



ASTROFILES

Auburn Astronomical Society Newsletter

December 2017

John Wingard - Secretary/Treasurer - Auburn Astronomical Society - jwin1048@gmail.com

Important! Proposed 2018 Meeting Changes - FEEDBACK REQUESTED!

As was mentioned in the November newsletter, we have been considering some possible changes in our meeting schedule and meeting formats. We discussed these ideas further at the December 1st meeting and have decided on a tentative schedule for 2018. Instead of having monthly meetings, we are going to try having five meetings in 2018, beginning in February. The proposed meeting months are as follows:

- February
- April
- June
- August
- October

We also discussed some possible changes in the formats of the meetings themselves. One idea that was proposed was to possibly have the April meeting on Astronomy Day, which is on Saturday, April 21, 2018. Traditionally, we have always assisted the Gayle Planetarium in Montgomery with this event, and it may be possible for us to have a brief meeting at the Planetarium prior to the start of the events. Of course, arrangements will need to be worked out with the Planetarium staff to see if this would be possible.

Another possible idea discussed for the June meeting would be to have a combination cookout/star gaze at Wind Creek State Park near Alexander City, AL. This could also be on a Saturday to make it more convenient for those that cannot make it to a weekday meeting.

For the other three meetings, we can either secure a speaker/ presenter or arrange to have a field trip to some nearby astronomy/space related facility. We are open for any and all suggestions on some possible meeting topics or ideas. If you know of someone that can come and do a talk or presentation on an interesting topic, please let us know. If you know of an interesting place in our area that would be of interest to the members, let us know about it as well. What topics would you like to learn more about at the meetings? We really need feedback from you to help us improve our meeting experience. You can send me your ideas, comments, etc. to the e-mail at the beginning of the

newsletter. As you can see, we have not yet determined specific dates for the proposed meetings with the exception of the possible April Astronomy Day event. This will give us the flexibility to come up with some different and hopefully more interesting activities. Of course, for those meetings that are held in our usual meeting location on the AU campus, we can always adhere to the first Friday schedule unless it conflicts with some activity in Auburn such as home football games.

Our initial focus will be to firm up plans for the February 2018 meeting. We will then make sure that all of the members are notified well in advance by newsletter, e-mail reminder and our Facebook and web pages. We look forward to an interesting 2018!

The Auburn Astronomical Society web page: <http://www.auburnastro.org>

The AAS Facebook page: <http://www.facebook.com/groups/79864233515/>

On November 27, 2017, AAS member John Wingard captured this lunar shot using a Questar 3.5" telescope, using an ASI174MC camera with a 3X focal extender. It shows the sun just beginning to rise on the large crater Copernicus. Also prominent in the center of the photo is the crater Eratosthenes at the end of the long, curved Apennine Mountain chain. Due to the extremely low sun angle around Copernicus, many ridges and small craters are visible. Also notable is the barely-visible flooded ghost crater Stadius to the right of Copernicus. The large flat-bottomed crater at the bottom of the photo is Archimedes. This photo is the final result of approximately 750 individual video frames that were aligned and stacked in Autostakkert 3 software. Sharpening was performed using wavelets in Registax software. Final level adjustments for exposure were done in Photoshop CC.



“Seeing” vs. “Transparency”

If you’ve been into amateur astronomy for very long, you have likely encountered the two terms “seeing” and “transparency” when used to refer to viewing conditions and they are often confused with one another. The following article was in a recent blog post by Richard S. Wright, Jr. on the Sky & Telescope website. Hopefully, it will clear the air (pun intended) on the correct meaning of these two terms.

Good weather for imaging is about more than just the clouds! Even if it's cloud-free, you'll need to understand if the seeing and transparency are good.

A couple of years ago, I attended the OkieTex star party: great location, great skies. I came about halfway through the week and upon arriving, I spotted a vendor friend.

“How’ve the skies been this week?” I asked. “Really good seeing, but the transparency has been not so great.” Cool, thanks.

A moment later I saw another acquaintance. “I hear the skies have been so-so, so far”, I said in greeting.

“Yeah”, he responded, “Really great transparency here, but the seeing last night after the storm was pretty bad.”

Hmmm...

One of these friends did not know the difference between seeing and transparency, and I now knew nothing of what to expect of the coming night. (Actually, I suspected the second friend had it right, and you will too by the end of this blog.)

I figure if there was some confusion between these two ideas among astronomy vendors, then it's likely widespread in the community at large. Indeed, my experience talking with people at star parties continues to bear this out. These two factors affect your imaging plan in two *very* different ways, so let's take a look at what these two terms mean and how they affect your night and imaging strategy.

First, let's talk about **transparency**. **Transparency** is the opacity of the atmosphere, or how clear it is. Moisture and humidity lower the transparency, as does smoke or other kinds of pollution. It's not entirely unlike light pollution in that it washes out the fainter details of astronomical targets. In fact, poor transparency typically makes light pollution worse because it scatters the light around instead of letting it escape into space away from your cameras and optics.

At my own dark sky camp, the city of Okeechobee to the south provides a transparency “meter,” if you will. How far the light dome extends into the sky isn't just a factor of how many lights are burning, but how much moisture is in the air to scatter that light around.

When the transparency is poor, I select brighter objects and will shoot targets only when they are high in the sky, where there is as little pea soup to shoot through as possible. (As long as they're not in the direction of Okeechobee!)

Transparency usually gets better with altitude, because you're looking through less air. That's why high altitudes are prized for observatories and star parties.

Transparency is also usually very good after a rainstorm has come through to clear all of the particulates out of the air. This is reason number one I figured my second friend had it right at the star party.

Seeing, on the other hand, is a measure of *atmospheric turbulence*. We know that if we take a photo of a fast-moving subject, such as at a sporting event, with a low shutter speed, we'll get a blurry image. So what happens when you have to take a very long dark-sky photo and the stars are jumping all about due to atmospheric turbulence? That's right, blurry stars and deep sky objects.

Seeing is usually measured in arcseconds, an angular measure that describes distance on the celestial sphere. If the seeing was 4 arcseconds, it means the stars can be expected to dance around inside a circle with a diameter of 4 arcseconds. Seeing of 1 arcsecond is 4 times better and would then yield much smaller, less bloated stars, as well as finer detail on deep sky objects.

Seeing is typically better in places where the geography is very flat. The air masses moving over the land encounter few obstacles and flow more smoothly (sometimes called a *laminar flow*). This is one reason I love imaging in Florida in the wintertime: it has very good seeing. I have friends out West who moved to the desert to escape city lights, but now they're near mountains. The winds coming over the mountains gets all mixed up like a creek flowing over big boulders, which makes for terrible seeing.

Also, after a front comes through (often accompanied by some rainstorms), the air becomes turbulent for a day or so afterwards. Again, my second friend's claim that after a storm the transparency was good and the seeing was poor fit this pattern best.

If mountains are good for transparency, but poor for seeing, why are so many observatories located up on big mountains? Because as they say... less is more. Less air at high altitudes yields better transparency as I've said, but at the highest mountains you are also above much of the turbulent air, which mitigates the effects on seeing.

Sometimes I will soldier through poor transparency, and if I take enough exposures and spend the time in post-processing, I can often pull something out that I'll be proud of. Seeing, on the other hand, is often the real limiting factor. You can only do so much sharpening in post processing before things start to look ridiculous, and so if the images are just too soft, it's time to go to bed, or start that Netflix marathon.

Where to draw the line depends on your own personal tastes — and your image scale. Essentially, if your pixels are small and your focal length is long, the poor seeing will just make your images mushy. On the other hand, if you're using a very short focal length and larger pixels, you can do wide-field images of some bigger objects or constellations, with wild abandon to the seeing conditions. I'll return to the topic of pixel scale next month and talk more about how it relates to your seeing conditions.

OK...hopefully the above article helped to explain the differences between the two terms. There is also a useful tool that is available on the web that will give you fairly accurate information about not only seeing and transparency, but also about potential cloud cover and other things at or near your location. It is called a Clear Sky Chart. Shown below is the Clear Sky Chart for Montgomery, AL for 12/11/2017.



Auburn Astronomical Society
Membership Application Form

Name:

Address:

City: _____ State: _____ Zip: _____

Phone: _____ Date of Application* ____/____/____

E-mail:

Telescope(s):

Area(s) of special interest:

Enclose: \$20.00 for regular membership, effective January 1*. *Full-Time* student membership is half the Regular rate.

* If you are a *new* member joining after January, refer to the prorated dues table below:

Jan \$20.00	Feb \$18.33	Mar \$16.66	Apr \$14.99	May \$13.33	Jun \$11.66
Jul \$10.00	Aug \$8.33	Sep \$6.66	Oct \$4.99	Nov \$2.33	Dec \$1.66

Make checks payable to: Auburn Astronomical Society and return this application to:

Auburn Astronomical Society
c/o John Wingard, Secretary/Treasurer
#5 Wexton Court
Columbus, GA 31907

For questions about your dues or membership status contact: jwin1048@gmail.com