

# Jupiter in 2023/24: Report no.1

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## Figures (small copies)

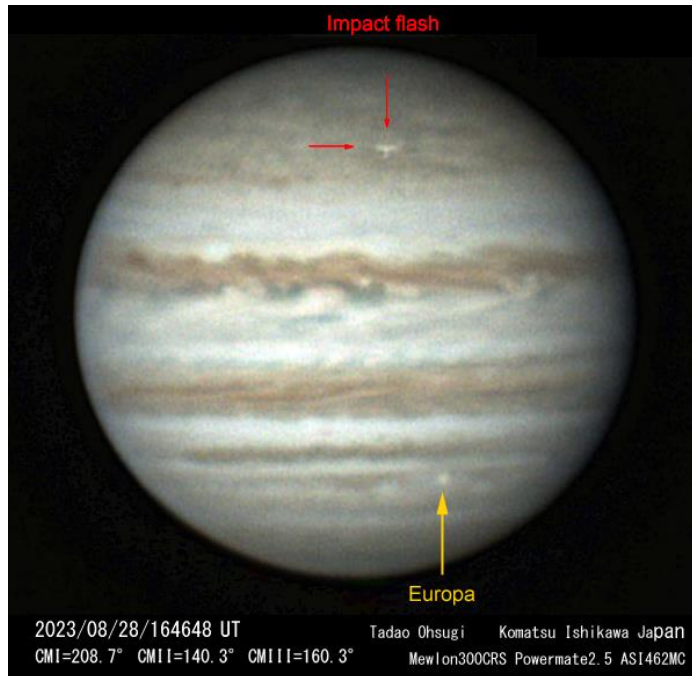


Figure 1: An impact flash observed on 2023 Aug.28 from Japan. (The point flash was blurred by unsteady seeing.)

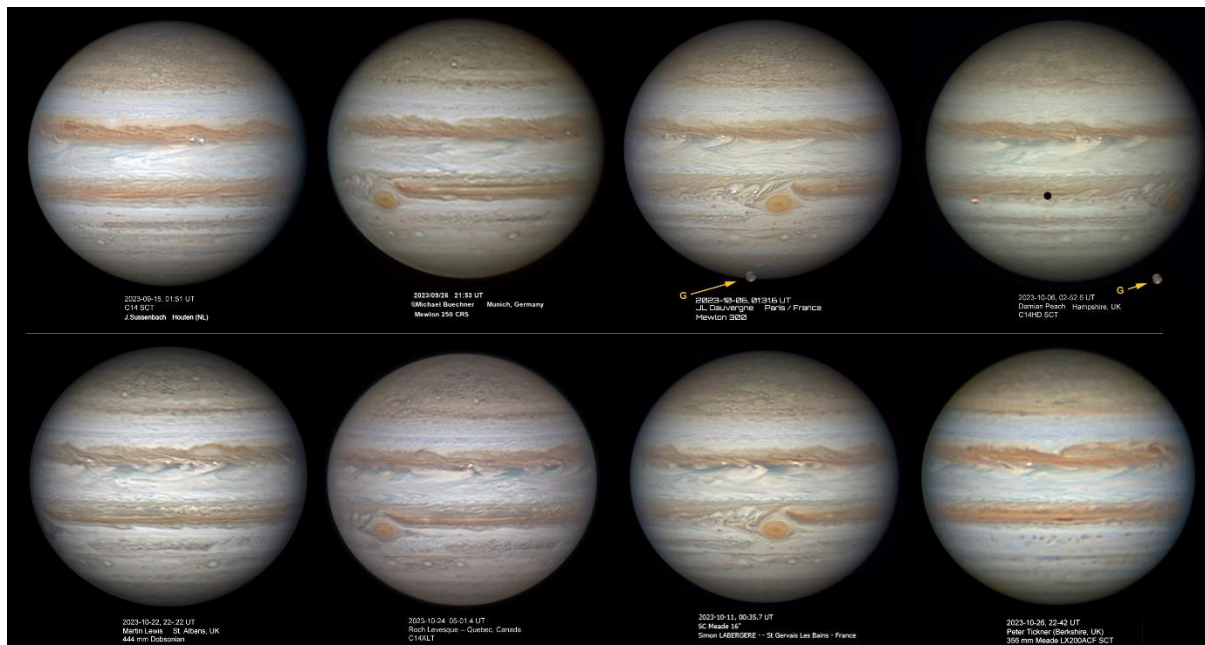


Figure 2: Some recent images from the UK, France, and other places north of 45°N, showing what good resolution can be achieved now that the planet has moved into the northern sky. (A) Two images on Oct.6 (upper right) show a grazing transit of Ganymede then a transit of Io with its shadow. (This set was also posted as a BAA on-line news item.)

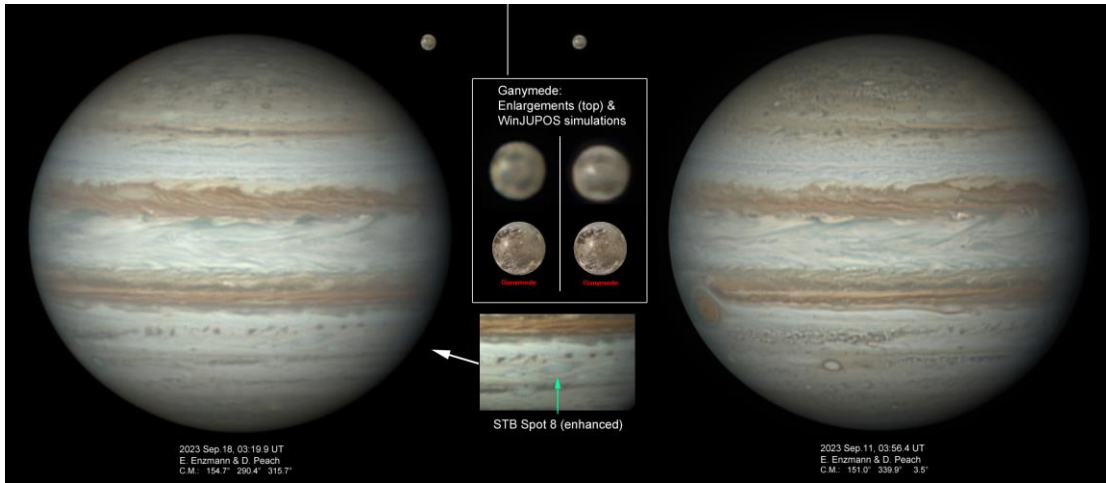


Figure 2 (B) Two v-hi-res images by Enrico Enzmann (Germany) with Damian Peach (UK), including Ganymede with features including the white polar caps and the bright ray crater Tros.

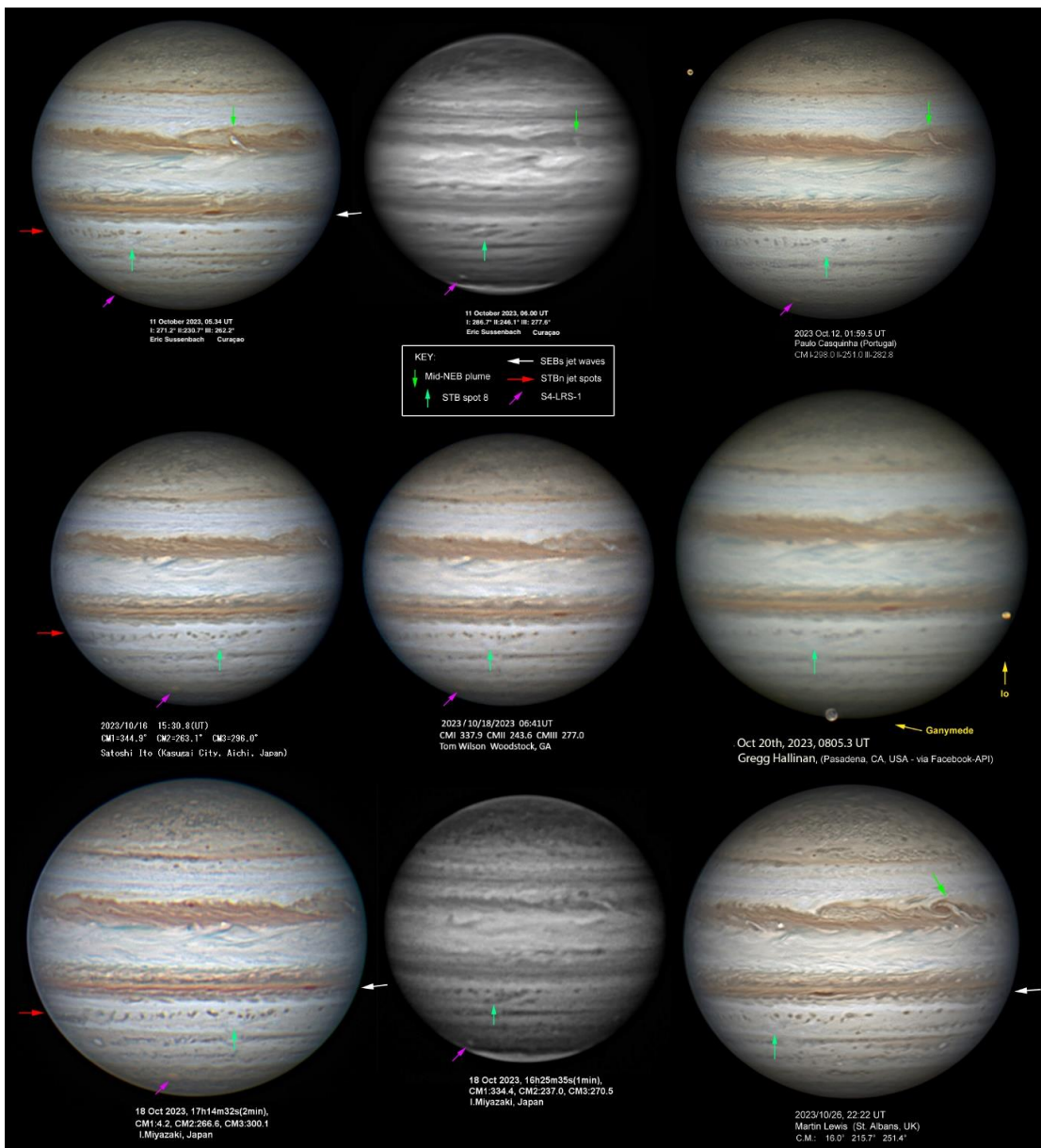


Figure 3: Hi-res images in October including a bright plume that initiated a rift in the NEB at the p. end of a faded barge; a wavetrain on the SEBs jet, beginning to retrograde past a dark red-brown barge in the SEB; and numerous STBn jet spots streaming past STB Spot 8. (Also see Figures 10-14.)



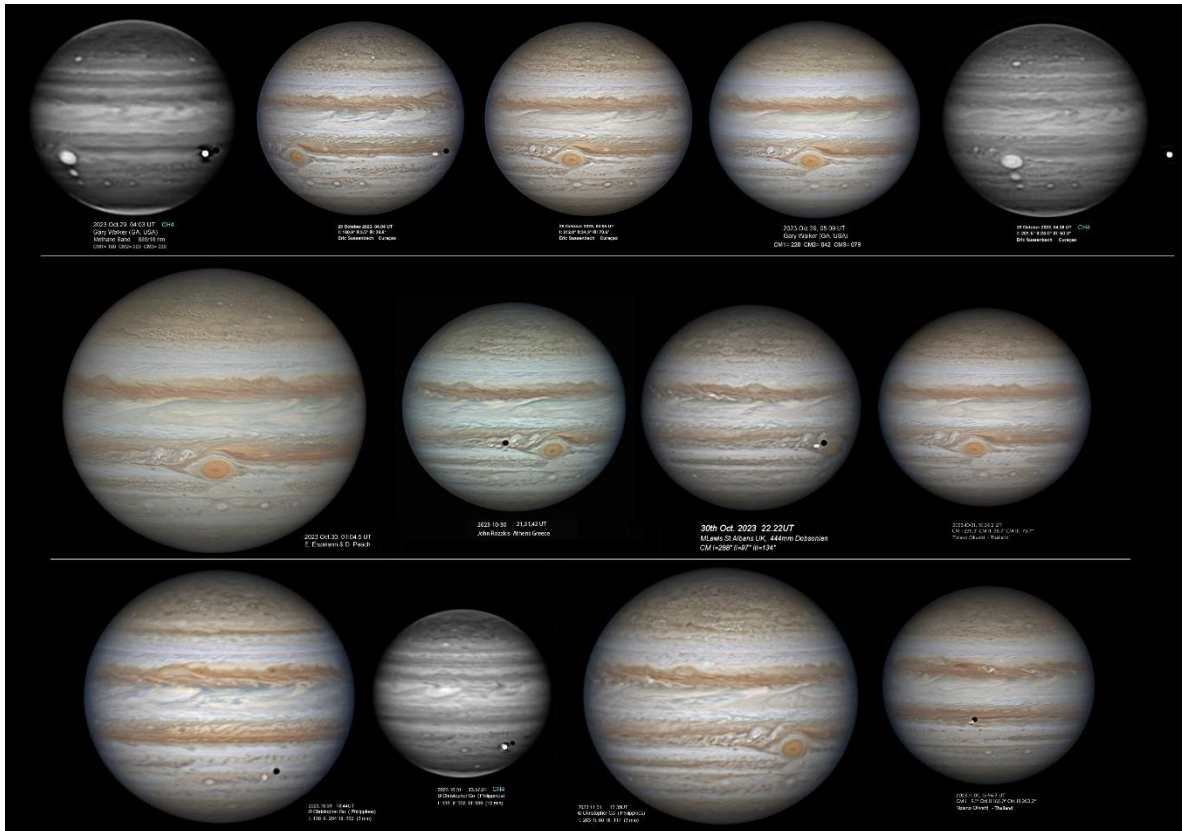
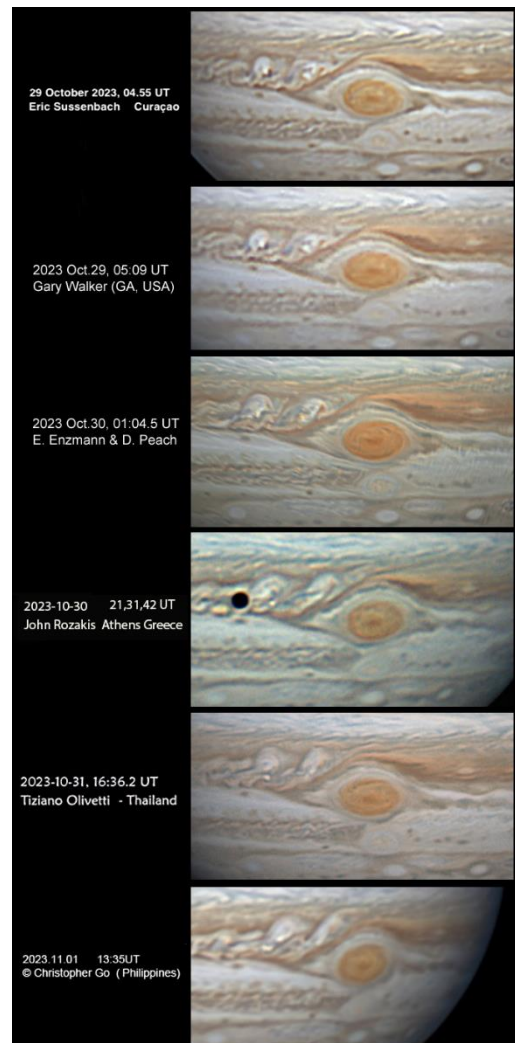


Figure 4. (A) Hi-res images showing the GRS, and/or moons in transit with their shadows, Oct.29—Nov.1, just a few days before opposition on Nov.3. They show three transits of Io on the SEBs, and one of Europa on the SSTB (Oct.31). (Further images of the satellite transits with shadows at opposition, and hi-res views of the satellited, are posted in 2023/24 Report no.2.) Bright ovals in the methane-band images include the GRS with oval BA due S of it & NN-LRS-1 due N of it.

(B) Cropped versions showing details in and around the GRS. Note that the first two images are nearly simultaneous and demonstrate the reproducibility of the smallest details as imaged by different observers. Thereafter the images are at intervals of two jovian rotations, during which dark spots and streaks inside the GRS would be expected to rotate by  $\sim 90^\circ$  in position angle, but they seem to be too variable to track them in these images. However, two narrow dark grey streaks can be tracked passing along the deflected jets just outside the GRS: one to the S (STBn jet) and one to the N (SEBs jet in the Red Spot Hollow). Note oval BA just S of the GRS; it has very low contrast but a pale reddish interior oval is visible.



2023 August 21-22 Images by I. Miyazaki & S. Ito; Map by Rob Bullen (JUPOS team); Annotations by John Rogers (BAA)

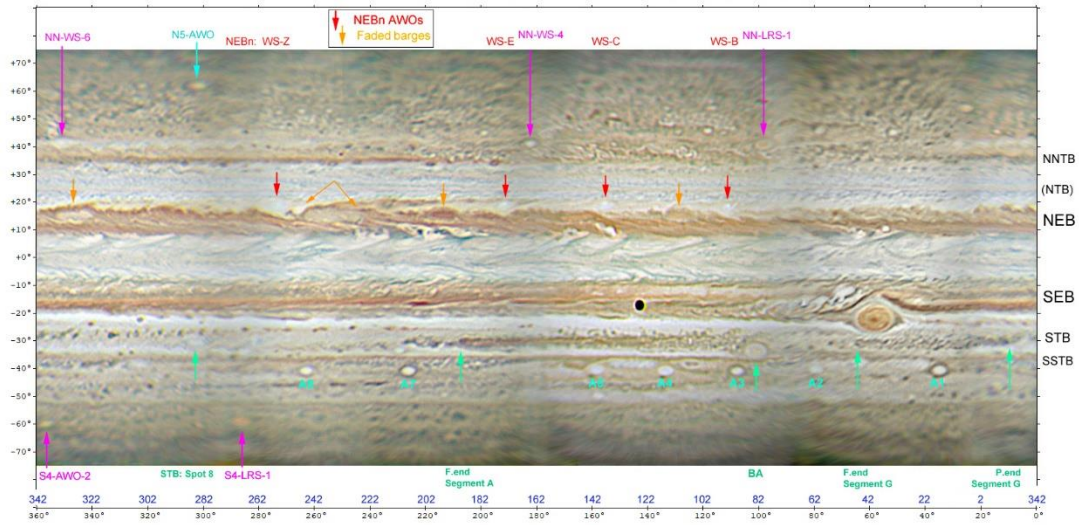


Figure 5. Map of Jupiter on 2023 Aug.21-22, by Rob Bullen.

Jupiter, 2023 Oct.10-11 Images by S. Ito, T. Olivetti, I. Miyazaki & C. Fattinanzi; Map by Rob Bullen (JUPOS team); Annotations by John Rogers (BAA)

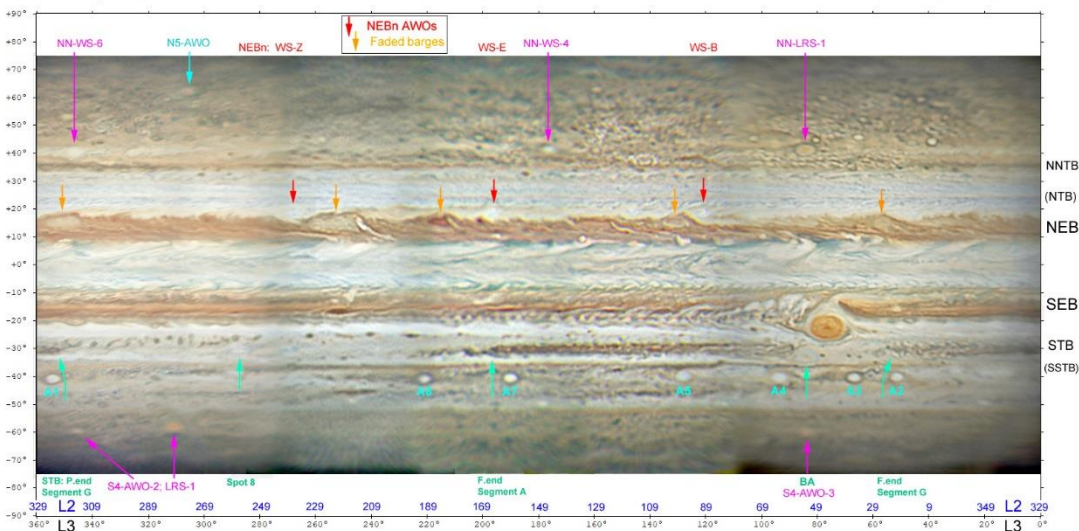


Figure 6. Map of Jupiter on 2023 Oct.10-11, by Rob Bullen (also posted in BAA news item).

2023 Oct.30-31 Images by 7 observers on ALPO-Japan; Map by Rob Bullen (JUPOS team)

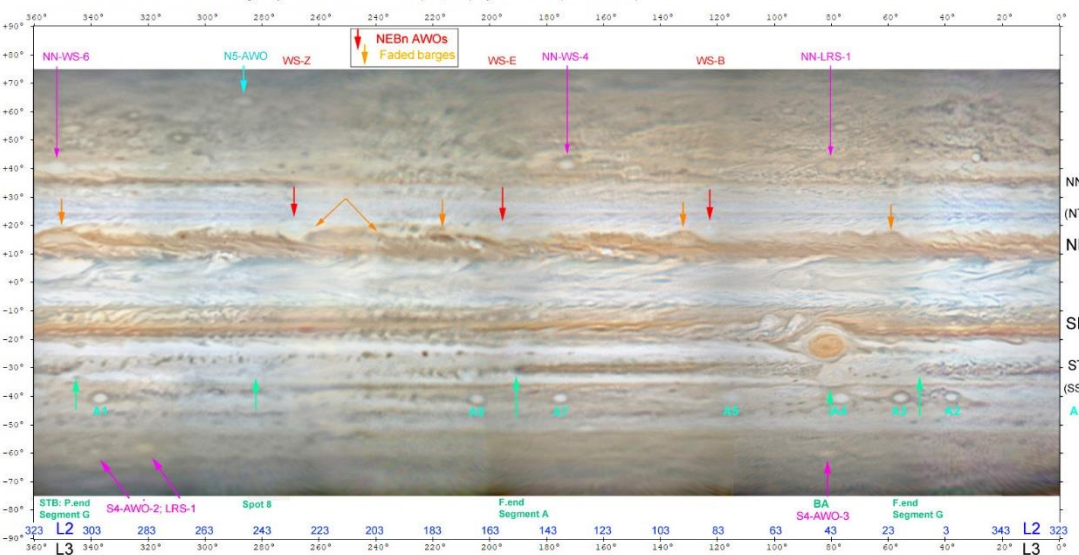


Figure 7. Map of Jupiter on 2023 Oct.30-31, by Rob Bullen.



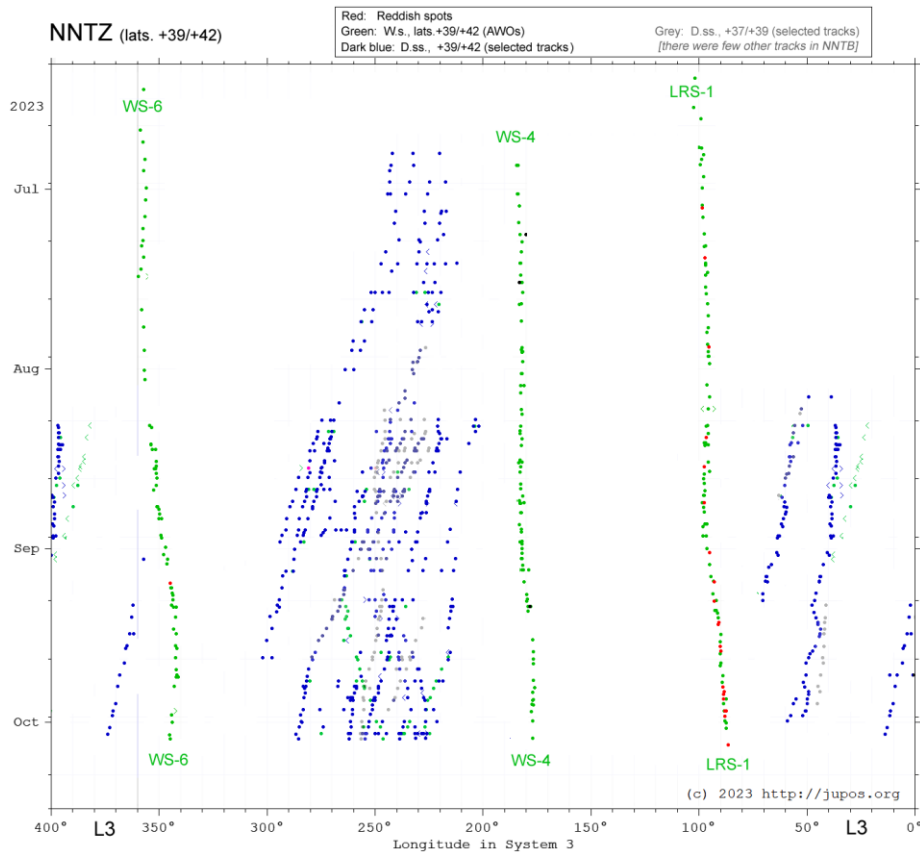


Figure 8. JUPOS chart of the N.N. Temperate (N2) domain. For clarity, only spots belonging to distinct tracks are shown.

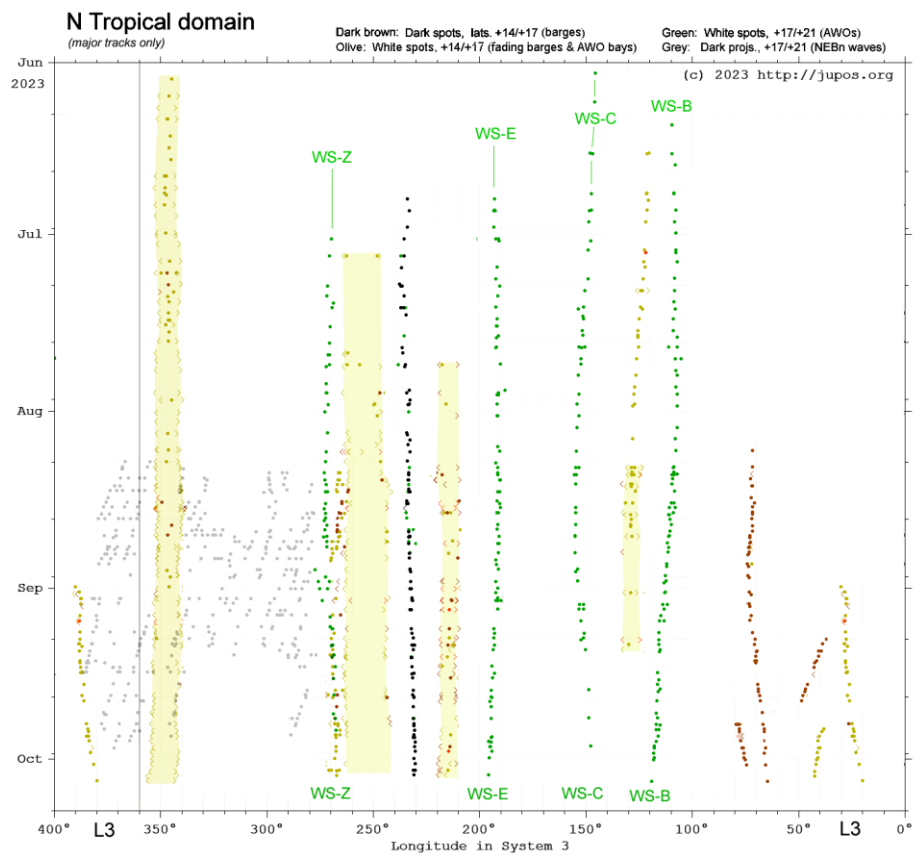


Figure 9. JUPOS chart of the N.Tropical domain. For clarity, only main tracks are shown.

Figure 10. Maps of the equatorial region, Oct.6-26, aligned in L1, made by Shinji Mizumoto. Note the new plume in NEB(S) at L1 = 240 on Oct.8 (white mark) and its subsequent development as a rift, and the ring in NTropZ that it induced (white arrow). The active sector of NEB(S)/EZn is on the right at L1 ~ 50-150.



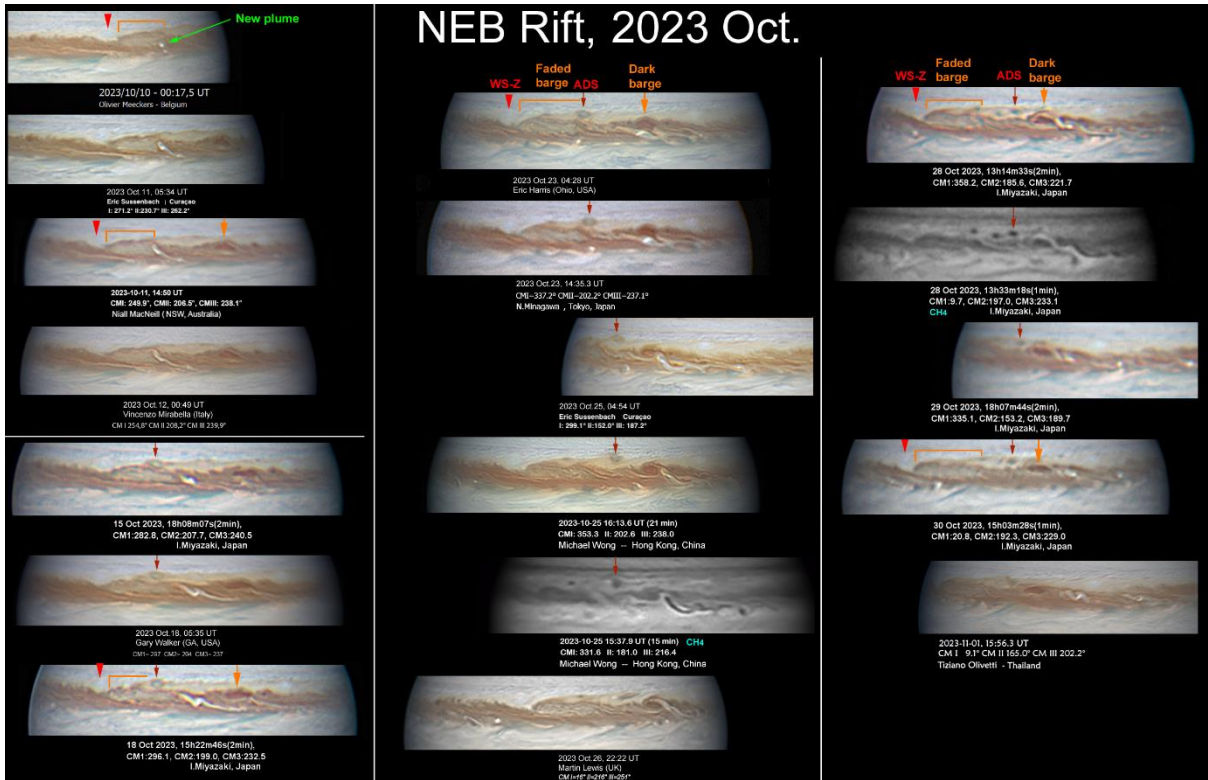


Figure 11. Hi-res images showing the new plume in NEB(S) (green arrow in first image) and its subsequent development as a rift, and the anticyclonic dark spot or ring that it induced in NTropZ (dark maroon arrow 'ADS').

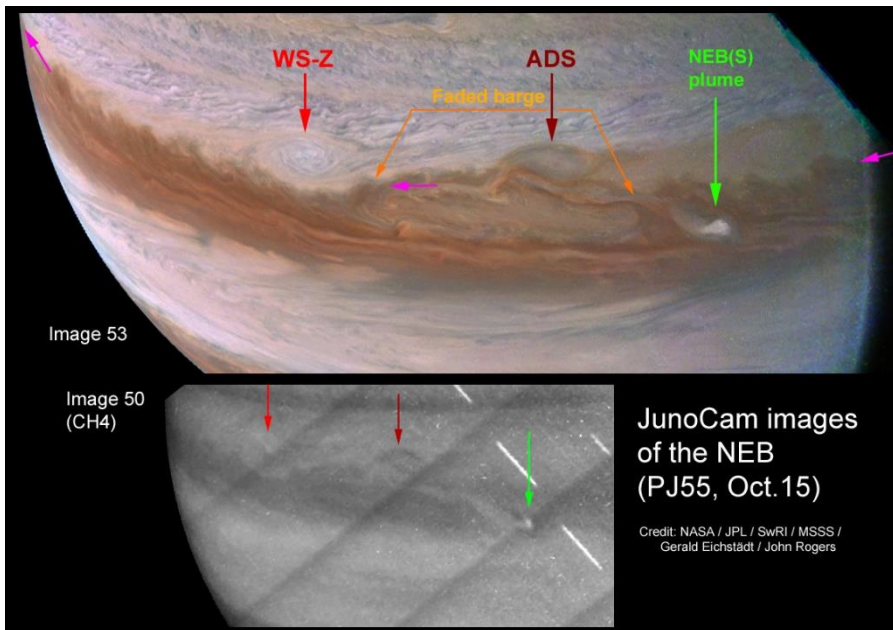
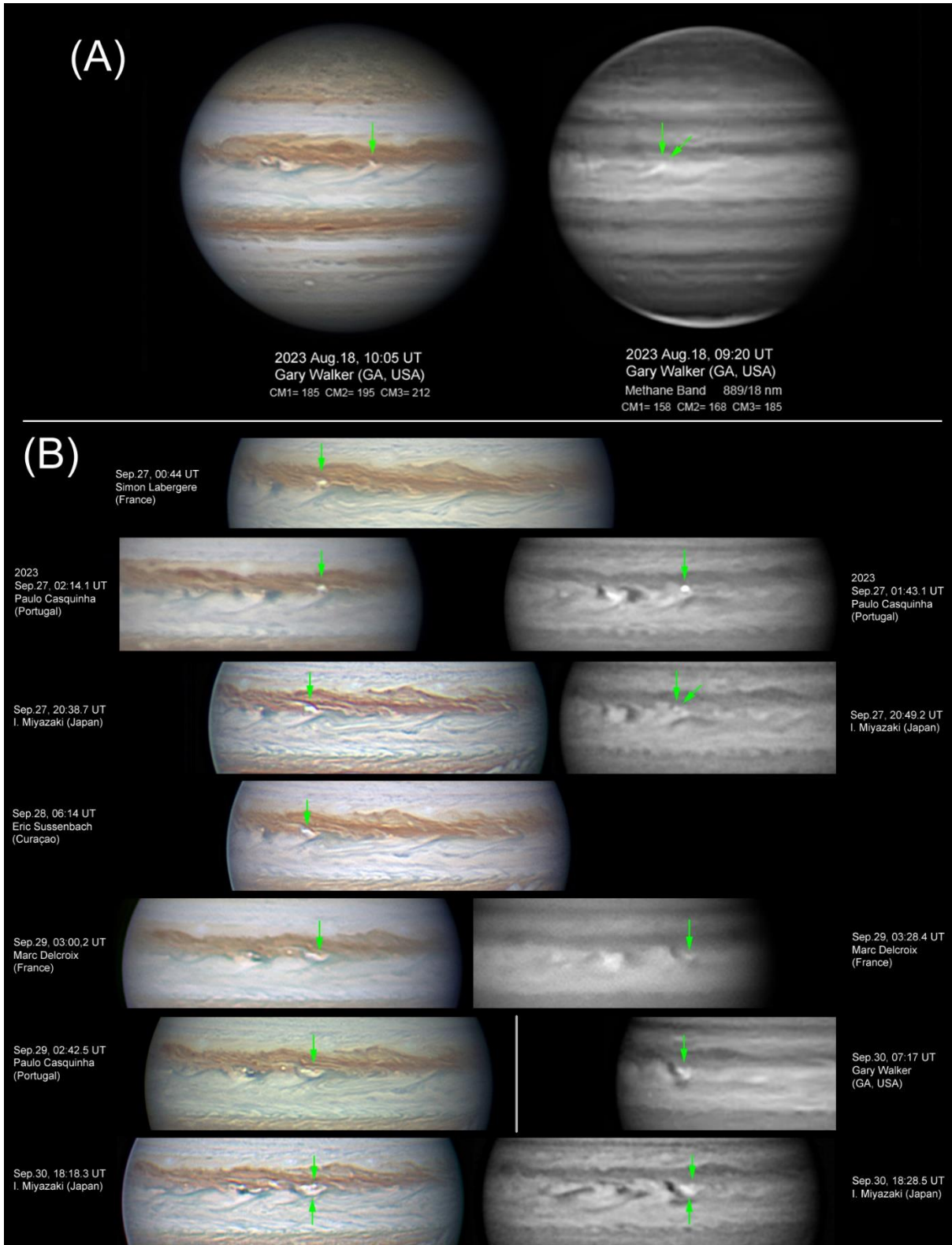


Figure 12. JunoCam images at PJ55 (Oct.15), processed by Gerald Eichstädt, showing the same features as in Figure 11. Magenta arrows mark the NEBn retrograde jet; note the wave structure downstream of White Spot Z. (In the methane image, diagonal lines and bright pixels are artefacts.)





**Figure 13.** Two examples of white, methane-bright outbreaks in the NEB(S), spreading into the EZ. (A) Aug. 18. (B) Sep. 27-30: an exceptionally bright outbreak in the NEB(S) active sector. The new, brilliant plume is arrowed. In methane it is very bright on Sep. 27 at 01:43 UT, even on the already methane-bright NEB(S), but by 20:49 it has faded. On Sep. 29 it is surging S across a NEBs dark formation, and on Sep. 30 it is complex and again very methane-bright. Also note an older, very methane-bright plume in the EZ(N) on Sep. 27,  $\sim 25^\circ$  f. the arrowed one, and other tiny white spots appearing in the NEB(S) over these 4 days.



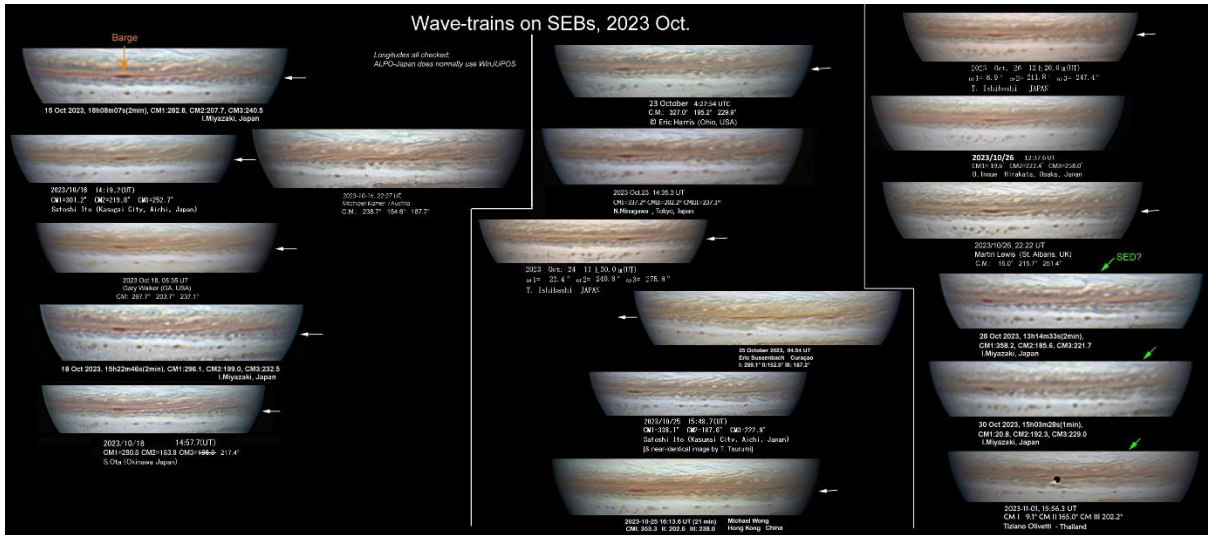


Figure 14. The SEB in October, showing the long wavetrain on the SEBs jet (white arrow in some images), retrograding past a dark barge. Numerous STBn jet spots are streaming across the scene. The last 3 images show the putative S. Equatorial Disturbance (SED), which was visually obscure up until then, now appearing as a rift in the SEBn (green arrow).

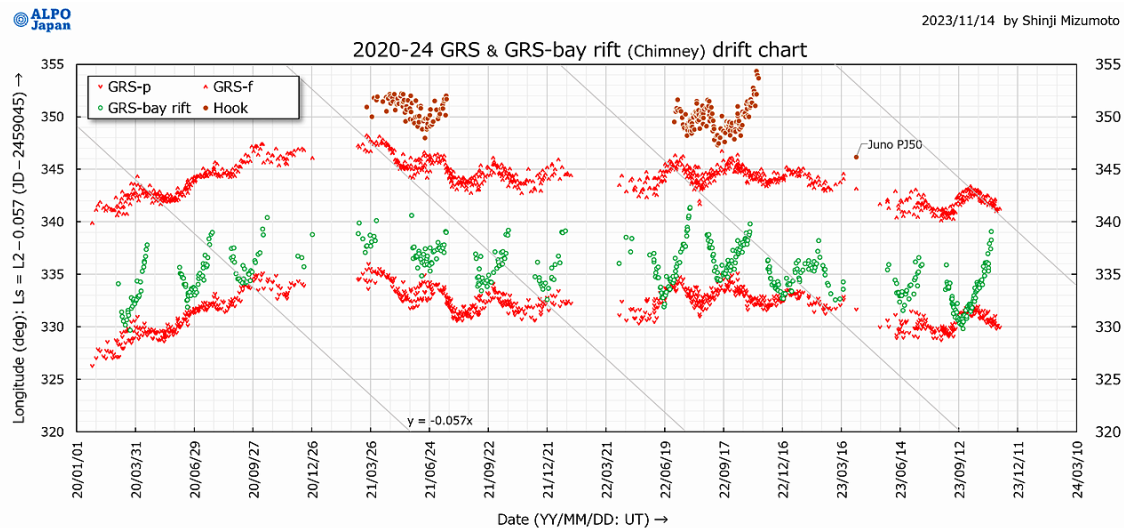
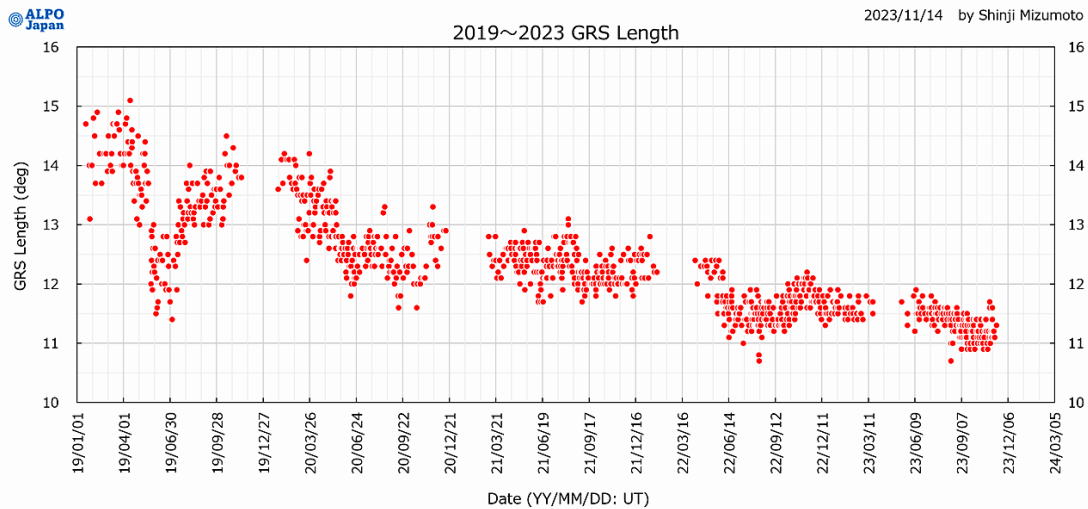


Figure 15. Charts of the GRS, by Shinji Mizumoto. (A) Length. (B) Drift (p. & f. ends, and the 'Chimney' and 'Hook' when present), in a longitude system moving with  $DL2 = +1.71 \text{ deg}/30\text{d}$ .

S. Temperate domain

-34, 0° / -30, 0° All points (black = dark, green = bright)  
-37, 0° / -34, 0° Selected track (small AWO)



Figure 16. JUPOS chart of the S. Temperate (S1) domain.



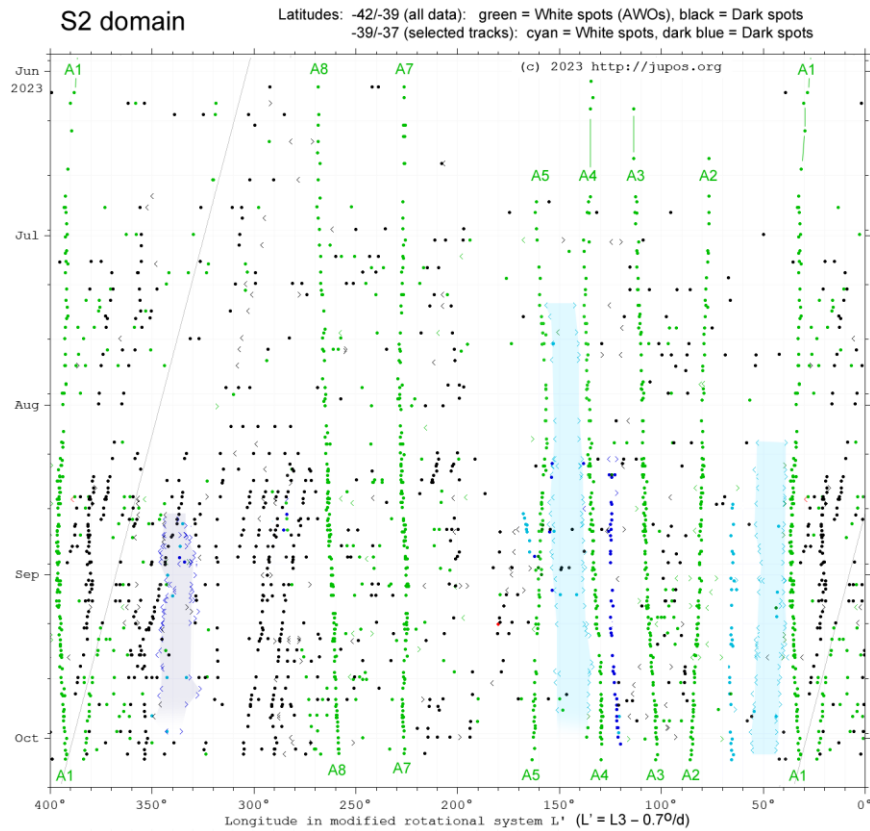


Figure 17. JUPOS chart of the S.S. Temperate (S2) domain.

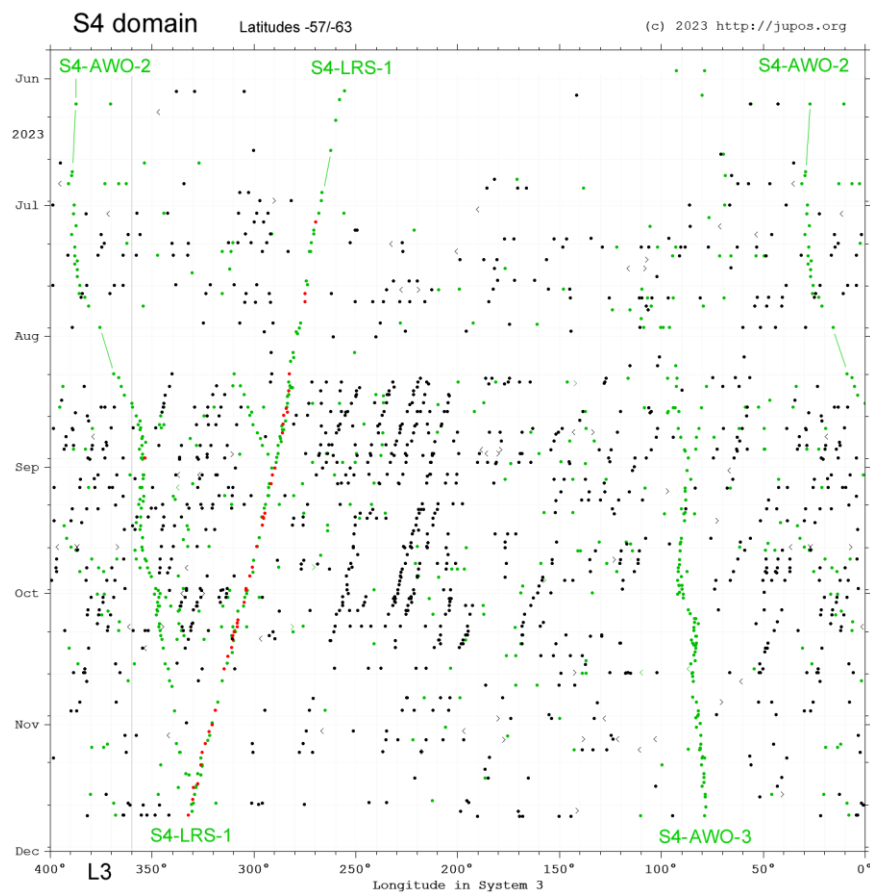
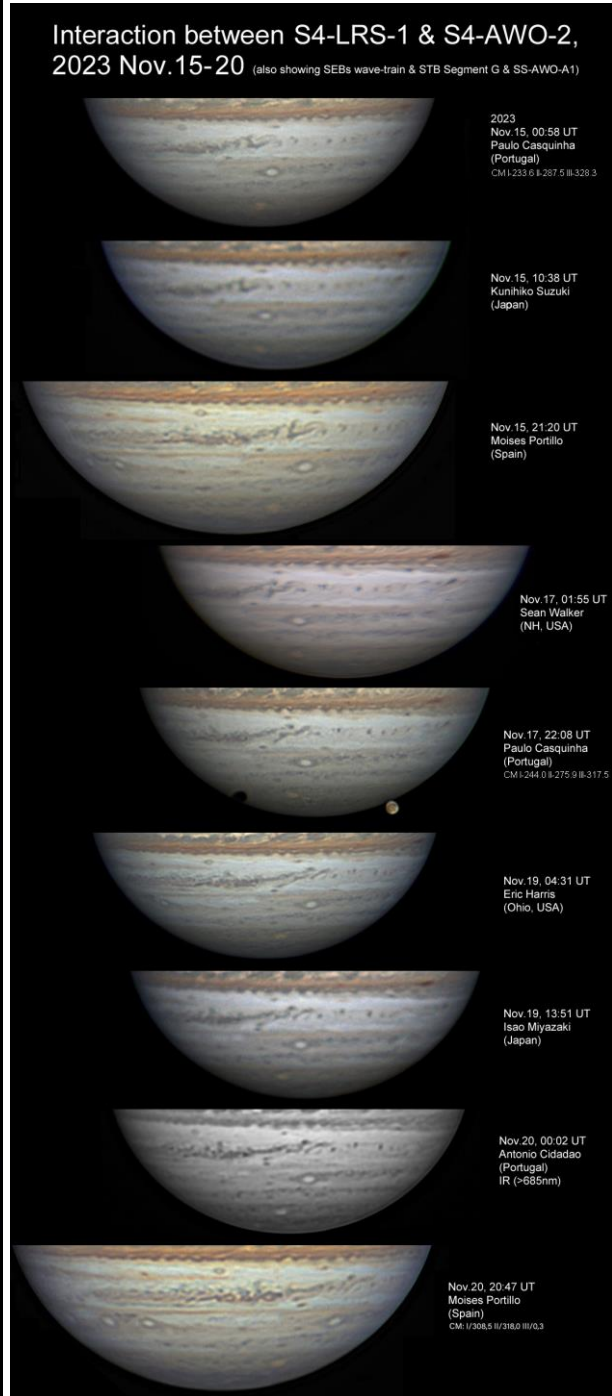
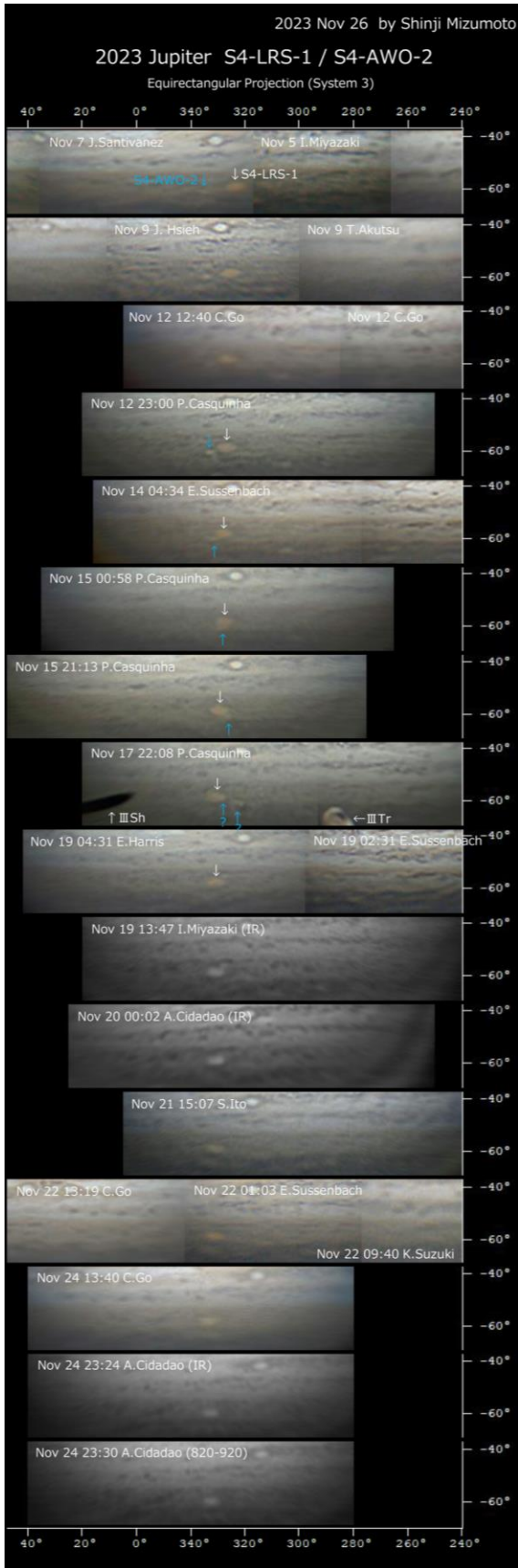


Figure 18. JUPOS chart of the S4 domain. (This chart has been updated to Nov.24.)



(L) Figure 19. Maps of the southern domains showing the encounter and probable merger of S4 ovals LRS-1 & AWO-2, Nov.7-24, aligned in L3, made by Shinji Mizumoto.

(R) Figure 20. Hi-res images of the probable merger of S4 ovals LRS-1 & AWO-2, Nov.15-20. Some are the originals for maps in Figure 19, others are confirmatory images.