

MARS

No. 401

25 August 2012

No. 27

Published by the International Society of the Mars Observers

Live Rotations?

By

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There were a lot of stupid observers who thought that it became meaningless to take pictures of Mars from the terrestrial bases since a lot of nicer pictures became distributed from the stations of the HST and MGS and so on. Among them, there were several who quitted observing Mars after the circulation of the fake-live rotating pictures of Mars made from the still images in the afternoon. On the other side there appeared some to desire to mimic the images which may cope with the professional images made by the HST.

Similarly, it is ridiculous there have appeared several who thought that we can see the live Mars made from the images by MRO et al on the monitor desktop. However it is strange if there are few who are discontented with such a fake rotation: For example the whole rim is too smooth, and furthermore for example the white cloud patches at Tharsis ridges are always apparent from the very morning. Usual sane observers must be aware and would like to say that this rotation is meaningless. In no sense these are any live images. It implies that a set of images taken in the afternoon have been twisted to the morning side. If so, these rotation images are not those expressing the whole day images in real time. At most these are composed from the fixed images in some afternoon time. Look care-

fully at the place near Syrtis Mj every day, and then you will see the image skip a bit near Syrtis Mj every day; this is the very moment when the image of the new day takes the place of the preceding day surface. No one would think this kind rotational images show the real rotation. That is to say; no real one day Mars has been recorded. If this kind rotation is not real we may say we cannot chase the surface phenomenon on any day. If something meaningful happens on the surface of Mars, this trial will be forced to evade.

We think that recently everyone becomes to be aware that it is important to observe carefully the Martian terminator at the dawn time. The conventional Martian observations have been concentrated on the central part of the Martian surface: The observation of the region of Syrtis Mj is still popular among the beginners as well as to those who seek the details on their images. It is still a satisfactory scene to those who want to have Martian images showing no other than dark markings and furthermore it will be pertinent to those who want to be trained.

However, such an elementary period had already passed or there are many who do not know the important elementary period. Conversely speaking

the Mars observations have become more difficult than before. Recent Mars observations are barely supported by the vigorous observers who know well the old fashioned observation techniques and data.

One of the points to be stressed is the observations of the dawn terminator. We are of the opinion that in the future the dawn observations will be proved very effective and precious, especially concerning the occurrence of the dust storms as well as the magnetic mushrooms. We believe that the initial state of the dust storm will be captured through careful checks of the dawn terminator. To accomplish this kind of observations the surfaces of the same degrees must be accompanied on the following days. Of course the seeing conditions must be rather constantly maintained, though it is a very difficult thing. It is apparent that the above mentioned fake rotation images are of no use.

As to the check of the morning terminator, since any image of the so-called imagers of the appropriate season will trap the morning terminator, there seems no problem exist. However it depends heavily on the consciousness whether we can check or not the same longitude on the following days. To the Mars observers, it is very important to observe repeatedly the same places by practical trainings.

Even on the occasion of the single visual observation, the checking of the morning terminator is important. If one is absorbed only on the central Syrtis Mj, the observation is unsatisfactory. Any image is detestable if its limb side is artificially even if seen beautifully.

It is very difficult to observe the limb areas: In the case of camera images, every piece of enormous shots must be of wonderful performance at the limb: It is stupid to choose the images which show just the central markings to be nice.

Here we should note again that the importance of the dawn terminator is not only concerned with the dust problem but sometimes related with the magnetic distributions on the specific areas of Mars.

Such an ordeal visited recently at the dawn terminator: We are speaking the magnetic protrusions. Fortunately the phenomenon this year was captured in the US and Europe: However it was regrettable that the results were not well concentrated because of a lack of the method and network. As we have repeatedly stressed, this protrusion phenomenon is similar to the one observed in November 2003 in Japan. Unfortunately there were few who remembered this phenomenon or there were some who wanted to ignore the preceding case. The central point of the phenomenon in 2003 was already summarised in the CMO. We stress here that this kind magnetic protrusion is not due to the morning dust occurrence as proved in 2003, but related with the activity of the Sun. In the 2012 case the Solar Wind was furious as well as in 2003. In a coming near future it is probable that such a phenomenon will occur at the Eridania-Ausonia region where the magnetic umbrella distribution is thick. So we expect everyone should be attentive to the dawn terminator without fail. Note again this kind of the protrusion is not related with the dust occurrence: The protrusion cannot be observed in the day time, but dust continues to be there whole day time long.

CMO/ISMO 2011/12 Mars Report #13

2011/2012 Mars Observations in July 2012

♂..... This is the 13th report of this season treating the observations in July 2012. The planet Mars was located in the SW sky at the sunset time moving in Vir, and made a triangle with Spica and Saturn. The Martian season λ proceeded from 133°Ls to 148°Ls, near the northern autumn. The tilt ϕ was still declined much to the north, and just back to 25°N at the end of the month. The npr was light and the npc was captured though small. At the opposite side Hellas as well as Argyre showed their existence. The phase angle ι was from 39° to 37°, the morning side defect being large. The apparent diameter δ further

went down from 6.6" to 5.8", implying at the same time its altitude was low and observation time became short. At the Kwantoh district, the rainy season ended in mid-July, but the sky remained unstable. At the end of July the hot summer came back, but the evening sky was rather cloudy.

♂.....In July we still received the observation reports as follows:

KONNAÏ Reiichi (Kn) Ishikawa, Fukushima, Japan

7 Drawings (10, 11, 31 July 2012) 750×600×30cm SCT

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

4 Colour Images (3, 11, 13, 23 July 2012) 25cm SCT with a ToUcam pro II

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

6 Sets of RGB + 6 LRGB Colour + 6 L Images (3, 8, 9, 17, 25 July 2012)
25cm speculum with a Flea3

MURAKAMI, Masami (Mk) Fujisawa, Kanagawa, Japan

2 Drawings (10, 30 July 2012) 400×20cm F/8 speculum

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

9 Sets of RGB + 9 IR + 27 Colour Images (1, 2, 4, 12, 13, 21, 22, 27, 28 July 2012)
36cm SCT with a DMK21AU04.AS

♂.....On 1 July ($\lambda=133^\circ\text{Ls}$) WILLEMS (FWI) made an observation at $\omega=315^\circ\text{W}$, and captured the bright Hellas as well as the dark Syrtis Mj and S Sabaeus. The northern hemisphere was also shot detailed: Olympia and Rima Borealis were clear ($\delta=6.6''$). Also on 2 July ($\lambda=133^\circ\text{Ls}$) at $\omega=305^\circ\text{W}$, FWI tried some shots but the resolution was poorer than the day before. On 3 July ($\lambda=134^\circ\text{Ls}$) at $\omega=215^\circ\text{W}$, MELILLO (FMI) observed: The image is small but the brightness of the npr and the shadowy Phlegra were apparent. From Japan MORITA (Mo) observed and took images at $\omega=029^\circ\text{W}$ showing the area of M Acidalium. Chryse looked bright and the morning side of M Acidalium was light. The npc was small, and at the western side Hyperboreus L was darkish. Argyre was not so light. On 4 July ($\lambda=134^\circ\text{Ls}$) at $\omega=286^\circ\text{W}$, FWI recorded the morning Hellas to be bright. The resolution was not so better, while in IR, N Alcyonius and the Ætheria dark patch were captured. To the east of the npc Olympia was evident.

On 8 July ($\lambda=136^\circ\text{Ls}$) the bright Hellas came into sight from Japan, and Mo took images at $\omega=319^\circ\text{W}$, 324°W . The morning mist was also light. On 9 July ($\lambda=137^\circ\text{Ls}$) at $\omega=315^\circ\text{W}$ Mo observed but the images are inferior to those on the preceding day. On 10 July ($\lambda=137^\circ\text{Ls}$), KONNAÏ (Kn) visually observed at $\omega=279^\circ\text{W}$, 289°W , 299°W . 30cm SCT×750. A slightly bluish Hellas and the small but white npc were recorded. He also noted that the northern hemisphere was a bit reddish. MURAKAMI (Mk) also observed the day at $\omega=294^\circ\text{W}$. On 11 July ($\lambda=138^\circ\text{Ls}$), Kn observed at $\omega=276^\circ\text{W}$, 286°W : Seeing was not bad, but the clouds obstruct several times. He however checked the bright Hellas, the small npc as well as the bright Elysium near the evening side. On the day in the US, FMI took an image at $\omega=145^\circ\text{W}$. On 12 July ($\lambda=138^\circ\text{Ls}$), FWI in Hawaii took the image at $\omega=209^\circ\text{W}$: The RGB image is not clear, while the IR image shows the brightness of Elysium and the dark band encircling the npc. On 13 July ($\lambda=139^\circ\text{Ls}$) at $\omega=198^\circ\text{W}$ FWI took again: The seeing improved and Phlegra, Elysium, the Ætheria dark patch are evident. FMI on the day at $\omega=116^\circ\text{W}$, showed the tiny npc. On 17 July ($\lambda=141^\circ\text{Ls}$), Mo took some picture at $\omega=235^\circ\text{W}$: Elysium was light, the Ætheria dark patch was near the centre. The npr was also light. His images also show the brightness of the southern continents.

Next observation was made on 21 July ($\lambda=143^\circ\text{Ls}$) by *FWI* at $\omega=120^\circ\text{W}$. The markings are scarce, and the images themselves are not good though the tiny npc is checked. The disc diameter shrunk to $\delta=6.0''$. However on 22 July ($\lambda=143^\circ\text{Ls}$) at $\omega=109^\circ\text{W}$, *FWI* produced quite better images than those on the day before, and we can see the evening bright *Chryse*, *Solis L*, the afternoon *M Acidalium* with *Nilokeras*, the whitish brightness of the southern limb, bright *Ophir* and so on. *Tharsis* ridges may be visible. *Alba* is also witnessed. The npc is bright with some details inside as well as *Hyperboreus L*. Excellent images when $\delta=6.0''$. On 23 July ($\lambda=144^\circ\text{Ls}$) at $\omega=017^\circ\text{W}$ *FMI* at NY took a small image where the dark *M Acidalium* and the bright morning mist stemmed from *Chryse*. On 25 July ($\lambda=145^\circ\text{Ls}$) at $\omega=159^\circ\text{W}$ *Mo* observed: the evening limb is bright, the dark band encircling the npc is evident with the residual cap. At the southern limb region there seems to show up *M Sirenum*. On 27 July ($\lambda=146^\circ\text{Ls}$) at $\omega=059^\circ\text{W}$, and on 28 July ($\lambda=146^\circ\text{Ls}$) at $\omega=049^\circ\text{W}$, *FWI* closed the observations in this season: In the former seeing was very poor, while the latter shows *M Acidalium* near the centre and the southern limb region shows the *Argyre* area somewhat pale light. The npc is evident.

On 30 July ($\lambda=147^\circ\text{Ls}$) at $\omega=094^\circ\text{W}$, and on 31 July ($\lambda=148^\circ\text{Ls}$) at $\omega=075^\circ\text{W}$, 084°W , *Mk* and *Kn* visually observed respectively: *M Acidalium* is shadowy (*Mk*): The npc was obscure while *Ophir-Tharsis* and the afternoon limb and the spr were bright (*Kn*). At last $\delta=5.8''$. *Masami MURAKAMI & Masatsugu MINAMI*

ISMO 11/12 Mars Note (3)

The Aphelion Cloud Belt During the 2012 Apparition of Mars

Christophe PELLIER

The last opposition has been ideal to watch a regular and important phenomenon of the aphelical climate on Mars: the aphelion cloud belt (ACB) also nicknamed “equatorial cloud belt” or “low-latitude cloud belt”, the first expression being probably the most pertinent, as it is only seen, for several reasons that we are going to describe, when Mars is away from the Sun on its orbit.

I - Fast Facts about the ACB

During the first half of northern spring and most of the following summer, it is possible to see, on images, a belt of white clouds roughly in the middle of the disk. This is the aphelion cloud belt. The ACB is a white cloud activity that exists thanks to a Hadley-cell type air circulation. The first Figure here presents one the best amateur B image taken in 2012 with the belt superbly visible.

On the Earth, the Hadley cell is a convective movement of air that rises near the equator,

bringing hot and humid air in altitude to form rain clouds that we call the “inter-tropical belt of clouds”, which is for example responsible of the mousson phenomenon in India. Dried air then goes down on the tropic. Such large-scale convections movements also exist on Mars but they are

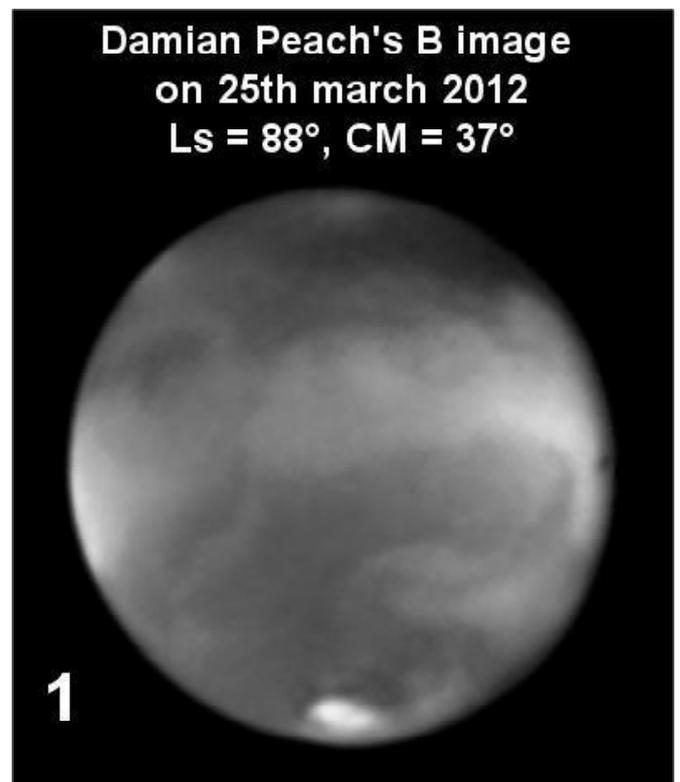


Figure 1: This superb blue image of Mars by Damian Peach features the aphelion cloud belt in one of its brighter sector - *Chryse* (read below)

different. While the Earth knows three big cells for each hemisphere (Hadley, Ferrel, polar), on Mars the meridional circulation most of the time is dominated by an almost single, big cell, whose ascending branch is located over the summer hemisphere, and the descending branch over the winter one. Due to the absence of a real tropopause like on the Earth, that Hadley cell reaches very high altitudes (several tens of km, against a few km for the Earth). The only moment when the situation is different is during the two equinoxes: when the

sub-solar point is located near the equator, two Hadley cells are active, one for each hemisphere. The reader will find diagrams on Figure 2.

The CMO readers have already encountered the Martian Hadley circulation when we discussed the cross-equatorial dust storms observed during 2003, 2005 and 2007.¹⁾ Cross-equatorial dust activity is a consequence of the descending branch of the very strong cell observed during the Martian southern summer (scientists say that it is six time stronger than the terrestrial Hadley cell).

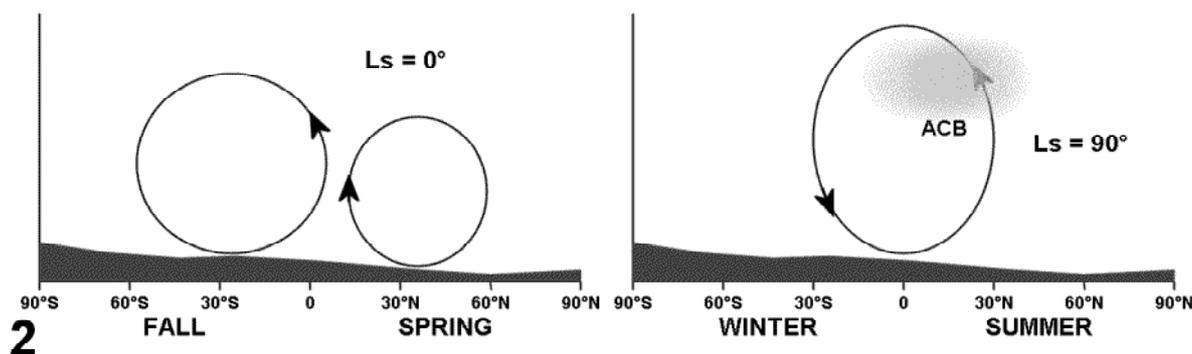


Figure 2: simplified diagrams of general convection cells in the Martian atmosphere for the seasons observed in 2012²⁾ At spring equinox ($\lambda=000^\circ L_s$, left), there are two Hadley cells, one for each hemisphere. At summer solstice ($\lambda=090^\circ L_s$, right), only one cell remains (this is the former northern cell at left), with ascending branch near sub-solar point ($25^\circ N$). The water vapour condensed into the ACB near the top of the cell, between latitudes 0° (equator) and 25° (Lion tropic).

During the northern late spring and summer, a cell weaker than the southern summer one is also active. It is weaker because the planet is away from the Sun and the global temperatures are cooler, and so the winds are slower as well. However, in contrary to the southern summer situation, the northern summer cell allows the condensation of water vapour into clouds near its highest circulation point, a kind of activity that is only barely detectable during the southern summer. The mechanism is the following:

- 1) During the northern spring, the north polar region releases water vapour into the atmosphere. The gas slowly spreads towards the tropic
- 2) During the season, the planet is going away from the Sun, to its aphelion, the farthest point that it reaches at $\lambda=070^\circ L_s$, in the second half of spring. As a result, global tem-

peratures do not increase so much and the northern spring is much cooler than its southern equivalent.

- 3) After $\lambda=030^\circ L_s$, at mid-spring, the sub-solar point is located deeply into the northern hemisphere, and so the future unique summer cell begins to form.
- 4) From around $\lambda=050^\circ L_s$, the amount of water vapour released by the polar cap is important enough to allow clouds to form. The gas is caught into the ascending branch of the Hadley cell and reaches colder and colder air masses. At one point, the temperatures are low enough for the water to condense. Because of the relatively cool spring, the required altitude is only half the one that would be required during the hot southern spring.

Scientists working with the MGS data have studied in detail the seasonal evolution of tropical clouds on Mars. In CMO #399 we referred to the work of Wang et al. to analyse images of the Alba's cloud.³⁾ This reference work gives the following elements for the formation of the ACB:

- 1) The cloud belt first develops north of Valles Marineris, at the western end of Chryse; the last part to develop is near Arabia (this is the ancient plateau north of Sinus Sabaeus).
- 2) The ACB develops from $\lambda=044^\circ\text{Ls}$ in mid spring, encircles the planet between $\lambda=057^\circ\text{Ls}$ and 070°Ls ⁴⁾ and peaks near summer solstice ($\lambda=090^\circ\text{Ls}$)
- 3) When it is complete, the belt is thicker and brighter over Chryse and Amazonis, with the Tharsis clouds between the two. Arabia remains the weakest part.
- 4) The nature of the clouds inside the ACB is fibrous, just like cirrus on the Earth. The fibrous nature declines after $\lambda=134^\circ\text{Ls}$ when convective, puffy clouds become dominant.

II - Map of the Aphelion Cloud Belt in 2012

The project of this study was mainly to try

to build the first amateur-made map of the aphelion cloud belt in blue light. The data collected by the ISMO and SAF in 2012 is good enough to achieve such a project. However, it must be repeated here that it is a shame that not every observer sends the blue images of his RGB or LRGB composite. Looking for adequate B images has been a tough work; and there are many excellent observations of the planet that were merely unusable as they did not show the B component. Please send your B images!

The map presented in Figure 3 has been made with the following method:

- 1) Due to the difficulty of getting homogeneous, good, B images for a very short range of time, the time window used is 11°Ls long ($\lambda=074^\circ\text{Ls}$ to 085°Ls , from 21 February to 18 March 2012). This is not that long considering that the MGS data has been compiled in longer times (15°Ls).
- 2) In order to avoid contamination by morning and evening clouds, it was necessary to see only the ACB during mid sol. For each image, only a narrow strip apart of local noon has been selected (two hours, from local Martian hour (LMH) 11 H to 13 H),

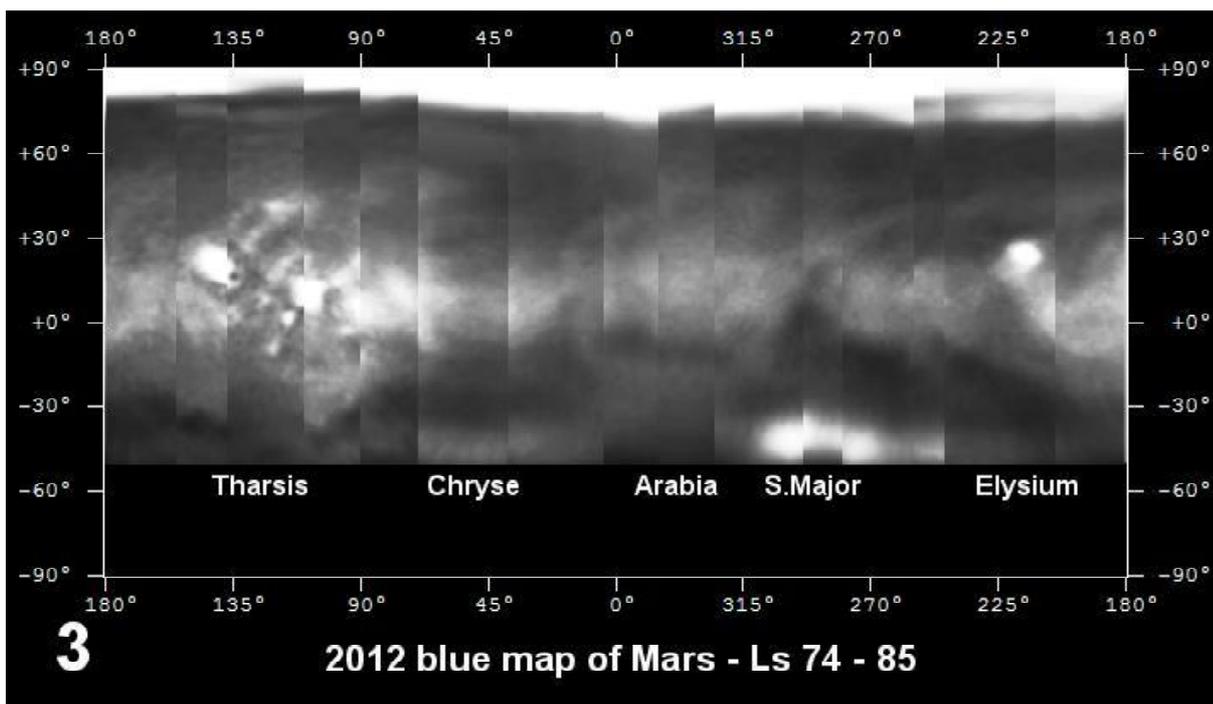


Figure 3: First amateur-made map of the aphelion cloud belt in blue light. The figure aggregates data from $\lambda=074^\circ\text{Ls}$ (21 February 2012) to $\lambda=085^\circ\text{Ls}$ (18 March 2012). It has been elaborated with 15 blue images of Mars taken by four observers: Efrain Morales (6 images), Damian Peach (3 images), Yann Le Gall (3 images), Christophe Pellier (3 images). The map has been built with WinJUPOS and the contrast strongly enhanced with IRIS.

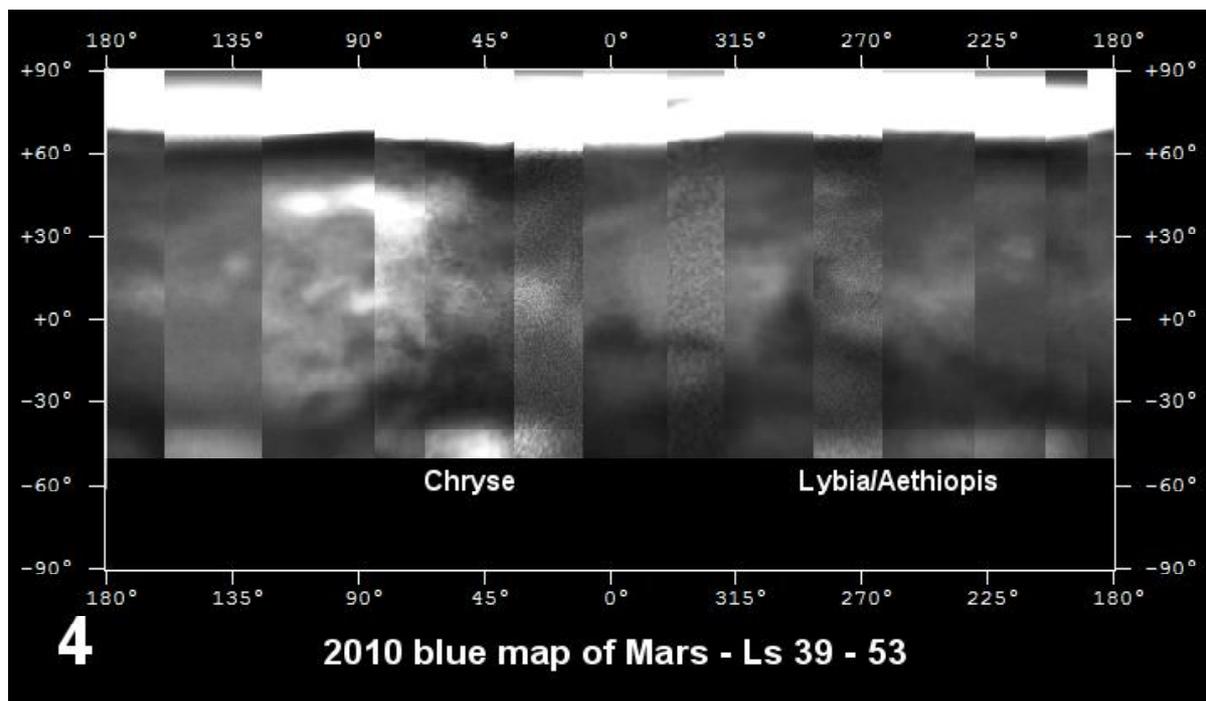


Figure 4: same map as in figure 3, but for the 2010 apparition. Ls range is 14° ($\lambda=039^\circ$ Ls (17 January 2010) to $\lambda=053^\circ$ Ls(17 February 2010)). 13 B images have been used from 9 observers: Tomio Akutsu (2 images), Peter Garbett (1 image), Bill Flanagan (1 image), Michel Lecompte (1 image), Damian Peach (4 images), Don Parker (1 image), Pete Lawrence (1 image), Paolo Casquinha (1 image), Jean-Jacques Poupeau (1 image).

thanks to the LMH functionality of WinJUPOS.⁵⁾

- 3) The contrasts of each strips has been adjusted in order to get, roughly, a continuous level of albedo for strip after strip. This is clearly the limit of such an amateur project. Each observer has his own way of processing the data and this results in a dispersion of the level of contrast of the details; this is especially a problem for B images as they are more difficult to get due to low contrast of the details, air turbulence and Rayleigh scattering from Earth atmosphere. However, the final result is coherent with result is coherent with professional data.

The characteristics of the aphelion cloud belt as seen in Figure 3 all fit in the scheme described above such as:

- 1) The brightest part is in western Chryse, just close to Tharsis.
- 2) The thinnest part of the ACB is located at meridian 0° , between Chryse and Arabia.
- 3) There is a latitude "drop" of the belt east of Elysium.

It is often noted that Tharsis belongs to the brightest part of the ACB. However, to the writer this statement is curious as at the very longitudes of the great volcanoes, no cloud belt is detected anymore. The visible clouds at noon and early afternoon belong to the orographic type; and this is a phenomenon completely different from the high altitude convection cloud belt. We would prefer to say that the ACB is interrupted over Tharsis. It's not possible however to tell if the convection cell itself is not active over Tharsis, due to the geographical proprieties of the volcanic bulge; it is more simple to believe that the water vapour has been depleted from the atmosphere to feed the orographic clouds above the volcanoes. This would also contribute to explain why the belt is also shortly interrupted east of the Elysium shield.

III - Comparison with the 2010 Data

The interest of such a work would be to get a seasonal evolution of the aphelion cloud belt, especially before it reaches the encircling state. However, amateur data taken in early winter 2011/12 is not dense enough to achieve the same

map. We propose here a comparison with a similar map made during the opposition period in 2010. At the time, the Martian season was an earlier mid-spring ($\lambda=045^\circ\text{Ls}$ at opposition), so in theory just when the belt begins to develop. Results are presented in Figure 4.

The 2010 map shows hints of the ACB near Chryse and Lybia/Aethiopsis, but nothing more. The dark albedo markings are more easily visible than in 2012, as a consequence of the relative weaker presence of white clouds. The orographic clouds (Tharsis and Elysium) are very weakly grown (they were more visible during the Martian afternoon in 2010, but remember the map does not show the data after 13H LMH). The most salient feature of the 2010 map however is the clouds located over Arcadia and Tempe, at a much more northern latitude (longitude around 90° ; latitude around 45°). These clouds do not belong to the convection cell type and are not the subject of the current essay. However they are clearly a climatic milestone to follow the seasonal southward movement of the water vapour: they are not visible anymore in the 2012 map.

Letters to the Editor

●.....**Subject: MARS - June 29, 2012 - Poor seeing**
Received; 2 July 2012 at 11:47 JST

Very poor seeing for this set, Couldn't get the color right this time.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120629/FW129June12.jpg>

○.....**Subject: MARS - July 01, 2012 - better seeing**
Received; 4 July 2012 at 12:03 JST

Just a late and small Mars in some better seeing conditions, very windy here lately.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120701/FW101July12.jpg>

○.....**Subject: MARS July 12, 2012 - Very poor seeing**
Received; 19 July 2012 at 14:57 JST

Almost my last Mars images, absolutely no detail and crappy seeing.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120712/FW112July12.jpg>

○.....**Subject: MARS July 13, 2012 - Poor seeing**

Conclusion

The aphelion cloud belt is nicely observed during the 2012 apparition, in complete coherence with the Martian season. All characteristics derived from amateur data look coherent with the established properties of the ACB - this would not be surprising as this is certainly one of the most regular and predictable phenomenon of the Martian climate. Amateur data is now good enough to build a map of the ACB excluding morning and evening cloud activity. However, it is a bit hard to do so at different moments in a given apparition, due to the logical decrease in participations before and after the opposition week. □

Notes:

1) Read for example the author's talk at the IWC MO meeting on the CMO website :

http://www.hida.kyoto-u.ac.jp/~cmo/cmomn5/2009Paris_Meudon_Talks_CPI.htm

2) The reader will find interesting diagrams about the Martian general circulation on the following web site :

<http://lasp.colorado.edu/~bagenal/3720/CLASS16/16EVM-Dyn2.html>

3) Wang, H., Ingersoll, A. P., Martian clouds observed by Mars Global Surveyor Mars Orbiter Camera, *Journal of geophysical research*, vol. 107, NO. E10, 5078, 2002

4) Images are compiled in time windows spanning $\sim 15^\circ\text{Ls}$

5) MGS maps from ref. 2) correspond to 14 H LMT, as this was the local hour when the probe was scanning the planet in its polar orbit. As a result they would show the ACB a bit thicker than here.

Received; 19 July 2012 at 15:02 JST

Sorry made a mistake in my earlier upload, this set is from July 13, 2012. You can check the date with the previous one from July 12, 2012

My last Mars images, very crappy seeing here lately.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120713/FW113July12.jpg>

○.....**Subject: Re: CMO #400 uploaded**
Received; 27 July 2012 at 17:37 JST

Thanks for the report, I still have 3 sets that I still need to process, and they show some detail.

That will be my final images....

Mars is still reasonable high in the sky.

○.....**Subject: MARS - July 21,- Poor seeing conditions**
Received; 29 July 2012 at 10:43 JST

My Mars set from July 21, 2012 - in poor seeing conditions. It's hard to get a good image from Mars at my location these days.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120721/FW121July12.jpg>

○.....Subject: MARS - July 22 - Poor seeing conditions
Received; 29 July 2012 at 10:48 JST

My Mars set from July 22, 2012 - in poor seeing conditions. It's hard to get a good image from Mars at my location these days. The NPC is very small now...hardly any detail.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120722/FWI22July12.jpg>

○.....Subject: MARS -July 27- Very poor seeing
Received; 29 July 2012 at 14:36 JST

What was I thinking when I recorded this set ?

Hardly any detail, all blurry, sorry guys for this fuzzy Mars pictures.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120727/FWI27July12.jpg>

○.....Subject: MARS - July 28, 2012 - Poor seeing
Received; 30 July 2012 at 05:25 JST

My last Mars set in poor seeing and low conditions. To fuzzy for now to much work to make it look good..

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120728/FWI28July12.jpg>

Freddy WILLEMS (Waipahu, HI)

●.....Subject: Mars: July 3, 2012
Received; 3 July 2012 at 13:50 JST

Hi - I have attached my latest image of Mars July 3, 2012 at 0:44 UT.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120703/FMI03July12.jpg>

Thanks,

○.....Subject: Mars: July 11, 2012
Received; 13 July 2012 at 04:34 JST

Hi - I have attached my latest image of Mars July 11, 2012 at 1:17 UT to be posted.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120711/FMI11July12.jpg>

Thanks,

○.....Subject: Mars: July 13, 2012
Received; 14 July 2012 at 00:50 JST

Hi - I have attached my latest image of Mars July 13, 2012 at 0:39 UT to be posted.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120713/FMI13July12.jpg>

Thanks,

○.....Subject: Mar: July 23, 2012
Received; 23 July 2012 at 13:58 JST

Hi - I have attached my latest image of Mars July 23, 2012 at 0:30 UT to be posted.

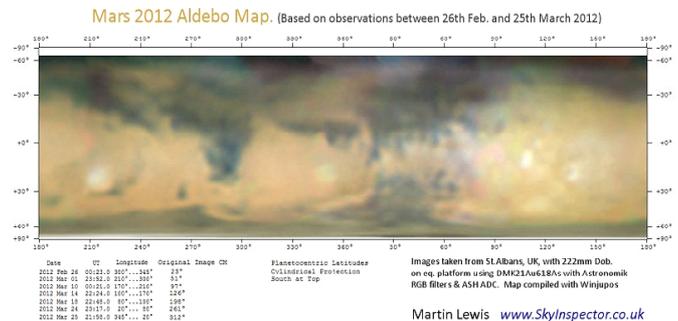
<http://www.hida.kyoto-u.ac.jp/~cmo/cmoms/2011/120723/FMI23July12.jpg>

Thanks,

Frank J MELILLO (Holtsville, NY)

●.....Subject: Mars 2012 Albedo Map
Received; 4 July 2012 at 08:27 JST

Hi, Please find attached my albedo map of Mars for the 2012 apparition, based on several images taken around opposition and compiled using Winjupos.



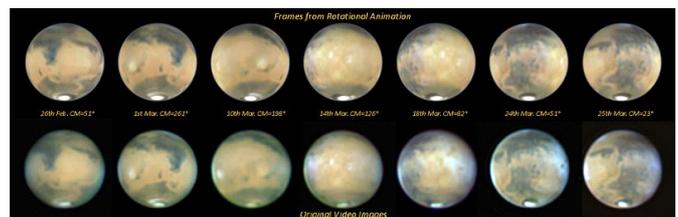
For more details have a look at the link below which also gives maps from the 2010 and 2007-2008 apparitions.

<http://www.skyinspector.co.uk/Mars-Albedo-Maps%282376972%29.htm>

I also hope to create a full rotation animation from this map in the next few weeks. Thanks,

○.....Subject: Updated Mars 2012 Map and Rotational Video
Received; 31 July 2012 at 06:53 JST

Hi, Just to let everyone know that I have spent time in the last month making improvements to my Mars 2012 Albedo Map and Mars Rotational Animation to better match the surface details on the original images and to remove some minor artefacts introduced during the blending process.



The attached image shows a comparison between the original 7 images used to make the albedo map and frames from the animation video at the same CMs. The video was created in Winjupos from the albedo map from the 7 images- so making the whole process go full circle.

Hope you like the results which can be seen at;

<http://www.skyinspector.co.uk/Mars-Rotation-Animations%282369874%29.htm>

<http://www.skyinspector.co.uk/Mars-Albedo-Maps%282376972%29.htm>

Regards,

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

●.....*Subject: Re: Your paper for CMO/ISMO#400*
Received; 5 July 2012 at 05:28 JST

Dear Reiichi, Many thanks for your encouraging e-mail! You have spotted the two sentences that are the most important, in my mind, of the whole article;). I don't know how imagers took that though...

The question of reliable colours on Mars (as on every planet) is a hard one. However, I don't know where you found the word "reliable" but this is for me a concept in itself - I would like to replace the notion of "true colours", by that of "reliable colors". The concept of reliable colours means for me, to say it short, that it's not really possible to find "real colours, and that it even does not make really sense; but that you can tell that some images show different nuances of colours but still, can be said to present satisfying colours. And they are reliable, because you can trust them to analyse the image without having to take into account possible errors of processing for example.

As a simple example, pink-orange and orange are both reliable colours for the deserts of Mars ; yet it's not possible to tell which is the "true" one ! But on the other hand, pink-bluish is not a reliable desert colour (unless the desert is cloudy !). Well you see the idea.

As to my way to try to reach reliable colours, I have some milestones :

- 1) Yes, if you are a CCD imager, please take a look at the eyepiece. Your eye is reliable, even if it's not perfect (unless you have true defects like daltonism). Perfection would be required to look for true colours. But, we don't look for true colours here ;). The human eye is reliable to see colours just because the colour is something that the human brain/eye system is producing.
- 2) Look at images. There are many excellent imagers; they are all, in general, using reliable colours. They don't need to be identical. Look as well as high-resolution images taken by probes or the HST : they show the details with a much higher spatial resolution so you can learn better how they look really
- 3) Learn about the planet. The more you know what

are the phenomenon you see, the more you can process correctly your images. This is true to avoid artefacts of processings (=false details), this is true as well for colours (in that sense, unreliable colours are processing artifacts).

4) Learn about the pitfalls of CCD imaging. Here are some pitfalls that will cause the colours to go unreliable :

a - Off balance of the RGB layers due to: atmospheric scattering, air turbulence, optical defects. Usually the B is blurred: this has consequences on the reproduction of colours. You will see a dull, white-blue haze on the final images (solution : process the B layer stronger).

b - Off balance due to the processing: if you process your R layer stronger, the grey markings will turn greenish - this is the same effect than in a -. Or if you don't merge enough your L into RGB if you are doing LRGB...

c - Colour dispersion due either to the Earth atmosphere, prism effect in the optical system, or both : white limb clouds tend to be shifted in comparison with the red surface and you will see blue clouds and not white

d - Colours cameras can have the tendency to artificially enhance certain colours...

e - The way the LRGB filters transmit wavelengths is also important. I am sure to see that the Baader RGB set does reproduce the NEB on Jupiter (2011) redder than the Astronomik RGB set, because the red filter avoids orange wavelengths that counts in the Astronomik set. (the problem is mild however - both set of filters certainly can reproduce reliable colours).

5) Just think 2 seconds about what you see on your image : Mars is certainly not bluish, nor greenish ! This is seen from time to time... ;)

The two web pages I have indicated in the first footnote on the CMO/ISMO 398 are really good articles on that topic. Best wishes,

○.....*Subject: Essay for ISMO400*
Received; 18 July 2012 at 03:15 JST

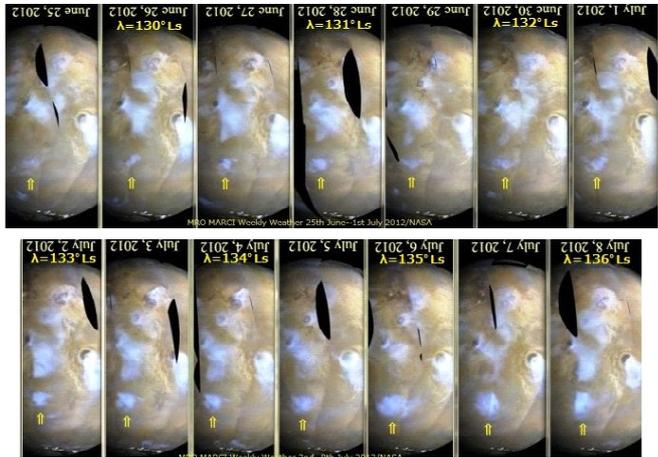
Dear Masatsugu, I have ended my proposal for the next ISMO issue. Tomorrow evening I will make a

last lecture and I will send it to you. Best wishes,
Christophe PELLIER (Nantes, FRANCE)

●.....**Subject: Scanner trouble**
Received; 16 July 2012 at 00:34 JST

Dear Dr. Minami, Sorry to keep you waiting for my drawings of Mars. I'm now adjusting my newly purchased scanner/printer...however, somehow my PC and the new scanner don't seem to be compatible again(!). Just hope I can submit my recent nine drawings within a couple of days.

Attached here is a montage with the images from the latest releases of MRO MARCI Weekly Weather Report.



The mid summer second maximum of Alba Mons cloud might have started just as Christophe PELLIER had mentioned and predicted in his latest CMO/ISMO note: The First Maximum of the Alba Mons' Orographic Cloud (ISMO 11/12 Mars Note (1), CMO#399). Adding the following MRO MARCI images may show a complete "curve" of the Alba cloud's activity beautifully showing the second maximum.

Though I am still chasing now tiny Martian disc everylear evening, orographic activities of the huge volcanoes might almost be impossible to catch visually (CMO imagers' Big Guns still can, I guess): So I am hoping for the next coming apparitions in 2014 and 2016 when we'll be able to watch for the second peak of Alba cloud with our instruments under favorable conditions! Best Wishes,

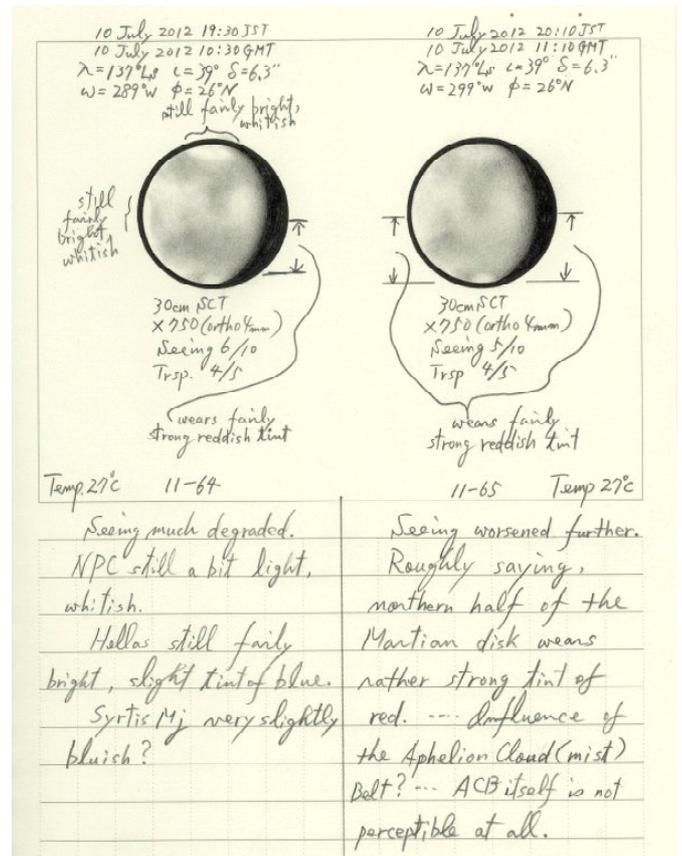
○.....**Subject: Drawings of Mars**
Received; 19 July 2012 at 22:39 JST

Dear Dr. Minami, Finally I managed to adjust my

new scanner/printer. So I am attaching here my piled up drawings.

- <http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120626/Kn26June12.jpg>
- <http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120627/Kn27June12.jpg>
- <http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120710/Kn10July12.jpg>
- <http://www.hida.kyoto-u.ac.jp/~cmo/cmons/2011/120711/Kn11July12.jpg>

Today I opened my dome wide just after lunch, preparing for the Mars time of this evening, expecting to catch the Alba Mons cloud in its mid summer second maximum at the local late afternoon. Around 18:00 JST when I started treatment of our last patient of the day I saw a clear



blue sky through the window. By 18:30, I heard a loud crash of thunder followed by cats and dogs!, hurried to shut the dome! Best Wishes,

Reiichi KONNAI (Fukushima, JAPAN)

●.....**Subject: RE: How are you?**
Received; 30 July 2012 at 23:25 JST

Dear Masatsugu, I suspect that you are right about the Parkinson's having come on gradually at first--I think it can be perceived as tiredness, fatigue, stiffness. I do hope the medications (Sinemet I recall) has been helpful. I suppose it must be very difficult for you to slow down given your ambition and

inquisitiveness --it may be lucky that Mars is not in good position this year.

I have also been rather overworked this summer, and actually all year (last year I also had the deaths of my parents to deal with). I made astronomy-related trips in January (to Austin, Texas), in February (to London for Astrofest and then to Nice and Paris), and again in May/June (3 weeks for the annular eclipse and the transit of Venus), then again last week (to Flagstaff for the First Light of the Discovery Channel Telescope and to see Neil Armstrong). Needless to say, these absences must be paid back, and since my main job is to run a neurodevelopmental disorders program, here, I have been tasked heavily with keeping that running, often short-staffed as many colleagues are also on vacations. This week I also have to prepare and present a major presentation for the state of Minnesota on neurodevelopmental disorders; a complex and difficult subject. The hard thing is just finding time for it.

Then I have finished translating James Lequeux's biography of Le Verrier (from French), I still have to write up the transit observations I made at Lowell with the coronagraph Paolo Tanga brought from

Nice, and I also have to rush to the end of a Galaxies book I have been working on for many years now (with Julian Baum and Chris Conselice). I also have a new edition of a book on transits (expanded to cover eclipses and occultations) with John Westfall and am also starting to gear up for a book on the Air Force Moon-mapping project at Lowell and the astronaut training in and around Flagstaff, which is a geological wonderland (I had hoped to get you to Lowell sometime, but now it appears the window of opportunity has passed).

Whew! I really have hardly a spare moment these days, my head spins, and when I do have a spare moment I am not inclined to spend it on writing. Also, Mars is as far from my mind as it is from us in space these days.

The upshot is: I don't think I can realistically write anything new; but perhaps I can dig out an old essay on Mars for you and you can publish that if you wish. Let me see what I can find.

With best wishes to you,

Bill SHEEHAN (Willmar, MN)

☆☆☆

TEN YEARS AGO (208)

----CMO #263 (25 Aug 2002) pp3403~3422 ----

<http://www.hida.kyoto-u.ac.jp/~cmo/cmomn3/cmo263/index.htm>

The top article in this issue was "The 10th CMO Meeting of the Planetary Observers" which was held from 2 August to 5 August 2002 at the Ina City, Nagano Prefecture.

This was coordinated by Toshiaki HIKI; and we visited the road along the Tenriu river tracing the road Percival LOWELL really went in 1889. Tomio AKUTSU, Hiroshi ISHADOH, Tohru IWASAKI, T HIKI, Hiroshi NARITA, Akinori NISHITA, Yukio MORITA, Francis OGER, Takaya OSHIRO as well as Masami MURAKAMI and Masatsugu MINAMI. It was most impressive to visit an inn called "KIKYOYA" whose old styled sign board which is recorded in LOWELL's archive was interesting.

Next article was 2001 Mars CMO Note (9) "How Did the MGS Observe the Dust Storm at the Beginning of July 2001" which was concerned with the comparison of the images by MGS at the beginning of July with our observations. However the MOC was only concerned with the PM 2hrs lines, so that the comparison is not so effective.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmomn3/263Note9/index.htm>

The LtE contained those sent from Tom DOBBINS (OH, the USA), Clay SHERROD

(AR, the USA), Damian PEACH (the UK), Bill SHEEHAN (MN, the USA), Jeff BEISH (FL, the USA), André NIKOLAI (Germany) as well as those Japanese LtE from ISHADOH, MORITA, HIKI, KUMAMORI, OSHIRO, AKUTSU, IWASAKI, and MIYAZAKI.

The third "New Saijikimura" was written by MINAMI with an English title "Even stubborn rock lose their wildness" where depicted was a scene near the Tenriu River and Ina Valley:

http://www.hida.kyoto-u.ac.jp/~cmo/cmomn3/mura_3.htm

The column "Click CMO=>CMO Clicks (20)" was entitled as the planet Mars came to the morning sky with the photo taken by SOHO's LASCO C2 camera. The planet was in conjunction on 12 August 2002.

<http://www.hida.kyoto-u.ac.jp/~cmo/cmomn3/click20-21.htm>

The second "Click CMO=>CMO Clicks (21)" was also added entitling as a jolly page with several URLs.

TYA (84) is about CMO #120 (25 Aug 1992) written by HIKI. The planet twenty years ago was in Tau, and several reports were coming in just after the rainy season. The season was around $\lambda=300^\circ$ Ls and the apparent diameter was about 6 arcsecs. The southern hemisphere looked free from any sign of dust storm so that the dark markings were visible, and the spc was caught.

In this issue an article appeared in which the expected apparent diameters and the variation of the phase angle in 1993 as a guidance of the forthcoming apparition. A letter from W. Y.-LAI from Taipei was largely shown in #120. (Mk & Mn)



International Society of the Mars Observers (ISMO)

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CMO #401/ ISMO #27 (25 August 2012)

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