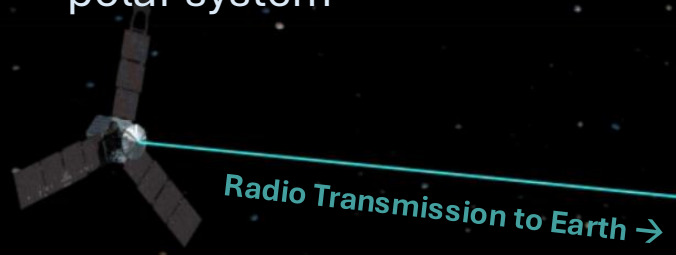
Radio Occultations Reveal Jupiter’s Atmospheric Structure

Jupiter’s atmosphere bends Juno’s radio transmissions to Earth

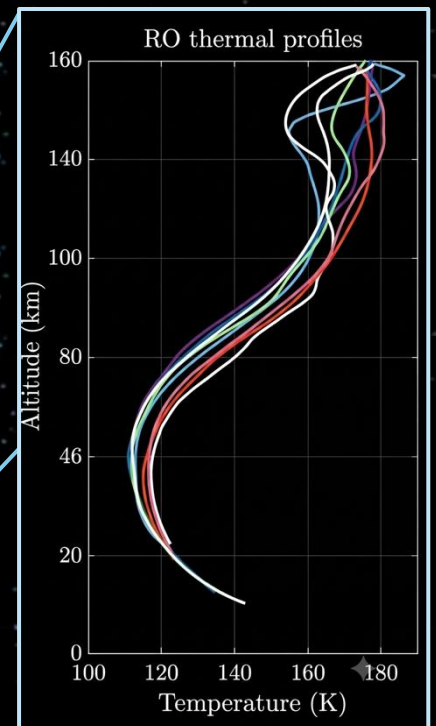
Jupiter’s atmosphere is being heated by multiple sources coming from above and below, such as gravity waves, aurora, sunlight, chemistry, and winds

Juno occultations across a range of latitudes constrain atmospheric temperature and pressures to reveal how Jupiter works from the equator to the pole

Results show a polar vortex in Jupiter's north driving large temperature changes and powerful winds shaping Jupiter’s weather system. Earth has a similar cold polar system



Radio Transmission to Earth →



Inset shows variability in temperature profile as function of altitude in Jupiter’s north

Caruso, Andrea, et al. *Geophysical Research Letters* 52.22 (2025): http://dx.doi.org/10.1029/2024GL113231
Smirnova, Maria, et al. *Geophysical Research Letters* 52.22 (2025): http://dx.doi.org/10.1029/2025GL116804
Smirnova, Maria, et al. *Astronomy & Astrophysics* 706 (2026): https://doi.org/10.1051/0004-6361/202556819