

JunoCam at PJ32: What the pictures show

John Rogers (BAA) (2021 March)

Figures

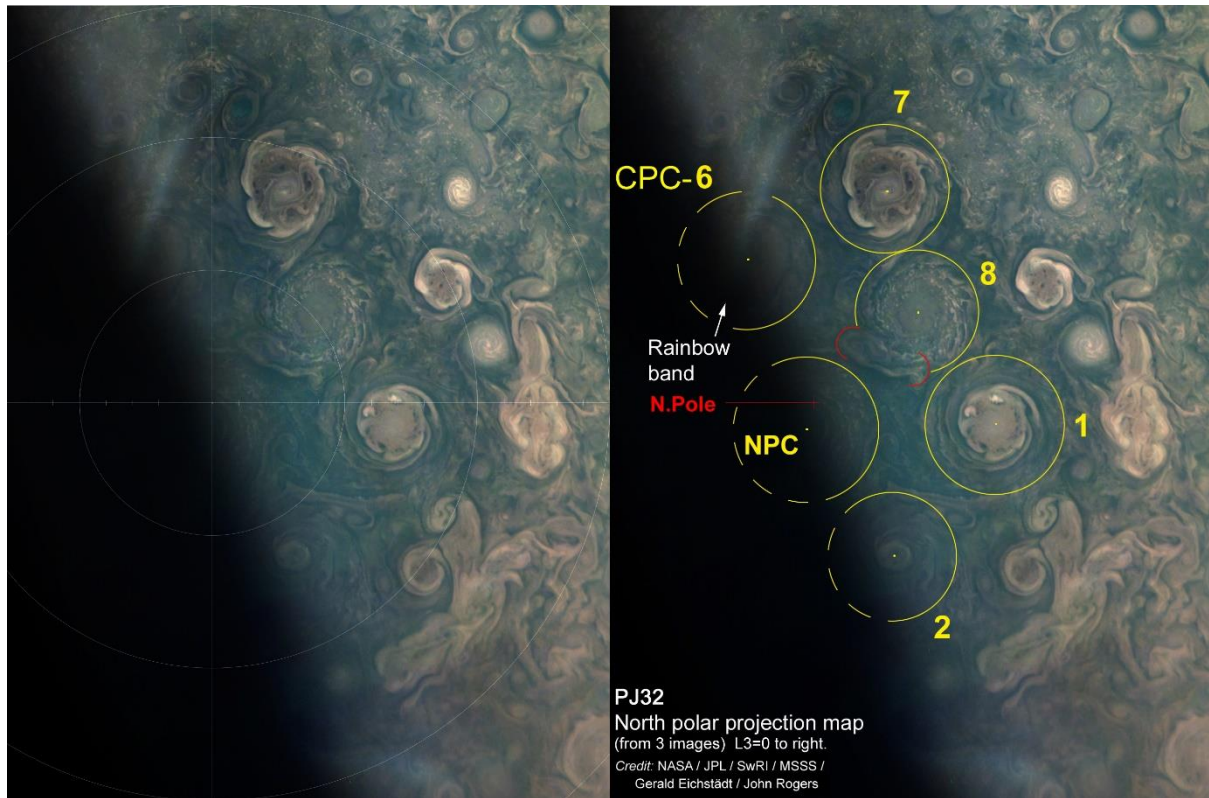


Figure 1. Composite map of the CPCs at PJ32.

Composite north polar projection map, PJ30-PJ32

L3=0 to right. (No rotation nor translation)

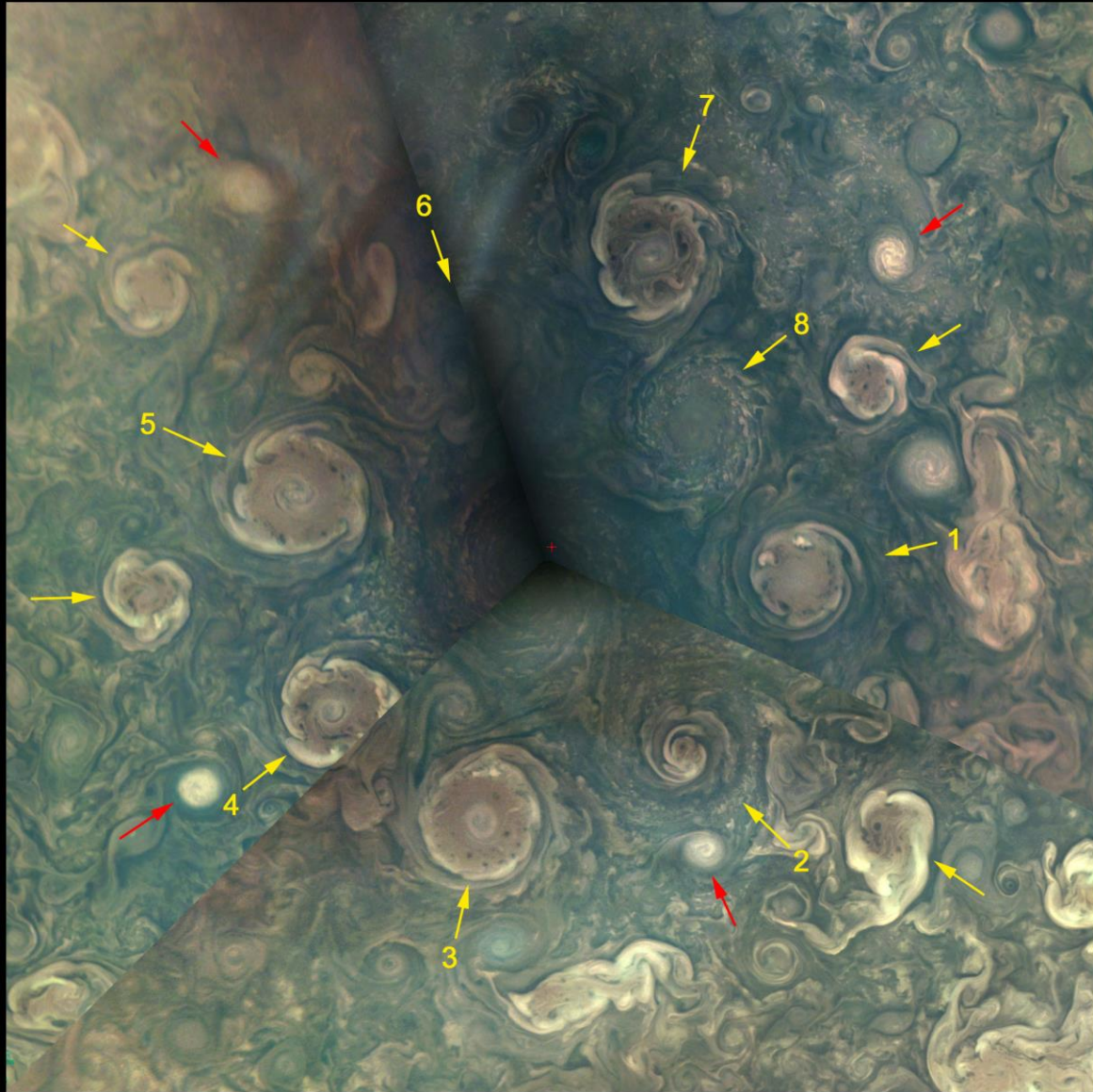
Planetocentric latitude

89 88 87 86 85 84 83 82 81 80 79 78 77 76

PJ30

Credit: NASA / JPL / SwRI / MSSS / Gerald Eichstädt / John Rogers

PJ32



PJ31

Figure 2. Composite map of the CPCs from PJ30 to PJ32. (The last map of this type was in our PJ28 report.) The long-lived CPCs are numbered. Unnumbered yellow arrows indicate smaller cyclones with filled central regions like miniature CPCs. Red arrows indicate small AWOs.

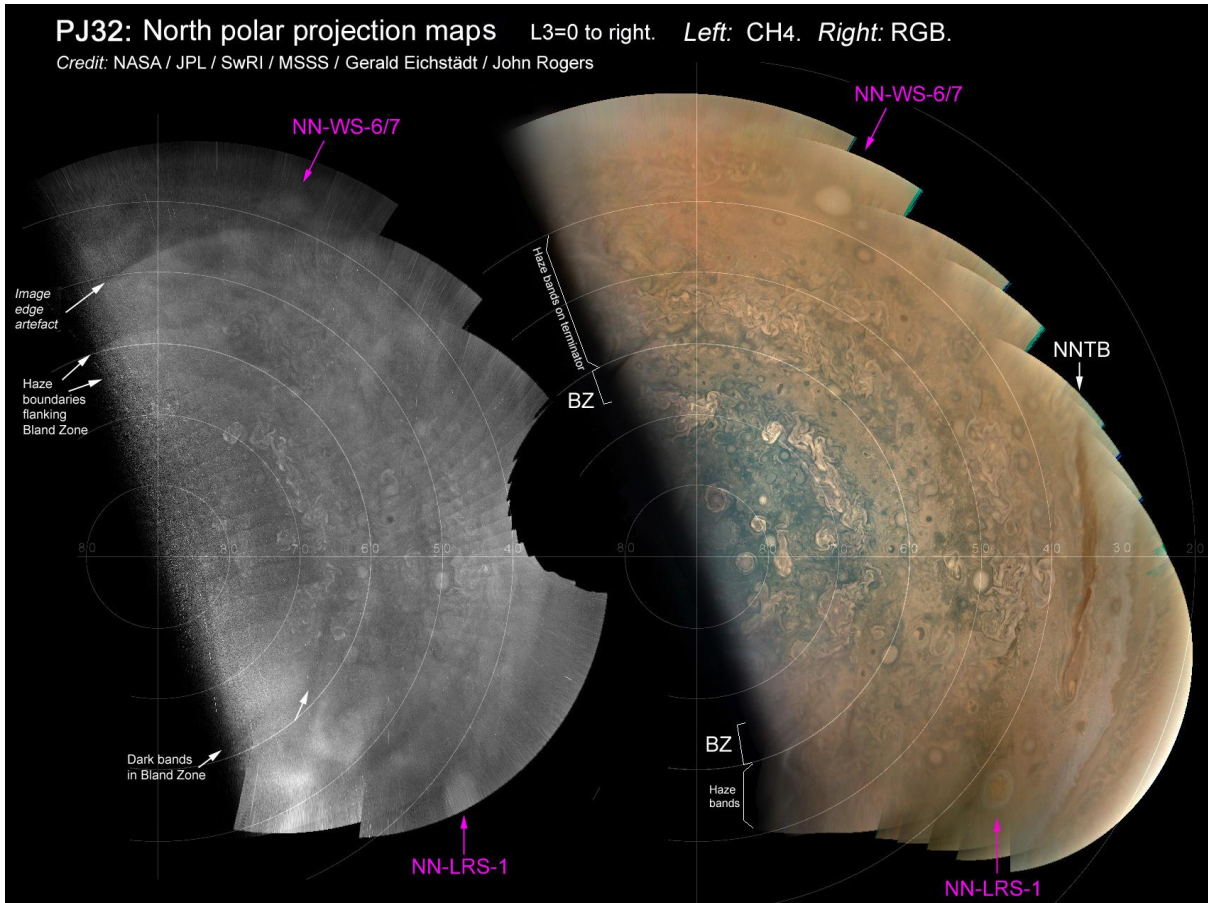


Figure 3. North polar projection maps of the northern hemisphere. (The CH₄ map is from images 24 & 27 & 30.)

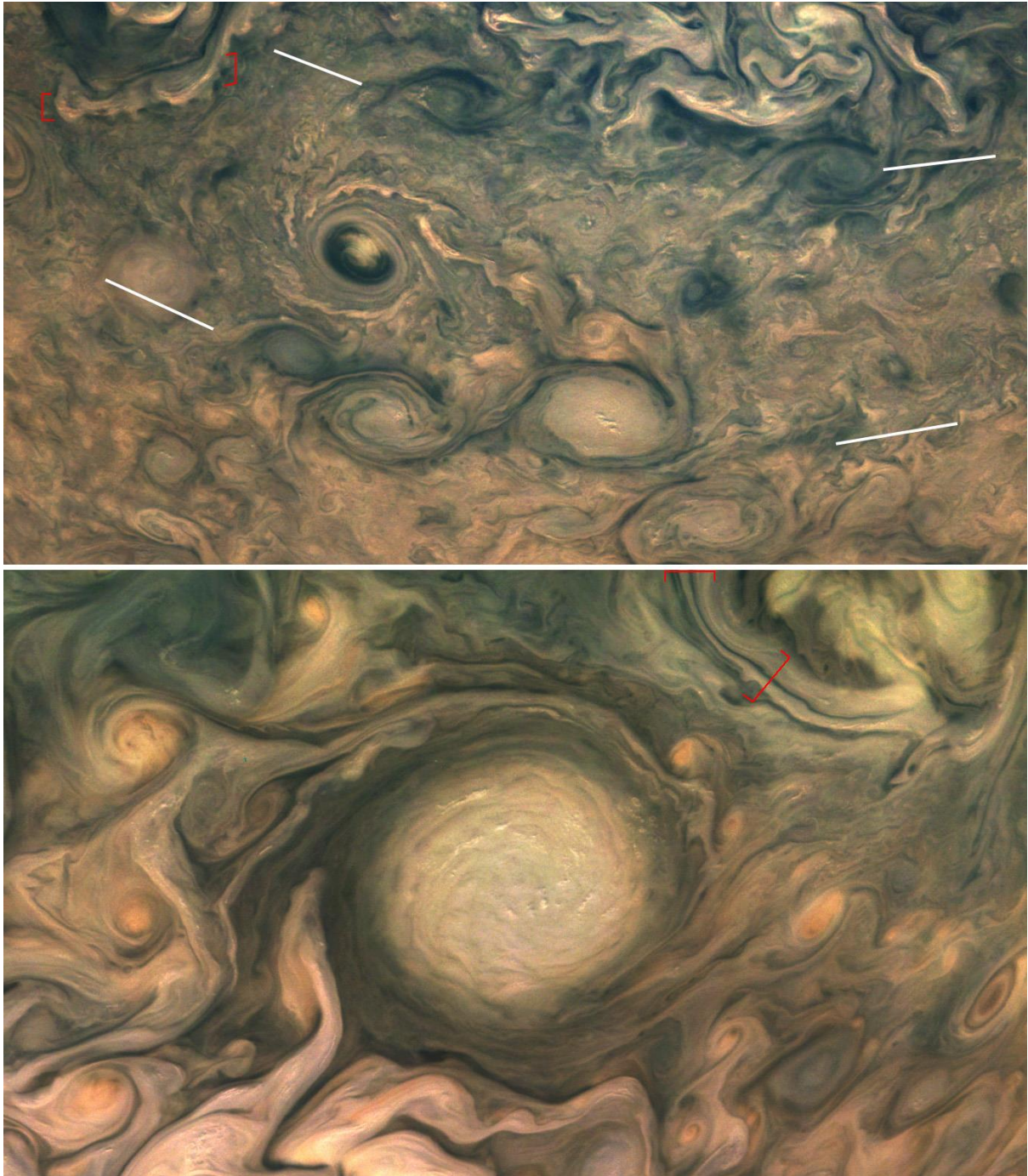


Figure 4. Closeups in far northern domains, with north approximately up (images processed by Gerald). (a) Cluster of ovals interrupting the Bland Zone: two AWOs and a dark compact cyclone, and smaller vortices. White lines outline the Bland Zone. (b) AWO in the N4 domain. Red brackets in each image indicate curious bands, each bordering a cyclonic disturbance, which consist of multiple parallel lines suggestive of waves. (Compare the parallel rows of popup clouds on the white border of the NNTB in Fig.5.)

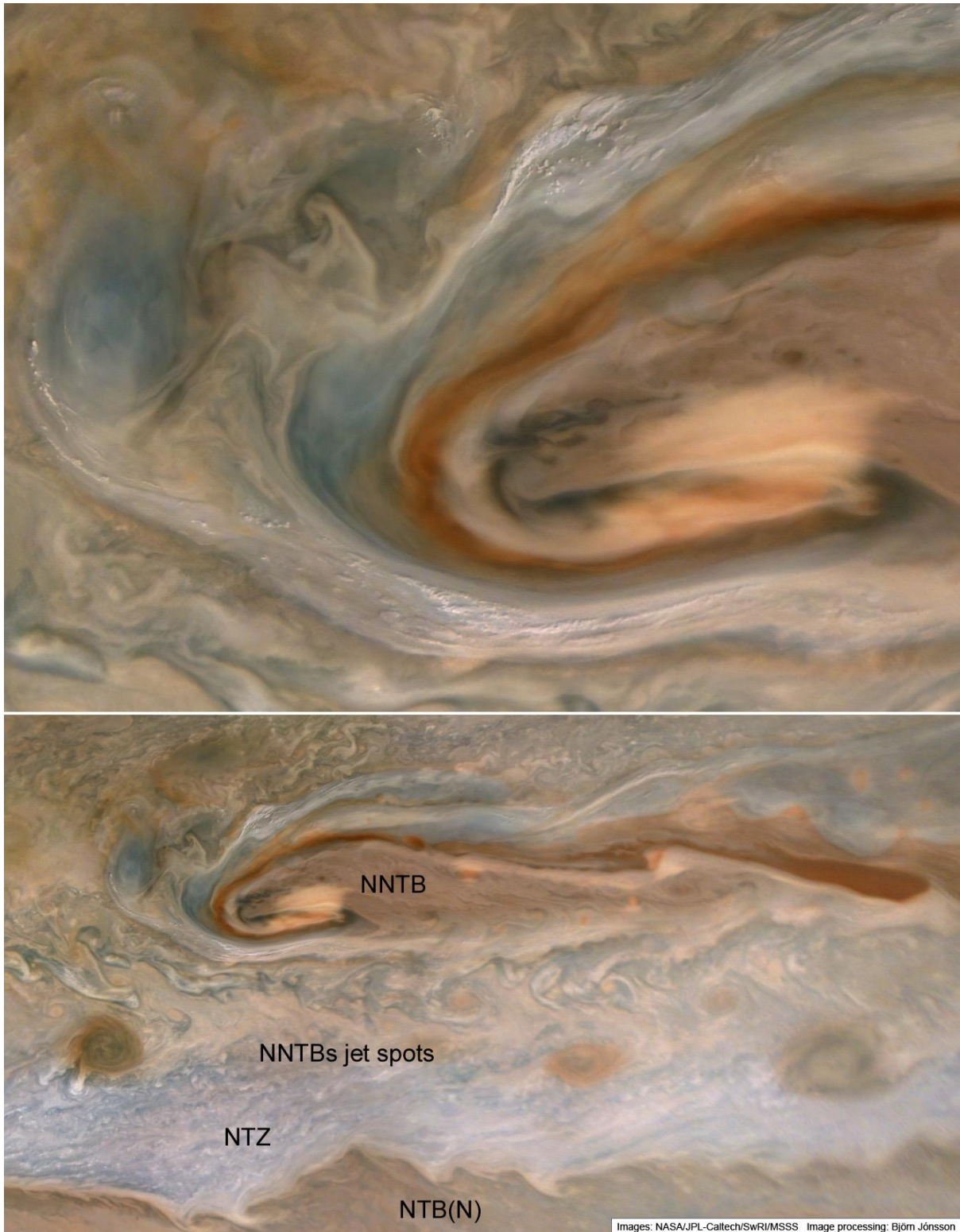


Figure 5. Cylindrical map of the NNTB & NTZ, by Björn Jónsson. North is up. *Below:* Complete map at reduced scale. *Above:* Full-scale excerpt covering the f. end of the NNTB.

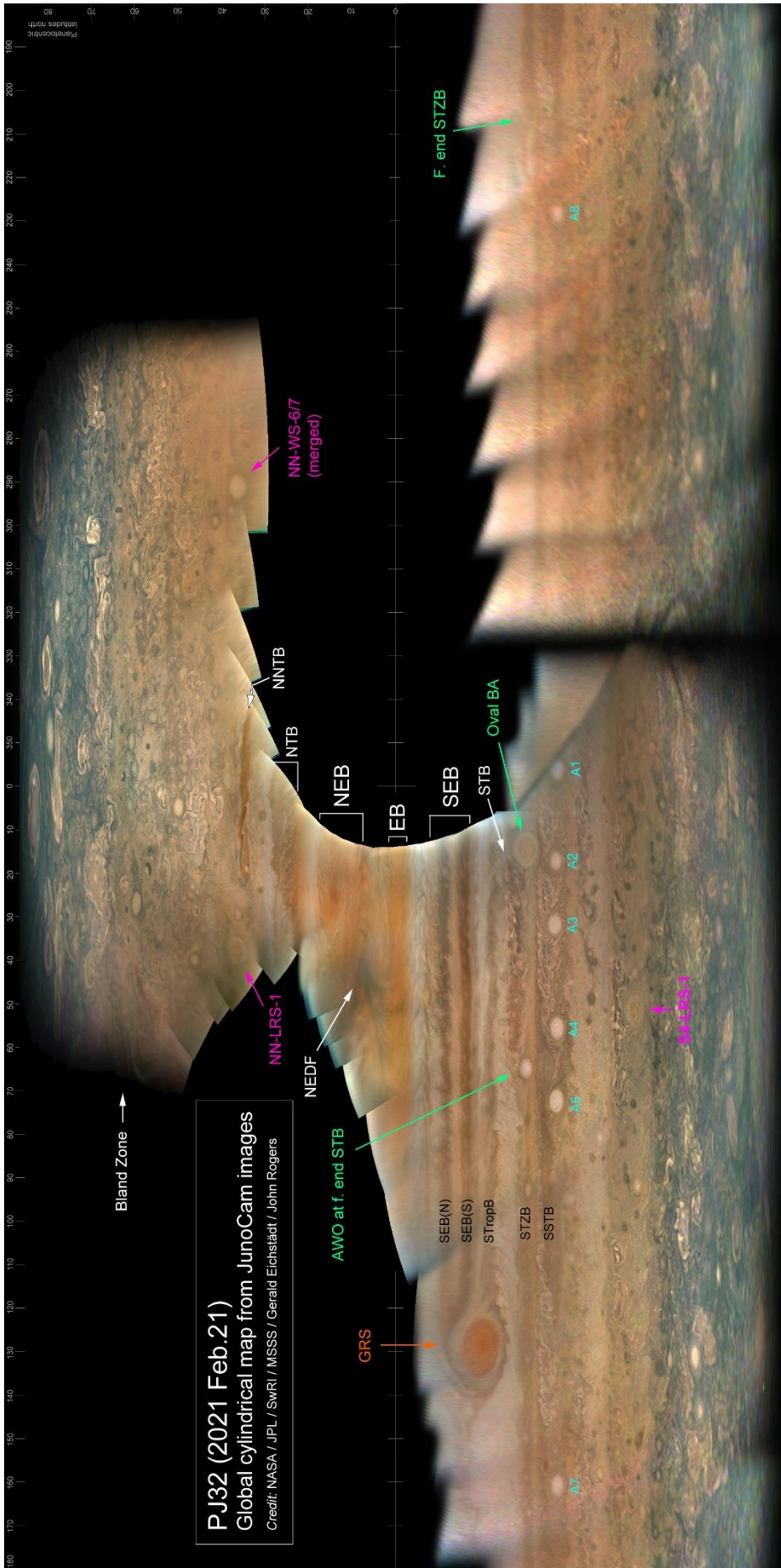


Figure 6.

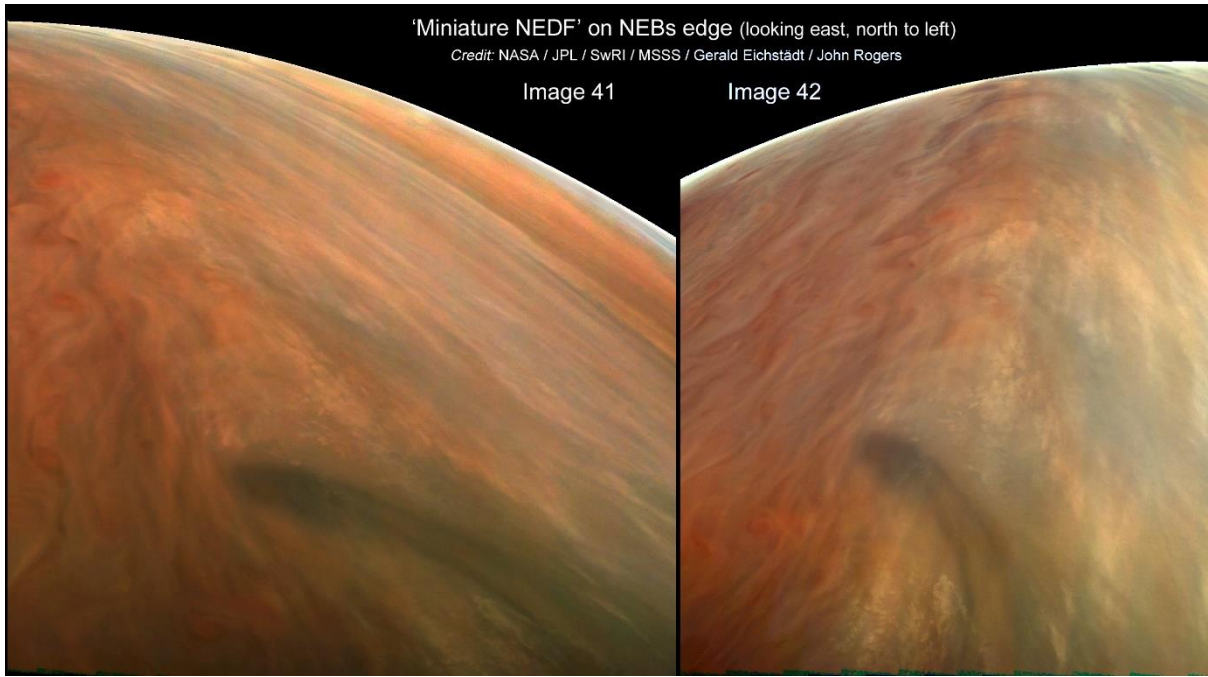


Figure 7. Two images showing a feature on the NEBs edge.

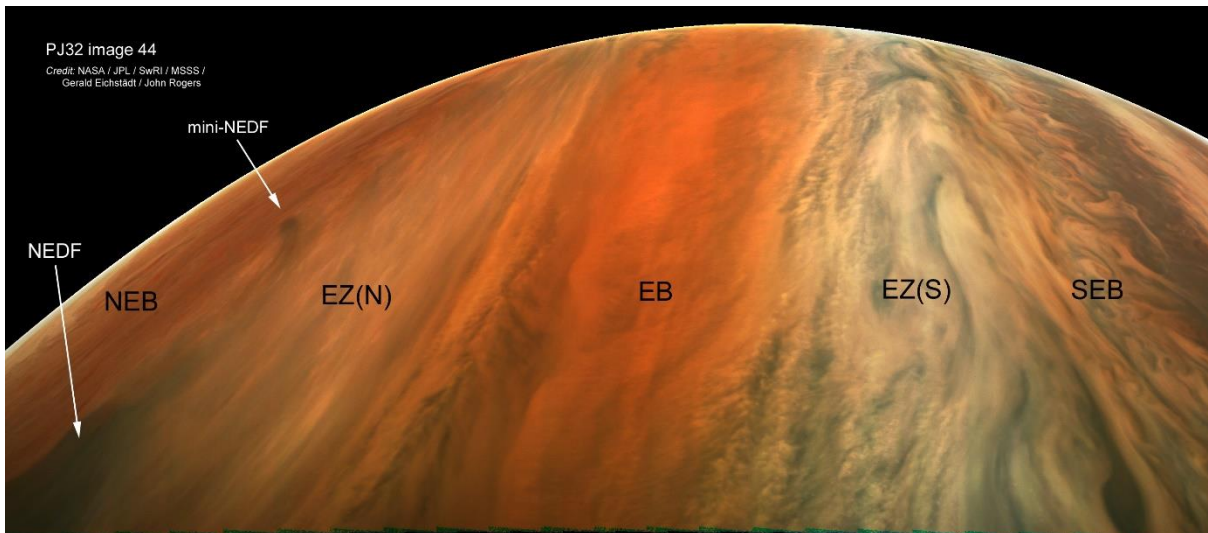


Figure 8. Image covering the full width of the EZ. Mesoscale waves are widespread over the orange EB.

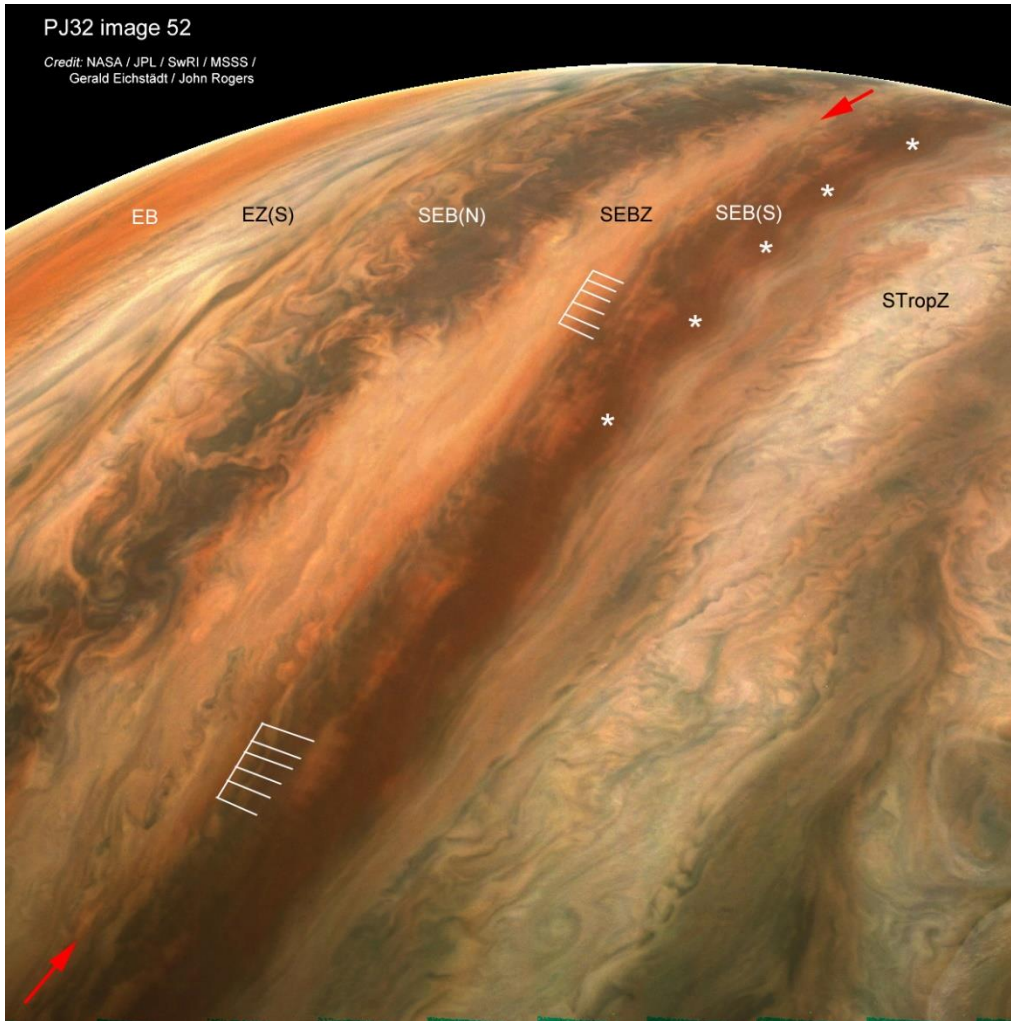


Figure 9. Oblique view of the SEB(S), showing mesoscale waves (e.g. two wavetrains indicated by white ‘combs’, and many between them), meandering waves on the SEBs (white asterisks), and a red haze band (red arrows).

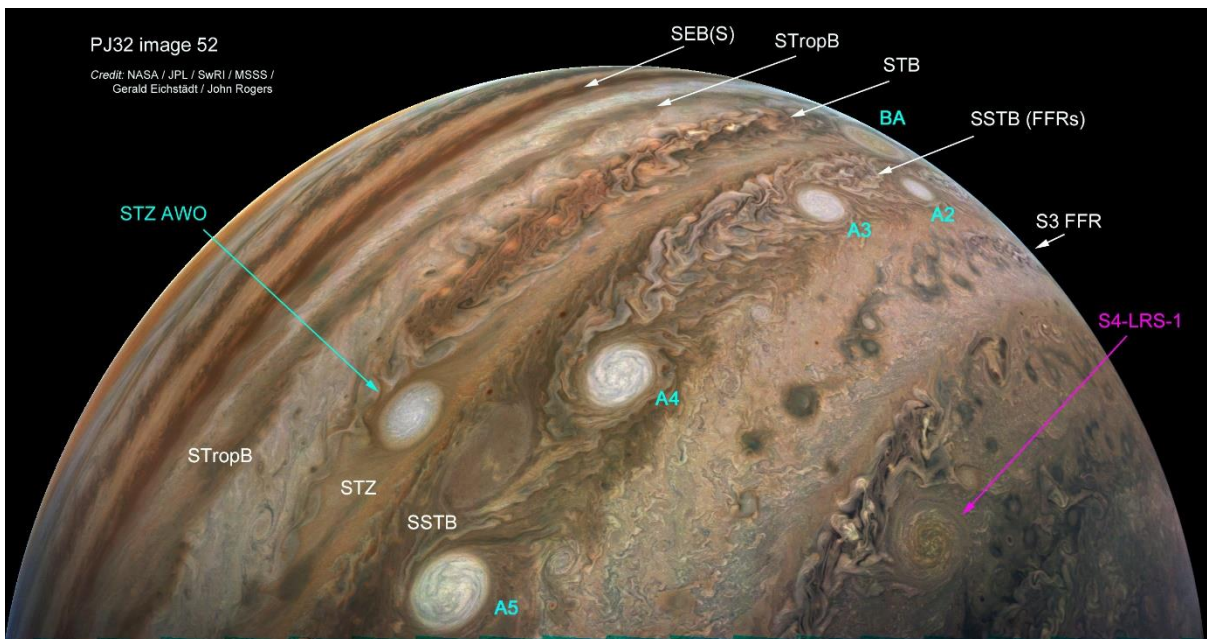


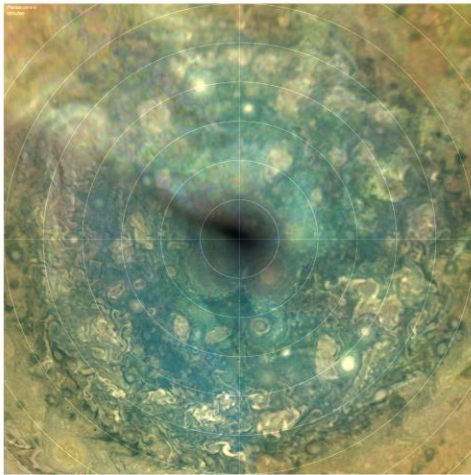
Figure 10. Image showing the southern temperate domains.

PJ32: South polar projection maps

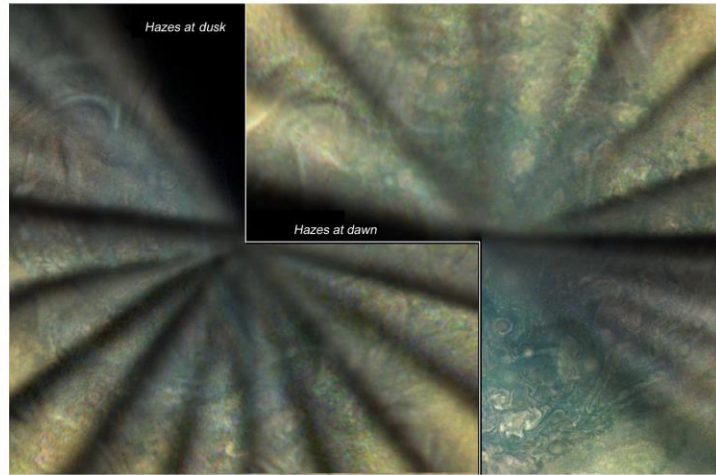
L3=0 to left. Red cross = south pole.

Credit: NASA / JPL / SwRI / MSSS / Gerald Eichstädt / John Rogers

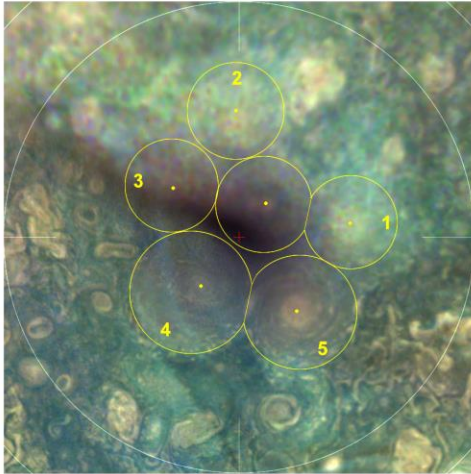
(A) RGB, down to 60°S at edges (half scale)



(C) RGB, down to 60°S at edges (half scale), showing near-terminator regions to highlight haze bands. Left: dusk. Right: dawn.



(B) RGB, showing the CPCs (full scale)



(D) Methane band (down to STropZ/STZ; 85% scale)

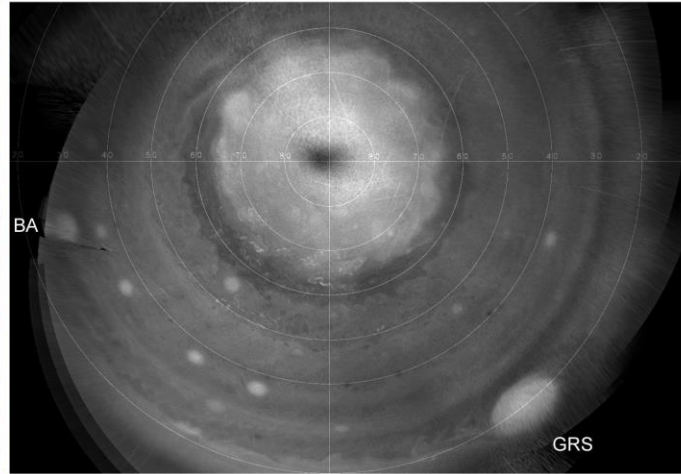
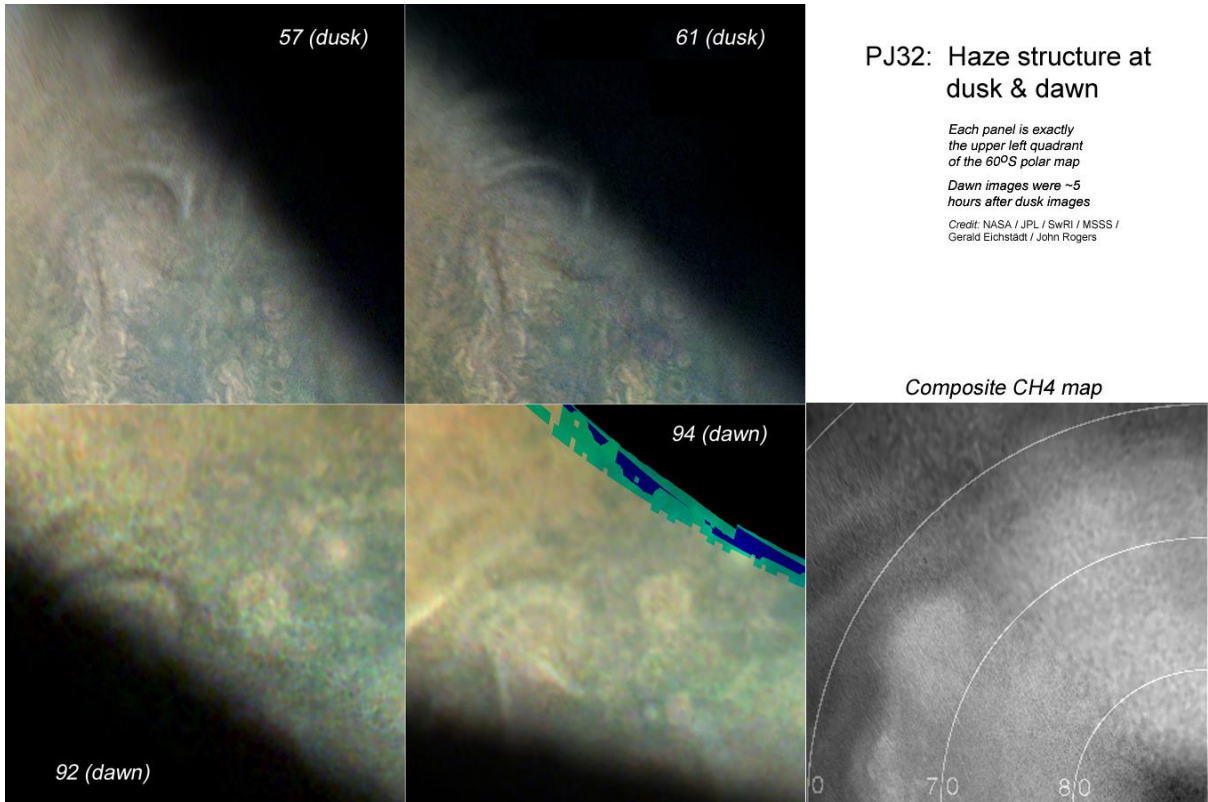


Figure 11. Four composite polar projection maps of the South Polar Region.



PJ32: Haze structure at dusk & dawn

*Each panel is exactly the upper left quadrant of the 60°S polar map
 Dawn images were ~5 hours after dusk images
 Credit: NASA / JPL / SwRI / MSSS / Gerald Eichstadt / John Rogers*

Figure 12. Four single polar projection maps of one quadrant of the SPR, showing a prominent set of arcuate haze bands, plus the same region in the composite methane map.

Position of SPC w.r.t. South Pole

The centre of the SPC is marked at each perijove, on a background map from PJ25 (& PJ21, lower left) (Enlarged x1.33 w.r.t. standard map)

Composite of all positions, PJ1-PJ31

Throughout these 4 years, the SPC has been oscillating with $P = 11.5 (\pm 1)$ months, in longitude and usually in latitude, cycling anticlockwise and progressively drifting in one direction

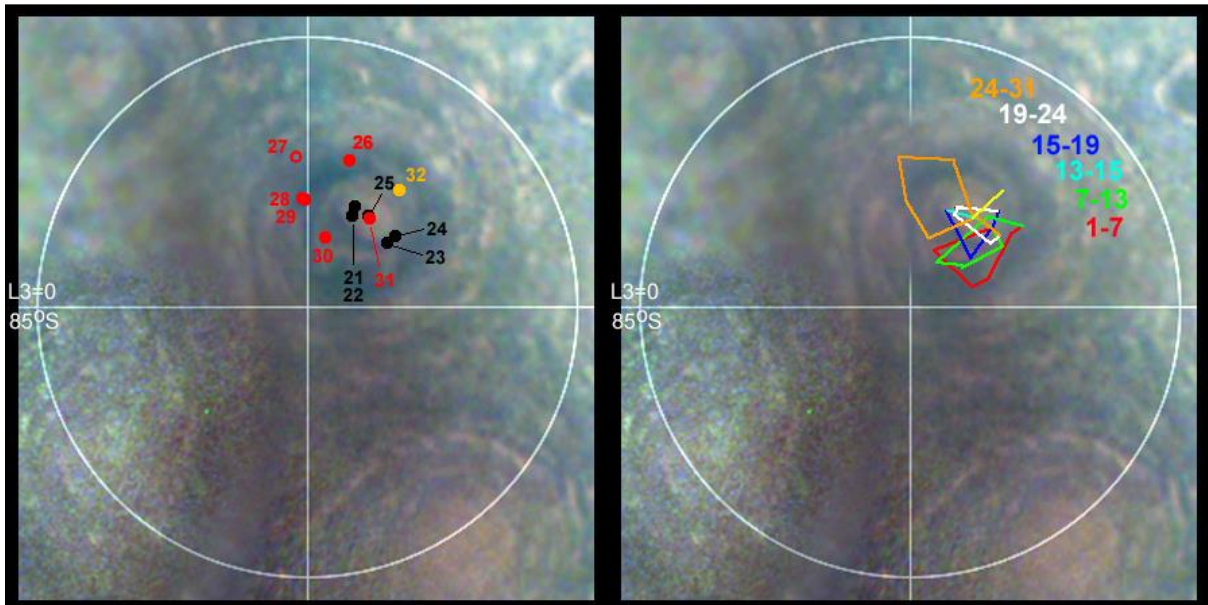


Figure 13. Motion of the central South Polar Cyclone over the past 1.5 years and the past 4.5 years.