

## Jupiter in 2019, report no.1

--John Rogers (BAA) (2019 Feb.4)

*A new page on the ALPO-Japan web site* presents cylindrical maps of the planet in all 3 longitude systems, made by Shinji Mizumoto every few days from the available images: [http://alpo-j.asahikawa-med.ac.jp/Latest/j\\_Cylindrical\\_Maps/j\\_Cylindrical\\_Maps.htm](http://alpo-j.asahikawa-med.ac.jp/Latest/j_Cylindrical_Maps/j_Cylindrical_Maps.htm)  
An edited version of one recent map is **Figure 1**.

### 1. General picture and Perijove-17 track

The new apparition began in December, and Juno's Perijove-17 (PJ17) was on 2018 Dec.21, p. oval BA. Amateurs had been able to take only a few, lo-res images by that date. **Figure 2** shows images near the PJ17 track in early January.

*EZ:* The most obvious feature is the strong coloration of the EZ: the ochre band occupies the central half of the EZ, and the usually-white areas in the EZ(N) are now yellowish or greyish-ochre as well, leaving only a narrow strip of white EZ(S).

*SEB:* The belt has not changed much since October: it still has a broad, very dark south component, so it has not generally faded, but it still has a 'SEB Zone' (SEBZ) within it, broad and very light f. the GRS, and narrower and light ochre p. the GRS. There are still one or two bright white spots just f. the GRS, so the convective and turbulent activity here still continues. But given the low level of activity, the quiescence elsewhere, and the intense equatorial coloration event, I think a SEB Fade could yet develop this year.

*NEB:* The last observations of 2018 [see map from Sep.4-5 in our report on Juno at PJ15, and images from Oct. in our 2018 report no.9] showed that the northern extension of the NEB had faded to a pale fawn colour, leaving the main NEB dark brown with normal width, with a sharp NEBn edge following the pre-existing high-amplitude wave pattern along the NEBn jet at ~17-18.5°Ng. The new images in 2019 Jan. show a similar aspect, but with almost no trace of the residual northern extension.

### 2. GRS region and Perijove-18 track

By the end of January, Jupiter was high enough in morning skies in the southern hemisphere that some observers began getting good-quality images – notably Damian Peach remotely using the 1-metre ChileScope on Feb.2. These images (**Figure 3**) show the area around the GRS which is the target for Juno at PJ18 on Feb.12. Various interesting features are indicated. Also, the JUPOS team produced the first drift charts of the apparition, revealing that the GRS and oval BA have changed their drifts as predicted.

#### *GRS and vicinity:*

The GRS has indeed decelerated, and from 2018 Sep. to 2019 Feb. has a mean speed of DL2 = +1.6 deg/30d. It is at L2 = 302 (stationary in recent weeks due to the 90-day oscillation), and is still predicted to be centred at L2= 302, L3=241, at PJ18 on Feb.12. Juno will pass just f. its f. end.

A reddish feature emerged from the f. end of the GRS on Jan.26 and (as of Feb.2) is still retrograding on the SEBs, and is methane-bright. It was pointed out by Andy Casely who posted an animation of cylindrical maps from 3 observers on Jan.25-31:

<https://photos.app.goo.gl/8qRrK7Yn65DtBvxm6>.

Its origin is not entirely clear, as the reddish feature has been largely superimposed on a dark brown streak, but it is probably a red cloud drawn out from the GRS. Just such a feature was shown in the JunoCam PJ17 images on 2018 Dec.21 [see inset in [Figure 3](#)]. Similar features have been seen before, but only rarely. So the appearance of two of them in the few good images since solar conjunction suggests that a change in the dynamics of the GRS might be responsible.

The convective activity in the SEB f. the GRS sputters on, in the form of one or two bright white spots present in most images (though not on Feb.2).

P. the GRS, rings (vortices) have reappeared on the SEBs. One retrograded into the Red Spot Hollow on Jan.30; a larger one was north of oval BA on Jan.31 to Feb.2, and will need measurement to determine if it is retrograding.

#### *Oval BA:*

Observers noted that oval BA has lost its orange colour during solar conjunction – as also shown by JunoCam at PJ17 on Dec.21 (those images showed a faint tint still, but colour is enhanced in the JunoCam images). The colour was fading in 2018 July [our 2018 report no.6], almost white in October [images in report no.9], and white now.

Its speed accelerated greatly in 2018 Sep., and averaged  $DL2 = -15.5 \text{ deg}/30\text{d}$  from Oct. to Jan., similar to its speed after previous STB collisions.

#### *The STB Spectre:*

This has not been recognised since last autumn, but it may be visible in Chris Go's methane image on Feb.2 [also Feb.7], as a very long methane-dark streak, ~50 deg long. It did lengthen rapidly last year, reaching 30 deg long at PJ15 on Sep.7. Juno should see it again at PJ18 and could find out whether it has really grown so long now.

#### *White spot Z on NEBn:*

This long-lived oval has maintained a very steady drift of  $DL2 = -5.8$  ( $DL3 = +2.2$ )  $\text{deg}/30\text{d}$  since last summer, and will be at  $L2=328$ ,  $L3=267$ , at PJ18 on Feb.12. Unfortunately I think it will be just beyond the horizon at perijove (slightly further away than it was at PJ16).

At present it does not have a regular oval outline; the best images show a small bright spot on its north edge (which has been seen before), and more unusually, a small very bright spot fixed just Np. it in the NTropZ.

#### *White ovals in NNTZ:*

One of the long-lived AWOs, NN-WS-6, is visible in the recent images, and a smaller white spot is f. it, converging on it according to Andy Casely.

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Images in 2019 Jan.,  
flanking the Juno track at  
PJ17 on 2018 Dec.21  
(L2=240, L3=164.5)

Compilation by John Rogers (BAA)



8 January 2019 Clyde Foster  
03.19 UT Centurion, South Africa  
I 16 II 269 III 199



2019 Jan. 13, 12:00 UT  
C.M.: 42.1° 254.8° 185.7°  
David Carlish Miami, FL



2019/01/16 19:23 UT  
CMI=65.3° CMII=252.8° CMIII=184.5°  
©Phil Miles Rubyvale Qld Australia



2019 Jan.3, 21:32 UT  
CM1=253° CM2=179° CM3=107°  
O.Inoue Hirakata-shi, Osaka, Japan



5 January 2019 Clyde Foster  
03.07 UT Centurion, South Africa  
I 255 II 172 III 101



January 15, 2018 21:40UT  
© Christopher Go (Cebu, Philippines)  
I: 351 II: 186 III: 117 (15 min)



17 January 2019 Clyde Foster  
03.12 UT Centurion, South Africa  
I 352 II 176 III 108

Figure 1.

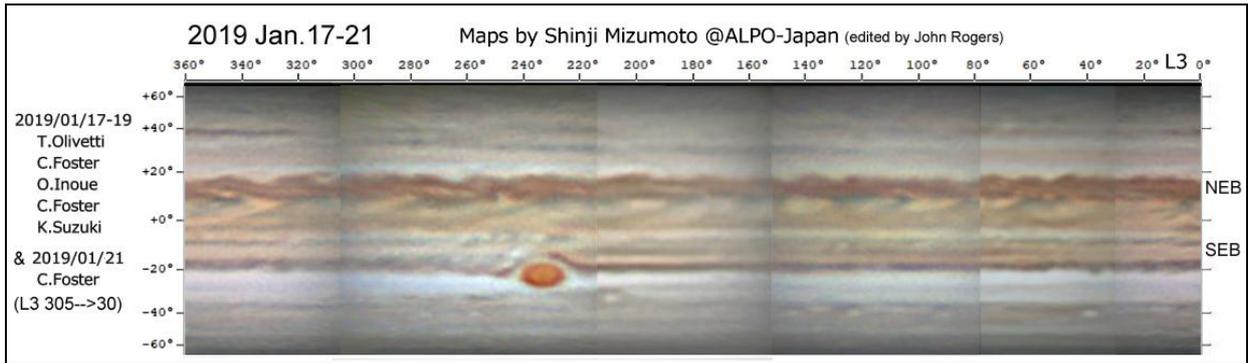


Figure 2.

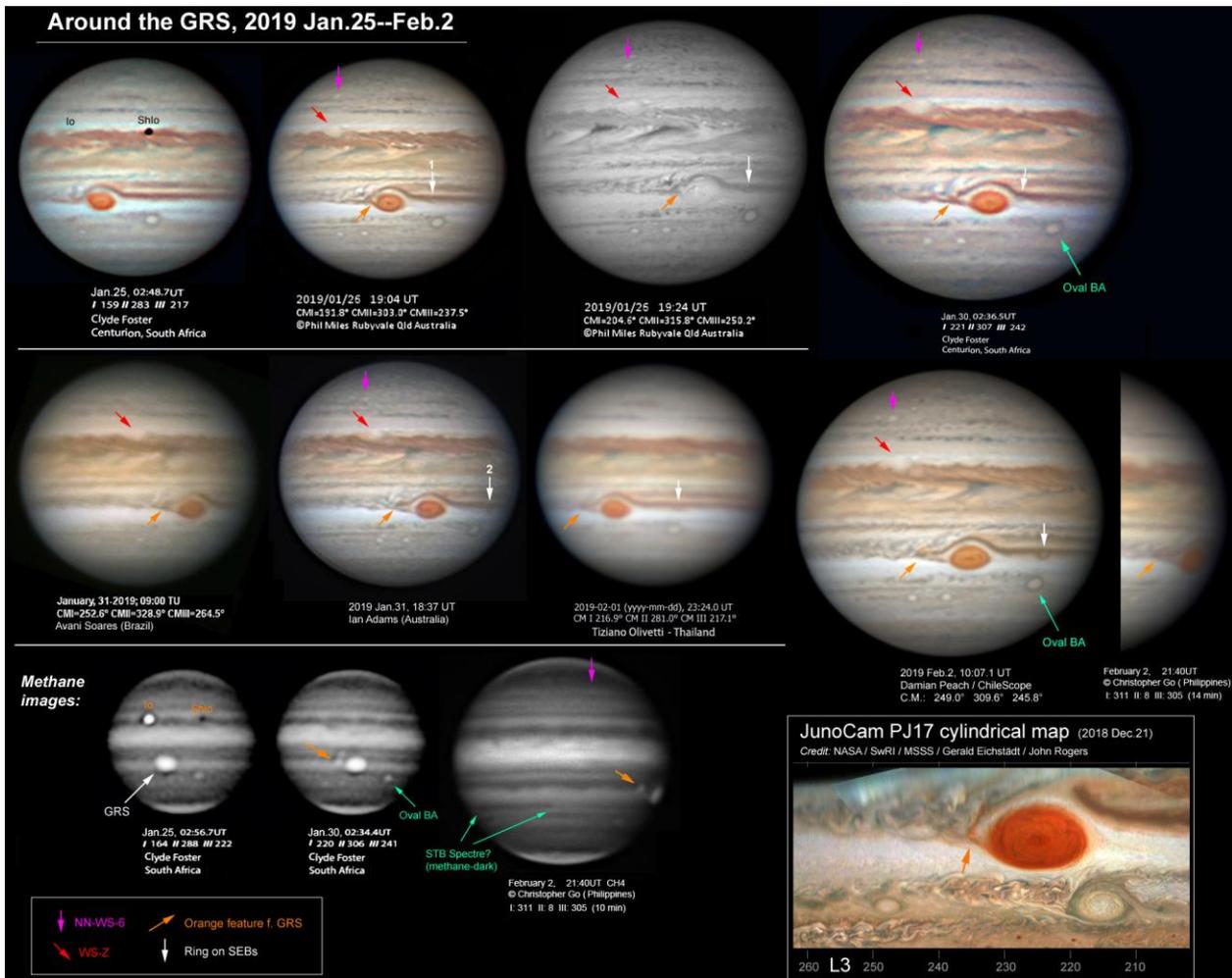


Figure 3.