

Atmospheric models of TRAPPIST-1 inner planets and comparison to observations

JWST observations of the secondary eclipse of TRAPPIST-1b at 15 and 12.8 microns have shown a very bright dayside.

Although this is consistent with a bare-rock scenario, and excludes a thick, CO₂-rich atmosphere, we did not have enough knowledge to exclude any possibility of an atmosphere.

A full phasecurve of the planet has been observed more recently, allowing for more information on the 3D thermal structure of the planet.

We explored different atmospheric cases to determine if some of them can produce a dayside emission and phasecurve compatibles with the observations.