



Monthly Notices of the Everglades Astronomical Society



Naples, FL
June 2015

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President's Message

This Tuesday is our last regular meeting at the Norris Center till we return in September. Since we do not have a spot for our casual get together in July and August we won't formally meet again till September.

Also as mentioned in the past newsletter and discussed at our meeting, we will be working with the YMCA Naples for three family nights over the summer. On June 26th – we are following a movie night starting at 8:30 and will have the scopes set up on the other side of the roof for before and after the movie. The other nights are July 24th and August 14th. Specifics about those dates are pending. Please let me know as soon as possible if you would like to help out. Three to four scopes with someone helping direct traffic should be sufficient. I'll send out further info as it becomes available.

This Tuesday's meeting, member Tom Woosnam is sharing pictures taken by Douglas Wheelock who is one of the inhabitants of the ISS. We will probably have some time for open discussion and should discuss what members would like to hear more of or different next season. Give it some thought.

Once again I would also like thank presenters, contributors to our newsletter and everyone this past season for attending and helping make it a success. Clear skies and enjoy your summer.

Clear Skies, Todd Strackbein

Dates for the "Fak"

Usually the best times to go out to the Fakahatchee Strand viewing site are moonless nights. Below is a list of upcoming Saturday nights that you will often find fellow club members out there enjoying the skies with you (weather permitting).

Date	Moonrise	Moonset
June 13	3:14 a.m.	4:34 p.m.
June 20	9:21 a.m.	10:29 p.m.

Sky Events

June 2	- Full moon
June 9	- Last quarter
June 16	- New Moon
June 24	- First Quarter

Next Meeting

June 9, 2015: Time 7:00 – 9:00 pm
Norris Center, Cambier Park

Imaging the Planets By Chuck Pavlick

There are two types of webcams that can be used for imaging the planets: monochrome (mono) or color cameras. Color cameras have a color CCD or CMOS chip in a Bayer filter configuration, where 50% of the sensor captures green wavelength light, 25% captures red and 25% captures blue. This means you are not getting the whole resolution in each color channel.



Photo by Chuck Pavlick

When using a monochrome camera, a filter wheel with red, green and blue filters must be used to make a color image. You must take a separate video for each color filter, then process each individually and combine them to make a color image. The benefits of Monochrome over Color is higher resolution. The benefits of One-Shot Color over Monochrome is no need to use filters, easier to use during capture (no need to capture 3 video files for a single image) and faster processing (don't need to process 3 images for a single image).

After using a color camera for years, I thought I would never go to a mono camera because of all of the trouble. I did not know what I was missing. I now use a mono camera and have compared shots taken with both cameras on the same night and could not produce near the same quality of image with the color camera. There are probably much better color cameras on the market that produce good images but if you were to compare that camera in both versions, the mono camera would do much better.

The equipment that I use now is the Imaging Source DMK21 AU618 mono camera, Olivon manual filter wheel that has 5 slots for filters, and the Orion red, green and blue filters. There are much better filter wheels (some motorized) and filters on the market but this was in my budget and I'm completely happy with my choice. The telescope that I use for the planets is the Celestron Edge 9.25 telescope mounted on a German Equatorial Mount. I have looked through many telescopes and the 9.25 always caught my attention. The Edge HD model is perfect for astrophotography because of the pinpoint stars it produces across the whole field of view. It is also the perfect weight for me to carry to a remote site (Fak) or set up in my back yard. I also use a Televue 2x barlow or 2x or 4x Powermate. The focal length of the Edge 9.25 is 2350 mm and 4700 mm when using the 2x extenders.

Capture Process with a Color Camera: Plug camera in, start capture software, focus image and capture image. Done! Processing is easy also because you only have to process one file.

Capture Process with mono camera: The capture software that I use is ICCapture which is the software provided with the Imaging Source camera. When using a mono camera to capture Jupiter you have to limit each color channel to under a minute because of Jupiter's fast rotation, if you do anything longer, the image would blur. This means you have to be very fast at changing the filters and refocusing between each filter. Orion claims the filters are parfocal but I do have to focus between each filter. I would do this even if I had a better set of filters. Focus is the most important part so I make sure I get as close as possible, sometimes difficult even when the seeing is average because the image jumps around quite a bit on the computer screen. I did install a motorized Moonlite focuser which helps tremendously. If you are imaging the planets with an SCT scope, I would highly recommend adding a better focuser because of the image shift produced by the original focuser especially when imaging Jupiter. Saturn is much easier to image because the surface doesn't change as much as Jupiter so you can take your time on getting focus correct and

take longer videos which will produce a smoother and sharper image.

Processing the image: I use Registax 6 for processing each color filter video file. The images look black and white when processing in Registax. I experiment with different settings and process each video several times and pick the best image. Registax will take the best frames and stack them for you. You can also choose the quantity to stack.

The examples shown below are 500 frames of each color channel after stacking and processing in Registax.



Red Channel



Green Channel



Blue Channel

Final processing is done in Photoshop or a similar program by combining the 3 color channels. This is where you can balance the color and sharpen the image even more. In this image of Saturn, the C ring is visible along with the Cassini Division and the Encke Division just slightly showing up on the far outside of the rings.



The steadiness of the air on the night I took this shot was average about 6/10 on the Pickering scale. Here is a link showing how a star looks at different seeing conditions. <http://www.damianpeach.com/pickering.htm>

I haven't had a night that there was perfect seeing conditions since I've been using the mono camera but I'm sure one will show up this summer for a better picture of Saturn.

If you are considering trying your luck at planetary imaging, a color camera would be a good start but mono would be a more serious choice. If you only want to use a color camera I would pick one that is rated very high. There are many tutorials available on the web that take you step by step through the process. Planetary imaging is fun and you do not have to have a dark site. I took this shot in my light polluted yard in Cape Coral, Florida.

Other Articles by EAS Members

Ted Wolfe's article in Collier Citizen on 5/21/15, Looking up: Bodes Nebula: Seeing into the Eye of a Cosmic Hurricane http://www.naplesnews.com/community/collier-citizen/looking-up-bodes-nebula-seeing-into-the-eye-of-a-cosmic-hurricane_55929916

Mike Usher's article in the Coastal Breeze News on 5/28/15, The Glorious Stars of Summer Rise <http://www.coastalbreezenews.com/2015/05/28/the-glorious-stars-of-summer-rise-2/>

TO VIEW THESE ARTICLES, PRESS "CTRL" AND LEFT CLICK BUTTON.

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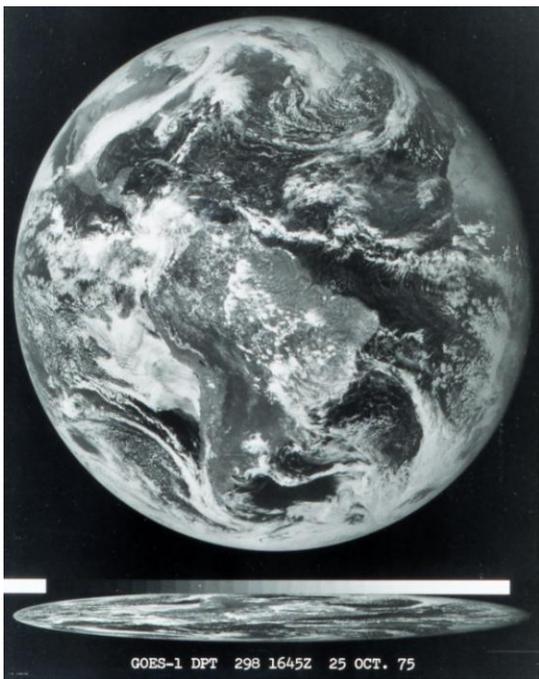


The "G" in GOES Is What Makes It Go By Ethan Siegel

Going up into space is the best way to view the universe, eliminating all the distortionary effects of weather, clouds, temperature variations and the atmosphere's airflow all in one swoop. It's also the best way, so long as you're up at high enough altitudes, to view an entire 50 percent of Earth all at once. And if you place your observatory at just the right location, you can observe the *same* hemisphere of Earth continuously, tracking the changes and behavior of our atmosphere for many years.

The trick, believe it or not, was worked out by Kepler some 400 years ago! The same scientist who discovered that planets orbit the sun in ellipses also figured out the relationship between how distant an object needs to be from a much more massive one in order to have a certain orbital period. All you need to know is the period and distance of one satellite for any given body, and you can figure out the necessary distance to have any desired period. Luckily for us, planet Earth has a natural satellite—the moon—and just from that information, we can figure out how distant an artificial satellite would need to be to have an orbital period that exactly matches the length of a day and the rotational speed of Earth. For our world, that means an orbital distance of 42,164 km (26,199 miles) from Earth's center, or 35,786 km (22,236 miles) above mean sea level.

We call that orbit *geosynchronous* or *geostationary*, meaning that a satellite at that distance always remains above the exact same location on our world. Other effects—like solar wind, radiation pressure and the moon—require onboard thrusters to maintain the satellite's precisely desired position above any given point on Earth's surface. While geostationary satellites have been in use since 1963, it was only in 1974 that the Synchronous Meteorological Satellite (SMS) program began to monitor Earth's weather with them, growing into the Geostationary Operational Environmental Satellite (GOES) program the next year. For 40 years now, GOES satellites have monitored the Earth's weather continuously, with a total of 16 satellites having been launched as part of the program. To the delight of NASA (and Ghostbusters) fans everywhere, GOES-R series will launch in 2016, with thrice the spectral information, four times the spatial resolution and five times the coverage speed of its predecessors, with many other improved capabilities. Yet it's the simplicity of gravity and the geostationary "G" in *GOES* that gives us the power to observe our hemisphere all at once, continuously, and for as long as we like!



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Name:

Address:

Phone:

Email:

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Items For Sale or Trade or Wanted:

http://www.naples.net/clubs/eas/equipment_sales.html

Useful links (software, telescope making, telescope and equipment suppliers, astronomical data sources, iPhone and iPad Apps and more):

<http://www.naples.net/clubs/eas/links.html>

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EAS 2015 DUES

For the bargain price of only \$20.00 per family, all this can be yours this year:

- Meet with your fellow astronomy enthusiasts at least 10 times a year;
- Learn about astronomy and telescopes. Check out our club scope;
- Many opportunities to view planets, nebulae and other celestial objects (even if you don't have your own telescope); and
- Enjoy the many astronomy programs at our regular monthly meetings.

Don't miss out! Fill out this form (please print clearly) and send it with your \$20 check to the