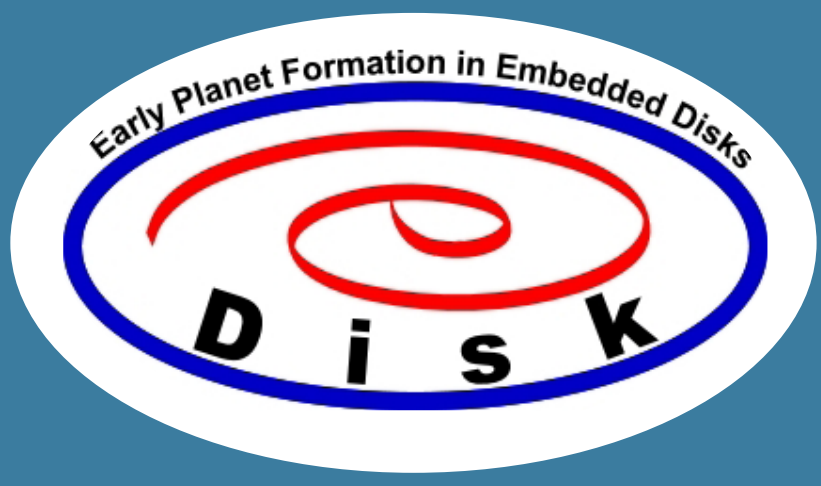


Early Planet Formation in Embedded Disks (eDisk): A first high-resolution view of molecular line emission toward the Class 0 protostar L1527 IRS



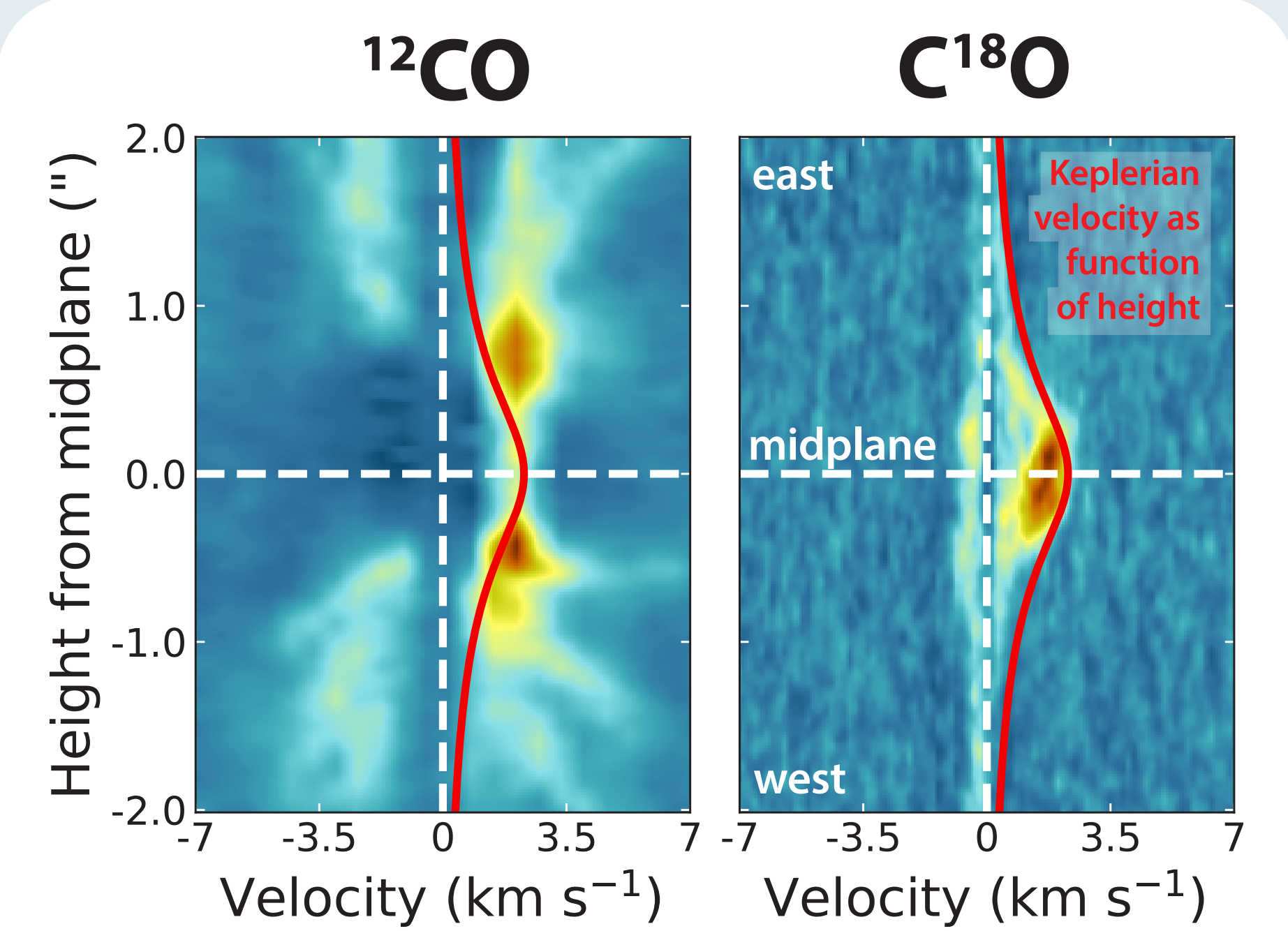
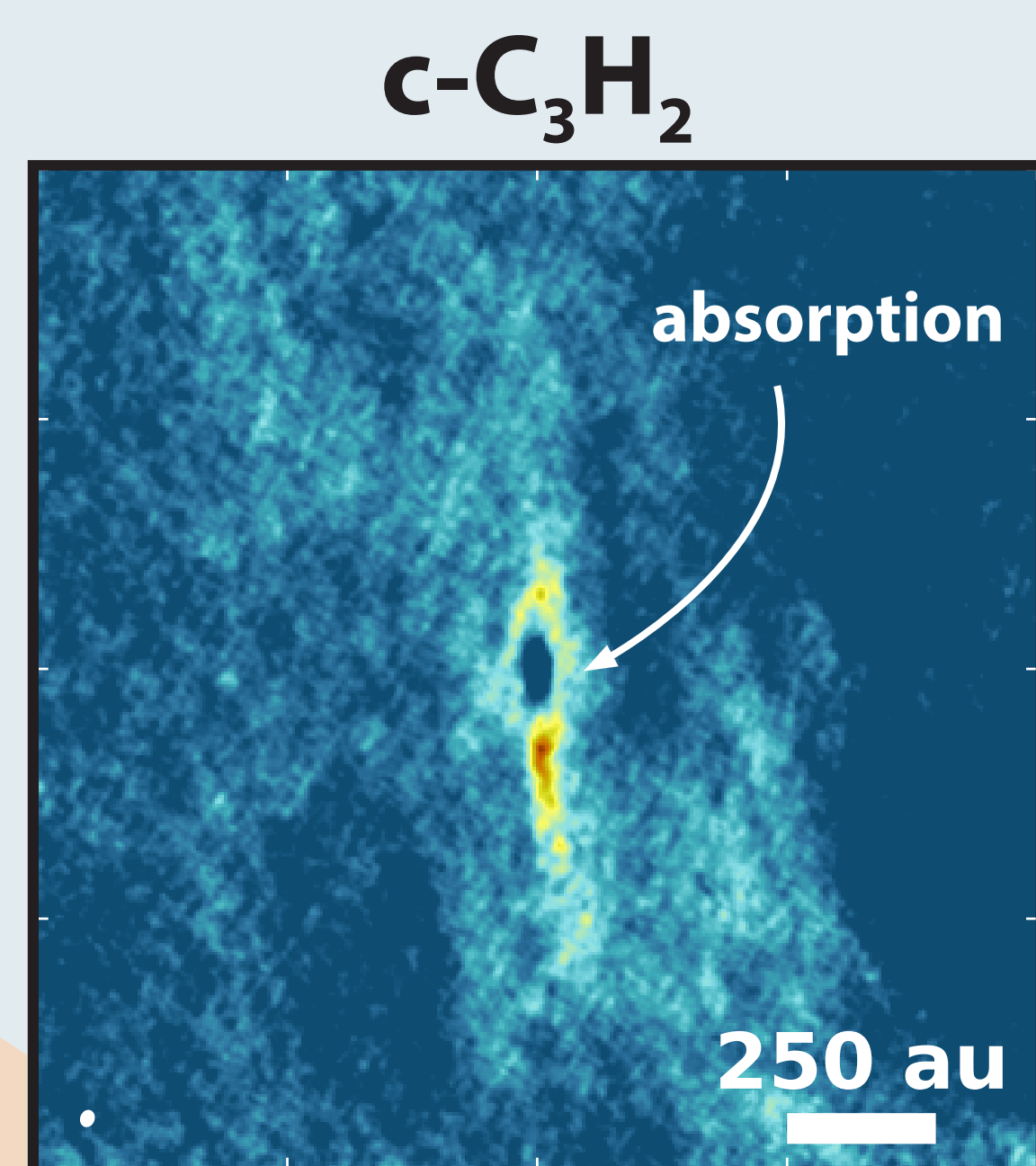
Merel van 't Hoff¹, John Tobin², Nagayoshi Ohashi³, Jes Jørgensen⁴,
& the eDisk team

¹University of Michigan; mervth@umich.edu ²NRAO ³ASIAA ⁴University of Copenhagen

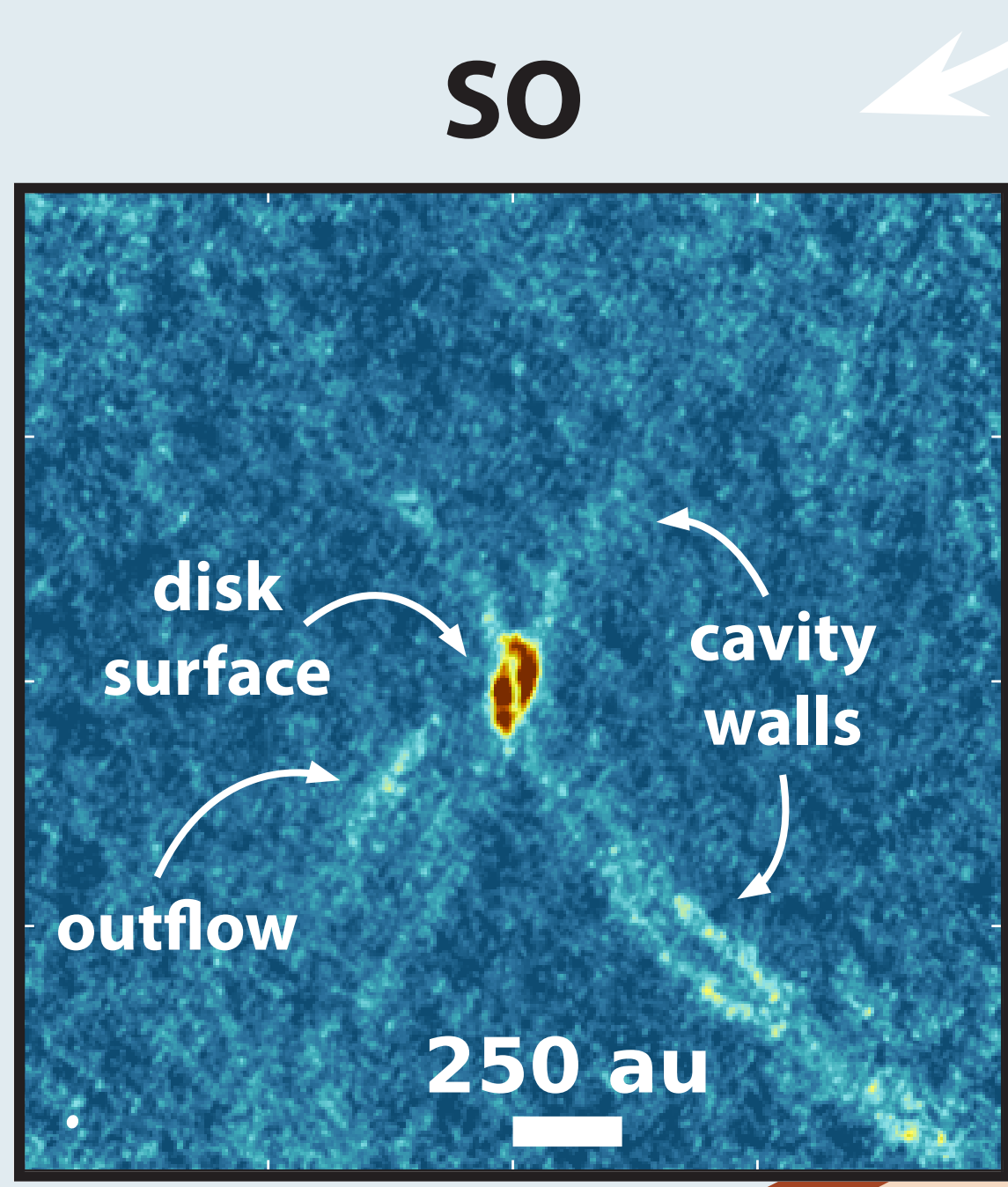
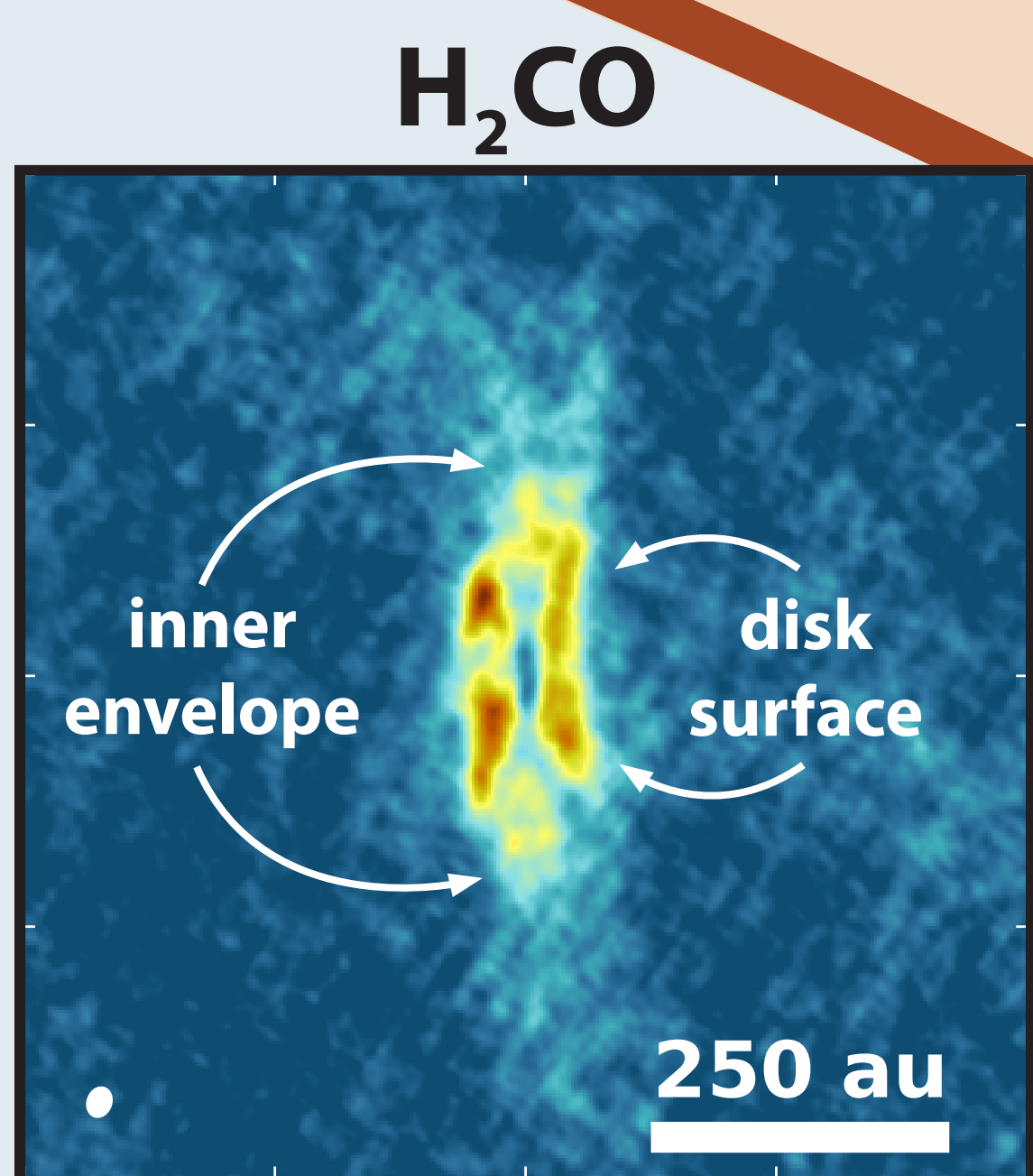
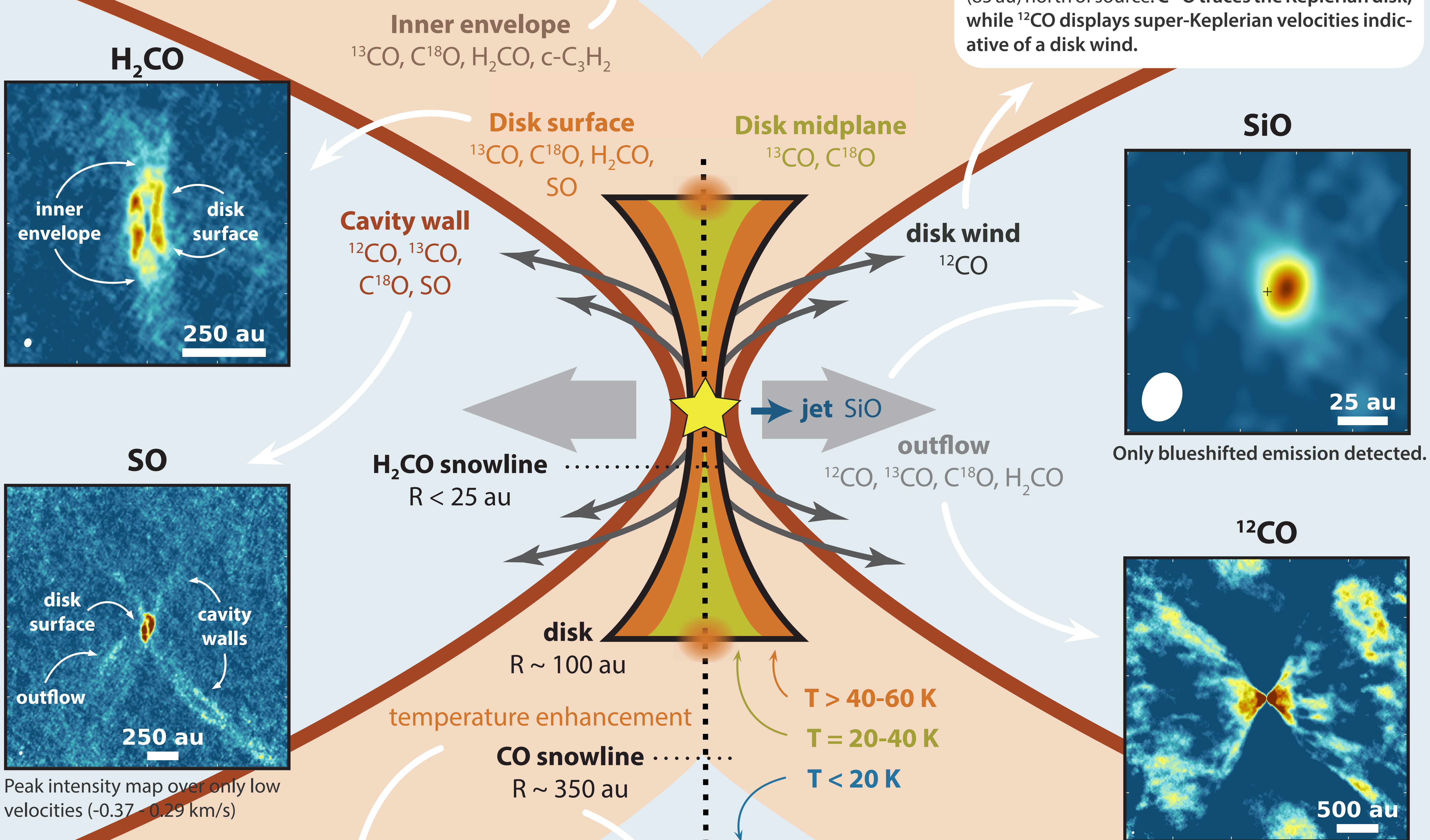


L1527 is a $1.3 L_{\text{sun}}$ [1] Class 0 protostar in Taurus (140 pc [2,3]), harboring a $\sim 100 \text{ au}$ [4,5,6] edge-on (85° [7]) disk.

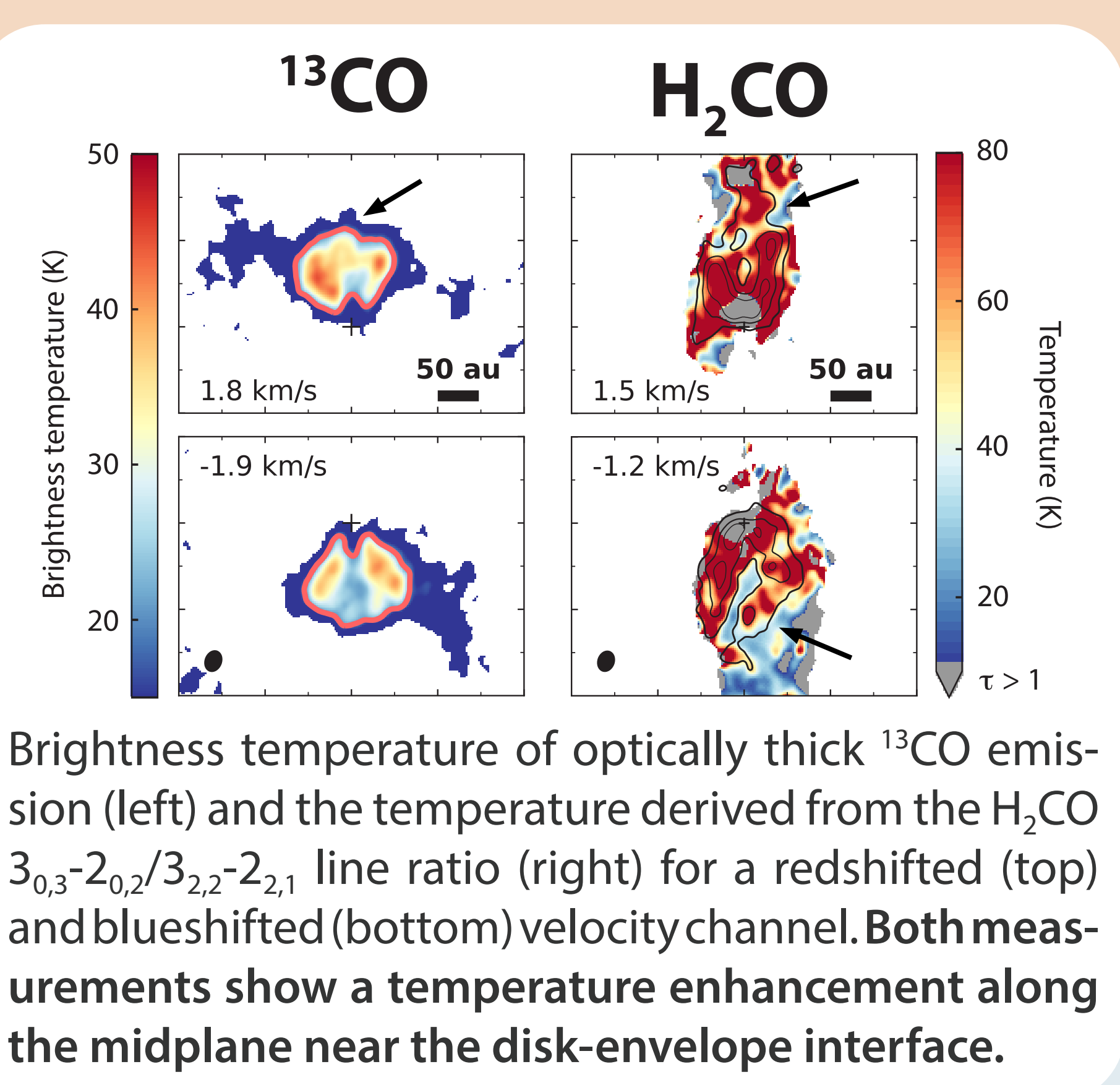
High-resolution ($0.17''$) observations from the ALMA Large Program eDisk confirm a stellar mass of $\sim 0.5 M_{\text{sun}}$, as well as reveal evidence of a disk wind and a temperature increase at the disk-envelope interface [6].



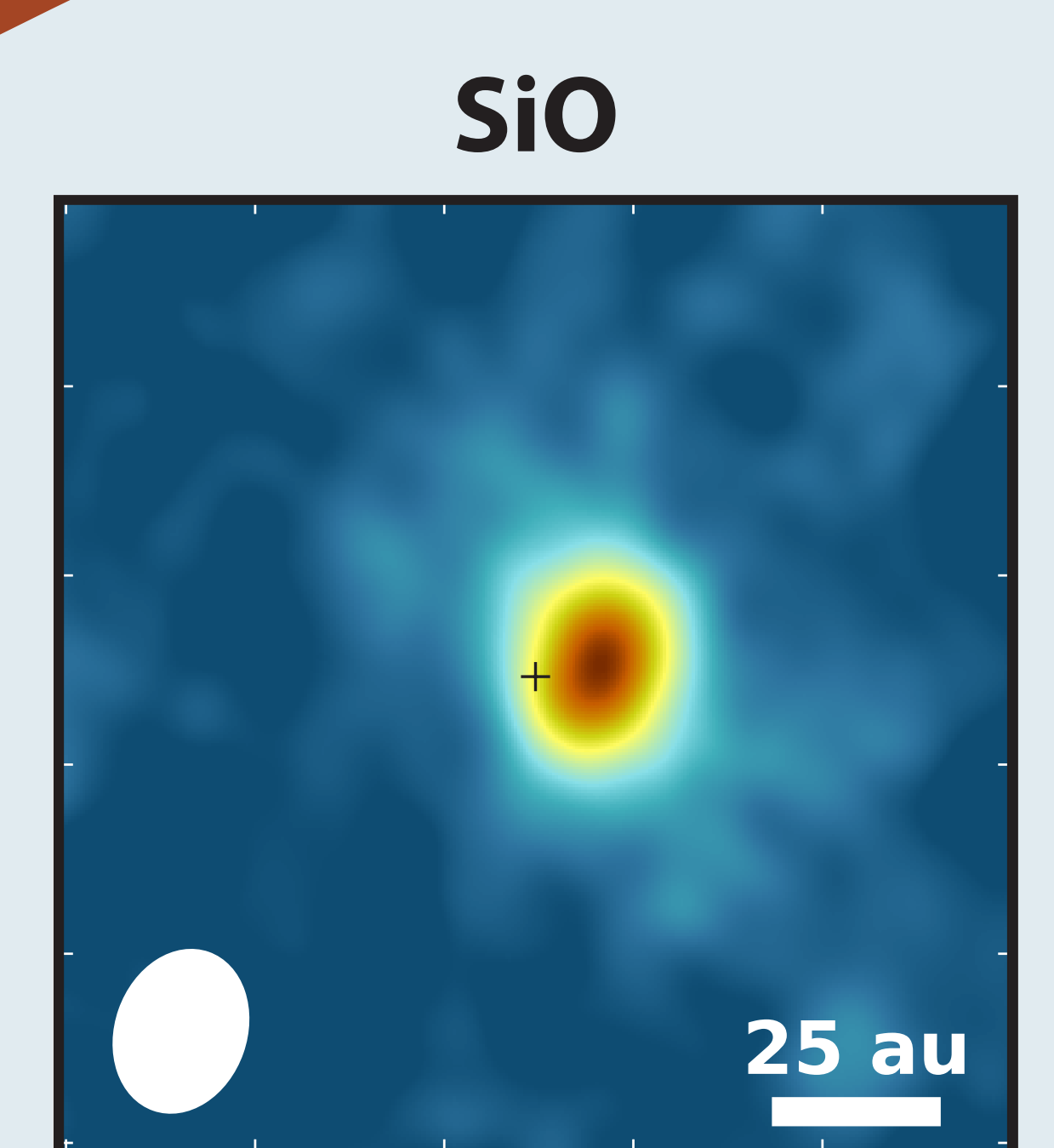
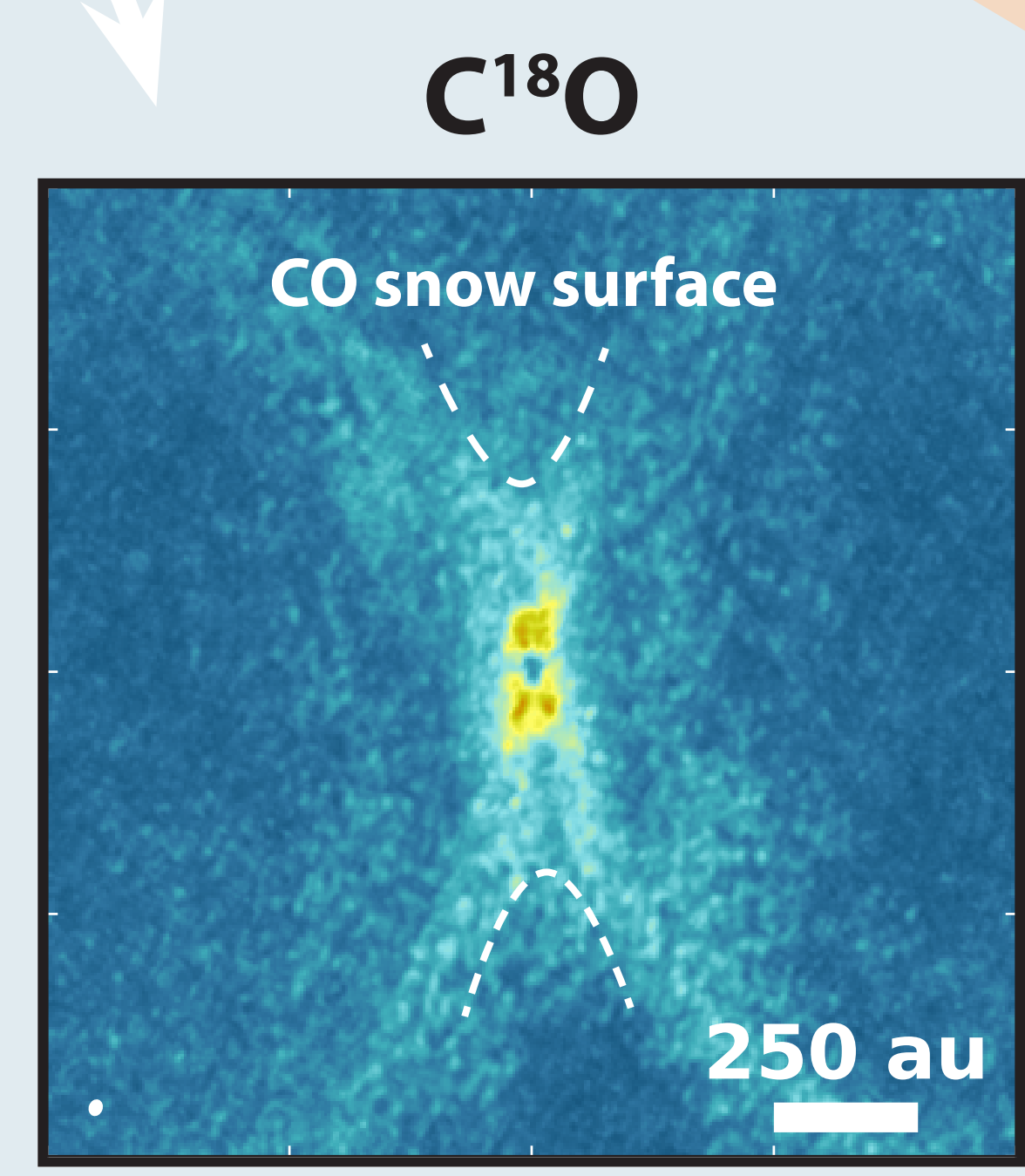
Position-velocity diagrams along the minor axis, $0.6''$ (85 au) north of source. C^{18}O traces the Keplerian disk, while ^{12}CO displays super-Keplerian velocities indicative of a disk wind.



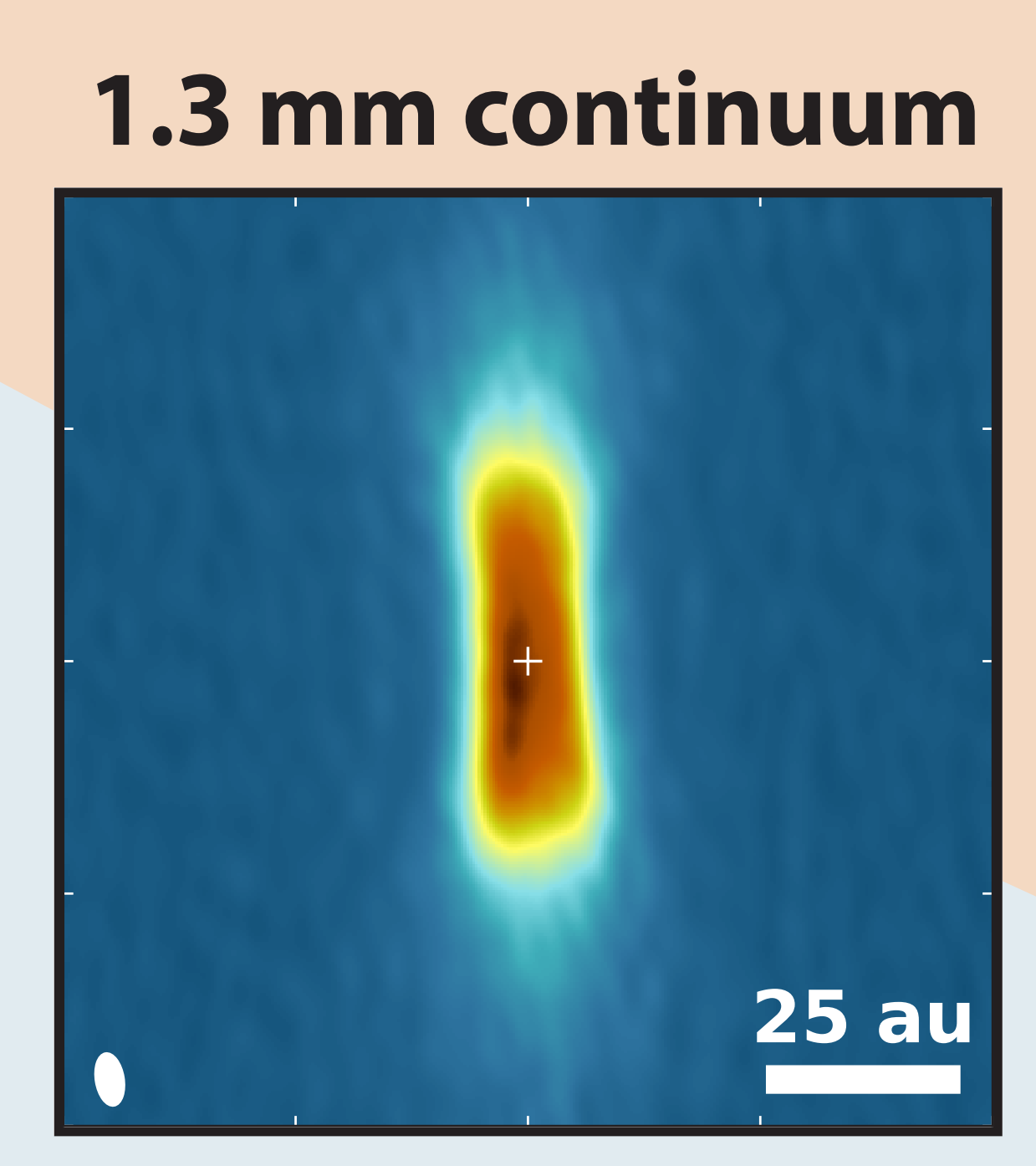
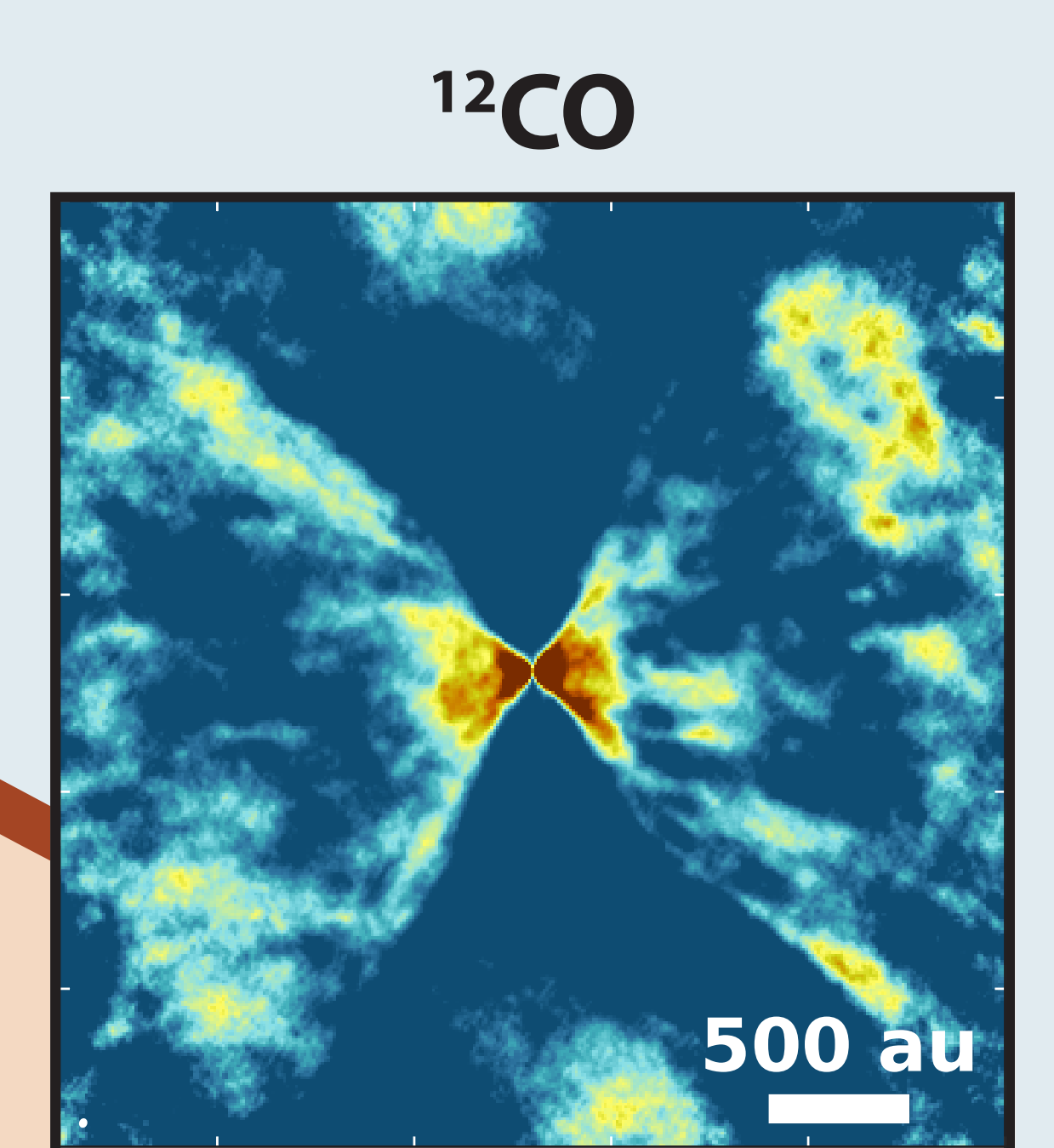
Peak intensity map over only low velocities ($-0.37 - 0.29 \text{ km/s}$)



Brightness temperature of optically thick ^{13}CO emission (left) and the temperature derived from the H_2CO $3_{0,3}-2_{0,2}/3_{2,2}-2_{2,1}$ line ratio (right) for a redshifted (top) and blueshifted (bottom) velocity channel. Both measurements show a temperature enhancement along the midplane near the disk-envelope interface.



Only blueshifted emission detected.



Asymmetries along the minor axis (due to optically thick dust) and the major axis. See also [8,9].