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## 2018 CMO/ISMO Mars Observations Made in April 2018 (λ=152°Ls~168°Ls)

By

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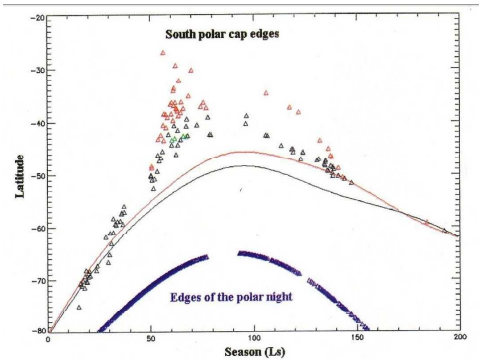
♂・・・・・・We shall here deal with the sixth Mars Report of the 2018 ISMO Mars Observations carried out by the CMO/ISMO members in April 2018. The Planet Mars in April 2008 continued a prograde motion inside the Sagittarius constellation. On 2 April it passed between the planet Saturn and the M22 globular cluster. At this season, the time the planet appeared from the eastern mountains was just after the mid-night, and the apparent declination D was about 23°S~22°S, and hence on the terrestrial Northern Hemisphere, the height of the planet remained quite lower. The western quadrature already passed, but the dawn time was getting faster, and hence the planet did not reach the Meridian even when the Sun rose. The Martian season proceeded from λ=152°Ls to λ=168°Ls, and so the southern spring equinox was approaching (that implies that the season of dust disturbances was approaching). The apparent diameter δ of the planet augmented from δ=8.5″ to δ=11.0″ during one month in April. The tilt φ was facing further to the south from φ=06°S to φ=12°S at the end of April, while the phase angle ι increased upto ι=41° implying that the defect of illumination of the evening side was close to the maximal.

♂・・・・・One of the phenomena observed in the earlier period (approximately at λ=150°Ls～) was the disappearance of the white Hellas: Hellas was conspicuously whitish bright at about λ=100°Ls, but after λ=150°Ls it become weaker because the ice crystals on the ground floor of the basin will be melted away. Of course the white mist will be associated with the melting and the southern polar hood could be governs the upper part of Hellas and so the appearance is not so simple. Here we will give an advice: Usually the white south polar cap and the white Hellas were treated as different. However the recent view gives an idea that they should be treated as the same material since both are mainly composed of $CO_2$. The figure here is cited from the paper made by Marco GIURANNA and others "PFS/MEX observations of the condensing $CO_2$ south polar cap of Mars" *Icarus* ***197*** (2008) 386-402. This Figure was also featured in our



CMO#353. PFS implies Planetary Fourier Spectrometer onboard ESA's Mars Express (MEX) of the surface temperature of the south polar region (spr) of Mars. It surveyed the spc and its neighbourhood from λ=330°Ls to λ=194°Ls. According to this map, at the outside of the so-called spc, we now know how the ice crystals are spread. See the Figure cited here, and also refer to CMO#353 at page Ser2-1021.

♂・・・・・We should say MRO MARCI's images in April caught some seasonal changes. For instance, at the beginning of April some orographies in the afternoon were checked, but gradually its activity became weaker, and eventually except for the cloud activity of Arsia Mons, others became silent. This was the same about Elysium Mons, i.e. it narrowed the range of activity. The dust activities are now in season, and checked in the northern part of Mare Acidalium, the outside of the Hellas basin, at the area of Solis Lacus and so on. At the region of the southern Mare Sirenum to the area of Mare Cimmerium there were recorded some dust disturbances after mid-April. Here we cite a significant image made by Mark JUSTICE (MJs) from Melbourne made on 25 April. This dust might have started on 24 April to the south of the south Eridania and its resonance on 25 April was caught by MJs at the area of Zephyria. Hesperian area was also resonant but around 29 April they looked all dispersed. On 30 April, Clyde FOSTER (CFs) captured a delicate small dust spot near the evening terminator (See LtE). No cyclone at the higher arc-


tic region was checked. The activity of the mist around the equatorial zone was been now weakened. The area of Utopia was free from the white cloud.

♂・・・・・We received with thanks a total of 66 observations made during one month period in April 2018, where a total of 12 ISMO members contributed (from Australia, Greece, Japan, the USA, and South Africa. The following list shows the names of the observers and the instruments they used.

**AKUTSU, Tomio (*Ak*)** Hitachi-Oota, Ibaraki, JAPAN
2 *RGB* +2*B* + 2 *IR* Images (1, 13 April 2018) 32cm Spec with an ASI 290MM

**FOSTER, Clyde *(CFs)*** Centurion, SOUTH AFRICA
13 Sets of *RGB* + 13 *IR* Images (7*, 14,~ 16, 18, ~21, 23,~25, 27, 28, 30 April 2018)
31cm SCT* @ *f/25*, 36cm SCT @ *f/27* with an ASI 290MM

**GORCZYNSKI, Peter *(PGc)*** Oxford, CT, The USA
5 Sets of *RGB* + 6 *IR* images (14, 21~24 April 2018)
18cm Maksutov Cassegrain with an ASI 290MM

**HEFFNER, Robert (*RHf*)** Osaka, JAPAN
2 *Colour* Images (20. 28 April 2018) 23cm SCT with an ASI 224MC

**JUSTICE, Mark *(MJs)*** Melbourne, AUSTRALIA
4 Sets of *RGB* Images (7, 17, 25, 30 April 2018) 30cm Spec with an ASI 290MM

**KARDASIS, Manos *(MKd)*** Glyfada-Athens, GREECE

3 *Colour* Images (3,~ 5 April 2018) 36cm SCT with an ASI 290MM

**KUMAMORI, Teruaki *(Km)*** Sakai, Osaka, JAPAN

7 *Colour** + 7 *R* + 7 *B* Images (2, 8, 9, 18, 21, 30, 31 April 2018)
36cm SCT @ *f/40* with an ASI 290MM & ASI 224MC*

**MORALES RIVERA, Efrain (*EMr*)** Aguadilla, PUERTO RICO

4 Sets of *RGB* + 4 *IR* Images (1, 5, 16, 19, 26 April 2018) 31cm SCT with an ASI 290MM

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

1 Set of *LRGB* Images (29 April 2018) 36cm SCT with an ASI 290MM

**PEACH, Damian A (*DPc*)** Selsey, WS, the UK, remote controlled the Chilescope Team in CHILE

6 Sets of *RGB* + 5 *colour* + 2 *R* Images (4, 5, 15,~20, 27, 28 April 2018)
Chilescope (100cm Richey Chretien)

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

2 *Colour* Drawings (14, 21 April 2018) 35cm SCT, 326×

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

3 Sets of *RGB* + *3 IR* Images (2, 21, 30 April 2018)
36cm Richey Chretien @ *f/22*, with an ASI 290MM

♂・・・・・We are now in a position to give some comments to every observation made in April 2018: Please refer to each image recorded in our **CMO/ISMO Mars Gallery of the 2018 Mars**:

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/f_image.html

### 1 April 2018 (λ=152°Ls~153°Ls, δ=8.5")

First of all **Efrain MORALES** (**EMr**) observed at Puerto Rico at ω=228°W, φ=07°S and obtained an IR685 image, by using a 31 cm SCT equipped with an ASI 290MM camera. Syrtis Major (Mj) is shown just wholly inside the disk. Mare Cimmerium and Mare Tyrrhenum (together with Syrtis Minor) are recognised though without details.

**Damian PEACH (DPc)** then collaborated, by the use of a remote control system, with the team at the Chilescope Observatory (owning a 100 cm Richey Chretien telescope) and obtained a set of R,G,B ingredient images to compose an RGB image at ω=233°W, φ=07°S. The composition of the image is not so different from EMr's case (just the time of observation is different by 19 minutes), but the details on DPc's images are much more detailed: The bridges from the Gale and Knobel craters to M Cimmerium are quite evident. The south Ausonia looks reddish. The Ætheria dark patch is clearly split into two. The south polar cloud hood (sph) is large though the shadowy part is too shadowy. The orographic cloud at Elysium looks to spread down to the ground (as the G and B images suggest). Nodus Alcyonius is nicely recorded. A white haze is seen at the arctic area.

**Tomio AKUTSU** (**Ak**) obtained an RGB composite at ω=008°W, φ=07°S while the distribution of markings is barely seen on the IR685 image at ω=010°W. S Meridiani remains near the evening terminator, and S Margaritifer is vaguely visible. M Acidalium at the morning side is faintly visible. The R image is powerless. Used a 32cm spec with an ASI 290MM camera equipped with IDAS LRGB Type 2 filters.

### 2 April 2018 (λ=153°Ls, δ=8.6")

**Maurice VALIMBERTI** (**MVl**) gave an RGB composite at ω=327°W, φ=07° S based on the three R,

G, B ingredients. Sinus Sabæus is expressed broadly but is not well showy, while Sinus Meridiani reveals its original head together with the twin nails. The whitish south polar hood at the sp region (spr) appears curios as if it bends at a top to the both sides of the end of Hellespontus; one wing going to Hellas, and the other wing is facing to the morning limb being more thickly whitish. The white mist at Hellas is dimmer than the other morning side. Syrtis Mj does just shows up without details at the evening side with a white haze at the northern evening part. Margaritifer S is shown near the morning limb, and M Acidalium looks a linear dark marking near the morning limb. These are more evident on the IR ingredient. MVl uses a 36cm Richey Chretien @*f*/22, equipped with an ASI 290MM. Filters are Astronomic Type IIc RGB filters and Custom Scientific Bessell IR filter for the IR.

**Teruaki KUMAMORI (Km)** obtained an L-colour image (by the method of Derotation) at ω=355°W as well as a B image at ω=360°W and an R image at ω=007°W. The instrument are a 36cm SCT, @ *f*/40 and an ASI 224MC and ASI 290MM (for further details about the exposures ad procedures, refer to the data writings on the original images). The L-colour is finished simply and some colour variations of the deserts are shown. S Sabæus/Meridiani are shown and Mare Acidalium is described nicely in the expected shape. Mare Erythræum is dark adjacent to one branch of the doubled south polar hood (sph): We should say the sph looks to protrude to Argyre. The R image at ω=007°W (stacked form 50,000 frames) is most attractive to us: It reminds us of some excellent images produced at Pic du Midi (in 1941?) as well as the excellent drawings made by Tsuneo SAHEKI (1916~1996). The area from Aram to Sinus Margaritifer as well as to Oxia Palus is described classically. Some canals are suggested to constitute a canal network, especially to the south of Chryse. The light and shade description of the markings should be said excellent.

### 3 April 2018 (λ=153°Ls, δ=8.6")

**Manos KARDASIS (MKd)** from Greece composed an RGB image at ω=116°W, φ=07°S by making use of a 36 cm SCT equipped with an ASI 290MM camera. The dark markings look to show the area of Solis Lacus, but the detail of the markings at the southern higher latitudes is not definite. We may however be able to check the Tharsis Montes and Olympus Mons. The light region looks as if dyed in a sunset colour.

### 4 April 2018 (λ=154°Ls, δ=8.7")

**MKd**'s RGB single image made one day later at ω=102°W, φ=07°S. The colour of the deserts returned to usual ochre colour. It looks possible to identify the area of Solis L. The sph looks weaker.

**DPc** cooperated by a remote control system with Chilescope team to produce a nicer single RGB image at ω=195°W, φ=07°S. At M Cimmerium, the connections with the Gale and Knobel craters are finely evident. The southern part of Ausonia appears reddish.The sph is largely depicted without a definite boundary of the sph. It is interesting to check the area of Cerberus to Phlegra and Propontis I: Cerberus and Trivium Charontis are broad but very fainter in a brownish tint. The upper part of the Ætheria dark patch is clearly doubled just like a tuning fork best described among so far in this apparition. Cebrenia is rather vacant, and the arctic area looks misty.

### 5 April 2018 (λ=154°Ls, δ=8.8")

**MKd** continued to take an RGB image at ω=094°W, φ=07°S. Solis L is this time positioned, and Tithonius Lacus is also suggested. The sph is weak. It is difficult to identify Olympus Mons, but some

shadowy markings are described around there.

**EMr** then took an RGB image together with the three ingredients at ω=187°W, φ=07°S. This image very interestingly indicates colour distributions: M Cimmerium is not so detailed but its indigo bluish colour is in good contrast with the brownish tint of the Cerberus to Phlegra (plus Propontis I). Note however the Ætheria dark parch looks bluish (still near the morning limb). The sph is very whitish evident and looks to go down to the 40°S line. There seems that a bright spot near the northern evening terminator especially in R (According to the MRO-MARCI weather Report on 5 April, there is seen a bright dust patch to the northern-west of Olympus Mons).

**DPc** produced a set of R,G,B ingredients and an RGB composite in collaboration with the Chilescope team at ω=194°W, φ=07°S. The description around the Knobel crater and Herschel crater is complete and there are seen several spikes from M Cimmerium to Hesperia. His observation is 25 minutes later than the preceding EMr's observation, and hence the dust spot is dimmer near the evening terminator, but may be checked on the R and G images. On the other hand because of the 25 minutes behind, Syrtis Minor is inside the disk and the tuning fork-like Ætheria dark patch is more evident. Note however the brownish tinge of the area of Trivium Charontis and Propontis I is still fainter. In R, the streak preceding the Ætheria dark patch is ground-lit, and Cebrenia is a bright broad band. The sph is conspicuous in B but the its edge looks blurred.

### 7 April 2018 (λ=155°Ls~156°Ls, δ=8.9"~9.0")

**Clyde FOSTER** (**CFs**) gave a set of R,G,B ingredients (+IR 685 image) and the RGB composite when λ=155°Ls at ω=066°W, φ=08°S. Temporarily, CFs used another 31 cm SCT. The camera is an ASI 290MM, and filters are from Baader. The procedure of the morning limb is not enough, but the colour impression of the sph, Solis L, and the bright band following Ganges and so is remarkable. Just preceding the Tithonius L, Ophir-Candor looks extraordinarily bright and broad extending to the north western direction as if a dust cloud has swept. The area of Nilokeras is also suggested to be of a complex structure. The brightness of the Ophir-Candor belt is also apparent in the IR image.

**Mark JUSTICE** (**MJs**) from Melbourne started from δ=9.0" and λ=156°Ls. He obtained an RGB image together with the three R,G,B ingredients at ω=309°W, φ=08°S. His apparatus is a 30cm spec equipped with an ASI 290MM camera, and the filters used are from Edmund. Syrtis Major is largely visible on the evening side. In R, the Huygens crater is well suggested. The northern end of Syrtis Mj takes like a shape of ship's bottom. Hellas looks fuzzy (without the white ground) while Yaonis Fretum and Hellespontus are evident in R both of which extend to a rather dark marking at the higher latitude Noachis (maybe Depressiones Hellesponticæ). The southern end is covered by a rather thinner (a bit bluish) sph (though looks quite thick in B and G). Sinus Sabæus is dark and broad near the area of Sigeus Portus.

### 8 April 2018 (λ=156°Ls, δ=9.0")

**Km** obtained an L-colour image at ω=295°W, φ=08°S based on a 10 minutes derotaion method, though its stacking effect is dubious. The markings including Syrtis Mj are without any sharpness. In B the sph does not show up. Seeing is recorded 2/10.

### 9 April 2018 (λ=157°Ls, δ=9.1")

**Km** took an L-colour image at ω=285°W, φ=08°S. Seeing is recorded 4/10, and hence the condition is better than the preceding day's. Hellas looks almost free from the whitish ground, and Yaonis Fr looks dark extending to the area adjacent to the sph. This is also show on the R image at ω=293°W where Nodus Alcyonius, Cassius and Boreosyrtis make a trio. The northern end of Syrtis Mj looks flat like a ship's bottom.

### 13 April 2018 (λ=159°Ls, δ=9.4")

**Ak** gave an RGB image at ω=231°W, φ=09°S. It is however difficult to identify the markings. Fortunately the IR image at ω=232°W shows that Syrtis Mj just totally inside the disk, and hence the position of M Cimmerium is known. On the RGB image the presence of the sph is certified, but its contour is never definite.

### 14 April 2018 (λ=159°Ls, δ=9.5")

**CFs** restarted by the use of the 36cm SCT with an ASI 290MM camera and aimed to obtain an RGB composite at the nice angle; at ω=355°W, φ=09°S. However the treatment of the morning limb is not still efficient in the cases of R, G and IR. Due to the defect, some fruitful indications do not allow further pursuit: For instance, the sph from this angle shows interestingly two rifts inside the hood, but their positions are quite near the ghost line. Otherwise Aram is shown nicely up with Brangæna, and as well several minor markings look associated with Oxus, while these are not far from the ghost limb line.

**Peter GORCZYNSKI** (**PGc**) enters the stage. His instrument is an 18cm Maksutov Cassegrain equipped with an ASI 290MM camera. Filters used are Astronomik RGB filters plus Astronomik IR742 one. The images are taken around at ω=100°W, φ=09°S. The RGB composite shows the surface in agreeable shades, and the spread of the sph is also nicely shown. However the resolution of Solis L is not well shown because its position is already close to the evening area. In R, there is also shown a hoarse aspect around Olympus Mons. (Compare this image with the image by DPc on the following 15 April at ω=100°W－003°W.)

**Michael ROSOLINA (MRs)** made a visual observation of Mars at ω=105°W, φ=09°S. The sph is largely drawn with a shadowy perimeter. This is an angle with little pattern so that the ground with ochre colour mainly governs. Near the evening terminator, MRs seems to see "bluish evening clouds".

### 15 April 2018 (λ=159°Ls~160°Ls, δ=9.5"~9.6")

**CFs** gave a good RGB composite at ω=313°W, φ=09°S, but unfortunately all of three ingredient show the poor processing at the morning limb with further poor repercussions. (The images suggest a further northward extension of the sph. The northern district of Syrtis Mj is darker than the other districts which may all be just sandy. S Meridiani is made of two nails. It may be possible to check the Huygens crater in R and IR, and so on.)

**DPc** produced a single RGB composite at ω=097°W, φ=09°S with the collaboration with the Chilescope team. Solis L is largely seen together with Tithonius L. Ophir-Candor is seen light with a whitish haze. Phœnicis L and Arsia Mons are visible side-by-side. A structure of Olympus Mons is checked. The sph is seen large but is not so thick. To its north, the area of Aonius S and Mare Sirenum is

suggested.

**16 April 2018 (λ=160°Ls, δ=9.6"~9.7")**

**CFs** composed an R(IR)GB image at ω=334°W, φ=10°S, and showed it together with three components (＋IR685). In R, the processing at the morning limb looks dubious, but the R(IR)GB image appeals better: S Meridiani is made of the two nails and S Sabæus looks dynamic. Hellas is near the evening terminator, but is never whitish and so the ground must have been in sight. Aram is light, and its northern Thymiamata is a bit reddish. The eastern coast of M Acidalium is reddish light along Oxus. The area around the npc is very whitish. The sph looks pale and is not impressive yet, though it extends to the latitude of 40°S.

**DPc** published an RGB composite and three-colour ingredient images at ω=078°W , φ=10°S by the collaboration with the Chilescope team. Maybe these will belong to the best images before δ=10" this apparition. In R, first of all, Solis Lacus attracts our notice because the way how to bulge looks abnormal. (It reminds us of the case observed in 1986 and 1988). Solis L is connected, via Geryon, with Agathodæmon and the complexed Tithonius L (quite detailed, with several minor spots). It's also rare to see the case where Ophir-Candor looks misty whitish. The description of Juventæ Fons is complete. The detail of Nilokeras is interesting, but this time it's too near the evening terminator. Two more noticeable points: One is the fact that the central area of the sph is quite shadowy. The outer perimeter of the sph looks very complexed in B. The other thing to be noted is a circular spiral cloud around the npc area (explicit in G and B).

**EMr** took R,G,B ingredients at ω=081°W, φ=10°S and composed an RGB image. Time difference from DPc's case is just 10 minutes. The resolution of Solis L and Tithonius L cannot even come close the DPc case, but their existence is identified. Especially the IR685 image gives us definite counter parts. The large circular spiral cloud cannot be identified. The whitish streak at Ophir-Candor is recorded. The contour of the sph looks blurred.

**17 April 2018 (λ=161°Ls, δ=9.8")**

**DPc** put forwards also an excellent image at ω=079°W, φ=10°S made cooperated with the Chilescope team. The southern boundary of Thaumasia to the south of Solis L is clearly shown up. The sph looks to be down until 50°S with a separated whitish faint mist at the southern end of Solis L at 30°S. It is amazing for us to see a real chasm associated with Agathodæmon (two explicit edges of a chasm). The western part of Tithonius L is also detailed. The area of Nectar is not so apparent because its position is near the terminator, while on the morning side, Phasis appears as a series of small spotted point group. Ophir-Candor also looks covered by a whitish veil (in B). Arsia Mons is free from the cloud yet at this LT. The structure of the sph is interesting (all in R , G and B).

**MJs** produced an excellent set of R, G, B ingredients as well as an RGB composite at ω=185°W, φ=10°S. Especially the features of the sph are remarkable in G and B. This season, M Cimmerium first appeared as if made of round slices: Especially the root of the bridge to the Gale crater looks disconnected by the slices at both sides. Elysium is still at the morning side and so Elysium Mons' whitish cloud is just a bit seen (explicit in B) though the ground-lit part is largely reddish light. The area of Trivium Charontis looks to get fatter in a brownish tinge. Both of the Ætheria dark patch and Propontis I are darker though they are still on the morning side. At the northern evening terminator a small light matter is remaining.

### 18 April 2018 (λ=161°Ls~162°Ls, δ=9.8~9.9")

**CFs** made an RGB composite at ω=292°W, φ=10°S. Due to the ill-procedure of the morning limb of the R and G images the RGB image also lower the value, but even then, the Huygens crater is checked, a dark spot at the vanished Deltoton S is evident, and the most southern part of Yaonis Fretum and Hellespontus is largely darker. Hellas shows its ground, while a weak white haze floats.

**DPc** gave next one of the series around Solis L at ω=073°W, φ=10°S. This is just different from DPc's preceding work by 6°. Some details around at Solis L and Tithonius L, but apparently the seeing condition must have been even worse than the previous one.

**Km** gave an L-colour image at ω=202°W where it is suggested the sliced structure of M Cimmerium, but the expression of light and shade looks duller. On the other hand the R image at ω=211°W (made by the stacking of 60,000 frames) gives a more explicit, clearer distribution of such markings as M Cimmerium, Syrtis Minor, the Ætheria dark patch, N Alcyonius (just coming in) and so on: In R, the southern Ausonia is identified, while it's harder to see it on the L-colour.

### 19 April 2018 (λ=162°Ls, δ=9.9")

**CFs**'s work here was given at ω=294°W, ϕ=10°S, just different by 2° from the preceding work (made on 18 April). Still the morning limb procedure is unfavourable, but the covering Hellas by the white cloud (from sph) is interesting. Yaonis Fr looks separated from Hellespontus and their southern parts are quite dark. The Huygens crater is now clearly visible.

**EMr** produced a good set of images at ω=042°W, φ=10°S. Solis L is dark but it does not well separate from the preceding markings (maybe better on R). Tithonius L is nicely described. Ophir is reddish light, and the area from Ganges, via Lunæ L, to Nilokeras is nicely depicted. The sph is thick in B. The northern part of M Acidalium until to the arctic area is a bit misty.

**DPc** gave an RGB composite at ω=051°W, φ=10°S by the collaboration with the Chilescope team, while no explicit details are obtained. It is even dubious whether Juventæ Fons is explicit.

### 20 April 2018 (λ=162°Ls~163°Ls, δ=10.0"~10.1")

**CFs** still wrestled with the ghost around the morning limb, while showed nicer descriptions of the R,G,B disks as well as an IR685 image. The RGB composite is recorded at ω=285°W (01:51GMT), φ=10°S. The ground of Hellas is visible while its southern part is concealed by the sph (which makes a singular shape). In R, Yaonis Fr is clearly described. The Huygens crater is evident.

**DPc** obtained a single RGB composite at ω=041°W, φ=10°S in collaboration with the Chilescope team. The prioritised markings are reproduced but the internal structure is not well definite. The structure of the eastern part of Tithonius Lacus is nicely detailed, and Juventæ Chasma and several spikes from Auroræ Sinus are shown up. The dark markings from Solis Lacus to Mare Erythræum are shown but not detailed. Mare Acidalium is shown widely near the CM but looks duller except for the complicated Nilokeras area. Sinus Meridiani is separated near the evening terminator. The npc is away from the disk, but the arctic

area is full of white hazes.

**Robert HEFFNER** (RHf) was now on stage when δ=10.1". RHf uses a 24 cm SCT equipped with an ASI 224MC colour camera. The image was taken at ω=195°W, φ=10°S. Mare Cimmerium is caught in an interesting shape. The internal part of Hesperia is a bit visible. A part of Ausonia seems to be reddish. On the northern hemisphere, Elysium is quite light. Cerberus and Phlegra show a brownish tint together with the dark Propontis I. The Ætheria dark patch looks also dark-brownish. The sph appears less whitish.

### 21 April 2018 (λ=163°Ls, δ=10.1"~10.2")

**CFs** is still troubled with the ghost at the morning limb. He shot at ω=295°W (03:10 GMT), φ=10°S and obtained a set of the three ingredients and composed an RGB image. Since now δ>10", the area of the Huygens crater appears now more detailed, and the northern district of Syrtis Major is quite rich in shade. The evening mist is shown to cover up until Syrtis Minor. Hellas shows mostly the ground of the basin. The sph comes down to the upper part of Hellas. Yaonis Fr is explicit in R and IR. In IR, the Hellas basin looks a bare blank ground.

**PGc** took three R,G,B ingredients and by using them PGc composed an RGB image at ω=030°W, φ=10°S. In R the area around Solis L is darkest and there are seen the area of Auroræ S and at the further east Oxia P and Margaritifer S are suggested. We note the sph comes down to the direction of Argyre. M Acidalium is present near the CM, but the main body appears faintly.

**MRs** took a drawing of the planet at ω=046°W, φ=10°S. The area around Solis L is darkish, and a part of M Acidalium is visible near the evening terminator. The sph is considerably large.

**MVl** obtained a set of three ingredients (+an IR image) and composed an RGB image at ω=157°W, φ=11°S. The sph is nicely shown, and the author seems to know the way to depict the deserts. In B, there are seen two definite cloud patches near the evening terminator: One must be at Alba, and the other must be a cloud from Tharsis. Near the morning limb the area of Phlegra is faintly caught in a brownish tinge.

**Km** made an L-colour image at ω=170°W, φ=11°S. Seeing 4~6/10, and stacked from 10 minutes -derotation. The description of the area from Trivium Charontis to Phlegra is excellent where Phlegra appears doubled. Propontis I is also detailed. M Cimmerium and other markings on the southern hemisphere look complicated. M Cimmerium looks roundish sliced though with poor resolution, and its northern coast is accompanied by the brownish Valhalla (ι=41°). The sph shows clearly the shadowy area on the other side. Near the evening terminator some remnant white clouds are distributed. The associated R stacked image at ω=181°W looks excellent where M Cimmerium is nicely detailed: The complexity around at the Gale crater is definitely and nicely decomposed. This stacked R image is quite excellent even concerning the area of the sph as well as the description of the Elysium area.

### 22 April 2018 (λ=163°Ls, δ=10.2")

**PGc** obtained an RGB composite at ω=021°W, φ=11°S based on a set of several ingredients including IR685 and IR742 images. The RGB image is mildly finished, while the R and IR images initiatively show the presence of Sinus Meridiani near the evening terminator. The dark markings from Margaritifer S to

Auroræ S further to the area of Solis L are notified. On the northern hemisphere M Acidalium with Nilokeras L largely occupies. The northern limb is a bit misty. The large sph in B is very brighter than those on the IR images.

### 23 April 2018 (λ=164°Ls, δ=10.3")

**CFs** put forwards an RGB composite at ω=270°W, φ=11°S based on the three ingredients (+an IR685 image). Though the morning limb procedure is not complete, the colour nuance differences on the RGB main disk is attractive: The sandy colour covering over the following region of Hellas (bounded by Yaonis Fr) is impressive. Around at the northern part of Syrtis Mj no influence of the sandy region is found. The sph lacks its unity in density and its fine structure inside the sph is very suggestive in the RGB composite. The B image also suggests a dis unity inside the sph. There is recorded a mist band at Libya from the evening terminator. The Huygens crater must now be always explicit.

**PGc** made an RGB composite at ω=012°W, φ=11°S based on several ingredients (including IR685 image). Even in R, an aspect of the sph is definite, and hence the water vapour inside the sph may slightly include minimal ice crystals. Its perimeter does not look uniform. S Meridiani is now caught quite inside. In IR, Auroræ S and its environment look darker. In RGB, the vast desert to the north of S Meridiani looks slightly reddish.

### 24 April 2018 (λ=164°Ls, δ=10.4")

**CFs** made as well an RGB composite at ω=258°W, φ=11°S. On the RGB image, the Hellas basin looks to be covered by a sand dust, but the G and B images also show the trace, the lighter part of the dust may contain a bit of water-vapour. Anyway the basin is governed by the high pressure air so that the dust will never outflow. On the other hand the sph looks in G and B very definite so that it is possible for the cloud to contain a lot of ice forming nuclei. The shadow on the opposite side should be made a bit weaker..

**PGc** obtained an RGB composite based on the ingredients at ω=356°W, φ=11°S. The darkest marking here is Meridiani Sinus with two explicit nails near the CM (most apparent in R). Margaritifer S is also nicely reproduced. Mare Acidalium is shown near the morning limb, decomposed to several pieces with mingled shades. A part of Niliacus L looks like a dark patch (as dark as Oxia Palus). On the other hand, Deucalionis Regio looks slightly reddish as well as Aram. The description of the sph is complexed: Near the south pole the thick cloud looks to swell while the outer cloud looks thinner (see G and B).

### 25 April 2018 (λ=165°Ls, δ=10.5")

**CFs** composed an RGB image at ω=227°W, φ=11°S. This show the moment Syrtis Mj is coming in, but the morning limb ghost line is troublesome. In R and IR685, M Cimmerium is described in a good way: The connection with the Gale crater is nicely described as well as the Hershel crater. Around here to further south, the RGB suggests a vast spread of weak dust. The area of Æolis near the evening terminator is largely governed by a whitish evening cloud (maybe somewhat dusty). The eastern boundary of the Elysium area looks blurred, while the small cloud at Elysium Mons is quite explicit. The perimeter of the sph is not definite but blurred.

**MJs** produced an excellent three colour composite image at ω=134°W, φ=11°S. These images are very precious and important ones. First of all, MJs recorded a very bright peculiar dust disturbance around near Zephyria Tholus. Unfortunately no other chasing observations on was performed on the next day and on the day after next (by ISMO members). According to the MRO-MARCI Weather Report for the week of 23 April 2018 - 29 April 2018, the dust disturbance was also seen from 24 April, it was reproduced brightest on 25 April, and it looked to have dispersed on 27 April. The second beauty of MJs here is his way of describing the sph: Surely the big sph shows a shadowy roundish area around the south pole inside the whole sph, while his sph depicts tightly in all R,G,B ingredients and on the RGB composite the sph keeps a good gradation inside and at the outskirt. Otherwise, the local time was appropriate for Arsia Mons to be shown up with a white cloud covered. Similarly Ascræus Mons, Olympus Mons Alba Patera look out as a whitishspot. It is also possible to check Pavonis Mons in G and B.

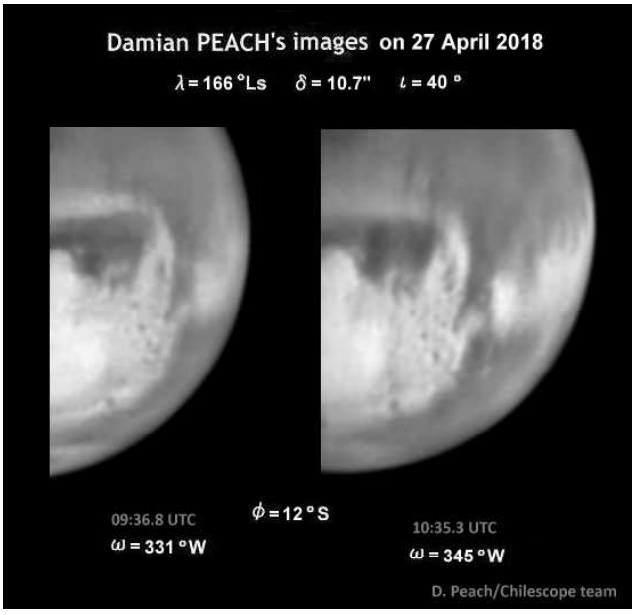
### 26 April 2018 (λ=166°Ls, δ=10.6")

**EMr** obtained an RGB composite at ω=336°W, φ=11°S based on his further work to squeeze three other ingredients (+IR685 image). S Sabæus stays near the CM. The RGB composite is of lower resolution compared with the R and IR. In R, Brangæna is suggested in Aram, while it is utterly invisible in other ingredients. The morning mist looks strong so as to weaken the usual dark markings. This can hold even at the arctic limb side. The sph is not tight yet. But the colour balance of it looks good. Finally note that Deucalionis Regio is slightly reddish.

### 27 April 2018 (λ=166°Ls, δ=10.7")

**CFs** made an RGB composite at ω=227°W, φ=11°S. Unfortunately the explicit ghost at the morning limb blasts out the delicate early morning status of the coming Syrtis Mj. However, the region of Syrtis Mn and the north western end of M Cimmerium are nicely described. The reddish southern Ausonia is perfectly expressed. The area of Elysium is a repetition of its preceding day's aspect. The split of the Ætheria dark patch is evident. Nodus Alcyonius is definite.

**DPc** in a cooperation with Chilescope observatory produced two sets of RGB composites at ω=331°W and at ω=345°W, φ=12°S. The times of two differ by about one hour. The most prominent new feature of the images is that around Thymiamata, to the north of Sinus Meridiani, there are scattered a lot of small real speckles (including Oxus dark segment). Fortunately these RGB images are associated by their original R images, and hence if we wish to concern the speckles we may sufficiently work with the R images. As to the details inside Sinus Meridiani, these images tell us a lot of new facts: for example the western nail encloses another set of nails, and so on. The eastern end of the eastern nail is a frontier. Note also that even Brangæna is not so simple. On the R image at ω=345°W, a set of double canals is shown to go up south-forwardly from the west of the southern end of S Meridiani until beyond Pandoræ Fr (as often observed).



### 28 April 2018 (λ=166°Ls~167°Ls, δ=10.8"~10.9")

**CFs** made an RGB composite at ω=218°W, φ=12°S. The procedure of the morning limb is better than before and it is shown how Syrtis Mj greeted the dawn (quite bluish). The description of M Cimmerium is inferior to the case on the preceding days.

**DPc** published a single RGB composite at ω=298°W, φ=12°S in the cooperation with Chilescope team. Syrtis Mj is nearly totally inside the disk. The image of Syrtis Mj is however not fully calm. The Huygens and Schröter craters are shown though without details. S Meridiani is just separated from the morning limb. There are seen some details around the east end of the Aryn's nails. Hellas looks duller while Yaonis Fr is definite. The sph shows a multiple structures.

**RHf** obtained a colour image by the use of a 224 MC camera at ω=116°W, φ=12°S. The opposite side of the sph is shadowy. Mare Sirenum is nicely described. There is no trace of the dust which was caught on 25 April. The Solis L area is not clear because the area is quite near the evening terminator. More inside Aonius Sinus is shown up. Phœnicis L and Arsia Mons are clearly detected as dark spots. The western part of Tithonius L is recognised. Because the contrast of colour is weak so that it is hard to point out the orographic clouds, while the clouds at Ascræus Mons and others may be caught.

### 29 April 2018 (λ=167°Ls, δ=10.9")

**Yukio MORITA (Mo)** composed an RGB image ω=074°W, φ=12°S based of his R, G, B ingredients. He also obtained an L-image. The telescope he uses is a 36cm SCT equipped with an ASI 290MM camera. As an expression, it gives us a dull-hued impression, but the depiction of the sph is nicely made including the shadowy opposite area. Solis L is seen near the CM though quite roughly. The area of Agathodæmon to the eastern area of Tithonius L is identified. In R, Ophir is light.

### 30 April 2018 (λ=168°Ls, δ=11.0"~11.1")

**CFs** made an RGB composite at ω=198°W, φ=12°S. Though a bug is still associated with the morning limb, while the central region is well surveyed, and especially the area of the Gale crater as well as the Hershel crater is nicely caught in R. It is also interesting to check several spikes from M Cimmerium to the inside of Hesperia. The colour coding of Elysium is also good. The pinkish bright streak along the Ætheria dark patch is quite evident. There is seen a small bright speck near the evening terminator of the southern hemisphere. It's weak in B while explicit in R and hence it must be a small dust disturbance.

**MVl** obtained the tri-colour ingredients and composed an RGB image at ω=062°W, φ=12°S. Otherwise he attached an IR image (Custom Scientific Bessell IR filter). The description of the sph perimeter is beautiful, and the gradation of the sph to the shadowy inside is also nicely performed. Solis Lacus is definite in shape, but is not dense. Tithonius L is also well depicted with the forgoing bright Ophir-Candor streak. Nilokeras is also seen though weak, and the arctic area is whitish. There is a sign for the Tharsis ridges will be apparent soon.

**Km** gave an excellent L-colour image at ω=073°W, φ=12°S. This describes well the shadowy area of the sph as well as the unevenness of the sph perimeter. Solis L is shown largely in shape though it's not

so dark. Tithonius L is also well shown a bit rough, and at its west Phœnicis L and Arsia Mons are well visible side-by-side. Thus the Tharsis ridges can be checked as shadowy spots on the morning side. The area of Auroræ S is also nicely depicted, and the shadowy Ganges and the light Candor parallel downwards beautifully. Lunæ L is a bit brownish, and to its east Nilokeras is definite. The R image at ω=081°W shows the dark markings to be shown with richer shade and light. For example, the inside of Solis L looks more detailed in this R.

**MJs** produced an excellent an RGB composite at ω=078°W, φ=12°S. The sph is described nicely the inside area and the peripheral area as well. Especially the area of the perimeter part is whitish bright. Solis L is mildly treated and its southern neighbourhood is described: Concerning its northern neighbourhood. The description of the area of Agathodæmon and Tithonius L is impressive. The Tharsis ridges are shown as a series of shadowy spots. Nilokeras is also explicit. - - -

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**Forthcoming 2018 Mars (#07)**

# *Ephemeris for the Observations of the 2018 Mars. V*

## *July & August 2018*

**By**

**Masami MURAKAMI**

AS a sequel to the preceding list of the Ephemeris for the physical observations of Mars, we here list up the necessary elements of the Ephemeris for the period from *1 July 2018* to *31 August 2018*. 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 axis rotation, measured eastwards from the north point: This is useful when we try to determine the north pole direction from the *p*←→*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 2018*.

| Date (00:00GMT) | ω | ϕ | λ | δ | ι | *Π* | *D* |
|---|---|---|---|---|---|---|---|
| 01 July 2018 | 301.49°W | 14.30°S | 202.91°Ls | 20.87" | 21.2° | 3.0° | −22°48' |
| 02 July 2018 | 292.42°W | 14.21°S | 203.51°Ls | 21.06" | 20.6° | 3.0° | −22°53' |
| 03 July 2018 | 283.37°W | 14.11°S | 204.12°Ls | 21.24" | 19.9° | 3.1° | −22°58' |
| 04 July 2018 | 274.32°W | 14.02°S | 204.72°Ls | 21.43" | 19.3° | 3.1° | −23°04' |
| 05 July 2018 | 265.29°W | 13.92°S | 205.32°Ls | 21.61" | 18.6° | 3.1° | −23°10' |
| 06 July 2018 | 256.27°W | 13.81°S | 205.92°Ls | 21.78" | 17.9° | 3.2° | −23°15' |
| 07 July 2018 | 247.26°W | 13.71°S | 206.53°Ls | 21.96" | 17.2° | 3.3° | −23°21' |
| 08 July 2018 | 238.27°W | 13.60°S | 207.13°Ls | 22.13" | 16.5° | 3.3° | −23°27' |
| 09 July 2018 | 229.28°W | 13.49°S | 207.73°Ls | 22.30" | 15.8° | 3.4° | −23°34' |
| 10 July 2018 | 220.31°W | 13.37°S | 208.34°Ls | 22.46" | 15.1° | 3.5° | −23°40' |
| 11 July 2018 | 211.35°W | 13.26°S | 208.95°Ls | 22.60" | 14.4° | 3.6° | −23°46' |
| 12 July 2018 | 202.39°W | 13.14°S | 209.55°Ls | 22.77" | 13.6° | 3.7° | −23°53' |
| 13 July 2018 | 193.45°W | 13.02°S | 210.16°Ls | 22.92" | 12.9° | 3.8° | −24°00' |

| Date (00:00GMT) | ω | ϕ | λ | δ | ι | Π | D |
|---|---|---|---|---|---|---|---|
| 14 July 2018 | 184.52°W | 12.90°S | 210.77°Ls | 23.05" | 12.2° | 3.9° | −24°06' |
| 15 July 2018 | 175.59°W | 12.77°S | 211.38°Ls | 23.18" | 11.4° | 4.1° | −24°13' |
| 16 July 2018 | 166.68°W | 12.65°S | 211.99°Ls | 23.31" | 10.7° | 4.2° | −24°19' |
| 17 July 2018 | 157.77°W | 12.52°S | 212.60°Ls | 23.44" | 9.9° | 4.3° | −24°26' |
| 18 July 2018 | 148.87°W | 12.39°S | 213.21°Ls | 23.55" | 9.2° | 4.4° | −24°33' |
| 19 July 2018 | 139.98°W | 12.26°S | 213.83°Ls | 23.65" | 8.5° | 4.6° | −24°39' |
| 20 July 2018 | 131.10°W | 12.13°S | 214.44°Ls | 23.76" | 7.8° | 4.7° | −24°46' |
| 21 July 2018 | 122.22°W | 12.00°S | 215.05°Ls | 23.86" | 7.1° | 4.9° | −24°52' |
| 22 July 2018 | 113.34°W | 11.88°S | 215.67°Ls | 23.94" | 6.5° | 5.0° | −24°59' |
| 23 July 2018 | 104.47°W | 11.75°S | 216.28°Ls | 24.02" | 5.9° | 5.2° | −25°05' |
| 24 July 2018 | 095.61°W | 11.63°S | 216.90°Ls | 24.09" | 5.4° | 5.4° | −25°11' |
| 25 July 2018 | 086.74°W | 11.50°S | 217.51°Ls | 24.15" | 5.0° | 5.5° | −25°17' |
| 26 July 2018 | 077.88°W | 11.38°S | 218.13°Ls | 24.20" | 4.8° | 5.7° | −25°23' |
| 27 July 2018 | 069.03°W | 11.26°S | 218.75°Ls | 24.24" | 4.7° | 5.9° | −25°29' |
| 28 July 2018 | 060.17°W | 11.14°S | 219.36°Ls | 24.28" | 4.8° | 6.0° | −25°34' |
| 29 July 2018 | 051.31°W | 11.02°S | 219.98°Ls | 24.30" | 5.0° | 6.2° | −25°39' |
| 30 July 2018 | 042.46°W | 10.91°S | 220.60°Ls | 24.32" | 5.3° | 6.4° | −25°45' |
| 31 July 2018 | 033.60°W | 10.80°S | 221.23°Ls | **24.33**" | 5.9° | 6.6° | −25°49' |
| 01 August 2018 | 024.74°W | 10.69°S | 221.85°Ls | **24.33**" | 6.4° | 6.7° | −25°54' |
| 02 August 2018 | 015.89°W | 10.58°S | 222.47°Ls | 24.32" | 7.0° | 6.9° | −25°58' |
| 03 August 2018 | 007.02°W | 10.49°S | 223.09°Ls | 24.28" | 7.7° | 7.1° | −26°03' |
| 04 August 2018 | 358.16°W | 10.40°S | 223.72°Ls | 24.25" | 8.5° | 7.2° | −26°06' |
| 05 August 2018 | 349.29°W | 10.30°S | 224.34°Ls | 24.22" | 9.2° | 7.4° | −26°10' |
| 06 August 2018 | 340.42°W | 10.21°S | 224.96°Ls | 24.19" | 9.9° | 7.6° | −26°13' |
| 07 August 2018 | 331.54°W | 10.14°S | 225.58°Ls | 24.12" | 10.7° | 7.8° | −26°16' |
| 08 August 2018 | 322.65°W | 10.06°S | 226.21°Ls | 24.05" | 11.4° | 8.0° | −26°19' |
| 09 August 2018 | 313.76°W | 09.99°S | 226.83°Ls | 23.99" | 12.2° | 8.2° | −26°21' |
| 10 August 2018 | 304.86°W | 09.91°S | 227.45°Ls | 23.92" | 12.9° | 8.3° | −26°24' |
| 11 August 2018 | 295.96°W | 09.86°S | 228.08°Ls | 23.83" | 13.7° | 8.4° | −26°25' |
| 12 August 2018 | 287.04°W | 09.81°S | 228.71°Ls | 23.73" | 14.5° | 8.5° | −26°27' |
| 13 August 2018 | 278.12°W | 09.76°S | 229.33°Ls | 23.64" | 15.2° | 8.6° | −26°28' |
| 14 August 2018 | 269.19°W | 09.71°S | 229.96°Ls | 23.54" | 16.0° | 8.7° | −26°29' |
| 15 August 2018 | 260.25°W | 09.68°S | 230.59°Ls | 23.42" | 16.8° | 8.8° | −26°30' |
| 16 August 2018 | 251.29°W | 09.66°S | 231.22°Ls | 23.30" | 17.5° | 8.9° | −26°30' |
| 17 August 2018 | 242.33°W | 09.63°S | 231.84°Ls | 23.18" | 18.3° | 9.0° | −26°30' |
| 18 August 2018 | 233.36°W | 09.60°S | 232.47°Ls | 23.06" | 19.0° | 9.1° | −26°30' |
| 19 August 2018 | 224.37°W | 09.60°S | 233.10°Ls | 22.92" | 19.7° | 9.2° | −26°29' |
| 20 August 2018 | 215.37°W | 09.60°S | 233.73°Ls | 22.78" | 20.4° | 9.2° | −26°28' |
| 21 August 2018 | 206.37°W | 09.60°S | 234.36°Ls | 22.63" | 21.1° | 9.3° | −26°27' |
| 22 August 2018 | 197.34°W | 09.60°S | 234.99°Ls | 22.49" | 21.8° | 9.4° | −26°25' |
| 23 August 2018 | 188.31°W | 09.63°S | 235.62°Ls | 22.34" | 22.5° | 9.4° | −26°24' |
| 24 August 2018 | 179.27°W | 09.65°S | 236.26°Ls | 22.18" | 23.2° | 9.4° | −26°22' |
| 25 August 2018 | 170.21°W | 09.68°S | 236.89°Ls | 22.03" | 23.8° | 9.5° | −26°20' |
| 26 August 2018 | 161.14°W | 09.70°S | 237.52°Ls | 21.87" | 24.5° | 9.5° | −26°17' |
| 27 August 2018 | 152.06°W | 09.75°S | 238.15°Ls | 21.70" | 25.1° | 9.5° | −26°14' |
| 28 August 2018 | 142.96°W | 09.80°S | 238.79°Ls | 21.54" | 25.7° | 9.5° | −26°11' |
| 29 August 2018 | 133.86°W | 09.85°S | 239.42°Ls | 21.37" | 26.3° | 9.5° | −26°08' |
| 30 August 2018 | 124.74°W | 09.90°S | 240.05°Ls | 21.20" | 26.9° | 9.5° | −26°05' |
| 31 August 2018 | 115.61°W | 09.98°S | 240.68°Ls | 21.03" | 27.5° | 9.5° | −26°01' |
| 01 Sept. 2018 | 106.46°W | 10.05°S | 241.32°Ls | 20.86" | 28.0° | 9.5° | −25°57' |

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# Letters to the Editor

●·····***Subject: Mars 15 April 2018 0032UT RGB and IR***
***Received: 16 April 2018 at 02:24 JST***

Hi all, Despite Meteoblue projecting very poor seeing conditions, I was up a bit earlier to try and catch the polar storm on Saturn, so Mars was at a lower altitude for these captures. Some cloud and two dark spots appear to be in Hellas, although it also appears that there is a section of the basin that is clear of ice/cloud. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180415/CFs15Apr18.png

○····***Subject: Mars 16 April 2018 0235UT RGB and IR***
***Received: 16 April 2018 at 12:49 JST***

Hi all, Conditions were very poor this morning and I just managed to catch one, cloud affected, set of R, G, B and IR data before the clouds closed over totally. The R data was very poor, so I combined the R and IR data to produce a R(IR)GB image, so it is not a "true" RGB. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180416/CFs16Apr18.png

○····***Subject: Mars 18 April 2018 0100UT RGB and IR***
***Received: 18 April 2018 at 19:37 JST***

Hi all, Mars this morning. Hellas appears to be clearing, with some remaining cloud or ice towards the S/SE region. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180418/CFs18Apr18.png

○····***Subject: Mars 19 April 2018 0151UT RGB and IR***
***Received: 20 April 2018 at 02:24 JST***

Hi all, Mars this morning. Quite a bit of structure in the southern clouds. I also note some late afternoon cloud between Syrtis Major and Mare Tyrrenhum. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180419/CFs19Apr18.png

○····***Subject: Mars 20 April 2018 0150UT RGB and IR***
***Received: 20 April 2018 at 23:12 JST***

Hi all, Mars image set from this morning, with Mars now at 10". I note the bright orange region at the NW(lower right) corner of Hellas, as well as possible mixed cloud in the south(top) of Hellas, which contrasts with the pure blue-white of the other clouds. Best regards, Clyde

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180420/CFs20Apr18.png

○····***Subject: Mars 21 April 2018 0310UT RGB and IR***
***Received: 21 April 2018 at 16:53 JST***

Hi all, Mars this morning. Despite the irritating edge artefact that is most prominent in IR and R wavelengths, it is fascinating and rewarding to monitor the daily changes taking place on Mars, not least of all in the Hellas basin, where there has been notable changes in the last few days. The late afternoon cloud is more prominent today. If I get regular conditions like this(not guaranteed!), there should be no difficulty in detecting any significant dust activity in the coming months. We wait patiently with expectation! Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180421/CFs21Apr18.png

○····***Subject: Mars 23 April 2018 0246UT RGB and IR***
***Received: 23 April 2018 at 20:21 JST***

Hi all, Mars this morning. I note a couple of brighter spots in Hellas. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180423/CFs23Apr18.png

○····***Subject: Mars 24 April 2018 0237UT RGB and IR***
***Received: 25 April 2018 at 00:41 JST***

Hi all, Mars image set from this morning. Interesting to note the very dark red colouring of the Ausonia/Borbyses region. Regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180424/CFs24Apr18.png

○····***Subject: Mars 25 April 2018 0110UT RGB and IR***
***Received: 28 April 2018 at 02:46 JST***

Hi all, Mars image set from 25 April. The Gale crater "antenna" is clearly seen. The bright western slopes of Elysium are also quite bright. I am wondering if it is the SPC visible in the R and IR images Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180425/CFs25Apr18.png

○····***Subject: Mars 28 April 2018 0230UT RGB and IR***
***Received: 28 April 2018 at 18:33 JST***

Hi all, Mars this morning. Interesting how the different planets seem to respond to atmospheric seeing conditions. I was up 4.00am for my second session of the night to catch Saturn and Mars. The first session was just after midnight for Jupiter. Saturn was so badly affected by the atrocious seeing that I don't think I will get anything significant out, and I

was tempted to close up and go back to bed. However, despite these conditions, I was able to squeeze the attached image set out for Mars. It seems that Mars handles the bad seeing better than Saturn, unless there was a sudden improvement in conditions(possible). Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180428/CFs28Apr18.png

○····***Subject: Mars 27 April 2018 0230UT RGB and IR***
***Received: 29 April 2018 at 00:04 JST***

Hi all, Quickly catching up on my captures from 27 April. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180427/CFs27Apr18.png

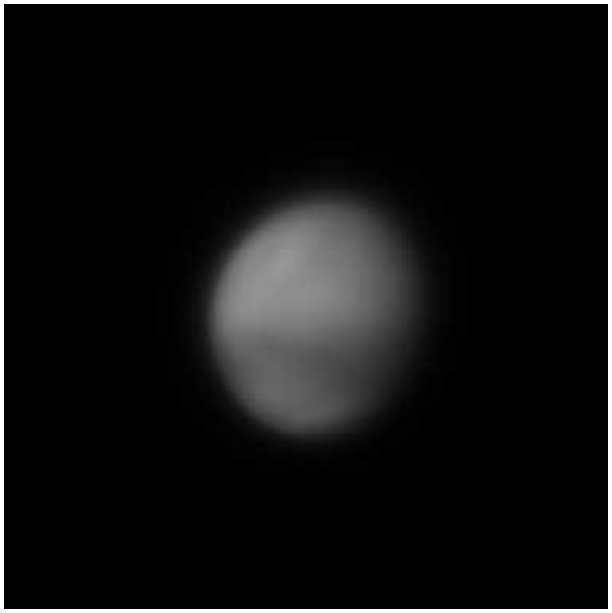
○····***Subject: Mars 30 April 2018 0227UT RGB and IR***
***Received: 30 April 2018 at 16:41 JST***

Hi all, Mars image set from this morning. Olympus Mons just appearing on the evening terminator. What is maybe more interesting is that the south polar region is starting to catch a bit of sunlight. There also appears to be some structure at the northern edge of the SPH/SPC. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180430/CFs30Apr18.png

○····***Subject: Re: Mars 30 April 2018 0227UT RGB and***
***Received: 1 May 2018 at 02:52 JST***

Thanks, Roger
I have had a bit of a scan through the original R frames, but it is very difficult to pick up any individual frames that would be of sufficient quality to



see the possible shadow of OM.

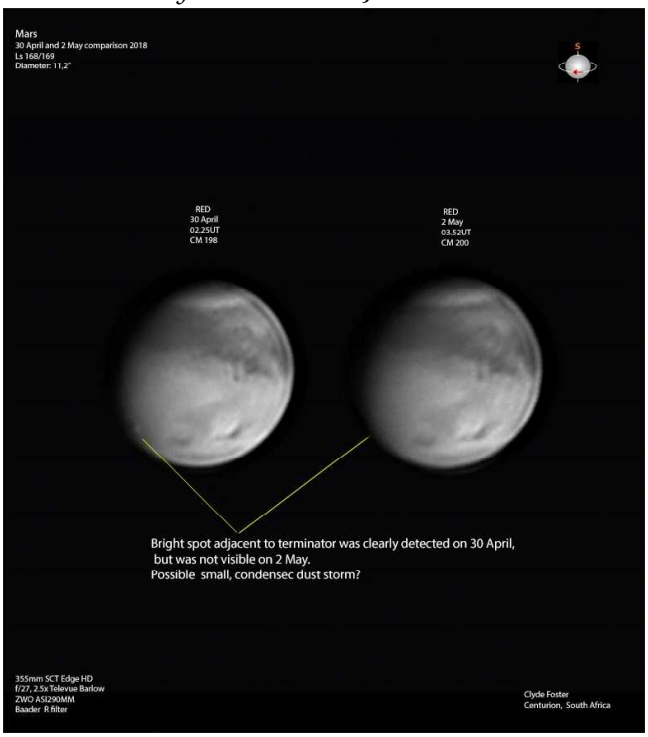
I attach the AS3! output file (before any wavelet processing) of 2500 frames stacked from 9064 aptured frames.

I have included Damian, Anthony and Chris (Martin is already included), just in case they may want to try and process the image with their more advanced capabilities and skills. The issue is whether we are able to confirm that the shadow of Olympus Mons (upper right, almost on the terminator) is detected in the R image(aligned and stacked AS3! Output file) attached. I appreciate any input or assistance. Best regards,

○····***Subject: Re: Mars 30 April 2018 0227UT RGB and***
***Received: 1 May 2018 at 03:25 JST***

Hi all, Hmmm... could be an embarrassing point for me. I have checked the co-ordinates of the bright spot adjacent to the terminator and measure it at approximate Long 150 and lat +30. If this is correct, the spot is too far north and west to be Olympus Mons(which was the obvious first choice), which is approx Long 130 and Lat +19. The question is then, what is the spot? From the maps I have, I don't see anything of significance at that location? It is visible in the IR, R and G images.
Maybe I am making a mistake somewhere. Comments or input are welcomed.
Best regards,

○····***Subject: RE: Mars 30 April 2018 0227UT RGB and IR***
***Received: 2 May 2018 at 17:39 JST***



Hi Roger, all, Just to try and solve the mystery of the terminator bright spot from 30 April, which I had initially incorrectly identified as OM, I waited for the same CM this morning. I found no trace of any feature, as per attached comparison images. The spot was brightest in red on the 30 Apr, although was also detectable in IR and G, but not blue. As Roger suggested, possibly a small, condensed spot of dust activity?

Best regards,

○····***Subject: Mars 2 May 2018 0130UT RGB and IR***
***Received: 2 May 2018 at 19:22 JST***

Hi all, Mars image set from this morning. Olympus Mons at lower left (I am sure this time!)

Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180502/CFs02May18.png

○····***Subject: Mars 3 May 2018 0209UT RGB and IR***
***Received: 4 May 2018 at 14:52 JST***

Hi all, Mars image set from 3 May. Pity about the edge artefact, but submitting for the record. OM nicely see, and apparently cloudless. I believe it would be Arsia Mons that is coming into view on the terminator with afternoon cloud visible.

Best regards,

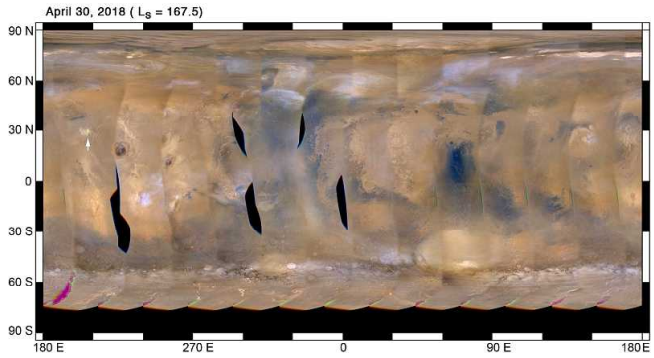
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180503/CFs03May18.png

○····***Subject: Small dust storm in northern Amazonis Planitia-30 April 2018***
***Received: 5 May 2018 at 04:50 JST***

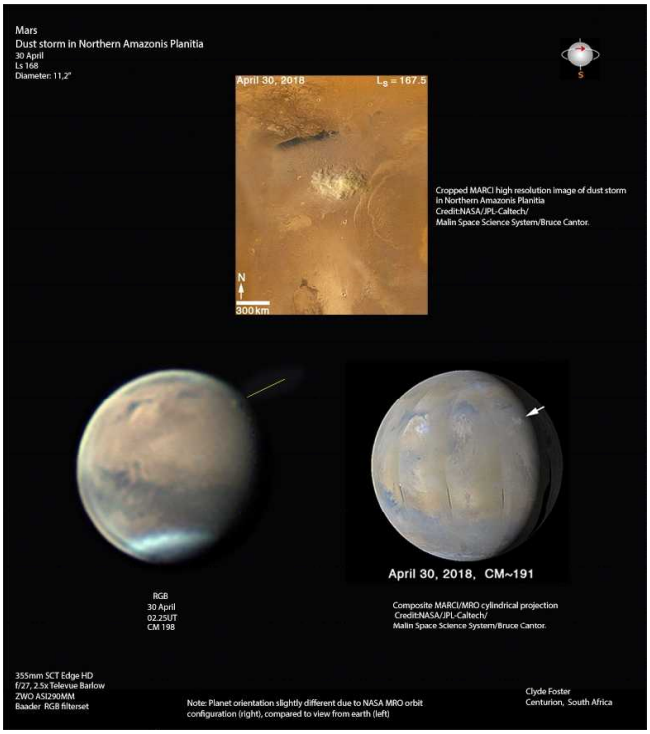
Hi all, As some of you may have seen in recent communications, I have been somewhat intrigued by a small, bright feature, adjacent to the terminator, in the northern Amazonis Planitia region, that I imaged on 30 April. I had initially thought it was the summit of Olympus Mons, as there are no other significant features in the vicinity. However, on detailed checking of the co-ordinates (approx. Lat +30, Long 150), it was clear that it was, although close by, not the giant volcano. The feature was brightest in R, and just detected in IR and G, but not in B, which, following some online discussion, pointed to a possible small dust event. On capturing a "duplicate" image on 2 May, no feature was detectable, which also seemed to strengthen the view that the original bright spot may have been a local, condensed, transient dust storm.

I had been privileged to meet Dr Michael Ravine of Malin Space Science Systems(MSSS) at EPSC 2017 in Latvia, and I had mentioned to him how much I appreciated the weekly online reports (http://www.msss.com/msss_images/latest_weather.html) from the MARCI imaging system onboard the NASA Mars Reconnaissance Orbiter(MRO), which has been in orbit around Mars since March 2006. MSSS are responsible for, amongst others, the MARCI imager, and the management, download and processing of imagery from the instrument on behalf of NASA.

Out of interest, I forwarded a copy of my images to him, and was pleasantly surprised to get a response from one of his co-workers, Dr Bruce Cantor, who is the MSSS inhouse Mars atmospheric Scientist and deputy principle Investigator for the MARCI instrument onboard the MRO.




Dr Cantor very kindly forwarded me a global, simple cylindrically projected MARCI/MRO map of Mars from 30 April, and to my amazement and delight, it clearly showed a bright, condensed, dust storm exactly in the location that I had imaged the bright spot (the storm is the one at far left on the Map, with Olympus Mons just to the lower right of it). He subsequently sent me a MARCI composite Mars image, which I have compared directly with my own image. Unlike normally, I have put my image with north at top, to allow the comparison. Planetary orientation of the two images is slightly different due to the orbital configuration of the MRO.




Further, he very kindly sent me an amazing, high resolution (1 km/pixel), cropped MARCI/MRO image of the storm.


Some details regarding the storm (with thanks to Dr Cantor and referring to the high resolution MARCI/MRO image): "The Storm covers an area of approximately 154,000 km^2. For reference, the bright spot in the centre of the storm is at 29.9 N, 153.2 W , north is up and west longitude increasing from right to left across the projection. The top of the image is Arcadia Planitia and Olympus Mons is on the far right. The bright spots just to the north and northwest of the storm (south of the large dark albedo feature, Euxinus Lacus) are the large Amazonis dust devils that are typically observed during the northern summer season."

As far as my own image is concerned, if the storm had been in full sunlight, a short while earlier, it would very likely have made it significantly more difficult to detect due to reduced contrast. Similarly, a short while later, it would have rotated into darkness, so the timing of my image of the 30 April, appears to have been just perfect- an amazing co-incidence.

My sincere appreciation to Dr Michael Ravine and Dr Bruce Cantor of MSSS for the interaction on this issue, and giving permission for me to share the above information. All images other than my own, are credited to Bruce Cantor (MSSS):

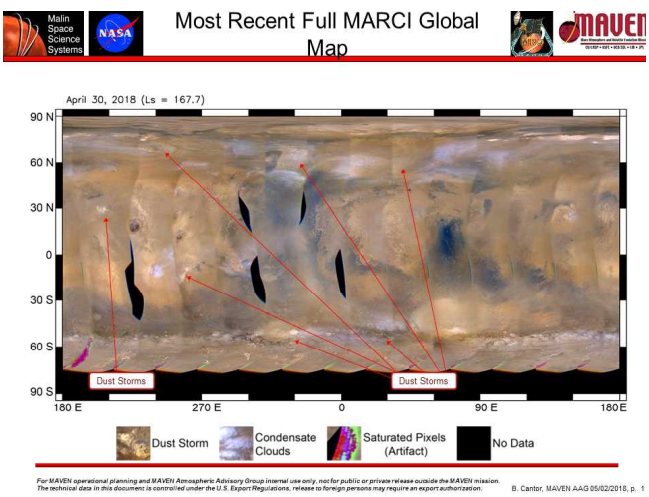
NASA/JPL-Caltech/MSSS. Best regards,

○····***Subject: Small dust storm in Amazonis/... Planitia -30 April 2018***

***Received: 5 May 2018 at 15:08 JST***

Hi Roger, all, Dr Cantor originally sent me a more comprehensively annotated map (attached) from the 30th April which he also gave me permission to share, and which indicated quite a number of, localised dust storms across the planet.

Image credit: Bruce Cantor (MSSS): NASA/JPL-




Caltech/Malin Space Science Systems. Best,

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

●·····***Subject: Mars images***
***Received: 16 April 2018 at 14:44 JST***

Dear Sirs, Please find attached a Mars image set from the 7th April 2018. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180407/MJs07Apr18.png

○····***Subject: Mars images***
***Received: 19 April 2018 at 09:47 JST***

Dear Sirs, Please find attached a Mars image set from the 17th April 2018. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180417/MJs17Apr18.png

○····***Subject: Mars images***
***Received: 26 April 2018 at 20:57 JST***

Dear Sirs, Please find attached a Mars image set from the 25th April 2018. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180425/MJs25Apr18.png

○····***Subject: Mars images***
***Received: 4 May 2018 at 11:25 JST***

Dear Sirs, Please find attached a Mars image set from the 30th April 2018. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180430/MJs30Apr18.png

○····***Subject: Mars images***
***Received: 15 May 2018 at 21:13 JST***

Dear Sirs, Please find attached a Mars image set from the 8th May 2018. Note that I have replaced my Edmund RGB filters and IR block combination with Baader RGB filters which don't require an IR block. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180508/MJs08May18.png

**Mark JUSTICE** (Melbourne, AUSTRALIA)

●·····***Subject: Mars Sketch 14 April 2018***
***Received: 16 April 2018 at 20:26 JST***

Sirs, Please accept the attached sketch -- my first of the current apparition. I was fortunate to have good seeing -- Mars stays pretty low for me at my latitude of 38°N. Best regards,

Here are the details:
35cm SCT f/11 @326x IL S: 7-8/10 P T: 4/6
CM: 105° Ls: 159° De: -9.1° Dia: 9.5" Alt: 28°

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180414/MRs14Apr18.png

○····***Subject: Mars Sketch 21 April 2018***
***Received: 28 April 2018 at 22:44 JST***

Sirs: Please find attached my sketch of 21 April 2018. I made the sketch so close to local sunrise that I didn't need to use a light. Seeing is often better at that time.

Details: 35cm SCT f/11 @326x Filters: W23A & IL
S: 6/10 P T: 5/6 Alt: 29°
CM: 46.4° Ls: 163° De: -10.4° Dia: 10.1"

Notes: Mare Erythraeum appears large and dark. Argyre bright to the south. Mare Acidalium appears dull on p. limb. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180421/MRs21Apr18.png

○····***Subject: Mars Sketch 2 May 2018***
***Received: 4 May 2018 at 04:38 JST***

Sirs, Please find attached my 3rd sketch of Mars for the current apparition. The eyepiece view of the tiny planet reminded me very much of one of the first Mars sketches done by Christiaan Huygens.

Details:

35cm SCT f/11 @ 326x & 230x Filters: W21, 23A, & IL
S: 5-6/10 P T: 5/6 Alt: 29°
CM: 295° Ls: 169° De: -12.1° Dia: 11.2"

Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180502/MRs02May18.png

**Michael ROSOLINA** (WV, theUSA)
Twin Sugars Observatory

●·····***Subject: Mars 2018/04/18-Kumamori***
***Received: 19 April 2018 at 19:00 JST***

Dear Masatsugu MINAMI: It was fine after a long time. The seeing condition was unstable, but the R image was rather successful. Best wishes.

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180418/Km18Apr18.png

○····***Subject: Mars 2018/04/21-Kumamori***
***Received: 23 April 2018 at 22:41 JST***

Dear, MINAMI: The fine weather continues so that the seeing condition has been tolerable. The apparent diameter reached 10″, and so we shall not resize the images henceforwards.

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180421/Km21Apr18.png

○····***Subject: Mars 2018/04/30-Kumamori***
***Received: 1 May 2018 at 20:49 JST***

Dear MINAMI: After a long interval, we were able to capture a set of decent images. I would say I would desire always this kind of seeing condition. Best wishes.

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180430/Km30Apr18.png

○····***Subject: Mars 2018/05/05-Kumamori***
***Received: 7 May 2018 at 21:13 JST***

Dear MINAMI: When I turned to take the R image,

the seeing a bit improved, and the R image was successful: Especially some complex layers of the sph were clearly shot. Best Wishes.

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180505/Km05May18.png

○····***Subject: Mars 2018/05/10-Kumamori***
***Received: 11 May 2018 at 20:09 JST***

Dear MINAMI: It was very fine. It was very cold (out of season), but the condition was rather preferable. Best Wishes.

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180510/Km10May18.png

○····***Subject: Mars 2018/05/14-Kumamori***
***Received: 15 May 2018 at 17:10 JST***

Dear MINAMI: Day times, the temperature was over 25°C while it was colder at dawn around 15°C. The δ increased and the seeing condition further improved than before.

Best Wishes.

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180514/Km14May18.png

**Teruaki KUMAMORI** (Osaka, JAPAN)

●·····***Subject: Mars good seeing (April 17th.)***
***Received: 20 April 2018 at 02:00 JST***

Hi all, Good seeing for a time on the 17th. A lovely view of the eye of Mars (Solis Lacus.) Lots of clouds across the planet. Best Wishes

http://www.damianpeach.com/mars2018/m2018_04_17dp.jpg
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180417/DPc17Apr18.png

○····***Subject: Mars images (March 29th.)***
***Received: 22 April 2018 at 04:46 JST***

Hi all, Working through a backlog of data. Very poor seeing on the 29th. Syrtis Major/Elysium on view. Best Wishes

http://www.damianpeach.com/mars2018/m2018_03_29dp.jpg
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180329/DPc29Mar18.png

○····***Subject: Mars images (April 1st.)***
***Received: 27 April 2018 at 06:22 JST***

Hi all Average seeing. Elysium is orographic cloud is very bright. Also note the deeply coloured reddish patch in the southern hemisphere.

Best Wishes

http://www.damianpeach.com/mars2018/m2018_04_01dp.jpg
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180401/DPc01Apr18.png

○····***Subject: Mars images (April 4th.)***
***Received: 2 May 2018 at 03:28 JST***

Hi all, Here is an image from April 4th. Average seeing. Best Wishes

http://www.damianpeach.com/mars2018/m2018_04_04dp.jpg
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180404/DPc04Apr18.png

○····***Subject: Mars images (April 5th.)***
***Received: 2 May 2018 at 06:16 JST***

Hi all, Some moments of decent seeing. A good view of Elysium and Mare Cimmerium.

Best Wishes

http://www.damianpeach.com/mars2018/m2018_04_05dp.jpg
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180405/DPc05Apr18.png

○····***Subject: Mars images (April 15th.)***
***Received: 16 May 2018 at 01:19 JST***

Hi all, Catching up on some unprocessed data. Here is Mars on April 15th under very poor seeing. Best Wishes

http://www.damianpeach.com/mars2018/m2018_04_15dp.jpg
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180415/DPc15Apr18.png

**Damian PEACH** (Selsey, WS, the UK)
Web: http://www.damianpeach.com/

●·····***Subject: Mars 21st April 2018 UT***
***Received: 22 April 2018 at 15:55 JST***

Hello, Attached is an image set of Mars taken on the 21st April 2018 UT as marked. Seeing was quite good but transparency was very poor due to fog which seemed to lower contrast significantly.

Best wishes

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180421/MVl21Apr18.png

○····***Subject: Mars 30th April 2018 UT***
***Received: 1 May 2018 at 20:06 JST***

Hello all, Attached is an image set of Mars taken this morning in good seeing but with poor transparency due to fog. Best wishes

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180430/MVl30Apr18.png

○····***Subject: Mars 4th May UT***
***Received: 5 May 2018 at 15:18 JST***

Hello all, attached is an image set of Mars taken on the 4th May 2018. Seeing was poor and imaging was interrupted with passing clouds, but I managed to salvage 10% of the data to produce an image.

Best wishes

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180504/MVl04May18.png

○····***Subject: Mars 8th May 2018 UT***
***Received: 9 May 2018 at 20:23 JST***

Hello all, Here are two image sets of Mars taken

this morning in fair to good seeing. Hellas looks dusty on the evening terminator and this aspect of Mars generally appears somewhat hazy. Syrtis blue evening cloud is just visible. Best Wishes

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180508/MVl08May18.png

**Maurice VALIMBERTI**
(Melbourne, AUSTRALIA)

●·····*Subject: Trump's short-sighted mistreatment of Japan*
*Received: 20 April 2018 at 10:01 JST*

https://www.ft.com/content/3dd4773a-42f6-11e8-93cf-67ac3a6482fd?segmentId=7ac5b61e-8d73-f906-98c6-68ac3b9ee271

**Trump's short-sighted mistreatment of Japan**

Failure to support an indispensable ally will have consequences

Potter yesterday

Shinzo Abe, prime minister of Japan, with his wife Akie at Mar-a-Lago with Donald Trump, US president, and Melania, first lady ? AFP

If Donald Trump's intention was to inflict maximum humiliation on Japanese Prime Minister Shinzo Abe, he could not have done a better job than his after-dinner tweet from Mar-a-Lago on Tuesday.

Having dined with Mr Abe, the US president fired off a tweet reversing last week's announcement that he was considering rejoining the Trans-Pacific Partnership trade agreement (he had pulled the US out of TPP, with fanfare, on his first day in office).

"While Japan and South Korea would like us to go back into TPP, I don't like the deal for the United States ?.?.?.? Bilateral deals are far more efficient, profitable and better for OUR workers," Mr Trump wrote.

Mr Abe had presented himself as a Trump whisperer who could explain the benefits of the pact and maybe even convince the US to sign back up. Mr Trump's turnabout is just the latest wound he has inflicted on Mr Abe.

Japan is the only major ally that has not been granted an exemption from US steel and aluminium tariffs that were ostensibly aimed at China. Another example was Mr Trump's sudden decision to meet North Korean dictator Kim Jong Un, which caught Tokyo by surprise and left Mr Abe scrambling to remind Washington of Japan's proximity to Pyongyang and its missiles.

In a public appearance with Mr Abe on Tuesday, Mr Trump repeatedly heaped praise on Chinese President Xi Jinping, whom he described as "a very special person to me". His affection for Mr Abe was much more restrained.

This undiplomatic treatment from Japan's most important ally could not come at a worse time for Mr Abe, who is polling at his lowest level since coming to office and struggling to shake off a string of domestic political scandals. Even some luminaries within his own party have suggested he may have to step down this year if his poll numbers do not improve.

The damage will be offset somewhat by Mr Trump's promise to press Pyongyang on its abduction of Japanese citizens, a highly emotional issue in Japan. But there will be few people left in Japan who still believe Mr Abe's boast of special influence over the American president.

Partly as a result of disillusionment with the US, Japan is cautiously cultivating better relations with America's strategic rivals. Mr Abe's visit to Florida comes immediately after China's foreign minister toured Japan, the first such visit in almost a decade. Mr Abe is also scheduled to call on Russian President Vladimir Putin next month.

Japan has been conspicuously absent from the roster of countries condemning Moscow for the Salisbury poisoning of a former Russian spy and for the chemical weapons attacks in Syria.

Tokyo is well aware that Beijing would like to drive a wedge into the US-Japan alliance and will be careful not to fall into that trap. But the more Mr Trump seems obsessed with the trade battles of the 1980s the harder it is for Japan to resist a hedging strategy that pulls it closer into China's orbit.

Mr Abe remains a China hawk but, if his domestic

position erodes further, he could be out of office by the end of the year. His replacement may be more inclined to cozy up to Beijing.

For Japan, Russia and China are not alternatives to the US. But the more Tokyo hedges the less likely it will be to stand behind Washington in its future disagreements with those countries.

It is possible that Mr Trump is oblivious to the damage he is doing to the relationship with one of the staunchest US allies, and to America's standing in the Pacific. If so, one of his advisers needs to stand up and explain the danger, in very plain terms.

Sent from my iPhone

**Bill SHEEHAN** (Flagstaff, AZ)

○····*Subject: Mars - April 26th*
*Received: 30 April 2018 at 02:44 JST*

Hi Mr. Minami and All!, My session from April 26th, 09:17ut.

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180426/EMr26Apr18.png

**Efrain MORALES RIVERA**
(Aguadilla, Puerto Rico)

●·····*Subject: Re: 25 April 2018 0110UT RGB and IR*
*Received: 28 April 2018 at 02:57 JST*

Yes, Clyde, I think that it is the SPC that has become visible in the last week, as the SPH thins.
I first noticed it in Damian's remarkable image of April 17th, in which its appearance is unambiguous.

○····*Subject: Re: Mars 30 April 2018 0227UT RGB and*
*Received: 1 May 2018 at 00:51 JST*

Great shot, Clyde. It looks as though the shadow of O.M. is visible. The problem with this possibility is that processing with wavelets can artefactually enhance the area to the east of the bright spot. Please check your images, especially the red one, before wavelet processing, and see whether this shadow is present. (Shadows of the volcanos are rarely imaged from Terra Firma.)

○····*Subject: Re: Mars 30 April 2018 0227UT RGB and IR*
*Received: 1 May 2018 at 04:02 JST*

Let's see if it's still there tomorrow, and whether it has moved if still present. Dust?

○····*Subject: Re: Small dust storm in northern Amazonis Planitia-30 April 2018*
*Received: 5 May 2018 at 05:04 JST*

Thanks, Clyde. That's a pretty exciting image you made. The pros tell us that there are about 1000 dust storms per Martian year detected by spacecraft images, mostly small ones near the edge of the polar caps. We amateurs pick up about 6.

**Roger VENABLE** (Chester, GA )

●·····*Subject: April 2018 Mars Images*
*Received: 30 April 2018 at 10:51 JST*

Gentlemen, Attached are my Mars images from April. Seeing was very good on April 24.
Seeing was poor for all other sessions. Mars is at a very low elevation of 26 degrees at my location.
Capturing good images of Mars this season will be very challenging. Regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180424/PGc24Apr18.png
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180423/PGc23Apr18.png
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180422/PGc22Apr18.png
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180421/PGc21Apr18.png
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180414/PGc14Apr18.png

○····*Subject: Mars image - May 2, 2018*
*Received: 5 May 2018 at 23:09 JST*

Gentlemen, Here is a set of images from May 2.
Seeing was poor, which is evident especially in the blue image. The low elevation of 26 degrees adds to the poor quality. Regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180502/PGc02May18.png

○····*Subject: Mars image - May 8, 2018*
*Received: 12 May 2018 at 12:39 JST*

Gentlemen, Here is a set of Mars images from May 8. Seeing was better than average. Regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180508/PGc08May18.png

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

●·····*Subject: Mars images from April 20 and April 28 UT*
*Received: 2 May 2018 at 10:52 JST*

Dear CMO, I wasn't sure if my last email you reached you or not, so just sending this just in case. Two Mars images, from April 20 and April 28 UT, from Osaka, Japan. best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180420/RHf20Apr18.png
http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180428/RHf28Apr18.png

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On 2018/4/23 at 7:17 PM, "R. Heffner" wrote:
Dear CMO and Minami-san, Long time no corre-

spond! How are you? I send you a Mars image from April 20 UT from my low altitude location in Japan. I'm in Osaka now. Not sure how useable my images will be this apparition, but will try to send a few this year. Image comments: Elysium appears bright, SPC prominent Best regards,

○····*Subject: Mars image from May 10 UT*
*Received: 11 May 2018 at 23:32 JST*

Dear CMO, Here is a Mars image showing Sinus Sabaeus and Sinus Meridiani from Osaka, Japan. Planet elevation is 32 deg from here. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180510/RHf10May18.png

●·····*Subject: Re: Mars image from May 16 UT*
*Received: 17 May 2018 at 17:44 JST*

Dear CMO, Here is a Mars image showing Syrtis Major and the Hellas Basin. Was a cloud filled session but seeing was fairly decent. Planet elevation was 30 deg from here. Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180516/RHf16May18.png

○····*Subject: Mars images from June 1 UT*
*Received: 2 June 2018 at 17:09 JST*

Dear CMO, Here is a set of Mars images from 6/1/2018 at 17:27 & 19:33 UT

Comments: Decent conditions this time with the jet stream taking a break finally! Evening clouds are clearly visible in the 19:33UT image, and were also prominent on the monitor during capture.

Best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180601/RHf01June18.png

○····*Subject: Mars images from 6/2/2018 19:12 UT*
*Received: 3 June 2018 at 19:50 JST*

Dear CMO, Here is a Mars image from 6/2/2018 19:12 UT

Comments:
Seeing was around 7/10 which happens about 2-3 times a year at my location, hopefully my rusty image processing skills did somewhat justice to the seeing conditions. Prominent clouds continue to be visible around the Tharsis region.

best regards,

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180602/RHf02June18.png

**Robert HEFFNER** (Osaka, JAPAN)

●·····*Subject: Mars images May 12th 2018*
*Received: 14 May 2018 at 00:19 JST*

Hi, attached one RGB set from last night, under variable seeing and average transparency.

Best Regards

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180512/TOl12May18.png

**Tiziano OLIVETTI** (Bangkok, THAILAND)

●·····*Subject: Mars capture*
*Received: 14 May 2018 at 22:08 JST*

Hello, For your information I send you my recent Mars capture. *Met vriendelijke groet,*

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2018/180511/ESb11May18.png

**Eric SUSSENBACH** (Willemstad, CURAÇAO)

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

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

*Bulletin:* **Kasei-Tsûshin CMO (http://www.mars.dti.ne.jp/~cmo/ISMO.html)**

**CMO n°469/ ISMO #95 (25 May 2018)**

*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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