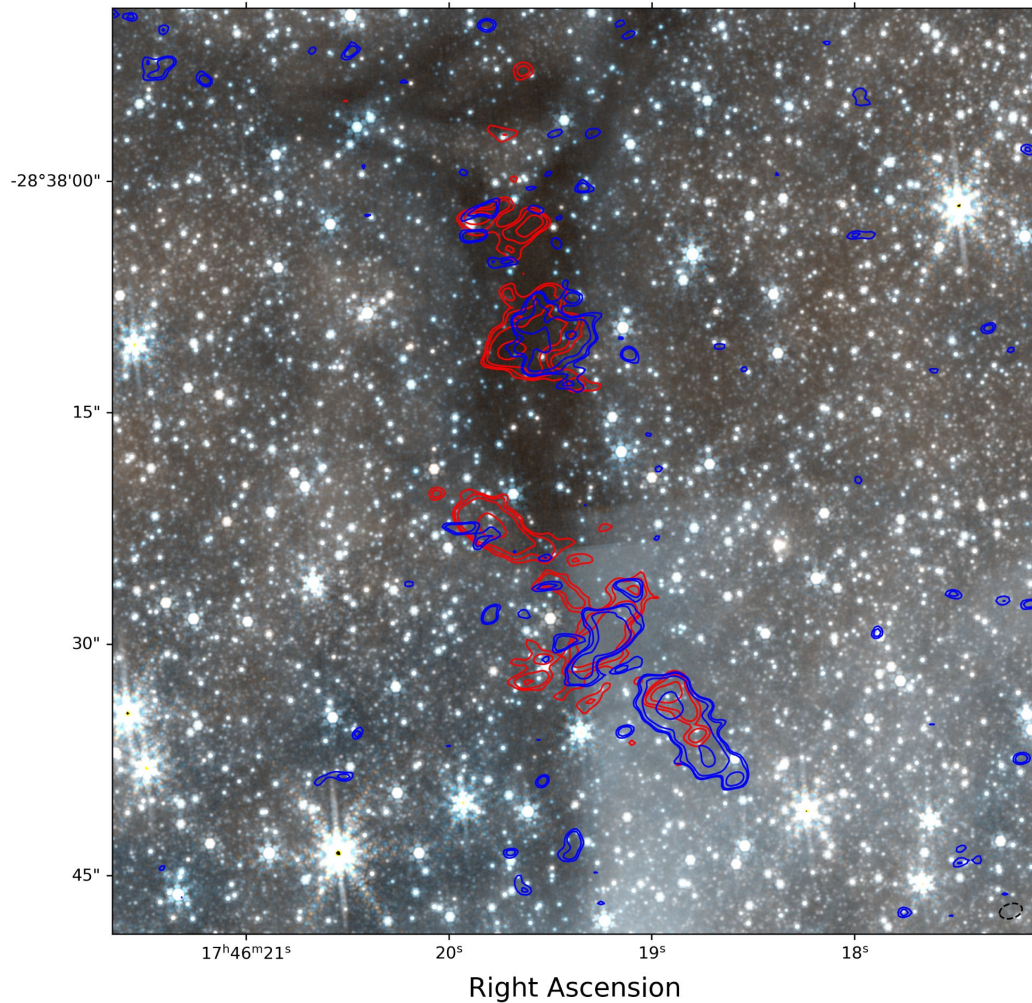




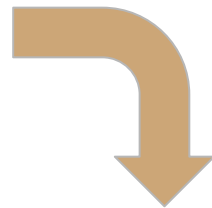


-60 to -55
-55 to -50

Declination

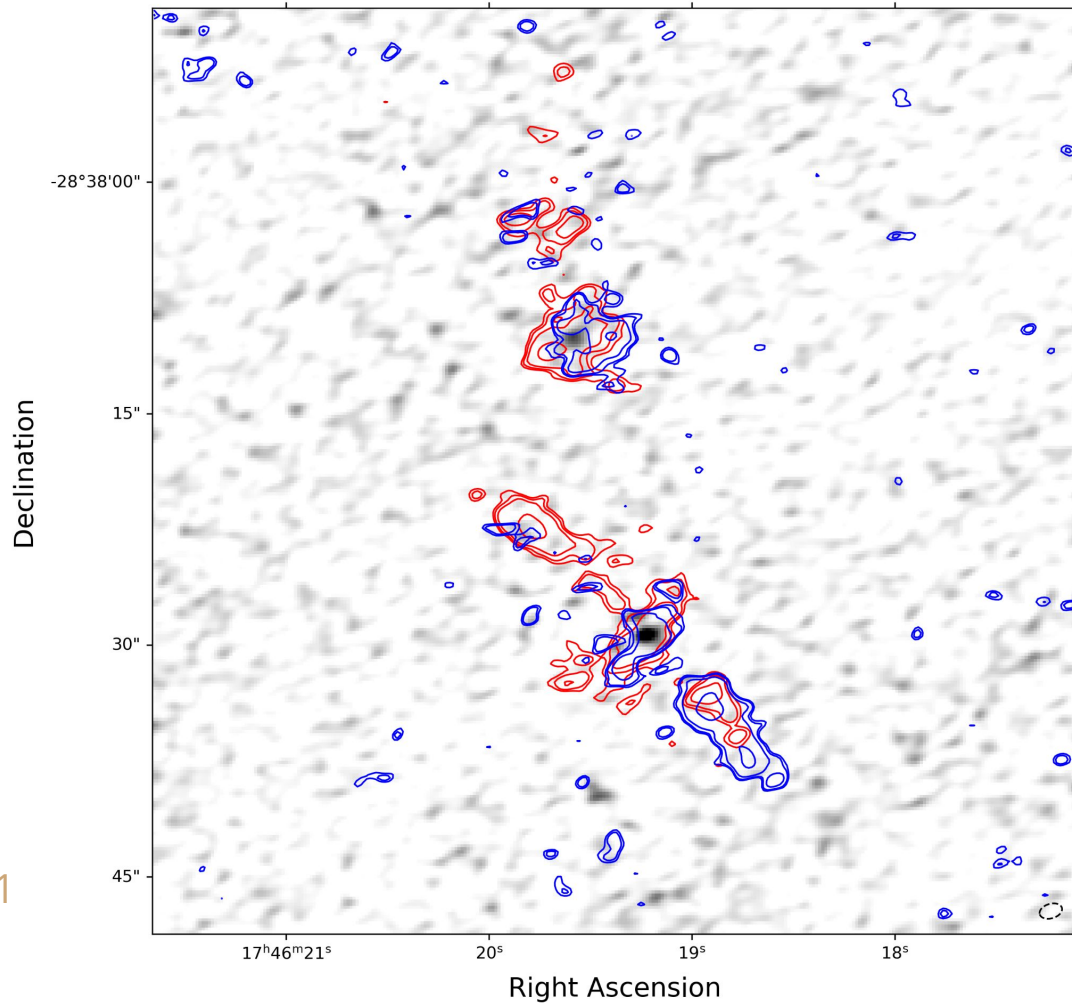


Rotate POV



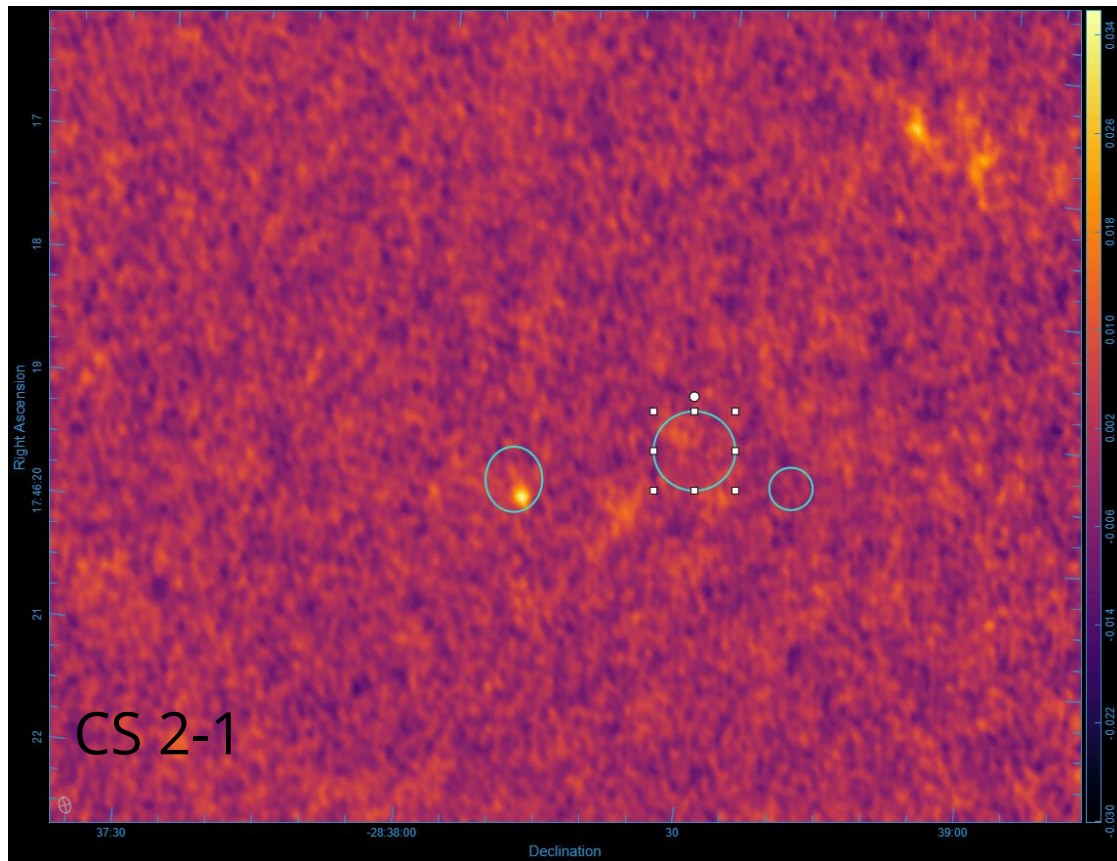
ALMA Band 3 & CS 2-1

ALMA Band 3 & CS 2-1

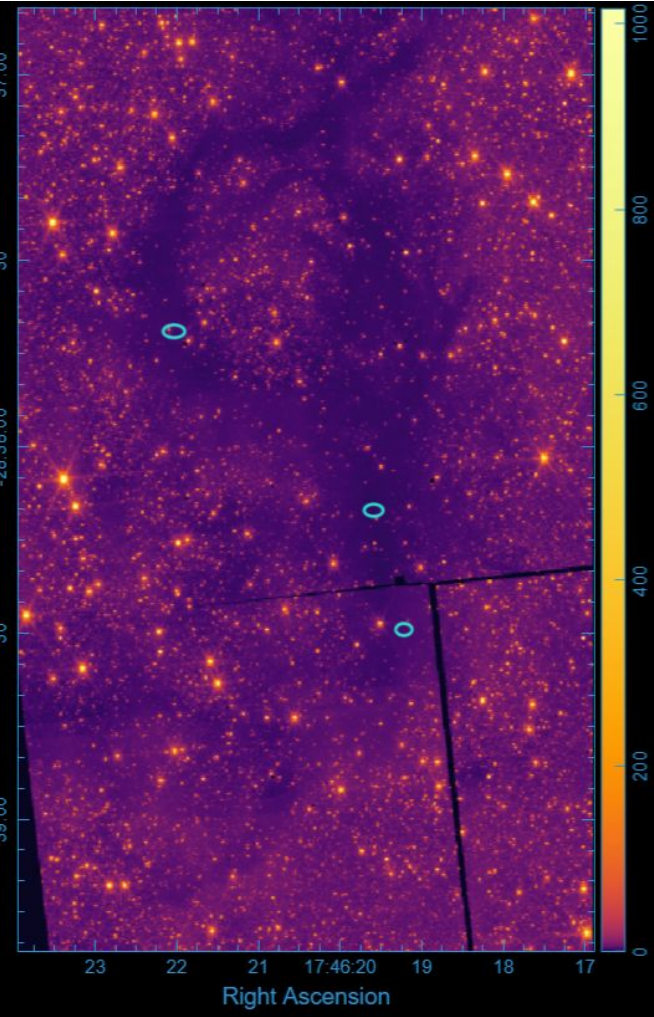
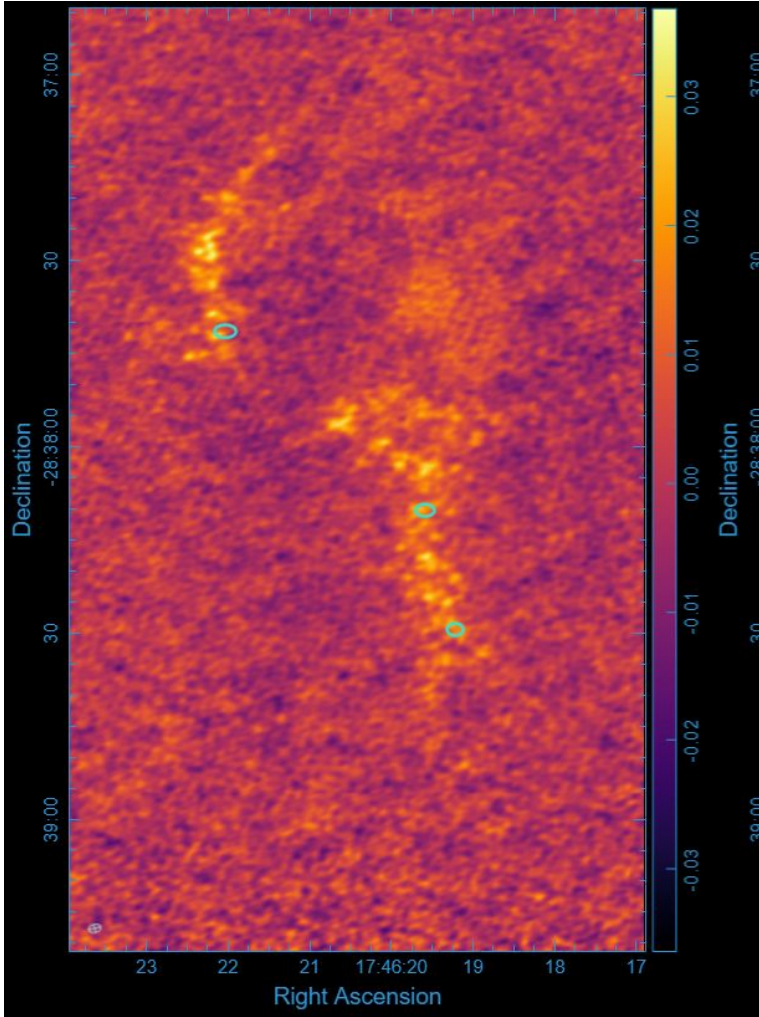


Lines Detected

- Some are very low S/N detections
 - CS 2-1
 - HNC 4-3
 - HCO+ 1-0
 - SiO 2-1
 - H13CO+ 1-0
 - ***HN13C 1-0
 - SO 3₂-2₁
 - HC3N 11-10
 - H13CN 1-0
- No emission in JWST, but the gas is associated with a dark filament
- Line of sight velocity ~ 3kpc ring?



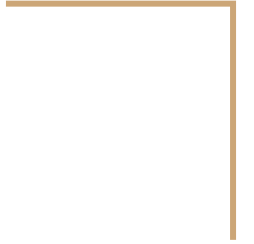
HN¹³C 1-0

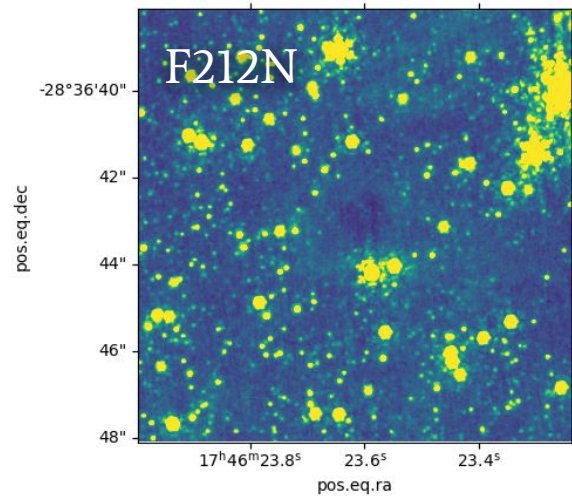
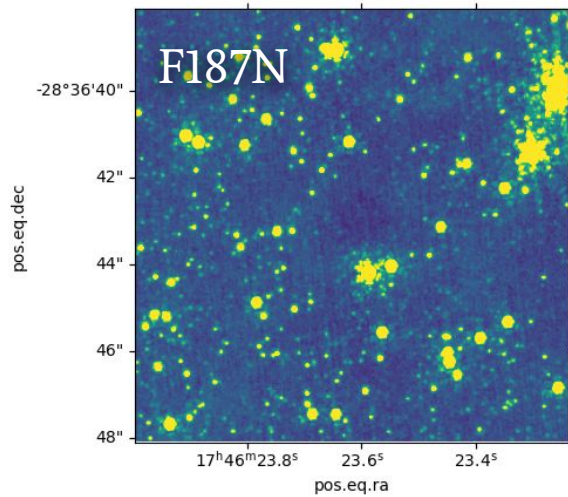
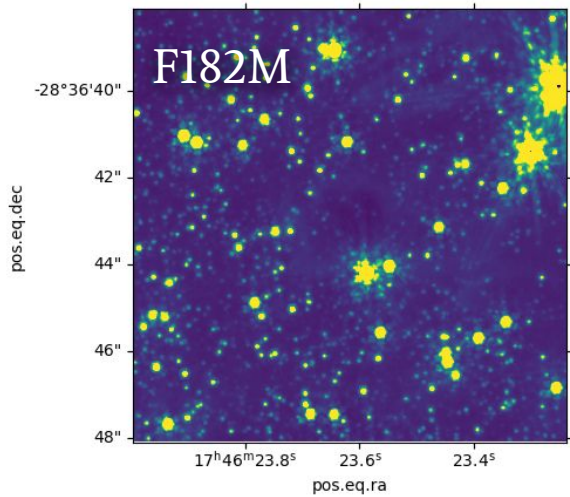
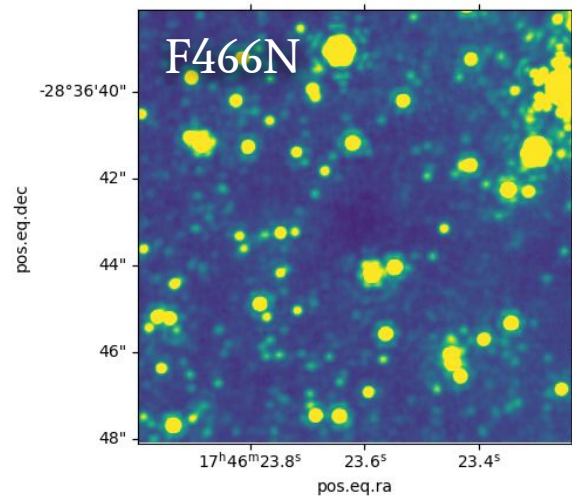
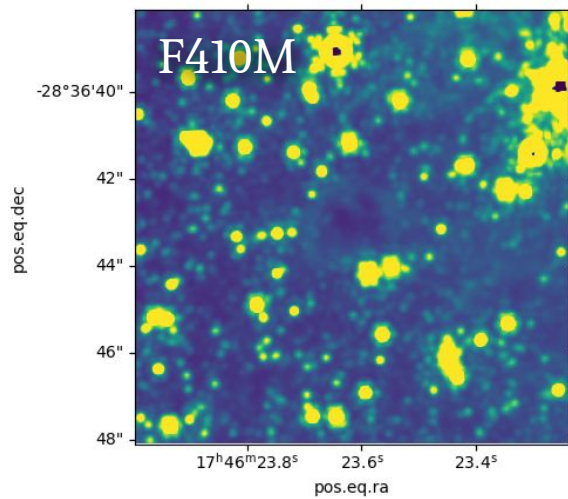
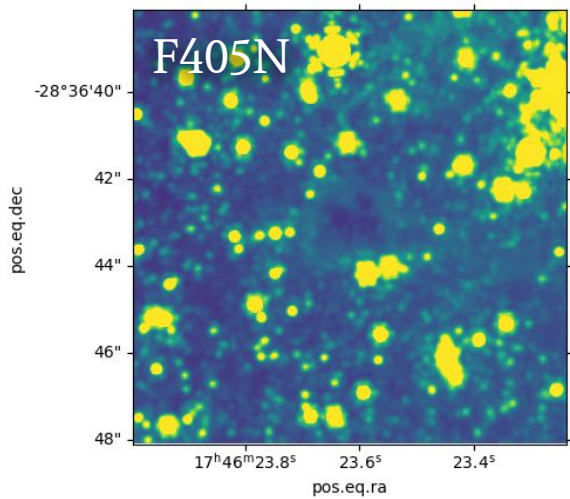


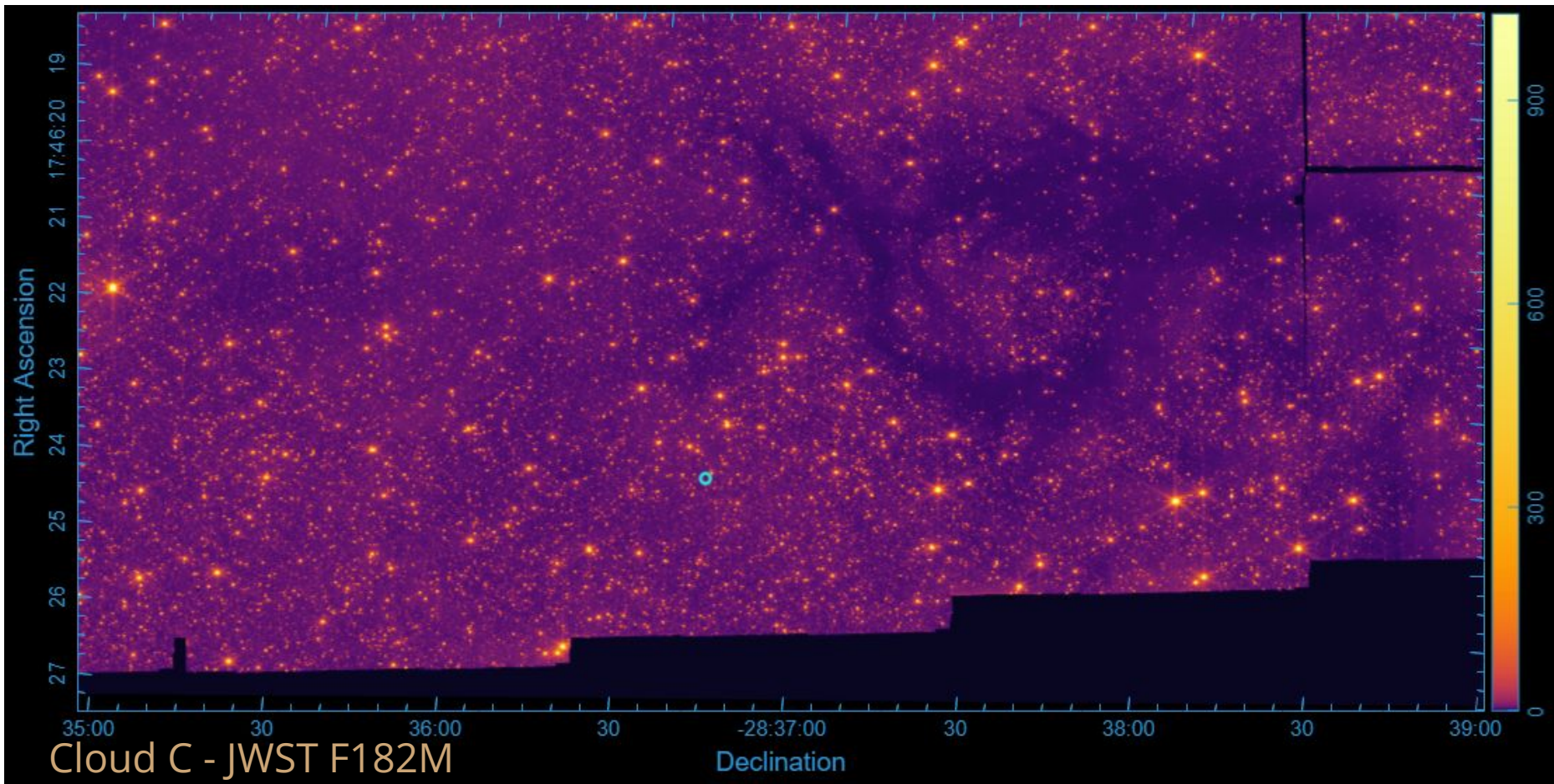
Rotate POV

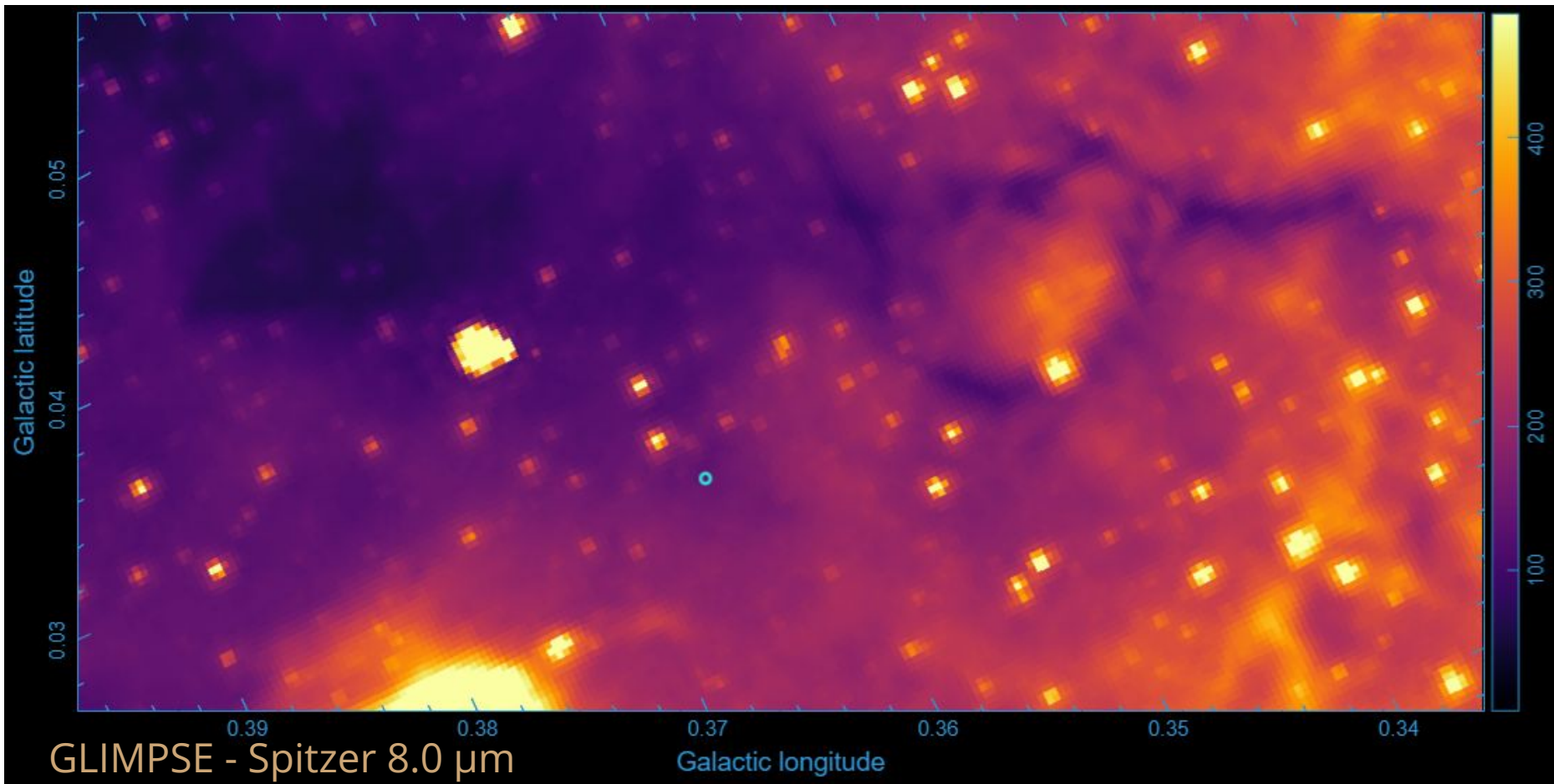


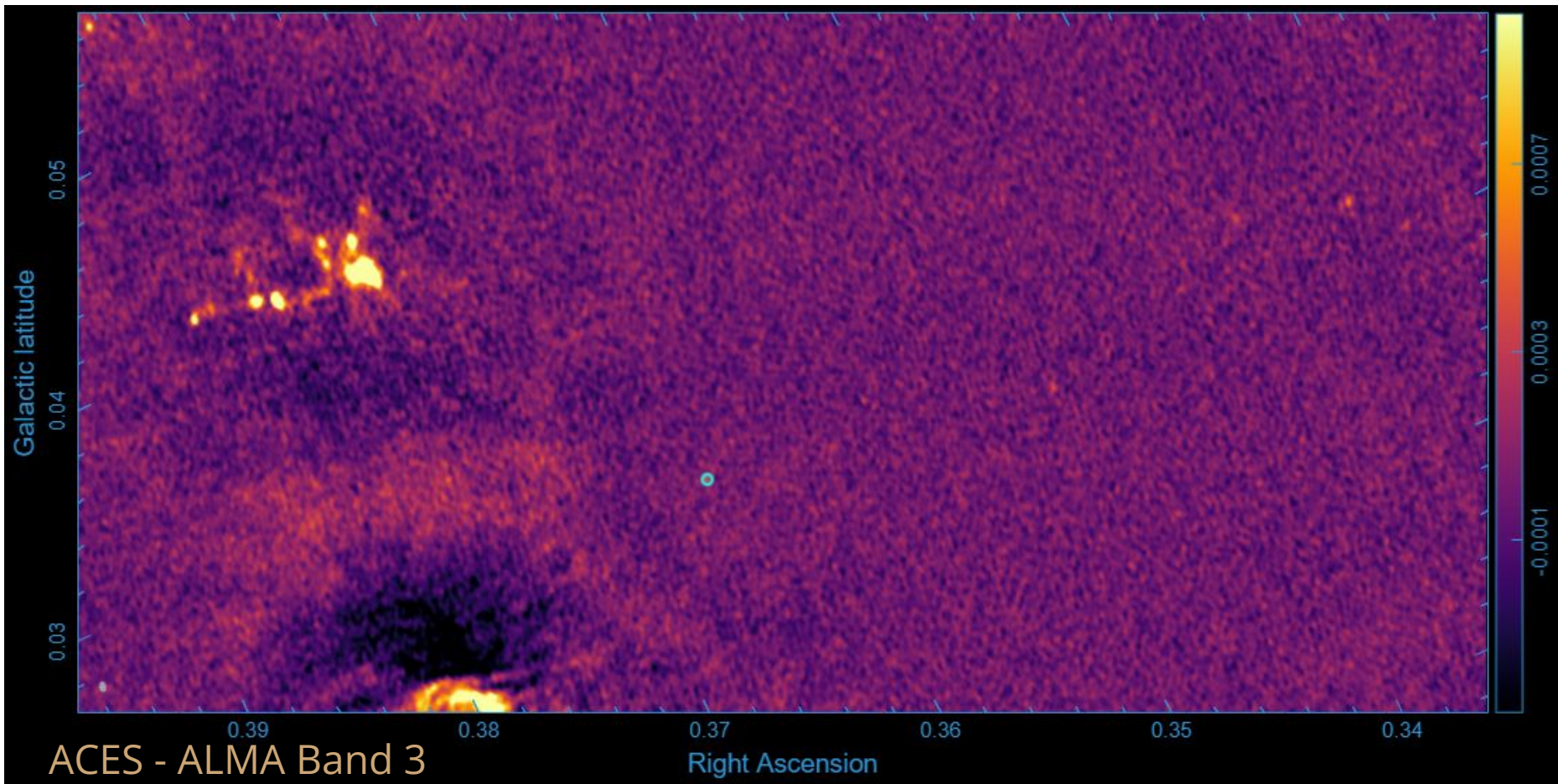
Spotlight: The Smudge

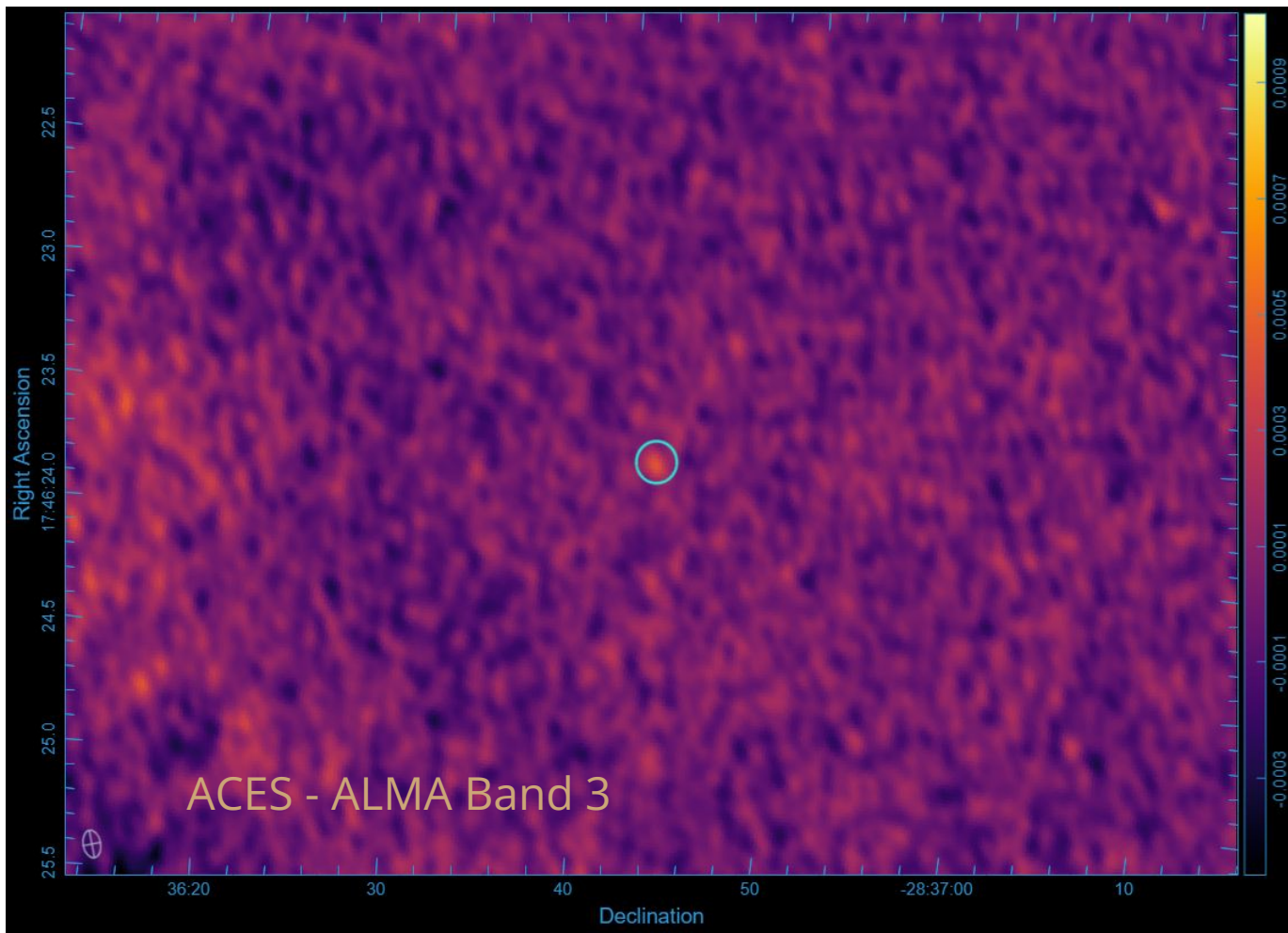


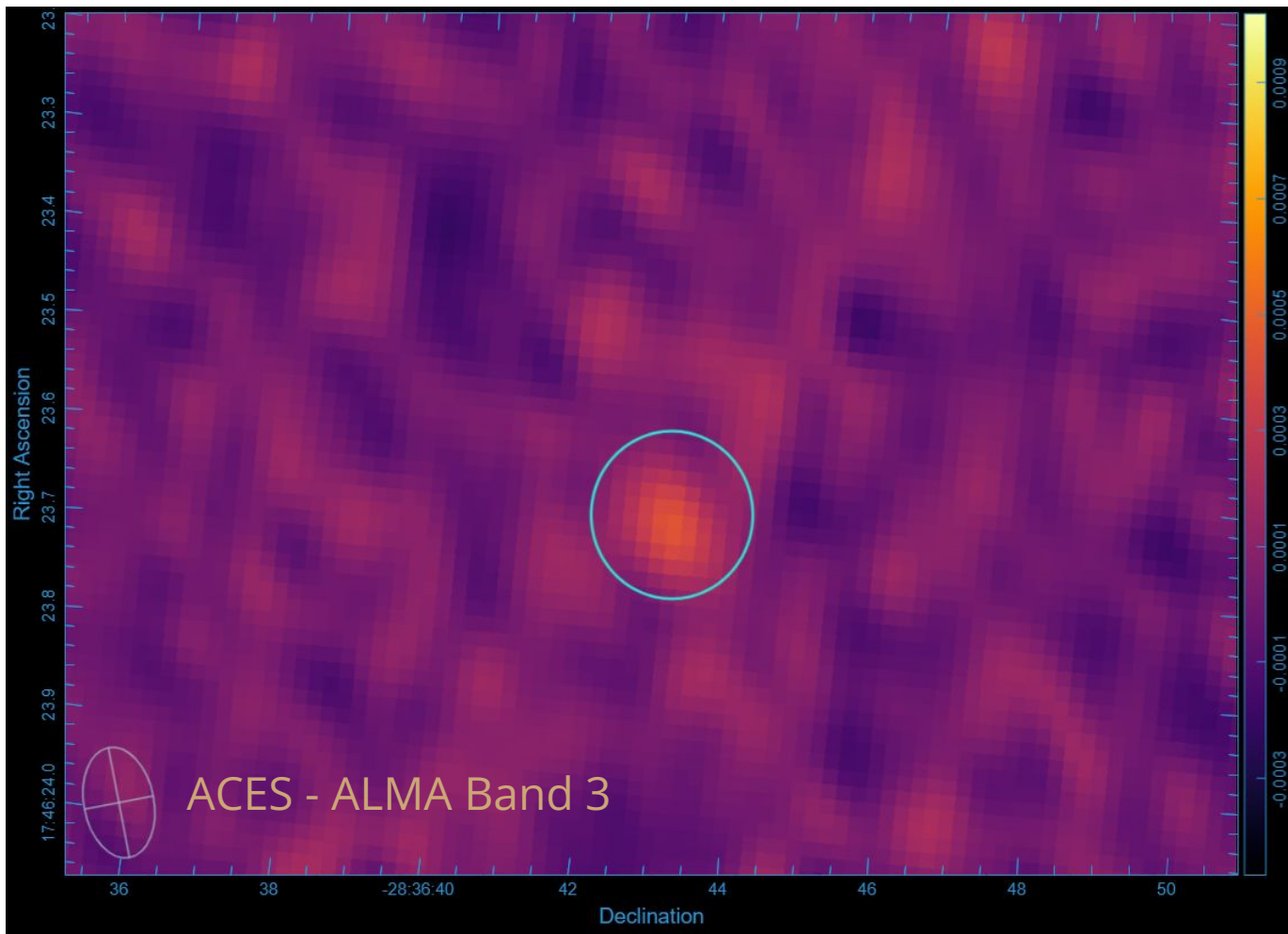






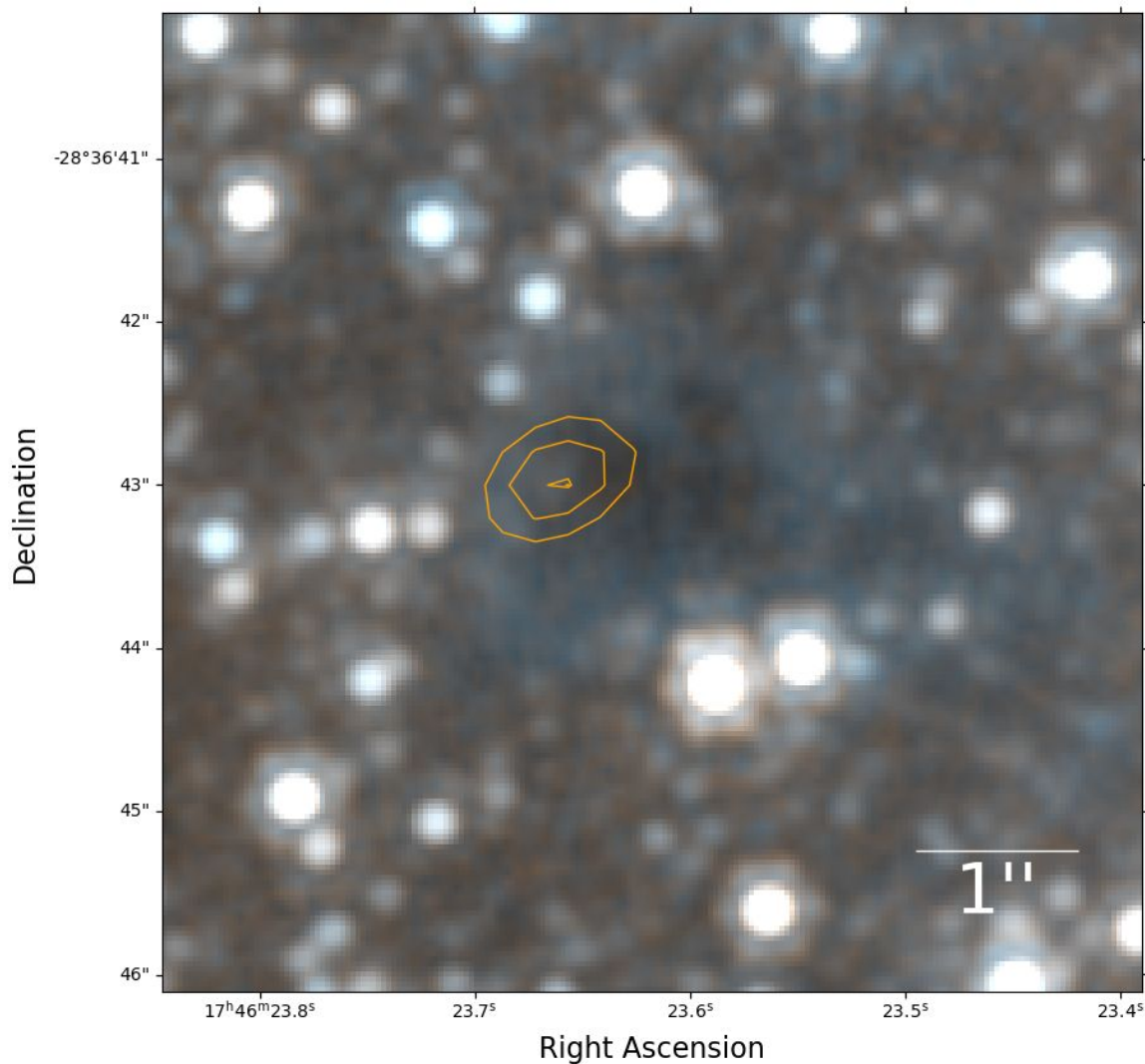






Spotlight: The Smudge

- Center of radio continuum source is offset from center of extinction in infrared
- No infrared source
- 10 mJy Band 6
- 0.48 mJy Band 3
- Spectral Index = 3.75
 - Dusty!
- Mass $\sim 10 M_{\text{sun}}$
- Line of sight velocity $\sim 33 \text{ km/s}$
- FWHM $\sim 10 \text{ km/s}$
- Seems to be in the GC based on velocity and wide FWHM



Conclusions

- An ACES SiO maser catalog will be helpful for astrometric correction across the CMZ
 - Outflow tracers in ACES data correspond with those in other data
 - Isolated ACES continuum sources are likely real.
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