

MARS

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By

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WE are now entering the opposition month for the 2014 Mars, and here are some of our best advices to observe and image the red planet. This article includes remarks on several plans, from the planet's activity itself to the CCD imaging techniques and more.

Observe at a regular time spacing

This advice is not new but it really deserves to be recalled to observer's memories. Unlike any other planet (most of the time), the Martian meteorology evolves by the hour - just like the terrestrial clouds, both system sharing many common points. This is especially true for the white clouds of Mars, that are made of water vapor and/or ice crystals. White clouds follow the influence of sunlight, atmospheric convection, air temperature... and this is especially interesting to follow, but studying this is better done if we have data covering several hours ! Are especially concerned the morning hazes, that dissipate quickly as the Sun is rising, the orographic

clouds that grow during the Martian afternoon and other more subtle phenomena. Of course, the benefit from gathering data from several observers at a time will increase the chance of getting data covering several hours even if everyone only take one image, but first we can't know in advance if there will be enough people observing at the right moments, and second, the processing can vary greatly from one observer to another, and the comparison is sometimes easier if the data comes from one person.

So aside of your own observing constraints, try to make at least two series if possible! Especially, do not send only the top images from the night. Last season in 2012, we have published several articles that analysed the hourly evolution of clouds (the morning fog inside Tharsis, the orographics over Tharsis and Elysium, the "high altitude cloud"...) and this had been done thanks to this approach. This is a bit early to speak about it since we are not going to observe this in 2014, but big dust storm activity will benefit as well from a

regular time spacing, although for an opposite reason, since we think that dust clouds, to the contrary of white clouds, *do not* evolve during the Martian day.

What cadence should you use ? The ISMO recommends to use a period of 40 mn (due to the fact the sol has a length of 24 terrestrial hours and 40 mn), but half an hour is fine as well. One hour should be considered as a maximum.

Show the separated color components

Analysing the aspect of details in the different color bands really helps in understanding the activity. Red will show the surface in high contrast, and blue will show the white clouds. Green light most of the time do not bring really interesting data (note however that it DOES matter for getting a correct color rendition, so do not use synthetic green images made only from red and blue), because it does not carry a specific information - with one noticeable exception : dust storms. It is always stated that dust storm are brighter in red - and this is true (or almost - the real

albedo peak is around 700/750 nm in near infrared), but it is less known that they are more *contrasted* in green light, since their albedo is quite important in green (and this explains why they look yellow) while the drop of albedo of the red surface is already important. Green light also has a weaker haze penetration than red light, and the G filter has the capacity of revealing the whole spread of the dust veil inside the atmosphere, while red will show better the active dust clouds.

Now what about near infrared ? We are numerous in getting infrared images of Mars since we enjoy the high contrast that it brings to the Martian ground albedo, and sometimes if seeing is poor we like the better steadiness brought by the longest wavelengths. But IR has a serious drawback - as the Airy pattern in any telescope is bigger than in visible light (due to the law of light diffraction), the resolution in infrared is less good than in visible light. And this is especially sensitive on Mars as the planet's disk is usually very small. So to study the surface of Mars, the red filter looks better in most cases.



Classical set of Mars images by Mark Justice, with a well processed and well-balanced RGB flanked by its separated color components. This is the most informative configuration.

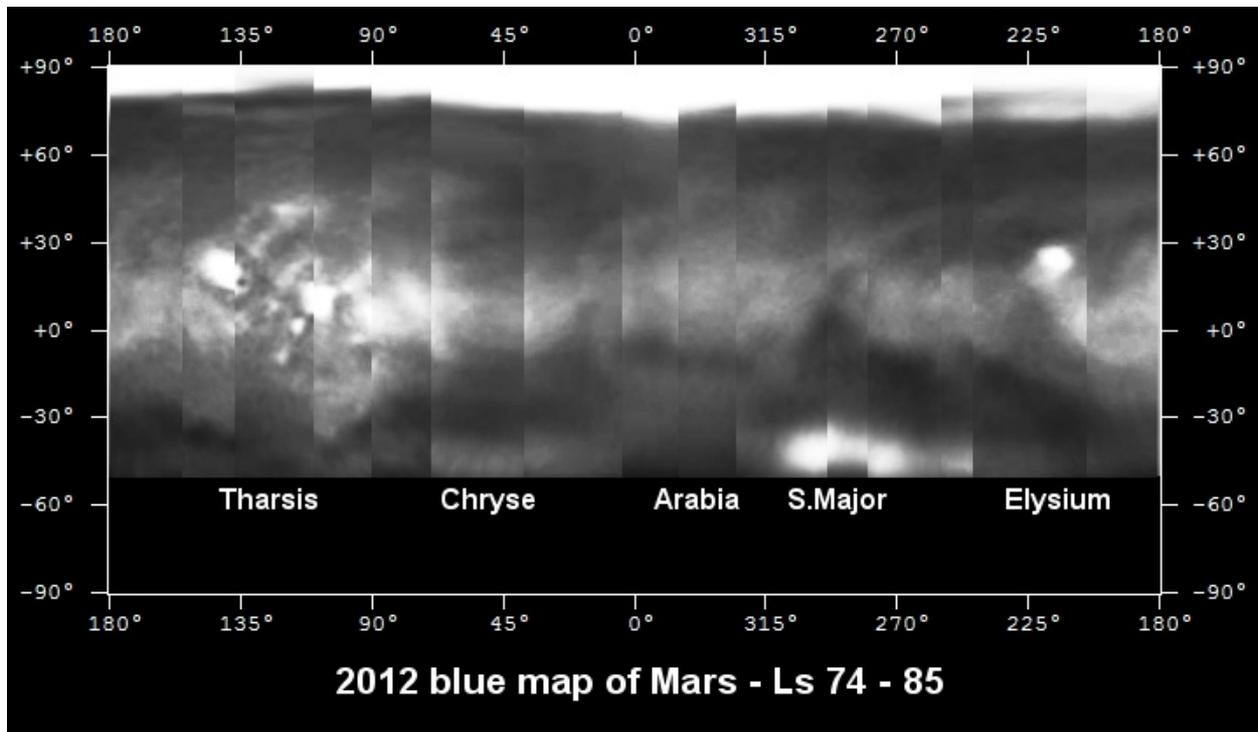
IR will not show anything more than R so it does not look really interesting for Mars amateur studies. However, the onset of a big dust storm will change again the utility of that filter: due to its strong power of haze penetration, the IR filter will reveal more than any other the position of dust cores. But again this will not serve this season.

Take care of your blue image, and show it on your set

Last... but not least, we should emphasize the interest of showing the blue image. B light is the only one that will reveal the entire spectacle of white clouds. Some of ISMO contributors only show the color image when they send data - try to systematically show the B as well - **even if it does not look sharp to you**. Last season when I made the first amateur map of the aphelion cloud belt with blue images from several observers (read

CMO 401), I have not been able to use the best data I could have used, because some very relevant RGB images were not accompanied by their B data.

Do not hesitate to really take care of it during acquisition and processing. B is often neglected since observers are mostly interested in getting high resolution on the ground. But apart of all the (more!) interesting data that it reveals, getting a good B image will of course increase the quality of your RGB. It is wise to use a longer video time for B, since the image is darker and forces us to get less frames as a result. I typically made 2 mn for R, 2 for G but 3 for B (the SER length will vary of course following your instrument diameter). I will also advice you to use WinJupos image derotation at least for the B. So the above series becomes for example RGBB.



Map of the aphelion cloud belt in 2012. This is the first amateur map of this phenomenon, and it can only be built with blue images; the belt is too faint in color images to be clearly visible.

Images from Efrain Morales, Damian Peach, Yann Le Gall, and Christophe Pellier.

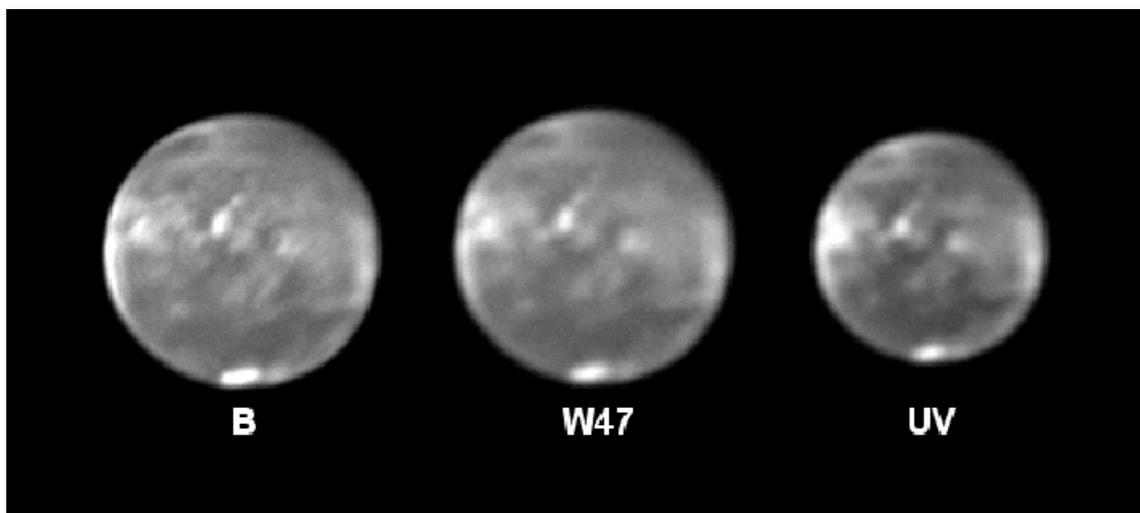
Taking care of the B image means that you can as well want to make a single, high-resolution B image of Mars that will not be planned to enter into a RGB. This will open a considerable longer available time only for the clouds. Use WinJupos derotation to make 3 to 5 files into a single.

Finally, some more advanced cloud imaging can be considered by using other filters than B. The Wratten 47 violet filter will provide noticeably more contrast to the white clouds since the absorption of the red surface is very strong. Usually however, you will get less details through this filter since the exposure will be longer (think WinJupos again), and the terrestrial atmospheric diffusion is stronger. If you plan to use this filter, do not forget to add an IR-blocking filter since the W47 has a strong IR leakage in its passband. On another hand, modern equipment allows the observer to use UV as well on Mars. Contrast is even stronger, but resolution will be low because due to the absolute darkness of the red planet in these wavelengths, you will be forced either to use a much shorter

focal length - or the 2x binning mode of your camera. Getting at least a few W47 or UV images for each Martian opposition, taken during the best nights, can be interesting.

Prefer natural color images

The last advice is about color processing. Prefer natural color processings, i.e. RGB or true LRGB. Processing does have a decisive influence on how the details will be represented on the final image, and we believe that it is important that it respects all the details present on the disk, either ground-based or atmospheric. This is why RRGB or IR-RGB processings should be avoided, since they will mostly reduce the final information to the red component of the ground details. Clouds are artificially weakened if you use a red luminance, but think that you will deteriorate the aspect of ground details as well: red light does not contain all their color information; they do have a green and a blue components! RRGB images usually show ground details of being evenly grey, but if you take a look at the best im-



Different images of Mars at short wavelengths taken by the author on March 15th, 2012 ($\lambda=087^\circ\text{Ls}$) showing the Tharsis clouds. The B filter clearly has the edge in term of resolution. The W47 should show a better contrast although this does not look to be the case here. The UV filter does increase the contrast with the ground on its side, but the resolution is even weaker (image taken in 2x2 binning).

ages published on the ISMO gallery (those in RGB), you will see that the color palette of the dark markings, although subtle, is much wider than those. So if you like this kind of processing, please say it clearly on the image

(a curious novelty of recent planetary imaging is to use RRGB processing without saying it, even pretending that the result is RGB), and show the RGB as well, so we can include your data for analysing. □

2013/2014 Mars Observations in February 2014

♂..... This is the sixth observation CMO/ISMO report of the 2013/2014 Mars apparition where we deal with the world-wide Mars observations in February 2014 based on the observations submitted to us. In February 2014, the planet proceeded in the Vir constellation to the north of Spica and was to be stationary at the beginning of March. At the end of February, the apparent declination of Mars was down to 08°S, and hence several competent observers in Australia joined this month with good success. Especially a number of observers in Melbourne, such as Stefan BUDA, Blastilav CURTIC, Mark JUSTICE, John KAZANAS, Maurice VALIMBERTI, submitted this month a lot of precious observations as to which we are grateful. Melbourne, the second largest city in Australia, is located at the Southern East corner of Australia with a latitude around 38°S, facing to the roundish Port Phillip. We hear the *Economist* ranked Melbourne as the world's most livable city in 2002 and 2004. Averaged temperature in Jan and Feb ranges 26°C ~15°C. Especially in Feb it is rainless.

On the opposite side in Japan, however, the weather conditions continued dismal so that we were less productive.

The Martian season proceeded from $\lambda=084^\circ\text{Ls}$ to $\lambda=096^\circ\text{Ls}$ during February. The northern summer solstice ($\lambda=090^\circ\text{Ls}$) was greeted on 15 February, and so the famous season came when the afternoon brilliant cloud over Olympus Mons shined like a beautiful cotton-ball. The angular diameter δ was increasing from $\delta=8.9''$ to $11.6''$ at the end of February. The phase angle ι was decreasing from 34° to 26° so that the defect of illumination at the evening side was improving. The tilt ϕ moved from $\phi=21^\circ\text{N}$ to $\phi=19^\circ\text{N}$. That implied that the residual north polar cap near the minimal was seen inside the disk.

♂..... We heard from the following observers with precious observations. As to the images, refer also to the actual Gallery in

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/f_image.html

AERTS, Leo (LAt) BELGIUM

4 Colour + 1 R Images (3, 24* February 2014) 36cm SCT, 25cm SCT* with a DMK21AU618

AKUTSU, Tomio (Ak) Cebu, the PHILIPPINES

2 Sets of RGB + 2 IR Images (24 February 2014) 36cm SCT @f/24 with a DMK21AU618AS

BUDA, Stefan (SBd) Melbourne, AUSTRALIA

7 Sets of RGB Images (4, 9, 10, 17, 23, 27, 28 February 2014)

40cm Dall-Kirkham with a DMK21AU04

CURCIC, Bratislav (BCr) Melbourne, AUSTRALIA

1 Set of RGB Images (24 February 2014) 28cm SCT with a QHY5L-II

GHOMIZADEH, Sadegh (SGh) Roudehen, IRAN

2 Colour Images (24, 25 February 2014) (28cm SCT with a DMK21AU04.AS)

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

3 Sets of RGB + 4 IR Images (12, 23, 27 February 2014) 36cm SCT with an ASI 120MM

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

3 Sets of Colour Drawings (14, 19, 22 February 2014) 23cm Maksutov-Cassegrain, 258×

JUSTICE, Mark (MJs) Melbourne, AUSTRALIA

8 Colour Images (4, 5, 9, 11, 20, 23, 24, 27 February 2014)

25cm Dall-Kirkham with a DMK21AU618

KAZANAS, John (JKz) Melbourne, AUSTRALIA

2 Sets of RGB + 4 Colour + 1 R + 3 IR Images (1, 5, 6, 10, 22, ~ 24 February 2014)

32cm SCT with an ASI 120MM

KONNAI, Reiichi (Kn) Ishikawa, Fukushima, JAPAN

2 Colour Drawings (12, 23 February 2014) 30cm SCT, 500×

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

1 Colour Image (8 February 2014) 25cm SCT with a ToUcam Pro II

MORALES RIVERA, Efrain (EMr) Aguadilla, PUERTO RICO

3 Sets of LRGB + 4 Sets of RGB Images (5, 8, 12, 15, 20, 21, 27 February 2014)

31cm SCT with a Flea3

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

8 Sets of RGB + 8 LRGB Colour + 8 L Images (10, 16, 20, ~22, 24, 25, 27 February 2014)

36cm SCT with a Flea3

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

4 Sets of RGB Images (8, 12, 18, 23* February 2014)

36cm SCT @f/23, 41cm Spec* @f/26 with an ASI 120MM

SMET, Kris (KSm) Bornem, BELGIUM

1 Drawing (3 February 2014) 30cm spec, 167×

SUSSENBACH, John S (JSb) Houten, the NETHERLANDS

1 Set of RGB Images (3 February 2014) 28cm SCT @f/25 with a QHYL5-II

VALIMBERTI, Maurice (MVI) Melbourne, AUSTRALIA

13 Sets of RGB + 2 IR Images (1, 4, 7, 9, 23, 27, 28 February 2014)

36cm SCT @f/24 with an ASI 120MM

WESLEY, Anthony (AWs) Murrumbateman, NSW, AUSTRALIA

3 Colour + 4 IR Images (6, ~8, 21, 22, 24 February 2014)

(37cm spec) with a Point Gray Grasshopper3

♂..... We now begin reviewing each observation made in February 2014 in the way as we employed in the preceding issue.

M VALIMBERTI (MVI): Maurice first shot on 1 Feb ($\lambda=084^\circ\text{Ls}$) at $\omega=197^\circ\text{W}$, and produced a moderate RVB image. The seeing did not look so preferable, but the northern coast of Mare Cimmerium was well

made and the “ant-like feet” were visible. Elysium was still on the morning side while well light in R, V, and B and so had a whitish tint. The Ætheria dark patch is dense. The north polar cap (npc) is bright but smaller.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140201/MVI01Feb14.jpg>

On 4 Feb ($\lambda=085^\circ\text{Ls}$) *MVI* got an image set at $\omega=181^\circ\text{W}$ which looked a bit dim, while there still remained a remnant of the Olympus Mons cloud at the evening side. The bright part of Elysium appears to flow into Cebrenia. Propontis I looks dark as well as the Ætheria dark patch.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140204/MVI04Feb14.jpg>

On 7 Feb ($\lambda=087^\circ\text{Ls}$) *MVI* imaged twice at $\omega=162^\circ\text{W}$ and at $\omega=173^\circ\text{W}$. (A bit later than *AWs* at $\omega=159^\circ\text{W}$. See later). The Olympus cloud looks three-dimensional: it may have its shadow at the evening side. The white clouds at Tharsis Montes are seen near the terminator. The morning limb is well processed, and the whole aspect of Elysium well presents. Especially the R image at $\omega=162^\circ\text{W}$ is good with a detail around Phlegra. At the np area Rima Borealis is a bit visible as well as Olympia both at $\omega=162^\circ\text{W}$ and $\omega=173^\circ\text{W}$. The orographic cloud at Olympus Mons is well settled down in Green and beautiful. M Cimmerium is still short in angle.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140207/MVI07Feb14.jpg>

MVI further went on to perform double sessions on 9 Feb ($\lambda=088^\circ\text{Ls}$) at 17:21~18:04 GMT ($\omega=135^\circ\text{W}$, 143°W): On both images Olympus Mons with covered by the evening clouds is visible. Its preceding evening terminator area is complex with the white clouds on Tharsis Montes. The npc (at $\phi=20^\circ\text{N}$) looks flat and associated with Olympia on the morning side, and Rima Borealis is visible in R and G. The mist seen at one time looks a bit subsided.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140209/MVI09Feb14.jpg>

On 23 Feb ($\lambda=094^\circ\text{Ls}$), *MVI* obtained a lot of images during $\omega=350^\circ\text{W} \sim 003^\circ\text{W}$. A composite may be best at $\omega=359^\circ\text{W}$.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/MVI23Feb14.jpg>

On the preceding day (22 Feb), *AWs* shot at the same angle by IR (as seen later). *MVI* does not depend on IR, while he gets nearly detailed images by R-light. Those minor markings as Brangæna, and the connection of Oxia P with Niliacus L (M Acidalium) as well as the details of the coast from Sinus Margaritifer to Auroræ Sinus are exposed by the use of R. The composite may lack an excessive sharpness but the images are mildly finished. The evening mist floating at the northern part of Syrtis Mj is described thanks to the Blue image. Problem however exists about the position of the npc. It is quite certain that the npc is completely inside the disk, while on *MVI*'s images it looks to be inside excessively. However *MVI* is right on this point because the northern part of the npc from this angle is quite dirty due to the fallout of dust at the northern part, and hence the clearer southern part of the npc looks brighter. See the image by MRO-MARCI in

http://www.msss.com/msss_images/2014/02/26/

(where 2/26 implies the date of media-release). As to the bright part, compare with *AWs*'s IR image on 22 Feb (cited later).

We would like to repeatedly note *MVI*'s image on 23 Feb ($\lambda=094^\circ\text{Ls}$) at $\omega=359^\circ\text{W}$ is a beautiful one. He used R during $\omega=350^\circ\text{W} \sim 003^\circ\text{W}$, and made comfortable images without excessiveness. Brangæna is all apparent in R, and the R images show a detail of Hyperboreus Lacus. On 27 Feb ($\lambda=096^\circ\text{Ls}$), *MVI* worked at $\omega=313^\circ\text{W}$. The seeing must have been deteriorated a bit, but the Aryn's nails are shown on R and IR

this time. Hellas is obscure as well as the npc. On 28 Feb ($\lambda=096^\circ\text{Ls}$) he took at $\omega=295^\circ\text{W}$: The RVB image shows a bluish aspect of the mist over Syrtis Mj. Hellas must be denser in white.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140228/MV128Feb14.jpg>

J KAZANAS (JKz): Another active observer in Melbourne. On 1 Feb ($\lambda=084^\circ\text{Ls}$) John KAZANAS shot at $\omega=215^\circ\text{W}$ after *MV*'s shot by 74 minutes, and so constitutions are not so different, and Elysium and M Cimmerium look similar. However perhaps due to the difference of the heights of the planet, such a making of Hesperia looks now clearer, and because of the rotation *JKz* could show Nodus Alcyonius definitely. The npc is small and clear, and the RGB image shows a faded and dusty Olympia to the south of the npc.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140201/JKz01Feb14.jpg>

On 5 Feb ($\lambda=086^\circ\text{Ls}$), *JKz* made a set at $\omega=180^\circ\text{W}$ just after *MJs* (later introduced) by 6 minutes. The cotton-ball of Olympus Mons is quite near the terminator but very evident yet. There is seen a misty matter to the south of the npc/Olympia. Elysium is shot a bit whitish and shown to have a white core in B. In R the northern coast of M Cimmerium is roughly described. The morning limb is well processed without strong artifact ghosts.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140205/JKz05Feb14.jpg>

On 6 Feb ($\lambda=086^\circ\text{Ls}$) *JKz* took at $\omega=177^\circ\text{W}$ an IR685 image after *AWs*. There is no explicit trace of Olympus Mons. The *Ætheria* dark patch is evident but together with an artifact line along the limb. Both *JKz* and *MJs* are to produce explicitly Olympia in the next month (March). On 10 Feb ($\lambda=088^\circ\text{Ls}$) *JKz* took at $\omega=134^\circ\text{W}$: Olympus Mons is near the CM shining whitish, and to the east of the cotton-ball there is a clear ground-lit belt, and continues to the terminator side area where a collection zone of complex white clouds over Tharsis ridges is seen. The images seem to have missed to catch the dust streak found by Stefan BUDA (*SBd*) on the preceding day.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140210/JKz10Feb14.jpg>

These images are compared with those by Y MORITA (*Mo*) on the same day and at the same angle ω . The seeing looks better in Melbourne, and the np region here shows a coming of Olympia at the morning side of the npc. (*Mo*'s B image however shows well the "ground-lit" wine coloured belt.)

On 22 Feb ($\lambda=093^\circ\text{Ls}$) *JKz* got a Red image at $\omega=015^\circ\text{W}$: There are shown some details at the area of S Meridiani and at the area of Hyperboreus L, while the limb side is ill processed. On 23 Feb ($\lambda=094^\circ\text{Ls}$) *JKz* produced an RGB image at $\omega=354^\circ\text{W}$: Some areas are detailed, but the image looks to lack a beauty: The evening terminator mist over Syrtis Mj looks too thick, and the morning limb looks unphysical. The angular diameter went up to $\delta=11''$. On 24 Feb ($\lambda=094^\circ\text{Ls}$) *JKz* issued three images at $\omega=333^\circ\text{W}$ (RGB), $\omega=336^\circ\text{W}$ (IR) and at $\omega=349^\circ\text{W}$ (RGB). The RGB images are now much milder, and the evening mist looks more natural. Evening mist over Syrtis Mj shows an interesting detail. Especially while there is seen a trace of Hellas at $\omega=333^\circ\text{W}$, a flowing out of mist can be seen up to Noachis. At $\omega=349^\circ\text{W}$, Hellas is no longer visible but a remnant of mist remains flowing out. These differences are recommended to be taken every 40 minutes (or ten degrees difference). Really the details are shown on the IR image, of the Aryn's nails, Brangæna and so on. It may be important to note Hyperboreus L is quite dark. It is also recommended to try to unearth more explicitly some "dusty" zones to the (eastern-)north of M Acidalium. Note further here that the npc looks is located quite inside the disk. Concerning the processing of the morning limb and the npc, the attention should be paid to the bright-shadowy distribution of the components of the npc (refer to the corner of Maurice VALIMBERTI above).

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/JKz24Feb14.jpg>

L AERTS (LA_t): Leo AERTS (*LA_t*) observed on 3 Feb ($\lambda=085^\circ\text{Ls}$) for about three hours. The timing looks arbitrary, and the RGB images are ranged as $\omega=352^\circ\text{W}$, $\omega=354^\circ\text{W}$, $\omega=004^\circ\text{W}$, and $\omega=010^\circ\text{W}$. The image taken at 03:48 GMT may be the best at ($\omega=352^\circ\text{W}$) showing a good colour. S Meridiani shows its nice form and density. The colour from the Oxia P area down to the npc is interesting. The could-be marking of Hydaspis Sinus, which has been noticeable starting from Eos, is here darkly expressed. M Acidalium occupies largely the northern morning area but still weaker governed by a morning mist. There are not shown the colour components, but we may speculate doubled layers of dust fall to the eastern north of M Acidalium. These layers are shown also on the IR image associated at $\omega=351^\circ\text{W}$. How about in B? The npc is still roundish, and Hyperboreus L is dark adjacent to the npc. On the opposite side, is there a white mist at Argyre?

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140203/LAt03Feb14.jpg>

LA_t further produced a colour image on 24 Feb ($\lambda=094^\circ\text{Ls}$) at $\omega=168^\circ\text{W}$. Evening mountainous region is covered by the white clouds. On the morning side, the following area of Elysium is also whitish misty. The inside of Elysium is rather not particularly light, while the band of Cerberus down to Phlegra darkly extends to Propontis I. The latter shows a brownish tinge. The npc looks small and dull.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/LAt24Feb14.jpg>

J SUSSENBACH (JS_b): On 3 Feb ($\lambda=085^\circ\text{Ls}$), John SUSSENBACH (*JS_b*) produced RGB images and the mild composite at $\omega=355^\circ\text{W}$; this being comparable with one of the images of Leo AERTS above. The description of S Meridiani is not enough, while the region from Oxia P down to the npc is well described. The zigzagged lighter layers to the EN of M Acidalium are visible in R, but not in B nor G, and so the layers must consist of the dusty matters.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140203/JSb03Feb14.jpg>

M JUSTICE (MJ_s): Mark JUSTICE also in Melbourne observed on 4 Feb ($\lambda=085^\circ\text{Ls}$) at $\omega=190^\circ\text{W}$. One colour image. Not so beautiful, but the orographic cloud at Olympus Mons is just setting at the evening terminator. Elysium at the morning side shows a bright core. The description of the curved band from Cerberus down to Propontis I is mild and gives a good impression since it suggests how the area of Elysium is made from. Phlegra may be doubled. The morning limb is not good because of artifact ghosts. The description of M Cimberium is not enough. The npc is whitish bright, but looks blurred at the perimeter.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140204/MJs04Feb14.jpg>

On 5 Feb ($\lambda=086^\circ\text{Ls}$) *MJ_s* shot at $\omega=178^\circ\text{W}$, still one colour image. Olympus Mons is a bit insider than the day before. Maybe it is like a cotton-ball visually. The area around Elysium is less informative. The area to the south of the npc looks similarly misty. On 9 Feb ($\lambda=088^\circ\text{Ls}$), *MJ_s* also made a colour image at $\omega=142^\circ\text{W}$. It is interesting to see how the Tharsis ridge is being covered by the thick evening clouds in addition to the cotton ball like cloud at Olympus Mons. Furthermore Olympia is seen rising on the rhs separated from the npc.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140209/MJs09Feb14.jpg>

On 11 Feb ($\lambda=089^\circ\text{Ls}$) *MJ_s* took one colour image at $\omega=133^\circ\text{W}$; this competing with those observations by *JKz* and *Mo* on the preceding day. Strong orographic clouds over Pavonis et Ascræus Montes in addition to the cotton ball of Olympus Mons. Elysium is still at the morning limb but Phlegra and Propontis I are shadowy. The morning Olympia is visible separated from the npc.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140211/MJs11Feb14.jpg>

On 20 Feb ($\lambda=092^\circ\text{Ls}$) *MJ_s* gave a one image at $\omega=050^\circ\text{W}$. Solis L is visible at the morning side of the

southern hemisphere. The area around Tithonius L is well shot and Ophir-Candor is ground-lit. At the evening side, Oxia P looks slightly bluish perhaps due to the presence of a thin white mist. M Acidalium looks weak though it is just after the noon line. The npc and Hyperboreus L are evident. Problem is about the white cloud near the morning limb. The area around the cloud core may suggest some shadowy poked spots, but due to the presence of the artifact line the differentiation is difficult.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140220/MJs20Feb14.jpg>

On 23 Feb ($\lambda=094^\circ\text{Ls}$) *MJs* made an image at $\omega=010^\circ\text{W}$. At the equatorial zone a weak white mist expands starting from the evening terminator. Notable is the position of the brightest part of the npc: As in the case of *MVl*, it looks to stay too inside. By a careful treatment, the area of the npc as well as the morning limb should have been dealt with. The northern hemisphere including the region of M Acidalium looks quite singular. Atmospherically is there any particular reason?

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/MJs23Feb14.jpg>

On 24 Feb ($\lambda=094^\circ\text{Ls}$) *MJs* worked at $\omega=006^\circ\text{W}$. The image is quite detailed but looks dull as a whole. Is there any reason why the npc does not appear white? Argyre is cloud covered? On 27 Feb ($\lambda=096^\circ\text{Ls}$), *MJs* observed at $\omega=339^\circ\text{W}$. Syrtis Mj is covered by a white mist to yield a bluish tint. The mist is the one governed by the equatorial band mist (to be more featured).

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140227/MJs27Feb14.jpg>

S BUDA (SBd): Stefan BUDA in Melbourne made a set on 4 Feb ($\lambda=085^\circ\text{Ls}$) at $\omega=204^\circ\text{W}$, just after *MJs*'s session. Already Olympus Mons set out leaving a white mist near the terminator. The description of M Cimmerium in R look nearly complete, while this R is in short at the area of Phlegra. Inside Elysium, the core of the Elysium Mons cloud is localised, especially in B. It is misty around Olympia which is located to the south of Rima Borealis, mingled with dust. Such markings as Propontis I, the Ætheria dark patch, and N Alcyonius are nicely exposed. The southern limb looks to correspond to Ausonia which is wine-coloured with some details.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140204/SBd04Feb14.jpg>

On 9 Feb ($\lambda=088^\circ\text{Ls}$) *SBd* produced an excellent set of images at $\omega=164^\circ\text{W}$. They show that the orographic clouds including the cotton ball are not uniform but have a particular topology. No special atmospheric activity is seen in the morning Elysium in off-white colour. Note however the area of Phlegra is detailed whose relation with Propontis I looks interesting. It is interesting to note that from the flat npc there arises a prominent *dust streak* to the western-south direction. We wish to have further information about this phenomenon at the same angle on consecutive days.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140209/SBd09Feb14.jpg>

On 10 Feb ($\lambda=088^\circ\text{Ls}$), *SBd* obtained again preferable images at $\omega=154^\circ\text{W}$. The work on this day shows clearly a remnant of the dust streak found on the preceding day. Furthermore we may say another possible shot just made after 40 minutes could have brought the same LCM as the preceding day. On this set of images, the cotton ball-like cloud at Olympus Mons is outstanding, and the cloud near the terminator look interesting: For example cannot we see a shadowy poked spot around at Pavonis Mons? Otherwise the morning limb side cloud is also conspicuous.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140210/SBd10Feb14.jpg>

On 17 Feb ($\lambda=091^\circ\text{Ls}$), *SBd* met with a fascinating angle at $\omega=082^\circ\text{W}$, where Solis L stays largely on the evening side, and the area of Agathodæmon to Tithonius L appears. Ophir-Candor must be slightly whitish misty. Maybe related with the Chryse cloud. Tharsis Montes including Olympus Mons present on the

morning side half-framed by the morning clouds. These well remind us of the features experienced in 1997. If the season processes further, the conspicuous Ascræus Cloud could be observed as well as the dark spotted poked-out summits of Montes.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140217/SBd17Feb14.jpg>

Stefan BUDA next observed on 23 Feb ($\lambda=094^\circ\text{Ls}$) and produced the image at $\omega=020^\circ\text{W}$. On the day almost all Mars observers in Melbourne joined. *SBd* did not employ the enhancement method, and constructed the milder images, without missing the fine structures, such as Brangæna at Aram, several minor fringes seen at the southern coast of Chryse, some characteristic markings around M Acidalium and so on. It appears to us that the general density and colour configurations inside M Acidalium look a bit queer. There must have been a weak but vast dust spread (plus water vapour) at the area of M Acidalium. The shape of the npc is not yet clarified, but *SBd*'s image of the area looks best at present. Even Hyperboreus L also seems to have received a small dust disturbance. Anyway we shall return to these problems (including the structure of the npc noted in the problem on 23 Feb in the *MVl* corner) in a coming Note. We consent to the description of the whitish distribution at the morning limb. We are also interested in the small white patch at the area of Argyre.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/SBd23Feb14.jpg>

On 27 Feb ($\lambda=096^\circ\text{Ls}$), *SBd* shot at $\omega=347^\circ\text{W}$. This does not point to the fine structure, but it puts forward a general aspect of the global white mist expansion, bringing interesting and beautiful results.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140227/SBd27Feb14.jpg>

On 28 Feb ($\lambda=096^\circ\text{Ls}$) at $\omega=346^\circ\text{W}$, *SBd* produced the same surface or same angle as the day before. Such a try is very precious because we can easily compare the present phenomenon with the aspect taken the day before. This time we clearly see the mist floated out from Hellas. This B image is excellent. This set will give a good help to determine the distribution of dust on the npc.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140228/SBd28Feb14.jpg>

E MORALES (*EMr*): Efrain MORALES (*EMr*) this month first observed on 5 Feb ($\lambda=086^\circ\text{Ls}$) at $\omega=064^\circ\text{W}$ where Solis L appears, but not well framed. Ophir-Candor is pinned down. M Acidalium occupied largely the northern hemisphere, but without definite shape. We don't say the B image shows an equatorial band of mist.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140205/EMr05Feb14.jpg>

On 8 Feb ($\lambda=087^\circ\text{Ls}$) at $\omega=038^\circ\text{W}$, *EMr* made a set of images after one hour and half of the shot by Don PARKER (*DPk*); see below. Solis L is now on the morning side, and though it is not so apparent, the equatorial band of mist is formed from the north of S Meridiani across Chryse to the north of Solis L area. This is vaguely visible in B. On the other hand R and L images show some other details. M Acidalium is well caught in L. The npc is not definitely expressed.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140208/EMr08Feb14.jpg>

On 12 Feb ($\lambda=089^\circ\text{Ls}$), *EMr* took at $\omega=345^\circ\text{W}$, where such large markings as S Meridiani, Margaritifer S, M Acidalium are well described. Syrtis Mj had already sunk, but a residual expansion of the white mist is shown in Æria. The npc is not yet mapped. It is interesting to check the off-white mist random expansion on M Acidalium.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140212/EMr12Feb14.jpg>

On 15 Feb ($\lambda=090^\circ\text{Ls}$, the northern summer solstice), *EMr* observed at $\omega=324^\circ\text{W}$. This set is good in the sense it issues several atmospheric interesting points, though markings are not so detailed. For instance,

the Hellas cloud at the terminator a bit shows up and Syrtis Mj's lower half is covered by a thin white mist to yield a faint blue light, and the white mist further shows it flows into the desert and vastly as seen from the B image. The morning Chryse is whitish bright near the limb. It is also interesting to see the terminator side to the north of Syrtis Mj is off-white, rather showing an ochre colour.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140215/EMr15Feb14.jpg>

On 20 Feb ($\lambda=092^\circ\text{Ls}$) *EMr* made a set at $\omega=244^\circ\text{W}$. Hellas is whitish bright at the morning limb. Since $t=30^\circ$ at present, it is not the early morning. Elysium is a small white patch at the evening side: Governed by a thin evening mist. The southern Ausonia to the south of Hellas is a bit wine-coloured.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140220/EMr20Feb14.jpg>

On 21 Feb ($\lambda=093^\circ\text{Ls}$) *EMr* shot at $\omega=269^\circ\text{W}$ where Syrtis Mj shows up in a strange purple colour near the CM. Hellas is whitish large showing some fine structure. The white cloud at Elysium is near the evening terminator, also clearly in B. N Alcyonius is visible. Compare with *DPK's* images on 18 Feb ($\lambda=091^\circ\text{Ls}$) at $\omega=270^\circ\text{W}$ (referred later)

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140221/EMr21Feb14.jpg>

On 27 Feb ($\lambda=095^\circ\text{Ls}$) *EMr* worked at $\omega=182^\circ\text{W}$. The white cotton ball of Olympus Mons is marvellous. Elysium is at the morning side, but no thick cloud. The npc is at the north pole surrounded by Rima Borealis, and to the south of it Olympia is seen blurred. Propontis I and the Ætheria dark patch are evident.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140227/EMr27Feb14.jpg>

A WESLEY (AWs): Anthony WESLEY (*AWs*) worked on 6 Feb ($\lambda=086^\circ\text{Ls}$) at $\omega=171^\circ\text{W}$ producing one colour image. The evening cloud over Olympus Mons looks three dimensional. Elysium is on the morning side, and the inside shows a different colour than the desert but not quite whitish. Phlegra is showing a wine-colour or orcher. Propontis I and Ætheria dark patch are well dotted. Among the dark markings, M Cimmerium is well described. The npc is white but looks blurred. Olympia is not apparent.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140206/AWs06Feb14.jpg>

On 7 Feb ($\lambda=087^\circ\text{Ls}$) *AWs* took at $\omega=159^\circ\text{W}$. One colour. At the evening terminator, the Tharsis ridge is seen covered by the evening cloud. The cloud at Olympus Mons has a shadow? The area of Elysium at the morning side is plain, but Cerberus-Phlegra and Propontis I are distinguished. The surrounding of the npc is an observation point, but the image is too small to check.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140207/AWs07Feb14.jpg>

On 8 Feb ($\lambda=087^\circ\text{Ls}$) *AWs* obtained RGB and IR images at $\omega=142^\circ\text{W}$. In colour, it is interesting to see the variety of the evening cloud at the Tharsis ridge. Olympus Mons is also caught by the IR as a dark spot (with the bright following flank). Morning neighbourhood of the npc is dusty?

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140208/AWs08Feb14.jpg>

No effective observation on 9 and 10 February?

On 21 Feb ($\lambda=093^\circ\text{Ls}$) at $\omega=009^\circ\text{W}$, only one IR image is given. Every marking is full of detail, but no configuration of mists and clouds is known. What about Argyre?

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140221/AWs21Feb14.jpg>

On 22 Feb ($\lambda=093^\circ\text{Ls}$) *AWs* issued an IR image at $\omega=359^\circ\text{W}$, As an IR image this is rather perfect.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140221/AWs21Feb14.jpg>

On 24 Feb ($\lambda=094^\circ\text{Ls}$) *AWs* took another IR image at $\omega=347^\circ\text{W}$.

F MELILLO (FMI): This season, Frank MELILLO gave his first image on 30 Nov 2013. This is the second

and given on 8 Feb ($\lambda=087^\circ\text{Ls}$) at $\omega=009^\circ\text{W}$. M Acidalium shows up largely near the CM. The npc appears large.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140208/FM108Feb14.jpg>

D PARKER (DPk): Don PARKER (DPk) produced a superb set of Mars images on 8 Feb ($\lambda=087^\circ\text{Ls}$) at $\omega=015^\circ\text{W}$. The outcome is so marvellous that no one would at first think that it was taken when the angular diameter was under 10 arcsecs (really $\delta=9.5''$).

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140208/DPk08Feb14.jpg>

The RGB image has been laid out every day on the Façade of the CMO/ISMO Web Site since the time we received his report. What first attracts us is the milder process he employed concerning the dark markings. He has been known hitherto rather as an observer who puts forwards over-processed images, but here he looks to have turned to bear in mind to produce a very nuance of the Martian markings. For instance, it appears to us that the inside of M Acidalium looks expressed here as milder than usual but quite real. Aram is moderately light to give off Brangæna, and along the northern end of Margaritifer S there are shown subtle light spots, in weak contrast with a rather reddish ground of Chryse. The light band between Oxus and M Acidalium is in a different colour, so that it suggests us to see the difference of elevation. The nuances of the inside of M Acidalium must be reckoned, and some off-white layers to the north of M Acidalium must be checked in relation with the atmospheric circumstances and fallout. It is apparent that from the evening Æria crossing over Chryse and Ophir-Candor up until the morning Tharsis region there is seen a broad equatorial white mist band. At $\lambda=087^\circ\text{Ls}$, it is not easy to see the effect of the influence of the southern polar atmosphere. Though the angular diameter was not enough, this is apparently one of the masterpieces.

On 12 Feb ($\lambda=089^\circ\text{Ls}$), DPk worked at $\omega=325^\circ\text{W}$. S Sabæus and S Meridiani are near the CM, and both are finely described: The Aryn's nails are darker on the eastern side. S Sabæus on this angle is charming. Syrtis Mj is dull at the evening side, while a white mist expansion over Æria is conspicuous which came across Syrtis Mj. The white mist on Syrtis Mj sometimes looks bluish because of diffraction. The light band between Oxus and M Acidalium must be ground-lit. As before, there are seen some lighter layers to the eastern north of M Acidalium. Iaxartes is visible. On the opposite southern hemisphere side, it is notable that an atmospheric flow out from the hidden Hellas is a bit seen.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140212/DPk12Feb14.jpg>

Don PARKER (DPk) also obtained an interesting images on 18 Feb ($\lambda=091^\circ\text{Ls}$) at $\omega=270^\circ\text{W}$. In this configuration Hellas faces to us: It is not yet very whitish, but shows a detail inside. It will soon become to take a partial role of the whitish bright south polar unsymmetrical cap. The most interesting fact on this image is the proof that in this phase the white mist (related with the equatorial mist band) is more accumulated at the lower eastern side of Syrtis Mj. It is suspected then that the mist is going to pass over to the Æria side. The equatorial mist band looks here related also with the Elysium cotton-ball cloud (which is now very near the terminator). Another interesting superb part of this image is that the *shape* of Nodus Alcyonius is caught at the stage of $\delta=10.4''$. The detail of northern end of Syrtis Mj reminds us of an old visual drawing made by A DOLLFUS (a set of doubled rifts). The description of Utopia is also interesting.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140218/DPk18Feb14.jpg>

On 23 Feb ($\lambda=094^\circ\text{Ls}$) DPk made a set of images at $\omega=208^\circ\text{W}$. The sharpness of the dark markings lacks, while Elysium faces toward us with a whitish bright clouded mountain. The morning mist which is related with Elysium is vast. The Ætheria dark patch is apparent. Olympia is seen to the south of the npc.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/DPk23Feb14.jpg>

Y MORITA (Mo): Yukio MORITA (*Mo*) has been annoyed with the continuation of the poor seeing, while on 10 Feb ($\lambda=088^\circ\text{Ls}$) he met with a bit preferable condition at $\omega=134^\circ\text{W}$. The evening cloud over Olympus Mons and cloud expansion over the Tharsis ridge near the terminator were caught. The shadowy band between the clouds (which was frequently witnessed in the 1980's) was caught especially in B. It was caught also in R and G; and its tint is a wine colour in RGB. The npc is not clear, but Olympia vaguely looks to come in at the morning side. The angle is the same as *JKz's* image's on the day.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140210/Mo10Feb14.jpg>

Next on 16 Feb ($\lambda=091^\circ\text{Ls}$) at $\omega=064^\circ\text{W}$, *Mo* obtained a set of images; not freshened, the composite shows the presence of Solis L, M Acidalium, Ophir-Candor and so on. The npc looks to have shrunk a bit.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140216/Mo16Feb14.jpg>

On 20 Feb ($\lambda=092^\circ\text{Ls}$) *Mo* shot at $\omega=014^\circ\text{W}$: The seeing is still poor, so that we just see the markings grossly and can identify the equatorial misty band in B.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140220/Mo20Feb14.jpg>

On 21 Feb ($\lambda=093^\circ\text{Ls}$) the seeing improved and *Mo* made a set at $\omega=014^\circ\text{W}$: The area from S Meridiani to Auroræ S is well described. The shadowy projection from Eos downward can be said to have been definite. M Acidalium shows up totally. Hyperboreus L is dark, and caught in a good position (better in L). The shape of the npc is not clear. The nipper of Nilokeras is apparent in R. The equatorial misty band looks to vaguely appear in B, but not well in the composite (the B should be taken more carefully). Brangæna is visible in R, but blurred in RGB.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140221/Mo21Feb14.jpg>

On 22 Feb ($\lambda=093^\circ\text{Ls}$) *Mo* took at $\omega=009^\circ\text{W}$, but the seeing was not good again. Just the L image tells something.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140222/Mo22Feb14.jpg>

On 24 Feb ($\lambda=094^\circ\text{Ls}$) *Mo* took at $\omega=344^\circ\text{W}$, where Syrtis Mj is near the terminator, and the evening mist expands to Æria, and perhaps makes an equatorial mist band connected with the mist at the morning Chryse. Hellas does not show up any longer.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/Mo24Feb14.jpg>

On 25 Feb ($\lambda=095^\circ\text{Ls}$) *Mo* took at $\omega=325^\circ\text{W}$. Wholly poor, while just a distribution of mists is checked.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140225/Mo25Feb14.jpg>

On 27 Feb ($\lambda=096^\circ\text{Ls}$) *Mo* finally took at $\omega=303^\circ\text{W}$: Hellas is now largely apparent. MORITA should sift the observation time to much more near dawn to get more improved seeing condition.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140227/Mo27Feb14.jpg>

P GORCZYNSKI (PGc) : Peter did not work in February. Peter GORCZYNSKI set out to catch Mars after a while on 12 Feb ($\lambda=089^\circ\text{Ls}$) at $\omega=341^\circ\text{W}$ (08:47 GMT). The images are taken in a high contrast, but recorded a lot. The mist over at Æria does not look uniform, while it makes a mist bluish at Syrtis Mj. The image IR742 at $\omega=339^\circ\text{W}$ (08:38 GMT) looks well balanced concerning S Meridiani, Margaritifer S and M Acidalium. Iaxartes is visible. The npc is roundish from this angle.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140212/PGc12Feb14.jpg>

On 23 Feb ($\lambda=094^\circ\text{Ls}$) *PGc* took at $\omega=231^\circ\text{W}$: Syrtis Mj is on the morning side with a bluish colour because of the diffraction. Hellas is also a bit seen whitish. The southern Ausonia near the southern limb has a colour of desert. M Cimberium is good in R and G as well as in IR. Rima Borealis is clearly seen in IR,

but never in other channels.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/PGc23Feb14.jpg>

On 27 Feb ($\lambda=095^\circ\text{Ls}$) *PGc* made a set of images at $\omega=198^\circ\text{W}$ where the cotton ball of Olympus Mons is just sinking. There is seen a nice detailed structure inside Elysium. Thanks to B, it contains a white cloud. We can also see a fine doubled structure at the *Ætheria* dark patch as well as at Phlegra (first this season?). $\delta=11.4''$.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140227/PGc27Feb14.jpg>

R KONNAI (*Kn*): Reiichi KONNAI made a colour drawing on 12 Feb ($\lambda=089^\circ\text{Ls}$) at $\omega=130^\circ\text{W}$. He usually use a Stædtler to draw. We don't know what kind of colour pencils he use, but here he is also skilful in colour usage. He uses a reddish colour explicitly here and there, and hence sometimes his drawing may look to surpass any plain ccd image. The evening Tharsis cloud is realistic. This case does not yet show the cotton ball-like Olympus Mons, but we expect he will do on next occasion.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140212/Kn12Feb14.jpg>

On 23 Feb ($\lambda=094^\circ\text{Ls}$) *Kn* drew another one at $\omega=010^\circ\text{W}$. This angle is the same as *MJs*'s ccd on the day. We say it's a nice angle, and the evening white mist is shown to have flowed into the desert. There is a light patch at the southern limb. Is it Argyre? M Acidalium seems to be surrounded by wine coloured areas.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/Kn23Feb14.jpg>

C HERNANDEZ (*CHr*): Carlos is an ALPO veteran, and a Mars friend of us since the pre-CMO age. On 14 Feb ($\lambda=090^\circ\text{Ls}$) *CHr* produced a colour drawing at $\omega=308^\circ\text{W}$. The markings are generally dark brownish. Note that there is an outflow from Hellas. Terminator and the morning limb are nicely drawn. Partially M Acidalium comes in.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140214/CHr14Feb14.jpg>

On 19 Feb ($\lambda=092^\circ\text{Ls}$) *CHr* did at $\omega=258^\circ\text{W}$ (associated is *Wr*#38A image at $\omega=260^\circ\text{W}$): Syrtis Mj is on the morning side, and Hellas is visible to be whitish bright. Hesperia is clearly cut. Elysium is large on the evening side having some smaller bright parts. *Wr* #38A shows that Zephyria is very bright as a cloud.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140219/CHr19Feb14.jpg>

On 22 Feb ($\lambda=093^\circ\text{Ls}$) he made a sketch at $\omega=230^\circ\text{W}$: Syrtis Mj looks to be cut into two pieces by a cloud, quite near the morning limb. Some spikes are seen at the northern coast of M Cimmerium. The npc looks to have a rift. Is it because of the presence of Olympia?

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140222/CHr22Feb14.jpg>

T AKUTSU (*Ak*): Tomio AKUTSU took two sets of images on 24 Feb ($\lambda=094^\circ\text{Ls}$) at $\omega=010^\circ\text{W}$ and $\omega=026^\circ\text{W}$ at Cebu (maybe final shots at Cebu). The images look to have been treated roughly. The limb of the images is full of artifact ghosts. *Ak* did not observe in December and January, so that we were afraid he had lost a feel of the planet Mars. For example, with these seeings he could have observed at least three or four times every forty minutes up until he might grasp the area of Tithonius L. Since $\omega=010^\circ\text{W}$ was the angle imaged by *MJs* or *Kn* on the preceding day, it was a good moment to begin to chase.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/Ak24Feb14.jpg>

B CURCIC (*BCr*): Blastilav CURCIC (*BCr*) observes in Melbourne and is a newface to us. He made a set on 24 Feb ($\lambda=094^\circ\text{Ls}$) at $\omega=013^\circ\text{W}$: The configuration is similar to *Dpk*'s on 8 Feb. It is apparent *BCr* has a power of description by the use of C11, but the procedure at the limb side is no good, and hence the npc is not well exposed. He already submitted another shot on 18 March which is excellent. Even then the

limb looks clumsy.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmoms/2013/140224/BCr24Feb14.jpg>

S GHOMIZADEH (SGh): On 24 Feb ($\lambda=094^\circ\text{Ls}$) at $\omega=071^\circ\text{W}$, SGh made an image, but the markings look totally swallowed in the black background, thus it's without the npc. The image on 25 Feb ($\lambda=095^\circ\text{Ls}$) at $\omega=069^\circ\text{W}$ is also similar.

♂.....**Refer also to:** Concerning the shadowy poked-out spots; see

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn0/97Note12.htm>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn0/97Note03.htm>

As to the Ascræus Cloud, see

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn0/97Note16.htm>

As to the cotton ball-like cloud, refer to

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn0/97Note03.htm>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn0/99Note10/index.htm>

Masatsugu MINAMI & Masami MURAKAMI

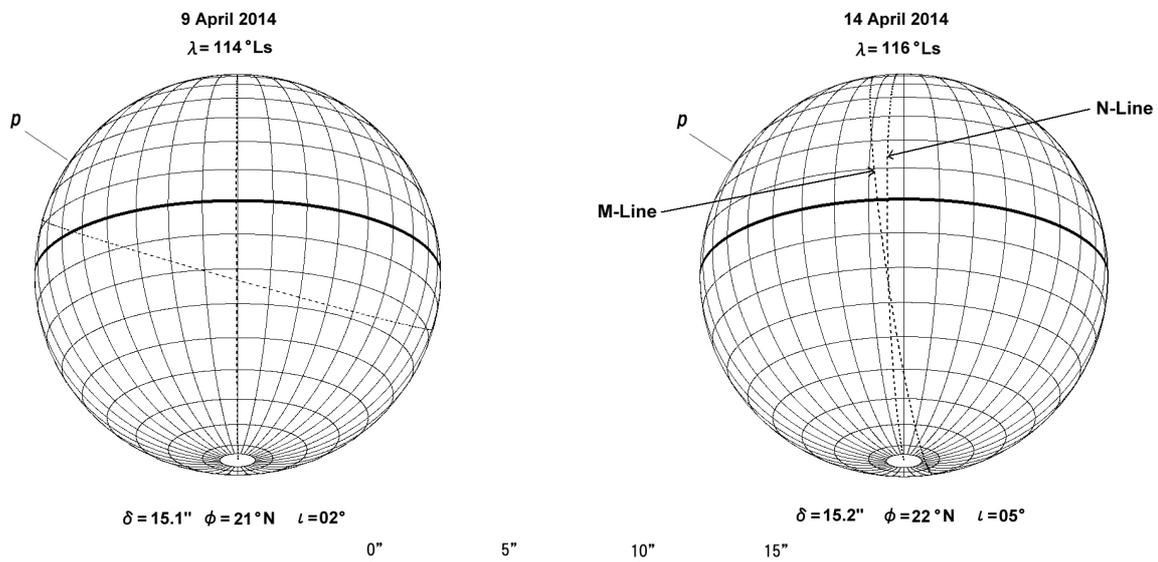
Forthcoming 13/14 Mars (8)

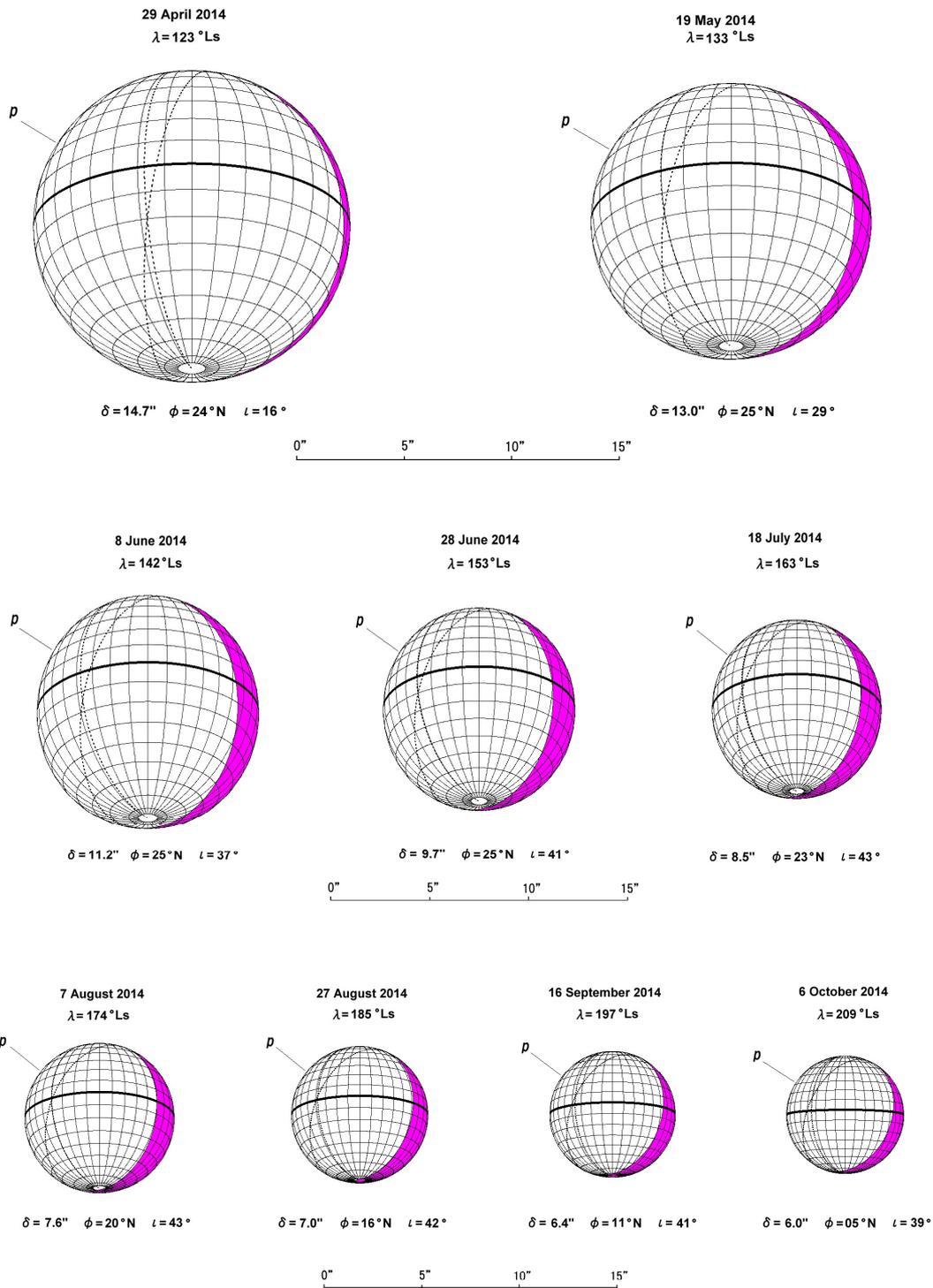
Disks with Grids. II

Akinori NISHITA

This is a sequel to Part I published in CMO #414 (25 September 2013 issue) and the following grid images show the expected Martian disks with the grids and the phases from this 9 April to 6 October 2014. The opposition will occur soon on 8 April 2014, while the planet will be closest to the Earth on 14 April 2014. The bold-faced

circular line shows the equator, so that the northern hemisphere largely faces toward us this season. Meanwhile the north polar cap (npc) is completely inside the surface. The possible sizes of the north polar cap are shown. The direction indicated as *p* is the preceding direction of the planet seen inside the eye-field when we stop the motor-driver, so indicating the direction of the celestial west. The noon line (*N*-line) is shown as a dotted line: The intersection with the other line (*M*-line) is the sub-Solar point.



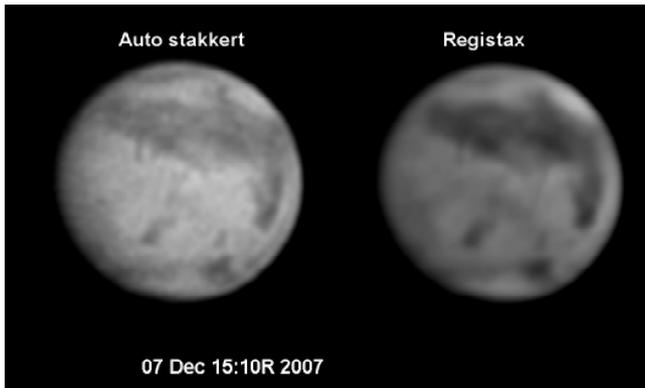


Letters to the Editor

●.....Subject: Mo23, 24, 31Jan_14
Received: 3 February 2014 at 01:27 JST

MORITA here reported some work in January, and put a PS:

PS: I tried to re-process some old images processed by Registax in 2007 by a new soft. The following is an example. I think much improved.



○.....*Subject: Mo10Feb_14*
Received: 12 February 2014 at 00:48 JST

I send Mars images on 10 February 2014. It was windy the night, and sometimes cloudy, but the images turned out to be a bit better.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140210/Mo10Feb14.jpg>

Yukio MORITA (Hiroshima, JAPAN)

●.....*Subject: Mars - January 31st*
Received: 3 February 2014 at 03:08 JST

Hi Mr. Minami & All!, Here is my latest session of Mars (cloudy) from January 31st under above average conditions, Clear Skies.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140131/EMr31Jan14.jpg>

○.....*Subject: Mars - February 5th*
Received: 7 February 2014 at 01:36 JST

Hi Mr. Minami!, Here is my latest session of Mars from February 5th.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140205/EMr05Feb14.jpg>

○.....*Subject: Mars - February 8th*
Received: 9 February 2014 at 13:29 JST

Hi Mr. Minami and All!, Here I submit my session from February 8th, under above average conditions.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140208/EMr08Feb14.jpg>

○.....*Subject: Mars - February 12th*
Received: 13 February 2014 at 06:57 JST

Hi Mr. Minami and All! Here is my latest session of mars from february 12th, Under above average conditions.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140212/EMr12Feb14.jpg>

○.....*Subject: Mars - February 15th*
Received: 16 February 2014 at 05:52 JST

Hi Mr. Minami and All!, Here is my latest session of Mars from February 15th, Clear skies.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140215/EMr15Feb14.jpg>

○.....*Subject: Mars - February 20th, 21st*

Received: 23 February 2014 at 03:24 JST

Hi Mr. Minami and All!, Here are two sessions from the 20th and on 21st of February, Clear skies.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140220/EMr20Feb14.jpg>
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140221/EMr21Feb14.jpg>

Efrain MORALES RIVERA

(Aguadilla, PUERTO RICO)

●.....*Subject: Mars 3 February 2014*
Received: 4 February 2014 at 04:08 JST

Dear friends, Attached find my Mars image of 3 February 2014. Seeing was average and a bit windy. Note the small North Polar cap, Mare Acidalium, Sinus Meridiani and bright Chryse. Regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140203/JSb03Feb14.jpg>

John S SUSSENBACH

(Houten, The NETHERLANDS)

●.....*Subject: Re: Thank you for your Essay on 25 Jan*
Received: 5 February 2014 at 12:20 JST

Thank you both. I will try to get more Mars images, but the weather has not been cooperating. The days and nights have been clear, but by the time Mars rises it turns cloudy and has even rained!

Best,

○.....*Subject: Mars 8 February*
Received: 12 February 2014 at 12:03 JST

Hi All, I have attached RGB Mars images from 8 February. Bright clouds are seen on AM limb, over Ophir-Candor and E. Tharsis. Ophir is especially bright in red, usually due to dust in the chasm. Faint clouds are over Eden. Deuteronilus is prominent. A faint reddish haze is seen west of the NPC. Best

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140208/DPk08Feb14.jpg>

○.....*Subject: Mars 12 February*
Received: 14 February 2014 at 15:15 JST

Hi All. I have attached an RGB Mars image from 12 February. The Syrtis Blue Cloud is prominent and confluent with clouds in Aeria. A cloud is seen over Hellas. There are bright AM limb hazes. Best,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140212/DPk12Feb14.jpg>

○.....*Subject: Mars 18 February*
Received: 19 February 2014 at 15:03 JST

Hi All, I have attached RGB Mars images from 18

February. Bright clouds appear over Hellas: Peneus is seen on the floor of Hellas in R light. Wispy clouds are over the NPC. Bright orographic cloud is seen over Elysium. There are wispy clouds across Libya onto the eastern border of Syrtis Major. Best

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140218/DPk18Feb14.jpg>

Donald PARKER (Coral Gables, FL)

●.....*Subject: Mars RGB 04Feb2014*
Received: 5 February 2014 at 14:43 JST

Hi everyone, The attached image was captured in mediocre seeing. Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140204/SBd04Feb14.jpg>

○.....*Subject: Mars 09 Feb 2014, dust in Lemuria?*
Received: 10 February 2014 at 08:56 JST

Hi everyone, I captured some Mars images this morning, in good seeing, that seems to show a dust streak across Lemuria. The problem is that the colour is not very red, so it could be something else perhaps. Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140209/SBd09Feb14.jpg>

○.....*Subject: 10 Feb 2014 with polar disturbance*
Received: 11 February 2014 at 09:32 JST

Hi everyone, I managed to catch the polar disturbance this morning in rather poor seeing and transparency. It appears to be spreading towards Propontis II. Regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140210/SBd10Feb14.jpg>

○.....*Subject: Mars 17 Feb 2014*
Received: 18 February 2014 at 10:27 JST

Hi everyone, The attached image was captured in mediocre seeing. Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140217/SBd17Feb14.jpg>

○.....*Subject: Mars 23 Feb 2014*
Received: 24 February 2014 at 15:52 JST

Hi everyone, I managed to produce an image from this morning captures in variable and jittery seeing. Interesting how bright a small patch of the NPC is. Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/SBd23Feb14.jpg>

○.....*Subject: Mars 27 Feb*
Received: 28 February 2014 at 18:07 JST

Hello everyone, Attached a Mars image from this morning in poor seeing. Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140227/SBd27Feb14.jpg>

Stefan BUDA (Melbourne, AUSTRALIA)

●.....*Subject: Mars 4th February 2014*
Received: 5 February 2014 at 21:24 JST

Gentlemen, Please find attached an image of Mars taken this morning in average seeing. Kinds regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140204/MV104Feb14.jpg>

○.....*Subject: Mars 7 Feb UT*
Received: 8 February 2014 at 10:48 JST

Attached is an image of Mars taken this morning in fair seeing. best wishes,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140207/MV107Feb14.jpg>

○.....*Subject: Another Mars 7th Feb UT*
Received: 8 February 2014 at 13:01 JST

Here is another image of Mars taken on the 7th Feb as marked. Seeing was not quite as good as for the image taken later. Best wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140207/MV107Feb14.jpg>

○.....*Subject: Collage of all images from 7th Feb*
Received: 8 February 2014 at 20:41 JST

Attached is a collage of all images taken on the 7th Feb from 1758 UT to 1846 UT. Best wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140207/MV107Feb14.jpg>

○.....*Subject: Mars 9th Feb UT*
Received: 10 February 2014 at 19:49 JST

Attached are two images taken this morning in good seeing. The anomaly mentioned by Stefan Buda has just come into view. Best wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140209/MV109Feb14.jpg>

○.....*Subject: Collage from 9th Feb UT*
Received: 10 February 2014 at 21:16 JST

Here is a collage of all images I took this morning, 9th Feb UT. Regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140209/MV109Feb14.jpg>

○.....*Subject: Mars 23rd Feb UT*
Received: 24 February 2014 at 20:07 JST

Attached is an image of Mars taken this morning in fair to good seeing. More images to follow when time permits. Best regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/MV123Feb14.jpg>

○.....*Subject: More Mars 23rd Feb UT*
Received: 25 February 2014 at 22:10 JST

Attached is a collage of all images taken on the

23rd Feb UT. Best Wishes

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/MV123Feb14.jpg>

Maurice VALIMBERTI

(Melbourne, AUSTRALIA)

●.....*Subject: Mars, Feb 6*
Received: 7 February 2014 at 08:41 JST

Here is an image of Mars from this morning, you can see prominent cloud over Olympus Mons at top right, and what appears to be an area of dust spreading at lower left over Elysium. This area was already turning pink in the last image I sent out, but now it's quite red. Seeing was still poor for this session. regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140206/AWs06Feb14.jpg>

○.....*Subject: Mars Feb 7*
Received: 8 February 2014 at 09:01 JST

Mars from this morning, seeing still pretty poor but you can see prominent cloud around Olympus Mons as well as more cloud forming on the sunset terminator at right over the top of the other Tharsis volcanoes (Ascraeus, Pavonis and Arsia). With sufficient averted imagination it's possible (I think) to see the summits of two of these monsters poking out through the top of the clouds right on the limb as dark spots in the cloud.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140207/AWs07Feb14.jpg>

○.....*Subject: Mars this morning, Feb 8*
Received: 9 February 2014 at 09:57 JST

Mars continues to be very photogenic... even in poor seeing the clouds over Olympus Mons and the three Tharsis volcanoes show up very nicely.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140208/AWs08Feb14.jpg>

○.....*Subject: Mars in IR this morning, Feb 21*
Received: 22 February 2014 at 08:38 JST

I'm testing a new camera that has a lot of promise but also a few "quirks" that are taking time to iron out. Many thanks to Torsten for helping support me with changes to firecapture... a few more changes are needed yet to get the best out of the camera.

Once again the seeing was very poor this morning but IR saves the day again on Mars...

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140221/AWs21Feb14.jpg>

camera: PGR Grasshopper3 USB3 w/ Sony IMX174 sensor

Filter: Thorlabs IR750 longpass
 3 minutes of data @ 50fps, stacked best 2000 frames.

regards,

○.....*Subject: IR animation of Mars, Feb 21*
Received: 22 February 2014 at 14:02 JST

Two frame animation of Mars from this morning, interesting to see the bright streak at bottom left moves with the planet, I thought it was an artifact at first but clearly not. cheers,

○.....*Subject: Mars this morning Feb 22*
Received: 23 February 2014 at 08:45 JST

Seeing was again about average or a bit below for this morning, I recorded several sequences in IR - here's the best single image and a 4-frame animation showing the interesting bright elongated streak from yesterday, rotating on from the lower left in the last 2 frames. This is probably the last time I'll get this for a few weeks thanks to Mars' rotation. cheers,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140222/AWs22Feb14.jpg>

○.....*Subject: Mars and Phobos*
Received: 23 February 2014 at 09:27 JST

I tried a set of longer exposures to go moon hunting, and I caught Phobos this morning just to the right of Mars. Exposures were 78ms (13fps) for 2 minutes, stacked all frames. Deimos is also in this frame, but doesn't show well enough to be claimed:



cheers,

○.....*Subject: Mars and Phobos , Feb 23*
Received: 24 February 2014 at 08:12 JST

This gives a good idea of the noise floor perfor-

mance of the Grasshopper3 IMX174 camera, no flats or darks were used to make this image - L channel data, 78ms exposure (13fps) for 2 minutes with max hardware gain applied, and then all frames aligned and stacked in registax6 + extreme wavelet enhancement and histogram stretching. Phobos is obvious, and the background noise is extremely low. My spider vane diffraction is more prominent than the camera noise. regards,

○.....*Subject: Mars this morning Feb 24*
Received: 25 February 2014 at 09:06 JST

Generally poor seeing again this morning, so only an IR image... Syrtis Major is just starting to come back into view again on the rising limb at right.

cheers,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/AWs24Feb14.jpg>

Anthony WESLEY (NSW, AUSTRALIA)
<http://www.acquerra.com.au/astro/gallery/mars/>

●.....*Subject: Re: Excellent seeing on Mars, at last*
Received: 7 February 2014 at 08:30 JST

Hi, Leo, I have come to the same conclusion that Mellish was tricked by his brain. He saw something that suggested craters--"oases," etc.-- but they were merely an illusion. Of course, it all got very confusing in 1965-66 when Mariner 4 showed that there were craters on Mars. The only way to find out for sure was to do what you have done, and that is image Mars under similar conditions.

The Mellish observations were with the Yerkes refractor, and the disk was only 7" or so.

Excellent work and I hope to see more soon.

Best, Bill

 On ??/14 6:28 AM, "Aerts Leo" wrote:

Hello Bill, Thank you for your reply. I remember clearly the 'Martian craters from earth' story by Rodger W. Gordon, when it first was published in an ALPO issue. I followed closely the several articles that appeared later on the Mellish observations (*Sky and Telescope*, etc.), and didn't, at that time, decide if his observations were real or optical illusion of the eye and brain. Now that we have the wonderful webcam, we can have results that are at least as good as the visual impression that Mellish had on the Lick refractor. My conclusion, at present, is that he must have been fooled by his brain, working at the limit of what visually can be done on Mars.

After many week of clouds, rain and wind, with very

mild temperatures for this time of the year (the opposite of what you have in the USA), it cleared again on February 2nd. Late in the evening I tried to imagine Jupiter but seeing was, again, very awful. Luckily I got up again at 3h0 UT, trying my luck on a 9"0 Mars. Amazingly seeing was ... excellent. Imaged for about two hours with my Celestron 14. Herewith you find my best result at 3h48 UT. Included in an RGB result and an IR result. I hope this seeing will come again when Mars has grown to 15" !

Best regards. Leo

 From: Bill and Debb

Sent: dinsdag 4 februari 2014 1:43

To: Aerts Leo

Subject: Re: Mars on January 31st 2014

Dear Leo, Superb work as always. This really makes me think that it would have been impossible for Mellish to have seen "craters" on Mars, under such conditions. He must have had an illusion of craters but on a small disk it's easy to deceive oneself. Keep up the great work.

Here, the weather is just starting to turn to the point where one can stand outside for a few minutes without freezing to death.

Thanks for allowing me the pleasure of vicarious observations! Best, Bill

 On ??/14 1:20 AM, "Aerts Leo" wrote:

Dear Bill, Had yesterday some decent seeing conditions on Mars. Herewith some results on the 8"8 disc. The planet culminates at 30° in Belgium. All with C14. Additional information on the imaging results.

No further results on Jupiter due to continuous clouded evenings. Frustrating with the planet at 62° culminating.

Have a nice weekend ! Best regards. Leo

 ○.....*Subject: FW: neuronal nonlinearity article*
Received: 14 February 2014 at 04:44 JST

Dear Masatsugu, I just noted this article in the Proceedings of the NAS—and wrote to one of the authors for the pdf, which he has obliged. They mention the way this effect explains how Venus, for instance, appears so much larger to the eye than Jupiter, even when they are the same apparent diameter or Jupiter is larger in the telescope, but of course it also explains many other visual planet effects such as the way the polar caps of Mars appear to project beyond the limb and even the fact that detail in the Martian bright areas is more poor-

ly resolved than that in the desert areas (which is one of the physiological-optics facts behind the canal illusion: it also explains why larger aperture telescopes and higher magnifications tend to provide better definition of detail even apart from resolving power in the usual sense, which tends to be seeing- not diffraction-limited).

Anyway, thought you would enjoy.

Best, Bill

 From: Jose-Manuel Alonso
 Sent: Thursday, February 13, 2014 1:31 PM
 To: Sheehan, William P (DHS)
 Subject: Re: neuronal nonlinearity article

Dear Dr. Sheehan, Thank you so much for your interest in our work and for sending me a reference of your book that looks really interesting and I am planning to read! As you will notice, our interaction with astronomy has been only coincidental. We have been studying the asymmetries between ON and OFF channels in vision for the past years and, through this work, we ended up learning about the problems that Galileo had when looking at the stars! I am attaching a pdf with the main paper and the supporting information published by PNAS.

Our very best wishes,

Jose MANUEL

Link:

[http://www.kwasan.kyoto-u.ac.jp/~cmo/cmo/ISMO_LtE420.files/Kremkow et al \(2014\) PNAS.pdf](http://www.kwasan.kyoto-u.ac.jp/~cmo/cmo/ISMO_LtE420.files/Kremkow et al (2014) PNAS.pdf)

On 2/13/2014 2:01 PM, Sheehan, William P (DHS) wrote:

Dear Dr. Alonso, I am a psychiatrist in Minnesota, who has done a lot of work in perceptual psychology and its applications to astronomy (e.g., Planets & Perception, U of Arizona Press, 1988). I read the abstract of your article "Neuronal nonlinearity.." and would like to request a reprint.

Congratulations on excellent work in elucidating a long-standing problem in planetary visual observations.

Thanks, and best wishes,

Bill Sheehan, M.D.

 ○.....Subject: Mellish's Mars
 Received: 26 February 2014 at 07:20 JST

Hi, all, Leo Aerts just sent me this evocative image.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/LAt24Feb14.jpg>

Now this I can imagine might resemble what Mellish saw that was so suggestive to him.

Bill SHEEHAN (Willmar, MN)

●.....Subject: Mars: February 8, 2014
 Received: 10 February 2014 at 00:47 JST

Hi - I have attached a decent shot of Mars February 8, 2014 to be posted. Thanks,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140208/FMI08Feb14.jpg>

Frank J MELILLO (Holtsvill, NY)

●.....Subject: RE: mars sketches 15/01/'12
 Received: 10 February 2014 at 20:20 JST

Hi, here is my sketch from february 3. Greetings,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140203/KSm03Feb14.jpg>

Date: february 3 2014 Time: 05:20 UT
 observer: Kris Smet location: Bornem, Belgium
 instrument: 12" f/5 dobson magnification: 167x
 seeing: very poor filters: apodizing mask

Kris SMET (Bornem, BELGIUM)

●.....Subject: Mars images
 Received: 11 February 2014 at 12:36 JST

Dear Sirs, I am not sure if I am following correct procedures but attached are three recent Mars images.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140204/MJs04Feb14.jpg>
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140205/MJs05Feb14.jpg>
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140209/MJs09Feb14.jpg>

All taken with:

- 25cm Dall-Kirkham
- DMK21AU618 camera
- Edmund filters
- From Melbourne Australia
- By: Mark Justice

Please advise if there is anything I should do in future before submitting images. Best regards,

○.....Subject: Mars images
 Received: 12 February 2014 at 21:01 JST

Dear Sirs, Please find the attached Mars image. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140211/MJs11Feb14.jpg>

Image taken in mediocre seeing with poor transparency due to the smoke haze of the recent fires.

○.....Subject: Mars images
 Received: 22 February 2014 at 21:58 JST

Dear Sirs, Please find the attached Mars image.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140220/MJs20Feb14.jpg>

Best regards,

○.....Subject: Mars image
 Received: 25 February 2014 at 07:54 JST

Dear Sirs, Please find the attached Mars image taken in good seeing. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/MJs23Feb14.jpg>

○.....Subject: Mars image
 Received: 27 February 2014 at 11:25 JST

Dear Sirs, Please find the attached Mars image taken in mediocre seeing.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/MJs24Feb14.jpg>

○.....*Subject: Mars image*

Received: 28 February 2014 at 19:56 JST

Dear Sirs, Please find the attached Mars image taken in poor seeing. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140227/MJs27Feb14.jpg>

Mark JUSTICE (Melbourne, AUSTRALIA)

●.....*Subject: Fwd: Mars Jan 10, 2014*

Received: 11 February 2014 at 17:32 JST

Please find some Mars observations from Australia - please let me know if the format is suitable for you and I can add you to my distribution list for this apparition. Best Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140210/JKz10Feb14.jpg>

○.....*Subject: Mars Images - Feb 22 & 21, 2014*

Received: 24 February 2014 at 13:17 JST

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140222/JKz22Feb14.jpg>

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140223/JKz23Feb14.jpg>

Best Regards,

○.....*Subject: Mars Feb 24, 2014*

Received: 25 February 2014 at 17:56 JST

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/JKz24Feb14.jpg>

John KAZANAS (Melbourne, AUSTRALIA)

●.....*Subject: 'Hurricane on Mars'*

Received: 13 February 2014 at 07:43 JST

Hi everyone, My job in the Mars Section of ALPO is to keep updating the MAROP with recent images posted by members of the Mars Observers E-group.

A few days ago, I put together a collage of 4 images covering a span of 5 days Jan 14 to Jan 20. The idea was to show the movements of dust clouds (tan colored) on or near the NPC, that they do.

But the one that blew me away was Mike Hood's image on Jan 20th. I was looking around where bright desert areas should be (see Efrain Morales Jan 17th image) and thought 'WHAT IS THAT'? A bull's-eye! I think it has the characteristics of what a very strong low pressure center would look like encircled by a airborne dust uplifted in the storm.

<http://www.alpo-astronomy.org/marsblog/observing-alerts-recent-observations/>

I think it's like seeing on Mars what on Earth is a

hurricane. I've never seen an image, amateur or professional, like that before. Thought you might like to see it. Good seeing,

Jim MELKA (Chesterfield, MO)

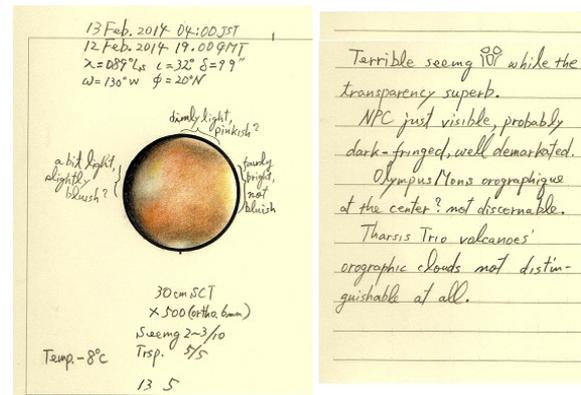
●.....*Subject: A color drawing of Mars*

Received: 14 February 2014 at 22:25 JST

Dear Dr. Minami, I have attached here my latest drawing of Mars. Seeing was dreadful while the transparency was superb, a gorgeous summer Galaxy, mottled and almost colored, on the eastern mountain range. Even through the binoviewer at $\times 500$ Mars was dazzlingly bright with vivid colors, I only hope I could have a better seeing with this transparency!

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140212/Kn12Feb14.jpg>

Good Seeing, Good Health!



Reiichi KONNAI (Fukushima, JAPAN)

●.....*Subject: Mars image - February 12, 2014*

Received: 15 February 2014 at 05:27 JST

Gentlemen, Attached is a set of images from February 12. Seeing was less than average and the temperature was a cold -17°C . Regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140212/PGc12Feb14.jpg>

Peter GORCZYNSKI (Oxford, CT, the USA)

●.....*Subject: RE: May I ask a favour of you?*

Received: 18 February 2014 at 23:46 JST

Dear Sir, I am very sorry that I didn't forward you the imaging results of December 10 2013 and Feb 3 2014. You find them herewith. All imaging done with C14. I will follow very close Mars in the next months. I hope weather will allow me to make valuable observations. They will be forwarded each

time to you from now on.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/131210/LAt10Dec13.jpg>
<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140203/LAt03Feb14.jpg>

Apologizes and best regards.

Leo AERTS (BELGIUM)

●.....*Subject: Mars images 2014 Feb 24 18:30UT*
Received: 26 February 2014 at 13:15 JST

Hi, here is a set of RGB images I have collected on the morning of Feb 24th 18:30 UT (5:30AM Feb 25th Australian Eastern Standard time).

I used an 11 inch SCT (C11) and a QHY 5L II monochrome camera with Edmund dichroic RGB set. Best regards,

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/BCr24Feb14.jpg>

Bratislav CURCIC (Melbourne, AUSTRALIA)

●.....*Subject: mars 24 feb*
Received: 27 February 2014 at 03:16 JST

Hi all, Nice to see clear Sky, Aside from these things, this new location for astronomy not good, but I did not realize that I must to do photography & Skyline East full of trees anyway must be this

location to change. Regards

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140224/SGh24Feb14.jpg>

○.....*Subject: mars.25.feb.2014*
Received: 27 February 2014 at 11:50 JST

Hi, Here is Mars in poor seeing. PLS see you it.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmons/2013/140225/SGh25Feb14.jpg>

Regards

Sadegh GHOMIZADEH (Roudehen, IRAN)

●.....*Subject: Re: From Masatsugu*
Received: 27 February 2014 at 23:26 JST

Dear Masatsugu, I'm much sorry to read such news about your health:(But I don't remember to have read curious things from you and you never hurted me in writing anything...

I have not forgotten the CMO but it's true that lately I have been completely busy in writing on other places! I think I can write something for the next CMO, it will by my third March article I need to do, plus the blog and the book but I can do it. Moreover, something about processing would be needed *before* the opposition period when people will more observe.

Currently, Stefan Buda, Maurice Valimberti and some images by Mark Justice have been at the top of the top. We keep on seeing red or IR luminances, but apart of the defects brought by such methods and I'm a bit concerned about a growing tendency about some people to use RRGB while pretending their image is in true RGB. Many people will not see the difference but this could flaw the results of the ISMO studies...

Thanks for my blog, you can share one article either by clicking on "share" on my facebook page or you can do it on the blog itself, if you go to the page of an article, at the footer (bottom left) you will see faint icones that one can use on several socials networks (for FB it is the "f").

Please receive my best regards and I will keep you inform about the ISMO article !

PS. the weather in western Europe have been extremely depressive and humid. I did not had a chance to image Mars so far, and even Jupiter is hard to catch. At best I can get 1 to 2 hours "clear sky surprise" but with poor seeing.

○.....*Subject: Re: [marsobservers] Another Mars*
Received: 28 February 2014 at 19:46 JST

I think that if the real purpose is to make a scientific following of the planet, any source that will help us to decide what's going on is helpful, there is no reason to discard them. Probe data can be fine because it reaches a much better spatial resolution. I frequently use HST or MARCI data for my own analysis and articles.

Note that such data is not perfect either: the problem with the rotating globes we can find on MSSS is that they are made with only narrow strips taken around Martian noon (just like MGS) and they do not show the daily evolution of clouds, nor the very important morning and evening sides. Amateur data will show this, and this is where they can help a lot.

In a short, anything that might keep us from making wrong interpretations is useful, regardless the origin. Regards,

Christophe PELLIER (Nantes, FRANCE)

TEN YEARS AGO (227)

--- CMO #289 (25 March 2004) ---

---<http://www.hida.kyoto-u.ac.jp/~cmo/cmomn3/cmo288/index.htm>

CMO #289 (25 March 2004) contains the 24th 2003 Great Mars CMO Report which treated the observations from 16 February to 15 March 2004. During the period, the planet went from the Tri to the Tau constellation, and shined yet higher in the evening sky. The Martian season proceeded from $\lambda=351^\circ\text{Ls}$ to $\lambda=005^\circ\text{Ls}$, and greeted the northern spring equinox on 5 March 2004. The angular diameter went down from $\delta=6.1''$ down to $5.3''$ implying we reached the end of the great 2003 apparition. The tilt ϕ moved from 26°S to 13°S , and the northern hemisphere came back a bit. The phase angle ι changed from 38° to 34° .

The 12 observers reported 107 observations. Domestically 7 joined with 91 observations. Abroad, we heard from 3 members with 8 observations in the US and two observers in Europe with 8 observations.

The review first dealt with a problem of the “nph” or the “npc”: After $\lambda=350^\circ\text{Ls}$, we usually “wonder if the white matter located at the northern limb is the north polar hood (nph) or the north polar cap (npc)”. In February a strong hood was observed, and it was considered the npc appeared a bit as March came in while it was difficult to tell the difference because the angular diameter was not enough. Next the aspect of the south polar hood (sph) was dealt with in terms of the observations gained in this period. Third, Hellas’s atmosphere was considered, based on the observations of the bright or less-brighter part of Hellas. Elisabeth SIEGEL (*ESg*) for instance “detected a bright patch at the northern part of Hellas thru Wr47 on 29 Feb ($\lambda=357^\circ\text{Ls}$).” Fourth, some markings were touched which appeared on the images of D PARKER (*DPk*) et al.

<http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn3/289OAA/index.htm>

The 2003 Mars CMO Note (#02) treated the topic “Xanthe Dust on 2 July 2003” when “a water vapour/dust cloud disturbance was witnessed from Tempe to the lower Xanthe independently by VALIMBERTI (ccd), PAU (ccd), NG (ccd), KUMAMORI (ccd), ISHADOH (visual, 31cm spec) and MINAMI (visual, 25cm spec)”. The Martian season was $\lambda=214^\circ\text{Ls}$. This disturbance looked to have disappeared in the following Martian night-time. However it was suggested we should have been more attentive on such events because these might have been a kind of dusts originated from the northern hemisphere. In fact, from the MGS-MOC images in 1999 during the period $\lambda=109^\circ\text{Ls}$ ~ 273°Ls , Bruce E CANTOR et al (“*Martian dust storms: 1999 Mars Orbiter Camera observations*” (*JGR*, 106 (2001) 23653)) listed a total of 783 dusts almost all of which were from the northern latitudes, while no great southern dust storm was observed during the period. That is, more concretely “the occurrences are denser at $\lambda=160^\circ\text{Ls}$ ~ 165°Ls at the northern higher latitudes just after the north polar cap has shrunk to the minimal state, and then thicker at 210°Ls ~ 227°Ls in the middle northern latitudes 40°N ~ 50°N after passing the autumnal equinox, and finally the occurrences decrease in quantity as the season approaches the winter solstice.” It was suggested here a dense happening of the northern minor dusts should be equally effective to the Mar-

tian atmosphere if compared with the great dust storms. In 1999, those dusts at $\lambda=210^\circ\text{Ls}$ and at $\lambda=221^\circ\text{Ls} \sim 225^\circ\text{Ls}$ were recognised as the “cross-equatorial dusts”.

There is also described such a possible case at Chryse in Aug 1986 (11 Aug 1986 ($\lambda=223^\circ\text{Ls}$) through 15 Aug ($\lambda=225^\circ\text{Ls}$)) observed by T AKUTSU, CHANG Li-Hsia and Mn .

Also MGS images of the 1999 cases (on 8 Oct ($\lambda=221^\circ\text{Ls}$) and on 12 Oct ($\lambda=223^\circ\text{Ls}$)) as well as the 2 July 2003 case are shown.

http://www.kwasan.kyoto-u.ac.jp/~cmo/cmomn3/289Note02_03/index.htm

In LtE, the emails received from 25 Feb 2004 to 24 Mar 2004 are shown. We heard from Don BATES (TX, the USA), António CIDADÃO (Portugal), Ed GRAFTON (TX, the US), Silvia KOWOLLIK (Germany), Françoise LAUNAY (Meudon, France), Frank MELILLO (NY, the USA), Eric NG (Hong Kong), Don PARKER (FL, the USA), Damian PEACH (the UK), Christophe PELLIER (France), Bill SHEEHAN (MN, the USA), Elisabeth SIEGEL (Denmark), David STRAUSS (Kalamazoo College, MI, the USA), Maurice VALIMBERTI (Australia), Sam WHITBY (VA, the USA), and Tom WILLIAMSON (NM, the USA). Domestically we heard from T AKUTSU, T ASADA, A HIRAOKA, T IWASAKI, H KIKUOKA+, T KUMAMORI, K OSA, Y MAKINO, N MATSUMOTO, I MIYAZAKI, Y MORITA, and Y YABU.

“Ten Years Ago (103)” was written by *Mk* concerning CMO #143 (25 March 1994 issue): The planet was already in the morning sky but not so far separated from the Sun. The first article was “COMING 1994/95 MARS. I” and associated with “Ephemeris for Observation of Mars in 1994/95. I” by A NISHITA. And next as “Something Old- (7) : “Martian Surface Features Observed from the Far East in 1986, *Résumé*”. This was written by *Mn* in 1988, but the one not carried hitherto in the CMO. The “Yogoto-Yogoto” XLIV by *Mn* was concerned with a few episodes of Antoine de Saint-Exupéry (1900~1944). Previously *Mn* wrote about him in 1994 on the 50th anniversary of his death. **Masami MURAKAMI (*Mk*) and Masatsugu MINAMI (*Mn*)**

International Society of the Mars Observers (ISMO)

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

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CMO #420/ ISMO #46 (25 March 2014)

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

☆ Any e-mail to CMO/ISMO including the image files is acknowledged if addressed to cmo@mars.dti.ne.jp (Masami MURAKAMI in Yokohama)



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