

MARS

No. 448

25 May 2016

OBSERVATIONS

No. 74

Published by the International Society of the Mars Observers

CMO/ISMO 2016 Mars Report #08

2016 CMO/ISMO Mars Observations Made During the Fortnight Period from 1 May ($\lambda=146^\circ\text{Ls}$) to 15 May ($\lambda=153^\circ\text{Ls}$) 2016

♂..... This is the 8th ISMO 2016 Mars report of the observations performed by the members during the fortnight period from 1 May until 15 May 2016. In Japan, the weather was variable periodically this period since several low-pressure air masses passed the islands. The planet Mars retrogressed at the claws of Scorpius and was close to δ Scorp. The stellar magnitude became brighter than that of α Scorp. (Antares). The angular diameter grew from $\delta=16.1''$ to $\delta=17.9''$, and the phase angle decreased from $\epsilon=17^\circ$ to 06° , since the planet was near at opposition (which occurred on 20 May). Mars appeared from the east at around 21 h Local Time, while the apparent declination D was around 21°S so that the culmination altitude seen from Tokyo is low and just about 33° . The Martian season proceeded from $\lambda=146^\circ\text{Ls}$ to $\lambda=153^\circ\text{Ls}$, and tilt $\phi=D_E$ was from $\phi=07^\circ\text{N}$ to 09°N . The equatorial zone of mist was often observed from Elysium to Syrtis Major, and from Chryse to Tharsis. The northern district of Syrtis Major was often invaded by a thick condensate. At the northern middle latitudes, the mist zone was sometimes checked on the B image from Tempe to Alba Patera. This may be related with the second peak of the activity of the Alba cloud. Hellas has decreased its activity inside the basin during this period. As the planet is near at opposition, Olympus Mons behaved unusually, and showed a beautiful ring on the shield. The southern polar canopy is still variable in brightness/whiteness. There has been once observed a white cloud disturbance to the north of Mare Acidalius.

♂..... Because of the low altitude of the planet if observed from the Northern Hemisphere, the activity in the US and Europe remains quite low. A total number of observations received amounted to 76 from 21 members. The observers and their instruments are listed as follows:

ADCOCK, Barry (BA_d) Viewbank, VIC, AUSTRALIA

1 RGB Colour + 2 B Images (15 May 2016) 25cm refractor

AKUTSU, Tomio (AK) Tochigi, JAPAN (# Utsunomiya University Observatory)

2 RGB Colour + 2 B + 2 IR Images (12 May 2016) 40cm Cassegrain# with an ASI 174MM

ASADA, Tadashi (AS) Fukuoka, JAPAN

1 set of RGB Images (15 May 2016) PPARC* 60cm Reflector with an ASI120MM

FOSTER, Clyde (CFs) Centurion, SOUTH AFRICA

6 Colour + 6 IR Images (2, 5, 6, 9, 11, 13 May 2016) 36cm SCT @f/33 with an ASI224MC

BUDA, Stefan (SBd) Melbourne, AUSTRALIA

1 RGB Colour Image (1 May 2016) 41cm Dall-Kirkham with an ASI120MM

GORCZYNSKI, Peter (PGc) Oxford, CT, the USA

3 Sets of RGB + 6 IR images (9, 12 May 2016) 36cm SCT @f/39 with an ASI290MM

ISHIBASHI Tsutomu (Is) Sagamihara, Kanagawa, JAPAN

4 Colour Images (12, 14 May 2016) 31cm Spec, with a SONY HC9 Video Cam

HERNANDEZ, Carlos E (CHr) Miami, FL, the USA

1 Colour Drawing (13 May 2016) 23cm Maksutov-Cassegrain, 280×,350×

JUSTICE, Mark (MJs) Melbourne, AUSTRALIA

2 Sets of RGB Images (6, 14 May 2016) 30cm Spec with a DMK21AU618

KUMAMORI, Teruaki (Km) Sakai, Osaka, JAPAN

6 LRGB + 6 B Images (1, 7, 11,~14 May 2016) 35cm SCT @ f/30 with an ASI120MC & ASI178MM

MELILLO, Frank J (FMI) Holtsville, NY, the USA

2 Colour Images (9, 12 May 2016) 25cm SCT with a ToUcam pro II

MILES, Phil (PMI) QLD, AUSTRALIA

1 IR Image (13 May 2016) 51cm Spec, with a Grasshopper3 GS3-U3-3254M

MORALES RIVERA, Efrain (EMr) Aguadilla, PUERTO RICO

5 Sets of RGB Images (2, 5, 6, 13 May 2016) 31cm SCT with a Flea 3

ROSOLINA, Michael (MRs) Friars Hill, WV, the USA

1 Colour Drawing (14 May 2016) 35cm SCT, 330×

SMET, Kris (KSm) Leest, BELGIUM

1 Colour Drawing (4 May 2016) 31cm Spec, 310×

SUSSENBACH, John S (JSb) Houten, the NETHERLANDS

1 RGB Colour Image (4 May 2016) 36cm SCT @f/18 with a QHY5L-II

VALIMBERTI, Maurice (MVI) Melbourne, AUSTRALIA

7 Sets RGB + 7 IR Images (1, 6, 15 May 2016) 36cm SCT @f/24 with an ASI120MM

WARELL, Johan (JWr) Lindby, Skivarp, SWEDEN

1 Sets of RGB Images (5 May 2016) 22cm speculum @f/23 with a DBK21AU618

WELDRAKE, David (DWd) NSW, AUSTRALIA

2 Sets of RGB Images (6 May 2016) 13cm refractor @f/40 with an ASI120MM

WESLEY, Anthony (AWs) NSW, AUSTRALIA

4 Colour +1 B + 1 IR Images (5, 6, 10, 12,~14 May 2016) (51cm Spec)

WILSON, Tim (TWI) Jefferson City, MO, the USA

3 Colour + 2 IR Images (6*, 7**, 11, 13, 14 May 2016) 28cm, 20cm*, 25cm** SCT with an ASI120MM

* Planetary Plasma and Atmosphere Research Center (PPARC) of the Tohoku University, Japan
(Mt. Haleakala of the Maui island, Hawaii)

♂..... We now begin to review each of the observations received chronologically. We hope the reader would like to refer to each image in http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/f_image.html

1 May 2016 ($\lambda=146^\circ\text{Ls}$, $\delta=16.1''\sim 16.2''$)

Maurice VALIMBERTI (MVI) made, by the use of the ASI 120MM (instead of the ASI 224MC), a set

of the R, G, B ingredients to compose an excellent RGB image at ($\omega=194^\circ\text{W}$, $\phi=07^\circ\text{N}$) which is also associated with an IR image at $\omega=195^\circ\text{W}$. [The last images of MVI were given on 24 April ($\lambda=142^\circ\text{Ls}$, $\iota=21^\circ$) at $\omega=272^\circ\text{W}$ and $\omega=280^\circ\text{W}$, $\phi=06^\circ\text{N}$ by the use of the 224MC, but they looked rather coarse though well detailed.] The present RGB composite looks milder, richer in nuance and more impressive. On the R image, the Herschel crater shows its figure and the leg with the end of the Gale crater is evident together with the following a bit light slit bounded by another leg including the Knobel crater. The description of light and shade from Hesperia to M Tyrrhenum is better. The Ætheria dark patch suggests an old figure, but Propontis I somehow lacks a detail. The thick white matter at the west flank of Olympus Mons is so evident in R that it may be rather frosted or deposited (white in RGB because on every ingredient of R, G, B it is bright). The southern canopy, which may be developed finally into the south polar hood has become thicker as shown in B. The reason why it looks somewhat wavy is because it is still a floating matter. The lenticular cloud at the summit of Elysium Mons B is evident in B as a light spot. The north polar cap (npc) is not sharp on the RGB image. In R, to the south of the dimmer npc, there lies a flat white matter. Tint of the deserts appears good.

Stefan BUDA (SBd) next, one hour later than VMI, gave a good RGB composite making use of 120MM at $\omega=210^\circ\text{W}$. Olympus Mons moved to the terminator, and the inside area of Elysium is now clear near the CM. Syrtis Mj is now coming inside of the disk? It's blue beneath the morning mist. The Herschel crater is now clearer. Propontis I looks still vague. Some loosening of the markings, common to the MVI case may be caused by opposition effect as the phase angle has been decreasing. The area of the npc is here well shown (the flat cloud just to the south of the npc is clear).

Teruaki KUMAMORI (Km) gave an L-colour image at $\omega=251^\circ\text{W}$ and a B image at $\omega=255^\circ\text{W}$. The LRGB looks good in colour, while the dark markings are not well edged. They look coarse grained. The bluish colour of Syrtis Mj is beautiful, while it is not clear why and where the colour difference comes from. The colour inside Elysium is interesting. The southern canopy is rather bluish. In B, the cloud at Elysium Mons and the southern canopy are brighter, though the npc is vague.

2 May 2016 ($\lambda=146^\circ\text{Ls}$ ~ 147°Ls , $\delta=16.2''$ ~ $16.4''$)

Efrain MORALES (EMr) took at $\omega=066^\circ\text{W}$ the R, G, B components and made an RGB composite. We should say that each of the G and B images proves to be a marvellous composition showing a delicate distribution of the whitish mists. The R image is also good, but when mapped on the RGB image, it might look to have been somewhat too enhanced. The dark markings in RGB look to have lost sharpness and the gradation inside the markings. The G and B show that there exists a thick mist at the northern part of Ophir while the southern part is slightly free. This is also seen in the RGB. Some mist floats at the area of Ganges. The Ascræus cloud looks to exist. The thick mist preceding Niliacus L is noteworthy. The npc is suggested due to R.

Clyde FOSTER (CFs) obtained an L-colour image (due to 224MC) as well as IR685 at $\omega=337^\circ\text{W}$. Several small dark spots associated with the dark markings are emphasised. Maybe it's somewhat excessive so that the colour should be said sacrificial, especially the whiteness looks largely off-white (or muddy). Some of details are as follows: Aran Chaos, the spot near the right nail of Aryn, Oxus dark segment=Ods and so on on the morning side. On the evening side, the area of Antoniadi/Baldet crater, Huygens crater,

Schröter crater, the details of Hellespontus and Yaonis Fr. Notable is the zigzagged aspect of the thick evening mist/cloud just invading the northern district of Syrtis Mj. This must be flowed out as several white spots to the following desert in Æria, while it is difficult to identify every white spots because some of them must be off-whitish. The residual npc is also off-white. We want to know whether the southern part of Hellas is whitish misty or not at this moment.

4 May 2016 ($\lambda=147^\circ\text{Ls}$ – 148°Ls , $\delta=16.5''$ – $16.7''$)

Kris SMET (KSm) drew the Martian surface by a 31cm Dob at $\omega=356^\circ\text{W}$. The ground is drawn yellowish. S Sabæus + S Meridiani and the eastern coast of S Margaritifer are clearly separated by Aram. KSm tries to distinguish the shading inside Mare Acidalium. The angular diameter was $\delta=16.5''$.

John SUSSENBACH (JSb) issued a single RGB composite at $\omega=013^\circ\text{W}$. The image looks modest, while we feel it is a bit blurred. Even then, Brangæna and two nails of Aryn are evident. The northern part of M Acidalium and the cloud following Iaxartes are real, but the npc is lost.

5 May 2016 ($\lambda=148^\circ\text{Ls}$, $\delta=16.7''$ – $16.8''$)

CFs gave a usual set of an L-colour and an IR685 image at $\omega=333^\circ\text{W}$, $\varphi=8^\circ\text{N}$. The result is a bit inferior to those on 2 May. Even then the Ods should be said definite, and the northern district of Syrtis Mj which is rather off-colour conveys an off-white cloud streak on its territory. We also understand the off-whitish matter at the upper side of Hellas is some misty matter though very dull. The cloud near at Iaxartes is thick. The haze which covers the southern polar area looks to be made of separated parts to which the mist at Hellas also belongs.

EMr's set of three colour components and its RGB composite at $\omega=049^\circ\text{W}$. This time the R image lacks a sharpness, all dark markings look too much enhanced. The B image is good and there is shown a brownish ground-lit area to the east of Niliacus L. The southern canopy is light-bluish beautiful. The cloud to the west of Iaxartes appeared as developed to conceal Iaxartes. It is supposed that a phenomenon similar to the one observed on 1 May at $\omega=210^\circ\text{W}$ where the npc and the flat cloud were doubled.

Anthony WESLEY (AWs) showed up a single RGB composite at $\omega=225^\circ\text{W}$. The morning mist is beautifully mapped over Syrtis Mj which has just come into the disk. Near the CM, the cloud at Elysium Mons is a bit detailed. Its following pinkish ground-lit streak inside Elysium is clear. The double structure of the area of the npc must have been caused by Olympia. The dark band must be Rima Borealis. The processing does not appear to be excessive, while at the area of Gale crater there are some ghosts.

Johan WARELL (JWr), our old friend, sent us a set of three ingredients as well as an RGB composite. From the preceding terminator to Syrtis Mj, the evening mist is thick, and the upper side of Hellas proves to be still misty at $\lambda=148^\circ\text{Ls}$.

6 May 2016 ($\lambda=148^\circ\text{Ls}$ – 149°Ls , $\delta=16.8''$ – $16.9''$)

CFs made his usual set at $\omega=323^\circ\text{W}$. The L-colour is excellent while the reproduction of the whiteness is not successful. If this could be well coordinated, the crooked mist/cloud invading Syrtis Mj as well as the southern gas running from Hellas to the south pole could appear more attractive. The situation of S

Meridiani is a symbol of the edgeless blurredness of the dark markings. The white cloud to the north of M Acidalium remains still strong.

EMr did the work of the RGB imaging at $\omega=030^\circ\text{W}$. The appearance of Oxia P and Aram Chaos is excellent while the dark markings in general look too big-boned due to the excessive dependence on the R image. Note that the B image is better showing up a mist from Eden to the terminator side, and the white cloud just to the south of the npc is splendidly standing (as shown by R it is on the eastern side of Iaxartes). The southern canopy is also impressive with a thicker gas near Argyre.

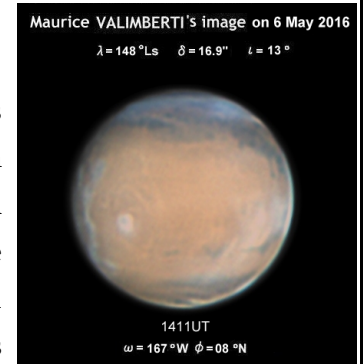


Tim WILSON (TWI) gave a 120MC colour image at $\omega=067^\circ\text{W}$. Still we feel a chromatic aberration, but this may be one of the best shots of TWI. The area of Nilokeras and the area of Tithonius Lacus are well shown up. The large Solis Lacus is visible. If he started earlier he might have caught Sinus Meridiani near the terminator. Whiteness lacks at the southern limb region and around the north polar cap (npc). Without whiteness, the morning side of the Martian surface cannot be researched.

David WELDRAKE (DWd) produced two sets of the R, G, B ingredients to compose two sets of RGB images at $\omega=118^\circ\text{W}$ and $\omega=129^\circ\text{W}$. Both are separated by 40 minutes, and the cloud density associated with Olympus Mons on the latter image is apparently higher than the first one. The Ascræus Cloud is visible on the latter images while on the first series it is rather difficult to identify. This allows us to judge the time when the Ascræus Cloud becomes thicker at the time of $\iota=13^\circ$. On the other hand, the present season is at $\lambda=148^\circ\text{Ls}$. Fortunately we have another document: Already as of the season $\lambda=134^\circ\text{Ls}$, there were published the images on 8 April at $\omega=115^\circ\text{W}$ made by Mark JUSTICE (MJs), and so we may be able to compare. (The MJs case is a pair of $\omega=105^\circ\text{W}$ and $\omega=115^\circ\text{W}$.) The difference of the apertures in both cases is large, and furthermore the MJs case the phase angle was $\iota=29^\circ$, and hence the Local Martian Times differ by 16° . Furthermore the LCM (ω) differs by 3° , and so eventually we have the difference of 19° which implies 1 hour 20 minutes. That is, on the DWd case, Ascræus Mons is far from the terminator by this time interval, and so the altitude of the Sun is higher by about 20° and so the activity of cloud must be weaker. Another point to be taken into account is that if the phase angle decreases, the opposition effect may begin to appear. That is, if the cloud is thin, its aspect from our eyes on the Earth must be different. Finally we should note the season proceeded from $\lambda=134^\circ\text{Ls}$ to 148°Ls . The cloud activity associated with Ascræus Mons is known that it has a peak at around $\lambda=110^\circ\text{Ls}$, and after $\lambda=120^\circ\text{Ls}$, the activity makes a downturn. Hence the present case, compared with the MJs case, the cloud activity should be much weaker. Hence we should say the DWd images show an appropriate result even if we disregard the difference of the apertures. The G and B images at $\omega=129^\circ\text{W}$ still show a nice spread of the white cloud spots and it is good for us to compare them. Unfortunately the size of image is smaller and hence the total aspect of each of Montes does not show up. Finally we note Solis L goes to the rear side without the mist covering.

MVI brought us, by the composite method from the images by 120MM, five successive RGB images at $\omega=154^\circ\text{W}$, 159°W , 164°W , 167°W , 172°W . The observation time stretched from 13:18 GMT to 14:33 GMT.

Each is associated with an IR image. What's new on this moment is the aspect of Olympus Mons (OM). At $\omega=154^\circ\text{W}$, OM is on the afternoon side, and OM shows a bright ring around the caldera of OM. As the planet is approaching opposition, the sunbeam must be equally reflected back to us from the vast flank of OM. This must belong to the opposition effect, while it is rare for us to encounter with such a beautiful effect. It is interesting to compare the B images with the IR images at $\omega=164^\circ\text{W}\sim 165^\circ\text{W}$: The IR is insensitive in general to clouds, while the IR dimly but R more explicitly shows a reflected ring, and hence the cloud at the western flank must possibly be frost-like. However the ring in IR is weak and so the flowing cloud may be active in the evening. Another possibility is that the thin cloud may pass the reflected sunbeam. It is well known that OM is roundish bright at opposition time as Nix Olympica because of the reflected sunbeam. The ring was also suggested before. In 2014, the images of John SUSSENBACH (JSb) and Richard BOSMAN (RBs) on 1 April 2014 ($\lambda=111^\circ\text{Ls}$, $\iota=06^\circ$) at $\omega=113^\circ\text{W}$ at $\omega=121^\circ\text{W}$ and so on showed the ring before opposition, and after opposition Efrain MORALES (EMr) showed the ring on 9 April ($\lambda=114^\circ\text{Ls}$, $\iota=02^\circ$) at $\omega=129^\circ\text{W}$ (especially the R image), and somewhat later by Yukio MORITA (Mo) and Teruaki KUMAMORI (Km) on 24 April ($\lambda=121^\circ\text{Ls}$, $\iota=13^\circ$) respectively at $\omega=124^\circ\text{W}/134^\circ\text{W}$, and at $\omega=129^\circ\text{W}$, detected the ring. However any ring was not so much vivid as the cases this time observed: It would be said this time as if it is floating just like a planetary nebula like M57 imaged by the HST. We may say even the so-called orographic cloud must be thinner than expected if not illuminated by a slanting sunbeam. After $\omega=164^\circ\text{W}$, the clouds at the Tharsis ridges stood out and the ring of OM turned out more beautiful. Finally at $\omega=172^\circ\text{W}$, OM was still evident while the other Tharsis ridges lost details. Elysium came totally into the disk with the following western border (the Ætheria dark patch), but the cloud of Elysium Mons looks vague. The morning mist is quite thinner starting from Elysium to the morning limb. At the morning limb side, the Herschel crater is clearer. The southern gas shows a large expansion. Caralis Fons is visible on all RGB images. The area of the npc looks slightly off-whitish. Finally Olympia is visible. The IR images suggest that Propontis I takes the form of check mark (like \checkmark) (see IR at $\omega=165^\circ\text{W}$).



Mark JUSTICE (MJs) obtained an RGB image at $\omega=186^\circ\text{W}$ by the three colour composite method. Due to the excellent B image, the distribution of the white mist is nicely depicted especially at the limb area. In a part of Cebrenia which is quite inside near the CM, a mist flows. Olympus Mons is approaching the evening terminator and the western flank is rich white, but as a whole it appears as a ring as a successor of the ring checked by MVI. It would be more pleasant if the author started 80 minutes earlier. The white cloud associated with Elysium shows now a shape. It is followed by the pinkish ground-lit streak. Olympia shows up to the south of the npc. The area of Trivium Charontis is thinly and largely brownish. M Cimmerium looks perfect. We are sure this is a very beautiful Martian image as a whole.

AWs issued one pretty and detailed RGB image at $\omega=221^\circ\text{W}$. Syrtis Mj is bluish beneath the morning mist. Elysium is near the CM, and Elysium Mons is clouded. The description of the Ætheria dark patch may be one of the best this season: It shows that the main part is split like a double canal. The eastern side of the preceding canal is a ground-lit pinkish streak. M Cimmerium looks detailed. However the area around the Gale crater shows some ghosts though there is no sign to have been made an enhanced proce-

ture. --- We have an opinion that to see the start of the polar clouds this apparition, the images of AWs must be useful (in 1986, at the period $\lambda=148^\circ\text{Ls}$, $\delta=9''$ and ϕ was around 4°S . In 2001, $\delta=12.6''$ and $\phi=01^\circ\text{S}$).

7 May 2016 ($\lambda=149^\circ\text{Ls}$, $\delta=16.9''\sim 17.0''$)

TW1 gave a single IR807 image at $\omega=044^\circ\text{W}$. The bright part has little brightness, but the dark markings are detailed more than the average: (1) The Aryn two nails are evident near the terminator, (2) complex details at the southernmost corner of Chryse look perfect including Juventæ Fons and the stinging structure of Auroræ Sinus and Tithonius Lacus, (3) the complex structure around Nilokeras Fossa is shown, (4) Iaxartes and the following canal are explicitly shown to the north of M Acidalium. We hope the author tries to represent these in the R image, and tries also to use G and B filters to show up the north polar cap (npc) and the southern canopy.

Km gave an L-colour image at $\omega=195^\circ\text{W}$ and a B image at $\omega=196^\circ\text{W}$. The LRGB looks nice in colour (in the thumbnail size) and seizes the spread of the white mists, but real image looks blurred due to unfavourable seeing? The thick cloud of Olympus Mons is now near the terminator.

9 May 2016 ($\lambda=150^\circ\text{Ls}$, $\delta=17.2''\sim 17.3''$)

CFs obtained an L-colour image at $\omega=297^\circ\text{W}$, and an IR685 image at $\omega=299^\circ\text{W}$. The former shows that the evening mist goes to Crocea and invades the middle of Syrtis Mj. It seems that a thicker mist still covers the southernmost corner of Hellas. Ausonia does not look misted. No whitish area exists: the area around the npc is also off-white.

Peter GORCZYNSKI (PGc) gave two sets of R, G, B ingredients to compose two RGB images at $\omega=008^\circ\text{W}$ and $\omega=014^\circ\text{W}$; and these are associated with two×two IR images: IR685 images at $\omega=011^\circ\text{W}$, $\omega=016^\circ\text{W}$ and IR742 images at $\omega=012^\circ\text{W}$, $\omega=018^\circ\text{W}$. These were taken by the use of the ASI 290MM, but the R images are mediocre where no trace of Brangæna is found (checked however on the IR images) though other details are more or less are all suggested. So, we may say the R-RGB compositions are not better, far from the expected details and tints.

Frank MELILLO (FMI) made a single colour image at $\omega=020^\circ\text{W}$. The aspects of the areas of M Acidalium, Margaritifer S, and the southern Chryse are caught. The southern polar hood is well depicted.

10 May 2016 ($\lambda=150^\circ\text{Ls}\sim 151^\circ\text{Ls}$, $\delta=17.3''\sim 17.4''$)

AWs sent us a single IR(> 685) image at $\omega=125^\circ\text{W}$. Near the CM, the flank of Olympus Mons is seen as a bright ring. The summits of Tharsis Montes are faintly visible, but the rings are within the range of error. Calaris Fons looks faint. The eastern tail of M Sirenum looks longer.

11 May 2016 ($\lambda=151^\circ\text{Ls}$, $\delta=17.4''\sim 17.5''$)

TW1, employing newly a 28cm SCT, made a colour composite image at $\omega=005^\circ\text{W}$ by the use of 120MM. This is considerably superior to the colour image of TW1 on 6 May. Brangæna and two Neudrus canals are seen. The details are thus satisfactory, but the tinge of the markings looks strange. The evening mist and the southern polar canopy look losing the whiteness. Is this IR-RGB? If so it is no good to try to

enhance the markings.

Km gave an L-colour and a B image at $\omega=161^\circ\text{W}$, $\phi=9^\circ\text{N}$. In the LRGB, the whiteness is well reproduced while we feel something is different about the white thick cloud associated with Olympus Mons if we compare it with those on the MVI images on 6 May ($\lambda=148^\circ\text{Ls}$) at $\omega=164^\circ\text{W}$, 167°W . Of course the cloud at the western flank of OM may be fundamentally deposited, and may appear thicker in some cases.

CFs gave the usual images at $\omega=261^\circ$. The dark markings look detailed, but checking the area of the Baldet/Antoniadi crater, we may judge the markings are not edged and the colour is less in whiteness and looks somewhere rather dirty.

12 May 2016 ($\lambda=151^\circ\text{Ls}$ - 152°Ls , $\delta=17.5''$ - $17.6''$)

PGc showed us a set of R-RGB images and some IR images at $\omega=335^\circ\text{W} \sim 339^\circ\text{W}$, $\phi=9^\circ\text{N}$ by the use of ASI 290MM. The B image works on the composite image, and the aspect that the evening mist invades Syrtis Mj is well shown, but unfortunately the south polar canopy evident in G and B is cancelled by R-R. The aspect of the mist inside Hellas is important at this moment, but R-RGB does not tell us something interesting.

FMI obtained an image at $\omega=352^\circ\text{W}$ which looks pleasant in tinge. The bluish Syrtis Mj beneath the evening mist, the light Aram, the aspect of the whitish south polar mist and so on are checked. The area of Oxia P is suggestive.

Tsutomu ISHIBASHI (Is) joined us with images at $\omega=112^\circ\text{W}$ and at $\omega=120^\circ\text{W}$ made from the Video. On the latter image, Olympus Mons may be checked. The thicker part of the south polar covering is well shown.

Km obtained an L-colour image at $\omega=127^\circ\text{W}$ and a B image at $\omega=128^\circ\text{W}$ (178MM). The L-RGB is good in coordination of the white colour, but, due to the unstable seeing condition, the markings look somewhat blurred. The bright ring of OM near the CM shows a shadowy spot faintly inside the ring. Some evening mist patches are seen near the terminator, especially at Ophir. The rudimental southern polar hood is blue whitish.

Tomio AKUTSU (Ak) sent us two image sets at $\omega=129^\circ\text{W}$ and at $\omega=140^\circ\text{W}$ made by the use of a 40cm Cass at the Observatory of Utsunomiya Univ near his home. Each set is accompanied by the RGB composite, B image and IR image. Olympus Mons was caught near the CM and after the CM, but OM is quite faint in B as well as in RGB. It is never alike the planetary nebula. There is a dense part in the southern polar white gas.

AWs gave a single RGB image at $\omega=151^\circ\text{W}$. The image is very excellent. The highlight is the planetary nebula-like ring of Olympus Mons on the afternoon side. Pavonis Mons also explicitly shows a ring.

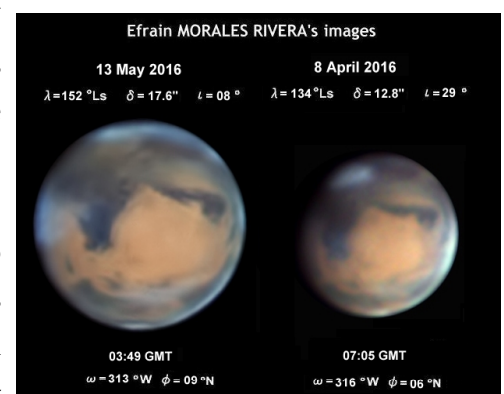


Arsia Mons conveys a thin covering of mist. The distribution of the white parts looks attractive. Outside of the dark fringe of the npc, there are lined up a few small frosty spots. Propontis I is apparent in a form of the check pattern (✓). The dark streak at Ætheria is visible near the limb, and so Elysium must be completely inside the disk. The morning mist at Elysium is not so thick. At present, $\tau=8^\circ$. This image should be remembered as a typical image at $\lambda=151^\circ\text{Ls}$ concerning the spread of the southern polar mist.

13 May 2016 ($\lambda=152^\circ\text{Ls}$, $\delta=17.6''\sim17.7''$)

CFs produced a set of L-colour and IR images at $\omega=260^\circ\text{W}$. The dark markings look attractively detailed, while we need further details at M Cimmerium and the area at Syrtis Minor. The range of the south polar gas is well described. Note also a large expansion of the evening mist to Syrtis Mj.

EMr made two sets of excellent RGB images at $\omega=313^\circ\text{W}$ and at $\omega=330^\circ\text{W}$. Both impressively show the aspect of the Hellas area where the basin looks as if it has run dry (compare these images with the EMr image on 8 April ($\lambda=134^\circ\text{Ls}$) at $\omega=316^\circ\text{W}$. This is also the reason why the region of Hellas to Syrtis Mj looked featureless on the IR images of PGc on 12 May. These two of EMr show how the evening mist goes up to Syrtis Mj. There is a streak of mist running at the north of Ismenius L which are all explicit in B. The so-called Ods is visible on the R and RGB at $\omega=331^\circ\text{W}$. The residual npc remains certainly.



Carlos HERNANDEZ (CHr) produced a colour drawing at $\omega=327^\circ\text{W}$. This shows how the evening mist invades the area of Syrtis Mj. The two nails of Aryn were caught on the morning side.

TWI gave an RGB composite by 120MM at $\omega=346^\circ\text{W}$. However it looks the author used somewhere the IR filter, so that the dark markings lack the colourfulness. The whiteness is not vivid.

Km took excellent images from a good angle at $\omega=124^\circ\text{W}$. This angle shows how the evening mist covers the area of Ophir (considerably thick in B). Tithonius L is definite. The nails of Nilokeras remains inside near the terminator. The tail of M Sirenum looks to have been elongated up to around $\Omega=120^\circ\text{W}$. The ring of OM is obvious. Some details of the area of the npc are shown (the npc should be exactly at the bottom!). The description of the south polar mist is beautiful.

Phil MILES (PMI) gave a single IR ($> 700\text{nm}$) image at $\omega=140^\circ\text{W}$. This image shows Olympus Mons near the CM with something surrounded by a bright ring which must be on the shield. From this ring, a bright tail looks to stand upward and flows out to the SW direction. This aspect reminds us of the image of Olympus Mons shot by Mariner 7 on the occasion of its flyby on 4 August 1969 ($\lambda=202^\circ\text{Ls}$, already the spc is evident). This PMI IR image also shows a series of small frost spots around (the dark fringe of) the npc. Propontis I proves that it is of the ✓ shape. Refer also to the AWs full image on 12 May at $\omega=151^\circ\text{W}$.

AWs provided us a B image at $\omega=142^\circ\text{W}$. This B image makes a pair with the preceding PMI IR image. The B image does not reproduce the OM ring, but its western flank looks more thickly clouded or frosted. This problem must be resolved with respect to the aspects shown by, for example, those images of MVI made on 6 May ($\lambda=148^\circ\text{Ls}$).

14 May 2016 ($\lambda=152^\circ\text{Ls}$ - 153°Ls , $\delta=17.7''$ - $17.8''$)

TWI gave an IR807 image at $\omega=307^\circ\text{W}$. It is usually difficult to find any white area by the IR light, but this Hellas may suggest that the basin is largely unfrosted. The Huygens crater is visible.

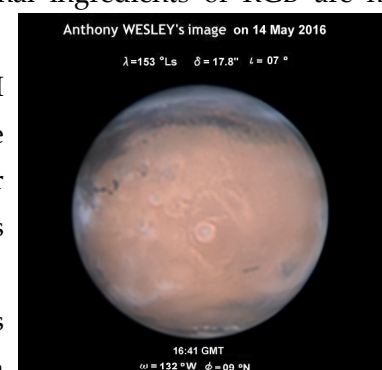
Michael ROSOLINA (MRs) made a colour drawing of the surface at $\omega=336^\circ\text{W}$. Does this imply that Hellas is light near the terminator?

Is gave two colour images from Video at $\omega=089^\circ\text{W}$ and $\omega=096^\circ\text{W}$. The existence of the Solis L is obvious and the lighter part of the south polar canopy is checked. However Olympus Mons does not show up on the morning side.

Km made an excellent L-colour image as well as an excellent B image at $\omega=107^\circ\text{W}$. Solis L is dark and shows an internal structure. It is quite dark also in B, so that the area is not misty upto the terminator. Ophir is light in B, and a bit misty, and mistier on the northern side on LRGB. The rudimental south polar hood has an interesting spread, and its boundary looks down to the eastern tail of M Sirenum. Auroræ S is beneath the evening mist, but detailed. The zigzagged two nails of Nilokeras is outside the mist. Olympus Mons has a ring which is not so bright, and dim in B. The summits of Tharsis Montes are barely recognisable, and the Fortuna double ring is also visible. Pavonis Mons has a weak ring. To the south of the npc there are seen a few frost dots. The npc is visible even after $\lambda=150^\circ\text{Ls}$.

MJs produced as usual a set of images at $\omega=109^\circ\text{W}$. The B ingredient is good and so the peripheral area of the RGB composite surface is nicely misty whole over except for the area of Solis L. Ophir is bright in B, but the area looks not so misty in RGB. The southern polar canopy is rather bright except for R. Olympus Mons is all checked on R, G and B, but not so explicit on RGB. There flows a lateral misty zone at Tempe. The dark markings look moderate in R because they are well processed.

AWs showed an excellent RGB composite at $\omega=132^\circ\text{W}$. The original ingredients of RGB are not shown, but we suppose the mist description in B is weaker and the contrast in R is a bit stronger than those of the preceding MJs cases. M Sirenum is made of small dark spots: Its eastern tail looks longer and the western end is largely vague. Caralis Fons is weak. Olympus Mons is near the CM, surrounded by an explicit ring. The central part inside the ring is made of a small lighter spot which is also surrounded by a greenish second ring. The outer ring is not because of the mist/cloud. Tharsis Montes are plotted. Pavonis Mons shows also a ring. Ascræus Mons also shows a similar ring. Notable are the details around the npc.



15 May 2016 ($\lambda=153^\circ\text{Ls}$, $\delta=17.8''$ - $17.9''$)

Tadashi ASADA (As) made these R, B, G images of Mars at $\omega=047^\circ\text{W}$ by remote control. The planet shined at the sky of Hawaii while the author was sitting at home in Kyushu, Japan. The R image shows every marking but the contour is not well edged. The G image looks good (the light and shade reproduction of the southern polar canopy looks good), while the B image may be rough.

Barry ADCOCK (BAAd) kindly sent us some images made by using a 25 cm refractor. The main image is shot at $\omega=061^\circ\text{W}$. Every marking is roughly shown, but many markings from S Meridiani near the evening terminator to the morning Tithonius L and Solis L are lined. M Acidalium is explicit with Nilokeras. The colour of the north polar cap is identified but looks very off-white.

MVI produced three sets of the RGB and IR images together with three sets of the R, G, B components at $\omega=062^\circ\text{W}$, $\omega=069^\circ\text{W}$ and at $\omega=072^\circ\text{W}$. Every R image however looks low modulated, and at $\omega=061^\circ\text{W}$, the dark region of M Erythræum and Solis L appears flat and soft in R, though the minor markings near at Auroræ S and Tithonius L are detailed. The northern end of Margaritifer S is well described together with Brangæna. The southern part of M Acidalium looks also low in contrast in R. Eventually, the RGB images look much softer than expected as if hazed. From the northern bottom of M Acidalium two definite legs go down to Hyperboreus L adjacent to the npc. Some npc are off-white, though the southern polar canopy is dull whitish.

♂.....**We Further Received** from Tomio AKUTSU (Ak) a total of 17 numbers of the RGB images made on 24, 25, 27, ~30 April at Cebu, and also from Charles TRIANA (CTr), Colombia, one LRGB image made on 10 April. We shall review these observations in the next issue.

Masatsugu MINAMI and Masami MURAKAMI

Forthcoming 2016 Mars (#09)

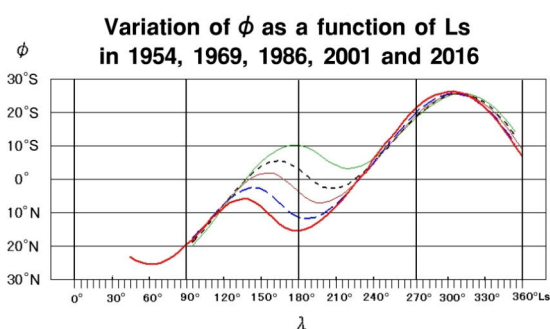
The Martian Disks for the 2016 Mars. Part II

By

Masami MURAKAMI

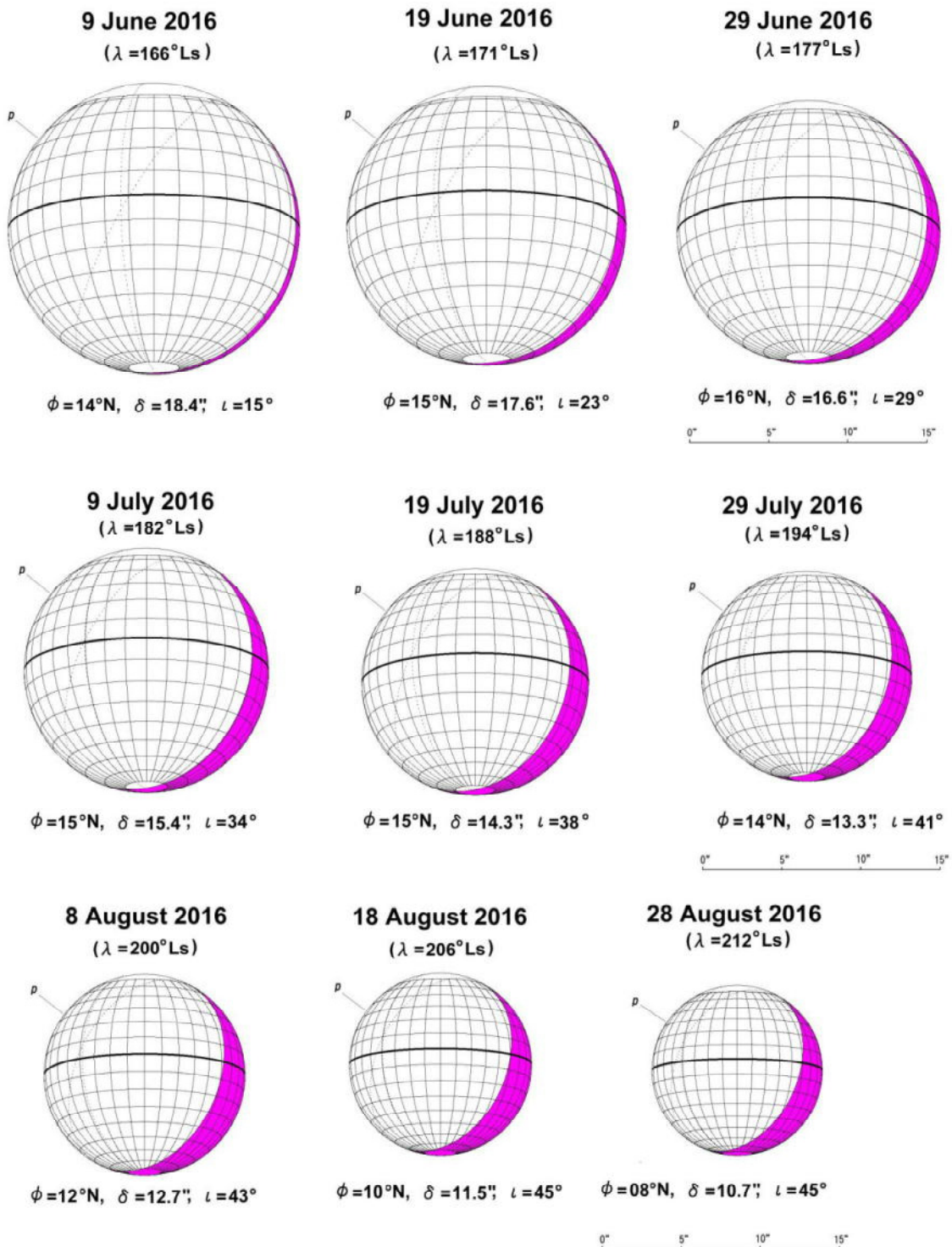
As a sequel to Part I in CMO n°441 (25 December issue), we here give a display how the size and the phase of Mars vary with the grids of the longitude-latitude lines from June to August 2016. The method is *à la* A NISHITA (and M and N

lines *à la* M MINAMI). Just passed the closest day on 30 May 2016 (when the angular diameter $\delta=18.6''$), the planet on 1 June 2016 attains the season $\lambda=162^\circ\text{L}$, and gradually decreases its apparent diameter. It is well-known that Hellas shows the white bright aspect at around $\lambda=100^\circ\text{Ls}$, but around $\lambda=145^\circ\text{Ls}\sim\lambda=150^\circ\text{Ls}$, the inside of Hellas becomes free from the frost, and the south polar cap core recovers a symmetrical roundish form (refer to CMO n°353, p.Ser2-1022), though its pole is away this period. At the end of August, on 28 August 2016, δ will goes down to $10.6''$ and the season will



proceed to $\lambda=212^\circ\text{Ls}$. The p -indication denotes the direction of the planet which is moving inside the ocular-field when we stop the automatic tracking system of the telescope. This determination will be exactly useful when we want to know the Martian axial tilt of the rotating/floating planet; that is, it determines the $p \longleftrightarrow f$ segment which was used by D. PARKER and Y. MORITA to see how the centre of the south polar cap deviates from the southern

pole. Two dotted lines inside the disks are: One is the line which shows the noon line (so we sometimes call the N-line) in Martian Local Time, and the other dotted line (we call it as the M-line) shows a great circle that is perpendicular to the great circle of the boundary of the defect of the illumination and passes the Sub-Solar Point such that the intersection of the N-line and the M-line indicates the Sub-Solar Point. □



Letters to the Editor

●.....*Subject: Mars images*

Received: 1 May 2016 at 12:35 JST

Hi all, here's an image of Mars taken under very good conditions. Syrtis Major can be seen in the middle of the image, with Hellas below it containing clouds. Elysium is setting at right, also covered in cloud. cheers,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160429/AWs29Apr16.jpg>

○.....*Subject: Mars, May 5*

Received: 6 May 2016 at 12:19 JST

Hi all, here's an image of Mars from this morning in reasonable seeing. Syrtis Major can be seen rising at left with some cloud cover extending across the disk and some isolated clouds in the north. The north pole is getting harder to see at the top of this image while Elysium is the very bright feature at centre. A lot of cloud can be seen to the south. regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160505/AWs05May16.jpg>

○.....*Subject: Mars, May 6*

Received: 7 May 2016 at 13:43 JST

Hi all, here's an image of Mars from this morning in poor seeing, with Elysium prominent at the centre, the north pole at bottom and Syrtis Major rising at right.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160506/AWs06May16.jpg>

○.....*Subject: Mars, May 10*

Received: 11 May 2016 at 17:18 JST

Hi all, here is an IR image of Mars from last night in very good seeing but spoiled by wind and cloud... I could only get this one capture before the cloud rolled in. regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160510/AWs10May16.jpg>

○.....*Subject: Mars, May 12*

Received: 13 May 2016 at 14:31 JST

Hi all, here's an image of Mars from this morning. Seeing was variable with some moments of very good seeing alongside a lot of poor seeing. Olympus Mons is prominent in the centre, with cloud over the slopes. More cloud can be seen to the right over the Tharsis volcanoes, as well as to the south covering the south

polar region. The north pole is at upper left, right on the limb and hard to see. regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160512/AWs12May16.jpg>

○.....*Subject: Mars in blue, May 13*

Received: 14 May 2016 at 08:44 JST

Hi everyone, here is an image of Mars from this morning through a blue channel filter (Astrodon I-series). Overall the seeing was poor with high speed winds in the jetstream. Through this filter we can see clouds and some faint surface detail. Orographic cloud can be seen over Olympus Mons at centre and the three Tharsis volcanoes to it's right as well as other places including some very bright clouds on the setting limb at right. The north pole is at top left and only partly visible while there is a lot of cloud over the south polar region. regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160513/AWs13May16.jpg>

○.....*Subject: Mars, May 14*

Received: 15 May 2016 at 14:37 JST

Hi all, here's a Mars image from this morning in reasonable seeing. Olympus Mons is prominent at centre with the surrounding edges of the shield quite visible. No cloud is visible today over it's slopes. The three Tharsis volcanoes to it's right can be seen with a small amount of orographic cloud on their slopes. More cloud is seen around the limb, especially the setting limb at right and over the south polar hood at bottom. The north polar remnant is faintly visible. regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160514/AWs14May16.jpg>

Anthony WESLEY (NSW, AUSTRALIA)

●.....*Subject: Mars 2016/05/02 2322UT*

Received: 3 May 2016 at 16:22 JST

Hi all, My observing has been a bit disrupted over the last week with my "retirement", with various functions and responsibilities, and also a trip down to my father in Durban over the weekend to celebrate his 91st birthday. I was up early this morning to capture Mars overhead and was rewarded with fairly good seeing, although heavy dew did interfere. Impressive clouds over Syrtis Major. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160502/CFs02May16.jpg>

○.....*Subject: Mars 2016/05/05 0021UT*

Received: 5 May 2016 at 14:58 JST

Hi all, A Mars capture from this morning under average seeing conditions. Two features I note:

- A hook shaped cloud over Syrtis Major. Would this be cloud on the flanks of Nili Patera?
- The cloud in the Iaxartes region, near the NPC, which was visible in my image of 2 May, has developed into a very bright feature with a northerly extension, and what appears to have a small spot towards its centre (more easily seen in the red image).

Apologies for the over exposed red image. Best

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160505/CFs05May16.jpg>

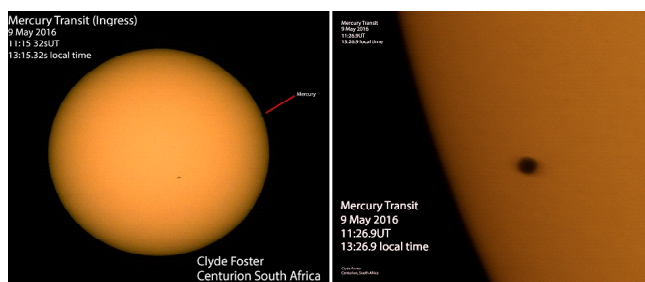
○···**Subject: Mars 2016/05/06 0017UT**
Received: 6 May 2016 at 16:40 JST

Hi all, Mars capture from this morning under reasonable seeing. The bright cloud near the NPC is still evident. I am away with the family for the weekend so will unfortunately not be submitting the next two days. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160506/CFs06May16.jpg>

○···**Subject: Mars 2016/05/09 0019UT and Mercury transit**
Received: 10 May 2016 at 14:25 JST

Hi all, Mars capture from yesterday morning under below average seeing. Still quite a bit of light equatorial cloud between Elysium and Syrtis Major. It was a long day, starting with my Mars imaging at 2am and running through to a busy afternoon with the Mercury transit (I have attached two ingress images. I was using a 110mm Williams Optics refractor as well as the 14'). Best regards,



<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160509/CFs09May16.jpg>

○···**Subject: Mars 2016/05/11 2341UT**
Received: 12 May 2016 at 23:27 JST

Hi all, Mars capture from early this morning local time(Just before 00.00h UT). Seeing looked poor to me, so I was reasonably happy with the eventual outcome. Hellas basin starting to clear. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160511/CFs11May16.jpg>

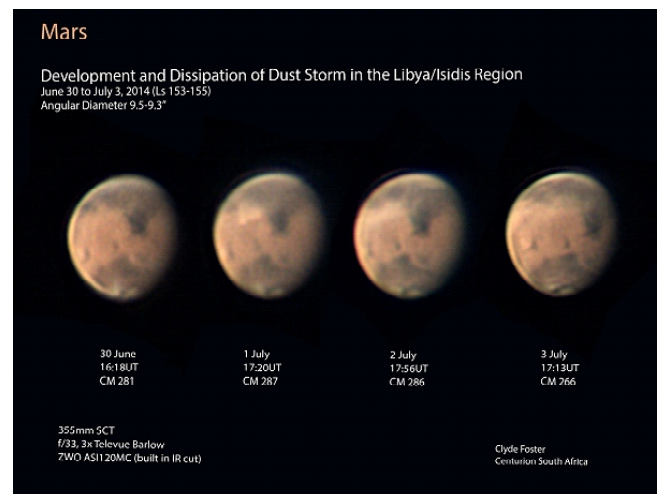
○···**Subject: Mars 2016/05/13 0012UT**
Received: 13 May 2016 at 17:32 JST

Hi all, Mars early this morning. The seeing again was visually poor, making focussing difficult, but again, I was reasonably happy with the result. I also tried a modified colour adjustment. Fine cloud is visible between Syrtis Major and Elysium. There also seems to be cloud over the Dioscuria region, on the lower right limb. I changed from 4am(2.00UT) imaging to 2.00am(0.00UT) imaging a while back, but will shortly be changing my alarm to midnight (22.00UT) to try and still capture Mars at high elevation. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160513/CFs13May16.jpg>

○···**Subject: RE: Mars 2016/05/13 0012UT**
Received: 13 May 2016 at 19:42 JST

Hi all, I note that we are at Ls152. In going through some of my old images, my first ever Mars dust storm "discovery" was Ls 153-155, June 30 to July 3 2014, shortly after I started "serious" imaging. So I guess we need to keep our eyes peeled from now on.....



Attached a special composite, at least for me personally. It seems like a long time ago! Best regards,

Clyde FOSTER (Centurion, SOUTH AFRICA)

●···**Subject: Mars images (March 18th and 27th, 2016.)**
Received: 4 May 2016 at 01:41 JST

Hi all, Here are Mars images from March 18th and 27th. Best Wishes

<http://www.damianpeach.com/mars1617/m2016-03-18-RGB.jpg>
<http://www.damianpeach.com/mars1617/m2016-03-18-BLUE.jpg>
<http://www.damianpeach.com/mars1617/m2016-03-27-RGB.jpg>
<http://www.damianpeach.com/mars1617/m2016-03-27-BLUE.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160318/DPc18Mar16.jpg>
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160327/DPc27Mar16.jpg>

○.....*Subject: Mars images (March 19th, 2016.)*
Received: 5 May 2016 at 01:42 JST

Hi all, Some images from March 19th in good seeing.
 Olympus Mons prominent. Best Wishes

<http://www.damianpeach.com/mars1617/m2016-03-19-RGB.jpg>
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160319/DPc19Mar16.jpg>

Damian PEACH (Selsey, West Sussex, the UK)

●.....*Subject: mars sketch 04/05/2016*
Received: 4 May 2016 at 19:06 JST

Hello, here is my sketch from may 04. Greetings,

 Date: may 04 2016, Time: 01:20 UT;
 location: Leest, Belgium
 instrument: 12" f/5 dobson, magnification: 312x
 seeing: excellent, filters: apodizing mask

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160504/KSm04May16.jpg>

Kris SMET (Leest, BELGIUM)

●.....*Subject: Mars RGB from 01 May 2016*
Received: 4 May 2016 at 19:24 JST

Hi Everyone, Please find attached my Mars image
 from 1st of May 2016 captured in rather poor seeing.
 Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160501/SBd01May16.jpg>

Stefan BUDA (Melbourne, AUSTRALIA)

●.....*Subject: Mars 1st May 2016*
Received: 5 May 2016 at 20:59 JST

Here is an image of Mars taken on the 1st May with
 a more traditional set-up of Astronomik RGB & CS IR
 filters and a mono camera. Conditions were poor, but
 improving towards the end of the session. Best wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160501/MVI01May16.jpg>

○.....*Subject: Mars 6th May 2016*
Received: 7 May 2016 at 11:55 JST

Hello all, Interesting 'serpentine-like' evening termi-
 nator cloud on Mars this morning. Seeing was quite
 good. I still have earlier data to process which was not
 as good. Best wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160506/MVI06May16.jpg>

○.....*Subject: Mars 6th May 2016 Animation*
Received: 7 May 2016 at 20:59 JST

Hello all, Attached is a small animated GIF of Mars'
 rotation from 1318 to 1434UT on the 6th May. The
 balance of images will follow tomorrow. Best wishes

○.....*Subject: Mars images 6th May 2016*
Received: 8 May 2016 at 17:50 JST

Hello all, Attached is a composite of some of the
 images obtained on the 6th May as indicated. Seeing
 was poor early but improved as the night progressed.
 best wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160506/MVI06May16.jpg>

Maurice VALIMBERTI (Melbourne, AUSTRALIA)

●.....*Subject: Mars 4 May 2016*
Received: 6 May 2016 at 06:00 JST

Dear Sir, Here my best image of Mars of this appari-
 tion so far. Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160504/JSb04May16.jpg>

John SUSSENBACH

(Houten, The NETHERLANDS)

●.....*Subject: Mars, May 6 2016*
Received: 8 May 2016 at 04:23 JST

Date: May 06, 2016, Time: 07:21 GMT, CM: 067o, Ls: 149o

Telescope: 20CM SCT, Camera: ASI 120MC

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160506/TWI06May16.jpg>

○.....*Subject: Mars, May7 2016*
Received: 8 May 2016 at 04:30 JST

Date: May 07, 2016, Time: 06:23 GMT, CM: 044o, Ls: 149o

Telescope: 25.4 CM SCT, Camera: ASI 120MM, Filter IR 807

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160507/TWI07May16.jpg>

○.....*Subject: Mars May 11, 2016*
Received: 12 May 2016 at 06:46 JST

Date: May 11, 2016, Time: 06:10 GMT, CM: 005o, Ls: 151o

Telescope: 28 CM SCT, Camera: ASI 120MM. Filter RGB + IR 807

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160511/TWI11May16.jpg>

○.....*Subject: Mars May 13, 2016*
Received: 16 May 2016 at 06:52 JST

Date: May 13, 2016, Time: 06:05 GMT, CM: 346o, Ls: 153o

Telescope: 28 CM SCT, Camera: ASI 120MM, Filter RGB+IR807

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160513/TWI13May16.jpg>

○.....*Subject: Mars May 14, 2016*
Received: 16 May 2016 at 06:56 JST

Date: May 14, 2016, Time: 04:01 GMT, CM: 298o, Ls: 151o

Telescope: 28 CM SCT, , Camera: ASI 120MM, Filter IR 807

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160514/TWI14May16.jpg>

Tim WILSON (Jefferson City, Mo)

●.....*Subject: Mars Observation May 6th 2016*
Received: 8 May 2016 at 12:19 JST

Please find attached two observations of Mars I

took on the 6th May for the CMO, around an hour apart. The seeing was moderate for the first image but good for the second. Tharsis is visible, as well as several clouds throughout that region, particularly Olympus Mons. I also caught Solis Lacus and Tithonius Lacus setting. The second image shows the clouds over the other Tharsis volcanoes much brighter than in the first image, which could be showing their formation as the volcanoes move towards evening.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160506/DWd06May16.jpg>

David WELDRAKE (NSW, AUSTRALIA)

●.....*Subject: Mars images*

Received: 8 May 2016 at 20:37 JST

Dear Sirs, Please find attached a Mars image set from the 6th May 2016. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160506/MJs06May16.jpg>

○.....*Subject: Mars images*

Received: 15 May 2016 at 19:07 JST

Dear Sirs, Please find attached a Mars image set from the 14th May 2016. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160514/MJs14May16.jpg>

Mark JUSTICE (Melbourne, AUSTRALIA)

●.....*Subject: Mars Images, Ak24Apr16 ~ Ak30Apr16*

Received: 11 May 2016 at 22:53 JST



Tomio AKUTSU spent a week in April at Cebu, and secured several images which will be reviewed soon.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160424/Ak24Apr16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160425/Ak25Apr16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160427/Ak27Apr16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160428/Ak28Apr16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160429/Ak29Apr16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160430/Ak30Apr16.jpg>

Tomio AKUTSU (Tochigi, JAPAN)

●.....*Subject: Mars: May 9th, 2016*

Received: 12 May 2016 at 12:27 JST

Hi, I have attached my latest image of Mars May 9th, 2016 at 5:58 UT. Thanks,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160509/FM109May16.jpg>

○.....*Subject: Mars: May 12, 2016*

Received: 13 May 2016 at 10:39 JST

Hi, I have attached my latest image of Mars May 12, 2016 at 5:52 UT. Thanks,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160512/FM112May16.jpg>

Frank J MELILLO (Holtsville, NY)

●.....*Subject: Mars- May 2016*

Received: 13 May 2016 at 01:02 JST

Hi Mr. Minami and All!, Here I submit some sessions from May 2nd, 5th, 6th. Excuse the quality as we been effected for over a month of below average conditions. Clear Skies!.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160506/EMr06May16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160505/EMr05May16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160502/EMr02May16.jpg>

Efrain MORALES (Aguadilla, Puerto Rico)

●.....*Subject: RE: Mars IR700nm*

Received: 14 May 2016 at 09:07 JST

Hi, here is a Mars image taken with a Astrodon NIR700nm filter during a period of steady seeing. Olympus Mons can be seen upper central. Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160513/PM113May16.jpg>

Phil MILES (QLD, AUSTRALIA)

●.....*Subject: Mars Observation 14 May 2016*

Received: 15 May 2016 at 02:36 JST

Dear Sirs: Please find attached an observational sketch done this morning. Of note, I was able to see the Syrtis Blue Cloud. Information is below and also with notes on the sketch.

35 cm SCT f/11 @ 326x Filters: W#23A, 56, 21, 80A, & IL

S: 4-5/10 P T: 5/6 Alt: 30°

CM: 336° Ls: 152.3° De: 8.9° Dia: 17.7"

I enjoyed reading the last CMO newsletter #447.

Thank you very much.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160514/MRs14May16.jpg>

Michael ROSOLINA (Friars Hill, WV)

●.....*Subject: Mars Image 2016/04/10*
Received: 15 May 2016 at 04:55 JST

Dear Masatsugu, Dear Masami, I send you one image of Mars. Best regards,

Comments: Mars image on 10-Apr-2016. You can observe surface details of the regions in Syrtis Major, Sabaeus Sinus, Aeria, Arabia, quite luminosity in Hellas Planitia and some details in Sirbonis.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160410/CTr10Apr16.jpg>

Charles TRIANA (Bogotá, COLOMBIA)
 AstroExplor Observatory
www.astroexplor.org

●.....*Subject: Mars 15 May*
Received: 16 May 2016 at 18:22 JST

Dear Mr Murakami, Please find attached photographs of Mars taken on 15 May. The latter two were taken using narrow band filters. They both have a bandwidth of 40 nm and are centred on 450 nm and 400 nm respectively. More results are to follow.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160515/BAAd15May16.jpg>

Barry ADCOCK (Viewbank, Vic, AUSTRALIA)

●.....*Subject: report from flagstaff*
Received: 21 May 2016 at 06:15 JST

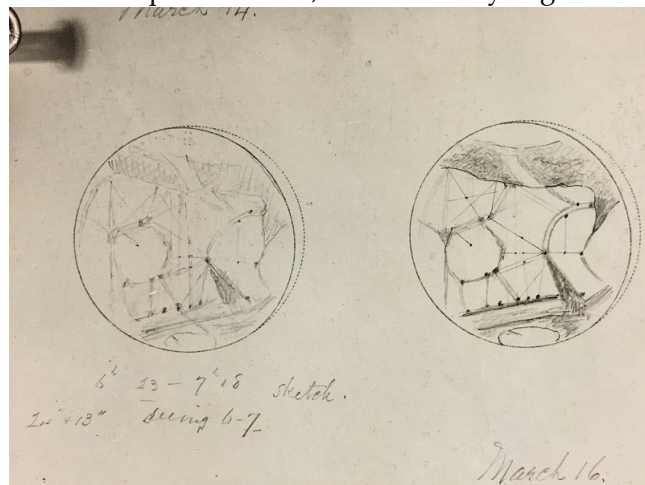
Dear Masatsugu, I arrived in Flagstaff about a month ago -- my wife Debb and I (and two dogs) left Minnesota, traveled across the agricultural wastelands of Iowa, Nebraska, and Kansas (including Larned, where Clyde Tombaugh took the >train, with only a one-way ticket, to Flagstaff in 1929), Oklahoma, then the more interesting states of New Mexico and Arizona. My wife had to return to Minnesota to tie some things up, but I remain here.

I spent a productive day in the Lowell archives -- I have been working on Percival Lowell's last year for an article or two; and found some very interesting things. Some from earlier in his career including the Japanese phase that have not been uncovered before. I am sending, as an example of what I found, two drawings of Mars from March 14, 1916. He was seeing very fine details around Elysium and was full of wonder at what they might be.

Tuesday night I have reserved the Clark, and am

hoping to look at Mars and Saturn with it.

I have seen Murakami's excellent article on the Edom flare phenomenon, and am really eager to see



what results are forthcoming this year, as now it is Japan and other points in the Far East which will be enjoying the favorable geometry. Please send me immediate news of any flares! With warm regards,

Bill Sheehan, CMO's correspondent in Flagstaff

○.....*Subject: FW:Mars, Edom brightening and News*
Received: 23 May 2016 at 04:32 JST

Dear Masatsugu,

In the near future I will be working on a new Mars book (actually an update of "*The planet Mars*"), with Jim Bell providing an authoritative account of developments since I wrote the first edition (it was published before Pathfinder arrived in 1996). No one is in a better position to do this than Jim.

I sent him tidings of the Edom flashes--or glint--and here's what he says:

"Thanks for sending the Edom glint information.

It seems like an interesting phenomenon, but is likely not related to surface composition or mineralogy (there's really nothing unusual there, based on spacecraft measurements). Rather, I bet it's physical properties, like slope or exposure of some particularly slabby bedrock or something. It is something that could be looked into using modern spacecraft data sets. We've seen a pretty intense sub-solar (zero phase angle) glint in daily MOC and MARCI global mapping images for decades, so it's not particularly unusual or surprising to see the surface glint at low phase angle. Maybe that's just

the most extreme example. We should ping Bruce Cantor at MSSS and ask him if he sees that glint in MOC or MARCI images when MGS or MRO flew over Schiaparelli crater at the right geometry. Or maybe he or Phil James have already looked into this...? -Jim"

I've been having a great time roaming through the archives at Lowell, and have found a lot of new material; I attach, for instance, a page of notes from the Japanese phase, in which someone who was obviously very fluent in Japanese (Yejiro?) wrote out a haiku and instructed Lowell as to its meaning. I have similar notes in my diaries where you did the same for me.

Hope you are able to observe Mars.

Best, Bill

(*Ed's Note:* The attached photo-document shows a famous Tanka (31 syllable Japanese poem) read by a famous female poet called ONO-NO-KOMACHI (c. the first half to the middle of the 9th century). This must have been written by a highly-educated person who had a good hand (perhaps, not Yejiro).)

From: william sheehan

Date: Friday, May 20, 2016 at 4:56 PM

To: Jim Bell

Subject: Mars, Edom Brightenings, and news

Hi, Jim, Great image from Hubble that was

posted online yesterday. I can't wait to get at the red planet with a decent telescope -- and Tuesday night have reserved the 24" Clark for the purpose.

I'm settling in here in Flagstaff, though lots to do (including getting my job situation sorted out). I'm well along with Pluto (Dale Cruikshank has been writing up a storm) and am starting to think of what comes next -- Mars, for us.

In case you are interested, I am sending a text from a Japanese colleague, Murakami, on the Edom brightenings -- similar to those seen in the past by Saheki and predicted and then observed by a colleague and myself the last time the Sun-Mars-Earth geometry was right, in June 2001. There are some dates and times for this. It may be we will be able to get better observations (this time from the Far East, where the Edom longitude is well presented at the time of the favorable geometry) and be able to determine just what it is about the mineralogy or surface topography that produces this effect.

I have attached the video images that my colleagues obtained from the Florida Keys in 2001.

Best, Bill

Bill SHEEHAN (Flagstaff, AZ)

☆☆☆

International Society of the Mars Observers (ISMO)

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

Bulletin: ~~Kaset-Tsushin~~ CMO (<http://www.mars.dti.ne.jp/~cmo/ISMO.html>)

CMO n°448/ ISMO #74 (25 May 2016)

Editorial Board: Tadashi ASADA, Masatsugu MINAMI, Masami MURAKAMI, Takashi NAKAJIMA and Akinori NISHITA



☆ Any e-mail to CMO/ISMO including the image files is acknowledged if addressed to

cmo@mars.dti.ne.jp (Masami MURAKAMI in Yokohama)

vzv03210@nifty.com (Masatsugu MINAMI at Mikuni-Sakai, Fukui)

☆ Usual mails to CMO are acknowledged if addressed to

Dr Masatsugu MINAMI, 3-6-74 Midori-ga-Oka, Mikuni, Sakai City, Fukui, 913-0048 JAPAN
