HOPS 171
Outflow Study

Group1 - Kunwoo Lee

Archive Data

12m + 7m + (T.P)

- P. I : Fischer, William
- Title : Mapping the Envelopes of Edge-On Orion Protostars

Observation

- 12CO, 13CO, C18O, 230GHz continuum
- Deconvolution size 1.61757 x 0.854669 (arcsec x arcsec)
- Position angle : -88.8383 deg

HOPS 171 !?

Known

- Herschel Orion Protostar Survey
- YSO with outflow

Unknown

- Mass
- Structure

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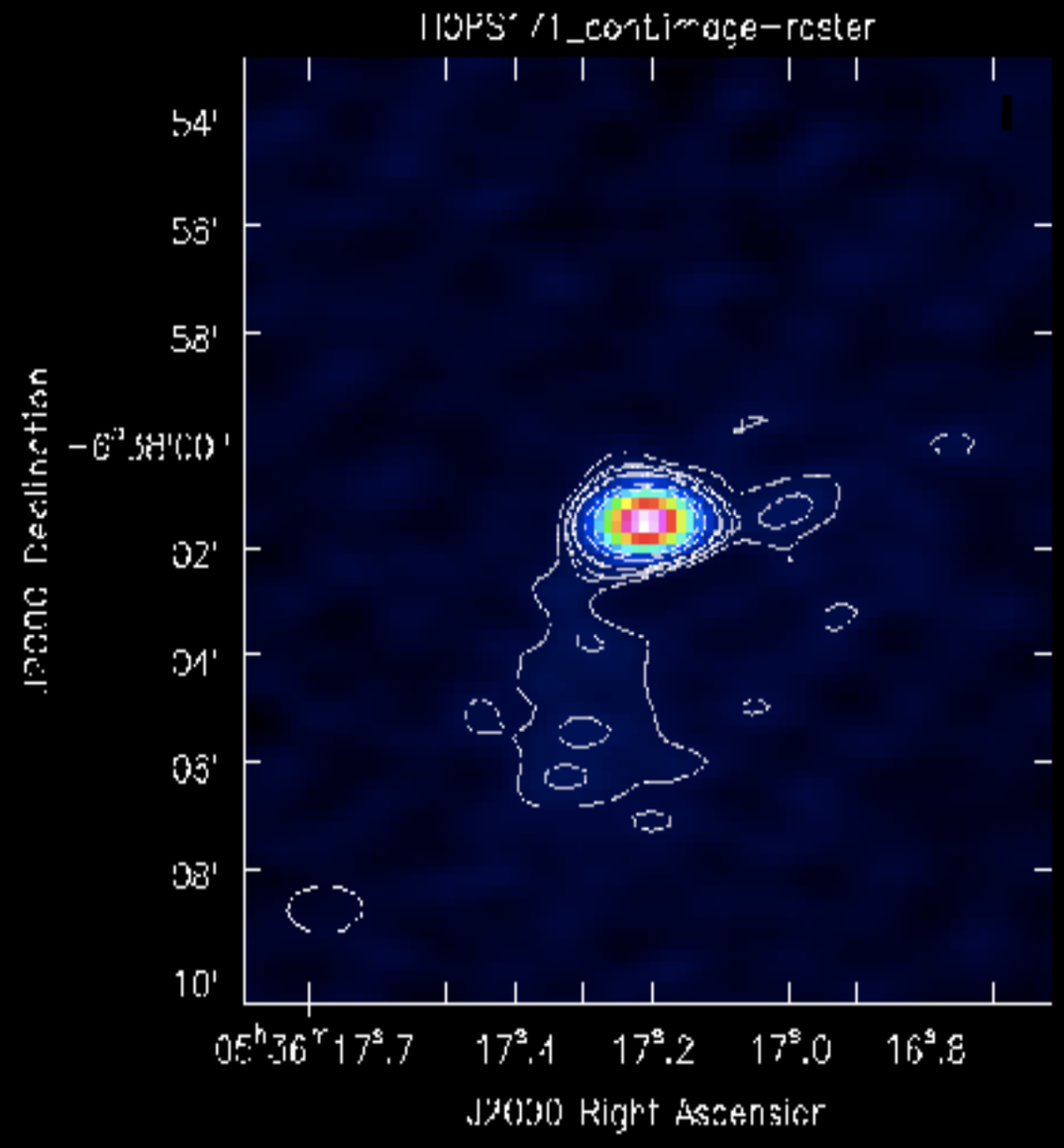

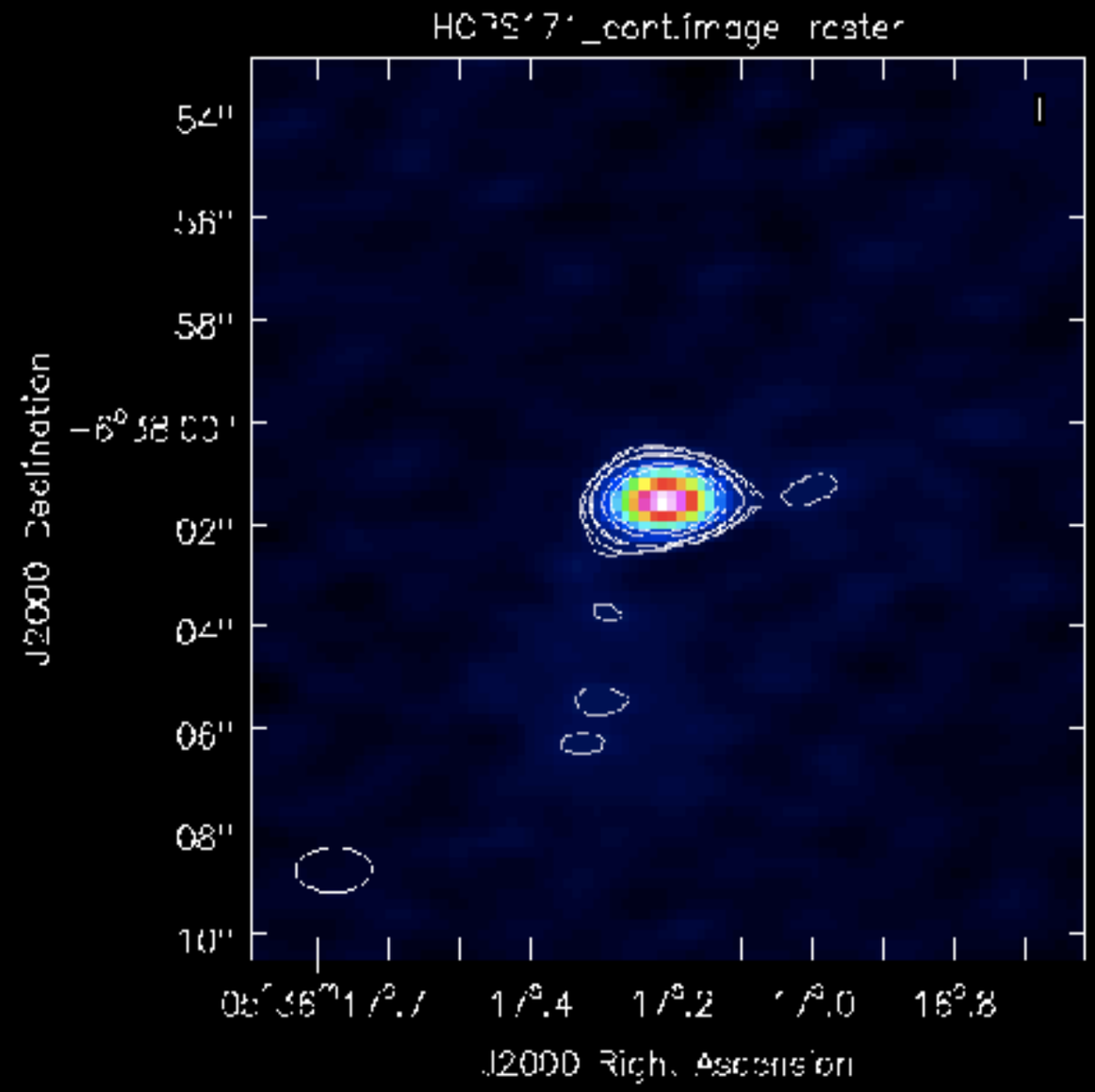

3 sigma Detection

Flux density : 1.5796603e-02 Jy
Maximum : 1.101658e-02 Jy

5 sigma Detection

Flux density : 1.195960-02 Jy
Maximum : 1.101658e-02 Jy

Mass

$$M_{disk} = M_{gas+dust} = \frac{S_{1.3mm} \cdot d^2}{B(T_{dust}) \cdot \kappa_{1.3mm}}$$

Dieter Nurnberger et al 1997

- T_dust ~ 50K
- Gas to Dust ratio 100 : 1
- k_1.3mm ~ 0.02 cm^2/g
- d ~ 437 pc

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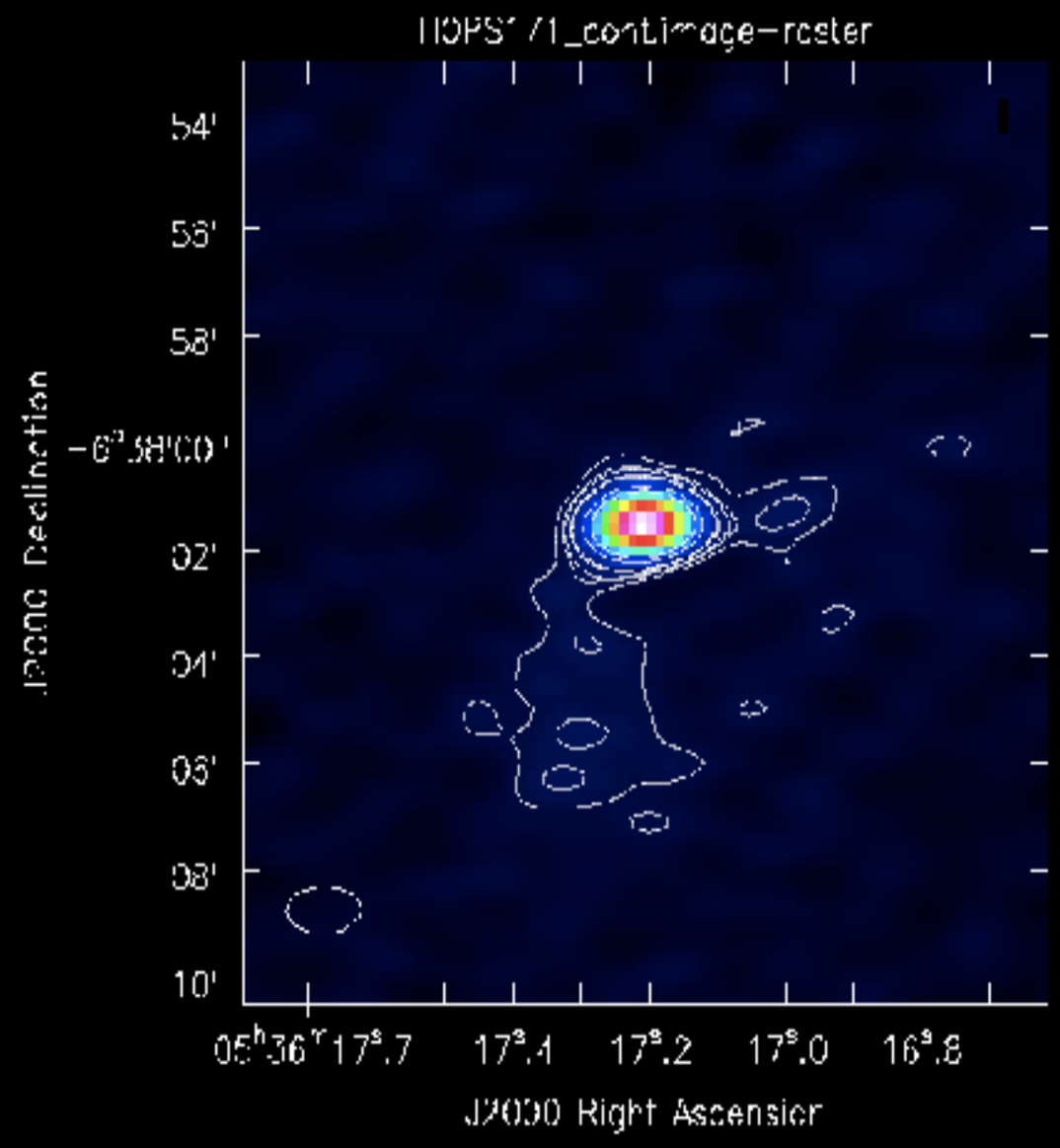
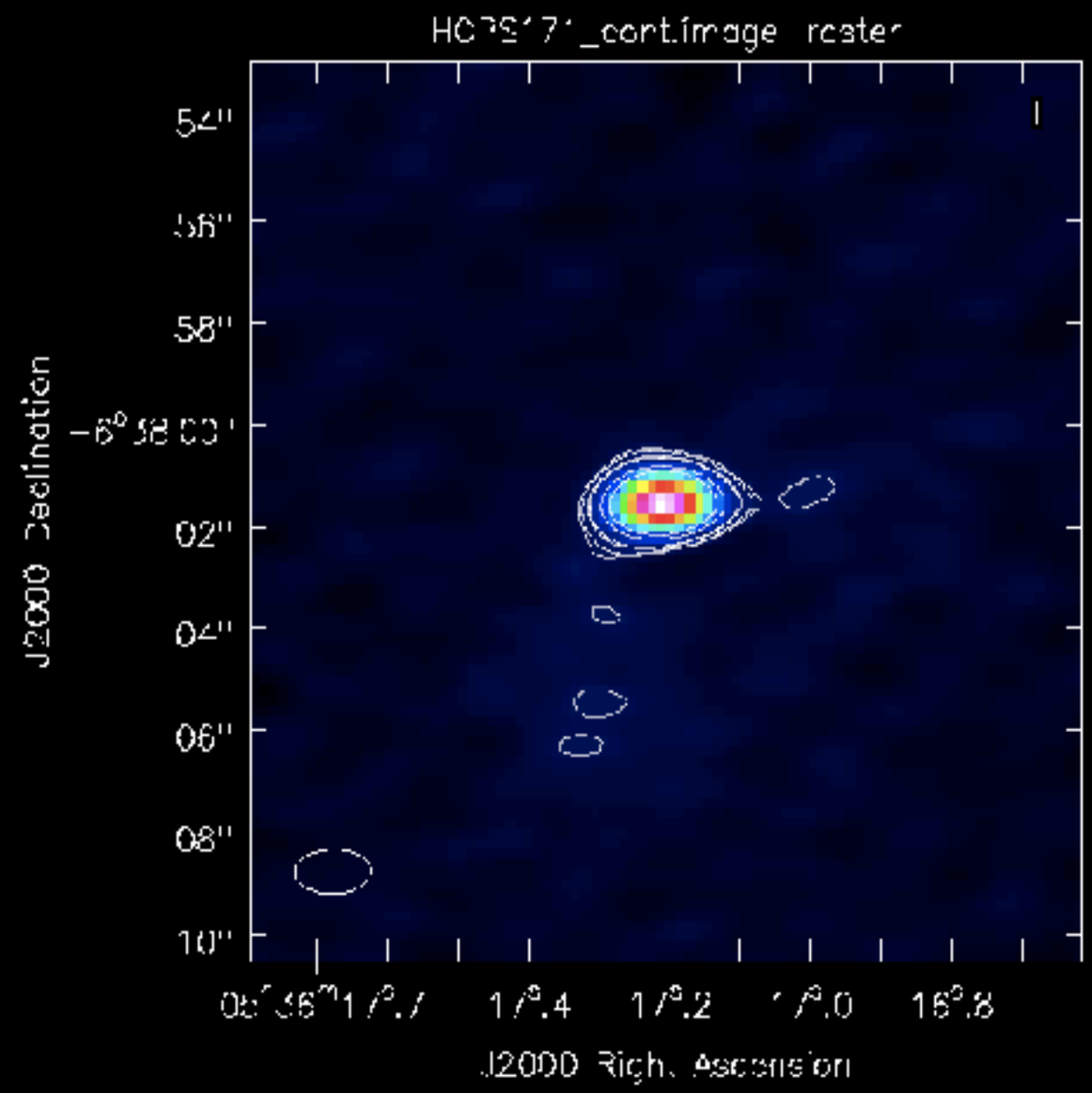




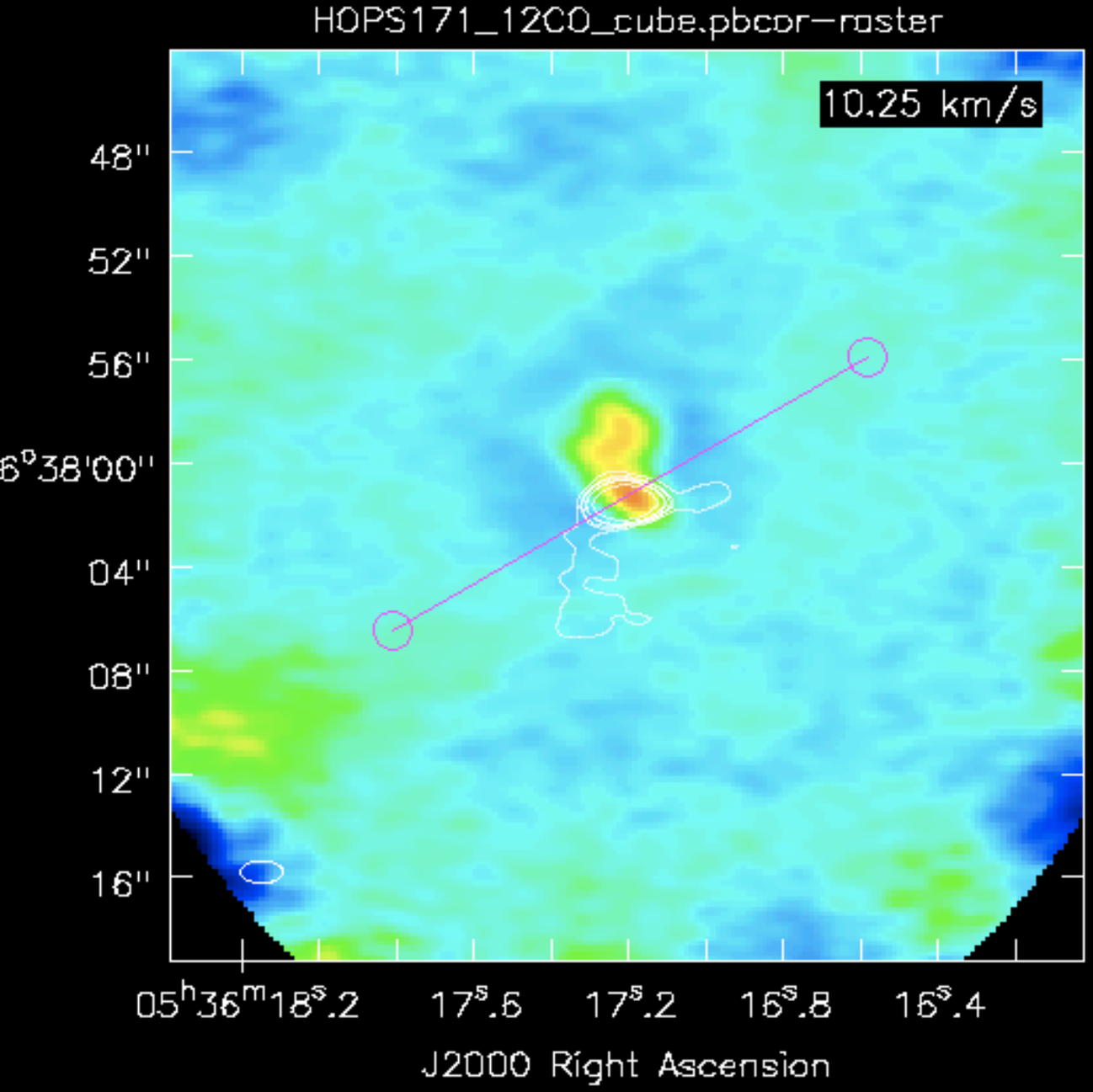
3 sigma Detection

M_disk = 0.93 E-3 M_sun

5 sigma Detection

M_disk = 0.7 E-3 M_sun

Image & P.V (12CO)



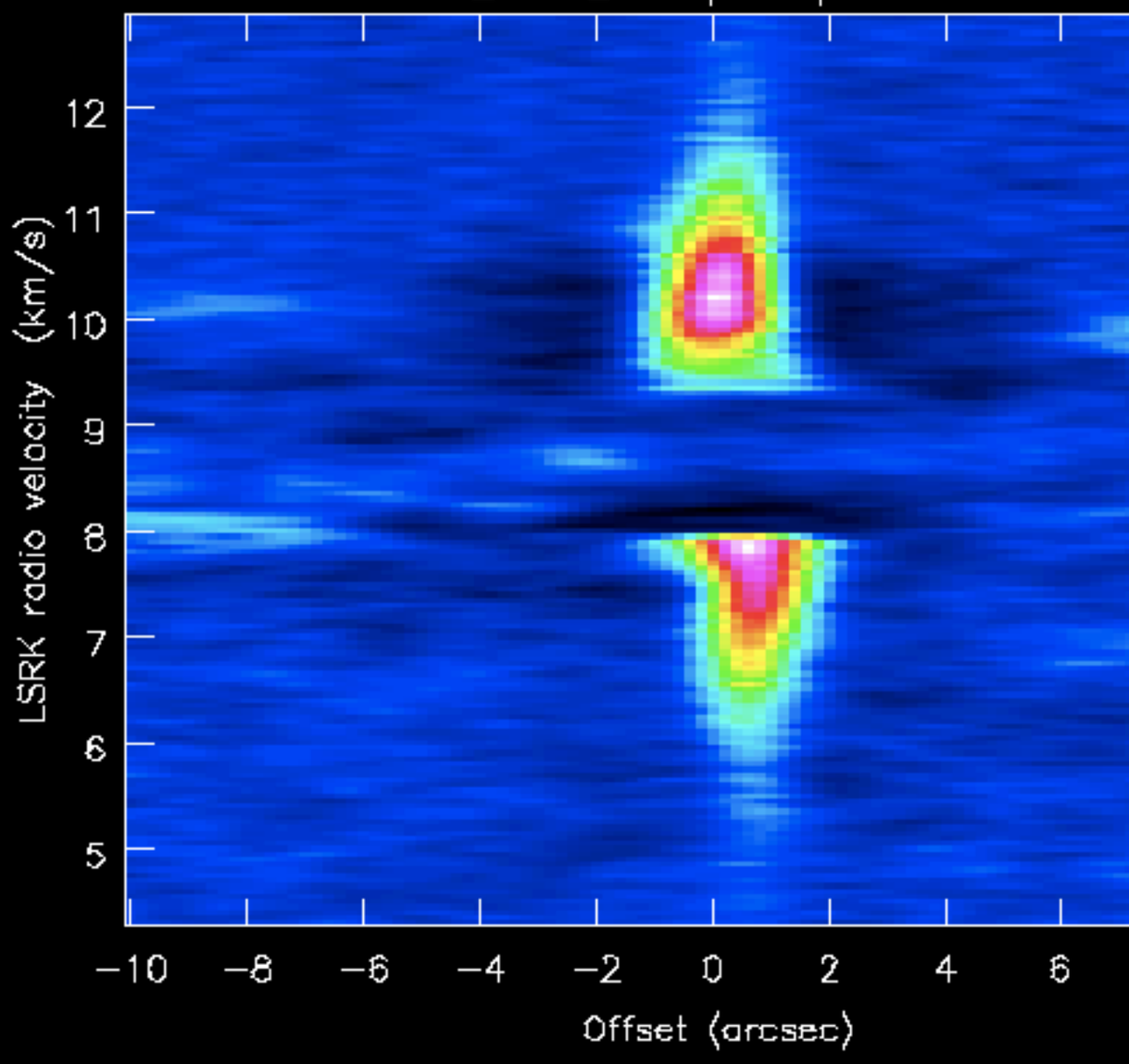
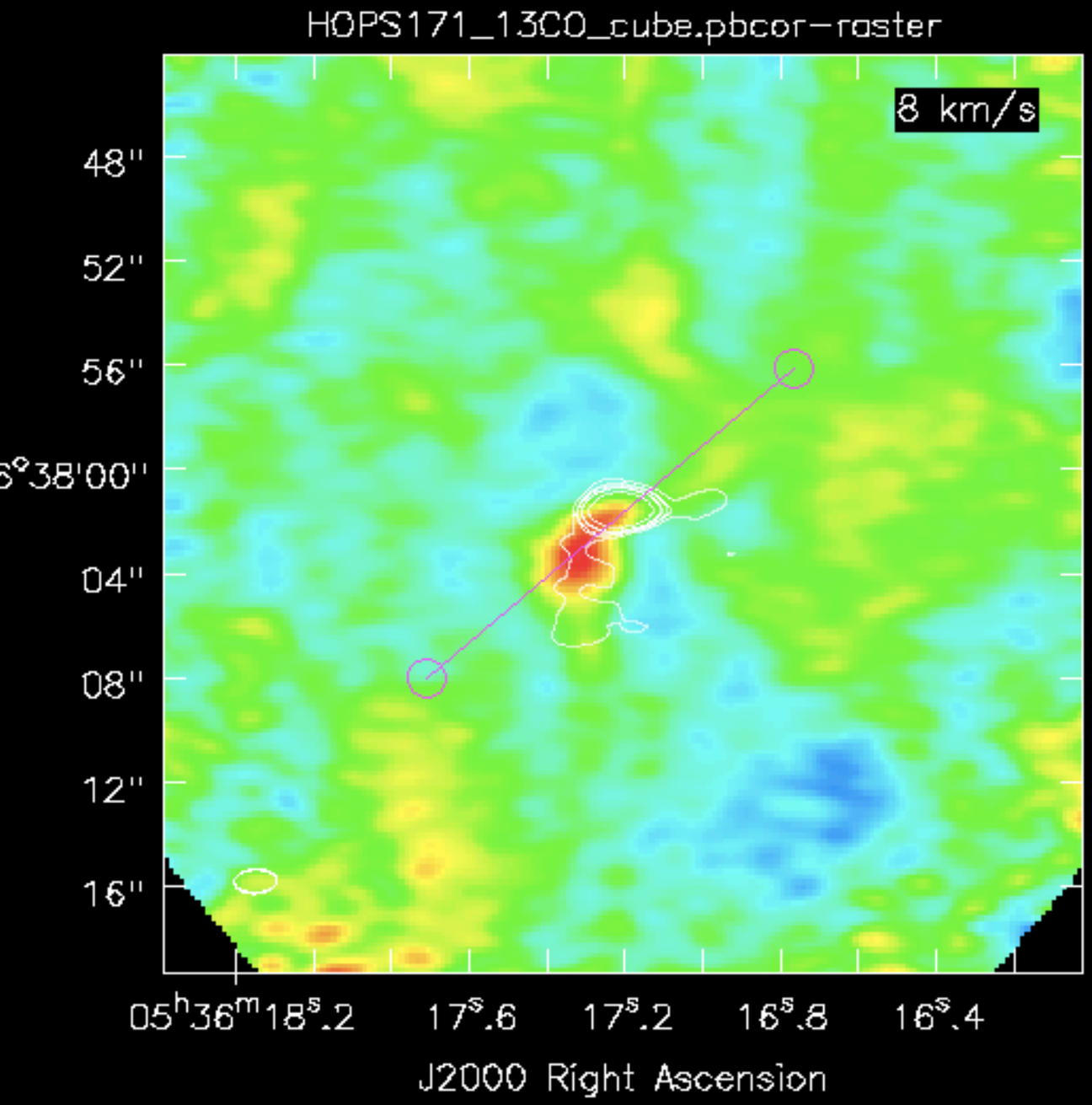


Image & P.V (13CO)



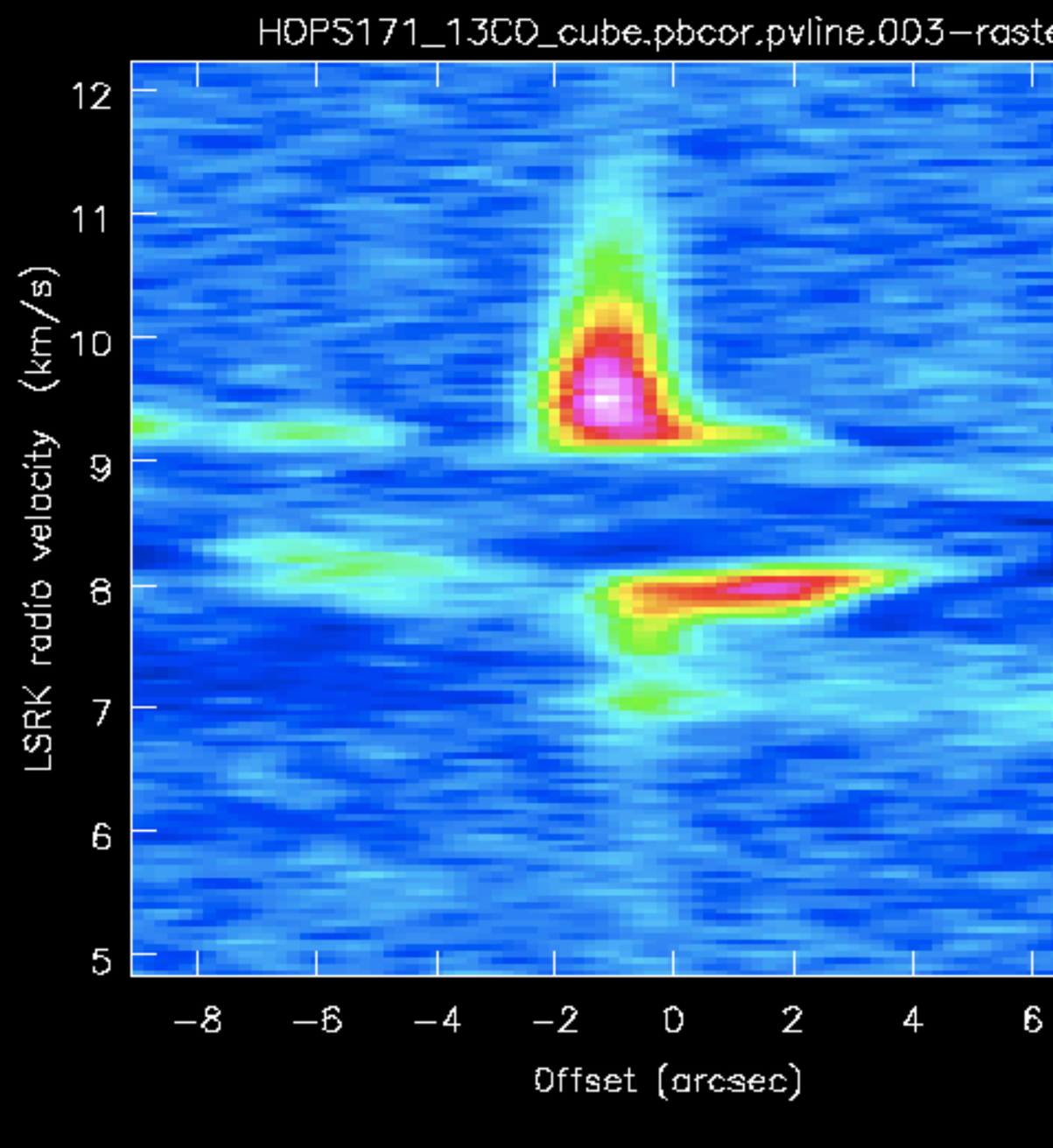
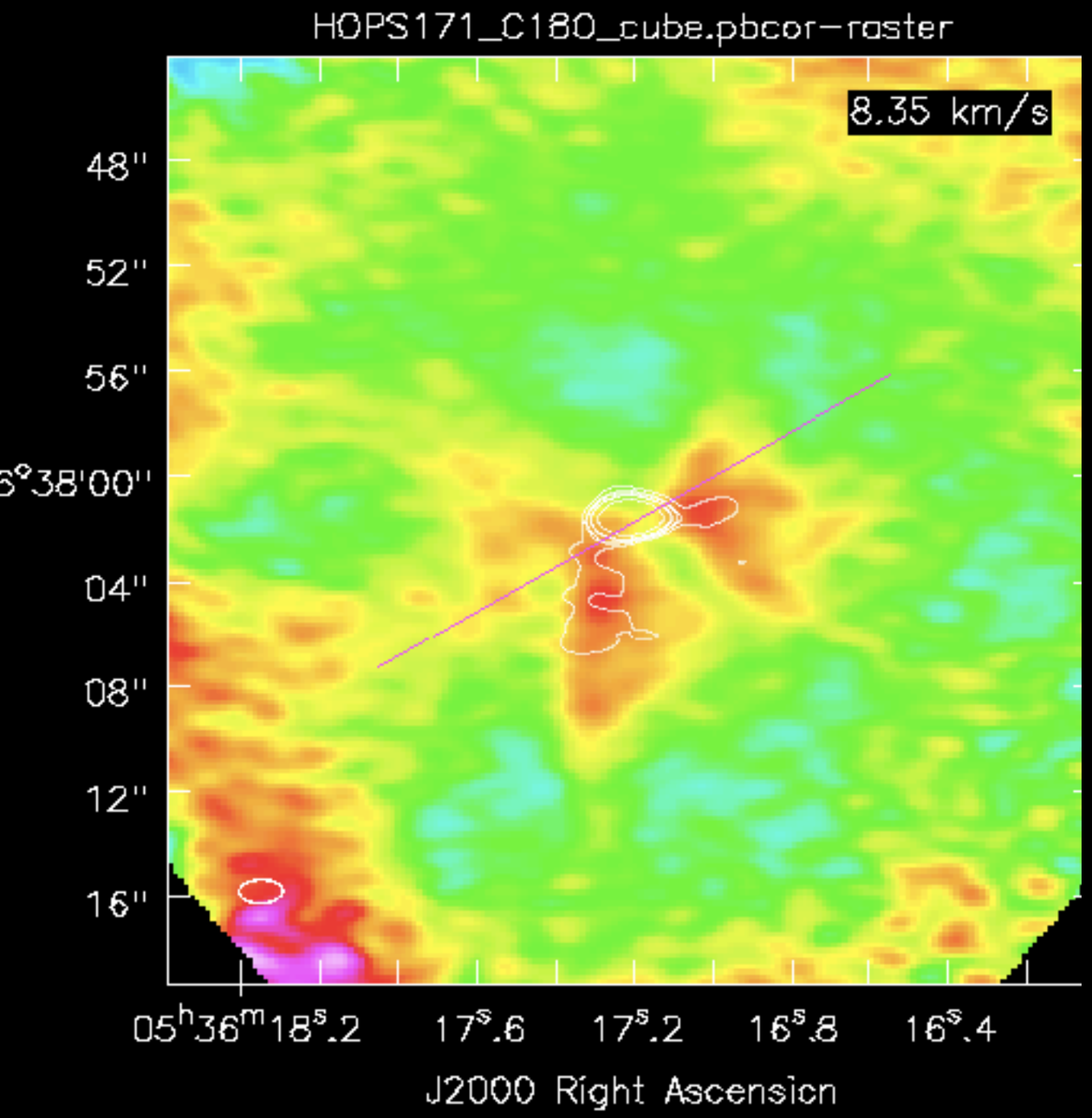
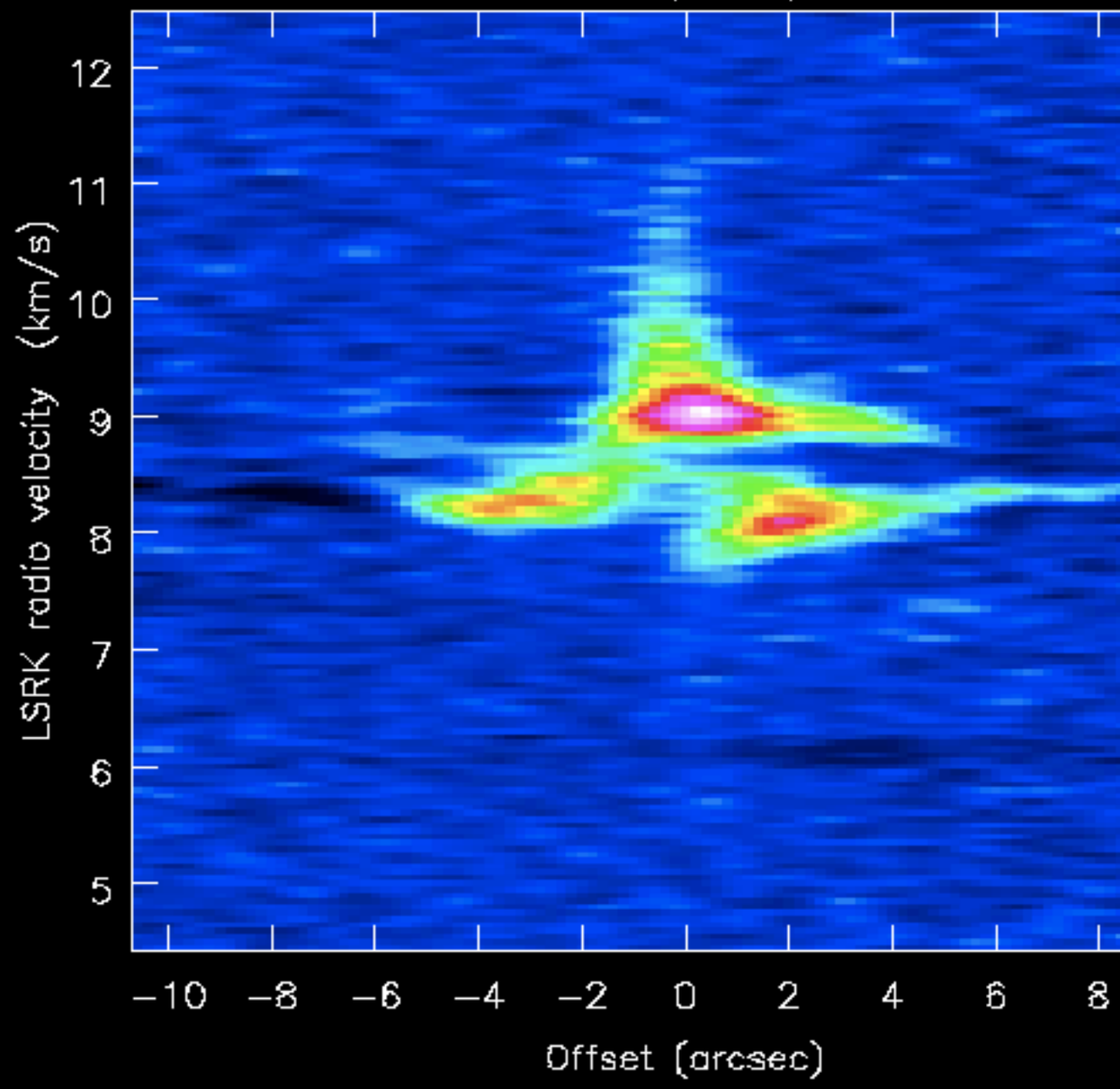
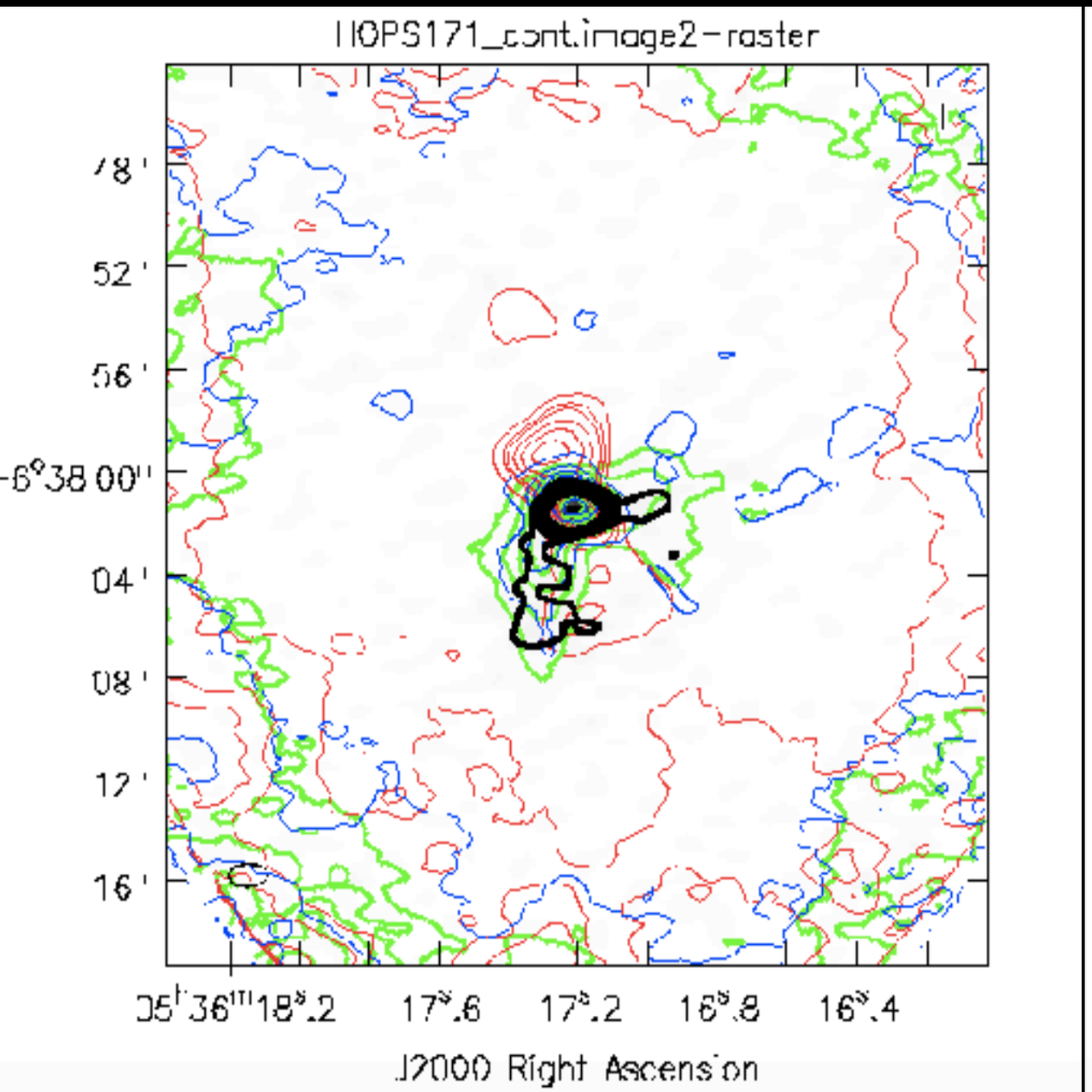


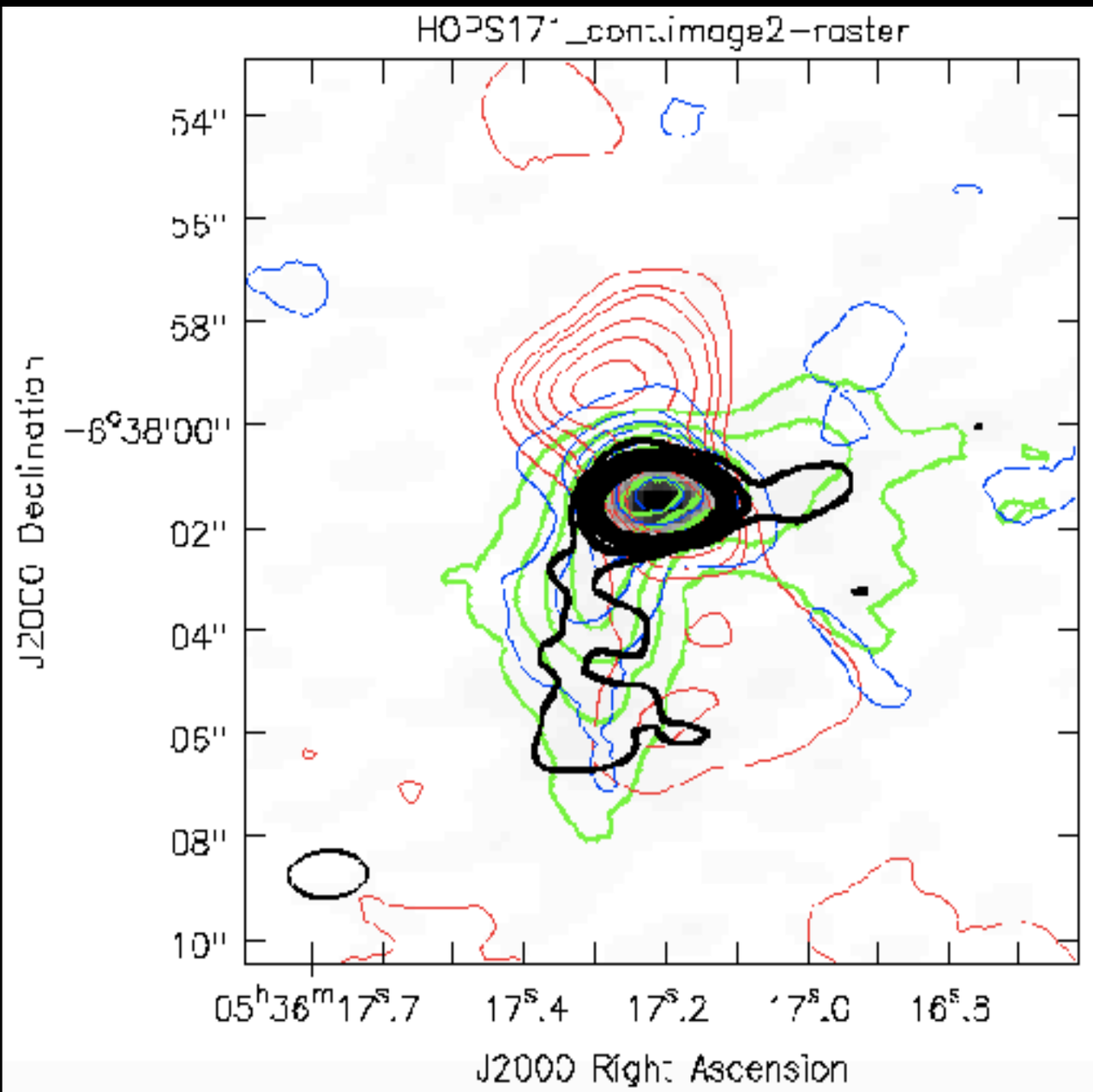
Image & P.V (C18O)





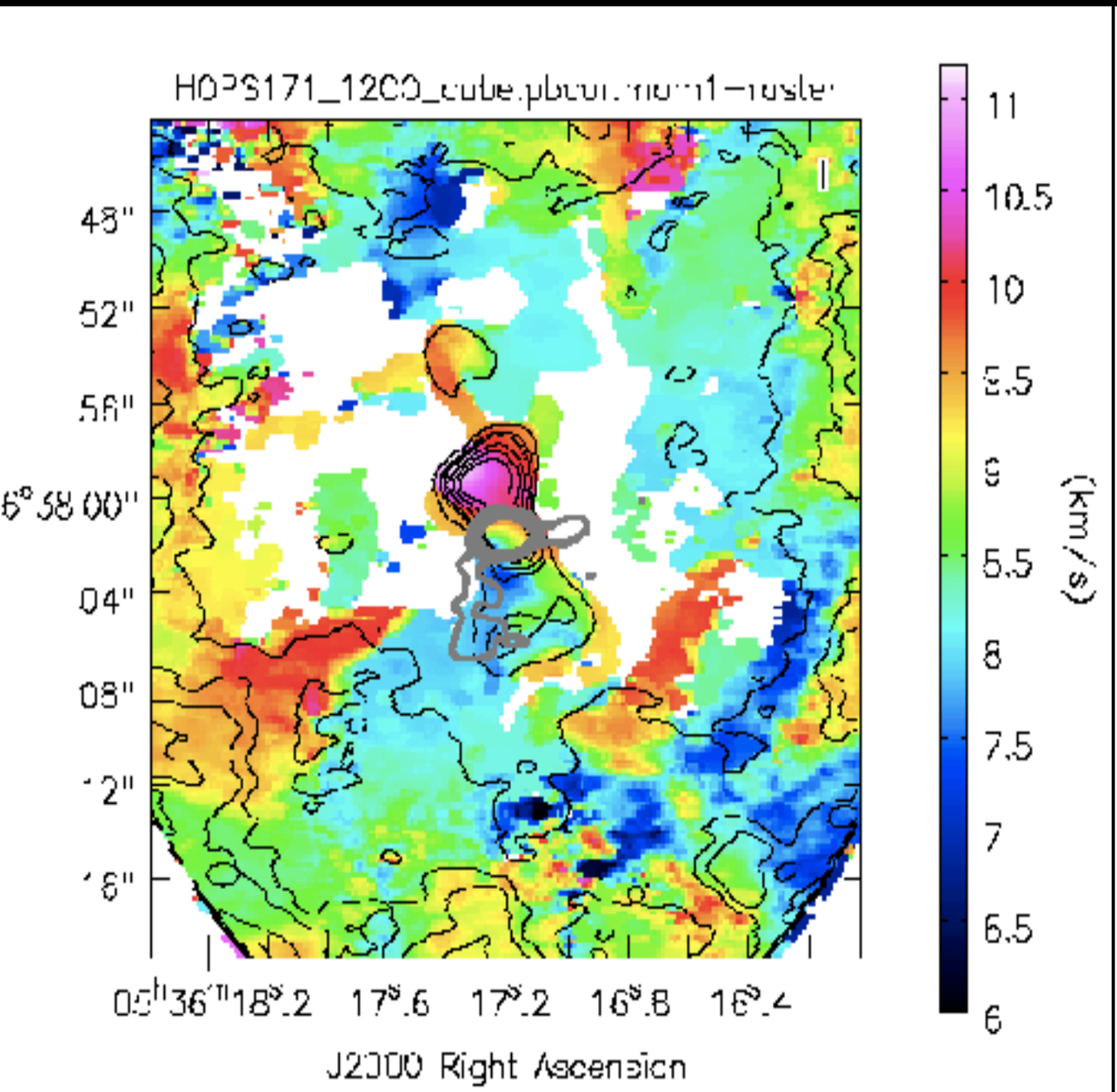
Intensity Map

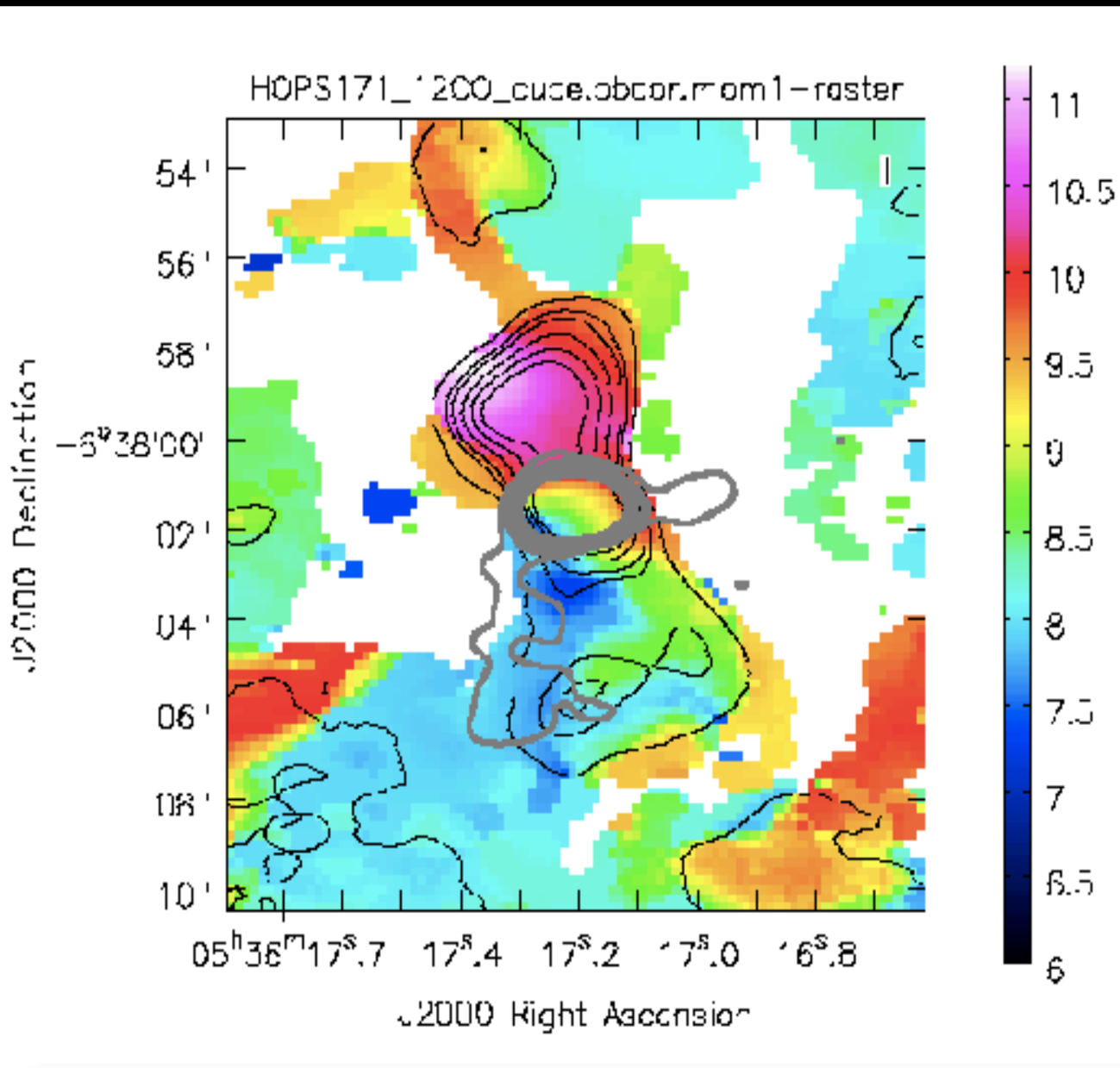




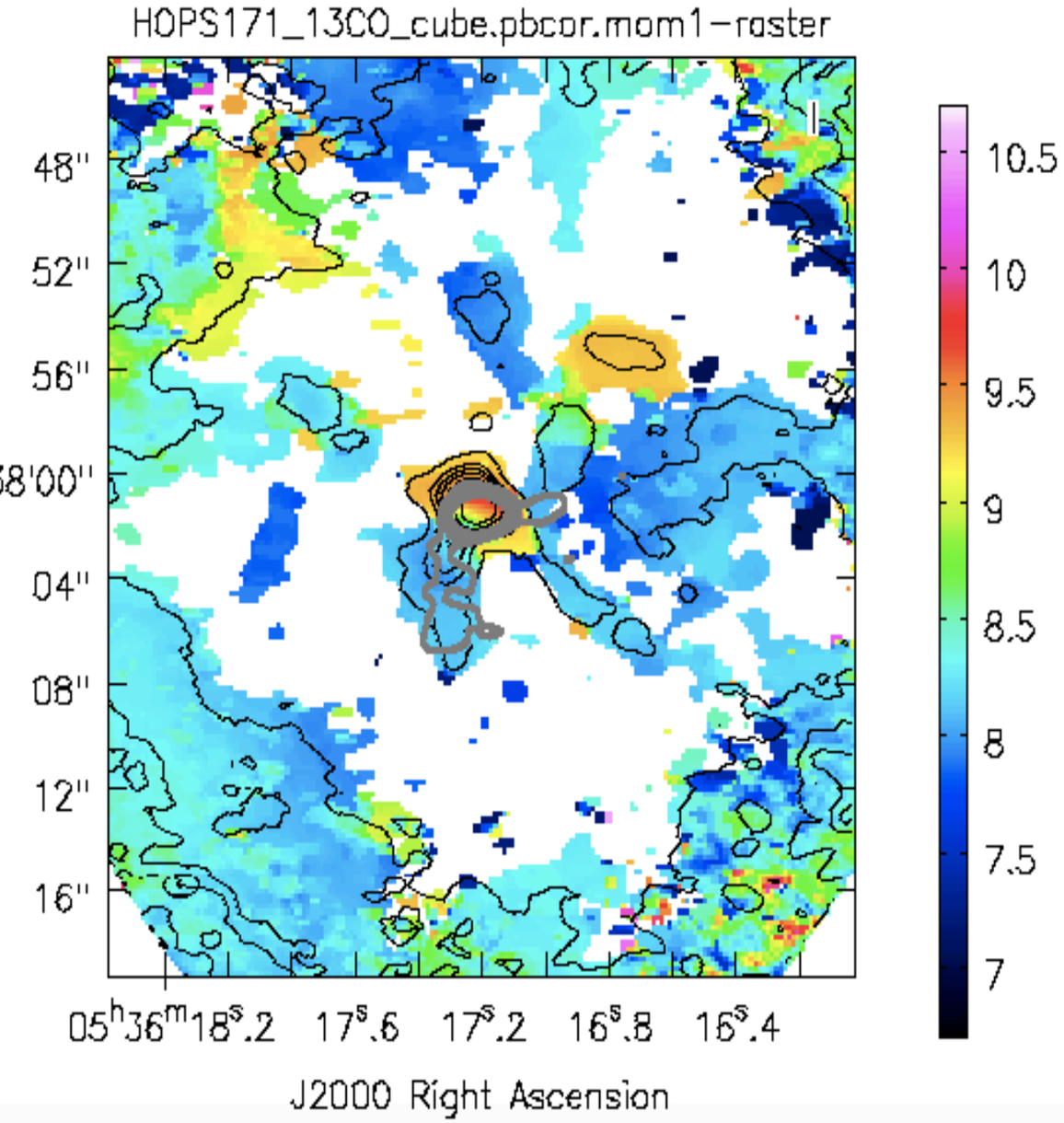
12CO 13CO C18O

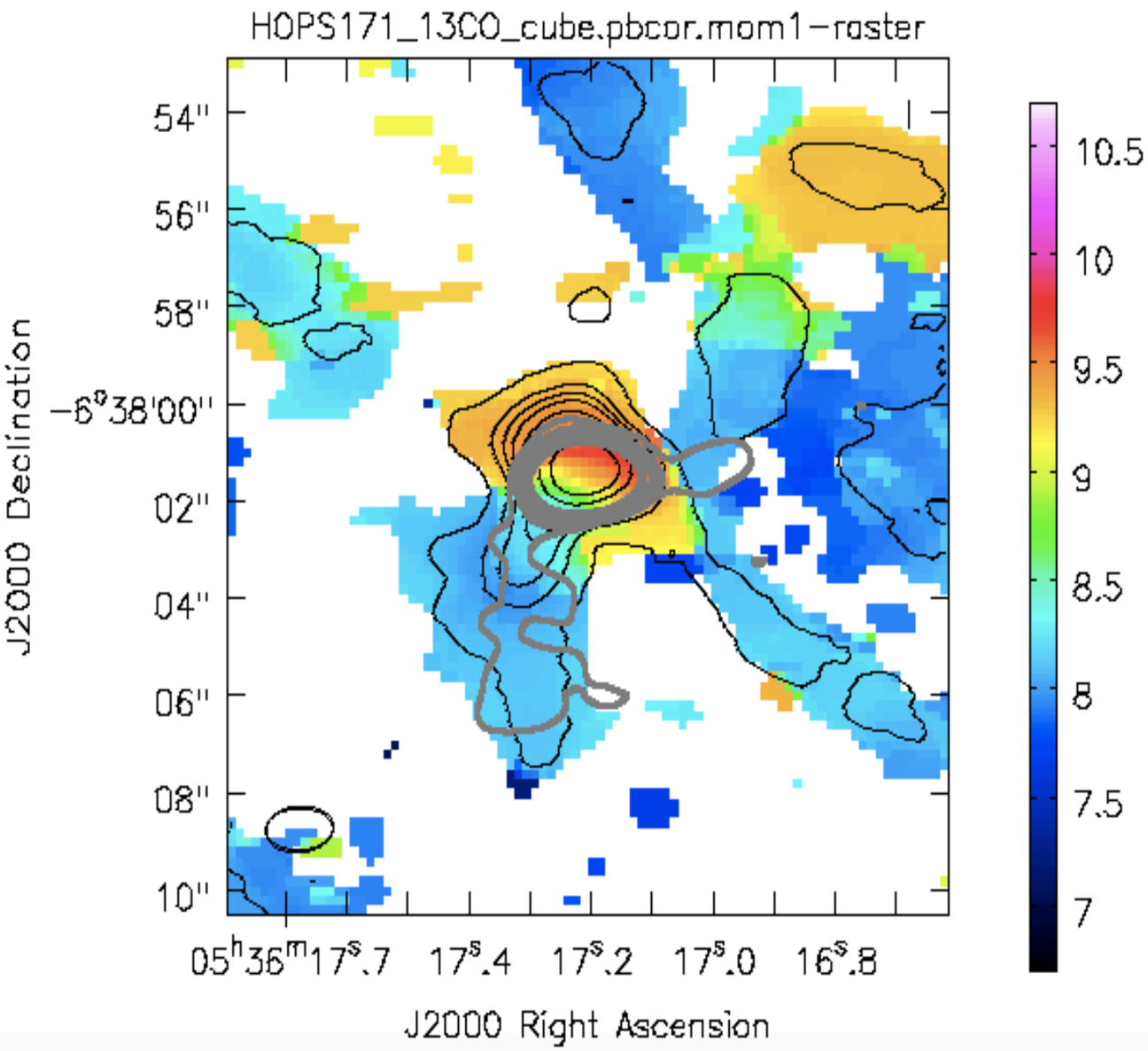
Moment Map (12CO)



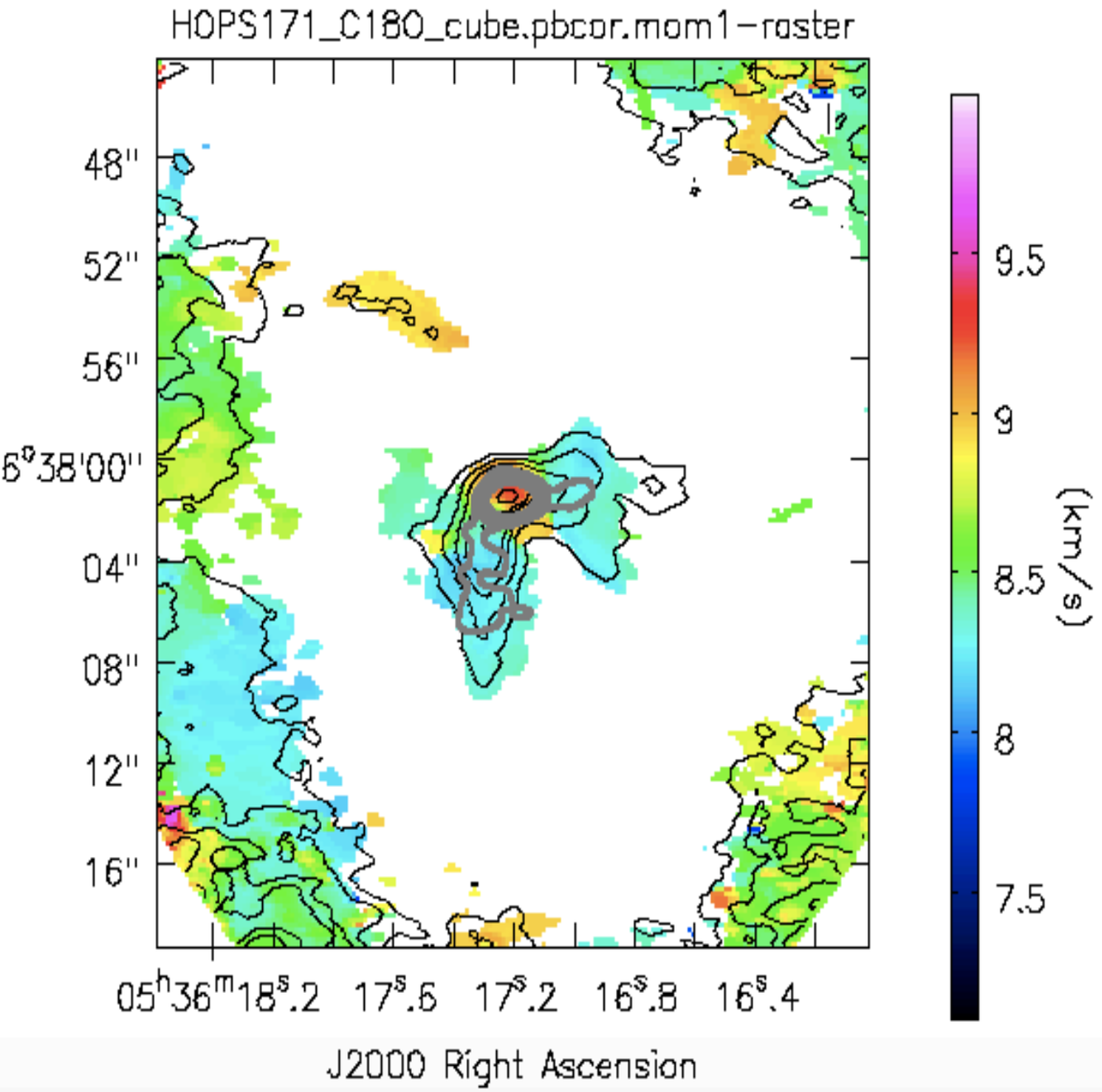


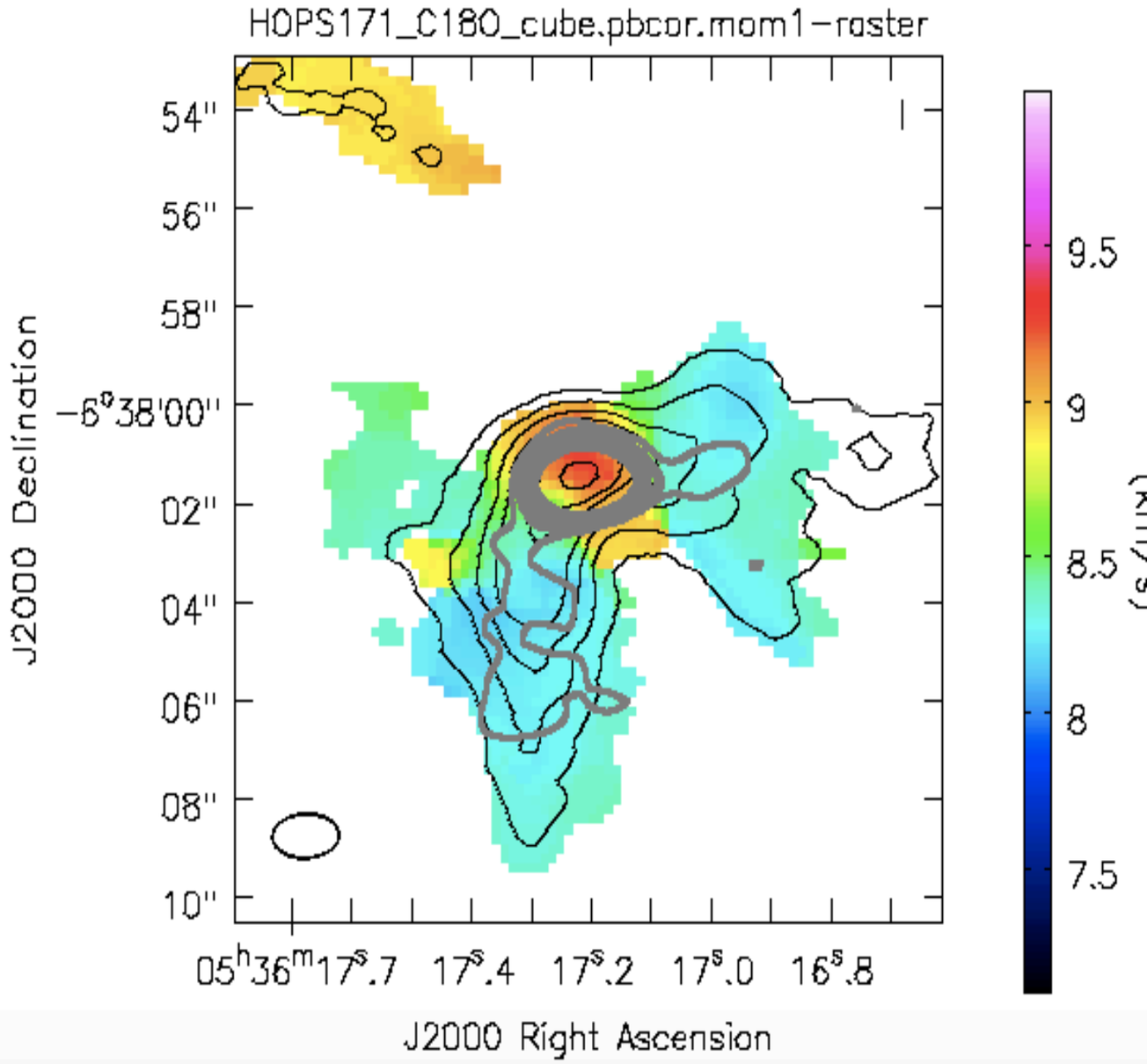
Moment Map (13CO)





Moment Map (18CO)





Conclusion

- Protostar
- Outflow
- Disk? Envelope? - by P.V diagram
- Rotation? Falling? - by Moment Map

Further Study

- T.P to be combined…

Thank You