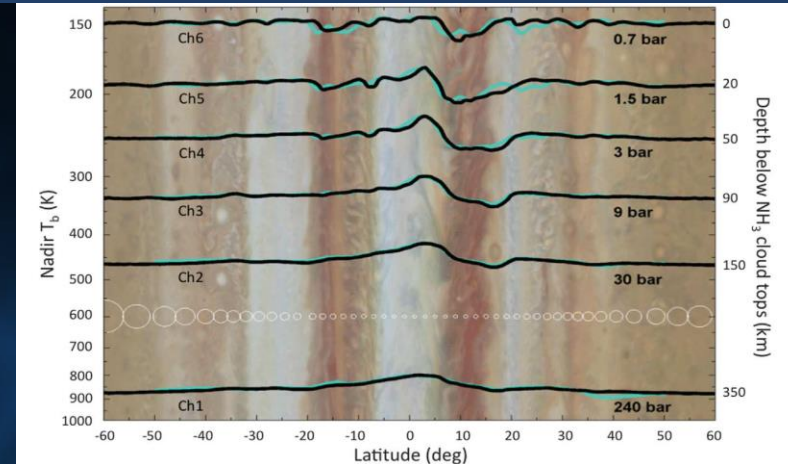


# Juno finds atmospheric surprises at Jupiter

Science observations of Jupiter with the Juno spacecraft have already begun to yield an unprecedented view of atmospheric dynamics beneath Jupiter's clouds.

- The MicroWave Radiometer (MWR) collects data on the thermal emission upwelling from depth in Jupiter's atmosphere (figure right, above). The main scientific objectives for this instrument are to determine the global abundance of ammonia and water, and to observe dynamical features in the deep atmosphere.
- Ammonia distribution with depth vs latitude (figure right, below) are surprising:
  - Weather extends 100's of km beneath the clouds
  - North-South structure is asymmetric
  - Jupiter is not uniform at depth. This implies that previous in-situ probe data (like Galileo dropped off) that measured bulk composition & other properties of giant planets should not be applied globally.



Above: Nadir brightness temperatures in the six channels of the MWR versus planetocentric latitude for the first two passes (black/green) overlain over Hubble image of the surface. Below: Planetocentric latitude-altitude cross section of ammonia mixing ratio. At the top ammonia is condensing; at the equator, the high mixing ratio is likely air exchanging with the deep atmosphere.

