Jupiter in 2022/23, Report no.6:
Final report on the high northern latitudes

John Rogers, Gianluigi Adamoli, & Rob Bullen (British Astronomical Association)

Figures

Figure 1. Map of the planet on 2022 Oct.1-6 by Damian Peach, from v-hi-res images that he took in Barbados.

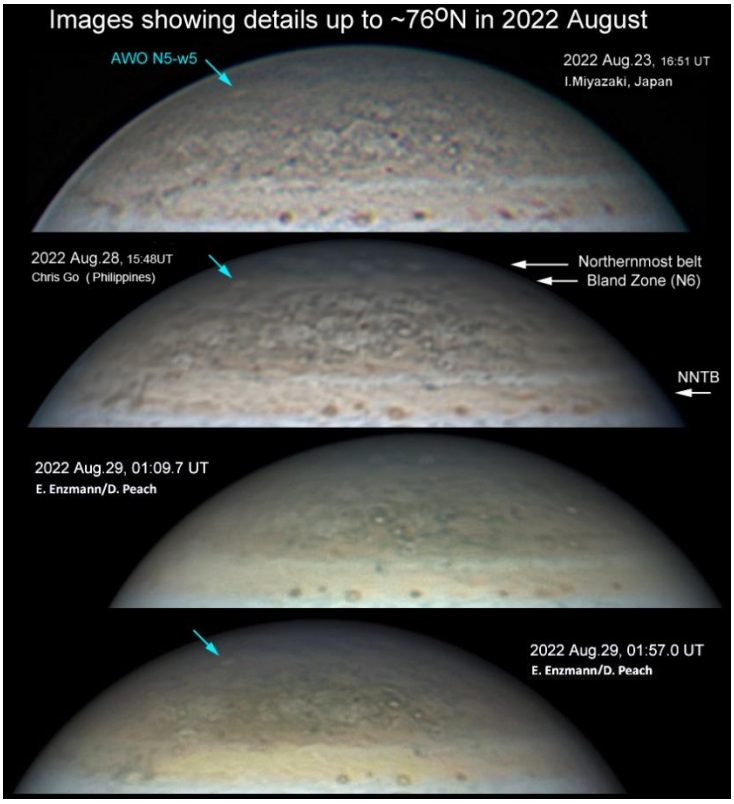


Figure 2. Some v-hi-res images of the NPR in August.

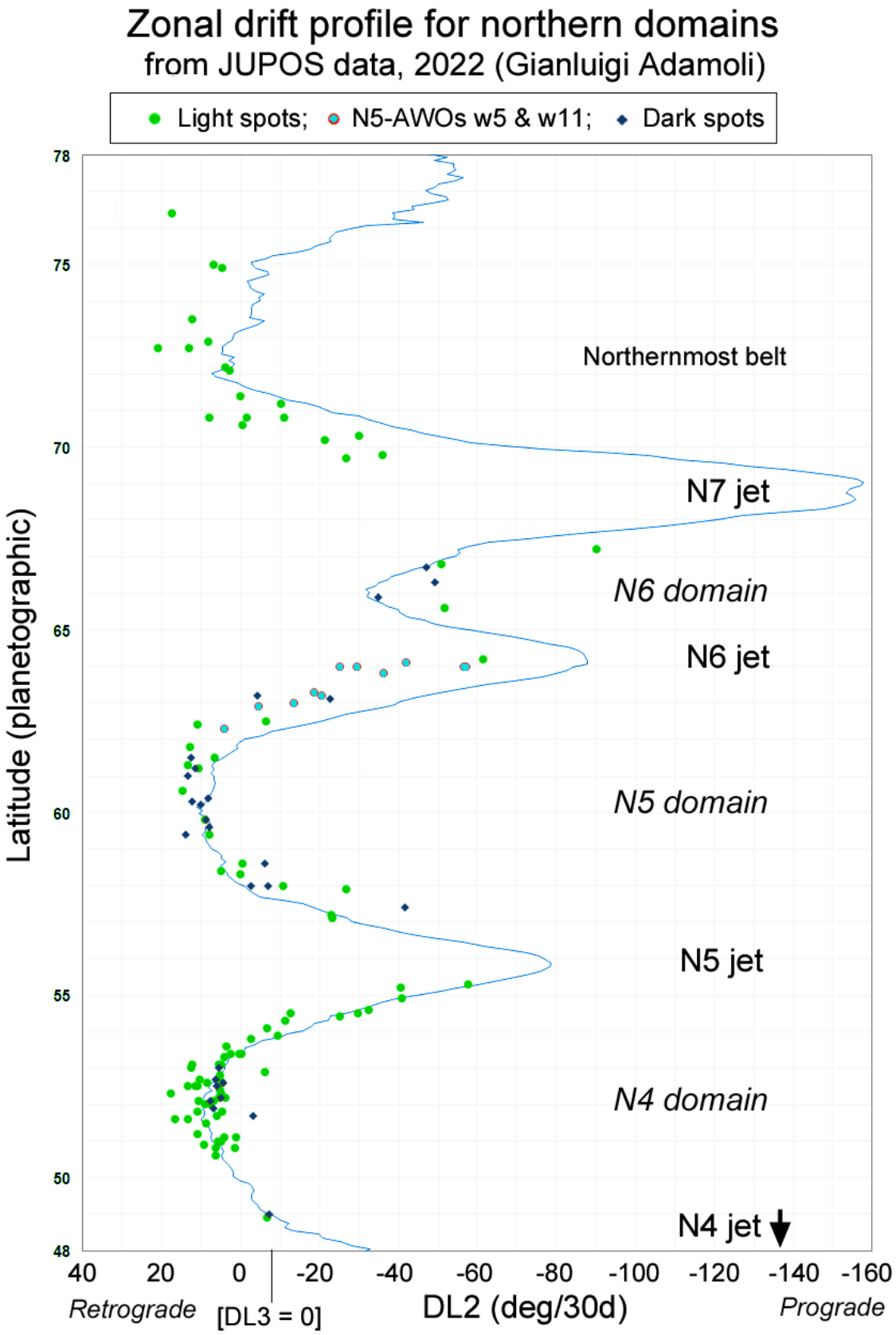


Figure 3. Our JUPOS-derived zonal drift profile (ZDP) from the N4 jet to the NPR in 2022, compared with the zonal wind profile (ZWP) from Cassini [ref.4]. Each point represents a separate track or (where a spot's speed varied) a track segment. Most of these measurements, and all above 63°N, were made by G.A.

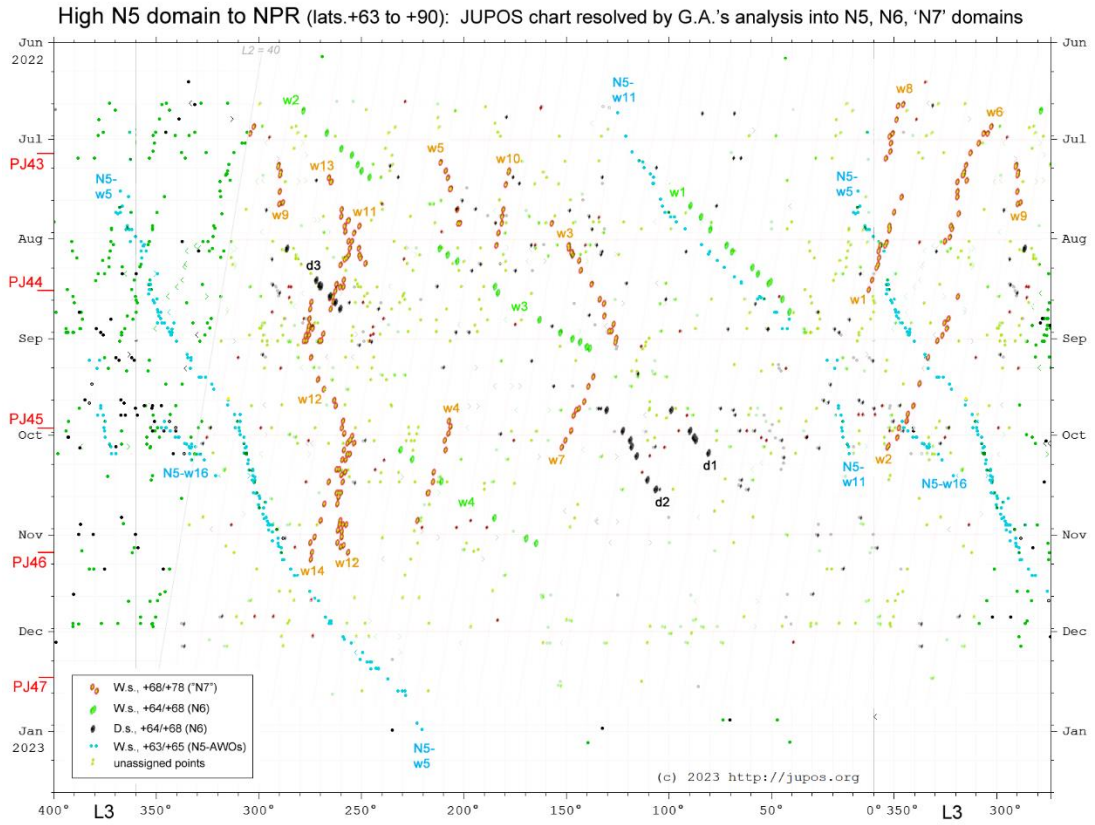


Figure 4. The JUPOS chart for the N6 domain and NPR (>63°N), with measured tracks highlighted and colour-coded by latitude. Features in the "N7 belt", all white spots, are highlighted in brown.

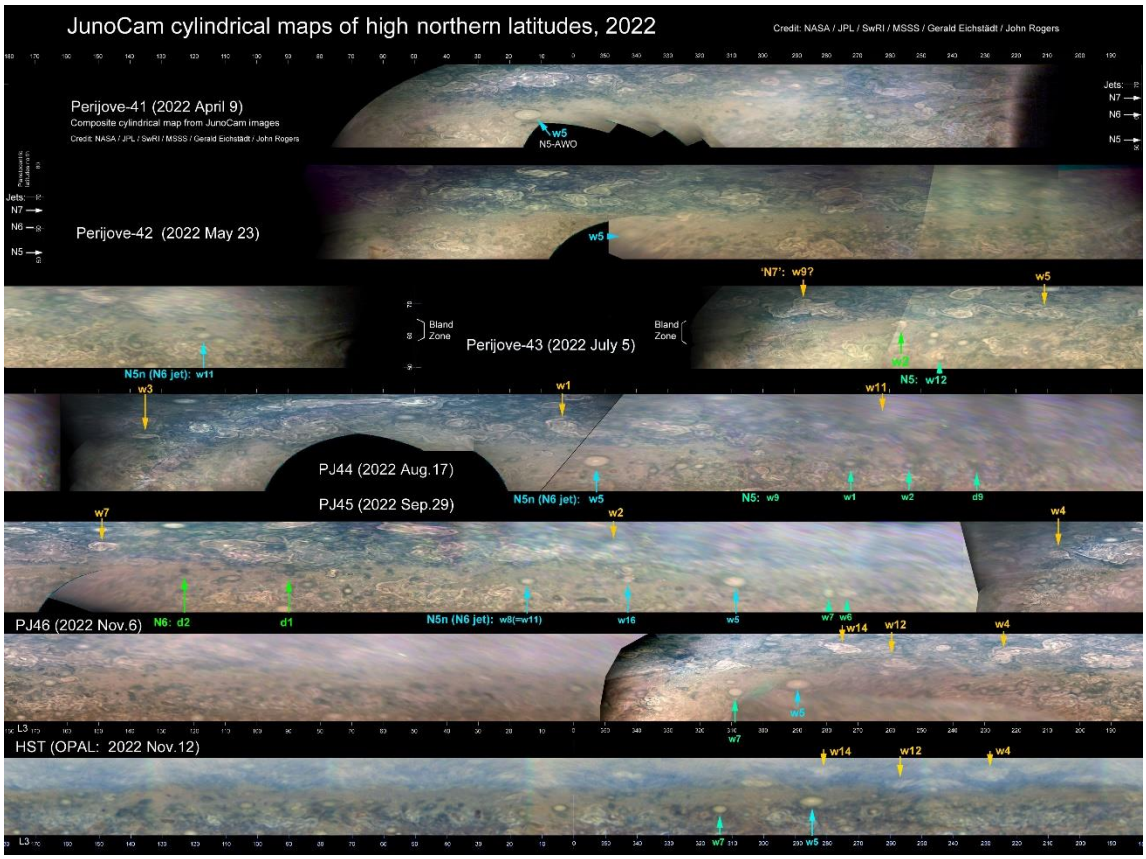


Figure 5. JunoCam maps in 2022. Latitude scales are planetocentric (°Nc), rather than planetographic (°Ng) as in the rest of this report. JUPOS-tracked spots are labelled north of ~60°Ng (57°Nc), i.e from the northern fringe of N5 up to the NPR. The last map is from Hubble [ref.7].

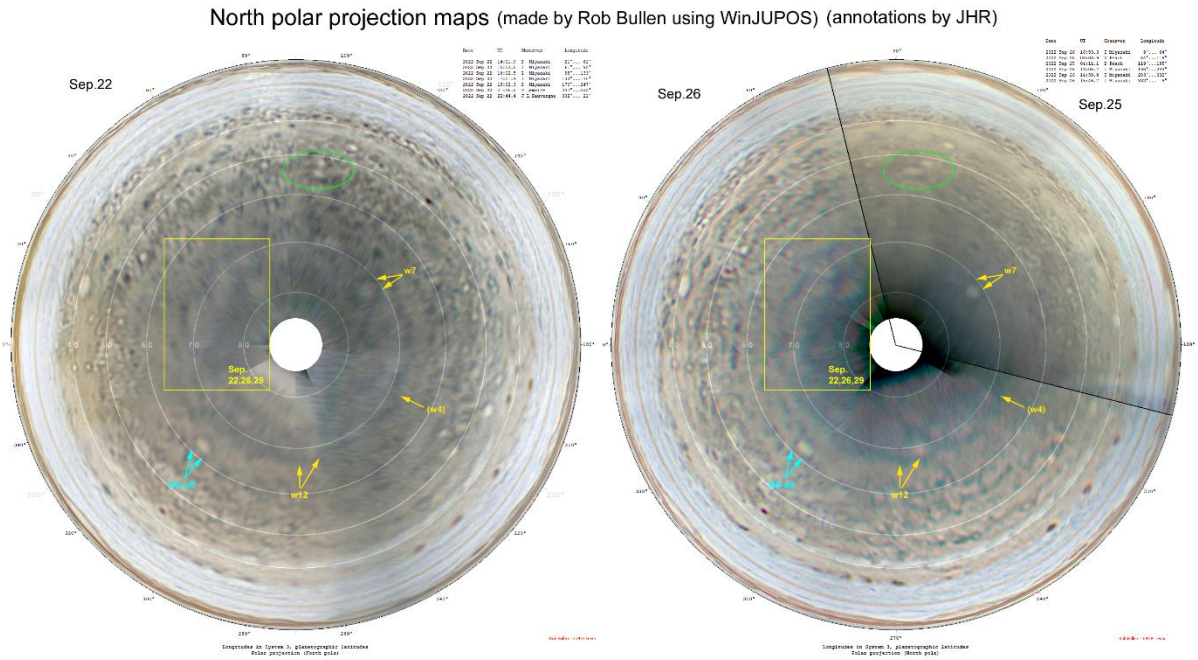


Figure 6. Examples of north polar projection maps in 2022 Sep. The yellow box encloses the chain of FFRs tracked in the 'northernmost belt' (part of this chain of FFRs is also shown in JunoCam's PJ45 map on Sep.29). Yellow arrows mark FFRs tracked by G.A. The green loop encloses a pair of N4-AWOs gliding past each other.

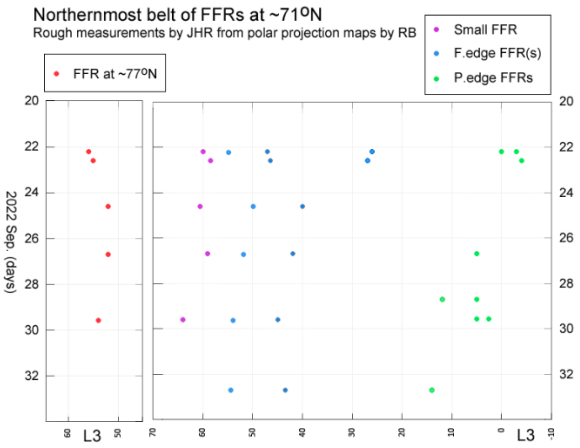


Figure 7. Approx. longitudes of various points on the FFR chain in the northernmost belt, and one at ~77°N, in 2022 Sep., from data in Animation-1.

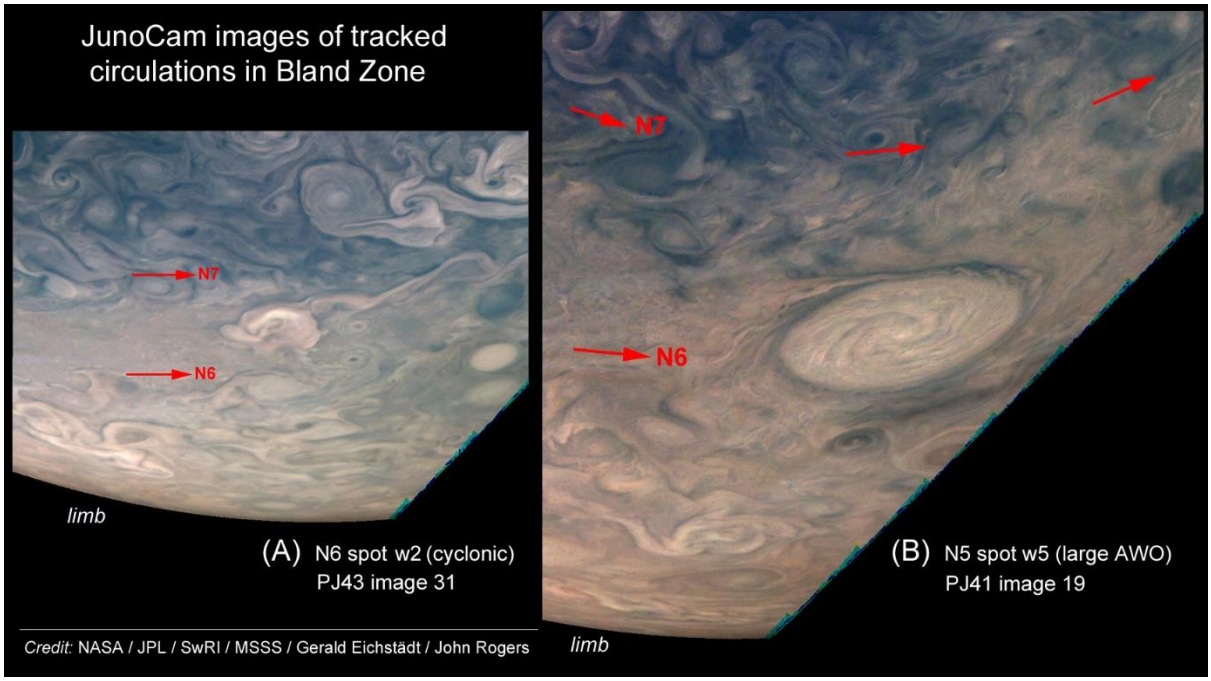


Figure 8. JunoCam images of (A) a prograding cyclone in the Bland Zone (N6 domain); (B) the large long-lived N5 AWO w5.

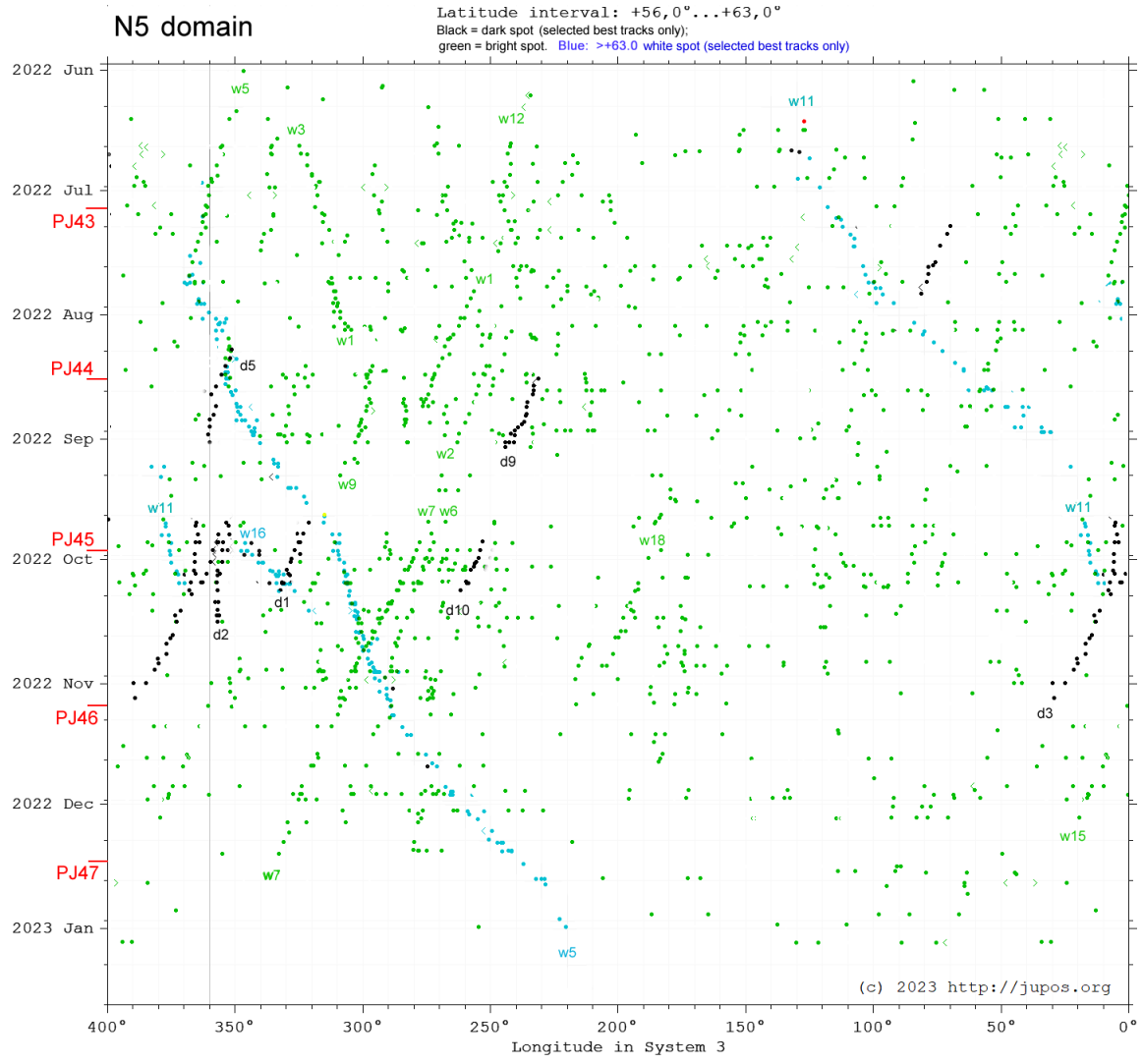


Figure 9. JUPOS chart for the N5 domain.

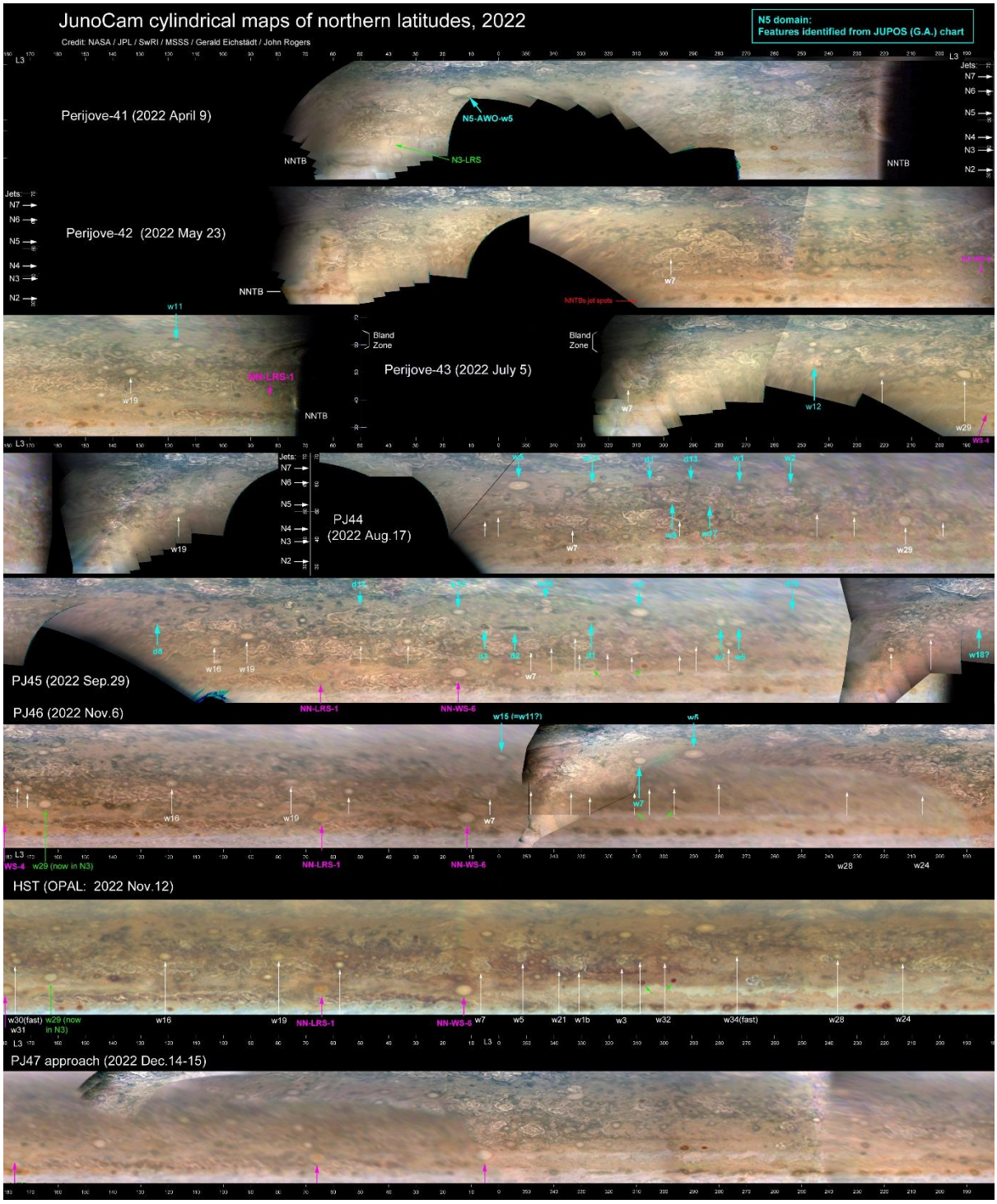


Figure 10. JunoCam maps, with JUPOS-tracked spots indicated in the N5 domain (with our temporary numbering) and N4 domain (unnumbered except on the HST map, apart for a few referred to in the text), and the NNTZ (ovals).

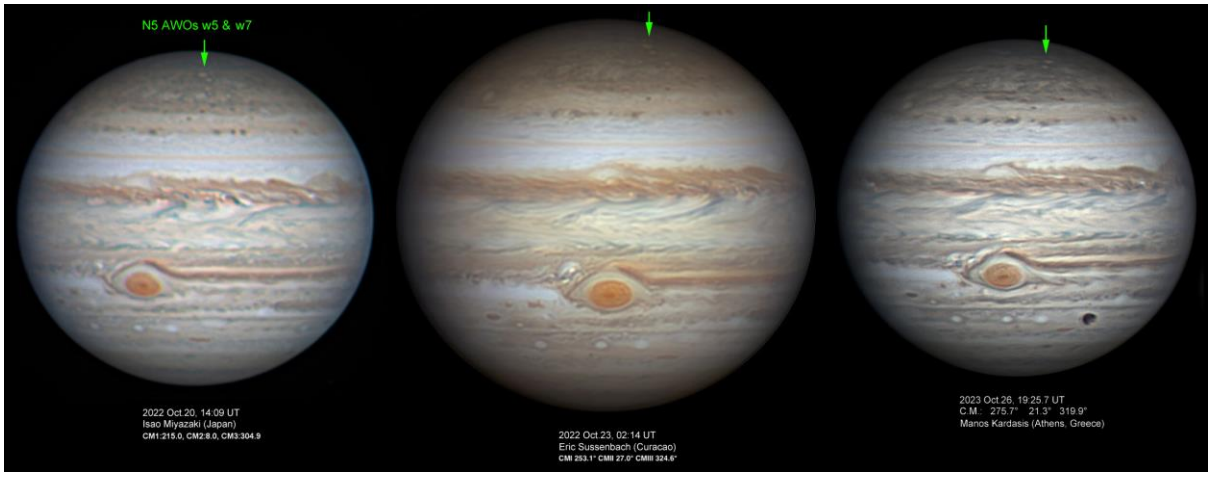


Figure 11. N5 AWOs w5 and w7 passing each other on Oct.20-26. (Excellent images were also taken on these dates by C. Go, L. Gulliver, N. MacNeill, J. Palmer, J. Rozakis, & C. Serodio.)

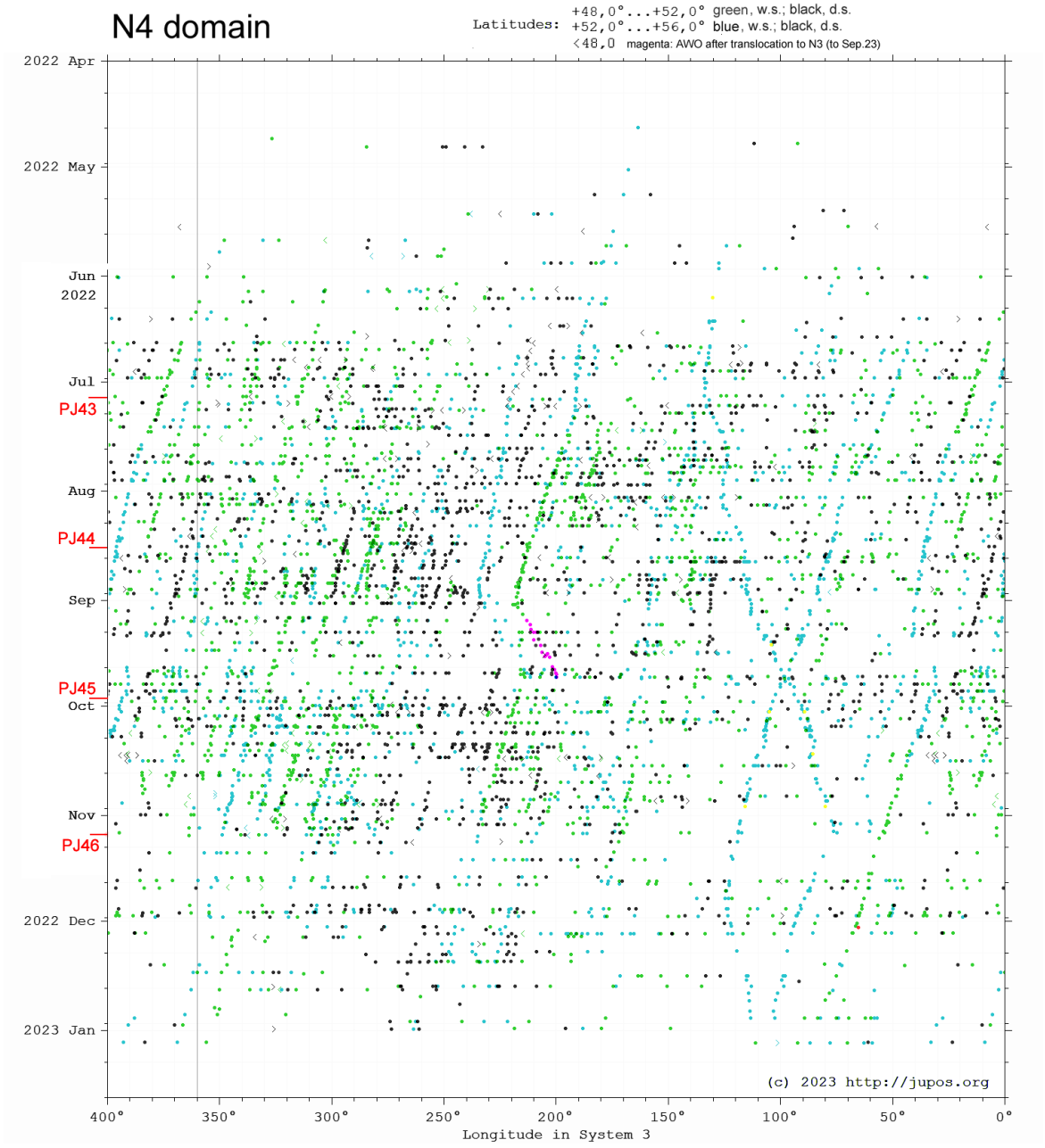


Figure 12. JUPOS chart for the N4 domain.

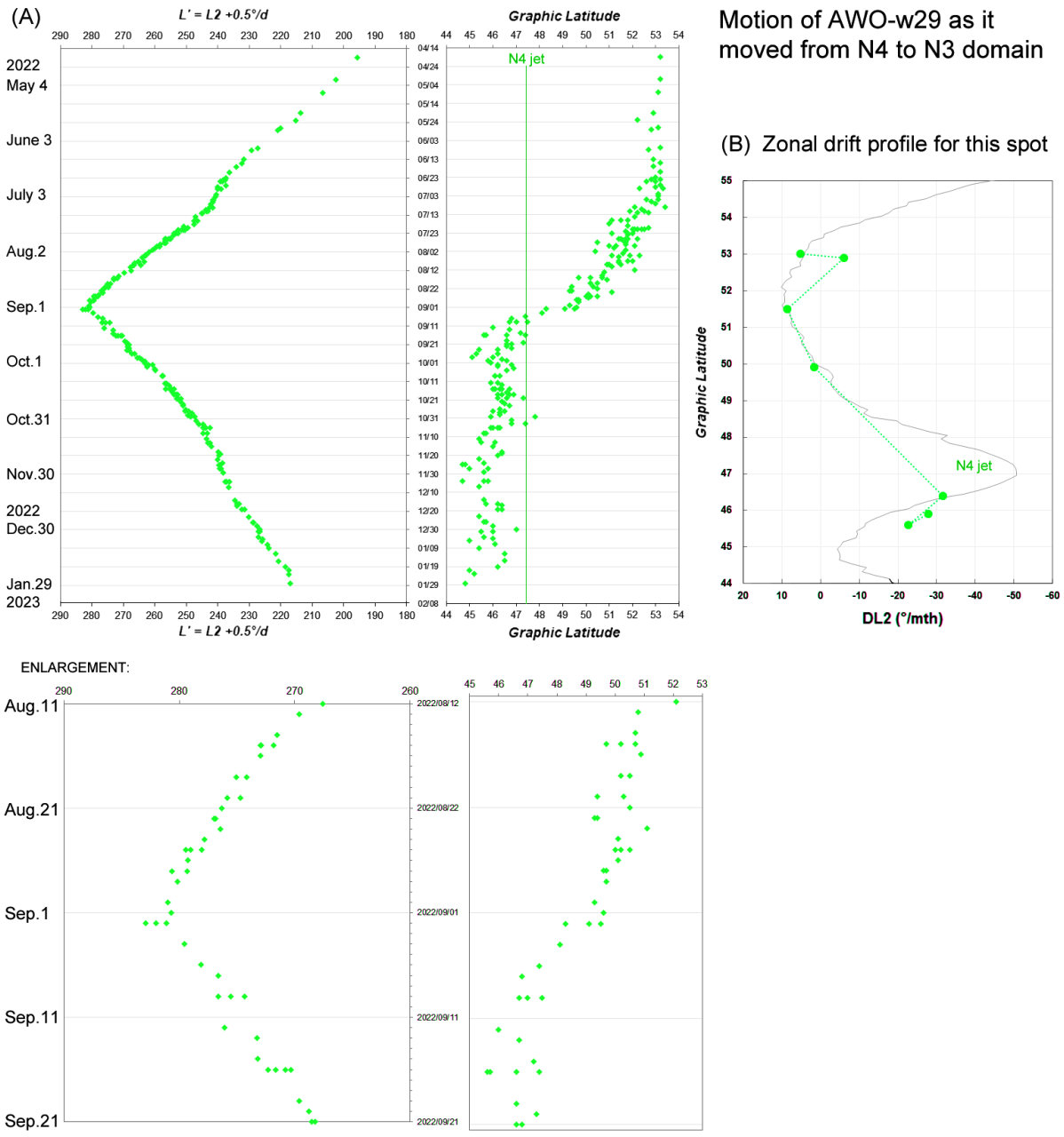
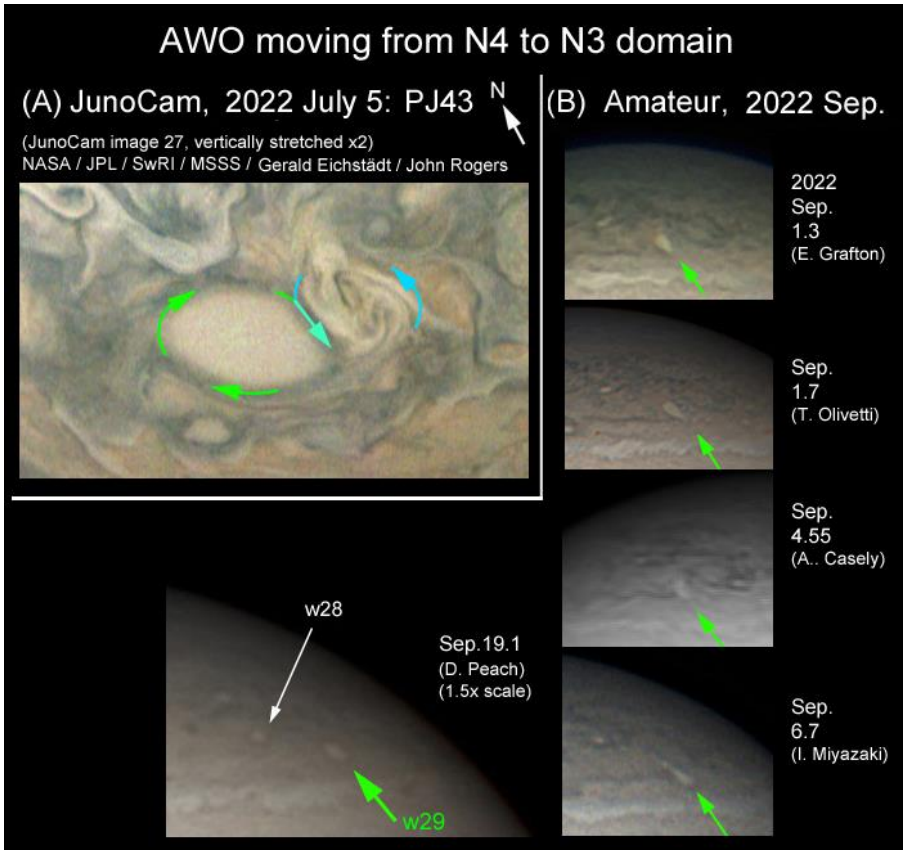


Figure 13. Lat. & long. tracks & ZDP for N4-AWO-w29 as it crossed the N4 jet. (The jet's mean latitude is 47.0°N from Cassini, 47.4°N from all spacecraft, although we do not know its exact position while N4 crossed it.)



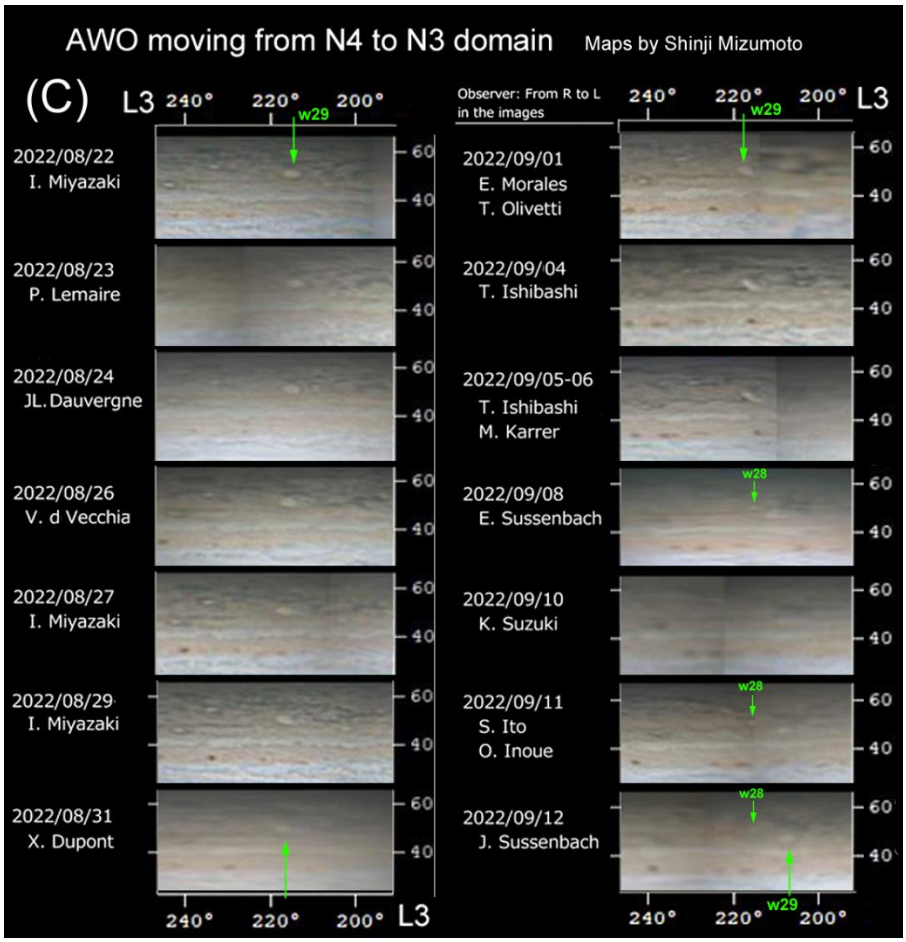


Figure 14. Images & maps showing N4-AWO-w29 before, during, and after it crossed the N4 jet into the N3 domain.

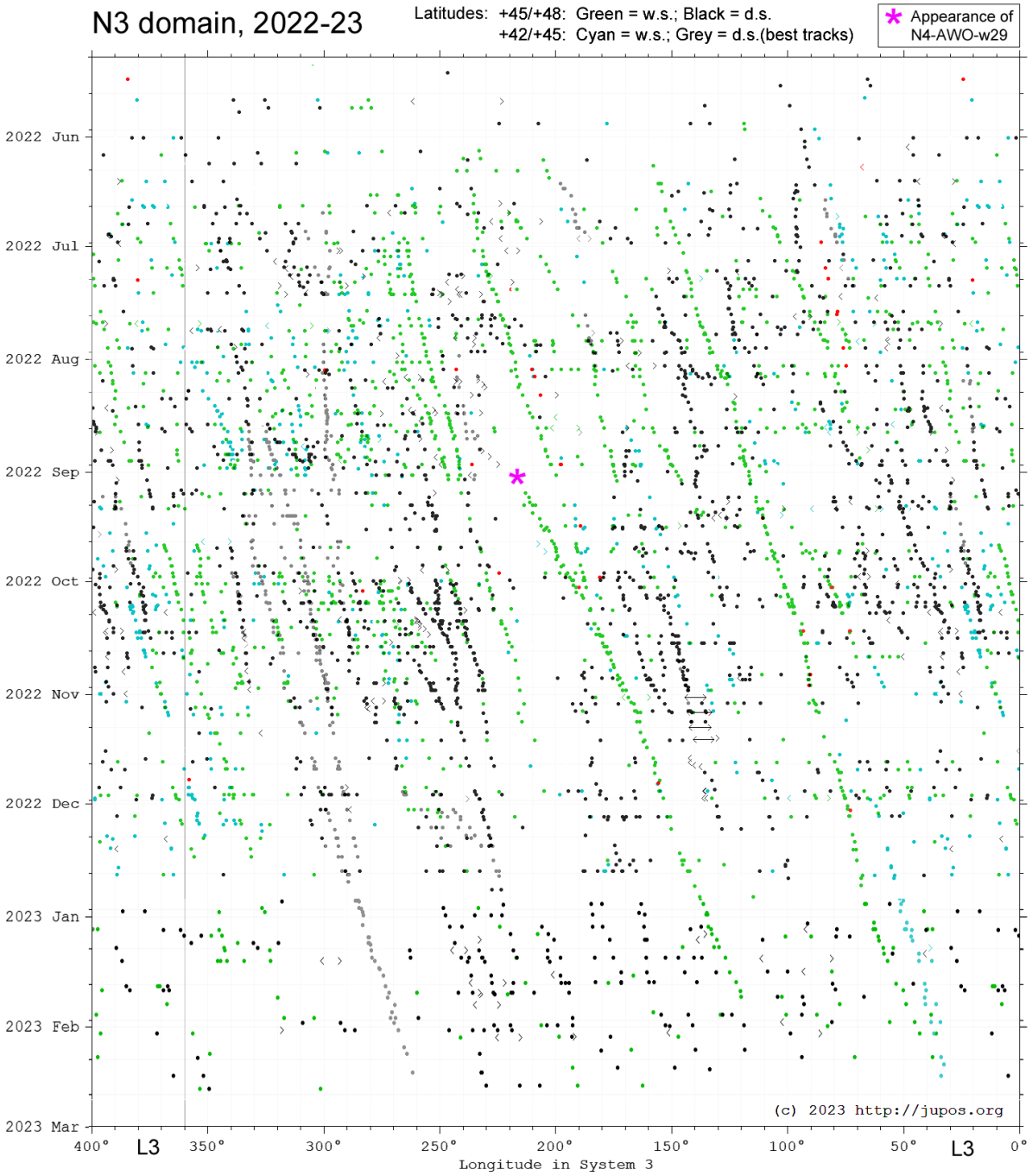


Figure 15. JUPOS chart for N3 domain.

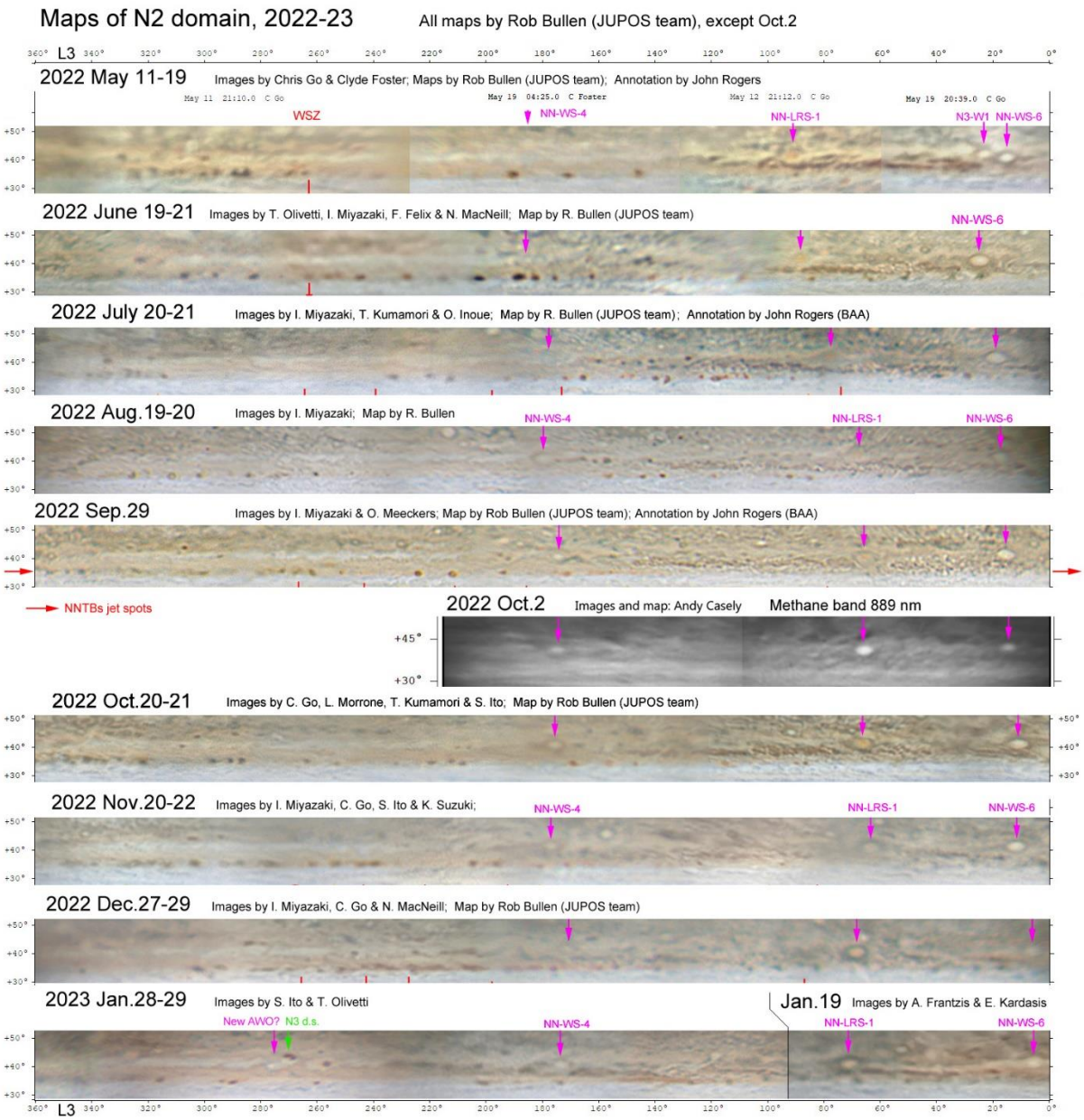


Figure 16. N2 domain: JUPOS maps by R.B. (from amateur images).

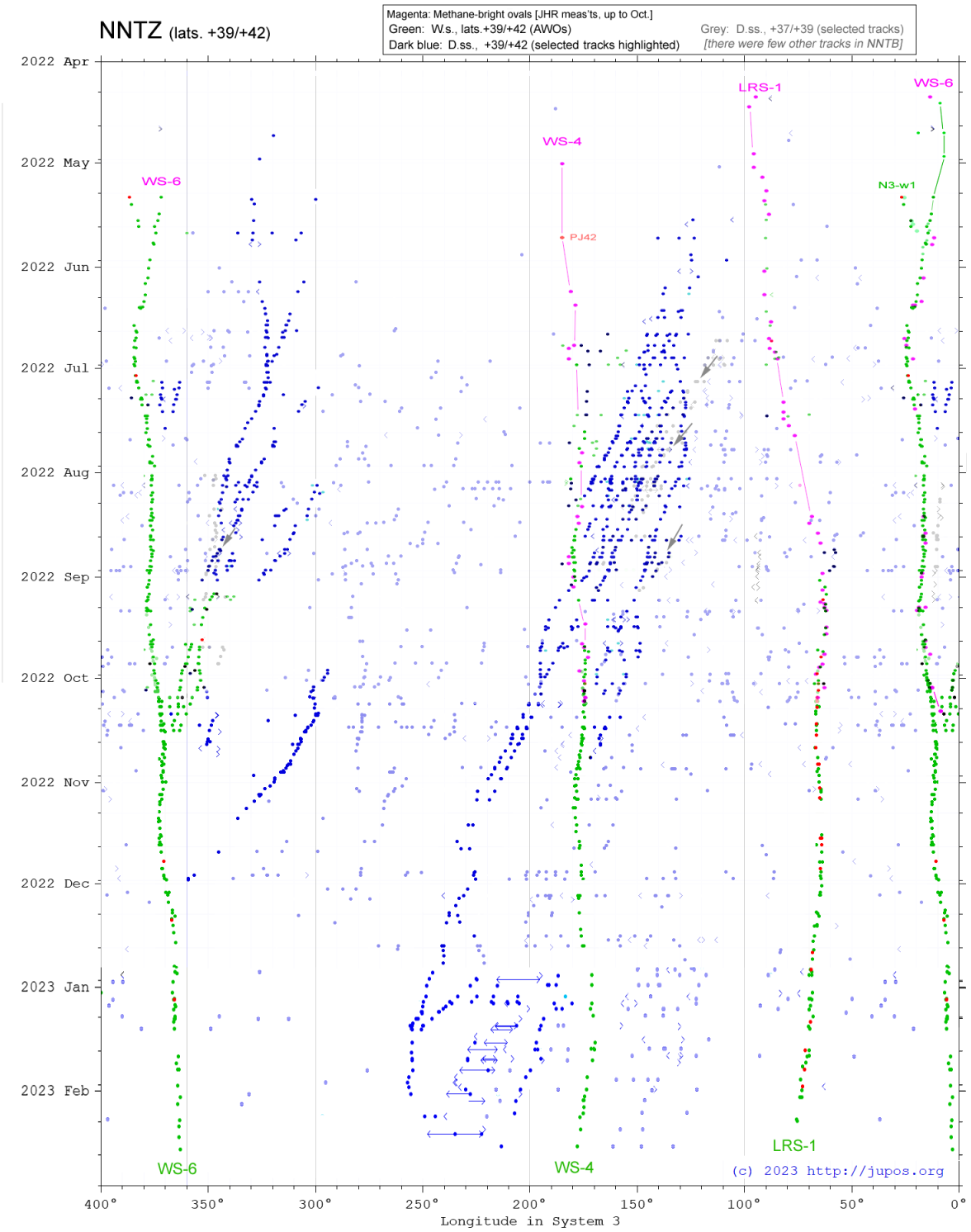


Figure 17. N2 domain: JUPOS chart.

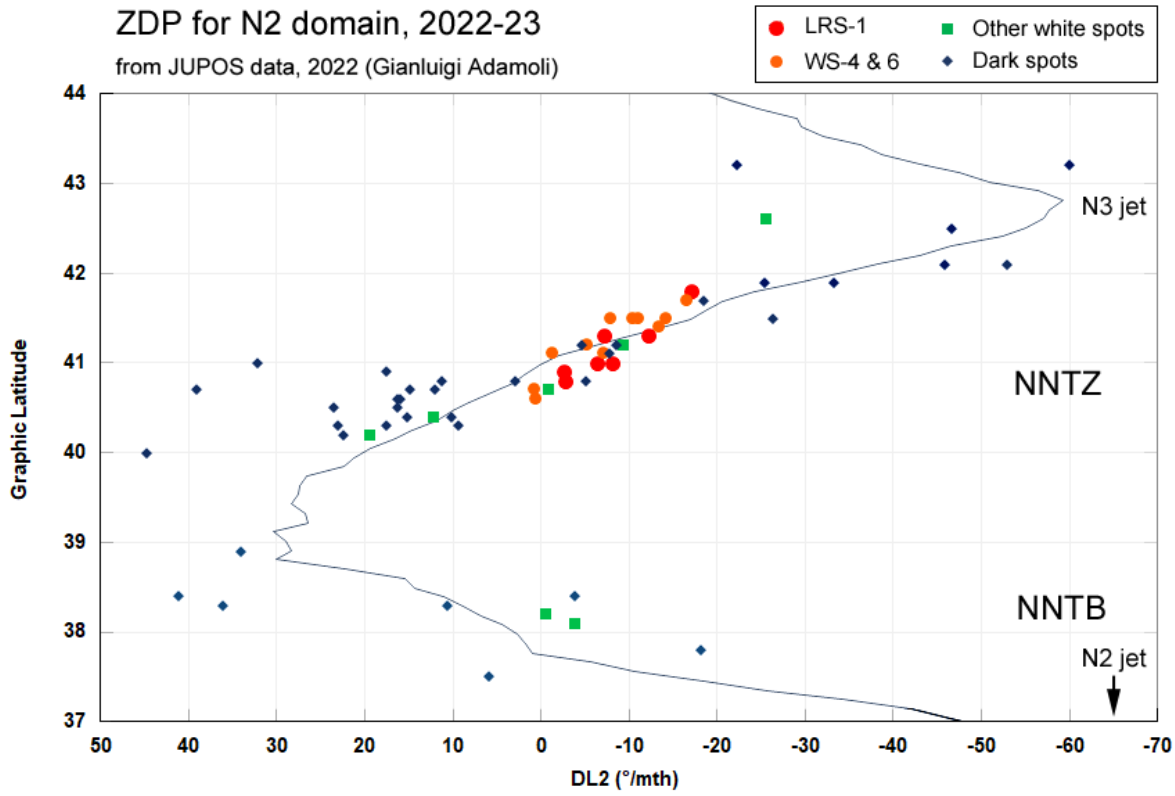


Figure 18. N2 domain: ZDP.

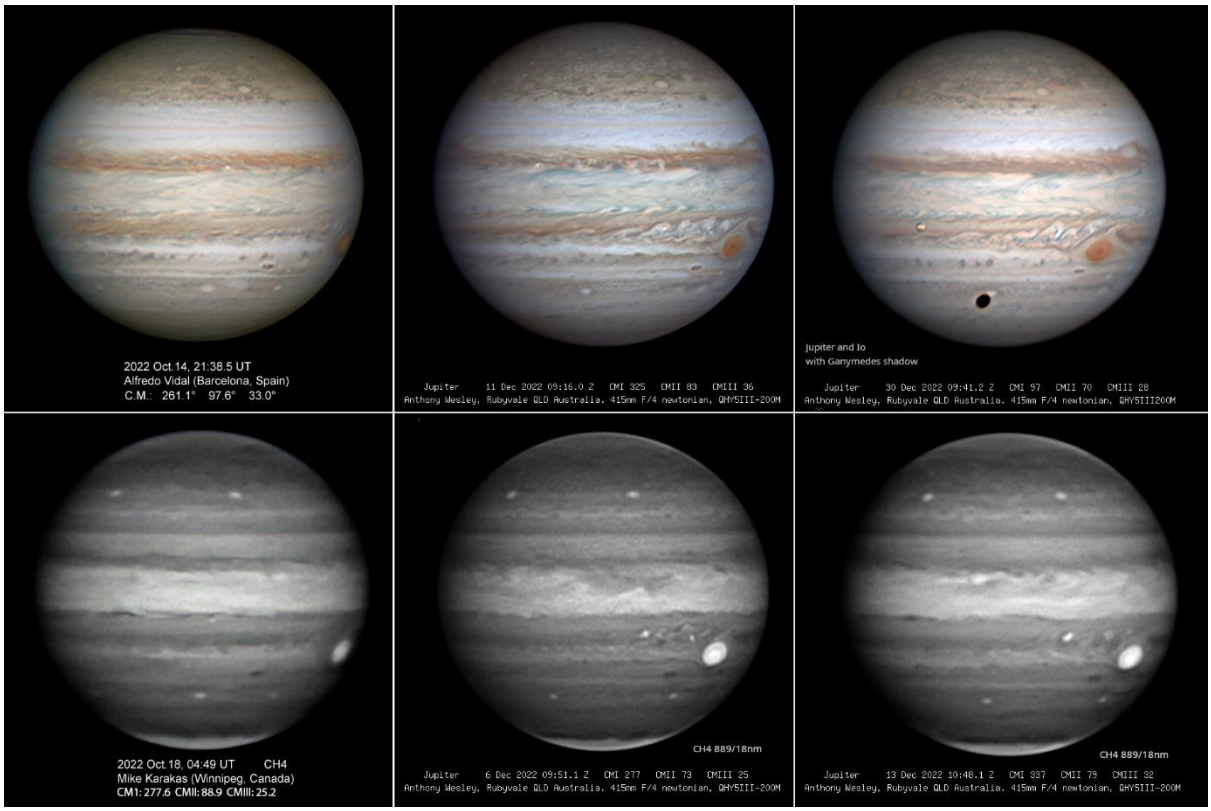


Figure 19. Hi-res images including NN-LRS-1 and -WS-6, in Oct. (left) and Dec. (centre & right), in RGB and CH4.

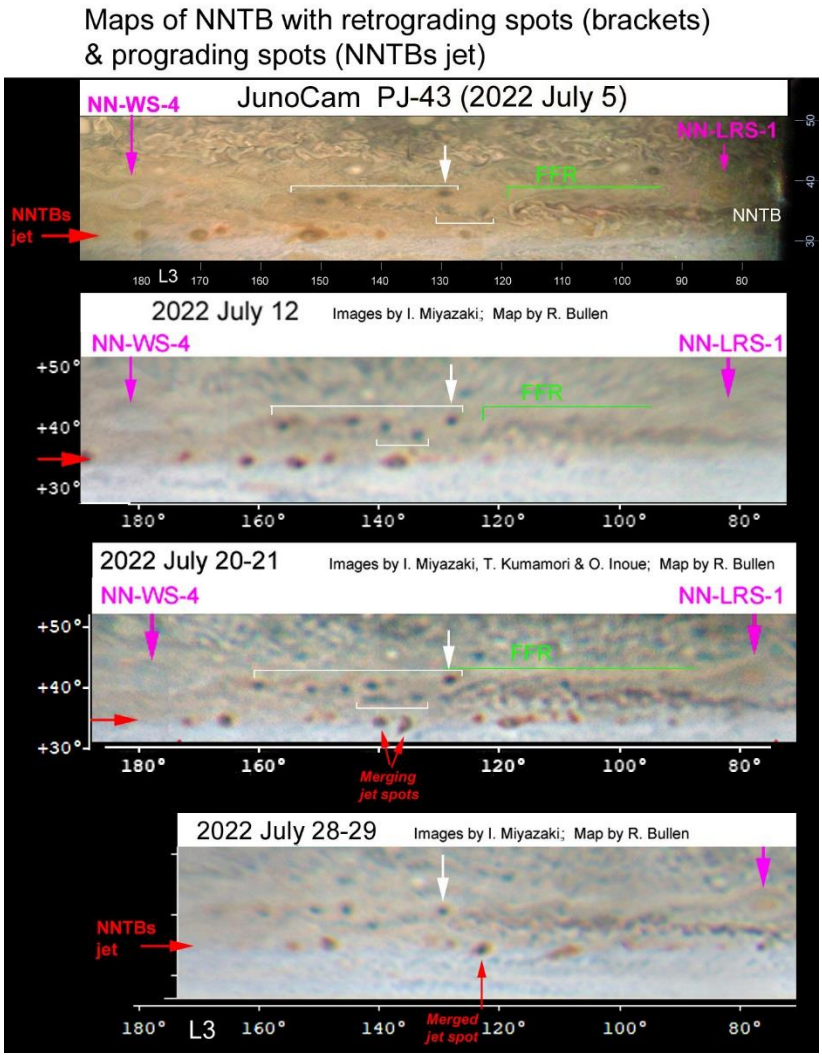


Figure 20. Maps of the N2 domain sector between NN-WS-4 & NN-LRS-1 in July, showing the volleys of retrograding spots (white brackets) and a stationary dark spot (white arrow) following a FFR, and a pair of NNTBs jet spots which merged (red arrows).

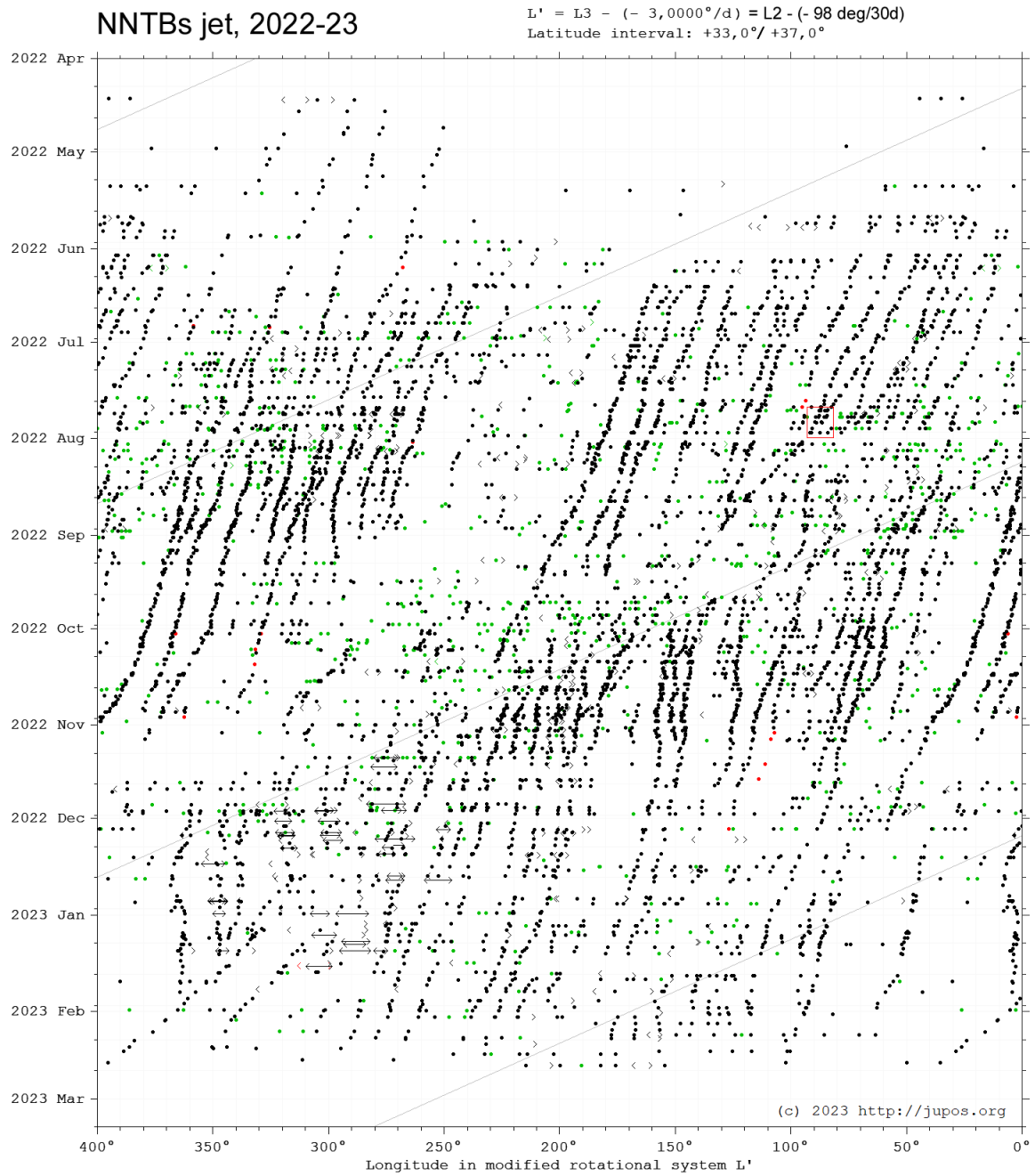


Figure 21. JUPOS chart of the N2 (NNTBs) jet, in a system moving with DL3 = -90 deg/30d (DL2 = -98 deg/30d).