

MARS

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OBSERVATIONS

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On the North-South Axis Orientation of the Mars Images

by

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This apparition as usual we are receiving a lot of precious Mars images with thanks. In our CMO Gallery of Mars, we try to lay out any Mars image by exactly making south upward. We are thankful if every Mars image we receive is oriented as we wish.

Recently when we commented in CMO #452 that the NS axis supposed on the image on 4 July 2016 at $\omega=177^\circ\text{W}$ made by Gary WALKER was not exactly perpendicular (to the horizon) but declined about 6 degrees, he sent us the following kind inquiry (especially about the Parker/Morita way of orientation).

From: Gary Walker
To: cmo@mars.dti.ne.jp; vzv03210@nifty.com
Sent: Saturday, August 13, 2016 5:09 AM
Subject: NS axis orientation of Mars images

Regarding my image of 4 July 2016 you noted in CMO#452 that the NS axis should be oriented using the Parker/Morita method. Would you kindly provide a reference for this method?

With best regards, Gary Walker

As is apparent on every image file of Donald C PARKER and Yukio MORITA in the CMO Gallery for years, there is described a direction denoted by $p \leftarrow$. This indicates the direction of moving away of Mars inside the eye-field when we stop

the motor-drive. This direction and the Π value provided by us in every CMO Ephemeris (most recent one was in CMO#449 p.Ser3-1129. The newest is the one in this issue) can help for us to exactly determine the direction of the north pole. Π is the position angle of the axis rotation, measured eastwards from the north point.

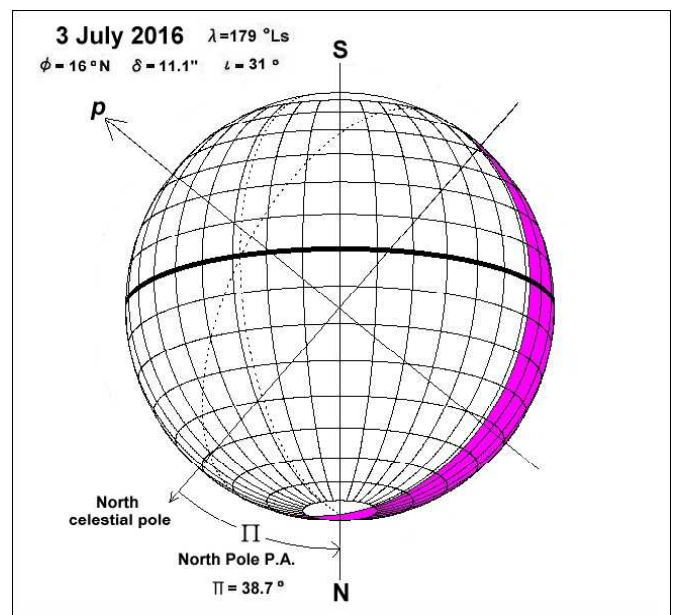


Figure here shows an example. The direction noted by p^{\leftarrow} is perpendicular to the direction of the celestial north. The angle Π denotes the angle (measured eastwards) from the celestial north pole to the Martian north pole direction.

In the era of the silver-halide photography, it was easy to get $p \leftarrow$ by exposing for a few seconds after stopping the motor drive. In the case of the digital images, one may find the direction by composing several images got after stopping the motor drive.

In any case it is advisable to exactly fix the direc-

tion of the NS axis: This is very inevitable when the center of the south polar cap begins to deviate from the south pole (which will occur soon from $\lambda=235^\circ\text{Ls}$).

Reference

"Use the Phase Angle: How to Use Our Ephemeris"
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn4/CMO392.pdf>
 (page Ser3-0222)



CMO/ISMO 2016 Mars Report #13

2016 CMO/ISMO Mars Observations Made During the Fortnight Period from 16 July ($\lambda=186^\circ\text{Ls}$) to 31 July ($\lambda=196^\circ\text{Ls}$) 2016

♂..... This is the 13th CMO/ISMO 2016 report dealing with the ISMO Mars Observations made during the fortnight period from 16 July to 31 July 2016. The planet Mars was going in the prograde direction still inside the Libra constellation. The apparent declination D was a bit southward around at 22°S . The angular diameter went down from $\delta=14.6''$ to $13.1''$. The phase angle ι increased from $\iota=37^\circ$ to 41° : and thus the defect of illumination at the morning side quite increased. The tilt moved from $\phi=15^\circ\text{N}$ to 13°N . The Martian season proceeded from $\lambda=186^\circ\text{Ls}$ to $\lambda=196^\circ\text{Ls}$ during the period. Already the season of the dust disturbances came.

The Martian surface is not clear due to some airborne dust especially on the limb sides. The south polar cap (spc) is visible just slightly at the southern limb, because the tilt is still northwards. Hellas, which was already frost free, appears in a beige tint different from the reddish tint of the desert, but looks sometimes to be entangled with the mist sent from the spc. The perimeter of the spc is shadowy but looks bluish due to the southern mist. However the observations of Argyre were scarcely reported. The activity of the arctic cloud is outstanding.

Because of the inclination of the phase angle, the Martian surface on the afternoon/evening side has become hard to observe, and hence it was difficult to chase the orography of Arsia Mons at this important season.

♂..... We received with thanks a total of 45 observations from 13 members made during this fortnight period. Unfortunately we missed the observations at Melbourne where several talented/precious observers are waiting ready, but the winter dismal weather looks to dominate over there.

The following are the names of the observers, sites of observations, dates, instruments and so on. The observations made during this period will be reviewed each chronologically below.

FOSTER, Clyde (CFs) Centurion, SOUTH AFRICA

11 Colour + 11 IR Images (16, ~19, 21, 24, 27, ~31 July 2016) 36cm SCT @f/33 with an ASI224MC

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

1 Set of RGB + 1 IR images (16 July 2016) 18cm Maksutov Cassegrain with an ASI290MM

HOOD, Mike (MHd) Kathleen, GA the USA

1 Set of RGB images (26 July 2016) 36cm SCT @f/24 with an ASI290MM

ISHIBASHI, Tsutomu (Is) Sagami-hara, Kanagawa, JAPAN

2 Colour Images (29 July 2016) 31cm Spec, with a SONY HC9 Video Cam

KONNAI, Reiichi (Kn) Ishikawa-cho, Fukushima, JAPAN

1 Colour Image (22 July 2016) 41m SCT @ $f/33$ with an ASI224MC

KUDOH, Hidetoshi (Kd) Cairns, QLD, AUSTRALIA

1 Colour Image (30 July 2016) 20cm Spec with a QHY5L-II-C

KUMAMORI, Teruaki (Km) Sakai, Osaka, JAPAN

5 LRGB + 5 B Images (18, 19, 27, 30, 31 July 2016)
36cm SCT @ $f/38$ with an ASI224MC & ASI290MM

LEWIS, Martin (MLw) St. Albans, Hertfordshire, the UK

1 Colour Image (17 July 2016) 44cm Spec with an ASI224MC

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

5 Colour + 2 IR* Images (16, 20, 21, 27 July 2016)
25cm SCT with a ToUcam pro II, DMK21AU618.AS*

MORALES RIVERA, Efrain (EMr) Aguadilla, PUERTO RICO

9 Sets of RGB Images (18, 20, 22,~27, 29 July 2016) 31cm SCT with a Flea 3

OHSUGI, Tadao (Og) Komatsu, Ishikawa, JAPAN

6 Colour Images (18, 19, 22, 28, 30, 31 July 2016) 25cm Dall-Kirkham with an ASI290MC

WALKER, Gary (GWk) Macon, GA, the USA

1 Set of RGB Image (23 July 2016) 25cm Refractor with an ASI174MM

WESLEY, Anthony (AWs) NSW, AUSTRALIA

1 Colour Image (23 July 2016) (51cm Spec with a PGR GS3-U3-32S4M)

♂.....We further received 26 observations made earlier than the present period including those made by Damian PEACH at Barbados as follows. We are sorry however we shall refrain from reviewing each of the (further received) observations until the end of the season.

JUSTICE, Mark (MJs) Melbourne, AUSTRALIA

3 Sets of RGB Images (1 June 2016) 30cm Spec with a DMK21AU618

KONNAI, Reiichi (Kn) Fukushima, JAPAN

11 Colour Images (14*, 18, 22, 28 May; 1, 2, 10*, 18 June 2016)
41m SCT with an ASI224MC & ASI178MC*

MAXSON, Paul (PMx) Surprise, AZ, the USA

24 Sets of RGB + 24 IR Images (2, 4, ~ 10, 12, 13,~ 20, 23, 25, 26, 28 June; 3,~5 July 2016)
25cm Dall-Kirkham with an ASI290MM

PEACH, Damian (DPc) Selsey, WS, the UK (Loc. Barbados Islands)

16 RGB Colour + 6 B Images (5, 8, 9, 10, 11, 13 June 2016)

WALKER, Gary (GWk) Macon, GA, the USA

9 Sets of RGB Images (25 May; 11, 14, 23, 24, 25, 28 June 2016)
25cm Refractor with an ASI174MM

♂.....The following pages are spent for our chronological comments about every observation made during the period from 16 July until 31 July 2016. Every image is found in the ISMO 2016 Mars Gallery.

16 July 2016 ($\lambda=186^\circ\text{Ls}\sim 187^\circ\text{Ls}$, $\delta=14.6''\sim 14.5''$, $\phi=15^\circ\text{N}$)

Frank MELILLO (FMI) gave two colour images at $\omega=045^\circ\text{W}$ and at $\omega=052^\circ\text{W}$. Both suggest the pres-

ence of S Meridiani near the evening limb. There is visible a large arctic white cloud to the north of M Acidalium.

Peter GORCZYNSKI (PGc) gave a set of R, G, B components and its RGB composite at $\omega=063^\circ\text{W}$ as well as an IR685 image at $\omega=063^\circ\text{W}$. Still S Meridiani remains near the preceding limb together with a ghost arc-line. The depiction of Margaritifer S to Auroræ S is decent. Tithonius L is definite following the bright Ophir. Ganges and the area around Lunæ L look brownish. The base of Nilokeras is detailed. A thick arctic white cloud is located to the EN of M Acidalium.

Clyde FOSTER (CFs) obtained an L-colour image as well as an IR685 image at $\omega=296^\circ\text{W}$. Syrtis Mj is near the centre. The ground of the Hellas basin shows softly a beige tint, different tint from the colour of the Martian desert, maybe partly misty. It looks also that something dusty overflows from the EN corner of Hellas. The beige matter is definitely distributed at the western corner of Hellas. The south polar cap (spc) occupies narrowly the southern limb. At the opposite arctic area, the white mist widely distributed, especially thickly at the evening side.

17 July 2016 ($\lambda=187^\circ\text{Ls}$ ~ 188°Ls , $\delta=14.5''$ ~ $14.4''$)

CFs gave an L-colour image at $\omega=292^\circ\text{W}$. The dark markings look the same as the preceding day, while Syrtis Mj is described more interestingly. The configuration of the white mists at the arctic region is different than the configuration on the previous day.

Martin LEWIS (MLw) gave a 224MC colour image at $\omega=336^\circ\text{W}$. MLw uses a 44cm Dob and here gives a soft and lucid image. Mare Serpentis this season is not so conspicuous. The spc is quite away, but the arctic white mist expansion is nicely mapped.

18 July 2016 ($\lambda=188^\circ\text{Ls}$, $\delta=14.4''$ ~ $14.3''$)

Efrain MORALES (EMr) obtained an RGB composite at $\omega=037^\circ\text{W}$. The B image nicely shows a three-tiered distribution of the arctic white clouds: The RGB composite shows how the tier is related with the northern Acidalium M. The R image shows quite a detail from Meridiani S to Margaritifer S as well as at the Ods. The RGB looks dusky, while its shows a vast mist expansion at the region of Erythræum M. Note the area of Oxus is brownish.

Tadao OHSUGI (Og) obtained a 290MC colour image at $\omega=196^\circ\text{W}$. The details are shown more than adequate, but the contrast is too high to distinguish the brightness of the evening limb from the spc brightness. Contrarily, the arctic white cloud is not well described.

Teruaki KUMAMORI (Km) obtained an L-colour image at $\omega=196^\circ\text{W}$. The seeing is poor (3/10), while the stacked image is placid: It fairly describes a distribution of a thin mist at the south circumpolar region, as well as the complex distribution of the arctic white mist together with the B image. Utopia is slightly bluish because of the thin mist. Elysium looks natural. At the evening limb, Olympus Mons looks obscure, but the following pattern of the area of Gordii Dorsum is quite definite (dorsum=ridge). The description of Valhalla is this much appropriate.

CFs gave an L-colour image at $\omega=253^\circ\text{W}$. We admit the procedure at the preceding limb is not successful, but we don't understand the physical implication of the yellowish limb. Elysium is not well described. Hellas is coming in with a beige tint. The arctic cloud is largely covering Utopia.

19 July 2016 ($\lambda=188^\circ\text{Ls}$ ~ 189°Ls , $\delta=14.3''$ ~ $14.2''$)

Og issued a colour image at $\omega=171^\circ\text{W}$. The processing is modest concerning the dark markings. The area of Olympus Mons and Gordii Dorsum is decently shown. However the evening limb is mapped extraordinarily bright. The whiteness is lacking at the both circumpolar regions. Mare Sirenum is shown nicely.

Km gave an L-colour image at $\omega=186^\circ\text{W}$. Olympus Mons has been more clearly visible than at the preceding case at $\omega=196^\circ\text{W}$. The inside of the morning Elysium is interestingly described. There seems to follow a faint dark fringe at the northern perimeter of the spc (slightly bluish because of the presence of a weaker mist at the circumpolar area). The western end of M Sirenum is more suggestive than in the previous case. The descriptions of the misty south circumpolar region and the complexity of the arctic cloud are excellent (explicit on the associated B image).

CFs gave an L-colour image at $\omega=240^\circ\text{W}$. Elysium seems to keep the similar configuration as before. A large arctic cloud patch is caught at Utopia. The author should be more careful about the evening limb disposition.

20 July 2016 ($\lambda=189^\circ\text{Ls}$, $\delta=14.2''$ ~ $14.1''$)

FMI observed at $\omega=016^\circ\text{W}$: The image is smaller, while Oxus is visible. The area of the spc and the large arctic cloud are nicely shown.

EMr issued an RGB composite with three elements at $\omega=028^\circ\text{W}$. The RGB shows a large expansion of white mist at the higher-latitude region of the southern hemisphere to the morning terminator. From the northern district of M Acidalius to the northern limb the arctic white cloud largely occupies. Just the intermediate zone including Brangæna and Oxus is rather brownish, and hence it is considered that the region has a clearer sky. The R image shows some details from S Meridiani to Auroræ S.

21 July 2016 ($\lambda=189^\circ\text{Ls}$ ~ 190°Ls , $\delta=14.1''$ ~ $14.0''$)

FMI gave a Toucam image at $\omega=011^\circ\text{W}$ as well as a DMK IR image at $\omega=016^\circ\text{W}$: Both images show well Aryn's separated nails. The seeing condition was reported 5/10. The NS axis should be correct.

CFs gave an L-colour image at $\omega=273^\circ\text{W}$. In contrast to the pinkish Ausonia, the inside of Hellas shows a beige tinge as if the bottom is covered by some dusty matters, and the perimeter of Hellas at the northern end is obscure. The spc looks to be associated with a dark fringe. The arctic cloud is still large but looks dispersed. We wonder why the evening limb is so much yellowish. What is the physical reason?

22 July 2016 ($\lambda=190^\circ\text{Ls}$ ~ 191°Ls , $\delta=14.0''$ ~ $13.9''$, $\phi=14^\circ\text{N}$)

EMr obtained an RGB composite at $\omega=356^\circ\text{W}$. The R image is coarse so that there are little to be mentioned specially. However the large arctic cloud is described beautifully. The whiteness is in good

contrast with the brownish region which precedes M Acidalium. The spc is whitish bright and the circumpolar region is also slightly misty.

Reiichi KONNAI (Kn) observed at $\omega=132^\circ\text{W}$ and made a 224MC image. Near the evening limb, Solis L appears as a triangular dark patch, and the area of Tithonius L is definite. At the rhs of Phoenicis L, Arsia Mons makes a shape as a southernmost ridge of the Tharsis ridges. Pavonis Mons is a faint spot, while Ascræus Mons is conspicuous. The white ring at Fortuna is present but not so distinguished. Olympus Mons and Gordii Dorsum are not obvious. The spc lacks the very whiteness (influenced by the chromatic aberration?). The arctic cloud also lacks the whiteness.

Og gave an image at $\omega=157^\circ\text{W}$. The arctic cloud is slightly caught. We hope it extends to the north of Propontis I. The area of Gordii Dorsum is clearly evident, while Olympus Mons is featureless. The colour of the deserts is not Martian's.

23 July 2016 ($\lambda=191^\circ\text{Ls}$, $\delta=13.9''\sim13.8''$)

The angular diameter of the planet Mars has gone down to the maximal size we met at the opposition time in March 2012.

EMr made an RGB composite at $\omega=346^\circ\text{W}$. Syrtis Mj is at the evening side and the Huygens crater is visible. Notable is the beautiful arctic white cloud which runs to the morning M Acidalium.

Gary WALKER (GWk) obtained an RGB composite from three ingredients at $\omega=354^\circ\text{W}$ by the use of a 25cm APM refractor equipped with an ASI 174MM. It is a pity that the spc is not distinguished from an inorganic rim-brightness at the evening limb. However the vivid description of the arctic cloud layers from the area of M Acidalium down to the very polar area is superb. In contrast, the preceding EMr's description of the arctic cloud may be said softer. It may be possible for GWk's northernmost layer to contain some dusty elements inside the condensate cloud. Note also that GWk's RGB image shows the brownish Oxus as well as the double canals of Neudrus.

Anthony WESLEY (AWs) gave a beautiful colour image at $\omega=138^\circ\text{W}$. The description of Olympus Mons readily notifies us what and how it is together with the area of Gordii Dorsum. Tharsis Montes are also quite evident. Phoenicis L is a good spot. Tithonius L is still shown up in detail though it is quite near the limb. The spc is quite pretty, and on the opposite side the arctic large cloud/mist is smoothly distributed up to the direction of Propontis I (which is not yet obvious).

24 July 2016 ($\lambda=191^\circ\text{Ls}\sim192^\circ\text{Ls}$, $\delta=13.8''\sim13.7''$)

EMr gave an RGB composite at $\omega=335^\circ\text{W}$. There is a difference between the whiteness of the spc and the colour of Hellas at the evening limb. The morning part of the arctic cloud is large but mild. However it is thicker near the evening limb.

CFs's is at $\omega=230^\circ\text{W}$. The depiction of Elysium and M Cimmerium is of rather high quality. Except for the yellowish evening limb line, others look normal. The arctic cloud patch is thicker near the northern polar area, but it does weakly expand upto the north of Propontis I.

25 July 2016 ($\lambda=192^\circ\text{Ls}$, $\delta=13.7''\text{--}13.6''$)

EMr gave an excellent RGB composite at $\omega=321^\circ\text{W}$. Hellas is now separated from the evening limb and shows us a beige/misty bottom. This is not the colour of the usual desert and maybe water-vapoured since the area is apparent on the B image. The arctic cloud is large from the morning side and thicker over Utopia near the circumpolar evening limb.

26 July 2016 ($\lambda=192^\circ\text{Ls}\text{--}193^\circ\text{Ls}$, $\delta=13.6''\text{--}13.5''$)

Mike HOOD (MHd)'s first contribution to us at $\omega=322^\circ\text{W}$. MHd uses a C14 equipped with an ASI 290MM. The angle is similar to EMr's on the preceding day. They compete against each other, but there are however differences in the descriptive way of the spc, Hellas, the Huygens crater and its west and so on. The depiction of the arctic cloud is good.

EMr took the RGB image at $\omega=324^\circ\text{W}$. The contour of Hellas is nicely shot. However what is the effect of the yellowish evening limb line? The spc is whitish bright. The arctic cloud is given whitish in good gradation.

27 July 2016 ($\lambda=193^\circ\text{Ls}$, $\delta=13.5''\text{--}13.4''$)

EMr showed us an RGB composite at $\omega=305^\circ\text{W}$. The evening limb has become reasonable without the strange yellow colour. Syrtis Mj is now deep inside the disk and Hellas shows up fully. It looks thinly covered by circumpolar mist. The narrow streak between Yaonis Fr and Hellespontus looks a bit reddish. This colour is also seen inside the Huygens crater. The arctic white cloud is thicker at the evening limb side.

FMI gave a colour-cam image at $\omega=321^\circ\text{W}$ and a 720nm IR image at $\omega=317^\circ\text{W}$. The contour of Hellas is more definite on the Tou-cam image because of the white colour. S Meridiani looks to have come inside the disk. The colour of the desert is good.

Km gave an L-colour image at $\omega=109^\circ\text{W}$ (as well as a B image at $\omega=114^\circ\text{W}$). Near the evening, the area of Auroræ S and Tithonius L are detailed and Solis L is also well shown up. At the northern hemisphere, Nilokeras' double nippers and Ganges are well brownish evident. On the western hemisphere, together with the definite Phoenicis L, the complexity of Arsia Mons is described, and also Pavonis Mons is visible, and finally Ascræus Mons is conspicuous. Note also the preceding doughnut ring at Fortuna is lighter. Near the terminator, Olympus Mons is quite evident with a definite central dark spot. The spc is whitish bright showing a dark *bluish* fringe; this being the effect of the south circumpolar white mist. Note however the arctic cloud is comparably thinner than that shown on the B image.

Compared with the time of EMr's image on 11 July 2016 ($\lambda=184^\circ\text{Ls}$) at $\omega=109^\circ\text{W}$, should we say the surface has become clearer? However, Km's description of the arctic cloud at the morning thinner part should be said too weak compared to the expression of the arctic cloud on his B image.

CFs gave an L-colour image at $\omega=176^\circ\text{W}$. The processing of the evening limb is not adequate, while Arsia Mons is shown to be associated with an orographic cloud. Olympus Mons is rather obscure, but apparent together with Gordii Dorsum on the IR685 image. The arctic cloud extends to the north of Propontis I, while a thicker part exist near the evening terminator. M Sirenum is suggestive in IR685.

28 July 2016 ($\lambda=193^\circ\text{Ls}$ ~ 194°Ls , $\delta=13.4''$ ~ $13.3''$)

Og gave a single image at $\omega=094^\circ\text{W}$: Nilokeras is well visible. Solis is blunt, not separated from the preceding marking. The bright spc is unknown. The Tharsis ridges are checked: Ascræus Mons is obvious. The main part of the arctic cloud is checked.

CFs gave an L-colour image at $\omega=164^\circ\text{W}$. The cloud at Arsia Mons looks to exist. The LMT of Arsia Mons is a few minutes after the noon. (However the cloud associated with Ascræus Mons is unseen at around $\lambda=195^\circ\text{Ls}$ while the orographic cloud of Arsia Mons, located at the highest latitude among other Montes, is still active, though over the hill). Olympus Mons is obscure (while obvious on the IR685 image) but the area of Gordii Dorsum is apparent. The area of the arctic cloud is quite spread.

29 July 2016 ($\lambda=194^\circ\text{Ls}$ ~ 195°Ls , $\delta=13.3''$ ~ $13.2''$)

EMr made an RGB composite at $\omega=289^\circ\text{W}$. The south circumpolar region is misty, including Hellas near the CM. In R, some markings are recorded inside Hellas, and the border of the spc is visible. Ausonia is reddish near the evening limb. An arctic white mist largely occupies and the northern district of Utopia is beneath the thick part of the arctic cloud

Tsutomu ISHIBASHI (Is)'s Video-cam images are at $\omega=078^\circ\text{W}$ and at $\omega=088^\circ\text{W}$. Both show the spc but not distinctly. The outskirts of the spc may look bluish. The position of Solis L is suggested. M Acidalium and Nilokeras are checked. The arctic cloud is shown but not distinct.

CFs gave an L-colour and an IR685 image at $\omega=179^\circ\text{W}$. Olympus Mons is obscure, while the area of Gordii Dorsum is apparent. The arctic haze is not so thick but extends up until the north of Propontis I.

30 July 2016 ($\lambda=195^\circ\text{Ls}$, $\delta=13.2''$ ~ $13.1''$, $\phi=13^\circ\text{N}$)

Hidetoshi KUDO (Kd), at Cairns, made an image at $\omega=042^\circ\text{W}$. The image is smaller, but the spc is shown whitish bright and the area from S Meridiani to Agathodæmon is nicely detailed. The area of M Acidalium with Nilokeras is totally exhibited. To the north of M Acidalium the large roundish arctic cloud is shot. (Furthermore, we may add that the arctic cloud is suggested to show a crack and Margaritifer S may be followed by a misty streak.)

Og gave a 290MC colour image at $\omega=070^\circ\text{W}$. This image looks like a photo of skeletal specimen without nuanced flesh. The gradation and colour variation are dull. One may say Ganges is brownish, but cannot say it's especially brownish compared with other markings. The Fortuna ring is nicely composed though not whitish. It's in contrast with the following dark Ascræus Mons. The cloud to the north of M Acidalium is not white coloured.

Km obtained an L-colour image at $\omega=074^\circ\text{W}$. Thaumasia is not cut out, though the inside of Solis L appears to be composed of several dark spots. Ganges is brownish as well as Nilokeras. It is interesting to see the brownish Juventæ Fons. The Tharsis ridges are definite with the darkest Ascræus Mons. From the northern district of M Acidalium is covered by the arctic cloud/mist and hence the lower part of M Acidalium appears bluish. The northern outskirts of the spc is also suggestive.

CFs obtained an L-colour image at $\omega=138^\circ\text{W}$. Tharsis Montes are definite. Olympus Mons is near the CM while its dark spot is rather obscure, though the area of Gordii Dorsum is more apparent.

31 July 2016 ($\lambda=195^\circ\text{Ls}$ – 196°Ls , $\delta=13.1''$ – $13.0''$)

Og gave an image at $\omega=055^\circ\text{W}$. It seems that the seeing condition is very poor. If the light intensity at the evening limb is not much decreased, it will be difficult to see the physical background: Even S Meridiani does not make its shape at the limb.

Km obtained an L-colour image at $\omega=066^\circ\text{W}$ under the seeing condition $2\sim 3/10$. Km however tries to blur the markings in accordance with the seeing condition. It is correctly shown that Ganges and Nilokeras are brownish. Despite the seeing, the stacking unearths Ascræus Mons evidently near the terminator. The part of the northern district of M Acidalium is bluish due to the presence of the arctic cloud.

CFs obtained an L-colour image at $\omega=128^\circ\text{W}$. The normal shape of Arsia Mons is expressed interestingly. Ascræus Mons and the preceding the doughnut ring at Fortuna are quite evident. The dot of Olympus Mons is more explicit than expected. The large arctic cloud looks doubled: The lower part may be expanded at around the north pole (at $\phi=13^\circ\text{N}$). □

Masatsugu MINAMI and Masami MURAKAMI

Forthcoming 2016 Mars (#11)

Ephemeris for the Observations of the 2016 Mars. VI

September & October 2016

By

Masami MURAKAMI

AS a sequel to the preceding list of the Ephemeris for the physical observations of Mars in CMO #449, we here list up the necessary elements of the Ephemeris for period from 01 September 2016 to 31 October 2016. The data are listed for every day at 00:00 GMT (not TDT). The symbols ω and ϕ denote the Longitude and Latitude of the sub-Earth point respectively. The symbols λ , δ and ι stand for the Areocentric Longitude of the Sun, the Apparent Diameter and the

Phase Angle respectively. We also add the column of the Position Angle Π of the NS axis rotation, measured eastwards from the north point: This is useful when we try to determine the north pole direction from the $p \leftarrow \rightarrow f$. The Apparent Declination of the planet is also given at the final column (denoted D). The data here are basically based on *The Astronomical Almanac for the Year 2016*.

Date (00:00GMT)	ω	ϕ	λ	δ	ι	Π	D
01 September 2016	316.16°W	6.63°N	214.41°Ls	10.47"	45.7°	33.5°	–25°11'
02 September 2016	306.54°W	6.37°N	215.03°Ls	10.41"	45.8°	33.3°	–25°14'
03 September 2016	296.91°W	6.10°N	215.64°Ls	10.34"	45.8°	33.1°	–25°18'
04 September 2016	287.29°W	5.84°N	216.26°Ls	10.28"	45.9°	32.9°	–25°21'
05 September 2016	277.66°W	5.57°N	216.87°Ls	10.21"	45.9°	32.7°	–25°24'
06 September 2016	268.02°W	5.30°N	217.49°Ls	10.15"	45.9°	32.4°	–25°27'

Date (00:00GMT)		ω	ϕ	λ	δ	ι	Π	D
07 September	2016	258.38°W	5.02°N	218.11°Ls	10.09"	46.0°	32.2°	-25°30'
08 September	2016	248.74°W	4.75°N	218.72°Ls	10.02"	46.0°	32.0°	-25°33'
09 September	2016	239.10°W	4.47°N	219.34°Ls	9.96"	46.0°	31.7°	-25°35'
10 September	2016	229.45°W	4.19°N	219.96°Ls	9.90"	46.0°	31.5°	-25°38'
11 September	2016	219.80°W	3.91°N	220.58°Ls	9.84"	46.1°	31.2°	-25°40'
12 September	2016	210.15°W	3.63°N	221.20°Ls	9.78"	46.1°	31.0°	-25°42'
13 September	2016	200.49°W	3.35°N	221.82°Ls	9.72"	46.1°	30.7°	-25°44'
14 September	2016	190.83°W	3.06°N	222.44°Ls	9.67"	46.1°	30.5°	-25°46'
15 September	2016	181.17°W	2.77°N	223.07°Ls	9.61"	46.1°	30.2°	-25°48'
16 September	2016	171.51°W	2.48°N	223.69°Ls	9.56"	46.1°	29.9°	-25°49'
17 September	2016	161.84°W	2.19°N	224.31°Ls	9.50"	46.1°	29.7°	-25°51'
18 September	2016	152.17°W	1.90°N	224.93°Ls	9.45"	46.1°	29.4°	-25°52'
19 September	2016	142.49°W	1.60°N	225.56°Ls	9.39"	46.1°	29.1°	-25°53'
20 September	2016	132.82°W	1.31°N	226.18°Ls	9.34"	46.1°	28.8°	-25°53'
21 September	2016	123.14°W	1.01°N	226.80°Ls	9.28"	46.1°	28.5°	-25°54'
22 September	2016	113.45°W	0.71°N	227.43°Ls	9.23"	46.1°	28.2°	-25°54'
23 September	2016	103.77°W	0.41°N	228.06°Ls	9.18"	46.1°	27.9°	-25°55'
24 September	2016	94.08°W	0.10°N	228.68°Ls	9.12"	46.0°	27.6°	-25°55'
25 September	2016	84.39°W	0.20°S	229.31°Ls	9.07"	46.0°	27.3°	-25°54'
26 September	2016	74.70°W	0.51°S	229.94°Ls	9.02"	46.0°	26.9°	-25°54'
27 September	2016	65.00°W	0.81°S	230.57°Ls	8.97"	46.0°	26.6°	-25°53'
28 September	2016	55.30°W	1.12°S	231.19°Ls	8.92"	46.0°	26.3°	-25°53'
29 September	2016	45.60°W	1.42°S	231.82°Ls	8.87"	46.0°	26.0°	-25°52'
30 September	2016	35.90°W	1.73°S	232.45°Ls	8.82"	46.0°	25.6°	-25°50'
01 October	2016	26.19°W	2.04°S	233.08°Ls	8.78"	45.9°	25.3°	-25°49'
02 October	2016	16.48°W	2.35°S	233.71°Ls	8.73"	45.9°	24.9°	-25°47'
03 October	2016	6.77°W	2.66°S	234.34°Ls	8.68"	45.8°	24.6°	-25°45'
04 October	2016	357.06°W	2.97°S	234.97°Ls	8.64"	45.8°	24.2°	-25°43'
05 October	2016	347.34°W	3.29°S	235.60°Ls	8.59"	45.7°	23.9°	-25°41'
06 October	2016	337.62°W	3.60°S	236.23°Ls	8.55"	45.7°	23.5°	-25°39'
07 October	2016	327.90°W	3.91°S	236.86°Ls	8.50"	45.6°	23.2°	-25°36'
08 October	2016	318.17°W	4.23°S	237.49°Ls	8.46"	45.6°	22.8°	-25°33'
09 October	2016	308.44°W	4.54°S	238.13°Ls	8.41"	45.5°	22.4°	-25°30'
10 October	2016	298.71°W	4.86°S	238.76°Ls	8.37"	45.5°	22.1°	-25°26'
11 October	2016	288.98°W	5.17°S	239.39°Ls	8.32"	45.4°	21.7°	-25°23'
12 October	2016	279.24°W	5.48°S	240.02°Ls	8.28"	45.4°	21.3°	-25°19'
13 October	2016	269.50°W	5.80°S	240.66°Ls	8.24"	45.3°	20.9°	-25°15'
14 October	2016	259.76°W	6.11°S	241.29°Ls	8.19"	45.3°	20.5°	-25°10'
15 October	2016	250.02°W	6.42°S	241.92°Ls	8.15"	45.2°	20.1°	-25°06'
16 October	2016	240.27°W	6.74°S	242.56°Ls	8.11"	45.2°	19.7°	-25°01'
17 October	2016	230.52°W	7.05°S	243.19°Ls	8.07"	45.1°	19.3°	-24°56'
18 October	2016	220.77°W	7.37°S	243.83°Ls	8.02"	45.1°	18.9°	-24°51'
19 October	2016	211.02°W	7.68°S	244.46°Ls	7.98"	45.0°	18.6°	-24°45'
20 October	2016	201.26°W	7.99°S	245.10°Ls	7.94"	44.9°	18.1°	-24°40'
21 October	2016	191.50°W	8.31°S	245.73°Ls	7.90"	44.9°	17.7°	-24°34'
22 October	2016	181.74°W	8.62°S	246.37°Ls	7.86"	44.8°	17.3°	-24°27'
23 October	2016	171.97°W	8.93°S	247.00°Ls	7.82"	44.7°	16.9°	-24°21'
24 October	2016	162.21°W	9.24°S	247.64°Ls	7.78"	44.6°	16.5°	-24°14'
25 October	2016	152.44°W	9.55°S	248.27°Ls	7.75"	44.6°	16.1°	-24°07'
26 October	2016	142.66°W	9.86°S	248.91°Ls	7.71"	44.5°	15.6°	-24°00'
27 October	2016	132.89°W	10.17°S	249.54°Ls	7.67"	44.4°	15.2°	-23°53'
28 October	2016	123.11°W	10.48°S	250.17°Ls	7.63"	44.3°	14.8°	-23°45'

Date (00:00GMT)	ω	ϕ	λ	δ	ι	Π	D
29 October 2016	113.33°W	10.79°S	250.81°Ls	7.60"	44.2°	14.4°	-23°38'
30 October 2016	103.54°W	11.09°S	251.44°Ls	7.56"	44.1°	13.9°	-23°30'
31 October 2016	93.75°W	11.40°S	252.07°Ls	7.52"	44.0°	13.5°	-23°21'
01 November 2016	83.96°W	11.70°S	252.71°Ls	7.49"	43.9°	13.1°	-23°13' - - -

Forthcoming 2016 Mars (#12)

The Martian Disks for the 2016 Mars. Part III

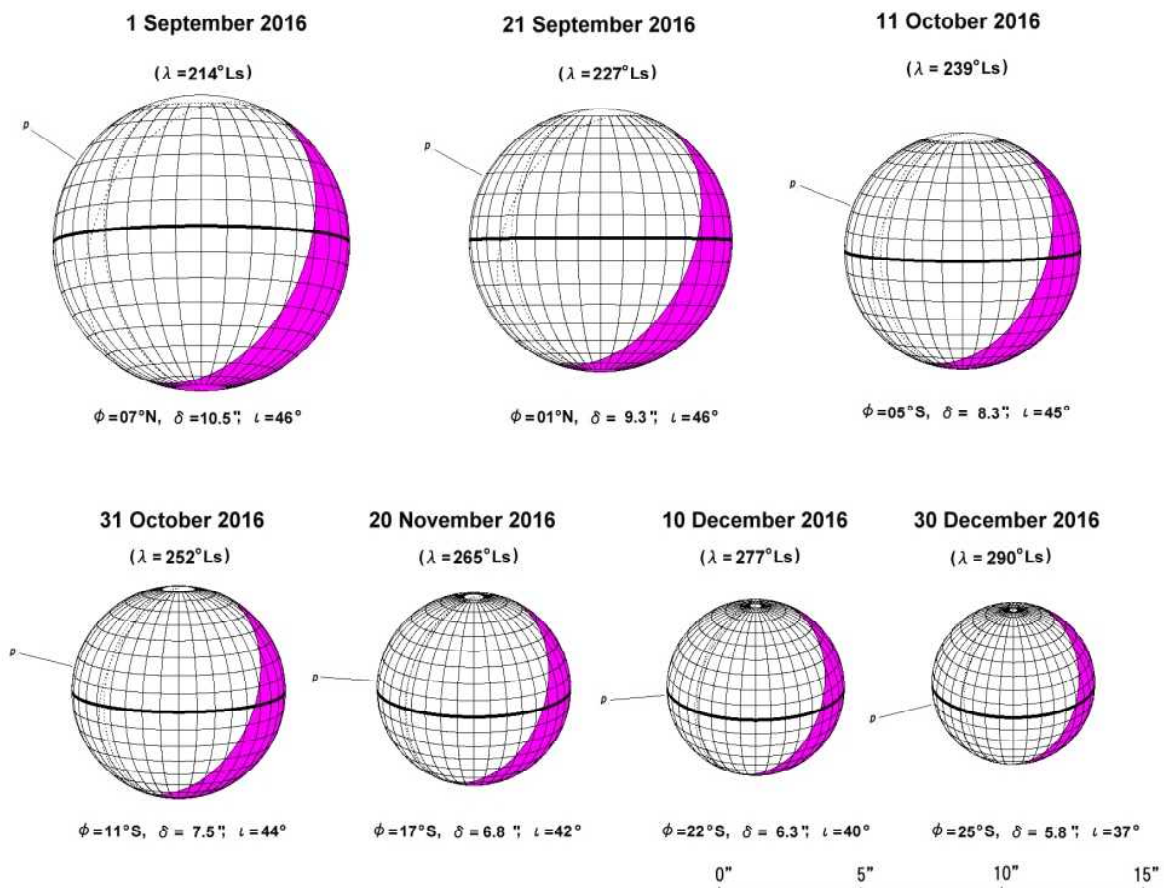
By

Masami MURAKAMI

This is a sequel to Part II in CMO/ISMO #448, and we shall show the Martian grids every twenty days from September until December 2016. The Martian season proceeds from $\lambda=214^\circ\text{Ls}$ to $\lambda=291^\circ\text{Ls}$ during the period. The southern summer solstice $\lambda=270^\circ\text{Ls}$ will be attained on 29 November with the angular diameter $\delta=6.6''$.

It is important this period to notice that the tilt will face to us from the last week in September, that is, the Martian south pole is visible from us (more exactly from 24 September ($\lambda=229^\circ\text{Ls}$)). Furthermore

the first week in October around from $\lambda=235^\circ\text{Ls}$ will provide us the chance to chase the deviation of the center of the south polar cap (spc), that is, the center of the spc will begin to deviate from the Martian south pole. This deviation will be more apparent by around $\lambda=250^\circ\text{Ls}$ at the end of October. The grids here shown cannot describe the deviation, but we will be able to grasp the situations at $\lambda=235^\circ\text{Ls}$, $\lambda=250^\circ\text{Ls}$, $\lambda=270^\circ\text{Ls}$ of the case of 2005 apparition in <http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn2/CMO307.pdf> (at page Ser2-0130 in CMO#307)



The thawing of the spc is more rapid at around $\Omega = 210^\circ\text{W}$ (to the south of Mare Cimmerium), and remnant of the spc will be found to the direction of $\Omega = 030^\circ\text{W}$ (to the south of Argyre). This will also be the subject to be pursued in the next great apparition and hence this time a good rehearsal.

Finally we shall give a list of some articles in CMO which are concerned with the spc recession:

Coming 2001 Mars (7): Deviation of the spc from the

south pole

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn0/01Coming07.htm>

Coming 2001 Mars (6): The spc and the northern summer

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmo/coming2001/0106/06.html>

Shallow Field Lens: The spc in fall and winter

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn0/CMO353.pdf>

(page Ser2-1022)



Letters to the Editor

●.....**Subject: Mars 2016/07/16 1722UT CM296**
Received: 17 July 2016 at 04:05 JST

Hi all, Poor conditions this evening and this was the best I could get out. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160716/CFs16July16.jpg>

○.....**Subject: Mars 2016/07/17 1745UT CM293**
Received: 18 July 2016 at 1 5:05 JST

Hi all, Poor conditions continued yesterday evening, and I see that we had Jetstream conditions. However, the development of the NPH can still be followed. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160717/CFs17July16.jpg>

○.....**Subject: Mars 2016/07/18 1541UT CM253**
Received: 19 July 2016 at 23:42 JST

Hi all, Poor conditions continued yesterday evening, but submitting the attached image set, from early evening/twilight, when seeing seemed to be best, for the record. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160718/CFs18July16.jpg>

○.....**Subject: Mars 2016/07/19 1525UT CM240**
Received: 20 July 2016 at 15:06 JST

Hi all, Poor conditions continued yesterday evening, but submitting the attached image set, from twilight, when seeing seemed to be best, for the record. NPC development continues, no major dust activity noticeable and Elysium seems to be fairly clear of substantial cloud. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160719/CFs19July16.jpg>

○.....**Subject: Mars 2016/07/21 1858UT CM273**
Received: 22 July 2016 at 15:30 JST

Hi all, Somewhat improved conditions last night, after the recent poor spell. Attached is an image set generated from 3x 90s derotation in Winjupos. I note the brightish southern edge of Hellas, which is off-white compared with the SPC. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160721/CFs21July16.jpg>

○.....**Subject: Mars 2016/07/24 1757UT CM230**
Received: 26 July 2016 at 17:52 JST

Hi all, Some reasonable conditions on 24 July as a cold front moved in. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160724/CFs24July16.jpg>

○.....**Subject: Mars 2016/07/27 1612UT CM176**
Received: 28 July 2016 at 04:35 JST

Hi all, Average/below average conditions. Elysium close to the morning terminator (at right). Olympus Mons in lower left quadrant although not prominent under these conditions. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160727/CFs27July16.jpg>

○.....**Subject: Mars 2016/07/28 1600UT CM164**
Received: 29 July 2016 at 15:16 JST

Hi all, Average conditions last night. Possibly just a hint of cloud on Olympus Mons, but there appears to be more evident cloud over the other three Tharsis volcanoes. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160728/CFs28July16.jpg>

○.....**Subject: Mars 2016/07/29 1743UT CM179**
Received: 30 July 2016 at 14:04 JST

Hi all, Poor conditions last night and a bit of a struggle getting anything useful out. However, submitting for the record, and no major activity noted.

Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160729/CFs29July16.jpg>

Clyde FOSTER (Centurion, SOUTH AFRICA)

●.....*Subject: Re: Mars 2016/07/16 1722UT CM296*

Received: 17 July 2016 at 07:215 JST

Hi Clyde, Three features stand out. Another wave of dust in Hellas, the crater Huygens and continuing formation of the NPH. I'm going to look back on everyone's images to see if the NPH started to form about the time dust waves appeared in Hellas. These features may coincide with the start of sublimation of Northern parts of the CO₂ SPC which by the way is supposed to be clear slab ice. That CO₂ may also be providing vapor in the NPH. This is my hypothesis. Good work and thanks. Your contributions are very valuable.

Jim MELKA (Chesterfield, MO)

●.....*Subject: Mars: July 15, 2016*

Received: 17 July 2016 at 1 0:13 JST

Hi, I have attached my image of Mars July 15, 2016 at 1:24 UT. Thanks,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160715/FMI15July16.jpg>

○.....*Subject: Mars: July 16, 2016*

Received: 17 July 2016 at 1 0:17 JST

Hi, I have attached my latest image of Mars July 16, 2016 at 0:39 UT.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160716/FMI16July16.jpg>

○.....*Subject: Mars: July 20, 2016*

Received: 20 July 2016 at 11:47 JST

Hi, I have attached my latest image of Mars July 20, 2016 at 0:47 UT. Thanks,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160720/FMI20July16.jpg>

○.....*Subject: Mars July 21, 2016*

Received: 21 July 2016 at 13:05 JST

Hi, I have attached my latest image of Mars July 21, 2016 at 1:02 UT. Thanks,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160721/FMI21July16.jpg>

○.....*Subject: Mars: July 27, 2016 UT*

Received: 27 July 2016 at 12:33 JST

Hi, I have attached my latest images of Mars July 27, 2016 at 1:13 UT and 1:28 UT. Thanks,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160727/FMI27July16.jpg>

Frank J MELILLO (Holtsville, NY)

●.....*Subject: Mars June 6*

Received: 17 July 2016 at 10:46 JST

Average seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160606/PMx06June16.jpg>

○.....*Subject: Mars June 7*

Received: 19 July 2016 at 08:08 JST

Average seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160607/PMx07June16.jpg>

○.....*Subject: Mars June 8*

Received: 20 July 2016 at 01:48 JST

Respectable

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160608/PMx08June16.jpg>

○.....*Subject: Mars June 9*

Received: 21 July 2016 at 07:44 JST

Decent seeing at last!

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160609/PMx09June16.jpg>

○.....*Subject: Mars June 10*

Received: 22 July 2016 at 04:36 JST

Best seeing in quite a while

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160610/PMx10June16.jpg>

○.....*Subject: Mars 2016.07.03*

Received: 23 July 2016 at 11:38 JST

Good seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160612/PMx12June16.jpg>

○.....*Subject: Mars June 13*

Received: 24 July 2016 at 02:06 JST

Below average seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160613/PMx13June16.jpg>

○.....*Subject: Mars June 14*

Received: 25 July 2016 at 11:25 JST

Not the best seeing, but useful.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160614/PMx14June16.jpg>

○.....*Subject: Mars June 15*

Received: 27 July 2016 at 08:10 JST

Pretty nice seeing for these Mars images.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160615/PMx15June16.jpg>

○.....*Subject: Mars June 16*

Received: 29 July 2016 at 08:44 JST

Lots of clouds to the north.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160616/PMx16June16.jpg>

○.....*Subject: Mars June 17*

Received: 31 July 2016 at 10:06 JST

Unsettled seeing for these images.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160617/PMx17June16.jpg>

Paul MAXSON (Surprise, AZ)

●.....*Subject: Mars - July 15th*
Received: 17 July 2016 at 12:32 JST

Hi Mr. Minami and All!, I submit my latest session from July 14th under average conditions.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160715/EMr15July16.jpg>

○.....*Subject: Mars - July 18th*
Received: 19 July 2016 at 21:16 JST

Hi Mr. Minami and All!, My submission from July 18th under average conditions.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160718/EMr18July16.jpg>

○.....*Subject: Mars - July 20th*
Received: 21 July 2016 at 21:43 JST

Hi Mr. Minami!, Here I submit my latest session from July 20th but under below average conditions.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160720/EMr20July16.jpg>

○.....*Subject: Mars July 22,23,24,25th*
Received: 28 July 2016 at 14:49 JST

Hi Mr. Minami and All!, Here are my most recently processed sessions from the 22,23,24 and 25th. under average & below average conditions.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160722/EMr22July16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160723/EMr23July16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160724/EMr24July16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160725/EMr25July16.jpg>

○.....*Subject: Mars July 26,27,29th*
Received: 31 July 2016 at 13:55 JST

Hi Mr. Minami and All!, here are my latest sessions from the 26th, 27th and 29th of July. Still under the influence of Saharra dust aerosols.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160726/EMr26July16.jpg>

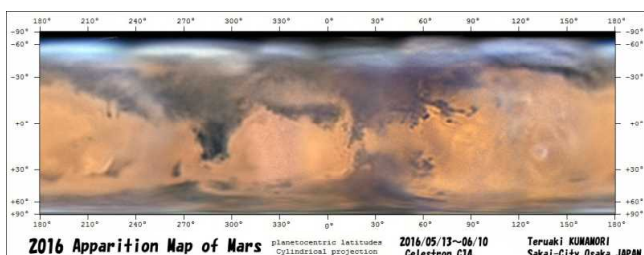
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160727/EMr27July16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160729/EMr29July16.jpg>

Efrain MORALES (Aguadilla, PUERTO RICO)

●.....*Subject: Mars 2016/07/27-Kumamori*
Received: 28 July 2016 at 18:37 JST

Here are an L-colour image on 27 July 2016 and a Projection Map constructed from my images in 2016.



<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160727/Km27July16.jpg>

Teruaki KUMAMORI (Osaka, JAPAN)

●.....*Subject: Mars July 14 and 15*
Received: 20 July 2016 at 23:47 JST

Dear Masatsugu and Masami, Attached are some of mages of Mars from the mornings of July 14 and July 15. The images show interesting cloud formations over Mare Acidalium and Mare Boreum. Best wishes,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160714/WF114July16.jpg>
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160715/WF115July16.jpg>

Bill FLANAGAN (Houston, TX)

●.....*Subject: Mars images (June 8th.)*
Received: 21 July 2016 at 03:39 JST

Hi all, Excellent conditions. The Chryse hemisphere is on view. Note the swirl of cloud in the northern hemisphere across Mare Acidalium.

RGB: <http://www.damianpeach.com/mars1617/m2016-06-08-RGBall.jpg>

Blue Light: <http://www.damianpeach.com/mars1617/m2016-06-08-BLUEall.jpg>

Best Wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160608/DPc08June16.jpg>

○.....*Subject: Mars images (June 9th.)*
Received: 28 July 2016 at 01:23 JST

Hi all, Some images from June 9th. Excellent seeing. The frosted Lowell crater can again be seen in the last colour image as a bright spot on the edge of the SPC. Swirls of dusty looking material across Mare Acidalium.

Colour: <http://www.damianpeach.com/mars1617/m2016-06-09-RGB.jpg>

Blue: http://www.damianpeach.com/mars1617/m2016-06-09-0214_0-BLUE.jpg

Best Wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160609/DPc09June16.jpg>

○.....*Subject: Mars images (June 10th.)*
Received: 30 July 2016 at 05:18 JST

Hi all, Here are some images from June 10th. Only a brief spell of very good seeing on this session.

<http://www.damianpeach.com/mars1617/m2016-06-10-RGB.jpg>

Best Wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160610/DPc10June16.jpg>

Damian PEACH (Selsey, West Sussex, the UK)

●.....*Subject: Mars image - July 16*
Received: 21 July 2016 at 12:38 JST

Gentlemen, Seeing was about average for this set of images. Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160716/PGc16July16.jpg>

Peter GORCZYNSKI (Oxford, CT)

●.....*Subject: Mars 2017 July 3*
Received: 23 July 2016 at 00:17 JST

Dear friends, Here's my last contribution this Mars season, an image obtained quite a while ago on July 3rd. Seeing was poor and the altitude only 11 degrees on a bright twilight sky. Mars was already well past the meridian when it was dark enough to catch it.

Though the resolution is very poor, Lunae Lacus, Tithonius and Noctis L can be seen to be dark and extended as previously. Bright and small evening cloud over Chryse, extended hazes over both S and N poles. I tried imaging a few more times in July but the seeing has been just horrible. Perhaps there will be a new chance to catch Mars towards the end of the year when it again climbs a little higher in the afternoon sky. It will reach an altitude of about 25 deg from here then, but the diameter will have shrunk to 6-7 arc seconds. With best wishes,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160703/JWr03July16.jpg>

Johan WARELL (Skurup, SWEDEN)

●.....*Subject: Mars 22 July 2016*
Received: 23 July 2016 at 00:57 JST

Dear Dr.Minami, I am attaching here my latest image of Mars got through some rifts in the clouds. Seeing still no good. Clear Skies!

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160722/Kn22July16.jpg>

Reiichi KONNAI (Fukushima, JAPAN)

●.....*Subject: Saturn and Mars from 17th July*
Received: 23 July 2016 at 02:47 JST



Hi, Some good seeing on 17th July allowing me de-

cent imaging of Mars and Saturn filter despite the low altitude;

- Mars with colour camera
- Saturn with colour camera
- Saturn with 642nm BP filter
- Saturn and Moons composite (Saturn 642nm and Moons L filter)

See these also at the top of the following pages;

<http://www.skyinspector.co.uk/mars-and-venus>

<http://www.skyinspector.co.uk/saturn>

Have a great summer,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160717/MLw17July16.jpg>

Martin LEWIS (St Albans, the UK)

●.....*Subject: Mars 2016.07.03*
Received: 23 July 2016 at 05:44 JST

Dears, Mars at low elevation, with as usual a rather good IR image and a so-so RGB. Tharsis volcanoes at meridian, Olympus Mons NW, and Valles Marineris SE.

<http://www.astrosurf.com/delcroix/images/planches/m20160703i-21h12.5UT-MDe.png>

Usual clouds in the polar zone, and a bright small one on the NW edge of Acidaria Planitia (on the limb).

<http://www.astrosurf.com/delcroix/images/planches/m20160703-21h32.0UT-MDe.png>

R G B:

<http://www.astrosurf.com/delcroix/images/planches/m20160703r-21h28.6UT-MDe.png>

<http://www.astrosurf.com/delcroix/images/planches/m20160703g-21h32.0UT-MDe.png>

<http://www.astrosurf.com/delcroix/images/planches/m20160703b-21h35.5UT-MDe.png>

Steady skies,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160703/MDc03July16.jpg>

○.....*Subject: Mars 2016.07.06*
Received: 23 July 2016 at 15:31 JST

Dears, Valles Marineris at CM, Tharsis volcanoes close to the night side, and Olympus Mons on the limb:

<http://www.astrosurf.com/delcroix/images/planches/m20160706i-21h05.2UT-MDe.png>

Less detailed color version, still with clouds on the Southern polar area and North of Acidia Planitia:

<http://www.astrosurf.com/delcroix/images/planches/m20160706-21h22.3UT-MDe.png>

Individual color layers:

<http://www.astrosurf.com/delcroix/images/planches/m20160706r-21h19.7UT-MDe.png>

<http://www.astrosurf.com/delcroix/images/planches/m20160706g-21h22.3UT-MDe.png>

<http://www.astrosurf.com/delcroix/images/planches/m20160706b-21h24.8UT-MDe.png>

Steady skies,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160706/MDc06July16.jpg>

Marc DELCROIX (Tournefeuille, FRANCE)

●.....Subject: Mars, 23rd July
Received: 23 July 2016 at 20:31 JST

Hi all, here is a Mars image from tonight, Olympus Mons is prominent at centre, and some cloud can be seen over the north and south of the planet.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160723/AWs23July16.jpg>

Anthony WESLEY (NSW, AUSTRALIA)

●.....Subject: Mars2016_23 July RGB image
Received: 25 July 2016 at 06:53 JST

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160723/GWk23July16.jpg>

Gary WALKER (Macon, GA)

●.....Subject: Mars image on 2016-07-30 from Cairns Australia
Received: 31 July 2016 at 09:47 JST

Minami-sensei and Murakami-sama, Please find attached a Mars image from the last night. Mars was just before passing the zenith. I am still struggling to get the exact north-up. Hope this one is better than before. Kind regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160730/Kd30July16.jpg>

Hidetoshi KUDOH (Cairns, QLD, AUSTRALIA)

News FLASH:

●.....Subject: Dust on August 20
Received: 23 August 2016 at 02:32 JST

Two or more dust clouds around Nilokeras are evident upon images on August 20 by Efrain Morales Rivera (received 23 August at 00:18 JST).

They were not present on the 18th, and I have not yet looked for images taken on the 19th. These longitudes are not accessible from the UK but I am alerting you and selected observers in the USA.

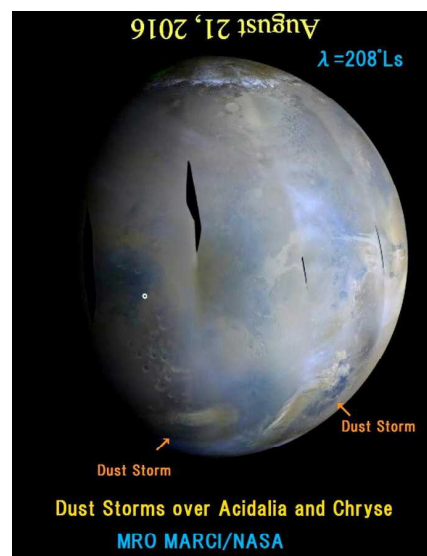
In haste, with good wishes

Richard McKIM

(Director, the BAA Mars Section, the UK)

●.....Subject: Dust over Acidalia and Chryse
Received: 25 August 2016 at 10:19

Dear Dr. MINAMI and All, MRO MARCI Weather Report for the Week of 15~21 August 2016 says "...dust-lifting activity over Acidalia was advected southward to Chryse at the end of the week," just corresponding to Richard McKIM's



alert on 23 August based on Efrain MORALES RIVERA's image on 20 August 2016. Best Regards,

Reichii KONNAI (Fukushima, JAPAN)



International Society of the Mars Observers (ISMO)

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CMO n°453/ ISMO #79 (25 August 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

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☆ Usual mails to CMO are acknowledged if addressed to

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