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Astronomical League of the Philippines' *HerAld*

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FEATURE IMAGE THIS ISSUE

Henry So led a team of ALPers to view the occultation of Venus by the thin crescent Moon. Above is an image he's taken of the planet Venus before it got covered (occulted) by the Moon. More occultation reports on page 70. © Henry So

CLUB NEWS

May Meeting

Last May 9, 2010, members of the Astronomical League of the Philippines (ALP) held their monthly meeting at the Manila Planetarium at 3:00 p.m. Members who attended were ALP President James Kevin Ty and son Kendrick Cole (KC); PRO Armando Lee, wife Myra and son Jason; Andrew Ian Chan; Berenice Chan; Treasurer Henry So; director Edgar Ang; Tommy Tan; Belen Pabunan; Christopher Louie Lu; Mark Ian Singson; Michael Cruspero; Mark Joven Cortel; Reynen Pansanos; Nel Lagda; and new member Maria Cristina Gonzalez.

The meeting started at around 3:30 p.m. with PRO Armando Lee giving a short lecture entitled "Galactic Spiral Arms". He covered the following: spiral arms in the Milky Way and other galaxies, star forming regions, with a highlight on the spiral features; and, mechanisms for formation and persistence of spiral arms. These are topics rarely lectured on and discussed in club meetings, and it was indeed a rare occasion having this lecture in the latest ALP monthly meeting.

Even if it was a short lecture, the mathematical model for the spiral arm structure was presented, and Dr. Lee ended the lecture emphasizing the following point: Spiral arms do not rotate at the same rate as the stars that comprise them, but can be explained as density waves moving relative to the background material. The members were delighted to learn about the topic and they were promised similar ones in upcoming meetings.



Afterwards, ALP President James Kevin Ty discussed the upcoming May 16 Venus occultation by the Moon (*above*). Venus will disappear on the dark limb of the Moon and reappear on the bright limb. Full details of the event were posted in the ALP main page. The meeting ended at around 5:30 p.m. - *James Kevin Ty*

Institute of Astronomy

The Astronomical League of the Philippines formally created the Institute of Astronomy or IoA as the organization's education and research arm. The former Education Committee was transformed into an institute with two primary functions: research and education. Focus on these two areas is vital to enhance astronomy and space science in the country. The first and current Director of the IoA is Dr. Armando Lee. Dr. Lee has been active in promoting astronomy in the Philippines through his international linkages with Sidewalk Astronomers and Astronomers without Borders. He also conducts astronomy lectures during ALP monthly meetings at the Manila Planetarium.

To visit the IoA site, please click:

<http://www.astroleaguephils.org/institute.html>

During the International Year of Astronomy, scientific bodies were established within the society to foster the development of specialized fields. For the first year, two scientific divisions were created: the Division on Sun & Heliosphere and the Division on Astronomy Education & Development. Within the solar division, two commissions were initiated: the Commission on Solar Activity, which was tasked to monitor solar occurrences and produce the Philippine Solar Index, and the Commission on Eclipses, which was tasked to observe and document the various lunar and solar eclipses in and outside the country.

Message from the IoA Director

The year 2009 saw the coming together of the world's astronomers, both professional and amateur, in promoting astronomy by giving telescopic views of celestial bodies to ordinary people on the streets, in parks, and even on computer websites where the spirit of sharing the heavens were done through live webcast and even virtual telescope sharing. It was done in celebration of the 400th year of Galileo's discoveries using his improved version of the telescope (⇒ p. 70).



The Astronomical League of the Philippines took part in this grand year of celebration called the International Year of Astronomy 2009. It was a fruitful participation for the members and officers of the ALP. An important aspect of this was the lessons learned from doing these activities. Events carried out and participated in by the ALP brought out the realization that the organization needed to consolidate its resources in terms of manpower and logistics to be more effective and more efficient in doing public viewing, outreach activities and even scientific observations. Limited resources can be effectively managed and improved upon if the different uses and activities are coordinated effectively and in a faster manner under an institute within the organization. This is the goal of the creation of an Institute of Astronomy within the society. And this is envisioned to streamline and improve the participation of ALP in astronomy education, public outreach and scientific observation and research.

Having been appointed the director of the Institute of Astronomy of the Astronomical League of the Philippines, I would like to first express my gratitude to the members of ALP for having faith in the newly created institute and also for giving me the chance to serve in this new exciting endeavor of the ALP.

In behalf of the Officers and Directors of ALP, I welcome all our members' participation whether it be in their knowledge, skill and logistics in pursuing astronomy-related activities and events, especially in the field of observational research, and studies where astronomy education can simultaneously be exhibited and practiced for the benefit of ALP members, as well as the local astronomy community.

Dr. Armando Lee
Director, Institute of Astronomy

ALP Receives IYA 2009 Certificate from International Astronomical Union (IAU)



Reports

May 16, 2010 Venus Occultation Reports

Last May 16, 2010, ALP members successfully documented the disappearance (Ingress) and Reappearance (Egress) of Venus behind the thin crescent Moon. ALP set up 3 main observing sites: AstroCamp Observatory in SM MOA, led by Armando Lee; Johndel Beach Resort in Nasugbu, Batangas, led by James Kevin Ty; and, Candaba, Pampanga, led by Henry So. Below are the official reports coming from the 3 ALP Observing Station Heads.

AstroCamp Observatory Service, SMBY, SM MOA

Last May 16, 2010, at the Astrocamp Observatory grounds, San Miguel by the Bay Park in SM Mall of Asia Complex in Pasay City, Dr. Armando Lee headed an ALP Lunar Occultation expedition team. He and seven (7) other ALP members, namely: his wife Myra Lee, Crispin Riosa, Michael Cruspero, Mark Ian Singson, Christopher Lee, Christopher Lu, and Wilbert Palma were joined by three (3) MS Astronomy students from Rizal Technological University (RTU), namely: Bon Delelis, Roldan De Guia, and Jimdel Macapagal, who helped in documenting the event and also in crowd control.

The ALP members there manned the following scopes for the visual observation of the guests of Astrocamp Observatory: Celestron C-11 on an Atlas Mount, 10-inch Hardin Optics Dobsonian, William Optics 66SD refractor on a photo tripod mount, and a GoScope 80 achromatic refractor on a photo tripod.

There were 41 guests that came and were able to use these scopes alternately from sunset up to the end of the lunar occultation of Venus.

There were 2 scopes set up for photographic purpose, which were two Orion Apex127 Maksutovs – one on a Celestron ASGT mount and the other on an EQ2 mount. Dr Lee, Michael Cruspero and Christopher Lee manned the one on ASGT mount where they coupled it with a Canon350d at prime focus, while the other Maksutov on EQ2 mount was coupled with a guest's Canon7d also at prime focus.

Bon Delelis and Dr Lee set up a Celestron C90 coupled with a Neximage focal reducer, PC-164ex CCD video camera, KIWI-OSD-VTI, and a CanonZR200 miniDV to record a GPS time stamped video recording of the event. This setup provided an accurate atomic time-stamped video frames that can be used to study the event.

Bon Delelis will submit a study report of this event to Rizal Technological University (RTU) as his planned thesis for his MS degree in Astronomy.

Christopher Lu did several afocal images using a digicam on the scopes assigned for visual viewing. He was able to get good images from this technique.

MS Astronomy students Dan De Guia and Jimdel Macapagal tried to cover the event using Dr Lee's laptop webcam via Justin.tv to do a live webcasting of the activity, but unfortunately the bandwidth of the wifi on the site proved very limited to allow live webcasting, so they instead did a live news cast via twitter.com/astrocamp_ph which followers from other countries like Avivah Yamani of Indonesia followed and other amateur astronomer friends of ALP also followed during the occultation. It was an exciting new way of sharing the news live as it happens, and ALP was the first to do this in the Philippines while covering a planetary lunar occultation!

The time came for the Lunar Occultation of the planet Venus, and the group was blessed with clear sky all throughout, and the observation, documentation and recordings were successfully done by the group.

Guests of the observatory were delighted to have joined the group of ALP astronomers and RTU MS Astronomy students who facilitated in their understanding of the rare celestial event that they witnessed. People in the park were awestruck seeing a brilliant white object just above the thin crescent Moon disappear behind it, and later reappear after almost 41 minutes! (⇒ p. 71)



Ingress 7:36PM PST



Egress 8:16 PM PST



ALP PRO Dr. Armando Lee posed beside his Celestron C90 Mak with KIWI OSD VTI-GPS to record accurate timing. RTU MS Astro students/ALPer Roldan de Guia and Bon Delelis and Victor (at the back with C11) are also present

The group was so successful that they were able to produce very good images and video recordings. In fact the Ingress image by Dr Lee, Michael Cruspero and Christopher Lee was featured the next day in Spaceweather.com as its front page Lunar Occultation image.

The same image was featured in Telegraph.co.uk and Agrepres Foto also as their picture of the day for May 17, 2010. The following are the links to sites that featured the said image by Dr Lee, Michael Cruspero and Christopher Lee.

<http://www.spaceweather.com/archive.php?view=1&day=17&month=05&year=2010>

<http://www.telegraph.co.uk/news/picturegalleries/picturesoftheday/7732616/Pictures-of-the-day-17-May-2010.html?image=4>

<http://foto.agerpres.ro/index.php?i=4343200>

ALPers became known internationally by the images produced from this event, and this proves that Filipino amateur astronomers, given the right equipment, can produce images and studies that are at par with international standards.

Thanks to the Administration of San Miguel by the Bay Operations Office and to Victor Espartero – staff on duty of Astrocamp Observatory. They were responsible for good crowd control and guest assistance during the event.

Johndel Beach Resort, Nasugbu, Batangas

Last May 16, 2010, ALP President James Kevin Ty, together with fellow ALPers Andrew Ian Chan and Babak Parhizkari, went to Nasugbu, Batangas to document Venus's occultation by the thin crescent Moon.

James decided to lead the Nasugbu team so that ALP will have alternative sites as well as get better chances to observe this event successfully by observing from more than one site. Another reason to pursue the Nasugbu site is because of the low latitude reappearance of Venus from the bright limb of the Moon, which was a bit low, at 3 degrees in Manila.

In Nasugbu, the reappearance was also very low at 2 degrees above the horizon. The advantage here was that Venus and the Moon will set at the sea line, instead of mountains, and the plus factor was that we were able to get an additional 2 minutes more before Venus exited the bright lunar limb. Venus exited at 8:18 p.m. Manila Time, compared to Manila's 8:16 p.m.

They departed Manila at around 11 a.m. and arrived in Tagaytay at around 1 p.m. They then had lunch at Terriyaki Boy before proceeding to Nasugbu, Batangas. They arrived in Nasugbu at around 2:45 p.m. and stayed at Johndel Beach Resort, where James observed several occultation observing events whenever he needed a clear western horizon.

They checked in at the 3rd floor so that they will have an easier time to transport their imaging equipment to the roof deck. Inside the room, their astro imaging equipment lay scattered out all over the floor and beds to ensure all items needed were accounted for.

At around 5:30 p.m., they started to set up their equipment and tried to image the elusive green flash, but unfortunately, no green flash was visible when the Sun set in the horizon.

For this event, James brought his TV-101 refractor and GP-DX mount. He also installed a Digital 8 video camera to document in still and video mode. Andrew brought his Skywatcher 80ED refractor on his new GP mount equipped with Sky Sensor 2000-PC. Babak brought his WO Z70 ED refractor, as well as Skywatcher 102mm Maksutov-Cassegrain telescope, which he installed on his highly portable Takahashi Sky Patrol 2 mount.

Initially, James planned to use his Kenko Sky Memo for this event, but since he didn't have a lighter ED refractor, he decided not to bring it and use his previous mount system instead.

While the Sun was setting, Babak called our attention and pointed to Venus, which was several degrees above the 2.5 day old thin crescent Moon. It was a very beautiful sight to behold, as Venus got closer and closer to the dark limb of the Moon. They started to check their exposures to get a good balanced exposure of the Moon with Earthshine, as well as Venus, without overexposing, while showing the planet Venus as a point of light.

At around 7:30 p.m., James's friends and colleague started to call his mobile to ask what the bright star above the Moon was. He told them it was the planet Venus, and they were quite surprised and excited when he told them it will disappear at around 7:36 p.m.

For their area in Nasugbu, estimated time of Venus disappearance (Ingress) was at 7:36 p.m. with the exit behind the bright limb of the Moon at around 8:18 p.m. True enough, Venus disappeared exactly at 7:36 p.m. and reappeared at 8:18 p.m. They synchronized their watches and camera clocks with James' GPS unit. It also provided them their current location as 14.0716 North and 120.6254 East. Their final contact timing: Ingress at 7:36:07 p.m. and Egress at 8:18:11 p.m.

After the event, Babak and Andrew tried testing their new mounts on stars and DSOs to check tracking accuracy. Before they packed up, they had their traditional group shot. They had a very late dinner at Jollibee Tagaytay before going back to Manila (⇒ p. 72)



Starting Ingress at 7:36:01



Egress at 8:18:11



The Nasugbu team

Candaba, Pampanga

The ALP Candaba Team, consisting of Henry So, Tommy Tan, and Tommy's friend Rose, went to Candaba, Pampanga. They left Manila around 2:30 p.m. and arrived at Candaba at 4:30 p.m.

Still early at the time of arrival, the group decided to take a rest and do some nature watching. The sky was clear and it was very hot. At around 6 p.m., they started to check on a possible good spot to set up their equipment and have a little snack.

At 6:15 p.m., they were able to find a good spot beside the rice field where the western view was visible down to 1 degree. There they set up their twin WO ZS 80 II refractors and a point and shoot camera on photo tripods and Vixen Porta mount.

The group started to view Venus and the Moon using their telescopes, while waiting for the sky to get dark. At 6:40 p.m., Henry started to attach his camera to the telescope in preparation of taking images. Rose used her camera to zoom in, while Tommy stayed on visual to help them on checking the time of disappearance (Ingress).



By 7:36 p.m., ingress was observed and documented at Candaba. The group then checked out other deep sky objects, like Omega Centauri and M44.



Five minutes before the scheduled reappearance, they started to take an image again, and around 8:16 p.m.

Venus reappeared and the Moon was already yellowish-red and boiling, due to its very low position. Just after Venus' total reappearance, the Moon was blocked by thin clouds near the horizon. Luckily the occultation had already finished. – reports by Dr. Armando Lee, James Kevin Ty, and Henry So, respectively

Sun Halo

May 7. "At lunchtime today, my workers were in a panic," says Christopher Go of Cebu City, the Philippines. "There's a weird ring around the sun, they said. I told them to calm down. It's just an ice halo."



That's right, ice. Although it was hot and muggy in Cebu City, there was ice in the air. About 10 km above the ground, the temperature dropped below freezing, causing water in the clouds to crystalize. The halo appeared when sunlight hit those crystals.

Ice crystals come in many shapes and sizes, and they can make many kinds of sun halos. "This particular halo is called a circumscribed halo," says atmospheric optics expert Les Cowley. "It is sharp and brightly coloured - both symptoms of a circumscribed arc."

"Sun halos are visible all over the world and throughout the year," adds Les Cowley. "Look for them whenever the sky is wisped or hazed with thin cirrus clouds. These clouds are cold and contain ice crystals in even the hottest climes." – Spaceweather.com

Comet 81P/Wild 2

I felt like a kid again in a toy store under all the stars with my newly repaired Gemini mount controller that had been out of commission nearly three months.

I had a hard time deciding which object to test my system on and finally picked magnitude 10 Comet 81P/Wild 2, which was slowly fading as it receded further from the Sun and Earth. A faint tail still trailed behind its distinct coma with a greenish blue glow (*next page*).

Imaged May 16, 2010 using an N16 f/4.5 telescope with an ST10XME camera and exposure of 24 minutes. Used Astrodon LRGB filter at 9, 5, 5, 5 x 1 min. – John Nassr (⇒ p. 73)



Comet 81P/Wild 2, imaged by John Nassr on May 16, 2010

Jupiter Loses a Stripe

In a development that has transformed the appearance of the solar system's largest planet, one of Jupiter's two main cloud belts has completely disappeared.

Known as the South Equatorial Belt (SEB), the brown cloudy band is twice as wide as Earth and more than twenty times as long. The loss of such an enormous "stripe" can be seen with ease halfway across the solar system.

"In any size telescope, or even in large binoculars, Jupiter's signature appearance has always included two broad equatorial belts," says amateur astronomer Anthony Wesley of Australia. "I remember as a child seeing them through my small backyard refractor and it was unmistakable. Anyone who turns their telescope on Jupiter at the moment, however, will see a planet with only one belt - a very strange sight."



These side-by-side images of Jupiter taken by Australian astrophotographer Anthony Wesley show the SEB in August 2009, but not in May 2010

Wesley is a veteran observer of Jupiter, famous for his discovery of a comet hitting the planet in 2009. Like many other astronomers, he noticed the belt fading late last year, "but I certainly didn't expect to see it completely disappear," he says. "Jupiter continues to surprise."

Orton thinks the belt is not actually gone, but may just be hiding underneath some higher clouds. Without the SEB present, Jupiter's Great Red Spot is surrounded by almost uninterrupted white.

"It's possible," he hypothesizes, "that some 'ammonia cirrus' has formed on top of the SEB, hiding the SEB from view." On Earth, white wispy cirrus clouds are made of ice crystals. On Jupiter, the same sort of clouds can form, but the crystals are made of ammonia (NH_3) instead of water (H_2O). What would trigger such a broad outbreak of "ammonia cirrus"? Orton suspects that changes in global wind patterns have brought ammonia-rich material into the clear, cold zone above the SEB, setting the stage for formation of the high-altitude, icy clouds. "I'd love to send a probe in there to find out what's really going on."

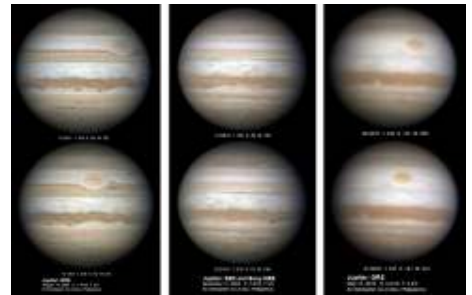
Indeed, Jupiter's atmosphere is a mysterious place which would benefit from exploration. No one knows, for instance, why the Great Red Spot is red — or what has sustained the raging storm for so many years. Neither does theory explain why the twin equatorial belts are brown, nor why one should vanish while the other remains. "We have a long list of questions," says Orton.

This isn't the first time the SEB has faded out. "The SEB fades at irregular intervals, most recently in 1973-75, 1989-90, 1993, 2007, 2010," says John Rogers, director of the British Astronomical Association's Jupiter Section. "The 2007 fading was terminated rather early, but in the other years the SEB was almost absent, as at present."

The return of the SEB can be dramatic. "We can look forward to a spectacular outburst of storms and vortices when the 'SEB Revival' begins," says Rogers. "It always begins at a single point, and a disturbance spreads out rapidly around the planet from there, often becoming spectacular even for amateurs eyeballing the planet through medium-sized telescopes. However, we can't predict when or where it will start. On historical precedent it could be any time in the next 2 years. We hope it will be in the next few months so that everyone can get a good view.

The revival will likely be sudden and dramatic, with planet-circling groups of storms appearing over the space of just a week or so. Indeed, says Orton, "anyone could be the first to spot the return of the SEB." — *Dr. Tony Phillips, Science@NASA*

Jupiter's opposition — the point in its orbit opposite the Sun as seen from Earth (and the best time to observe it) — arrives on the last day of summer in the Northern Hemisphere. On September 21, the planet will appear bigger and brighter than at any time in 47 years. It will subtend an angle of 49.9 arcseconds (close to its greatest possible size of 50.1 arcseconds), and it will glare at magnitude -2.9 — 4 times brighter than the brightest nighttime star, Sirius.



This sequence of three sets of images by amateur astronomer and planetary imager Christopher Go of Cebu, Philippines, shows how prominent Jupiter's South Equatorial Belt (SEB) was in August 2009 (left). By November of last year (center), the belt had begun to fade some. And the current pair (right), taken May 13, 2010, shows no SEB at all. South is up in all these images. © Christopher Go — *Astronomy.com*

Jupiter

May 6. Seeing was still unstable this morning. I was only able to get one good shot because of clouds.



The Great Red Spot (GRS) looked lonely without the South Equatorial Belt (SEB). The dark cyclone following the GRS seemed to be breaking up. Oval BA is rising on the right. The North Equatorial Belt (NEB) was very dark with some hint of rifts. Note the bright outbreak setting on the left of NEBn. Note the dark features on the North Temperate Belt (NTB).

May 8. Finally got excellent seeing!! No clouds and a good easterly wind made good seeing. The GRS was very prominent. Note that the halo around the GRS was bright, especially the northern part of the halo. The SEB has a very slight hint of color, but it was basically fully faded (next page).

The Equatorial Zone (EZ) looked active again. Note the dark oval on the NEB and the very bright white oval following it. The NEB is very red. Note the white patches north of the NEB (⇒ p. 74)



Jupiter on May 8

May 9. I had a crazy situation this morning. My filter wheel went crazy. I thought one of the filters got loose. I had to take it apart but all filters were tight. It was the power adapter that was loose.



The SEB was very light in this region. Note the blue feature of the EZ seemed to extend into the SEB. Io's shadow is transiting the SEBn. The NEB is very dark. Note the white spot on the mid-NEB. The North North Temperate Zone Little Red Spot (NNTZ LRS) can be seen as an orange spot.

May 11. Seeing was not good this morning. The GRS and Oval BA can be seen in this image. Note the white spot following Oval BA. It seemed to be getting closer to BA.



Nothing much to see except that the SEB was basically gone. The NEB was very dark, with some outbreak activity past the CM.

May 13. Seeing was again poor this morning. Clouds were coming and going, making imaging a bit frustrating.



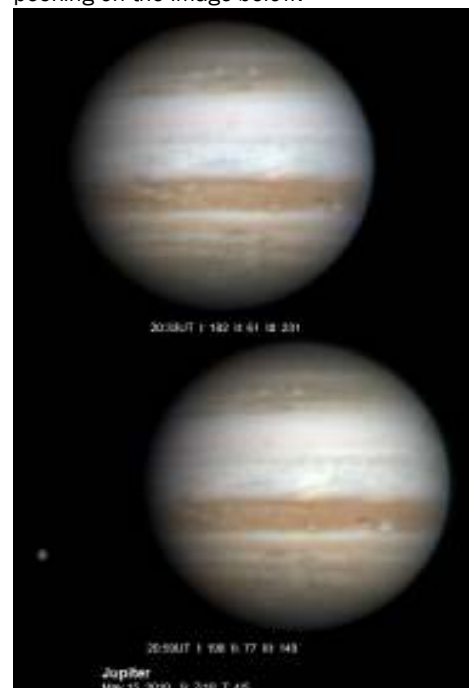
The GRS can be seen in this image. It was very prominent. The NEB was still very broad and dark. The contrast between both hemispheres was obvious. The north was very red while the south was light.

May 14. Seeing was a little better this morning, but I was still having problems with my filter wheel. The SEB was really quiet. There was still some light coloring at the southern edge of the SEB. The EZ was turning yellow and activity seemed to be picking up. The NEB was very dark. Note the dark red spot close to the CM.



Note the dark red barges on the NTBn.

May 15. Seeing was okay this morning. Jupiter was finally above 40 deg. The SEB was very pale. One can see the GRS peeking on the image below.



There was a huge rift in the NEB. Something seemed to be stirring up this region. The NEB was still very dark (⇒ p. 75).

May 19. Seeing was again excellent this morning. The SEB was very quiet. The SEBs had a light orange color. The mid-SEB had an almost Zonal color like the EZ, while the SEBn was dark. There seemed to be an oval on the mid-SEB at the CM of the top image.



The NEB was very busy. Note the dark red oval on the mid-NEB just past the CM. There were also some white ovals and rifts. The EZ looked active lately, with festoons appearing.

May 20. Seeing was good this morning. The GRS was rising on the right, while Europa was the dark spot on the SEB.



The NEB was very busy. Note the dark and white oval forming a ying-yang pattern. There were a lot of details in the northern temperate region.

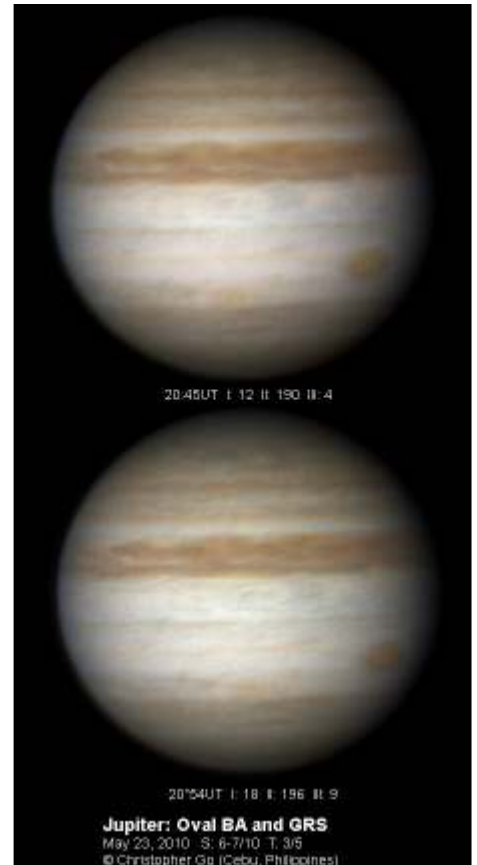
May 21. Seeing was excellent this morning. I have finally upgraded to the Flea3 camera. This camera was amazing and the image said everything. It is much more sensitive than the DMK and allows 12-bit capture. If you want to see the difference between 8 and 12 bit, check out the image today against yesterday's image!! The noise is also lower because I am able to capture at faster frame rates and lower gain!



From the image, one can see that the northern hemisphere was very red compared to the south. The SEB had very zonal color. It looked like the EZ had pushed to the SEB. The NEB was very busy, while the NNTZ LRS can be seen above, as an orange spot.

May 23. Seeing was very variable this morning. I was still trying to get a handle with the Flea3. Oval BA was very prominent in this image. It was not as dark now. Note the white spot that was moving closer to BA. The dark cyclonic spot that prevented the two from merging was no longer there.

The SEB was very light. The GRS looked very lonely. The NEB was very dark. Note the rifts on the NEB.



A belt seemed to be forming on the NNTB. The Little Red Spot (LRS) seems to be embedded in this belt.



(⇒ p. 76).

May 24. Seeing was good this morning but transparency was variable because of thin clouds. The SEB was still very quiet. Note the bluish festoons on the EZ, extending towards the SEB.

Note the orange streak on the SSTB between the two ovals (*previous page*). The EZ looked very busy, with a lot of interaction with the NEBs. The northern hemisphere looks very busy.

May 27. Seeing was variable this morning, but this was where the Flea3 really shone. Even with less than favorable seeing, because of its sensitivity, I could still get decent images. The NEB was still very dark. Note the rifts on the NEB. The red and white spot pair on the NEB was still there.

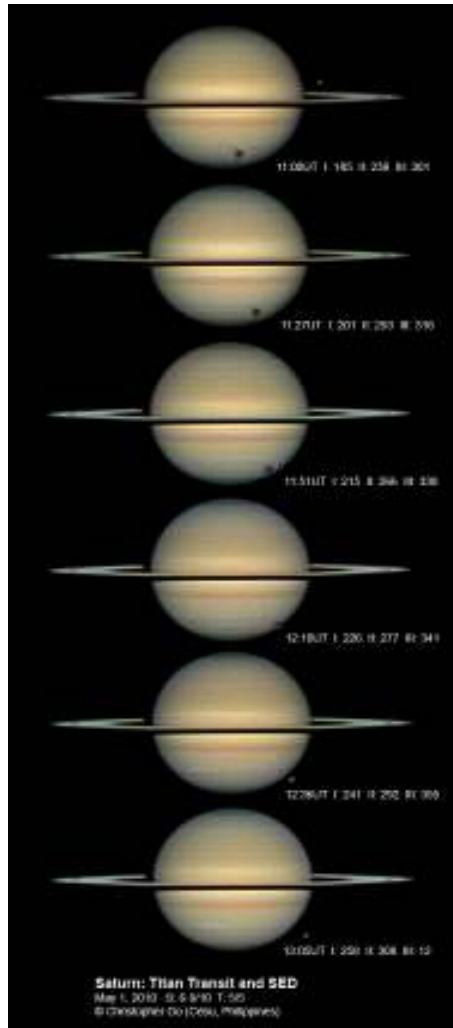


Europa's shadow was on the SEBn. Note the distorted shadow due to seeing. The SEB was still very zonal. The GRS was rising on the bottom image on the left. There seemed to be a white haze forming south of the SSTB.

I was able to get a UV image of Jupiter. I am still working with PGR to provide support for longer exposures with the Flea3 so I can take Methane band images. - *Chris Go, Cebu*

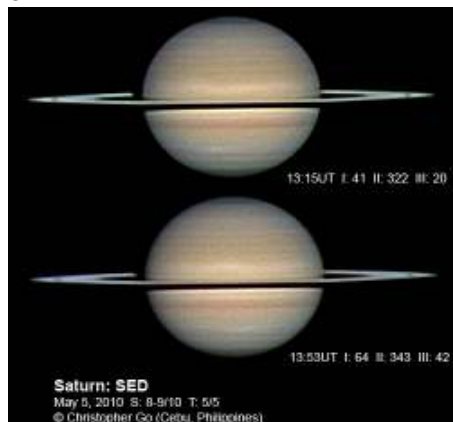
Saturn

May 1. I was hoping to image the April 15 Titan transit but I was rained out! Condition was perfect this evening. Clouds rolled in at around 9:00 p.m. local time, so I was fortunate to image the transit. There are 4 more Titan transits, all of which are visible in the Pacific. The last will be on July 4.



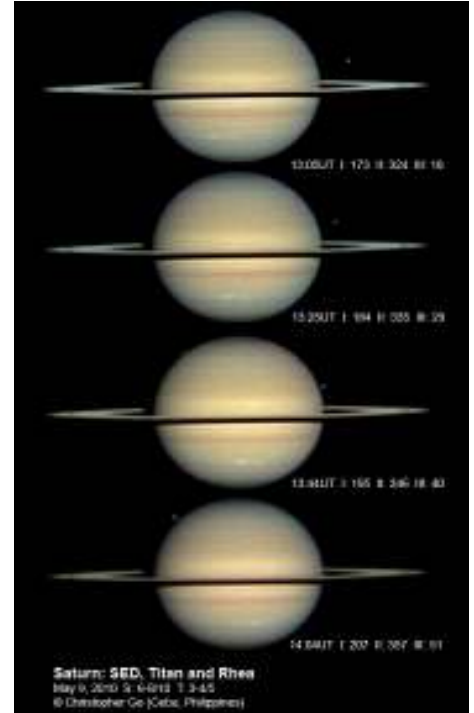
The dark spot on Saturn is Titan. Note the rifts on the SEB. Also visible was the spot on the South Tropical Zone (STrZ) just north of Titan. You can see it better in the video. The South Equatorial Disturbance (SED) can be seen in the bottom image. Note the SED is spread out and it was still bright.

May 5. Seeing was excellent this evening. The SED was in transit and was still bright. Is it reviving? Note the bright streak preceding the SED. Is this the "wake" of the SED?



The SEB was still very dark. It is also interesting that the South polar region had two bright bands.

May 9. Seeing was variable this evening. The SED is back and it's very bright. Note that there are two distinct spots in the SED. The bright spot is following the faint spot.



Rhea is moving towards Saturn while Titan is moving out from behind Saturn. Note the 13:44UT image where Titan is peeking out the northwestern edge of Saturn. The SEB is dark. Note the white spot in the SEB.

May 14. Had to take a quick image of the SED. Took this image early in the evening, but still had baby chores to do. Seeing was variable but there was a moment of good seeing.



The SED was still very prominent. Saturn seemed like the opposite of Jupiter now. Saturn has a prominent SEB and non-existent NEB while the opposite is current situation of Jupiter. - *Chris Go, Cebu*

Milky Way

May 13. Last night, got home late from a meeting. I noticed that the sky's a bit clear, since I was tired to take out my telescope, I just took my cam and tripod instead (⇒ p. 77).



Image above by Ted, reprocessed by James Kevin Ty. Haven't tried taking the picture of the Milky Way before, so this is my first.

May 15. Last night, we had a brownout. An opportunity without street lights....



View of the south, (with visible coal sack)



Looking north



The glorious Milky Way

- Ted Gonzaga

Deep Sky

I tried to test my "Do-it-Yourself" DSLR piggyback mount to my optical tube assembly on my GP2 mount, using a Canon EF 70-300mm USM III lens at 70mm f/4.

Since the moon was setting around midnight, I didn't waste my effort (for setting up the mount and etc) and did some hunting and imaging.

Then again, it was like Pringles, once you start, you can't stop... until I was sleepy.



M8 "Lagoon" Nebula in Sagittarius



M7 Open Cluster in Scorpius



M4 (Cat's Eye) Globular Cluster in Scorpius



M6 Open Cluster in Scorpius



M17 "Omega" or "Swan" Nebula



M16 "Eagle" Nebula



M22 Globular Cluster

More of Ted's images can be found on the next page (⇒ p. 78).

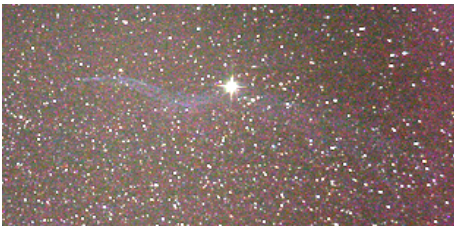


NGC 2631 "Northern Jewel Box" Cluster

I also tried (almost desperately) to image the "Veil" supernova remnants, which was beyond my telescope's capabilities to clearly "see" it.



Eastern arc of the Veil Nebula



West arc of the Veil Nebula

Here's one of my favorite objects, M27, the Dumbbell Nebula:



And the last image before I called it a night, M57, the Ring Nebula:



- Ted Gonzaga

Interacting Galaxies

NGC 5427 and NGC 5426 are two interacting galaxies with a bridge of exchanging stellar material in the constellation Virgo. The two galaxies are collectively listed in Halton Arp's Atlas of Peculiar Galaxies as Arp 271.

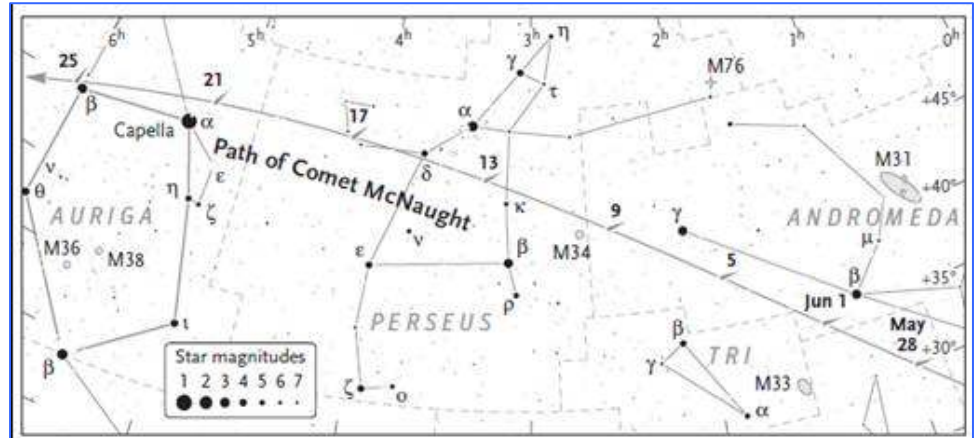


Imaged May 16, 2010 with N16 f/4.5 and ST10XME camera and an exposure of 28 minutes using Astrodon LRGB Filter 28x1min

This 28 minute exposure was taken to further test my newly repaired Gemini Titan mount controller. - *John Nassr, Baguio*

The Sky

June is typically a bad month for observing, as it marks the beginning of the rainy season with monsoon rains bringing in unbroken days of rain and clouds. If the clouds break, however, there are quite a few observing challenges out there.



Comet McNaught

This particular Comet McNaught is one of 54 (and counting) named for Robert H. McNaught of Australia's Siding Spring Observatory. He works in the Siding Spring Survey, funded by NASA to record large swaths of sky to find potentially hazardous near-Earth objects. The survey also turns up many other moving objects. McNaught found this comet (which will never come near Earth) at 17th magnitude on an image taken last September 9th.

Pre-discovery images quickly established its orbit. The June comet crosses Perseus, low just before dawn, when at its best in June. On the morning of June 5th, the comet skims just north of the large, loose open cluster NGC 752. On June 6th and 7th, it's within about 2° of the 2nd-magnitude double star Gamma Andromedae. The Moon is much thinner then, but also closer to the comet.

Mid-June is when Comet McNaught should be most interesting, offering the best compromise between its increasing brightness and its decreasing altitude at the start of dawn. Moreover, the sky will be free of moonlight.

The helpful conjunctions continue as the comet passes about 1° north of the open cluster M34 in Perseus on the morning of June 10th, and 3° south of 1.8-magnitude Mirfak (Alpha Persei) on the 13th. It's still about 15° high in the northeast as the sky starts to grow light on June 15th, but it appears roughly 1° lower every day after.

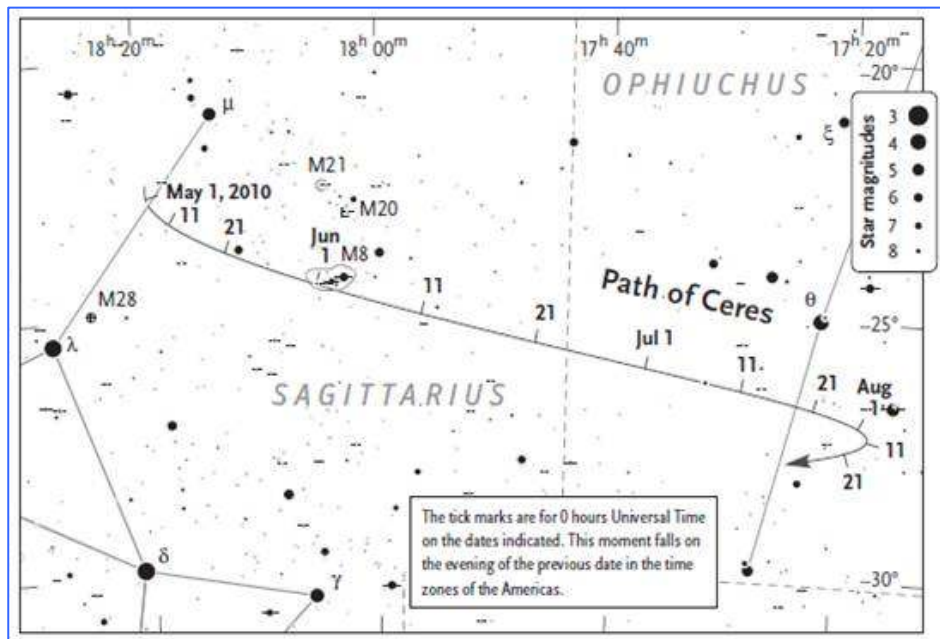
The comet passes zero-magnitude Capella on the 21st, and it's very low by the 24th, when it passes 2nd-magnitude Beta Aurigae. By now Comet McNaught may be as bright as 4th or 5th magnitude, but moonlight is returning. The comet will be lost to view by June's end — just before it reaches perihelion on July 2nd, 0.405 astronomical unit from the Sun. It remains far from Earth throughout this apparition, never venturing closer than 1.135 a.u. (in mid-June). After perihelion it will fade rapidly as it heads to the far-southern sky.

The most famous of the Comet McNaughts is C/2006 P1, also known as the Great Comet of 2007. It was an easy naked-eye sight when passing near the Sun in mid-January of that year, shining at magnitude -5 or -6, and in the following days it flung a gigantic, multi-banded tail across the Southern Hemisphere's evening sky. This new Comet McNaught, however, will most likely not match that earlier one in terms of brightness of beauty (⇒ p. 79).

The comet is approaching on a hyperbolic orbit, which means that it's making its first trip in from the Oort Cloud. So its brightness is even less predictable than usual. Will it flare unexpectedly or perhaps fizzle right out? - [Greg Bryant, SkyandTelescope.com](http://GregBryant.SkyandTelescope.com)

Ceres

Ceres, the largest and first-discovered asteroid, is the only "dwarf planet" (by modern designation) that's easily visible to amateurs; the next brightest is 14th-magnitude Pluto. Right now Ceres may be familiar to only a tiny portion of humanity, but we can expect it to gain global star status in February 2015 when NASA's Dawn spacecraft will take up orbit around Ceres and start imaging its unknown landscape in detail.



In early June, Ceres passes just south of the Lagoon Nebula, M8, located above the spout of the Sagittarius Teapot. The Lagoon is easy in binoculars and a joy in a telescope, even under moderately light-polluted skies.

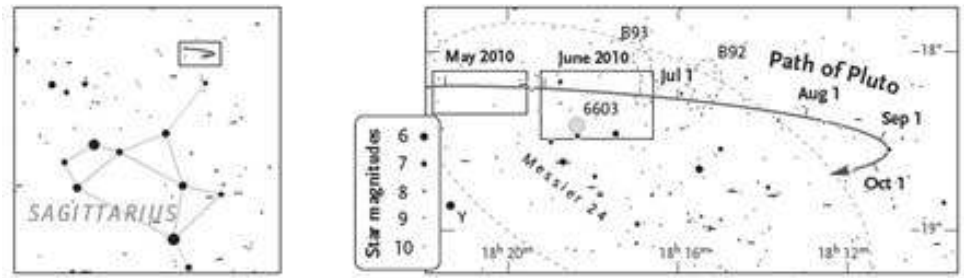
At magnitude 7.5 Ceres will be a pinprick in binocs and obvious in a scope. Print out the photo chart at right and put a pencil dot on Ceres's position for the time and date you plan to look.

Ceres reaches opposition on June 18th at magnitude 7.2. Prior to that date, the asteroid is best observed after midnight.

During July, Ceres gradually fades, but it also rises earlier each night and becomes ever higher in the evening sky.

It's still 8th magnitude in August, when it's high in good view by the time the sky grows dark. - [Alan MacRobert, SkyandTelescope.com](http://AlanMacRobert.SkyandTelescope.com)

Path of Pluto 2010



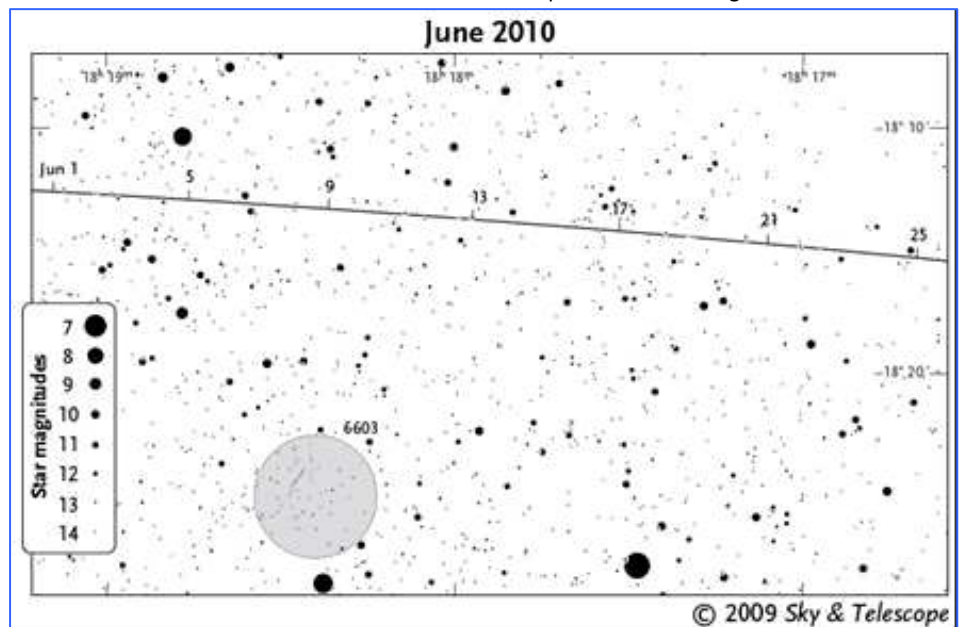
Pluto

Have you ever seen Pluto through a telescope? Do you want to try? All you need is a good 8-inch scope, access to dark skies, lots of persistence, and excellent star charts.

This is one of the best years in Pluto's 249-year orbit around the Sun to view the dwarf planet. In May and June, it crosses Messier 24, the Small Sagittarius Star Cloud, one of the pieces of sky most densely packed with stars. A high-power telescopic field of view will include hundreds of stars comparable to Pluto in brightness. Then, in July, Pluto crosses Barnard 92, one of the most prominent of all dark clouds, where typical backyard telescopes show no stars whatsoever. Whether you call it a planet, a dwarf planet, a minor planet, an asteroid, a comet — or all of the above — Pluto is a special object. It's the most distant chunk of solid material that can be seen through the eyepiece of normal backyard telescopes.

Pluto is almost impossible to see when the Moon is up, so each month there's a two or three-week window of visibility, depending precisely where you live. At mid-northern latitudes, these windows are roughly:

- June 3-22 midnight to 3 a.m.
- July 2-19 nightfall to 1 a.m.
- Aug. 1-15 nightfall to 11:30 p.m.
- Aug. 29 - Sept. 11 nightfall to 9:30 p.m.
- Sept. 27 - Oct. 9 at nightfall



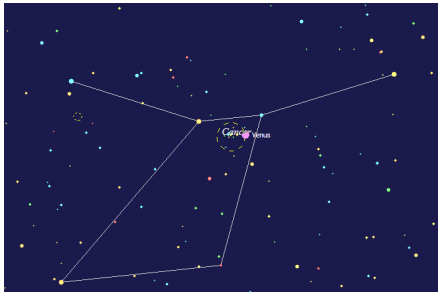
- [Tony Flanders, SkyandTelescope.com](http://TonyFlanders.SkyandTelescope.com)

Sky Calendar

DAY HR EVENT

June 2010

- 05 06:12 LAST QUARTER
- 06 22:44 Mars 0.9° N of Regulus
- 11 04:20 Moon 1° S of Pleiades
- 12 19:13 NEW MOON
- 19 12:28 FIRST QUARTER



- 20 21:56 Venus 0.4° N of Praesepe
- 21 10:32 Moon 1.4° N of Antares
- 21 19:27 Summer Solstice
- 24 18:34 Moon 1.4° N of Aldebaran
- 26 19:30 FULL MOON
- 26 19:38 Partial Lunar Eclipse (visible in the Philippines)
- 28 20:06 Mercury at Superior Conjunction



A string of planets and Moon on July 16

July 2010

- 28 20:06 Mercury at Superior Conjunction
- 04 22:35 LAST QUARTER
- 06 21:23 Earth at Aphelion
- 08 17:02 Moon 0.9° S of Pleiades
- 10 10:55 Venus 1.1° N of Regulus
- 12 03:33 Total Solar Eclipse (not visible in the Philippines)
- 12 03:40 NEW MOON
- 13 22:02 Mercury 0.2° N of Beehive / Praesepe star cluster

- 18 18:09 FIRST QUARTER
- 22 03:27 Moon 1.6 deg N of Antares
- 26 09:35 FULL MOON
- 28 07:17 Mercury 0.3° S of Regulus
- 28 10:10 Delta Aquarids Meteor Shower Peak

I took some photographs of the University of Latvia observatory during my visit. I have no chance of visiting the facility interior unless I go there during office hours.

At the bottom of the page is an old star globe (for ship navigation) displayed at the Navigation History Museum.

- Vincent Lao

A Trip to the University of Latvia



University of Latvia Observatory



An old star globe used for navigation.

