

## MARS

No. **429**

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## OBSERVATIONS

No. **55***Published by the International Society of the Mars Observers***Cloud Fronts on Mars in Northern Summer:  
Activity Observed in 2014**

By

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ISMO 2013/14 Mars Note (#02)

The first 2014 Note in the preceding issue reviewed general scientific facts about cloud fronts activity during northern summer on Mars. Now, we will make a global turn on activity precisely observed in 2014. Amateurs have long been waiting for some of them to catch clearly the eye-shaped, hurricane-like feature caught by the HST in 1999 - and that year was the only favourable opposition to do so until 2014 came into sight. (As said already some amateurs did caught the famous cloud in 1997 and 1999, but the precise shape was not seen as the resolution reached was then quite low considering today's standards.) Needless to say that with today's amateur performance several observers did imaged the circular shape; however, we managed to record a greater wealth of activity.

***In 2014, activity lasted some  
20° of areocentric longitude  
of the Sun (Ls)***

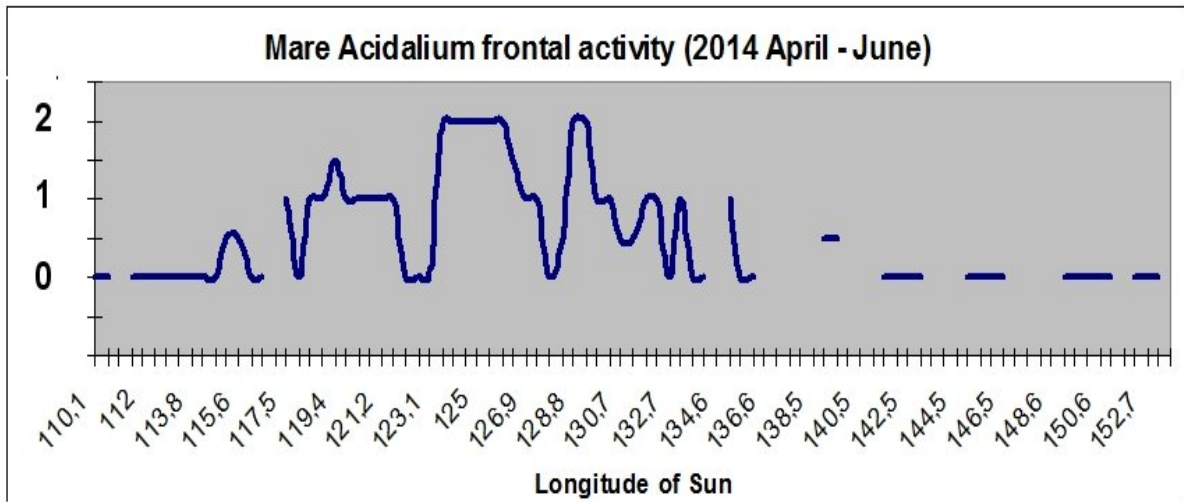
To evaluate the global evolution in 2014, I tried to classify the observed activity into three levels for each martian day from April 1<sup>st</sup> ( $\lambda=111^\circ\text{Ls}$ ) to June 30<sup>th</sup> ( $\lambda=154^\circ\text{Ls}$ ). Let's recall that activity was supposed to start from  $\lambda=120^\circ\text{Ls}$ , and peak around  $\lambda=130^\circ\text{Ls}$ .

- **Level 0** is when no activity is observed, or nothing particular
- **Level 1** is when a clear (white) cloud front is detected, with a straight shape (not circular), or if cloud brightness is low, indicating probably a weaker upwelling of water vapor
- **Level 2** is assigned to the more circular shaped with clear eye, or to thick and bright clouds that are much likely to be unresolved circular/multiple fronts shapes (eye (s) filled in)

I assume that the circular shape is a testimony of a stronger cyclonic gyre at the moment, as we read on Note #01, it's a rolled-up front, or two fronts rolled up together. So it

should be justified to assigned to it a value of 2. If no data is available for a given date, the value is left blank; sometimes half values were given (ex : 1,5). The daily note was chosen by eye and should not be considered as an extremely precise evaluation, but it does draw interesting tendencies. Read below for

some examples of values given to real images; Figure 1 is a tendency curve plotted against Martian season in Ls degrees. Images are taken from CMO and SAF Galleries mainly but other sources have been investigated whenever data was missing.



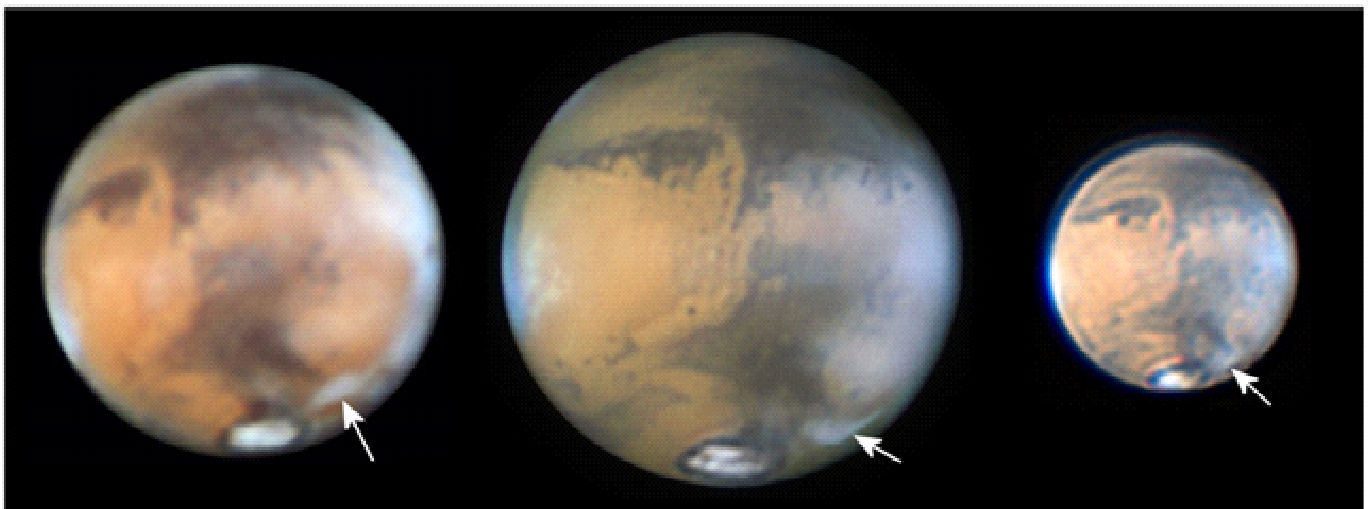
**Fig. 1.** Curve outlining the evolution of cloud front activity north of Mare Acidalium in 2014. 0 = nothing particular observed, 1 = single straight front or low brightness, 2 = circular shape of thick bright mass of clouds.

**Start of activity**

**$\lambda=116^\circ\text{Ls} \sim \lambda=122^\circ\text{Ls}$**

In 2014, activity started around mid-april; the first weak sights of the presence of a cloud front are on  $\lambda=116^\circ\text{Ls}$  (April 13<sup>th</sup>) but activity starts really on  $\lambda=119^\circ\text{Ls}$  (April 19<sup>th</sup>).

Single fronts are observed up to  $\lambda=122^\circ\text{Ls}$  (April 26<sup>th</sup>). On the last sol of the period, a possible weak, partially circular shape is caught around midday (ex. Phil MILES / Christopher GO), but morning data (Gary WALKER) is not convincing.

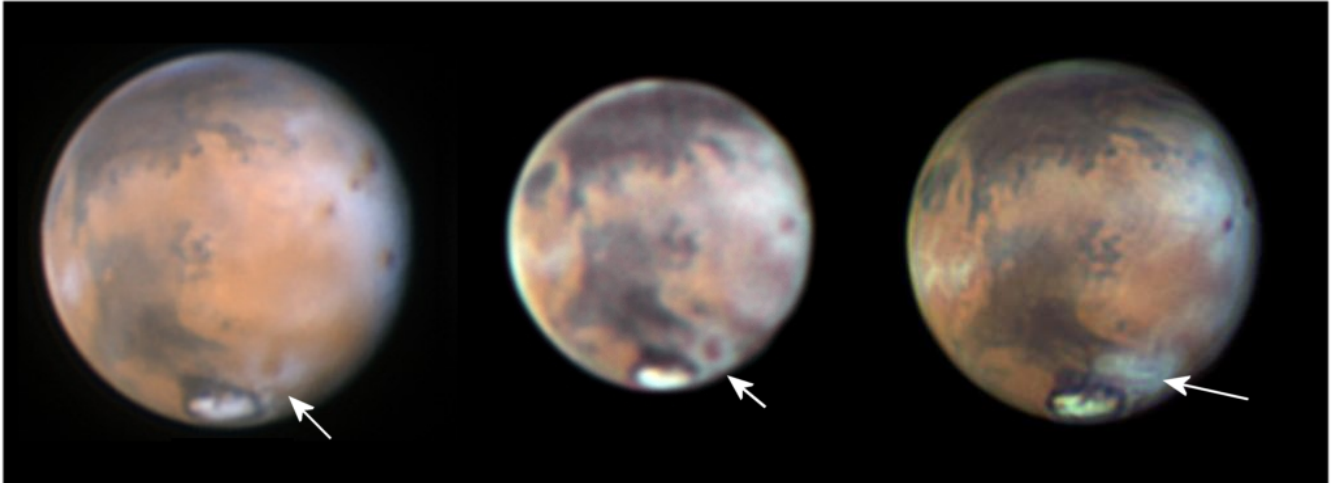


**Fig. 2.** First period. **Left:**  $\lambda=118^\circ\text{Ls}$  (April 19<sup>th</sup> - Efrain MORALES). **Mid:**  $\lambda=119^\circ\text{Ls}$  (April 20<sup>th</sup> - Damian PEACH). **Right:**  $\lambda=121^\circ\text{Ls}$  (April 25<sup>th</sup> - Paul MAXSON).

### **Apogee of activity $\lambda=124^{\circ}\text{Ls}\sim\lambda=129^{\circ}\text{Ls}$**

A brief pause in activity look to happen on  $\lambda=122/123^{\circ}\text{Ls}$  and then a second period

opens with clear circular shapes from  $\lambda=124^{\circ}\text{Ls}$  (April 30<sup>th</sup>) to  $\lambda=129^{\circ}\text{Ls}$  (May 12<sup>th</sup>) with some variations. Amateur data taken during this period is of high quality and we will tell more about it!



**Fig. 3.** Circular or multiple fronts features from the peak of activity. **Left:**  $\lambda=124^{\circ}\text{Ls}$  (April 30<sup>th</sup> - Stefan BUDA). **Middle:**  $\lambda=124^{\circ}\text{Ls}$  (May 1<sup>st</sup> - Yukio MORITA). **Right:**  $\lambda=125^{\circ}\text{Ls}$  (May 3<sup>rd</sup> - Christopher GO).

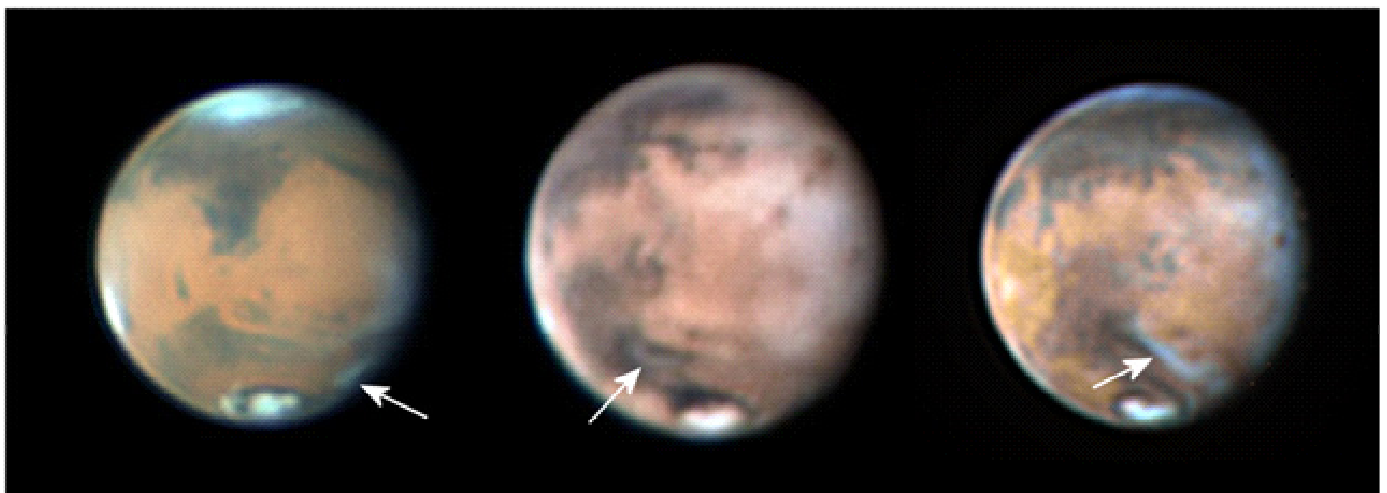
*The last one is an example of non circular feature, but that deserves the highest value "2" in Fig. 1:*

*It involves several fronts and carries on bright clouds.*

### **Back to single fronts, $\lambda=130^{\circ}\text{Ls}-135^{\circ}\text{Ls}$**

A third period covers activity from  $\lambda=130^{\circ}\text{Ls}$

to  $\lambda=135^{\circ}\text{Ls}$  (May 13<sup>th</sup> - 24<sup>th</sup>) with fronts observed with no circular shapes. Activity is still quite interesting, but wind circulation does not create circular shapes anymore.



**Fig. 4.** From the third period, with a slight decay of activity. **Left:**  $\lambda=130^{\circ}\text{Ls}$  (May 13<sup>th</sup> - Marc JUSTICE). **Middle:**  $\lambda=131^{\circ}\text{Ls}$  (May 14<sup>th</sup> - Martin LEWIS). **Right:**  $\lambda=133^{\circ}\text{Ls}$  (May 19<sup>th</sup> - Almir GERMANO).

### ***Fade of activity after $\lambda=135^\circ\text{Ls}$***

And then, activity looks to fade strongly after  $\lambda=135^\circ\text{Ls}$ , when nothing is clearly caught during the whole month of June - if we except images taken by Charles TRIANA on  $\lambda=139/140^\circ\text{Ls}$  (June 1<sup>st</sup> - 2<sup>nd</sup>) because the white clouds look a bit too low in latitude. Data's quality do not look high enough to draw definitive conclusions here, and as Fig.

1 is clearly showing, for many days we are just missing images. The MRO MARCI weather reports' movies, that are helpful to fill blanks, do not show anything either - even if we know that they fail to present the early hours of the sol, when frontal activity is at its strongest.

However, circular or thick white fronts would still have been visible when they reach noon.



***Fig. 5. Typical images of morning Mare Acidalium from the last period, with no or very little activity detected. Season has reached second half of northern summer. Left:  $\lambda=143^\circ\text{Ls}$  (June 9<sup>th</sup> - Stefan BUDA). Middle and right:  $\lambda=149/150^\circ\text{Ls}$  (June 21<sup>st</sup> - 22<sup>nd</sup> - Xavier DUPONT).***

In past Martian years, some strong frontal activity has been detected after  $\lambda=140^\circ\text{Ls}$ , even in the circular appearance, so there would be a difference. Either the years with no activity are anomalous, or those one with persistent fronts are. Figure 6 shows a thick and bright front imaged by the HST in 1997 at  $\lambda=146^\circ\text{Ls}$  (July 9<sup>th</sup>).

In 2014, white front activity began around  $\lambda=116^\circ\text{Ls}$  (quite early) and lasted at least up to  $\lambda=135^\circ\text{Ls}$ , with a peak between  $\lambda=124^\circ\text{Ls}$  and  $\lambda=129^\circ\text{Ls}$ . There is possibly anomalous decay of the activity after  $\lambda=135^\circ\text{Ls}$  ~ $140^\circ\text{Ls}$ .

In a next note, we will describe more precisely the appearance and behavior of northern summer white fronts observed in 2014.



***Fig. 6: Strong front imaged by the HST in 1997 at  $\lambda=146^\circ\text{Ls}$ .***

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□

## 2013/2014 Mars Observations in September 2014

♂..... We shall give below a 15<sup>th</sup> report of the 2013/2014 apparition of Mars, and deals with the observations made in September 2014 when the planet moved from the Lib to the Sco constellation, and the apparent declination went down (or up, on the Terrestrial Southern Hemisphere) from 19°S to 23°S. On 30 September it passed by the north of Antares, Sco. On the Northern Hemisphere the altitude of Mars was quite low at the sunset time, and observational condition was quite worse. The apparent diameter  $\delta$  went down from  $\delta=6.8''$  to  $6.1''$ . The Martian season proceeded from  $\lambda=188^\circ\text{Ls}$  to  $206^\circ\text{Ls}$ , and the dust season on the southern hemisphere approached, but no significant dust disturbance was observed in September. The tilt was from  $\phi=15^\circ\text{N}$  to  $07^\circ\text{N}$ , and thus the Martian southern hemisphere was largely seen, and at the latter part of the month the south polar cap (spc) was clearly glimpsed. The defect illumination was large but less as far as the phase angle was decreased from  $\iota=42^\circ$  to  $40^\circ$ .

♂..... This period no report from the American continents arrived and the total number of observations much decreased. We just received 19 observations from four members this occasion: Domestically Yukio MORITA (*Mo*) sent us three observations, from Australia Maurice VALIMBERTI (*MVI*) and David WELDRAKE (*DWd*) reported 12 observations, and finally at the end of the month, Clyde FOSTER (*CFs*) in South Africa re-joined with a new apparatus and sent us four observations.

♂..... The following is a list of the observers and data of the days of the observations they performed.

**FOSTER, Clyde (*CFs*)** Centurion, SOUTH AFRICA

4 Sets of *RGB* + 4 *IR* Images (24, 26, 27, 29 September 2014)

36cm SCT @*f*/33 with an ASI 120MM

**MORITA, Yukio (*Mo*)** Hatsuka-ichi, Hiroshima, JAPAN

3 Sets of *RGB* + 3 *LRGB Colour* + 3 *L* Images (14, 20, 28 September 2014) 36cm SCT with a Flea 3

**VALIMBERTI, Maurice (*MVI*)** Melbourne, AUSTRALIA

10 Sets of *RGB* + 10 *IR* Images (4, 5, 21, 22, 29 September 2014)

36cm SCT @*f*/24 with an ASI 120MM

**WELDRAKE, David (*DWd*)** Bungendore, NSW, AUSTRALIA

2 Sets of *LRGB* + 2 *L* Images (13, 23 September 2014) 13cm refractor @*f*/70 with an ASI 130MM

♂..... We shall now give a short review to each observation in September chronologically as before:

**4 September 2014 ( $\lambda=190^\circ\text{Ls}$ ,  $\delta=6.7''$ )**

**Maurice VALIMBERTI (*MVI*)** obtained two sets of R, G, B, and IR images and composed two RGB images at  $\omega=252^\circ\text{W}$  and  $255^\circ\text{W}$ . The gross aspect of markings is mostly recognised in IR. The time lag between the two sets is not enough, while Syrtis Mj is more apparent on R and IR images of the following case. M Cimmerium is also better shown on the IR images than on the RGB image. On RGB, Elysium is a bit light, but never whitish. On the first set, the Ætheria dark patch is definite. On G, the preceding area of Hellas (maybe the southern Ausonia) shows a bit lighter spread. The southern limb is dull light. Its north around M Chromium looks a dark band. The arctic area looks dull.



### 5 September 2014 ( $\lambda=190^\circ\text{Ls}\sim 191^\circ\text{Ls}$ , $\delta=6.7''$ )

**MVI** also made two sets of images at  $\omega=251^\circ\text{W}$ ,  $\omega=260^\circ\text{W}$ . The shape of Elysium is apparent together with the Ætheria dark patch. On the former images some bright streak inside Elysium. On the latter images Syrtis Mj is totally visible inside the disk. The tip of Utopia is also seen. At the southern limb side M Chronium or Tiphys Fr is dark as a band of the southern bright matter. Still the details of M Cimmerium look to be checked on the R and the IR image. The arctic region is a bit light in B.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140905/MVI05Sept14.jpg>

### 13 September 2014 ( $\lambda=195^\circ\text{Ls}\sim 196^\circ\text{Ls}$ , $\delta=6.5''$ )

**David WELDRAKE (DWd)** took a set of images at  $\omega=166^\circ\text{W}$  to compose an LRGB image. The colour composite shows an aureole around the whole circumference of the image. The southern and the northern limb are whitish bright, but the antarctic part is very dull in R (while bright in G and B), and so here is featured some mist-like matter associated with the northern peripheral part of the south polar cap (spc) at the rear side. In this case however we don't know the positive implication of the Luminance filter. Mare Sirenum is quite dark. There is seen an area which is a bit light, maybe near Olympus Mons, but yet it is on the morning side. The G and B images suggest an arctic mist at the morning terminator.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140913/DWd13Sept14.jpg>

### 14 September 2014 ( $\lambda=196^\circ\text{Ls}$ , $\delta=6.5''$ )

**Yukio MORITA (Mo)** produced a set of images at  $\omega=174^\circ\text{W}$  from which *Mo* composed an LRGB and an RGB images. M Sirenum is dark on the lhs of the image, and to its south there exist a light arc (maybe the northern perimeter of the spc) at the southern limb: Its brightness is obvious in R, but less bright in G and B. At the morning side of the northern hemisphere there is visible a light matter in G, and also is suggested in R and B. On the R image there are seen complicated light areas to the preceding part of Propontis I.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140914/Mo14Sept14.jpg>

### 20 September 2014 ( $\lambda=199^\circ\text{Ls}\sim 200^\circ\text{Ls}$ , $\delta=6.3''$ )

**Mo** obtained one set of images at  $\omega=114^\circ\text{W}$ . The markings look duller: Just there is suggested a darker part around Solis Lacus. The preceding limb at the equatorial region is a bit light (slightly yellowish) in LRGB as well as in RGB. The southern limb is duller.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140920/Mo20Sept14.jpg>

### 21 September 2014 ( $\lambda=200^\circ\text{Ls}$ , $\delta=6.3''$ )

**MVI** gave two sets of three primary colour plus IR ingredient at  $\omega=093^\circ\text{W}$  and at  $\omega=098^\circ\text{W}$ . Solis L is considerably definite in good shape in R and L, and Phasis is also caught. Tithonius Lacus is also well described. Ophir-Candor is bright evident. The southern limb is bright in G: This is also apparent on the later R image so that it may show a glimpse of the spc towards us. The arctic region is not so much light, while the northern preceding limb of the RGB image shows a thick white small bulge.  $\phi=09^\circ\text{N}$ .

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140921/MVI21Sept14.jpg>

**22 September 2014 ( $\lambda=200^\circ\text{Ls}\sim 201^\circ\text{Ls}$ ,  $\delta=6.3''$ )**

*MVI* obtained two sets of excellent images at  $\omega=077^\circ\text{W}$  and at  $\omega=088^\circ\text{W}$ . On the former, the northern edge of the spc appears to be white. The Solis L area is large and definite. Along the perimeter of the spc, Mare Australe runs as a dark band, its density being higher than that of Solis L. The series of Tithonius L, the bright Ophir-Candor, Auroræ Sinus until Margaritifer Sinus are clearly distinguishable. In R, Nilokeras is definite. Incidentally the R image is superior to the IR. Mare Acidalium is now declined with a darker northern part following a patch of white cloud. This cloud is connected with the morning cloud near the terminator as being apparent in G and B. The latter group at  $\omega=088^\circ\text{W}$  is good, while this is no much for the images of the former group at  $\omega=077^\circ\text{W}$ .

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140922/MVI22Sept14.jpg>

**23 September 2014 ( $\lambda=201^\circ\text{Ls}\sim 202^\circ\text{Ls}$ ,  $\delta=6.3''$ )**

*DWd* gave a set of images to compose an LRGB image at  $\omega=072^\circ\text{W}$ . The apparent circumference looks light as if an aureole, especially the southern and northern limbs being bright. The areas at Solis L and M Acidalium are shadowy. The desert spread pinched by the both shadowy areas shows a nice reddish colour proper to the planet Mars.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140923/DWd23Sept14.jpg>

**24 September 2014 ( $\lambda=202^\circ\text{Ls}$ ,  $\delta=6.3''\sim 6.2''$ )**

**Clyde FOSTER (CFs)** joined again with a new apparatus (ZWO ASI120MC  $\rightarrow$  ZWO ASI120MM), and secured a set of primary R, G, B images plus IR742 ingredient at  $\omega=167^\circ\text{W}$ . CFs displays a large composite RGB image. The glimpse of the spc is evident, and M Sirenum is dark and definite on the lhs of the disk. Notable is that there exists a conspicuous white cloudy bulge at the arctic area of the preceding limb followed by a large mist at the most part of the arctic region. This is also a bit evident in R.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140924/CFs24Sept14.jpg>

**26 September 2014 ( $\lambda=203^\circ\text{Ls}$ ,  $\delta=6.2''$ )**

*CFs* obtained another set of images at  $\omega=166^\circ\text{W}$ . The angle is the same as on the preceding day, but the seeing condition seems to be inferior. The white bulge on the previous day is not seen.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140926/CFs26Sept14.jpg>

**27 September 2014 ( $\lambda=203^\circ\text{Ls}\sim 204^\circ\text{Ls}$ ,  $\delta=6.2''$ )**

*CFs* secured a set of images including IR at  $\omega=138^\circ\text{W}$ . The glimpse of the northern perimeter of the spc is apparent. M Sirenum is dark, and some details are suggested at Memnonia from the eastern part of M Sirenum. Solis L is now appearing at the preceding limb. The arctic area is light with a mist expansion in B, but unseen in R. The bulge at the northern preceding limb is weakly visible.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140927/CFs27Sept14.jpg>

**28 September 2014 ( $\lambda=204^\circ\text{Ls}\sim 205^\circ\text{Ls}$ ,  $\delta=6.2''\sim 6.1''$ )**

*Mo* gave a set of images at  $\omega=031^\circ\text{W}$  and obtained the LRGB and RGB images. Sinus Meridiani is visible on the lhs of the disk, and Aram is whitish light. In R and L, Chryse is a bit light and

shows a fine structure: The western part may show a lighter patch. Ganges is visible. The spc is clearly seen in R, but it looks to be a bit smaller from this angle. The arctic area is dull, while the northern part of M Acidalium is pretty covered by a white cloud. In L, The arctic morning terminator is light.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140928/Mo28Sept14.jpg>

### 29 September 2014 ( $\lambda=205^\circ\text{Ls}$ , $\delta=6.1''$ )

**MVI** obtained three sets at  $\omega=000^\circ\text{W}$ ,  $003^\circ\text{W}$ , and at  $\omega=009^\circ\text{W}$ . The images do not appear clear when they were taken before the dusk, while as far as we refer to the R images, all images are suitable: Meridiani S shows the twin nails, and Sabæus S finely describes a curve. On the first set of images, Aram is light. The area of Oxia Palus is well described, and Oxus is separated. The morning side of M Acidalium is covered by a cloud, though is not bright in B. Although Hellespontus does not make a difference from the ghost which is connected with Mare Australe, the part connected with a thin Mare Serpentis runs to Depressiones Hellesponticæ which lies beyond a cloud belt to the north of M Australe. The spc is glimpsed. We should say the third RGB image looks best. There is seen a dull white bulge at the arctic preceding limb.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140929/MVI29Sept14.jpg>

### 30 September 2014 ( $\lambda=205^\circ\text{Ls}$ - $206^\circ\text{Ls}$ , $\delta=6.1''$ )

**CFs** gave a set of images at  $\omega=110^\circ\text{W}$ . A glimpse of the spc is well described as well as the arctic cloud expansion at the opposite side. As seen from the R image, Solis Lacus, Tithonius L, Auroræ Sinus are well separated. M Acidalium and Nilokeras leave their silhouettes near the preceding limb side. Inside Tempe a shadowy dot is visible. The arctic cloud is light in G and B, while not in R. The R image is superior to the corresponding IR.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140930/CFs30Sept14.jpg>

The diameter  $\delta$  came down to  $6.1''$  (and  $\phi=07^\circ\text{N}$ ). The activity of CFs continues until those coming months of October and November.

**Masatsugu MINAMI & Masami MURAKAMI**

## *Letters to the Editor*

●...*Subject: Mars 1 November*

*Received: 2 November 2014 at 03:53 JST*

Good evening all, Images from this evening. I believe that Olympus Mons may just be visible lower left (NE) of centre? Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141101/CFs01Nov14.jpg>

○...*Subject: Mars 1 November- 2nd set*

*Received: 2 November 2014 at 04:17 JST*

Hi all, A second set that I took a little earlier than the one I sent through already. Olympus Mons directly below centre?

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141101/CFs01Nov14.jpg>

○...*Subject: Mars 5 November*

*Received: 6 November 2014 at 05:34 JST*

Good evening all, Images from this evening. Have missed a few evenings due to poor weather and also being out of town on business. No significant activity detectable at this stage, as far as I can see.

Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141105/CFs05Nov14.jpg>

○...*Subject: Mars 6 November*



**Received: 7 November 2014 at 03:57 JST**

Good evening all, Images from this evening. Reasonable seeing conditions extended into the evening. Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141106/CFs06Nov14.jpg>

○...**Subject: Mars 7 November**

**Received: 8 November 2014 at 15:00 JST**

Good evening all, Images from this evening. A bit of a hint that the Argyre region, which is rotating into view may be fairly light. Afraid there is very poor data in the blue. Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141107/CFs07Nov14.jpg>

○...**Subject: Mars 9 November**

**Received: 10 November 2014 at 02:00 JST**

Good evening all, Images from this evening. Blue data a bit better. Some (vapour) cloud apparent over Mare Acidalium. Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141109/CFs09Nov14.jpg>

○...**Subject: Mars 14 November**

**Received: 15 November 2014 at 04:06 JST**

Good evening all, Images from this evening. We have had bad weather the last few days. Argyre region reasonably bright. Clouds and maybe a hint of dust (in red image) over Mare Acidalium. Although overexposed, some shape apparent in the SPC. Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141114/CFs14Nov14.jpg>

○...**Subject: Mars 16 November Red channel only**

**Received: 17 November 2014 at 02:44 JST**

I do note that I am still very well placed for the next two apparitions, so I am hoping I can get these medical issues resolved and be back to full operation during the first half of next year (I still have mountains to climb, rivers to canoe, as well as lots of planetary, lunar and deep sky imaging to do.....!!) Best regards, and I will try and make the most of these last couple of weeks to close out this apparition. Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141116/CFs16Nov14.jpg>

○...**Subject: Re: Mars 16 Nov Red channel only**

**Received: 18 November 2014 at 03:49 JST**

Hi all, I did not get any images this evening, but as a point of interest, when I was looking a bit more closely at the image from yesterday evening, I noticed two small dark spots central and south west of

the Argyre region (I think....). I have marked them on the attached image. I would be interested to know if these are identifiable, or whether they are just artifacts of processing. The upper one (more southerly), appears to be roughly in the position of Crater Schmidt, but I guess it would be expecting a bit much at this distance.....! Best regards



○...**Subject: Mars 18 November**

**Received: 19 November 2014 at 03:41 JST**

Good evening all, Images from this evening. It is becoming increasingly difficult to capture a blue image. Hellas rotating into view. Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141118/CFs18Nov14.jpg>

○...**Subject: Mars 20 November**

**Received: 21 November 2014 at 05:16 JST**

Good evening all, Images from this evening. Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141120/CFs20Nov14.jpg>

○...**Subject: Mars 26 November**

**Received: 27 November 2014 at 20:57 JST**

Hi all, Apologies for sending from my work e-mail. I had some problems with my e-mail system at home. Attached image from yesterday evening. Hellas, Syrtis Major and Mare Tyhrrenium prominent. Hesperia also showing in red and IR images. Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141126/CFs26Nov14.jpg>

○...**Subject: Re: CMO/ISMO is updated to #428/#45**

**Received: 28 November 2014 at 18:48 JST**

Thank you Masami and Masatsugu. I will be having my back operation next Friday, so will not be able to take images probably until January, when

Mars will be very small and lower in the sky. Hopefully I can get a few images during the next few days. Best regards,

**Clyde FOSTER** (Centurion, SOUTH AFRICA)

●...*Subject: 2014 Mars images*  
*Received: 5 November 2014 at 15:03 JST*

Hello Darryl, I'm about to resume writing Mars notes for ISMO. I remember you made some good shots of the planet last spring but I think you did not send them. Would you be able to send at least those ones showing the so-called polar fronts or northern spiral clouds? You had some I think :)

This will be my first subject of study. Best wishes.

○...*Subject: Article for CMO 428*  
*Received: 16 November 2014 at 01:12 JST*

Dear Masatsugu, Just a word to say that I will be late in sending my CMO note. Last week-end in France we had our great astronomical meeting in Paris (every two years), and I have been able to begin working on my note only after. Then I have hesitated quite a lot in the precise subject of writing - It will be an scientific overview of northern spiral clouds, I think. Best wishes,

**Christophe PELLIER** (Nantes, FRANCE)

●...*Subject: Mars images in Sept and Oct 2014*  
*Received: 10 November 2014 at 00:52 JST*

Please find attached here the Mars images taken

on 14, 20, 28 September and 19 October 2014. Best

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140914/Mo14Sept14.jpg>  
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140920/Mo20Sept14.jpg>  
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140928/Mo28Sept14.jpg>  
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/141019/Mo19Oct14.jpg>

**Yukio MORITA** (Hiroshima, JAPAN)

●...*Subject: Pro-Am session at EPS Congress 2014*  
*Received: 22 November 2014 at 23:44 JST*

Dears, I had the pleasure this year to organize the pro-am program and convene in particular the "Amateur contribution to planetary and exoplanet science" which was holded in Portugal, in Sept during the 2014 EPSC. For those of you who could not join, please find on the following page a summary of the oral and poster sessions, with the abstracts and a couple of posters / presentation available and some pictures:

<http://www.astrosurf.com/delcroix/doc/EPSC2014/EPSC2014.htm>

You can also find the program of the second session: "Citizen Science: Intersection of Professional - Amateur Astronomy"

[http://meetingorganizer.copernicus.org/EPSC2014/oral\\_program/16853](http://meetingorganizer.copernicus.org/EPSC2014/oral_program/16853)

I want to thank all co-conveners and authors for your contribution, and the public who listened to our sessions. Regards,

**Marc DELCROIX** (Tournefeuille, FRANCE)

★ ★ ★

## **International Society of the Mars Observers (ISMO)**

**Advisory Board:** Donald PARKER, Christophe PELLIER, William SHEEHAN, and Tadashi ASADA, Reiichi KONNAI, Masatsugu MINAMI

**Bulletin:** [Kasei-Tsushin](http://www.kasei-tsushin.com) CMO (<http://www.mars.dti.ne.jp/~cmo/ISMO.html>)

**CMO #429/ ISMO #55** (25 December 2014)

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