

## JunoCam images at PJ65

John Rogers (BAA)

Juno's PJ65 was on 2024 Sep.20. Perijove was at  $L3 = 8$ , at  $54.9^\circ\text{N}$ , then Juno crossed the equator at  $L3 = 34$ , all on the dark side. As usual, JunoCam provided hi-res images during its final approach leg over the northern hemisphere (including very good methane-band images) and the north polar region.

This report, like all in this series, is due to the work of the NASA JunoCam team: Drs Candy Hansen (Principal Investigator), Glenn Orton, Tom Momary, and Mike Caplinger (of Malin Space Science Systems); and Gerald Eichstädt, who produces complete sets of high-quality processed images and map projections. Details were given in our PJ6 report. Gerald produces both cylindrical and polar map projections of all the images, and also assembles them into composite maps using automated (though not automatic) procedures. All the maps shown here, except [Figure 1](#), are based on maps that were produced and assembled by Gerald. (Methane-band maps were also made, not shown here.)

Abbreviations and conventions are as in previous reports, including: AWO = anticyclonic white oval, FFR = (cyclonic) folded filamentary region, CPC = circumpolar cyclone. Latitudes are planetocentric. Longitudes are in System 3 ( $L3$ ).

[Figure 1](#) is a ground-based map from Sep.20-22, and [Figure 2](#) is our JunoCam map from inbound (N) and outbound (S) legs. [Figure 3](#) is a north polar projection of the JunoCam map (with  $L3=0$  to the right, as always).

The inbound track fortuitously gave good views of several large AWOs: in the northern NEB (WS-C/E, recently merged), in the NNTZ (WS-4) ([Figure 4](#)), and in the N5 domain (the long-lived N5-AWO) ([Figure 5](#)). The N5-AWO is interacting with two cyclonic structures to its south, and [Figure 5](#) also shows other striking clusters of circulations (see caption for details).

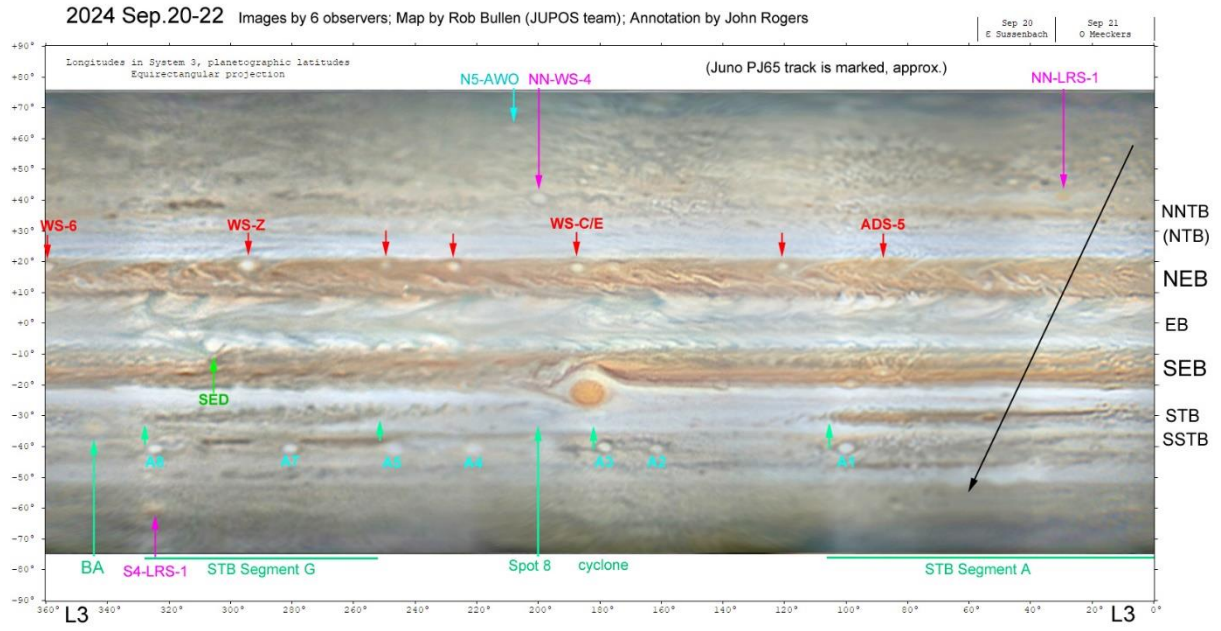
[Figure 5](#) shows one other notable feature, identified by Gerald: a detached haze layer at the limb and terminator. This is probably the first time that we have seen a detached limb haze layer so far north (it is probably over the N4 domain), and it is unexpected as we are looking south from a point above the thickest North Polar Hood, but it may be one of the haze bands often seen in the N4 domain with a clearer strip north of it.

[Figure 6](#) is the map of the north polar cyclone cluster. In [Figure 7](#), this is combined with the PJ63 map (and a small part of the PJ62 map) to give the latest complete view of the octagon of cyclones. There are several features of interest:

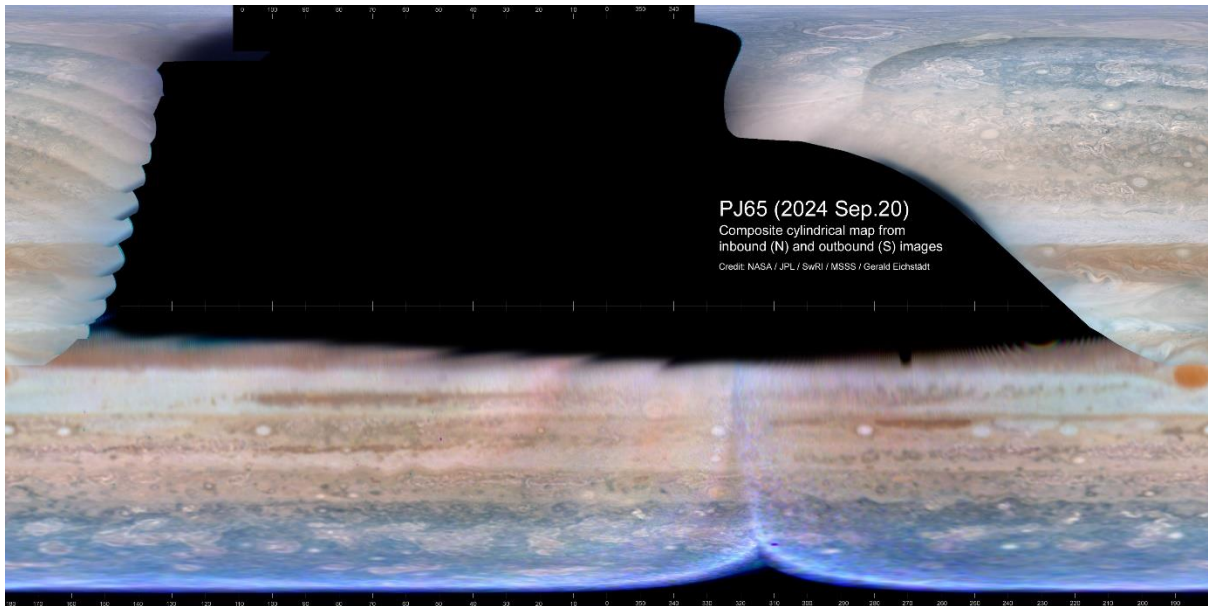
- (i) CPCs-6,7,8 are still in their usual positions: CPC-7 still displaced away from the pole, and CPCs-6 & 8 still present although both are now chaotic and weak-looking. (We had not seen CPCs-6,7,8 since PJ62; for previous maps see our PJ62 report Fig.3).
- (ii) There is again an anticyclonic oval N of CPC-7; this AWO had not been present there since PJ58 (when we suspect that it merged with another AWO, possibly becoming the AWO that was N of CPC-1 from PJ62 to PJ64; possibly this same oval has now moved back to lie N of CPC-7 again).
- (iii) CPC-5, usually a typical filled cyclone, no longer has an anticyclonic core; however a white anticyclonic vortex in its 'upper' half could be this core, highly displaced. We have seen filled cyclones with the 'central' anticyclonic structure lying eccentrically before, e.g. in CPC-1 at PJ62, so this may be a transient but vigorous wobble.
- (iv) There is still a small ancillary cyclone 'X' just 'left of' CPC-5.

[Figure 8](#) is the outbound map of the south polar region (with  $L3=0$  to the left, as always).

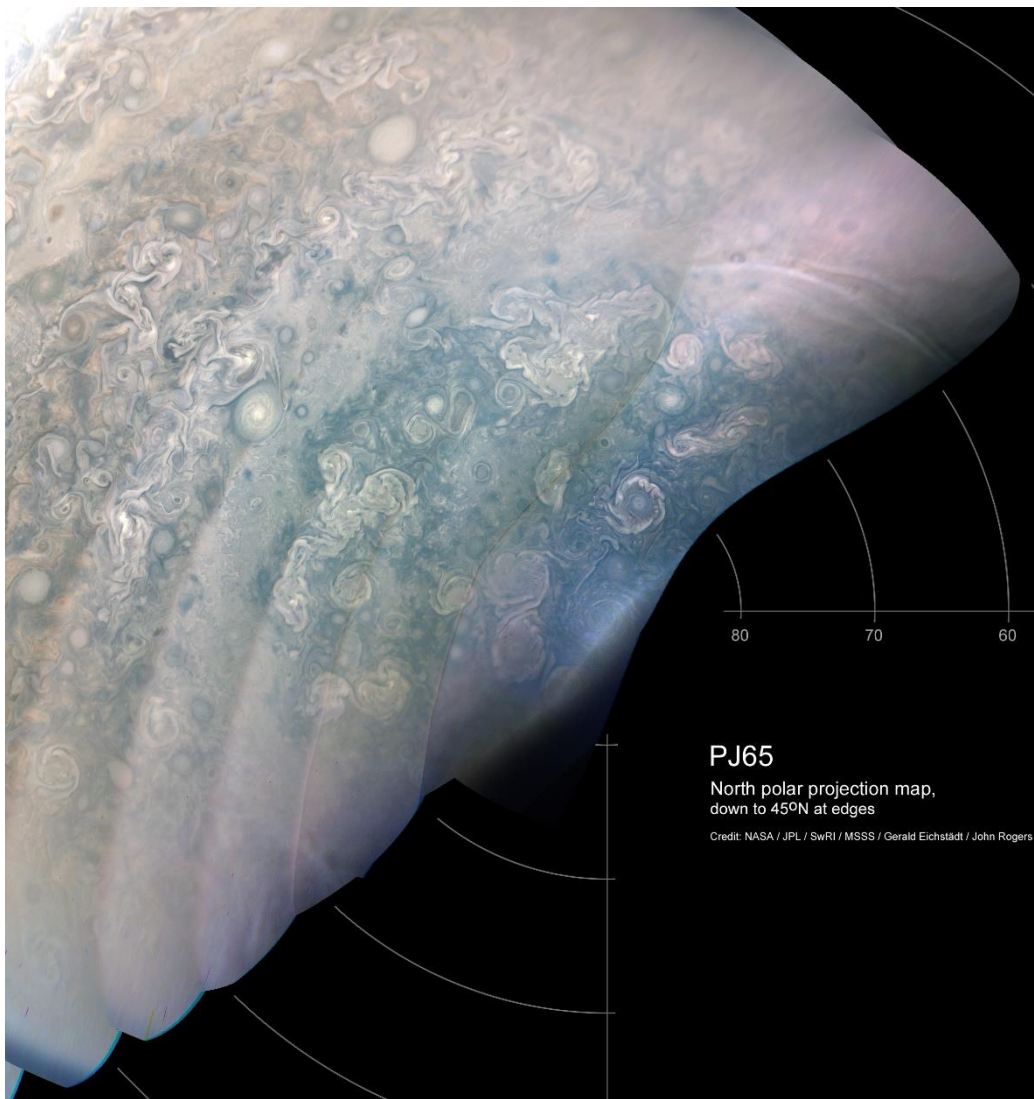
**Figure 1:**



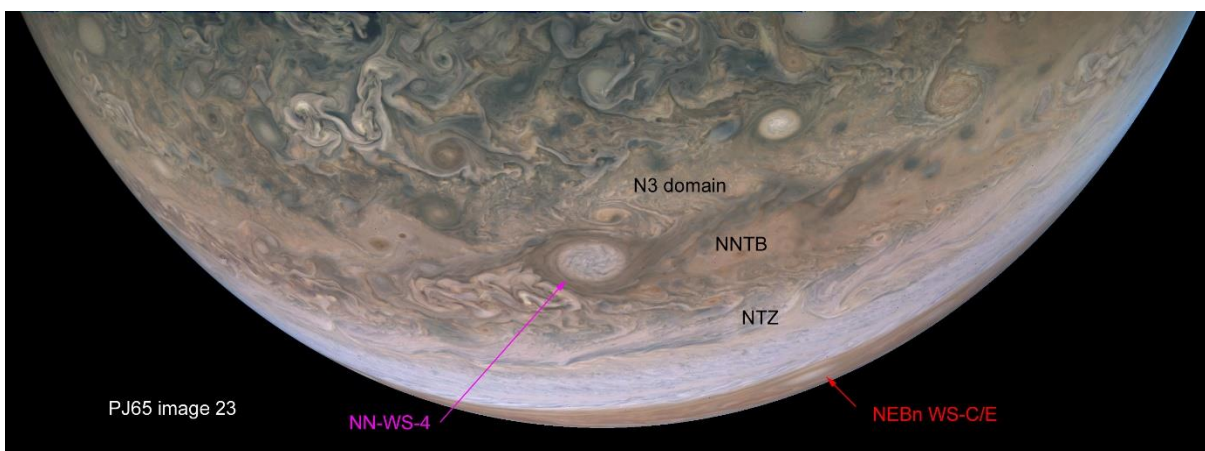
**Figure 2:**



**Figure 3:**

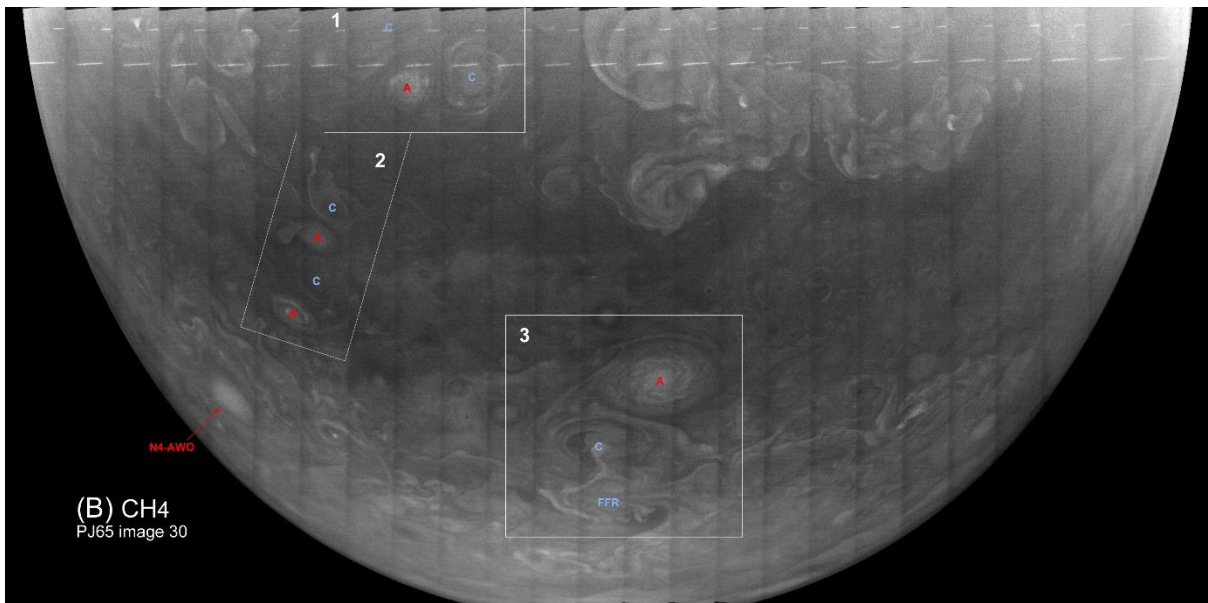
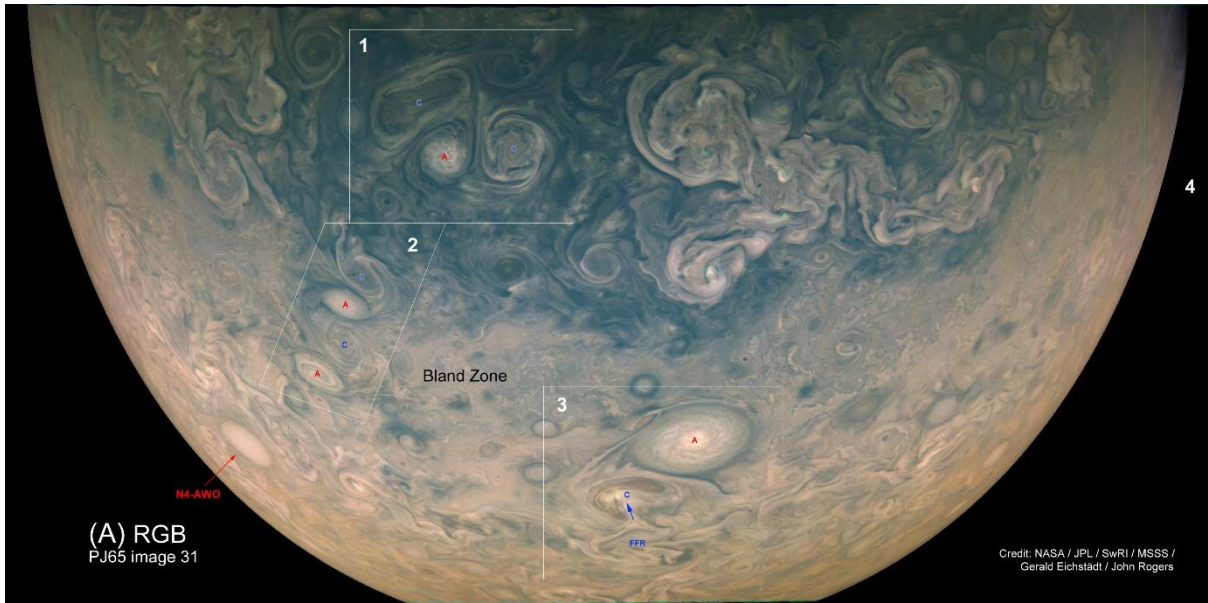


**Figure 4:**



**Figure 5.** Features of the high northern latitudes in inbound image 31 [on next page]:





**(Panels A,B)** Three boxes outline clusters of circulations as follows (A = anticyclone, C = cyclone):

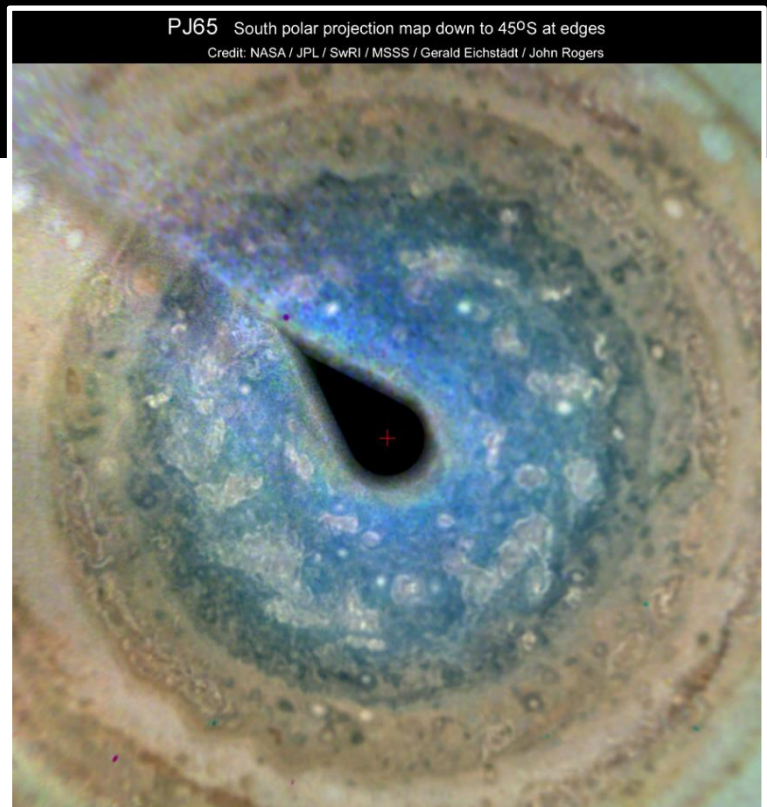
- (1) Triplet consisting of an AWO sandwiched between a dark brown cyclonic oblong and a roughly circular cyclone (which resembles the filled CPCs), in the NPR.
- (2) Line of alternating anticyclones & cyclones.
- (3) The large N5 AWO, interacting with two cyclonic structures to its south: from types in previous JunoCam imagery, these can be recognised as a dark brown cyclonic oval being overridden by a bright streak from an adjacent FFR. The **methane image (B)** shows that the AWOs and the streak from the FFR are all methane-bright, which is typical. The map (Figure 2) shows that these three circulations in (3) all belong to the N5 domain although the AWO and the FFR protrude beyond its average latitudinal limits.
- (4) This box outlines a detached haze layer at the limb and terminator, shown in **panel (C)** (enlarged, rotated, brightened). From Gerald's map projection, this seems to be in the range of  $\sim 45\text{--}52^\circ\text{N}$ , i.e. over the N4 domain.

**Figure 6:**



**Figure 7** [on next page].

**Figure 8:**





**Figure 7:**

