

## MARS

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## OBSERVATIONS

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CMO/ISMO 2016 Mars Report #18

**2016 CMO/ISMO Mars Observations Made During the One-Month Period  
in December 2016 ( $\lambda=272^\circ\text{Ls}\sim\lambda=291^\circ\text{Ls}$  2016)**

♂..... We here deal with a 18<sup>th</sup> Report of the 2016 ISMO/CMO Mars Observations made during the one month period of December 2016. During the one month, the planet Mars moved from the Capricornus constellation to the Aquarius, and just visible in the evening SW sky in December. The apparent declination  $D$  recovered from  $17^\circ\text{S}$  to  $8^\circ\text{S}$ , and we were happy because a few observation made in Europe were communicated. The Martian season proceeded from  $\lambda=273^\circ\text{Ls}$  to  $\lambda=291^\circ\text{Ls}$ , and the tilt declined much to about  $\phi=20^\circ\text{S}$ , and hence the Martian southern hemisphere faced to us interestingly: The south polar cap (spc) is now quite deviated from the south pole and appears as a small roundish bright cap (if favourably seen from the side of Argyre). The angular diameter of Mars went down from  $\delta=6.5''$  to  $\delta=5.7''$ , so small that no minor details were given. However the main larger markings were traced and no big disturbance was observed during the period. The phase angle  $\iota$  a bit decreased from  $41^\circ$  to  $37^\circ$ , so that the disk looks more rounded.

The MRO-MARCI images proves that Novus Mons disappeared at the beginning of December (the CMO observed for example that Novus Mons vanished just before  $\lambda=270^\circ\text{Ls}$  in the most favourable condition in 2003), while the white cloud activity of Arsia Mons proved to still continue.

This period, we received several images which could not be evaluated because of some strange monstrous ghosts appearing due to an inappropriate procedure. We suppose such ghosts appear due to a forcible technique employed when the angular diameter is bigger, and we hope a further polite treatment should be applied to eliminate any ghost. Finally, although this period was just up until  $\lambda=291^\circ\text{Ls}$ , we would like to remind every observer that the distinguished dust storm at Solis Lacus in 1973 was entrained at  $\lambda=300^\circ\text{Ls}$ , the storm which attracted the European and the US observers in 2005 started at  $\lambda=308^\circ\text{Ls}$ , and even in 2003, a significant dust disturbance was chased by Don PARKER (DPK) and Christophe PELLIER (CPI) et al from  $\lambda=315^\circ\text{Ls}$ : So we hope every observer would be still on alert. As to the dust observations in 2003, see

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn2/285OAA/index.htm>  
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn2/286OAA/index.htm>

(**Technical Note:** These web sites were uploaded within the old IE constitution, and so those who use the MS Edge (Windows 10) should first browse by opening these by the Internet Explorer (from . . . at the right-uppermost corner), and then after the key-operation of (Alt+X) choose "Compatibility View Settings", and then add "kyoto-u.ac.jp." to the blank corner.)

♂..... As the CMO/ISMO Mars observations made in December 2016, we received with thanks a total of 50 observations from South Africa, England, Puerto Rico, the US and Japan. The following are the contributed members and their instruments:

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

2 Colour + 16 IR Images (6, 8, 10,~13, 15,~ 18, 20, 29, 31\* December 2016)  
36cm SCT @f/33 with an ASI290MC & ASI290MM\*:

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

2 Colour Images (3, 9 December 2016) 41m SCT @f/62 with an ASI290MC

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

2 Colour Images (18, 27 December 2016) 45cm Dobsonian with an ASI224MC

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

4 Sets of RGB + 14 IR Images (1, 3,~5, 9, 12,~15, 18, 19, 26, 27, 30 December 2016)  
25cm Dall-Kirkham with an ASI290MM

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

5 IR Images (4, 10, 14, 24 December 2016) 25cm SCT with a DMK21AU618.AS

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

3 Sets of RGB + 4 IR Images (6\*, 8\*, 15, 27 December 2016) 31cm SCT with a Flea 3 & ASI290MM\*

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

7 Set of LRGB Images (3, 11, 18, 25, 30, 31 December 2016) 36cm SCT with a Flea 3

♂..... We Further Received four observations from

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

2 Colour Images (22 July; 10 August 2016) 36cm SCT with a DBK21AU618

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

2 Sets of RGB + 2 IR Images (8, 30 November 2016) 25cm Dall-Kirkham with an ASI290MM

♂..... We now give a short comment chronologically to each observation made in December 2016. Every image is found in the Web of the ISMO 2016 Mars Gallery. However we missed to receive any observation made on half a dozen of days; really on 2, 7, 21, 22, 23, 28 December 2016.

### 1 December 2016 ( $\lambda=272^\circ\text{Ls}$ , $\delta=6.5''$ , $\varphi=20^\circ\text{S}$ )

**Paul MAXSON (PMx)** equipped an ASI 290MM for a 25cm Dall-Kirkham telescope and took an IR685 image at  $\omega=164^\circ\text{W}$ . The south polar cap (spc) is not vivid and it is annoying to see a ghost arc at the evening limb side. PMx obtained on 26 Oct 2016 ( $\lambda=249^\circ\text{Ls}$ ,  $\delta= 7.7''$ ) a set of images at  $\omega=162^\circ\text{W}$ ,  $\varphi=10^\circ\text{S}$  which shows well M Sirenum definitely and this surface is comparable with the present image at  $\omega=164^\circ\text{W}$ ,  $\varphi=20^\circ\text{S}$ , but unfortunately the area of M Sirenum is not clarified. PMx also obtained an excellent image on 8 July 2016 ( $\lambda=182^\circ\text{Ls}$ ,  $\delta=15.5''$ ,  $\varphi=15^\circ\text{N}$ ) at  $\omega=163^\circ\text{W}$  which is quite different in the tilt, but suggests what should be visible on the northern side. Gordii Dorsum and Olympus Mons should be suggested.

### 3 December 2016 ( $\lambda=273^\circ\text{Ls}-274^\circ\text{Ls}$ , $\delta=6.5''-6.4''$ )

**PMx** continued to give similar image at  $\omega=143^\circ\text{W}$ . The spc is a bit clearer but the ghost still

governs the evening limb side, and M Sirenum is not clarified.

**Reiichi KONNAI (Kn)** obtained an L-colour image at  $\omega=237^\circ\text{W}$  by the use of a 41cm SCT equipped with a colour cam ASI 290MC. M Cimmerium largely occupies the centre, and beyond Hesperia M Tyrrhenum is darkly shown near the morning terminator. The area of Ausonia is slightly reddish light. Mare Chronium is also suggested, but the effect of the spc is not so clear.

**Yukio MORITA (Mo)** is using a 36cm SCT equipped with a Flea 3 and took a set of R, G, B, L ingredients at  $\omega=283^\circ\text{W}$  and composed an RGB and an LRGB image. We hear Mo recently found nicer images in his backlogs on 1 May, 20 May, 23 May, 30 May, 17 June, 22 July and so on in 2016 (not yet submitted in the CMO Gallery), while he was generally annoyed by the bad seeing conditions this apparition because the planet constantly stayed lower in the sky (from Japan). But this month he began to give some nicer colour images which were so MORITA. Already the angular diameter is  $\delta=6.4''$  and hence the details are beyond the compass, while Syrtis Mj takes shape, and in LRGB M Tyrrhenum and M Cimmerium are distinguished in colour. Hellas and Ausonia show there lighter parts. The area of Tiphys Fr is suggested. The region of Thyle looks light, though the spc is not definite.

#### 4 December 2016 ( $\lambda=274^\circ\text{Ls}$ , $\delta=6.4''$ , $\varphi=21^\circ\text{S}$ )

**PMx** obtained an RGB composite as well as an IR685 image at  $\omega=132^\circ\text{W}$ . The spc is shown white definite. The evening limb still suffering from the ghost, but a bit more details on the northern hemisphere look visible, and the area of Gordii Dorsum and Olympus Mons is suggested. The Tharsis ridges are seen but the area of Solis L overlaps with the area of ghost. M Sirenum is not clear, but a band at M Chronium is shown. A white fog is suggested to the north of the spc? The seeing condition was 7/10.

**Frank MELILLO (FMI)** obtained two IR610 images at  $\omega=067^\circ\text{W}$  and  $\omega=082^\circ\text{W}$  by the use of a 25cm SCT equipped with a DMK. The area around the spc is light. As a central marking the region from Margaritifer S to Solis L appears to be dark. The area around of M Erythræum is really dark. The spike of the northern Margaritifer S goes towards the north to M Acidalium. Auroræ S also looks northwards protruding. It is difficult to pin down around Tithonius L.

#### 5 December 2016 ( $\lambda=274^\circ\text{Ls}$ - $275^\circ\text{Ls}$ , $\delta=6.4''$ )

**PMx** gave an RGB composite at  $\omega=123^\circ\text{W}$ . The spc is roundish and white. The evening ghost is still annoying, but the dark marking which appears as a set of two dots is no way to say that it's Solis L if we refer to the IR685 image. On the IR685, M Sirenum is rather clear and the dark band which starts from Aonius S to its SW direction is visible. We may say Phasis well goes down. In RGB, M Sirenum looks fainter and appears to decompose into a set of unlikely points. Why?

#### 6 December 2016 ( $\lambda=275^\circ\text{Ls}$ , $\delta=6.4''$ - $6.3''$ )

**Clyde FOSTER (CFs)** obtained an L-colour and an IR686 image at  $\omega=323^\circ\text{W}$  by the use of a C14 equipped with an ASI 290MC. On the afternoon side visible are Syrtis Mj and Hellas whose northern part is lighter. The tail of M Serpentis is still widened and S Sabæus is caught. The desert area of Æria looks slightly reddish, while the image itself is unnaturally yellowish in general, and even the spc is not white

and looks doubled. On the northern neighbourhood some lighter area exists. Yaonis Fr is visible and the preceding northern Hellas is light.

**Efrain MORALES (EMr)** tried to use an ASI 290MM loaded on a 31cm SCT and took an IR685 image at  $\omega=073^\circ\text{W}$  (while EMr has usually used a Flea 3). This image shows Ganges and the light Ophir, and since the tilt has moved southwards, several markings are revealed interestingly to be caught on the southern hemisphere. Solis L is the darkest looking to be composed of two or three dark patches. M Erythræum is not so dark while at the east side boundary of Thaumasia, a series of such markings as Depres Pontica and Delphini Portus is conspicuous, and to its further east, Phruxi Regio is light and then Bosphoros Gemmantus lies preceding Ogygis R which continues to a considerably lighter band connected with Dia. The circumpolar band of the spc shows a dark patch. This apparition this region became faced to us for the first time in December.

#### 8 December 2016 ( $\lambda=276^\circ\text{Ls}-277^\circ\text{Ls}$ , $\delta=6.3''$ , $\phi=22^\circ\text{S}$ )

**CFs** took an IR685 image at  $\omega=325^\circ\text{W}$ . Mildly processed and the image gives a nice impression about Syrtis Mj and Hellas, though no detail of M Serpentis is featured. The spc is weak.

**EMr** obtained an RGB composite by using ASI 290MM and the set of the Custom Scientific filters. The spc is well light in G and RGB. Its eastern neighbour is considerably light diffused. In RGB, Noachis is beautifully wine-red coloured up until the circumpolar area. The inside of the Noachis desert is not uniform in intensity but suggests a step-wise gradation. Depressiones Hellesponticæ is not so dark. The details around M Erythræum are not shown up. SS Meridiani and Sabæus at the evening side are poor looking. Margaritifer S is featureless but Oxia P is conspicuous and it is connected with the area of M Acidalium. On the IR685, Niliacus L looks square angular. M Serpentis is not distinguished even in IR.

#### 9 December 2016 ( $\lambda=277^\circ\text{Ls}$ , $\delta=6.3''$ )

**PMx** produced an RGB composite at  $\omega=085^\circ\text{W}$ . The evening limb side is still governed by a ghost arc. The spc is bright evident, but it looks it shows a ghost of the spc itself to its north. Solis L, and as well Tithonius L and Ophir are identified. G and B show as if the spc looks double imaged.

**Kn** made an L-colour image at  $\omega=176^\circ\text{W}$ . The spc does not suggest anything and though the area of M Cimberium looks dark but looks blurred.

#### 10 December 2016 ( $\lambda=277^\circ\text{Ls}-278^\circ\text{Ls}$ , $\delta=6.3''-6.2''$ )

**CFs** got an IR685 image at  $\omega=257^\circ\text{W}$ . The image is weak and just suggests the spc direction. M Cimberium and Hesperia and M Tyrrhenum are detected while Syrtis Mj must be near the morning terminator. Ausonia makes a form to the north of the area of M Australe. Hellas is not.

**FMI** by using a DMK made an IR610 image at  $\omega=031^\circ\text{W}$  (when seeing 7~8/10). The spc looks largely bright but its shape is beyond the scope. S Margaritifer is shown and S Sabæus looks to lie near the evening limb. FMI observed on 2 Nov 2016 at  $\omega=034^\circ\text{W}$ , which can be comparable, but the image on 2 Nov is superior (seeing 8/10).

### 11 December 2016 ( $\lambda=278^\circ\text{Ls}\sim 279^\circ\text{Ls}$ , $\delta=6.2''$ )

**Mo** obtained both of LRGB and RGB composites at  $\omega=185^\circ\text{W}$ . On R, G and L the supposed spc area is light. At the centre, M Sirenum and M Cimmerium must be seen connected but the area just looks blurred.

**CFs** gave an L-colour image at  $\omega=296^\circ\text{W}$  by the colour-cam 290MC as well as two IR685 images at  $\omega=257^\circ\text{W}$  and at  $\omega=296^\circ\text{W}$ . The spc looks roundish but a bit blurred. At  $\omega=257^\circ\text{W}$ , M Cimmerium is almost caught inside the disk, but Syrtis Mj is a bit seen near the morning terminator, while at  $\omega=296^\circ\text{W}$ , Syrtis Mj is located near the CM, and M Cimmerium is caught near the evening limb. The light part of Hellas has no clear boundary. Ausonia is light (Ausonia takes a shape of a Japanese triangular rice ball at  $\omega=257^\circ\text{W}$ ).

### 12 December 2016 ( $\lambda=279^\circ\text{Ls}$ , $\delta=6.2''$ )

**PMx** made an IR685 image at  $\omega=051^\circ\text{W}$ . The spc is bright, but it is possible for the spc itself to contain its ghost. The evening markings are too exaggerated in a wrong way to judge. On the morning side, we can pin down no more than Solis L and the area of Auroræ S (including Ophir).

**CFs** obtained an IR685 image at  $\omega=306^\circ\text{W}$ . Syrtis Mj is large but weak near the CM. Hellas and Ausonia are blurred. The spc looks scares.

### 13 December 2016 ( $\lambda=279^\circ\text{Ls}\sim 280^\circ\text{Ls}$ , $\delta=6.2''$ )

**PMx** gave an IR685 image at  $\omega=047^\circ\text{W}$ . The ghost appears similar to the previous case. The spc looks doubled. The ghost must be because of an ill-procedure, but the dark monster near the evening limb must have been caused by Meridiani S.

**CFs** gave two IR685 images at  $\omega=275^\circ\text{W}$  and  $\omega=286^\circ\text{W}$ . Both show a roundish but weak spc. Syrtis Mj is on the morning side different in position by  $10^\circ\text{W}$ . The area of Syrtis Minor (Mn) looks similar on both images. To the east of Hesperia, M Cimmerium appears dark but this causes a monster band which runs up to near the spc. These monsters must be due to an ill-procedure, while the light area of Ausonia looks regular (especially on the image at  $\omega=275^\circ\text{W}$ ).

### 14 December 2016 ( $\lambda=280^\circ\text{Ls}$ , $\delta=6.2''\sim 6.1''$ , $\varphi=23^\circ\text{S}$ )

**PMx** gave an IR685 image at  $\omega=033^\circ\text{W}$ . The spc is bright, but it may contain its own ghost. The ghost along the evening limb became more pathological.

**FMI** gave an IR610 image at  $\omega=342^\circ\text{W}$ . The area of the spc is roundish light. The tail of Mare Serpentis is shown wide and dark. S Sabæus is faintly visible. Syrtis Mj is together with Hellas is clear near the evening limb.

### 15 December 2016 ( $\lambda=280^\circ\text{Ls}\sim 281^\circ\text{Ls}$ , $\delta=6.1''$ )

**PMx** obtained an IR685 image at  $\omega=023^\circ\text{W}$ . This differs by  $10^\circ\text{W}$  from the one made on the preceding day and it looks that S Meridiani is now out from the preceding ghost. The northern part of S Margaritifer is also visible. The shadowy area near the arctic area must be influenced by M Acidalium. The evening darkish monster ghost must be affected by M Serpentis and Hellespontus. Pandoraë Fr looks

however realistic. The seeing condition is recorded as 6/10.

**CFs** gave an IR685 image at  $\omega=226^\circ\text{W}$ . The spc is quite thinner, and M Cimmerium looks also weak. At the evening limb side a ghost runs from M Sirenum to both limb sides. Ausonia is not well described.

**EMr** obtained an excellent RGB composite for  $\delta=6.1''$  at  $\omega=341^\circ\text{W}$  by employing again the Flea 3 camera. The colour of the surface looks very nice. The spc is roundish white. This cap is accompanied by a separated white island quite similar to Novus Mons. As we remember the case in 2003 (and also other cases) Novus Mons disappeared just before  $\lambda=270^\circ\text{Ls}$  and hence we should like to postpone the analysis of this phenomenon. A bit down to the north there exists a dark patch which may be *Depressiones Hellesponticae*. Its east shows a thick wine reddish colour. The northern part of the Hellas basin is lighter in a wine colour which is of the same tint as governing the area of *Aeria*. S Sabæus looks plausible in shape and the tail of M Serpentis shows up still wider and is related with the following *Pandoræ Fr*. Each ingredient of R, G and B images is good and the RGB shows a thin white mist at the arctic limb area.

#### 16 December 2016 ( $\lambda=281^\circ\text{Ls}$ - $282^\circ\text{Ls}$ , $\delta=6.1''$ )

**CFs** got an IR685 image at  $\omega=273^\circ\text{W}$ . The spc is scarcely seen. Both of Syrtis Mj and Syrtis Mn are definite, but the monster ghost which runs from M Cimmerium upwards is very annoying.

#### 17 December 2016 ( $\lambda=282^\circ\text{Ls}$ , $\delta=6.1''$ )

**CFs** got again an IR685 image at  $\omega=232^\circ\text{W}$ . This looks similar to the one on the preceding day. But differed by  $40^\circ\text{W}$ , M Cimmerium is totally inside the disk. However the ghost at the evening limb still remains.

#### 18 December 2016 ( $\lambda=282^\circ\text{Ls}$ - $283^\circ\text{Ls}$ , $\delta=6.1''$ - $6.0''$ )

**PMx** obtained an IR685 image at  $\omega=355^\circ\text{W}$ . The seeing condition is 6/10 as before, while this succeeded in killing the evening ghost monster, and the markings around from Syrtis Mj at the evening limb side to Margaritifer S near the morning terminator are decent: The tail of M Serpentis looks well wide and connected with *Hellespontus* (up to the spc) and *Pandoræ Fr* on the western side. *Deucalionis R* is a bit lighter.

**Mo** obtained an RGB composite and an LRGB composite at  $\omega=120^\circ\text{W}$ . The angle permits to show the spc, while its outline looks blurred. The LRGB image shows clearly *Solis L* on the evening side, and to the south of *Solis L*, there is seen a large patch of a dark marking which may include *Depr Pontica* and *Aonius S*. M Sirenum is seen on the morning side. On the R image, *Tithonius L* is checked, and there is seen a canal or band which starts from the tail of M Sirenum and extends to the SW direction. The uneven shading of RGB image should have incorporated this canal or band.

**CFs** gave an IR685 image at  $\omega=210^\circ\text{W}$ . On the evening side there is suspected M Sirenum but from its tail a monster ghost extends to the north of the spc. The uneven shading of M Cimmerium is described but rather skinny. *Hesperia* is cut and the SE end of M Tyrrhenum well shows up. Ausonia is a bit light.

**Martin LEWIS (MLw)** produced an colour image at  $\omega=224^\circ\text{W}$  by the use of a 224MC colour-cam. The telescope used is a 44cm Dobsonian. The image shows a tendency of green-yellowish tint, but this image is quite beautiful in good gradation. A bit of M Sirenum remains near the evening limb and followed by the full-sized M Cimmerium. Ausonia is visible. M Chronium shows a broad body and Thyle shows a bit whitish tinge. The spc is small and roundish and described beautiful together with a faint northern circumpolar fringe. The dark markings are not detailed, but on the northern hemisphere side, some minor details are suggested around Cerberus and Phlegra. At the arctic limb side a whitish mist weakly expands.

#### 19 December 2016 ( $\lambda=283^\circ\text{Ls}-284^\circ\text{Ls}$ , $\delta=6.0''$ , $\varphi=24^\circ\text{S}$ )

**PMx** made an RGB composite and an IR685 image at  $\omega=346^\circ\text{W}$ . As shown by the R and IR images, Syrtis Mj at the evening limb side made a ghost arc along the evening limb. Just the whitish spc and S Sabæus are realistic. The markings on the RGB however do not show any velvety appearance. The markings on G look lumpy in general.

#### 20 December 2016 ( $\lambda=284^\circ\text{Ls}$ , $\delta=6.0''$ )

**CFs** obtained an IR685 at  $\omega=192^\circ\text{W}$ . M Sirenum looks to be seen totally inside the disk, but a monster ghost appears along the evening limb. However the area where M Sirenum and M Cimmerium join looks interesting. On the northern hemisphere, Cerberus may look to show traces.

#### 24 December 2016 ( $\lambda=286^\circ\text{Ls}-287^\circ\text{Ls}$ , $\delta=5.9''$ )

**FMI** got an IR610 image at  $\omega=238^\circ\text{W}$ . At the centre a dark marking is shown. The spc is unknown.

#### 25 December 2016 ( $\lambda=287^\circ\text{Ls}$ , $\delta=5.9''$ , $\varphi=25^\circ\text{S}$ )

**Mo** encountered with a preferable seeing condition after a while and took two sets of nice images for  $\delta=5.9''$  at  $\omega=037^\circ\text{W}$  and at  $\omega=046^\circ\text{W}$ . Each set is made of the RGB composites as well as LRGB composites. The spc is shot roundish white from a good direction. At  $\omega=037^\circ\text{W}$ , M Serpentis seems to have gone to the rear side, but S Meridiani is explicitly shown with the clear-cut Aram. Margaritifer S is nicely described dark up until M Erythræum. To its east, Noachis shows a lighter but wine-coloured area which looks to extend to the area of Argyre. Note a dark presence of Depressiones Hellesponticæ and the circumpolar area is nicely shown by the LRGB. In RGB, we should say Aurorae S is better mapped because the density is a bit thinner. In LRGB, Niliacus L is more clearly visible. Its north neighbourhood is whitish misty. It's conspicuous in B. At  $\omega=046^\circ\text{W}$ , the sharpness of the images has fallen and S Meridiani became a bit thinner. However other features remain nearly the same. Just the area of Solis L is more apparent in LRGB because of the difference by  $10^\circ\text{W}$ . The white mist at the arctic limb side is beautiful in RGB.

#### 26 December 2016 ( $\lambda=287^\circ\text{Ls}-288^\circ\text{Ls}$ , $\delta=5.9''-5.8''$ )

**PMx** gave an IR685 image at  $\omega=276^\circ\text{W}$ . Still the processing of the ghost at the evening limb side is very poor. Syrtis Mj near the morning terminator is well dark and largely seen, and Hellas looks realistic. However, the preceding M Tyrrhenum is not real. The western part of M Cimmerium looks a bit visible. The spc shows roughly up.

**27 December 2016 ( $\lambda=288^\circ\text{Ls}$ ,  $\delta=5.8''$ )**

**PMx** gave an IR685 image at  $\omega=265^\circ\text{W}$ . Including the unrealistic ghost part, this image is not so different from the image on the preceding day. Just the western part of M Cimmerium looks longer and darker than before. Ausonia is lighter.

**MLw** made a 224MC colour-cam image at  $\omega=138^\circ\text{W}$ . This is an excellent and beautiful image. The spc is roundish white, definite surrounded by a dark fringe. The morning M Sirenum is impressive just like an eyebrow. To its east, Aonius S is visible as well as Depr Pontica (to the south of Solis L). Solis L is a dark patch located near the evening limb. The area of Phaethontis is faded to the south of M Sirenum. The latitude of M Chronium appears as a shadowy band and its south may be a faded circum-polar band including Thyle. At the equatorial zone, Tithonius L is visible near the evening limb and Phoenicis L follows. To its north Ascaræus Mons lies as a small dark spot. At the morning side, Olympus Mons is visible as a bit large brownish spot together with Gordii Dorsum. At the arctic limb side, a thinner white mist covers, and denser at the evening limb side. This image, although a bit less tinged with red, imparts a pleasant feeling to us, visual Mars observers.

**EMr** obtained an RGB composite and an IR685 image at  $\omega=240^\circ\text{W}$ . On the afternoon side, M Cimmerium lies though not detailed. To the north of M Chronium, Ausonia appears slightly lighted in a triangular shape (especially on IR). M Tyrrhenum is still near the morning terminator. The spc is marked in IR also.

**29 December 2016 ( $\lambda=289^\circ\text{Ls}-290^\circ\text{Ls}$ ,  $\delta=5.8''$ )**

**CFs** gave an IR685 image at  $\omega=098^\circ\text{W}$ . The area of Solis L and Tithonius L is suggested. The image is of a poor definition.

**30 December 2016 ( $\lambda=290^\circ\text{Ls}$ ,  $\delta=5.8''\sim 5.7''$ )**

**PMx** gave an IR685 image at  $\omega=237^\circ\text{W}$ . At the evening limb side, M Sirenum looks to have changed into a ghost which lies along the evening limb. However M Cimmerium is separated from the ghost line, but remains unstable. The triangular Ausonia is suggested.

**Mo** obtained one set of LRGB and RGB composites at  $\omega=004^\circ\text{W}$ . The images look blurred, but the spc on RGB is light. On LRGB, Meridiani S is definite. S Sabæus is not dense while dark is M Serpentis: From there runs a dark band to Depressiones Helleponticæ. Hellas is at the evening limb, not so bright.

**31 December 2016 ( $\lambda=290^\circ\text{Ls}-291^\circ\text{Ls}$ ,  $\delta=5.7''$ )**

**Mo** gave one set of LRGB and RGB composites at  $\omega=340^\circ\text{W}$ . This time the L image is not so good and hence the RGB image instead should be said better and really quite excellent for  $\delta=5.7''$ . The spc is whitish bright, and its east is a bit whitish faded. Hellas is inside the disk and the northern part is light. Syrtis Mj is also all inside the disk and connected with the wider tail of M Serpentis. S Sabæus is totally visible together with Meridiani S. Deucalionis R is light, and Pandoræ S is evident. In RGB, we should say Yaonis Fr extends southwards. At the northern limb side a white misty veil floats. Yukio MORITA thus



wrapped up the year 2016 with a considerably favourable observation for  $\delta=5.7''$ .

**CFs** obtained two IR685 images at  $\omega=067^\circ\text{W}$  and at  $\omega=084^\circ\text{W}$  by the use of 290MM. Both fail in processing the evening limb. Around the area of Solis L and Tithonius L, the latter gives nicer image, but we should say the image of Auroræ S is better gained on the first occasion. Ophir is light.

*Masatsugu MINAMI and Masami MURAKAMI*

## *Letters to the Editor*

● **.....Subject: Mars 2016/12/16 1843UT CM274 IR**  
**Received: 17 December 2016 at 05:06 JST**

Hi all, An IR capture from this evening. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161216/CFs16Dec16.jpg>

○ **.....Subject: Mars 2016/12/17 1632UT CM232 IR**  
**Received: 18 December 2016 at 05:27 JST**

Hi all, An IR capture from this evening. Conditions appear to be improving. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161217/CFs17Dec16.jpg>

○ **.....Subject: Mars 2016/12/18 1543UT CM210 IR**  
**Received: 19 December 2016 at 04:59 JST**

Hi all, This was the best of a large number of attempts I took over a few hours this evening. Conditions varying, but generally poor. I note a brightening below the SPC which has not been particularly noticeable the last few days. However this could also be due to the limb arc effect, so it would be good to compare with any other images. Elysium is seen as a diffuse bright spot at lower right. The "bridge" (Apodis D/Hesperis S?) connecting the southern end of Mare Tyrrhenum with Mare Cimmerium has been noticeable the last few days, with Ausonia (two lobes?) consistently bright. Mare Sirenum starting to come into view. Best,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161218/CFs18Dec16.jpg>

○ **.....Subject: Mars 2016/12/20 1553UT CM192 IR**  
**Received: 21 December 2016 at 01:59 JST**

Hi all, A final daylight capture under hot turbulent conditions before I head off for a week to visit family. Hoping that conditions may be a bit more settled

when I return. I noted that the Memnonia region was a bit brighter than the rest of the preceding limb. May I take this opportunity to wish all my friends and Mars colleagues a happy, restful, peaceful and safe festive season. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161220/CFs20Dec16.jpg>

○ **.....Subject: Mars 2016/12/29 1534UT CM98 IR**  
**Received: 30 December 2016 at 01:33 JST**

Hi all, An IR capture from this afternoon in poor, cloudy conditions. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161229/CFs29Dec16.jpg>

○ **.....Subject: Mars 2016/12/31 CM68 CM84 IR**  
**Received: 1 January 2017 at 22:28 JST**

Hi, all, Two IR captures from yesterday afternoon to end off the year. Ls 291 and 5.8" diameter. These were with the ASI 290MM camera and I think this is also the first time I have tried PIPP software, which, in my opinion, made a positive improvement in the final results. With best wishes for 2017!

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161231/CFs31Dec16.jpg>

○ **.....Subject: Mars 2017/01/01 CM62 CM72 IR**  
**Received: 2 January 2017 at 02:03 JST**

Hi all, A further double IR capture from this afternoon. Rather frustrated by cloud preventing RGB imaging. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170101/CFs01Jan17.jpg>

○ **.....Subject: Mars 2017/01/05 1634UT CM43 RGB**  
**Received: 6 January 2017 at 04:16 JST**

Hi all, Whilst I had set up for RGB imaging of Jupiter, I tried capturing Mars this afternoon. Becoming more challenging and atmospheric dispersion is definitely impacting. I am busy shopping for an ADC..... I think the IR and R data indicates that there is still no major dust activity on this face of Mars. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170105/CFs05Jan17.jpg>

○...*Subject: Mars 2017/01/09 1539UT CM350 IR*  
*Received: 10 January 2017 at 04:05 JST*

Hi all, With current weather conditions, I was not expecting to be able to image this afternoon, but managed to find some gaps in the clouds.

Attached an IR image. I have deliberately processed to try and not burn out the Arabia region which was strikingly bright on screen. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170109/CFs09Jan17.jpg>

○...*Subject: Mars 2017/01/10 1618UT CM350 IR*  
*Received: 11 January 2017 at 03:44 JST*

Hi all, An IR capture of Mars this afternoon taken between clouds. The Arabia region is remarkably bright under these conditions. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170110/CFs10Jan17.jpg>

○...*Subject: Mars 2017/01/11 1643UT CM345 IR*  
*Received: 12 January 2017 at 03:30 JST*

Hi all, IR capture of Mars this afternoon.  
 Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170111/CFs11Jan17.jpg>

○...*Subject: Mars 2017/01/11 1645UT CM346 RGB*  
*Received: 12 January 2017 at 20:02 JST*

Hi all, I previously sent through an IR image from yesterday. I did capture RGB data and attach an attempt at a full RGB image set- a rather challenging exercise, for me at least..... A tiny Mars with a tiny SPC, and what looks like a cloud just below the SPC(note the G and B images). All looks very quiet from a dust perspective.... Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170111/CFs11Jan17.jpg>

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

●...*Subject: Mars October 26*  
*Received: 17 December 2016 at 08:55 JST*

Average seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161026/PMx26Oct16.jpg>

○...*Subject: Mars October 27*  
*Received: 18 December 2016 at 08:41 JST*

Average seeing. SPC prominent.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161027/PMx27Oct16.jpg>

○...*Subject: Mars October 30*  
*Received: 21 December 2016 at 08:23 JST*

Very unsteady.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161030/PMx30Oct16.jpg>

○...*Subject: Mars November 3*

*Received: 22 December 2016 at 08:54 JST*

Quite unsteady.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161103/PMx03Nov16.jpg>

○...*Subject: Mars November 6*  
*Received: 23 December 2016 at 08:24 JST*

Better than average.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161106/PMx06Nov16.jpg>

○...*Subject: Mars November 7*  
*Received: 24 December 2016 at 08:42 JST*

Good seeing!

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161107/PMx07Nov16.jpg>

○...*Subject: Mars November 8*  
*Received: 29 December 2016 at 07:43 JST*

Average seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161108/PMx08Nov16.jpg>

○...*Subject: Mars November 30*  
*Received: 30 December 2016 at 08:49 JST*

Poor seeing..

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161130/PMx30Nov16.jpg>

○...*Subject: Mars December 1*  
*Received: 31 December 2016 at 08:14 JST*

IR only, poor seeing again.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161201/PMx01Dec16.jpg>

○...*Subject: Mars December 3*  
*Received: 1 January 2017 at 07:58 JST*

IR only this time.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161203/PMx03Dec16.jpg>

○...*Subject: Mars December 4*  
*Received: 2 January 2017 at 11:41 JST*

Slightly better seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161204/PMx04Dec16.jpg>

○...*Subject: Mars December 5*  
*Received: 3 January 2017 at 08:56 JST*

Average seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161205/PMx05Dec16.jpg>

○...*Subject: Mars December 9*  
*Received: 4 January 2017 at 08:33 JST*

Average seeing, but some flaring.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161209/PMx09Dec16.jpg>

○...*Subject: Mars December 12*  
*Received: 6 January 2017 at 11:32 JST*

IR only from now on.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161212/PMx12Dec16.jpg>

○...*Subject: Mars December 13, 2016*  
*Received: 11 January 2017 at 04:37 JST*

Unsteady seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161213/PMx13Dec16.jpg>

○.....*Subject: Mars December 14*

*Received: 11 January 2017 at 08:23 JST*

More unsteady seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161214/PMx14Dec16.jpg>

○.....*Subject: Mars December 15*

*Received: 12 January 2017 at 04:17 JST*

Fair.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161215/PMx15Dec16.jpg>

○.....*Subject: Mars December 18*

*Received: 12 January 2017 at 08:36 JST*

Difficult processing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161218/PMx18Dec16.jpg>

○.....*Subject: Mars December 19*

*Received: 13 January 2017 at 07:21 JST*

Nice seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161219/PMx19Dec16.jpg>

○.....*Subject: Mars December 26*

*Received: 14 January 2017 at 04:17 JST*

Below average seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161226/PMx26Dec16.jpg>

○.....*Subject: Mars December 27*

*Received: 14 January 2017 at 08:35 JST*

More bad seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161227/PMx27Dec16.jpg>

○.....*Subject: Mars December 30*

*Received: 15 January 2017 at 08:26 JST*

Average seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161230/PMx30Dec16.jpg>

**Paul MAXSON** (Surprise, AZ)

●.....*Subject: Mars - December 15th*

*Received: 18 December 2016 at 02:35 JST*

Hi Mr. Minami and All!, Here is my latest session under above average conditions on December 15th.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161215/EMr15Dec16.jpg>

○.....*Subject: Mars Dec.- Jan.2017*

*Received: 7 January 2017 at 00:12 JST*

Hi Mr. Minami And All!, First wishing you a Happy Birthday and Health!!. Here are some belated sessions taken in late december upto present.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161129/EMr29Nov16.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170101/EMr01Jan17.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170102/EMr02Jan17.jpg>

○.....*Subject: Mars - January 9th*

*Received: 11 January 2017 at 08:48 JST*

Hi Mr. Minami and All!, Here is my latest observation under cloudy and light showers a break in the clouds.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170109/EMr09Jan17.jpg>

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

●.....*Subject: Mars 18th Dec 2016*

*Received: 22 December 2016 at 09:13 JST*

Hi, I managed to make the most of a brief opening in the grey murk last Sunday afternoon imaging Mars and Venus in the fading twilight with my ASI224MC colour camera. Some pleasing details on the Mars image despite its diminutive 6.0" diameter. The Venus image on the other hand was special, not because of any detail visible, but because that then completes for me the full set of 7 solar system planets in an 8 month period during this calendar year. Please take this composite image, with all the planets shown at the same image scale, as a Christmas card to you all-- to bring you good cheer and a wonderful 2017.



If the images are not attached to this mail when you receive it they can be viewed at;

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

Best wishes,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161218/MLw18Dec16.jpg>

○.....*Subject: Mars and Venus 27th December 2016*

*Received: 31 December 2016 at 01:38 JST*

Hi, Another lucky opening in the thin high cloud on 27th December allowed Venus and Mars to be imaged in good conditions during the current period of stable air over the UK.

Mars was the best 4 images from 10 one minute videos combined in Winjupos (derotate).

Venus (next page) showing some cloud detail in UV light and IR for comparison.



See the two images here if no attachment with your copy of this mail;

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

Happy New Year to all,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161227/MLw27Dec16.jpg>

**Martin LEWIS** (St Albans, the UK)  
[www.skyinspector.co.uk](http://www.skyinspector.co.uk)

●.....*Subject: Mars: December 24, 2016*  
*Received: 26 December 2016 at 11:19 JST*

Hi, **Merry Christmas!** I have attached my latest image of Mars December 24, 2016 at 21:42 UT.

Thanks,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/161224/FM124Dec16.jpg>

○.....*Subject: Mars: January 1, 2017*  
*Received: 2 January 2017 at 12:59 JST*

Hi, **Happy New Year!** I have attached my latest Mars image January 1, 2017 at 21:37 UT. In fact, Mars is the largest on January 1st for entire year of 2017. It won't be this big until Feb. 4, 2018 !

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170101/FM101Jan17.jpg>

**Frank J MELILLO** (Holtsville, NY)

●.....*Subject: Mars 2016/07/22 & 2016/08/10*  
*Received: 5 January 2017 at 03:12 JST*

Hello, here are two delayed observations of Mars

<http://kardasis.weebly.com/mars-2016.html>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160722/MKd22July16.jpg>  
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/160810/MKd10Aug16.jpg>

○.....*Subject: Mars 2017/01/03*  
*Received: 5 January 2017 at 03:19 JST*

Hello, here is Mars at 5.6 arcsec....quite far from us, a small SPC is visible:

[http://www.astrovox.gr/forum/album\\_pic.php?pic\\_id=20329](http://www.astrovox.gr/forum/album_pic.php?pic_id=20329)

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170103/MKd03Jan17.jpg>

○.....*Subject: Mars 2017/01/13*  
*Received: 14 January 2017 at 06:11 JST*

Hello, here is Mars at 5.4 arcsec. A fine little disc with a small South Polar Cap, made in average conditions:

[http://www.astrovox.gr/forum/album\\_pic.php?pic\\_id=20340](http://www.astrovox.gr/forum/album_pic.php?pic_id=20340)

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2016/170113/MKd13Jan17.jpg>

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

●.....*Subject: Fwd: OAO: "Communicating Astronomy with the Public 2018" Goes to Japan*  
*Received: 24 December 2016 at 01:50 JST*

Begin forwarded message:

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 From: "AAS Press Officer Dr. Rick Fienberg" <[rick.fienberg@as.org](mailto:rick.fienberg@as.org)>  
 Date: December 23, 2016 at 8:41:09 AM MST  
 To: Rick Fienberg <[Rick.Fienberg@as.org](mailto:Rick.Fienberg@as.org)>  
 Subject: OAO: "Communicating Astronomy with the Public 2018" Goes to Japan

THE FOLLOWING ITEM WAS ISSUED BY THE INTERNATIONAL ASTRONOMICAL UNION'S CAP CONFERENCES WORKING GROUP AND OFFICE FOR ASTRONOMY OUTREACH IN TOKYO, JAPAN, AND IS FORWARDED FOR YOUR INFORMATION. FORWARDING DOES NOT IMPLY ENDORSEMENT BY THE AMERICAN ASTRONOMICAL SOCIETY.

23 December 2016

\*\* Contact details appear below. \*\*

Text & Image:

<http://www.communicatingastronomy.org/cap2018/>

"COMMUNICATING ASTRONOMY WITH THE PUBLIC 2018" GOES TO JAPAN

The brand-new Fukuoka City Science Museum on Japan's Kyushu Island has been chosen to host the International Astronomical Union (IAU) conference "Communicating Astronomy with the Public 2018" (CAP 2018).

The CAP Conferences Working Group of IAU Commission C2 issued an international call for proposals to host CAP 2018 in August 2016. Five countries submitted full proposals by the October deadline: Armenia, Ireland, Japan, the Netherlands and the United States of America. All five proposals were very strong,

but the one from Japan stood out from the rest and was selected as winner of the call.

Local organisation of CAP 2018, to be held March 24-28, will be led by the National Astronomical Observatory of Japan (NAOJ) and Fukuoka City, supported by a very strong national and local team of astronomy communicators, city officials and other partners.

*Fukuoka City Science Museum* will open in October 2017 to bring science to all citizens of, and visitors to, the city. It aims to make science accessible to the public and to provide an environment where children can express their creativity and receive support to follow their dreams for the future.

CAP 2018 will be the eighth conference in the series. Since 2003, CAP conferences have facilitated the exchange of ideas and best practices in astronomy and space communication and informal education. The conference helps strengthen the local community of professionals by connecting them to the global network of astronomy communicators and giving them access to the latest trends, lessons learnt from other parts of the globe and ongoing projects they can tap into.

The International Astronomical Union (IAU, <http://www.iau.org>) was founded in 1919 and is headquartered in Paris, France. Its mission is to promote and safeguard the science of astronomy in all its aspects through international cooperation. Its individual members -- structured into Divisions, Commissions, and Working Groups -- are professional astronomers from all over the world who are active in professional research and education in astronomy. The IAU has more than 10,000 members in 98 countries worldwide. The IAU is responsible for naming stars, planets, asteroids and other celestial bodies and collaborates with other scientific organisations all over the world.

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**Bill SHEEHAN** (Flagstaff, AZ)




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

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

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

**CMO n°458/ ISMO #84 (25 January 2017)**

***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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