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LRGB vz RGB for Mars Imaging

By

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As a Mars analyst, and an imager myself as well, I attach a great importance as to how image processing affects the reproduction of details and colours. To my eyes, a successful image of Mars manages to reproduce correctly not only the surface details, but the details of the atmosphere, with reliable colours; so it's far from being only a story of pure resolution. From my own experience and from what I observed on the images produced by our observers' community, the RGB method long has been my only choice.

The RGB method has many advantages. It gives all its importance to the water ice "white" clouds of Mars, by the use of the blue filter B. The green filter G reproduces the yellow colour that we see when dust is lifted in the atmosphere. Even the surface details benefit from the equal use of the three filters because they have also a green and a blue ingredient that we must respect.

When the LRGB method was introduced it brought a serious improvement in CCD imaging. Its advantage was to use the full visible spectrum in a luminance image, an image that was sharper than the R, G, B alone because it allowed capturing images with much shorter time exposures. Many years ago, the exposure required to get images through

filters such as G and B especially, were very long (up to a few seconds, depending on the target). As observed in years 2000 however, the LRGB method was seldom used. People were using either the classic RGB method (in 2002-2004 mostly because the webcams used were colour CCD) or an evolution of the LRGB by using R, IR or any luminance excluding short wavelengths. These processings brought no interest for analysis but they almost eliminated the true LRGB from the landscape¹⁾. When it came to Mars imaging, some people were expressing their doubts about the capacity of the LRGB method to reproduce correctly the faint clouds of the planet. The method is using for the details a b&w image where clouds details could be lost in the glare of the bright surface; a planet like Saturn does not know this kind of problem.

During years I kept imaging the planet in RGB, because of this and as well because all of my attempts with true LRGB did not brought any advantage in imaging Mars, according to experiences I made especially in 2005²⁾. Yet in the past two to three years, I saw very good true LRGB images of the planets thanks to the use of a somewhat new tool - an atmospheric dispersion corrector (ADC)³⁾. The device uses two glass prisms to correct the c

romatic aberration induced by our own terrestrial atmosphere. This aberration can be largely (but not completely, in blue light) corrected if you use a colour CCD chip (by shifting the colour components during processing), or if you use the RGB method with a b&w chip, but not with the luminance filter that passes the whole white light in a single grey image. The ADC allows correcting the aberration and the L image can now be as sharp as it should be, turbulence apart of course⁴). Owing an ADC since 2011, the 2012 apparition of Mars was a good opportunity for me to test both methods. There were three tests to be carried out :

1) Do the current best planetary CCD chip, the icx618ALA by Sony, is adapted to a correct reproduction of details and colours, due to its particularities ?

2) Does the LRGB produce higher definition/resolution than the RGB ?

3) Finally, does the LRGB is able to reproduce correctly the atmospheric details and the colours of Mars, as good as can do the RGB ?

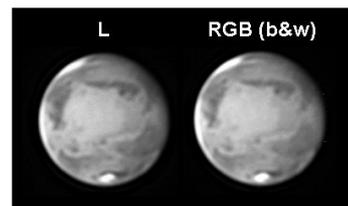
Images were done with the Astronomik LRGB filter set, my 250 mm *F*/32 Gregorian telescope, and a PLA-Mx iNova camera equipped with the icx618 CCD. To make reliable comparisons, a complete RGB series of images was taken just after the L image. I did not choose to take shorter, and poorer, RGB images: Mars is a relatively slow-spinning planet, and the WinJupos software is able to assemble images taken over a long time. The whole LRGB set took around ten minutes to be secured; the L filter was used at 75 frames per second (fps), the R and G at 60 fps, and the B at 20 fps.

Is the icx618 adapted to LRGB Mars images ?

The new icx618 CCD chip is currently the most performing sensor for planetary imaging. It's much more sensitive than the preceding ones used (the icx424, set on the SKYnyx 2-0M I was using previously, and the older icx098BL, that was equipping various models). It has however a particularity: if its sensitivity is relatively equal to that of the icx424 in blue light, in green and especially in red light, the sensitivity is greatly enhanced. As the L filter combines the three bands in one, on theory we would

expect the equilibrium of the different details to change quite a bit from the icx424 to the icx618: and this affects not only how details are reproduced; the colours change as well if the albedo of the L details are different.

A simple test was done to watch for differences (apart of the final results): a b&w L image has been compared to a supposedly well processed, and colour balanced, RGB component, but finally processed in grey levels as well. This comparison would have enlightened differences of contrasts between the two images with no colour differences involved. For instance, if a problem was to emerge, we would see the dark albedo markings of Mars be more contrasted in L than in the b&w RGB. The comparison do not show clear differences; those that could be made out from the figure 1, extremely subtle, could as well be

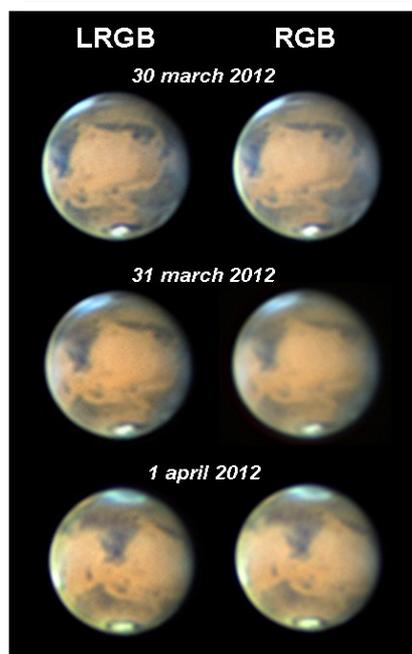


the result of sharpness or processing differences. Therefore an L image of Mars taken with the icx618 does not

look obviously unbalanced if we compare with the human eye.

Does the LRGB reach higher resolution than RGB ?

This was the core of the comparison. Again my previous experiences never had been convincing from this point of view. I was blaming the higher instability of the image as seen through a full white light filter; a narrower band had an edge here, and this looked to me to be even true for the B filter under good seeing. However, when I began to make L images with the help of the ADC at the end of march 2012, suddenly the LRGB composites became sharper than RGB. The difference was not huge; sometimes under very good seeing, it was even hard to decide if there was any superiority; however, there was now a clear advantage in LRGB imaging. The weak difference is clearly due to the fact that Mars is a very bright planet and so one still has plenty of light in RGB. The comparison on a dim planet like Saturn, in my first images of the 2012 spring apparition, turned out to a neat defeat of RGB: the frame rate usable with



colour filters is too low (in G and B) to allow a good RGB performance in front of the L filter. But again, the ADC is unavoidable. Saturn culminates at only 35° in my sky this year. RGB/LRGB comparisons on Mars are presented on figure 2.

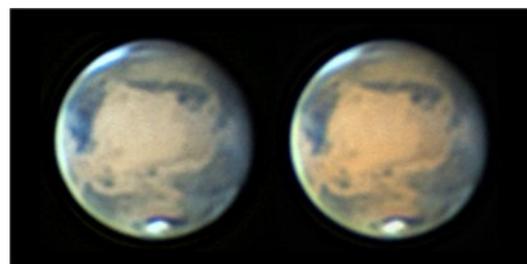
The reproduction of colours and details in LRGB: the importance of the processing

Now my last interrogation was about the reproduction of details and colours in LRGB. I was quite unsatisfied when looking at LRGB images of planets; often, the (true) LRGB images had a slight artificial looking to my eyes; especially, the colours were dull, greyish, quite different from RGB. When I began processing my own LRGB (and this is something I had noticed before), the importance of the attention devoted to a correct processing was enlightened. Processing a LRGB image is much difficult and subtle than for a RGB. The problem of the method is that it maintains, from the beginning to the end, a b&w image and this is the reason why so many images look weakly colorized. The concept I would like to promote to ISMO Mars observers is the *fusion* of the two components of the image, luminance and chrominance: the L image must merge completely into the RGB: the LRGB can be declared successful only when you can't detect that there is a luminance. The luminance is there and is bringing its increased sharpness, but you don't see it. Every LRGB image documented on figure 2 has exactly the same aspect than the RGB. They can be sharper, but the colours and the details are identical. By the way, the LRGB could as well be sharpened (better) RGB: you could not tell the difference on the final images.

To reach this point it's important to care for

two points, in particular. First, for me it's important to take a good RGB image for chrominance. Often it is said that its quality does not matter, than it's just there to bring the colours. However, it looks illusory to reach a good colorization if the RGB is blurred: if a given detail on the L image is not resolved on the RGB, it won't be colorized on the LRGB⁵). This is one of the causes of the "weak colours" problem. Second, the level of brightness of the L *versus* the RGB matters quite a lot. I have found that the other cause of the "weak colours" happens when the L image is brighter than the RGB. On every LRGB image I have made this Mars season, the colours were good only if the L was dimmer than the RGB (of course, not too dim...!).

This is where the metaphor of "fusion" is the most



relevant: the degree of merging of the L into the RGB, along with the quality of the last one, is all that makes the quality of the LRGB. The figure 3 shows the same LRGB processed with a bright L, and a dim L.

When this is done, the answer to the question whether the LRGB is able to reproduce correctly details and colours, is clearly yes. No, the LRGB is not in itself a method than artificially minimize the clouds of Mars. It does that only if it's not properly processed. On the LRGB above, even the elusive equatorial cloud belt of Mars is visible; every clouds spotted on the RGB are seen as well on LRGB.

So it looks to me that true LRGB imaging is a good way to increase the quality of our images of Mars, providing appropriate care is applied to the processing. However, for those of us who are living in mid-latitudes, the use of an ADC is clearly unavoidable (especially for northerners; Mars is going to fall in the sky for the following apparitions). Note that if you don't own an ADC (the device is quite expensive), the WinJupos software this year has also boosted the quality of the RGB, by allowing us to use quite longer video captures than before. And it is free !

Legend for figure 1 :

Both L and RGB are compared in b&w, to see if there is any albedo differences.

Legend for figure 2 :

Three sets of images from 2012 march 30, 31, april 1st. The first one under very good seeing; both methods are very comparable. For the second, seeing was average to poor and the LRGB is clearly better. On the third night seeing was just fairly good. LRGB wins by a hair. Note the identical reproduction of colours and details for each set, apart of sharpness differences.

Legend for figure 3 :

Two ways of processing the same LRGB. At left the L image is brighter than the RGB. Its aspect is weakly colorized, quite alike of an RRGB. At right the L image is dimmer than RGB. The fusion is more balanced and the colours are more satisfying.

(Notes)

¹⁾ The reader can refer to Damian Peach's page at <http://www.damianpeach.com/marscolour.htm> or the author's page on the same topic:

<http://www.astrosurf.com/pellier/marsprocess>

²⁾ The 2005 SAF Mars report (in french) devotes a paragraph to a RGB/LRGB comparison that is favourable to RGB both in good and bad seeing. Read part one page 7

http://astrosurf.com/planetessaf/mars/doc/Rapport_Mars_2005_I-SAF.pdf

³⁾ The use of prisms has been however already in use among japanese observers for a few years.

⁴⁾ For a more complete explanation of how the ADC works, please refer to Jean-Pierre Prost's webpage:

http://www.astrosurf.com/prostjp/Dispersion_en.html

⁵⁾ Whether the chrominance is taken with RGB filters or colour camera does not matter here.

□

CMO/ISMO 2011/12 Mars Report #09**2011/2012 Mars Observations in April 2012**

♂.....This is the 10th report of the CMO/ISMO and treats the period of April 2012. During the period, the Martian season proceeded from $\lambda=091^\circ\text{Ls}$ to $\lambda=104^\circ\text{Ls}$, and it was an interesting period of the northern hemisphere near deep summer. The angular diameter decreased from $\delta=12.6''$ to $\delta=10.0''$, and the phase angle increased to $\epsilon=34^\circ$ at the end of April. The morning side was misty and there have been observed the so-called "poking-out" phenomena of Tharsis Montes, but in addition even in the evening Olympus Mons showed a structure inside a roundish misty area. The tilt stayed around $\phi=23^\circ\text{N}$, and it was shown nearly the final state of the arctic period. As will be stated in the text, there have been observed the "projection phenomena" several times in accordance with the reversibility of the magnetic field direction at the Sun's north polar region which is now in progress. Finally at least in April Bill FLANAGAN (*WFI*) completed on 25 April the observation of the phenomenon which was issued with the gif images (see ISMO_LtE398

http://www.hida.kyoto-u.ac.jp/~cmo/cmo/ISMO_LtE398.htm). This kind of phenomena will be still in progress and will be observed also in May and June.....

♂.....In April, we received the observations as follows: 8 observers domestically and 22 observers from abroad. In April the weather in Japan was still dismal.

ALBERT, Jay (JAl) Lake Worth, FL, the USA

2 Drawings (3, 12 April 2012) 400×28cm SCT

AKUTSU, Tomio (Ak) Cebu, the Philippines

10 Sets of RGB + 10 IR + 4 LRGB Colour + 4 L Images (1, 2, 11, 14, 18, 19, 21, 22, 29 April 2012)
36cm SCT @f/36, 55 with a DMK21AU04

BATES, Donald R (DBt) Houston, TX, the USA

2 Colour Images (1, 8 April 2012) 25cm speculum @f/27 with a ToUcam Pro II

DELCROIX, Marc (MDc) Tournefeuille, France

2 Sets of RGB + 2 IR + 1 LRGB Colour + 1 L Images (1, 9# April 2012)
32cm speculum, 25cm SCT# with a Basler acA640-100gm

FLANAGAN, William (WFI) Houston, TX, the USA

1 Set of LRGB Images (25 April 2012) 36cm SCT @f/27 with a Flea3

GHOMIZADEH, Sadegh (SGh) Tehran, Iran

12 Colour Images (1, 4,~7, 9, 10, 19, 21, 22, 27, 28 April 2012) (28cm SCT with a DMK21AU04.AS)

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

2 Sets of RGB + 2 IR Images (10, 17 April 2012) 36cm SCT @f/28 with a DMKAU618.AS

GRAFTON, Edward A (EGf) Houston, TX, the USA

2 Colour Images (6, 8 April 2012) 36cm SCT @f/39 with an ST402

HILL, Richard (RHI) Tucson, AZ, USA

1 Colour Image (9 April 2012) 20cm Maksutov @f/32 with a DBK21AU04

ISHIBASHI, Tsutomu (Is) Sagamihara, Kanagawa, Japan

4 Colour Images (2, 9, 12 April 2012) 31cm speculum, with a SONY HC9 Video cam

KOHZAKI, Ichiro (Kz) Higashi-Kurumé, Tokyo, Japan

3 Drawings (2, 12 April 2012) 340, 480×20cm speculum

KONNAÏ Reiichi (Kn) Ishikawa, Fukushima, Japan

15 Drawings (1, 2, 8, 25, 28 April 2012) 500, 430, 600, 750×30cm SCT

KUMAMORI, Teruaki (Km) Sakai, Osaka, Japan

1 RGB + 4 LRGB Colour + 3 B Images (6, 8, 17, 27 April 2012)
28cm SCT @f/60 with a DMK21AF04/DFK21AF04

KOWOLLIK, Silvia (SKw) Ludwigsburg, Germany

5 Sets of RGB + 4 IR Images (11,~13, 19 April 2012) 20cm speculum with a DMK31AF03.AS

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

1 Colour Image (10 April 2012) 22cm speculum @f/44 with a DMK21AU618.AS

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

9 Colour Images (3, 5, 7, 14, 20, 30 April 2012) 25cm SCT with a ToUcam pro II

MINAMI, Masatsugu (Mn) Fukui City Observatory*, Fukui, Japan

2 Drawings (13 April 2012) 400, 550×20cm Goto ED refractor*

MORALES RIVERA, Efrain (EMr) Aguadilla, Puerto Rico

9 Sets of LRGB Images (3, 4, 7, 9, 10, 12, 17, 20 April 2010) 31cm SCT with a DMK21AF04

MORITA, Yukio (Mo) Hatsuka-ichi, Hiroshima, Japan

12 Sets of RGB + 12 LRGB Colour + 12 L Images (1, 7, 12, 14~16, 18, 23, 28 April 2012)
25cm speculum with a Flea3

MURAKAMI, Masami (Mk) Fujisawa, Kanagawa, Japan

7 Drawings (6, 12 April 2012) 320×20cm F/8 speculum

PARKER, Donald C (DPk) Miami, FL, the USA

7 Set of RGB + 2 UV Images (4, 6, 10, 13, 19, 26 April 2012)
36cm SCT @f/42 with a DMK21AU618.AS

PEACH, Damian A (DPc) Selsey, West Sussex, the UK

12 RGB Colour + 1G + 3 B Images (1, 2, 4, 5, 13, 14, 21 April 2012)
(36cm SCT with a SKYnyx 2-0M)

PELLIER, Christophe (CPl) Nantes, France

2 Sets of RGB + 1 IR + 2 LRGB Colour Images
(1 April 2012) 25cm speculum @f/32 with a PLA-Mx

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

1 Colour Drawing (3 April 2012) 480, 340×35cm SCT

SHARP, Ian (ISp) Ham, West Sussex, the UK

2 Colour Images (1, 21 April 2012) 28cm SCT with a Flea3

SMET, Kris (KSm) Bornem, Belgium

1 Colour Drawing (1 April 2012) 310×30cm Dobsonian

TYLER, David (DTy) Flackwell Heath, Bucks, the UK

3 LRGB Colour + 3 R Images (1, 14, 24 April 2012) 36cm SCT with a Flea3

WALKER, Sean (SWk) Manchester, NH, the USA

1 Colour Image (21 April 2012) 32cm speculum with a DMK21AU618

WARELL, Johan (JWr) Skivarp, Sweden

10 Sets of RGB Images (1, 4, 5, 8, 15, ~17, 19, 22, 23 April 2012)
22cm speculum @f/27 with a DBK21AU618

WILLEMS, Freddy (FWI) Waipahu, Hawaii, the USA

27 Sets of RGB + 44 Colour + 2 R + 1 G + 26 IR Images (1, ~4, 12, ~15, 19, 27, ~29 April 2012)
36cm SCT with a DMK21AU04.AS

♂.....This time since the important milestone of $\lambda=100^\circ\text{Ls}$ is included, we review a bit closely. The occurrence of the CME and consequences also checked.

♂.....**1 Apr ($\lambda=091^\circ\text{Ls}$)**, the picture by BATES (*DBt*) shows Hyperboreus L very dark: Now the beginning of the dark wave arrived near the npc. This is also seen on WILLEMS (*FWI*)'s images at $\omega=087^\circ\text{W}\sim 112^\circ\text{W}$. At the same time at $\omega=087^\circ\text{W}$, the poking out of Tharsis Montes and Olympus Mons is apparent in a brown tinge. AKUTSU (*Ak*)'s image at $\omega=148^\circ\text{W}$ and $\omega=156^\circ\text{W}$ show Olympia and it makes the npc to look like that the npc was split. On GHOMIZADEH (*Sgh*)' image at $\omega=259^\circ\text{W}$, the P ring is strong. The morning Hellas is weak. The remnant of the P ring on PELLIER (*CPl*)'s npc is conspicuous seen from $\omega=297^\circ\text{W}$, and the inside of Hellas near the meridians looks complex. Hellas on SHARP (*ISp*) looks a bit misty. On the other hand Hellas described by PEACH (*DPc*) at $\omega=304^\circ\text{W}$, 317°W , 324°W is very sharp and clear, and the southern Hellas concave aspect is evident. The complex surrounding of the npc is also interesting. See also DELCROIX (*MDC*)'s image at $\omega=211^\circ\text{W}$.

2 Apr ($\lambda=091^\circ\text{Ls}$): *FWI*'s image at $\omega=135^\circ\text{W}$ is interesting because Olympus Mons is near the CM and it stays inside a roundish misty area. In Japan KONNAI (*Kn*), *Ak*, KOHZAKI (*Kz*) et al saw images where the evening clouds are effective. Last on the day, *DPc* at $\omega=298^\circ\text{W}$ saw the complex of the P ring around the npc.

On **3 Apr ($\lambda=092^\circ\text{Ls}$)** MORALES (*EMr*) produced a good image at $\omega=024^\circ\text{W}$ where Hyperboreus L is dark. ALBERT (*JAl*) seems to see it at $\omega=029^\circ\text{W}$. Freddy *FWI*'s image at $\omega=090^\circ\text{W}$ interestingly depicts the inside of the npc.

4 Apr ($\lambda=092^\circ\text{Ls}$): At the east end at $\omega=352^\circ\text{W}$ Hellas is pure whitish. On the image by PARKER (*DPk*) at $\omega=005^\circ\text{W}$ Hyperboreus L is clearly seen. This is also dark on *FWI*'s images at $\omega=100^\circ\text{W}$, just like a rift inside the npc. Olympus Mons looks surrounded by a large ring (R). *DPc*'s image at $\omega=267^\circ\text{W}$, Hellas is at the morning side with a shadowy dent.

- 5 Apr ($\lambda=093^\circ\text{Ls}$):** WARELL (*JWr*)'s Syrtis Mj is slightly bluish at $\omega=251^\circ\text{W}$. *DPc*'s image is clearer but Hellas is obscure inside the morning area.
- On **6 Apr ($\lambda=093^\circ\text{Ls}$)** at 02:40 GMT *DPk* saw at $\omega=354^\circ\text{W}$ a faint projection at the western morning side near the equatorial line. It is uncertain the time was early or late: The projection is more seen in G and B. GRAFTON (*EGf*) took a good image at $\omega=003^\circ\text{W}$, but uncertain about the projection. The relation between P ring and Hyperboreus is clear. KUMAMORI (*Km*)'s description of the Tharsis trio and Olympus Mons at $\omega=113^\circ\text{W}$ is interesting.
- 7 Apr ($\lambda=093^\circ\text{Ls}$):** *EMr*'s Hellas at $\omega=332^\circ\text{W}$ is pure white. This may also seen in MELILLO (*FMI*) also shows it at $\omega=359^\circ\text{W}$. MORITA (*Mo*)'s images are interesting in the sense they show Tharsis Trio at $\omega=109^\circ\text{W}$ as well as Olympus Mons including the outer area (R,G,B) the npc part looks split from this angle.
- On **8 Apr ($\lambda=094^\circ\text{Ls}$)**, *EGr* shows the P ring at $\omega=356^\circ\text{W}$ and *Km* shows at $\omega=091^\circ\text{W}$ the P ring and Olympus Mons. The morning mist is also thick. It will be more interesting if the appearance is chased. *Kn* checked the poking out Olympus Mons at $\omega=110^\circ\text{W}$.
- 9 Apr ($\lambda=094^\circ\text{Ls}$):** On *EMr*'s image Hellas looks to have caved in near the meridian. The npc shows the complex P ring as if there exist rifts inside the npc. At Minsk a projection was observed at 17:31GMT:
http://www.astronominsk.org/Planets/Mars/2012/Mars20120409_en.html
- 10 Apr ($\lambda=095^\circ\text{Ls}$):** Hellas on the image of GORCYNKI (*PGc*) is near at the meridian at $\omega=304^\circ\text{W}$, looks to be pushed out. *EMr*'s $\omega=308^\circ\text{W}$ is a good image showing Huygens crater. *DPk*'s $\omega=314^\circ\text{W}$ image also shows as if Hellas flows outside. On LEWIS (*MLw*)'s image at $\omega=237^\circ\text{W}$ Syrtis Mj is faintly blue at the morning side.
- 11 Apr ($\lambda=095^\circ\text{Ls}$):** On *Ak*'s image the Tharsis trio and Olympus Mons are all seen. KOWOLLIK (*SKw*)'s $\omega=249^\circ\text{W}$ shows the markings in IR, but the main object should be the composition of the several colour: The B image is not good and consequently Elysium lacks an appeal.
- 12 Apr ($\lambda=096^\circ\text{Ls}$):** Hellas is already very whitish on *EMr*'s image though Hellas is somewhat deformed. There is a rift on the P ring. ISHIBASHI (*Is*)'s image at $\omega=071^\circ\text{W}$ seems to show the poking out of Tharsis, but the color is in general duller. *Mo*'s $\omega=073^\circ\text{W}$ images also seem to show the poking out phenomenon but not sharp: It must not be timely but can be chased continually. The images by *SKw* show the morning Syrtis Mj, and Elysium is clear even in B. And on the day at Minsk another projection was trapped at 1:56GMT: All at the magnetic mushrooms are dense and it must have been due to the reverse of the magnetic direction of the Solar northern district:
http://www.astronominsk.org/Planets/Mars/2012/Mars20120412_en.html
- 13 Apr ($\lambda=096^\circ\text{Ls}$):** *DPc* detected a weak projection of similar kind. On the other hand at $\omega=282^\circ\text{W}$ *DPk* showed white Hellas whose boundary is not clear. This might have been associated with a stream of icy particles at the upper atmosphere. At $\omega=021^\circ\text{W}$ on *FWI*'s image Hellas was going to the rear side: P ring and Hyperboreus L are dark. At $\omega=187^\circ\text{W}$ *DPc* detected Olympus Mons whose caldera was coming out from the evening mist: It is precious because the phenomenon was at the evening side. *DPc* successively took at $\omega=210^\circ\text{W}$, 215°W but no more it was seen. On these successive images the perimeter of Olympia is minutely zigzagged. At the same time the inside of Elysium looks very complex.
- 14 Apr ($\lambda=097^\circ\text{Ls}$):** Hellas on *FMI* at $\omega=307^\circ\text{W}$ is white and large (on this image the configuration of the npc, Hellas and the declination of Syrtis Mj is very instructive). *Ak* at $\omega=101^\circ\text{W}$ shows Olympus Mons coming out the morning mist. *Mo*'s case is earlier in time ($\omega=054^\circ\text{W}$). *DPc*'s Olympia at $\omega=192^\circ\text{W}$ is less white than the npc. To the west of Olympia there is seen Ierne (R image).

- 15 Apr ($\lambda=097^\circ\text{Ls}$):** *Mo* produced a successive images at $\omega=025^\circ\text{W}$, 034°W , 044°W , and 054°W . Hyperboreus L and the npc were checked but Iaxartes is obscure. The npc has become smaller.
- 16 Apr ($\lambda=098^\circ\text{Ls}$):** *Mo* produced a standard image at $\omega=034^\circ\text{W}$ for 25cm, but Iaxartes looks duller. *JWr*'s $\omega=152^\circ\text{W}$ takes the dull place but the images but tasteful. SUSSENBACH took an image of a projection. (<http://www.jsussenbach.nl/New3.htm>).
- 17 Apr ($\lambda=098^\circ\text{Ls}$):** *PGc* detected Olympia at $\omega=230^\circ\text{W}$ and suggested the complexity inside Elysium. *Km*'s $\omega=008^\circ\text{W}$ is typical. Iaxartes is shot. Out of *JWr* at $\omega=153^\circ\text{W}$ the B image is excellent. On *EMr*'s image Olympia is parallel. Phlegra is conspicuous in a brown colour.
- 18 Apr ($\lambda=099^\circ\text{Ls}$):** *Mo*'s $\omega=019^\circ\text{W}$ and *Ak*'s $\omega=029^\circ\text{W}$ are similar: In the former Iaxartes is clear but on the latter it shows a complex perhaps because of the water vapour.
- On **19 Apr ($\lambda=099^\circ\text{Ls}$)**, *DPk* took at $\omega=219^\circ\text{W}$ and 224°W . In the former Olympia is parallel to the npc, and density is similar. Phlegra is faintly brownish. *Ak*'s images at $\omega=017^\circ\text{W}$ are good in general. $\phi=23^\circ\text{N}$. *SGh*'s $\omega=113^\circ\text{W}$ aimed at the morning poking out but the image looks poor. *SKw*'s images at $\omega=168^\circ\text{W}$ aimed at Olympus Mons in the evening, but no poking out.
- 20 Apr ($\lambda=099^\circ\text{Ls}$):** *FMI*'s image at $\omega=198^\circ\text{W}$ shows Phlegra to be quite brownish. *EMr*'s $\omega=207^\circ\text{W}$ can be compared with his image on 1 Apr.
- 21 Apr ($\lambda=100^\circ\text{Ls}$):** The images at $\omega=205^\circ\text{W}$ by WALKER (*SWk*) are excellent: No more Olympus Mons shows the fine structure but the inside of Elysium is full of strange details. Olympia is visible. *Ak*'s image was at $\omega=360^\circ\text{W}$, and Hellas a bit seen near the evening limb. Images by *DPc* at $\omega=111^\circ\text{W}$, 121°W are excellent: Olympus Mons does not just poke out but shows itself up as if surrounded by a ring; among the Tharsis trio Arsia Mons is conspicuous. The npc is also surrounded singularly including the P ring. It should be analysed later. Nilokeras also shows a dark spot. The image by *ISp* at $\omega=124^\circ\text{W}$ is interesting but the image scale is too small.
- 22 Apr ($\lambda=100^\circ\text{Ls}$):** *Ak* chased Hellas at $\omega=326^\circ\text{W}$ and so on: White enough. Hyperboreus L on *SGh* at $\omega=053^\circ\text{W}$ is well dark. *JWr*'s images aim to show the poking out phenomena but not enough.
- 23 Apr ($\lambda=101^\circ\text{Ls}$):** *Mo* at $\omega=334^\circ\text{W}$ shows Hellas as *Ak* did the day before. Iaxartes looks elongated. *JWr*' images at $\omega=090^\circ\text{W}$ are far excellent than those on the day before: In addition to the Tharsis trio and the instance when Olympus Mons comes in looks precious. Hyperboreus L is well dark, and even Solis L is well apparent.
- 25 Apr ($\lambda=102^\circ\text{Ls}$):** FLANAGAN (*WFl*)'s image set at $\omega=180^\circ\text{W}$ is quite excellent: The evening Olympus Mons shows a fine structure, and the brownish colour at Phlegra is interesting. The P ring is also detailed, and Ierne is visible preceding Olympia. At the same time *WFl* shows the magnetic projections from $\omega=177^\circ\text{W}$ until $\omega=182^\circ\text{W}$ and makes a series of gif images (cf: LtE Now received 4 May). On the same day *Kn* from Japan drew beautifully at $\omega=290^\circ\text{W}$ Syrtis Mj and bright Hellas, N Alcyonius and the east end Elysium.
- 26 Apr ($\lambda=102^\circ\text{Ls}$):** *DPk*'s images at $\omega=150^\circ\text{W}$ show the caldera of Olympus Mons (especially in R): This is of somewhat different type from the so-called Poking out. The npc is now of a quire form; to be compared with residual npc.
- 27 Apr ($\lambda=103^\circ\text{Ls}$):** Freddy *Fwl* chased at $\omega=238^\circ\text{W}$, 244°W , 252°W : Note about Olympia. *Km* shot around $\omega=269^\circ\text{W}$: the area around Syrtis Mj is bluish while the SW end area shows a brownish tinge.
- On **28 Apr ($\lambda=103^\circ\text{Ls}$)**, Frank *FMI* shot from $\omega=201^\circ\text{W}$ to 231°W unperiodically in which Phlegra is different from one to another. The image around Olympia is good around at $\omega=201^\circ\text{W}$. *Kn* chased successively at $\omega=250^\circ\text{W}$, 260°W , 271°W , 280°W , 290°W and saw from the appearance of Syrtis Mj to the

disappearance of Elysium. His beauty is not to draw Syrtis Mj so dark.

♂.....We have thus outlined the situation in April just before $\lambda=100^\circ\text{Ls}$, but shall close by alluding again to the projection problem which must be associated with the magnetic CME phenomena. This kind of CME is extraordinary and perhaps caused by the reverse of the NS at the higher northern latitudes of the Sun which is now in progress, and so independent of the Martian season. Projections associated with the CME has been checked from March, and in April we had at least on 06, 09, 12, 13, 16, 25 Apr. On the other hand CME has been checked to occur on 02, 05, 09, 18, 19 Apr and these correspond to the projection phenomena. The Sun's magnetic extraordinary has been well checked compare with the previous case in 2003, but the mushrooms of magnetic distributions have the similar origin. The morning side when Electris, Eridania, and Ausonia come to the terminator side must be well checked.

(M MINAMI & M MURAKAMI)

Letters to the Editor

●.....**Subject: Mars image 31 March 2011**
Received: 01 Apr 2012 at 00:53 JST

Dear Mr. Minami, I attach some of Mars images taken on 31 March 2011.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120331/Ak31Mar12.jpg>

Best wishes

○.....**Subject: Mars image 01 April 2012**
Received: 01 Apr 2012 at 22:18 JST

Hi all, I attach some sets of Mars images taken on 01 April 2012. Seeing was poor.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120401/Ak01Apr12.jpg>

Best Wishes

○.....**Subject: Mars images 02 April 2012**
Received: 02 Apr 2012 at 23:14 JST

Hi all, I shall attach one set of Mars images on 02 April 2012.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120402/Ak02Apr12.jpg>

I will be back in Japan during 04-11 April. Best Wishes

○.....**Subject: Mars image 11,14 April**
Received; 15 April 2012 at 21:39 JST

Hi all, I attach recent Mars image on 11 and 14 April 2012

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120414/Ak14Apr12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120411/Ak11Apr12.jpg>

Best Wishes

○.....**Subject: Mars image 18, 19 April**
Received; 20 April 2012 at 22:53 JST

Hi all, I attach mars image on 18, 19 April 2012

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120418/Ak18Apr12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120419/Ak19Apr12.jpg>

Best Wishes

○.....**Subject: Mars image 21, 22 April**
Received; 25 April 2012 at 07:35 JST

Hi all, I attach mars image on 21, 22 April 2011.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120421/Ak21Apr12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120422/Ak22Apr12.jpg>

Best Wishes

Tomio AKUTSU (Cebu, the PHILIPPINES)

●.....**Subject: Mars (March 14-15th, 2012.)**
Received: 01 Apr 2012 at 02:00 JST

Hi all, Here is the full set from March 14-15th under excellent seeing. The high altitude cloud was captured (cutout inset.)

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120314/DPc14Mar12.jpg>

Nice to see how the orographics develop at they approach the limb.

RGBsequence:

http://www.damianpeach.com/mars1112/2012_03_14-15rgb.jpg

RGB & Blue Light:

http://www.damianpeach.com/mars1112/2012_03_14rgb01.jpg

Best Wishes

○.....**Subject: Mars (March 18th, 2012.)**
Received; 08 April 2012 at 06:49 JST

Hi all, Here are some images from March 18th. Poor to fair seeing. Bright clouds over Tharsis with the volcanoes visible.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120318/DPc18Mar12.jpg>

http://www.damianpeach.com/mars1112/2012_03_18rgb.jpg

Best Wishes

○.....**Subject: Mars (March 19th, 2012.)**
Received; 09 April 2012 at 01:33 JST

Hi all, Pretty decent seeing for this session. All four Tharsis volcanoes are very prominent poking through the clouds.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120319/DPc19Mar12.jpg>

http://www.damianpeach.com/mars1112/2012_03_19rgb.jpg

Best Wishes

○...*Subject: Mars (March 21st, 2012.)*

Received; 09 April 2012 at 05:06 JST

Hi all, Poor seeing on this night. None the less, the brilliant clouds over Tharsis persist and are easily seen.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120321/DPc21Mar12.jpg>
http://www.damianpeach.com/mars1112/2012_03_21rgb.jpg

Best Wishes

○...*Subject: Mars in great seeing (March 23rd, 2012.)*
Received; 10 April 2012 at 01:35 JST

Hi all, Some excellent seeing here on this night for a while. I was able to capture some very clear images of the Chryse hemisphere.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120323/DPc23Mar12.jpg>

The B filter image show extensive delicate clouds across the western half of the disk from Tharsis (where Ascraeus Mons appears as a very dark spot on the limb.) Interesting delicate fingers of clouds extending over Acidaliium. Chasma Borealis is very distinct cutting into in the NPC. Bright haze over Argyre in the far south.

http://www.damianpeach.com/mars1112/2012_03_23rgb.jpg

Best Wishes

○...*Subject: Re: Notice / CMO*
Received; 10 April 2012 at 21:55 JST

Dear Masami, I am very saddened to hear of Masatsugu's illness. Please pass on my warmest regards to him and his family. Best Wishes

○...*Subject: Mars (March 24th, 2012.)*
Received; 12 April 2012 at 04:51 JST

Hi all, Good seeing though not as good as the night before. Near identical CML with Ascraeus Mons on the limb poking through the Tharsis clouds.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120324/DPc24Mar12.jpg>
http://www.damianpeach.com/mars1112/2012_03_24rgb.jpg

Best Wishes

○...*Subject: Mars (March 25th, 2012.)*
Received; 14 April 2012 at 20:55 JST

Hi all, Good seeing again for this session. Extensive cloudiness visible in Blue light across Tharsis and Tempe.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120325/DPc25Mar12.jpg>
http://www.damianpeach.com/mars1112/2012_03_25rgb.jpg

Best Wishes

○...*Subject: Mars (March 26th, 2012.)*
Received; 15 April 2012 at 19:13 JST

Hi all, Fair seeing for this session. Prominent Syrtis

Blue cloud.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120326/DPc26Mar12.jpg>
http://www.damianpeach.com/mars1112/2012_03_26rgb.jpg

Best Wishes

○...*Subject: Mars (March 27th, 2012.)*
Received; 15 April 2012 at 21:56 JST

Hi all, Poor to fair seeing on this night. Bright clouds over Chryse/Tempe. Blue Syrtis cloud is prominent again.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120327/DPc27Mar12.jpg>
http://www.damianpeach.com/mars1112/2012_03_27rgb.jpg

Best Wishes

○...*Subject: Mars (March 28th, 2012.)*
Received; 16 April 2012 at 06:01 JST

Hi all, Here are some images from the 28th. A good view of Sinus Meridiani. Once again the Syrtis blue cloud is prominent.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120328/DPc28Mar12.jpg>
http://www.damianpeach.com/mars1112/2012_03_28rgb.jpg

Best Wishes

○...*Subject: Mars (March 29th, 2012.)*
Received; 18 April 2012 at 22:35 JST

Hi all, Some images from the 29th. An interesting swirl of cloud over Baltia and the bright cloud extending out of Hellas mentioned by Christophe Pellier.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120329/DPc29Mar12.jpg>
http://www.damianpeach.com/mars1112/2012_03_29rgb.jpg

Best Wishes

○...*Subject: Mars (March 29th - Part 2.)*
Received; 18 April 2012 at 23:53 JST

Hi all, With the help of our good friend winjupos i added some more data into the RGB from this session. It gave a more pleasing and smoother result. Hellas looks very interesting. It looks frosted to me as the bright edge is very well defined - rather reminds me of how the edge of the large NPC looks peeping through the hood. I wonder what the MRO imagery suggests.....

http://www.damianpeach.com/mars1112/2012_03_29rgb02.jpg

○...*Subject: Mars (March 30th, 2012.)*
Received; 19 April 2012 at 07:56 JST

Hi all, The last session from March. The frosty Hellas is nicely seen with Syrtis Major well placed.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120330/DPc30Mar12.jpg>
http://www.damianpeach.com/mars1112/2012_03_30rgb.jpg

Best Wishes

Damian PEACH (Selsey, WS, the UK)

●..... *Subject: Mars observation*
Received: 01 Apr 2012 at 05:48 JST

Greetings,

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120331/JA131Mar12.jpg>

Attached is my latest Mars observation, made through cirrus clouds last night. The tonal drawing has been uploaded to the New Images File. Regards,

○..... *Subject: Mars Observation 2012-04-03*
Received: 04 Apr 2012 at 9:45

Greetings,

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120403/JA103Apr12.jpg>

I had some decent, not great, seeing last night while Mars was near the zenith. My observing report and separate tonal drawing are attached. The tonal drawing has been uploaded to the new Images file. Jim, thanks for the compliment on my earlier submission. Regards,

○..... *Subject: Mars Observing Report*
Received; 13 April 2012 at 00:07 JST

Greetings, Some of the members of our local astronomy club went to West Delray Regional Park for some mostly deep sky observing. The sky was forecast to be clear with good transparency. It wasn't. I did manage to make a Mars observation under fair seeing of 7 which dropped to 3 as the clouds moved in. Transparency dropped from 4th magnitude to 0 before I could use the blue and green filters. The Martian clouds, however, showed up well in the W8 yellow filter. I thought I might have caught a hint of Hyblaeus in the red filter, but no sign of it in yellow. At best, I think I can only see large details when Mars is this size... and shrinking.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120412/JA112Apr12.jpg>

Regards,

Jay ALBERT (Lake Worth, FL)

●..... *Subject: Retardation of the protrusion from the CME passing*
Received: 01 April 2012 at 08:09 JST

Dear Masami, It seems the golden time of the protrusion must come two days or three days after the passing of the CME storm on Mars. In Wayne's case the CME came to the planet on 17 March at about 00:00 and was gone away already on 18 March at 12:00, and hence on 20 March around at 06:00 it is far from the planet. So you should take this retardation into account and should alter the Time Table for the possibility of the next protrusion: The protrusion must be something that should

make compensation for a loss which occurred during the CME storm. With best wishes

Masatsugu MINAMI (Mikuni-Sakai, Fukui, JAPAN)

●..... *Subject: Mars images 29 march 2012*
Received: 01 Apr 2012 at 09:18 JST

Hi all,

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120329/CPI29Mar12.jpg>

Here is a new set. Seeing was good.

http://www.astrosurf.com/pellier/M2012_03_29-CPE

Results in LRGB were virtually identical to RGB this time. A cloud is escaping from Hellas; this is a repeating cloud that we can see every day and every Martian year as well. Found it on 1997 and 1999 images! Best wishes

○..... *Subject: ISMO note - the bright Olympus in 2005*
Received: 02 Apr 2012 at 01:58 JST

Dear Masatsugu, ... You once asked me to write something about the bright Olympus in 2005. I did never write anything because finally, I just found myself to deny the "frost hypothesis". This morning I found MGS data taken on 6th November 2005 that of course show no frost and so I thought that it was interesting to write just a short note. Please find attached a short note. I have also found images that completely confirm the old note I wrote on CMO #325 about the October dust storm from the same year. I will also write something here just to show how good the amateur data can be. Of course I still keep all the other ideas I have already evocated. Best.

○..... *Subject: Mars images, 30 march 2012*
Received: 02 Apr 2012 at 02:56 JST

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120330/CPI30Mar12.jpg>

Hi all, Good seeing again here... good nights don't stop ! http://www.astrosurf.com/pellier/M2012_03_30-CPE

The white Hellas is on the limb, as well as the "escaping cloud" again. Best wishes

○..... *Subject: Mars images 31 march 2012*
Received: 04 Apr 2012 07:08 JST

Hi all, Seeing was just fair for the 31th.

http://www.astrosurf.com/pellier/M2012_03_31-CPE

The bright Hellas is coming into view. I have made a small comparison map with data from late february, the last period when we saw the region from Europe. The season was 76° and the basin was much less bright then. Looking at images I find difficult to decide whether there is frost or no on the floor...

○...**Subject: Mars images 1st april 2012**
Received; 06 April 2012 at 03:49 JST

Hi all, some images of the bright Hellas :

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120401/CP101Apr12.jpg>
http://www.astrosurf.com/pellier/M2012_04_01-CPE

It's hard to decide whether the basin is frosted or if these are just clouds yet. Probably both! The images remind me some of my first "serious" Mars observations. It was back in 1997, I was only drawing the planet at the eye-piece of my 7" newtonian, and the martian season was identical ; the Hellas basin was very bright as well. So these days I'm completing a full 15-years cycle of observations !

<http://www.astrosurf.com/pellier/M19mars97>

Best wishes,

○...**Subject: Re: Notice / CMO**
Received; 10 April 2012 at 21:24 JST

Dear Masatsugu, dear Masami, This is a sadly news that you're sending to us and I feel really sorry of it. The disease is very difficult, yet I just hope that modern medicine will allow you to go along with it ; perhaps that if it has just begun you could feel better in a short term ?

I can't imagine our observing community without the CMO/ISMO. If it's only the paper issue that is stopped, but the PDF issue is still edited, that would be ok for everyone I think.

Now I don't know exactly how the editorial activity itself will be impacted ? I just wanted to tell you, that, as I have informed you already, I have many ideas of ISMO notes to write and that I am able to fill gaps if they exist, just to help maintaining the publication.

Just wish you all the possible best...

=====
 (This is sent by BCC to our Mars colleagues by the use of the mailing list owned by the CMO.)

Dear CMO/ISMO readers, We very regret that we are to inform you of the fact that our Chief Editor Masatsugu MINAMI has fallen ill, more exactly he is suffering from a kind of PARKINSON'S diseases from this month and at present no one can replace his place, and hence the distributions of the paper versions of CMO/ISMO will be stopped until further notice. However CMO/ISMO Web Site will continue to be issued regularly every month although some items will be largely missing. Please so check the CMO/ISMO pages every day.

We are very sorry we are giving (possibly) great inconvenience to you.

Mars however is not very far from the earth at present and we sincerely expect your further work. Best regards,

Masami MURAKAMI
 Director of the OAA Mars Section

○...**Subject: ISMO note on RGB/LRGB imaging**
Received; 19 April 2012 at 04:26 JST

Dear Masatsugu, We had no news from you on the past days but you and your family are certainly going closer to go along with the situation. I just hope that you're going to face it... I don't know how things are going now for our ISMO ; but as planned here is my proposal of note on a comparison between RGB and LRGB.

Take care and please receive my friendly thoughts.

○...**Subject: Re: ISMO note on RGB/LRGB imaging**
Received; 20 April 2012 at 07:01 JST

Dear Masatsugu, I feel relieved to have a bit of news from you ! I did not know that you had problem to write :(This is a difficult situation for someone like you ; and I can just wish that things will improve...

On next time, I'll send you a short essay about the 2005 october dust observed by MGS, a bit like the one I wrote about the bright Olympus. Best wishes,

○...**Subject: Re: My situation**
.Received; 30 April 2012 at 20:44 JST

Dear Masatsugu, I'm happy to receive this notice from you. We all hope that you're going to keep on observing and analysing the red planet. I will do what I can to help the publication of the ISMO ! All the best

Christophe PELLIER (Nantes, FRANCE)

●...**Subject: Mars - March 30th, 03:37ut**
Received: 01 Apr 2012 at 09:56 JST

Hi Mr. Minami and Murakami, I am submitting my latest session from the 30th of March still under ideal conditions, Clear Skies.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120330/EMr30Mar12.jpg>

○...**Subject: Mars - April 3rd, 02:55ut**
Received; 05 April 2012 at 23:09 JST

Hi Mr. Minami & Mr. Murakami, Here is my latest session of Mars from the 3rd of April 02:55ut, Clear Skies.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120403/EMr03Apr12.jpg>

○...**Subject: Mars - April 4th, 01:22ut**
Received; 06 April 2012 at 12:53 JST

Hi Mr. Minami & Mr. Murakami, Here is my latest

session from the fourth of April, Showing some interest (possible) events in Syrtis Major (Orographic Clouds) and at the NPC (N. Deuteronilus, Dust?) region, Clear Skies.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120404/EMr04Apr12.jpg>

○...**Subject: Mars - April 7th, 01:46ut Received; 08 April 2012 at 20:48 JST**

Hi Mr. Minami & Mr. Murakami, This is my latest session from the 7th of april under not so ideal conditions, Clear Skies.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120407/EMr07Apr12.jpg>

○...**Subject: Mars - April 9th, 00:34, 03:22ut Received; 11 April 2012 at 15:08 JST**

Hi Mr. Murakami, Sorry to hear the news of Mr. Minami I hope he gets well soon. Here is my latest processed session from the 9th of April below average conditions, Clear Skies.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120409/EMr09Apr12.jpg>

○...**Subject: Mars - April 10th, 02:00ut Received; 13 April 2012 at 00:21 JST**

Hi Mr. Murakami, Here is my latest session from the 10th of april under above average conditions, Clear Skies to All.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120410/EMr10Apr12.jpg>

○...**Subject: Mars - April 12th, 01:05ut Received; 15 April 2012 at 13:54 JST**

Hi Mr. Murakami, My latest session from the 12th of april under below average conditions, Clear Skies.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120412/EMr12Apr12.jpg>

○...**Subject: Mars - April 17th, 23:57ut Received; 19 April 2012 at 06:11 JST**

Hi Mr. Murakami, Here I submit my latest session from the 17th of april under bad conditions but enough for one set before the curtain closed, Clear Skies.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120417/EMr17Apr12.jpg>

○...**Subject: Mars - April 20th, 01:21ut Received; 25 April 2012 at 14:41 JST**

Hi Mr. Murakami, Here I submit my latest session from the 20th of april under average conditions, Clear Skies.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120420/EMr20Apr12.jpg>

Efrain MORALES RIVERA
(Aguadilla, PUERTO RICO)

●...**Subject: RE: Retardation of the protrusion from the CME passing Received: 01 Apr 2012 at 13:03**

Dear all, Masatsugu MINAMI this morning communi-

cated that there could occur a retardation of the protrusion caused by the pressing CME passing near Mars, so that we revised the Expectation Table presented at **Subject: Expectation Times of the protrusion, Received: 29 Mar 2012 22:17 JST** below as follows: The area covers wider than before if the possible occurrences may be delayed two or three days.

GMT	5 April	6 April	7 April	8 April
11:00	ω=124.6°W	ω=115.6°W	ω=106.6°W	ω=097.5°W
11:20	ω=129.5°W	ω= 20.5°W	ω=111.5°W	ω=102.4°W
11:40	ω=134.3°W	ω=125.3°W	ω=116.3°W	ω=107.3°W
12:00	ω=139.2°W	ω=130.2°W	ω=121.2°W	ω=112.2°W
12:20	ω=144.1°W	ω=135.1°W	ω=126.1°W	ω=117.0°W
12:40	ω=149.0°W	ω=140.0°W	ω=130.9°W	ω=121.9°W
13:00	ω=153.8°W	ω=144.8°W	ω=135.8°W	ω=126.8°W
13:20	ω=158.7°W	ω=149.7°W	ω=140.7°W	ω=131.7°W
13:40	ω=163.6°W	ω=154.6°W	ω=145.6°W	ω=136.5°W
14:00	ω=168.5°W	ω=159.5°W	ω=150.4°W	ω=141.4°W
14:20	ω=173.3°W	ω=164.3°W	ω=155.3°W	ω=146.3°W
14:40	ω=178.2°W	ω=169.2°W	ω=160.2°W	ω=151.2°W
15:00	ω=183.1°W	ω=174.1°W	ω=165.1°W	ω=156.0°W
15:20	ω=188.0°W	ω=179.0°W	ω=169.9°W	ω=160.9°W
15:40	ω=192.8°W	ω=183.8°W	ω=174.8°W	ω=165.8°W
16:00	ω=197.7°W	ω=188.7°W	ω=179.7°W	ω=170.7°W
16:20	ω=202.6°W	ω=193.6°W	ω=184.6°W	ω=175.5°W
16:40	ω=207.5°W	ω=198.5°W	ω=189.4°W	ω=180.4°W
17:00	ω=212.3°W	ω=203.3°W	ω=194.3°W	ω=185.3°W
17:20	ω=217.2°W	ω=208.2°W	ω=199.2°W	ω=190.2°W
17:40	ω=222.1°W	ω=213.1°W	ω=204.1°W	ω=195.0°W
18:00	ω=227.0°W	ω=218.0°W	ω=208.9°W	ω=199.9°W
18:20	ω=231.8°W	ω=222.8°W	ω=213.8°W	ω=204.8°W
18:40	ω=236.7°W	ω=227.7°W	ω=218.7°W	ω=209.7°W
19:00	ω=241.6°W	ω=232.6°W	ω=223.6°W	ω=214.5°W
19:20	ω=246.5°W	ω=237.5°W	ω=228.4°W	ω=219.4°W
19:40	ω=251.3°W	ω=242.3°W	ω=233.3°W	ω=224.3°W

NB. The preceding observations were carried out as follows:

Wayne	20 Mar 2012	ω=147°W
Don	21 Mar 2012	ω=146°W
Jim	21 Mar 2012	ω=153°W
Masatsugu	04 Nov 2003	ω=203°W
Masatsugu	07 Nov 2003	ω=203°W
Yukio	07 Nov 2003	ω=211°W

Best Regards

Masami MURAKAMI (Director, the OAA Mars Section)

●.....*Subject: Bates Mars Image 04/01/2012*
Received: 01 Apr 2012 at 14:08 JST

Niliacus Lacus, Mare Erythraeum, Sinus Meridiani all show great detail.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120401/DBt01Apr12.jpg>

○.....*Subject: Bates Mars Image 04/08/2012*
Received; 08 April 2012 at 14:36 JST

Mars image from 04/08/2012 enclosed with notes.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120408/DBt08Apr12.jpg>

250 L
 f/27
 ToUcam (no IR)

02:21 UT
 Apr 8, 2012
 Cm = 331
 Dia = 11.9 as
 All the best from Texas,
Don R BATES (Houston, TX)

●.....*Subject: EPSC 2012 - AM2 session:*
Receive: 01 Apr 2012 at 16:47 JST

Dears, The European Planetary Science Congress (EPSC) will be held in September this year in Madrid, Spain. In particular, we would like to draw your attention to the AM2 session dedicated to "Amateur contribution to the advancement of planetary science", in a now separated program group "Amateur Astronomy"

For more information please visit:

<http://meetingorganizer.copernicus.org/EPSC2012/sessionprogramme/AM>

We would like to invite you to actively participate to this session by contributing a paper and/or meeting and exchanging views and ideas with other amateur and professional astronomers studying the solar system. If you are interested in making an oral or poster contribution, please fill in the abstract submission form that you will find at the web page above (abstract deadline: 23 May 2012).

Also, please feel free to circulate this message to all those who might be interested in the event. Sincerely,

Marc DELCROIX (*Convener of the AM2 session, SAF planetary observations commission*)

○.....*Subject: Mars 2012.03.31*
Received: 01 Apr 2012 at 21:14 JST

Dears,

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120331/MDc31Mar12.jpg>

Under degrading turbulence unfortunately:

<http://astrosurf.com/delcroix/images/planches/m20120331-MDe.jpg>

Whitish Hellas was prominent at the eyepiece.

Steady skies,

○.....*Subject: Mars 2012.04.01*
Received: 03 Apr 2012 at 3:23 JST

Dears,

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120401/MDc01Apr12.jpg>

Under correct conditions, I did my first trial LRGB on Mars with mitigated results as I could not get the correct color, and there are some differences (shape of Hellas ice, East of Acidia Planitia rendering, ...) which leads me to be careful about interpreting it.

<http://astrosurf.com/delcroix/images/planches/m20120401-MDe.jpg>

The blue layer shows diffuse ECB, which is not really seen on the RGB. Here are also the RGB and LRGB alone magnified by 120%:

http://www.astrosurf.com/delcroix/images/mars_20120401_rgb_120pc.jpg

http://www.astrosurf.com/delcroix/images/mars_20120401_lrgb_120pc.jpg

Sincerely,

○.....*Subject: Mars 2012.04.09*
Received; 11 April 2012 at 02:35 JST

Dears, Just before the bad weather coming in, Mars with my LX200 under average conditions; a cloud can be seen over Elysium:

<http://astrosurf.com/delcroix/images/planches/m20120409-MDe.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120409/MDc09Apr12.jpg>

Sincerely,

Marc DELCROIX (Tournefeuille, FRANCE)

●.....*Subject: Mars 2012/03/31*
Received: 01 Apr 2012 at 23:24 JST

Hello, Here is Mars on 2012/03/31.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120331/JpP31Mar12.jpg>

The seeing was bad. The transparency was poor.

Regards

Jean-Jacques POUPEAU (Essonne, FRANCE)

●.....*Subject: Mars: -Complete image set for Mar 20*
Received: 02 Apr 2012 at 04:33 JST

Hi all, Here is my complete set of images for the condensate cloud observation on March 20.

First is a 9-frame RGB animation from 2:02ut to 2:51ut

<http://exosky.net/images/March-20-Animation.gif>

and an 11-frame near-IR (742nm+) animation:

<http://exosky.net/exosky/wp-content/uploads/2012/04/March-20-Animation-IR.gif>

And the individual RGB images:

<http://exosky.net/exosky/wp-content/uploads/2012/04/20-March-0202ut.jpg>
<http://exosky.net/exosky/wp-content/uploads/2012/04/20-March-0210ut.jpg>
<http://exosky.net/exosky/wp-content/uploads/2012/04/20-March-0215ut.jpg>
<http://exosky.net/exosky/wp-content/uploads/2012/04/20-March-0219ut.jpg>
<http://exosky.net/exosky/wp-content/uploads/2012/04/20-March-0223ut.jpg>
<http://exosky.net/exosky/wp-content/uploads/2012/04/20-March-0234ut.jpg>
<http://exosky.net/exosky/wp-content/uploads/2012/04/20-March-0239ut.jpg>
<http://exosky.net/exosky/wp-content/uploads/2012/04/20-March-0245ut.jpg>
<http://exosky.net/exosky/wp-content/uploads/2012/04/20-March-0251ut.jpg>

Regards,

Wayne JAESCHKE (West Chester, PA)

●.....*Subject: Mars: Drawings of Mars*
Received: 02 Apr 2012 at 17:22 JST

Dear Dr. Minami, I have attached my latest Mars drawings. When I gave up observing for the degraded seeing and began withdrawing routine, blowing dust off the CP, binoviewer and eyepieces, a pretty strong earthquake occurred. The shake lasted over thirty seconds during which I had to dance with my telescope!

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120401/Kn01Apr12.jpg>

Good Seeing/Health!

○.....*Subject: Drawings of Mars*
Received; 04 Apr 2012 07:02

Dear Dr. Minami, Attached here are my latest Mars drawings. No special feature was discernable along the northwestern dawn terminator. Please take care, I do believe you should take a rest as you have been working too hard these days, no one can replace you!

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120402/Kn02Apr12.jpg>

Best Wishes,

○.....*Subject: A local dust on Meridiani*
Received; 05 April 2012 at 16:20 JST

Dear Dr. Minami, Dr. Parker, Christophe, all,

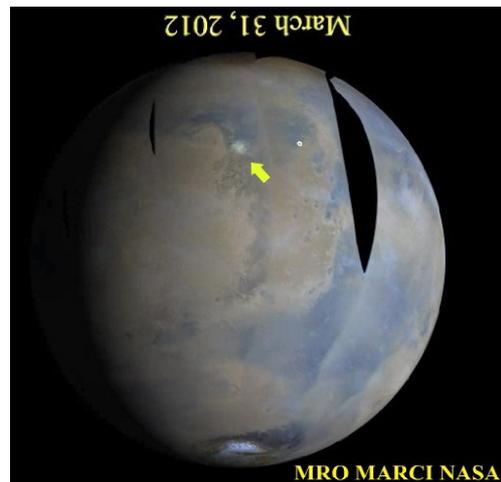
Attached here is an MRO MARCI image on 31 March 2012 showing a small(though almost 200km across) local dust on the eastern claw of Sinus Meridiani (the yellow arrow). The commentary on the week's weather says "A small local dust storm occurred approximately 800 km east of the Opportunity rover on the 31st, but it dissipated by the next day."

The excellent image taken by Donald PARKER on 04 April 2012 02:14GMT $\omega=005^\circ\text{W}$ clearly captured, I believe, an exactly the same type of dust phenomenon ; its location and extent are very much alike to those on the

MRO MARCI image.

As for the 31 March local dust event, it seems it hasn't been recorded on the images taken on the same day by Christophe PELLIER, Jean-Jacques POUPEAU and Marc DELCROIX. So that it seems probable that the local dust occurred at somewhere after the dawn until local afternoon of the day.

Best Regards,



○.....*Subject: Mars drawing on 08Apr2012 11:50GMT*
Received; 09 April 2012 at 23:08 JST

Dear Dr. Minami, Please find attached my latest drawing of Mars. The red planet is rapidly getting smaller, but is still comfortably large enough with a 750X magnification with Tani Optics' excellent 4mm orthoscopic eyepieces in the field of my Baader Planetarium 60 degrees binoviewer. The optical performance of my MEADE LX200-30ACF 12inchF/10 SCT is unexpectedly (sorry Mr. President of Meade Instrument!) superb!

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120408/Kn08Apr12.jpg>

Good Weather/Health!

Reiichi KONNAI (Fukushima, JAPAN)

●.....*Subject: Mars Image 01-Apr-2012*
Received 03 Apr 2012 at 00.05 JST

Hi all, Here's my image from last night -

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120401/ISp01Apr12.jpg>

- bigger than normal as the tightening screw on my 3× Barlow broke in mid-session, forcing me to go up to about f/66 using a 5x PowerMate on my C11. Seems to have come out OK. I had the gain on the Flea3 pretty well maxed out.

<http://tinyurl.com/7slunys>

Regards

○...*Subject: Mars with Olympus Mons 21-Apr-2012*
Received; 24 April 2012 at 18:34 JST

Hi all, Here's an image from Saturday night with Olympus Mons jutting through the clouds.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120421/ISp21Apr12.jpg>

Also, I've recently launched a new-look website (at my usual astro-sharp.com url). Image in the top blog entry here:

<http://astro-sharp.com>

Best Regards

Ian SHARP (Ham, WS, the UK)

●...*Subject: : mars 1.april*
Received: 03 Apr 2012 at 15:29 JST

Hi Guys, Nowadays I am happy because the weather is fine. In this time we had very stable atmosphere on 1 April: seeing was good & atmosphere was average so that anyway I took some images. PLS see a good definition of Syrtis Major.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120401/SGh01Apr12.jpg>

All the Best

○...*Subject: mars 5 april.& venus*
Received; 07 April 2012 at 14:27 JST

Hi Guys, A mix of clouds and clear this night totally OVERCAST I used capture .some images one of them is Mars PLS see you it.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120405/SGh05Apr12.jpg>

Regards



○...*Subject: Subject: mars 6 april*
Received; 09 April 2012 at 01:53 JST

Hi, On 6 April was fair seeing

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120406/SGh06Apr12.jpg>

Best Wishes

○...*Subject: mars 7 April*
Received; 11 April 2012 at 05:21 JST

Hi, Fair condition only for mars I took one image PLS see you it.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120407/SGh07Apr12.jpg>

Best Wishes

○...*Subject: mars 9 apr*
Received; 14 April 2012 at 09:46 JST

Hi, Poor seeing & unstable atmosphere that was total variable condition.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120409/SGh09Apr12.jpg>

Best Wishes

○...*Subject: mars 10 apr*
Received; 15 April 2012 at 05:33 JST

Mars are quickly fading as the planet ANOTHER has not that MAGNITUDE.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120410/SGh10Apr12.jpg>

Best Wishes

○...*Subject: mars 19 april.*
Received; 22 April 2012 at 08:50 JST

Hi, Mars at this year was not good for us because changed CLIMATE & we had always unstable weather & variable condition.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120419/SGh19Apr12.jpg>

Best Wishes,

○...*Subject: mars 21 april*
Received; 23 April 2012 at 10:15 JST

Hi, Very bad seeing & avrage atmosphere & variable condition.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120421/SGh21Apr12.jpg>

Best Wishes,

○...*Subject: mars 22 apr*
Received; 25 April 2012 at 10:32 JST

Hi, Very poor seeing & variable condition .

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120422/SGh22Apr12.jpg>

Best Wishes,

○...*Subject: mars 27 April.*
Received; 29 April 2012 at 03:06 JST

Hi, Poor seeing & bad condition . ,anyway you can see north east Airy crater & Cassini crater & vest Syrtis Major. PLS see you it.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120427/SGh27Apr12.jpg>

Best Wishes,

○...*Subject: mars 28 april.*
Received; 30 April 2012 at 09:16 JST

Hi, Total poor seeing & SPRING condition so was that.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120428/SGh28Apr12.jpg>

Best Wishes,

Sadegh GHOMIZADEH (Tehran, IRAN)

●.....*Subject: mars sketches 27/03/12 & 01/04/12*

Received: 04 Apr 2102 02:02 JST

Hi, here are my sketches from march 27 and april 1

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120327/KSm27Mar12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120401/KSm01Apr12.jpg>

Kris SMET (Bornem, BELGIM)

●.....*Subject: Mars from 20th March 2012*

Received: 04 Apr 2012 08:43

Hello, Mars from 20th March in moderate seeing showing a clearer view to that sent out previously from the 19th but with a similar longitude on show. Again you can see the location of the three Tharsis volcanoes and Olympus Mons seen as holes in the morning mists.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120320/MLw20Mar12.jpg>

Cheers,

○.....*Subject: Mars from 23rd, 24th, 25th, 27th, 29th*

Received; 11 April 2012 at 05:47 JST

Hi, Bit of a Mars extravaganza here now my backlog of processing has been cleared. Images from 23rd, 24th, 25th, 27th and 29th March, all in reasonable to good seeing.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120323/MLw23Mar12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120324/MLw24Mar12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120325/MLw25Mar12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120327/MLw27Mar12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120329/MLw29Mar12.jpg>



Also included is a DSLR shot of Mars in Leo from 19th March and a comparison image showing the relative size of the details on Mars, Jupiter and Saturn all at the same

image scale. Shows you how small the fine details are on Mars during this apparition.



Martin LEWIS (St Albans, the UK)

www.skyinspector.co.uk

●.....*Subject: More Mars images*

Received; 04 April 2012 at 17:53

Dear all, Sending you three new Mars images from March 22, 26, 27 and April 1. Also, revised processing for Mar 19, 23 and 25.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120401/JWr01Apr12.jpg>

See also: WARELL, Johan 19, 22, 23, 25, 26, 27 March 2012: Best regards, and have a lovely Easter,

○.....*Subject: Mars, 4 and 5 April*

Received; 07 April 2012 at 06:57 JST

Dear colleagues, Please accept my Mars images from April 4 and 5, as well as a revised image from February 27. Hoping for clear weather and more images tomorrow night and the following evening.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120405/JWr05Apr12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120404/JWr04Apr12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120227/JWr27Feb12.jpg>

Best wishes,

○.....*Subject: Mars on 8 April*

Received; 11 April 2012 at 01:08 JST

Dear colleagues, A Mars image from April 8 under good seeing and clear dark skies.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120408/JWr08Apr12.jpg>

Best regards,

○.....*Subject: Re: Notice / CMO*

Received; 12 April 2012 at 03:02 JST

Dear Masami, I am very sorry to read this. Please send my warmest regards to Masatsugu for his well being. I hope that the illness will be mild and that he can continue with his important work on Mars. I also hope you

will be able to maintain the web site and the printed CMO in due course. It is an important and very appreciated communication channel for the planetary community.

Best regards,

○ *Subject: Mars on 15 and 16 April*
Received; 17 April 2012 at 07:18 JST

Hi all, Two images of Mars on with pretty orographics over Tharsis and white clouds near the shrinking cap. Too bad Mars is shrinking too...

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120416/JWr16Apr12.jpg>
<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120415/JWr15Apr12.jpg>

Best wishes,

○ *Subject: Mars on 17 April*
Received; 19 April 2012 at 05:23 JST

Dear all, Still good seeing here but this time less luck with focus. Nothing much changing from day to day on Mars.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120417/JWr17Apr12.jpg>

All the best,

○ *Subject: Mars on 19, 22, 23 April*
Received; 25 April 2012 at 05:47 JST

Dear friends, Three more dates of the red planet with increasingly better seeing. The one taken last night April 23 was obtained in excellent conditions and shows Arsia, Pavonis, Ascraeus and Olympus Mons as dark spots peeking through the widespread morning cloud deck. Very similar to a month ago. North-south trending dust streak through Nilivus Lacus or an image artifact? Can't decide, but it's visible on another image obtained six minutes later. No obvious image artifacts on these images that I can detect.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120419/JWr19Apr12.jpg>
<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120422/JWr22Apr12.jpg>
<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120423/JWr23Apr12.jpg>

All the best,

○ *Subject: Mars, 25 April*
Received; 26 April 2012 at 23:19 JST

Hi, Obtained this image last evening under less than ideal conditions, thickening Cirrus, misty and twilight. Summer is clearly approaching with bright nights, but seeing is also generally improving. Will keep on going at dusk for the remainder of the Mars season to catch the planet as high as possible.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120425/JWr25Apr12.jpg>

All the best,

Johan WARELL (Skivarp, SWEDEN)

● *Subject: Mars 29-March-2012*
Received; 05 April 2012 at 08:29 JST

Hi Guys, Here are a trio taken in poor to fair seeing, I have added the three images in a very short GIF animation, but it does serve to demonstrate the Hellas cloud movement, which looks positionally a little odd on the stills.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120329/DTy29Mar12.jpg>

○ *Subject: Re: Notice / CMO*
Received; 11 April 2012 at 11:15 JST

Dear Masami that is bad news. I thank him for all of his efforts these past years and send him my very best wishes in coping with this illness. I do have an astro friend with Parkinsons who is actually coping well. I hope his treatment will stabilise his condition.

Best Regards

○ *Subject: Mars April 1-2012*
Received; 13 April 2012 at 18:05 JST

Hi Guys, Bit late but you know how it is! Fair seeing for the 41deg alt.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120401/DTy01Apr12.jpg>

Best wishes

○ *Subject: Mars 14-April-2012*
Received; 15 April 2012 at 23:19 JST

Hi Guys, I managed to grab a Mars Imaging run in the cloud gaps last night seeing very jittery but useable.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120414/DTy14Apr12.jpg>

Best wishes

○ *Subject: Mars 30-March-2012*
Received; 18 April 2012 at 20:35 JST

Hi Guys, here is an earlier unprocessed Mars image that has got to the front of the processing queue.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120330/DTy30Mar12.jpg>

Best wishes

○ *Subject: Mars 24th-April-2012*
Received; 27 April 2012 at 02:37 JST

Hi Guys, I was nice to see an imagable Mars this evening. I just love these blue mists

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120424/DTy24Apr12.jpg>

Best wishes

Dave TYLER (Bucks, the UK)

●.....*Subject: Mars Sketch 03 April 2012*
Received; 05 April 2012 at 10:04 JST

Sirs: Please find attached my recent observational sketch of Mars.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120403/MRs03Apr12.jpg>

I had OK seeing but only for about 20 minutes. I hope your good seeing lasts longer than that.

Best regards,

Michael ROSOLINA (Friars Hill, WV, the USA)
 Twin Sugars Observatory

●.....*Subject: Mars 4 April*
Received; 05 April 2012 at 11:36 JST

Hi All, I have attached RGB Mars images from 4 April.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120404/DPk04Apr12.jpg>

The dust prominent streak across the NPC persists. On the PM limb, Hellas was bright in all filters. In blue light a bright cloud was seen overlaying this region. Best,

○.....*Subject: Dust in Meridiani Planum*
Received; 06 April 2012 at 04:02 JST

Hi All, Reichi Konnai has alertly noticed a dust streak on my 4 April Mars image. It crosses the western fork of Meridiani Sinus. He sent me an image from the MRO MARCI spacecraft that showed a small dust cloud in that area which dissipated very quickly. See:

http://www.msss.com/msss_images/latest_weather.html

The Meridiani Planum should bear watching. Many thanks to Mr. Konnai! I should have picked up on this, but I get too immersed in image processing that I often miss the forest for the trees -- yet another sign of age! Best,

○.....*Subject: Mars 6 Apr: Another Terminator Cloud?*
Received; 07 April 2012 at 16:14 JST

Hi All, I have attached RGB and UV Mars images from 6 April. A very faint terminator projection was detected at approximate latitude +13 degrees. It appears to be a cloud and was more prominent in G and B light than in Red. A dust streak is still visible across the NPC. Meridiani Sinus now appears normal for the season.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120406/DPk06Apr12.jpg>

○.....*Subject: Mars 10 April*
Received; 11 April 2012 at 13:12 JST

Hi All, I have attached some RGB Mars images from 10 April. Hellas was only moderately bright in red, with faint details visible on its floor. In blue light a bright cloud covers the Hellas basin.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120410/DPk10Apr12.jpg>

Best,

○.....*Subject: Re: Notice / CMO*
Received; 13 April 2012 at 05:57 JST

Dear Masami, I am very sorry to hear of Masatsugu's illness. He has been a good friend of me and of amateur Mars observers for many years. I pray for his recovery. Regards,

○.....*Subject: Your Health*
Received; 13 April 2012 at 06:03 JST

Dear Masatsugu, I was very upset when I received the e-mail from Masami Murakami concerning your health problems. You have been a wonderful friend and supporter for all these years and I am keeping you in my prayers. Best,

○.....*Subject: Mars 19 April*
Received; 21 April 2012 at 13:17 JST

Hi All, I have attached some RGB Mars images from 19 April.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120419/DPk19Apr12.jpg>

The Olympus Mons orographic cloud was brilliant on the PM limb. A diffuse cloud band was seen running across Isidid-Aethiopsis into Elysium. Lemuria was centered above the NPC. Best,

○.....*Subject: Mars 13 April*
Received; 24 April 2012 at 03:28 JST

Hi All, I have attached belated RGB Mars images from 13 April. The seeing was poor. The Syrtis Blue Cloud was visible as well as a brilliant Elysium orographic on the PM limb. There were also clouds over Aeria and Libya-Isidis. Hellas appeared dull in red light and was apparently overlaid with cloud rather than frost.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120413/DPk13Apr12.jpg>

Best,

Don PARKER (Coral Gables, FL, the USA)

●.....*Subject: Mars: April 3, 2012*
Received; 05 April 2012 at 14:41 JST

Hi - I have attached my latest image of Mars April 3, 2012 to be posted.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120403/FMI03Apr12.jpg>

Thanks,

○.....*Subject: Mars: April 5, 2012*
Received; 08 April 2012 at 14:42 JST

Hi - I have attached my image of Mars April 5, 2012

to be posted.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120405/FM105Apr12.jpg>

○…*Subject: Mars: April 7, 2012*
Received; 08 April 2012 at 14:44 JST

Hi - I have attached my latest images of Mars April 7, 2012 to be posted.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120407/FM107Apr12.jpg>

Thanks,

○…*Subject: Mars: April 14, 2012*
Received; 15 April 2012 at 14:15 JST

Hi - I have attached my latest image of Mars April 14, 2012 at 4:25 UT to be posted. Thanks and Hope is all well with Masatsugu MINAMI.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120414/FM114Apr12.jpg>

○…*Subject: Mars: April 20, 2012*
Received; 21 April 2012 at 15:05 JST

Hi - I have attached my latest images of Mars April 20, 2012 to be posted.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120420/FM120Apr12.jpg>

Thanks,

Frank J MELILLO (Holtsville, NY, the USA)

●…*Subject: Re: Dust in Meridiani Planum*
Received; 06 April 2012 at 04:32 JST

Yeah, I thought Meridiani Sinus was fuzzy, but didn't see any bright red spot there. Others may have detected dust there:

2012-04-01-2141UT, Javler Beltran Jova (Image)

2012-04-03 0000UT Meridani Sinus fuzzy, not bright, Jeff Beish (Visual)

2012-04-04 0000UT Meridani Sinus fuzzy, not bright, Jeff Beish (Visual)

2012-04-04 0204UT, Wayne Jaeschke (Image)

2012-04-05 0000UT shows Meridani Sinus ill defined, not bright, Jeff Beish (Visual)

Seeing here was not good enough to see dust. Will look tonight, conditions permitting.

○…*Subject: Re: Mars 6 April: Another Terminator Cloud?*
Received; 07 April 2012 at 21:53 JST

Too bad Pathfinder lander isn't alive since it is only around 1,600-Km away; may have a good shot at a high cloud at that distance.

○…*Subject: Re: Mars 6 April: Another Terminator Cloud?*
Received; 08 April 2012 at 00:24 JST

Good thing my memory has not completely deteriorated

to zero! The aftermath of dust in the atmosphere of Mars: we used to discuss this often with Leonard Martin, Rich Zurek and Chick Capen (and others) where a few days after a large dust cloud or storm is sighted a bright morning limb arc would appear and then shortly after that a dull hood would form over the polar region.

Many times we forget to look for this because some storms race across the surface of Mars so dusty limb arcs or polar hazes are not noticed.

While some have postulated that the "limb projection" of 21 March 2012 may have been a dust cloud it seems unlikely given the altitude of this phenomenon would extend so far out (~380-Km) and most certainly would not be a terminator projection given the slim defect angle of only 0.2 seconds of arc. Also, how Sunlight could reflect into the empty void of space is a mystery to me!

It will be some time before we determine what it is, but what it was not seems obvious to me. The recent Parker image (07 Apr 2012) shows a terminator projection that is well within the confines of the defect phase angle or terminator.

Jeff BEISH (We The People)

●…*Subject: Mars - March 28, 2012 -*
Received; 06 April 2012 at 15:10 JST

I do not know why I only took blue channel images that day. I guess the seeing was crappy and I just want to show some cloud movement, O well, I just made an animation of the 5 Avi captures in crappy seeing conditions. Don't look it's really bad !

<http://stargazerslounge.com/attachments/imaging-planetary/84410d1333691986-mars-march-28-2012-blue-light-animation-crappy-mars-blue.gif>

○…*Subject: MARS -March 29, 2012- Freddy Willems*
Received; 07 April 2012 at 14:17 JST

Seeing was really not great for this Mars session.

Processed as much as I could to get some detail, lots of artifact due to oversharpening. Still working on a backlog.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120329/FW129Mar12.jpg>

○…*Subject: MARS -April 01, 2012-*
Received; 08 April 2012 at 18:08 JST

My MARS session from April 01, 2012 in variable seeing conditions

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120401/FW101Apr12.jpg>

○…*Subject: MARS- April 02, 2012 -*

Received; 09 April 2012 at 14:13 JST

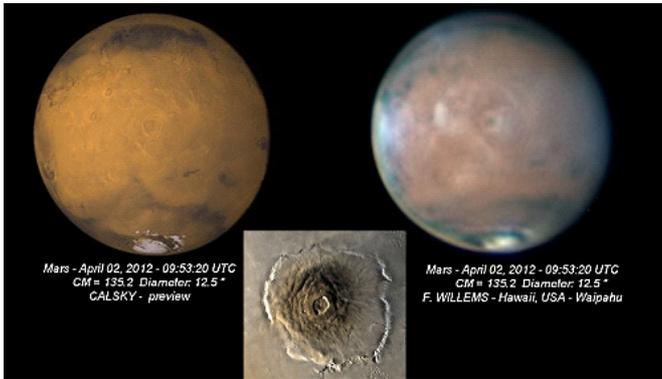
Hi Gentlemen, Here is my April 02,2012 Mars set, seeing was again variable.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120402/FW102Apr12.jpg>

○...**Subject: Mars - April 02, 2012 - Received; 10 April 2012 at 11:13 JST**

Reworked my image from April 02, 2012 a bit. Made a comparison with the Calsky Olympus Mons. If you look closely you can 'see' the black dot or the calendra and the asymmetric escarpment structure. Olympus Mons is on CM and seems to be cloudless.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120402/FW102Apr12.jpg>



○...**Subject: MARS - April 03&04, 2012 - Received; 11 April 2012 at 15:25 JST**

Missing some channels due to cloud cover, just post what I have.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120403/FW103Apr12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120404/FW104Apr12.jpg>

○...**Subject: Mars April 12, 2012 Received; 20 April 2012 at 17:23 JST**

My Mars session from April 12, 2012, Seeing was above average.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120412/FW112Apr12.jpg>

○...**Subject: Mars April 13, 2012 Received; 20 April 2012 at 17:24 JST**

My Mars images from April 13, 2012. Seeing was not that great while recording but the set turns out great, wish I recorded some more sets that night !.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120413/FW113Apr12.jpg>

○...**Subject: Mars - April 14, 2012- Received; 23 April 2012 at 14:06 JST**

My set from April 14, 2012. Average, variable seeing conditions.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120414/FW114Apr12.jpg>

○...**Subject: Mars -April 15, 2012 - Received; 23 April 2012 at 14:07 JST**

My Mars images from April 15, 2012 in variable seeing

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120415/FW115Apr12.jpg>

○...**Subject: Mars - April 19, 2012 - Received; 23 April 2012 at 14:08 JST**

My Mars images from April 19, 2012 in very poor seeing.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120419/FW119Apr12.jpg>

Freddy WILLEMS (Waipahu, HI, the USA)

●...**Subject: Mars drawings Received; 07 April 2012 at 04:12 JST**

I've been a bit quiet on the Mars front this apparition. Some images may come. In the meantime, here's two drawings. The opposition night one was through substantial cloud.



David ARDITTI (Edgware, Middlesex, the UK)

●...**Subject: Mars April 6th and 8th 2012 Received; 09 April 2012 at 03:32 JST**

Here are a couple of Mars images

April 6th 2012 @ 03:17 UT

<http://www.egrafton.com/04-06-12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120406/EGf06Apr12.jpg>

April 8th 2012 @ 04:04 UT

<http://www.egrafton.com/04-08-12.jpg>

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120408/EGf08Apr12.jpg>

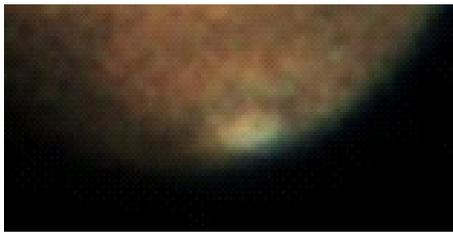
Ed GRAFTON (Houston, TX)

●...**Subject: First light on Mars Received; 09 April 2012 at 15:24 JST**

Hi, As I mentioned before, I had determined that at my site a 7-8" aperture could do better than the C14 I was using. The seeing is just never good for the full aperture.

Through an odd set of circumstances over the last 2 weeks, I acquired a TEC MC200 8" f/20 Maksutov-Cass. A friend of mine from my church helped me breakdown the C14 and install the TEC on Saturday. (I only have one working arm right now with a torn rotator awaiting

surgery.) Last night I did alignment through broken clouds. Tonight, amid mediocre seeing and a mostly cirrus covered sky I got my first image of Mars. I was not disappointed. This is at f/32 and is the best Mars image of this apparition, maybe ever for me. I took a subsection of the image with the pole and processed it to suppress the brightness of the cap and there was Rima Tenuous. I have NEVER imaged this in my 45+ years of observing Mars. Needless to say, I'm a happy camper awaiting a really good night.



<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120409/RH109Apr12.jpg>

Richard HILL (Tucson, AZ)

●.....*Subject: from bill sheehan*
Received; 13 April 2012 at 01:32 JST

fDear Masatsugu, I was deeply saddened to hear of your health problems and of the need to discontinue your work with the CMO/ISMO projects. I can only wish you a speedy recovery-- if there is anything I can do to help let me know. Best wishes, my old friend,

○.....*Subject: Re: My situation*
.Received; 30 April 2012 at 09:43 JST

Dear Masatsugu, The suddenness of this illness concerns me, since usually Parkinson's onset is more gradual. Perhaps more subtle symptoms have been present for awhile, but you have seemed to be well.

My sympathies go out to you in this difficult time.

As for the CMO/ISMO--I do hope we will all be able to keep it going. However, you have been the heart and soul of it, so it will be no easy task. I still hope for your complete recovery. Best,

Bill SHEEHAN (Willmar, MN)

●.....*Subject: Mars 2012-04-12, 23:21:56 UT*
Received; 13 April 2012 at 11:48 JST

Hi all, here my mars image from tonight.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120412/SKw12Apr12.png>

Cheers

○.....*Subject: Mars 2012-04-13*

Received; 15 April 2012 at 13:16 JST

Hi all, here my mars images from April 13th 2012. Captured through a thin layer of fog ore cirrusclouds in gaps of thicker cummuliclouds. I had to use very long exposertimes (1/38 sec instead of 1/108 sec in blue), so the noisy images show not a lot of details and image processing was very difficult...

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120413/SKw13Apr12.png>

Cheers

○.....*Subject: Mars 2012-04-11*
Received; 15 April 2012 at 13:52 JST

Hi all, here my mars image from April 11th. If I compare all the images from 11, 12 and 13th I think, there is a smal separated ice field ore a bright cloud outside the dark ring around the north icecap pointing to an area near lemuria?

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120411/SKw11Apr12.png>

Cheers

○.....*Subject: Mars 2012-04-19, 22:41:36 UT*
Received; 20 April 2012 at 09:26 JST

Hi all, here my mars from tonight. Unfortunately I could capture only 1 sequence, then the cloud cover again was closed. Fortunately the Seeing was quite calm, so a few details on the small disc can be recognized nevertheless.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120419/SKw19Apr12.png>

Cheers

Silvia KOWOLIK (Ludwigsburg, GERMANY)

●.....*Subject: response to CMO message*
Received; 15 April 2012 at 04:20 JST

Dear Masami, I am rather worried after the message in regard to the health of Dr Minami, and I would like to ask you if there is a telephone number at which I could try to call him? Dr Minami has been modest and said that he does not speak fluent English, but I wonder if he could hear a few words from his old American friend. Is that a possibility? In any case, I will write to him and offer my sympathy. Sincerely,

Samuel WHITBY (Hopewell, VA)

●.....*Subject: Re: Notice / CMO*
Received; 15 April 2012 at 06:03 JST

Dear Mr Murakami, Thank you for this information and I am very sorry to hear that Masatsugu Minami is

unwell. Please do give him my best personal regards and I shall have him in my thoughts: I will not trouble him with email now. With best wishes from the UK

Richard McKIM (Peterborough, the UK)

●.....*Subject: Mars images from March and April Received; 23 April 2012 at 10:59 JST*

Gentlemen, Attached are some images from March and April that I finally got a chance to process.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120307/PGc07Mar12.jpg>
<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120312/PGc12Mar12.jpg>
<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120410/PGc10Apr12.jpg>
<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120417/PGc17Apr12.jpg>

Regards,

Peter GORCZYNSKI (Oxford, CT)

●.....*Subject: Mars April 21 Received; 24 April 2012 at 05:11 JST*

Attached is an RGB composite captured at 1:52UT, 4/21. Poor to fair seeing at the time, and a hint of terminator projection cloud at the 1 O'Clock position.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120421/SWK21Apr12.jpg>

Sean WALKER (Manchester, NH)

☆☆☆

TEN YEARS AGO (205)

--- CMO #260 (25 May 2002) pp3327-3350 ---

<http://www.hida.kyoto-u.ac.jp/~cmo/cmomn1/cmo260/index.htm>

This period of 2001/2001 came to the end, and the Report was numbered 23: It treated the period in the latter half of April and the first half of May 2001. The planet Mars was in the evening sky and was going down to the opposition in August. During the period, the Martian season proceeded λ from 359°Ls to 013°Ls . The tilt ϕ was from 10°S to 01°S and the phase angle ι was near 22° , while the apparent diameter δ was from $4.2''$ to $3.9''$ and thus the observation became difficult. At the end of the report a summary was given: MINAMI's number of observations amounted to 1088 (More in 2003).

<http://www.hida.kyoto-u.ac.jp/~cmo/cmomn1/cmo260/index.htm>
 CMO Note became 6th this time and was entitled "The North Polar Hood during the Dust Clouded Period" where the behaviour of the north polar hood was considered when the great dust storm occurred. Historically there were known the cases where the north polar hood had weakened within 20 days after the occurrence. In the case of 2001, the period of occurrence was earlier and λ was different so that the npc was not weakened. It was conjectured that the influence of the dust to the npd must have been different according as the season is different.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmomn1/cmo260/index.htm>

Next the "Interview with Sanenobu FUKUI" was issued where NISHITA, TSUNEMACH, MURAKAMI, MINAMI visited his home in Yokohama and conversations with FUKUI were reported concerning the glint phenomena which FUKUI found in 1958.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmomn0/260FUKUI.htm>

In the LtE corner emails from Clay SHERROD (AR), Bill SHEEHAN (MN), Jeffery BEISH (FL), David R KLASSEN (NJ), Kent De GROFF (Marshall Islands), Francis OGER (France), Tom DOBBINS (OH), C Martin GASKELL (NE) from abroad and domestically ISHADOH, HIKI, AKUTSU, MORITA and others. The email from HIKI was concerned about the coming summer conference at INA.

TSUNEMCHI's Antares corner was 19th and entitled the "Umé Rain season" that is the Tsuyu rainy season in Japan and talked about the origin of Tsuyu and introduced several anecdotes concerning Tsuyu season

TYA#081 picked out CMO #117 (25 May 1992). Twenty years ago Mars was in Psc and was going about to start the observation season. Article was for example "COMING 1992/93 MARS" was written as the second time about "Opposition Relevant to the Observation of the Initial State of the NPC", and stressed about the appearance of the npc compared with the near apparitions. In "1990 OAA Mars Section Note (5)" AKUTSU's photos were introduced. It was also reported the death of Dr Shotaro MIYAMOTO.

(Mk & Mn)

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 COMMUNICATIONS IN 東亞天文學會「大夏通信」since 1986

MARS No. 260
 25 May 2002

OBSERVATIONS Published by the OAA Mars Section

CMO 2001 Mars Report # 23 OAA Mars Section
 NOW the season of the 2001 Mars has been brought to a close. We deal with the following period here, but the results proved no more fruitful:
 16 April 2002 (139°Ls) to 15 May 2002 (013°Ls)
 On 16 April, the apparent diameter δ was only $4.2''$ while it went further down to $3.9''$ on 15 May. The planet is now near the Sun, and looks very low in contrast even at sunset. The Martian season passed the northern spring equinox. The central latitude ϕ varied from 10°S to 1°S . MURAKAMI watched on 28 April and on 2 May all of the five planets in the evening sky, but he reports Mars was the smallest.
 観測の火星も終焉である。今期の観測は 16 April 2002 (139°Ls) から 15 May 2002 (013°Ls) であるが、五月初めに観測終了は49日外を割り、高度も低くなって困難な状況となった。正確には、16Aprで4.2、15Mayで3.9であったが、急に太陽の光害に入ったような感じであった。ただ、季節は北半球の春分まで来た。中心緯度 ϕ は 10°S から 1°S まで変った。MURAKAMIは28Aprと2Mayに西空の五惑星を観測したようであるが、観測は火星が一番小さかった。
 WE just received the following made during the period concerned:
 今回報告のあったのは次の観測である:
 MINAMI, Masatsugu 前 政次 (Mn) 福井 Fuki, Japan
 9 Drawings (18, 22, 26 April; 13 May 2002) 480, 400x20cm ED Goo refractor
 MORITA, Yuko 森田 行雄 (Mo) 日田市 Hatake's-ichi, Hiroshima, Japan
 2 Sets of CCD images (15 May 2002) 950x50cm specimen equipped with an ST-5C
 MURAKAMI, Masami 村上 昌巳 (Mk) 藤澤 Fujisawa, Kanagawa, Japan
 2 Drawings (28 April, 2 May 2002) 370x20cm peccini
 福井市自然史博物館観測上天文堂 Fuku City Observatory
 THE Martian season attained 000°Ls on 18 April 2002. The present writer (Mn) watched on the day at $\omega=220^\circ\text{W}\sim 230^\circ\text{W}$ where a dark band was seen through a shadowy area in the NEI was not identified. The spot is light, and the morning limb to the spot was misty or cloudy. $\phi=10^\circ\text{S}$. On 22 April (002°Ls) Mn watched at $\omega=170^\circ\text{W}\sim 190^\circ\text{W}$. Similar results with the band darker at the morning side. 20° C. On 26 April (004°Ls) at $\omega=140^\circ\text{W}\sim 150^\circ\text{W}$, the light area of the spot was rather small, and adjacent to the right a shadowy marking was seen. On 28 April (005°Ls), MURAKAMI (Mk) observed at 10:00 GMT at $\omega=130^\circ\text{W}$. The dark band including W Stream and the light area.

3 3 2 7

Ephemeris for the Observations of the 2011/12 Mars. XI

June 2012

Masami MURAKAMI

01	June	2012	152.54°W	25.6°N	118.39°Ls	7.89"	38.8°	18.9°	+07°02'
02	June	2012	142.97°W	25.6°N	118.86°Ls	7.83"	38.9°	18.9°	+06°51'
03	June	2012	133.40°W	25.7°N	119.33°Ls	7.78"	39.0°	19.1°	+06°40'
04	June	2012	123.82°W	25.7°N	119.80°Ls	7.73"	39.0°	19.3°	+06°29'
05	June	2012	114.23°W	25.8°N	120.26°Ls	7.68"	39.1°	19.6°	+06°18'
06	June	2012	104.64°W	25.9°N	120.73°Ls	7.63"	39.1°	19.8°	+06°06'
07	June	2012	095.05°W	25.9°N	121.20°Ls	7.58"	39.2°	20.1°	+05°55'
08	June	2012	085.45°W	25.9°N	121.67°Ls	7.54"	39.2°	20.3°	+05°44'
09	June	2012	075.84°W	26.0°N	122.14°Ls	7.49"	39.3°	20.6°	+05°32'
10	June	2012	066.23°W	26.0°N	122.61°Ls	7.44"	39.3°	20.8°	+05°20'
11	June	2012	056.61°W	26.1°N	123.08°Ls	7.40"	39.3°	21.1°	+05°08'
12	June	2012	046.99°W	26.1°N	123.55°Ls	7.35"	39.4°	21.3°	+04°57'
13	June	2012	037.37°W	26.1°N	124.02°Ls	7.31"	39.4°	21.6°	+04°45'
14	June	2012	027.73°W	26.2°N	124.49°Ls	7.26"	39.4°	21.8°	+04°33'
15	June	2012	018.10°W	26.2°N	124.97°Ls	7.22"	39.4°	22.1°	+04°20'
16	June	2012	008.46°W	26.2°N	125.44°Ls	7.18"	39.4°	22.3°	+04°08'
17	June	2012	358.81°W	26.3°N	125.92°Ls	7.13"	39.4°	22.6°	+03°56'
18	June	2012	349.16°W	26.3°N	126.39°Ls	7.09"	39.4°	22.8°	+03°43'
19	June	2012	339.51°W	26.3°N	126.87°Ls	7.05"	39.4°	23.1°	+03°31'
20	June	2012	329.85°W	26.3°N	127.35°Ls	7.01"	39.4°	23.4°	+03°18'
21	June	2012	320.19°W	26.4°N	127.82°Ls	6.97"	39.4°	23.6°	+03°06'
22	June	2012	310.52°W	26.4°N	128.30°Ls	6.93"	39.4°	23.9°	+02°53'
23	June	2012	300.85°W	26.4°N	128.78°Ls	6.89"	39.4°	24.1°	+02°40'
24	June	2012	291.18°W	26.4°N	129.26°Ls	6.86"	39.4°	24.4°	+02°27'
25	June	2012	281.50°W	26.4°N	129.74°Ls	6.82"	39.3°	24.7°	+02°14'
26	June	2012	271.82°W	26.4°N	130.22°Ls	6.78"	39.3°	24.9°	+02°01'
27	June	2012	262.13°W	26.4°N	130.70°Ls	6.75"	39.3°	25.2°	+01°48'
28	June	2012	252.45°W	26.4°N	131.19°Ls	6.71"	39.3°	25.5°	+01°35'
29	June	2012	242.75°W	26.4°N	131.67°Ls	6.68"	39.2°	25.7°	+01°21'
30	June	2012	233.06°W	26.4°N	132.15°Ls	6.64"	39.2°	26.0°	+01°08'

International Society of the Mars Observers (ISMO)

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

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

CMO #398/ ISMO #24 (25 May 2012)

**Editorial Board: Tadashi ASADA, Masatsugu MINAMI, Masami MURAKAMI,
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