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Star Points for March 2012

“Techniques for Better Viewing”

by Curtis Roelle

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Place

How do you get the most out of using your telescope? Astronomers have been collecting and swapping observing tips for years. Here is a brief description of some popular recommendations from selecting an observing location to observing with a telescope.

Don't observe near or within the unsightly glare of outdoor lights such as floods, mercury vapor “yard blasters,” and wall packs to name but a few. Even better yet, put your telescope in the car and take it to a location outside of town. Make certain you have the property owner's permission before setting up.

Likewise, the light from a bright Moon may interfere as well. When viewing faint objects you might want to wait for a night that the Moon's not up or at least is merely a crescent.

If your telescope has a small “finder scope” attached, make sure that it's aligned parallel to the main telescope before using it to locate celestial targets. First choose a distant terrestrial object, such as a roof peak by day or a far-off light at night. The target object should be at least a couple of blocks away.

Using the lowest-power eyepiece, locate the target object with the main instrument. Once it's found, lock the knobs on the two axes so the telescope won't move. Adjust the small thumb screws on the finder scope until the object is centered in the cross hairs and re-tighten them. Check the main telescope. If the object's no longer centered, unlock the axes, re-center and repeat until the object has been centered in both scopes.

Now you're almost ready to observe. Dark adaptation occurs as the eye recovers its sensitivity after exposure to light. Let your eyes adjust to the darkness while avoiding any white lights or flashlights. Ten minutes is enough to recover a fair amount of night vision, and after a half hour the adaptation will be mostly complete.

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March Meeting: Wednesday, March 14, 2012, 7:30 p.m., at Bear Branch Nature Center

Speaker: Dr. Michelle Thaller of NASA's Goddard Space Flight Center will present “The Search for Alien Life.” See a description on page 5.

March President's Message

by Jim Reynolds

Greetings All!

March is almost upon us, and WASI has a lot to offer in the coming weeks.

On Saturday March 10th, you can join WASI at Soldier's Delight for an evening of star gazing (8:00 pm), the WASI monthly meeting is on Wednesday, March 14th (7:30 pm), and March 22nd is a teleconference with Dr. Anthony Aveni on the 2012 prophecies. Information regarding the teleconference can be accessed via the Night Sky Network. March 24 is the annual "Women in Aviation and Space Day" at the Udvar-Hazy Center in Chantilly (a.k.a. "The Dulles Annex"). We'll be saying goodbye to March with the monthly planetarium show and star party on March 30th.

If you're looking for any public outreach, you have a great opportunity with the "Women in Aviation and Space Day" at the Udvar-Hazy Center in Chantilly. Please see or email Wayne Bird if you are interested in lending a hand. The Towson University Project ASTRO annual workshop will be held on May 25 at the Maryland Science Center in Baltimore. As a Project ASTRO site institution, Towson University is responsible for recruiting educator and astronomer partners and for bringing them together for an annual workshop. At the workshop, partners are provided with materials from the Astronomical Society of the Pacific, and they learn how to forge effective collaborations, how to make use of local astronomy resources, and how to implement hands-on, inquiry-based astronomy activities in their classrooms. We are looking for astronomers, both professional and amateur for the 2012-2013 academic year. If you are interested or know of someone who might be, please contact me (Jim Reynolds) at jreynolds@towson.edu.



"It's black, and it looks like a hole.
I'd say it's a black hole."

Unfortunately, the last monthly meeting was canceled due to inclement weather. A lot of folks were perplexed by the cancellation and apparently at least one or two people showed up at Bear Branch Nature Center in the evening, only to find a darkened building. Let me re-iterate the WASI policy regarding inclement weather and WASI events.

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Star Points, cont.

When referring to printed charts and reference materials, or making notes, avoid white-light flashlights. Use a red-filtered one instead. The eye's rods are insensitive to red light, so your low-level night vision will not be affected. In a pinch try using a rubber band to fasten one or two layers of brown paper from a grocery bag over the end of the flashlight.

Begin viewing each new object using your lowest-power eyepiece. Don't automatically jump to the highest-power eyepiece in your collection. Among different power eyepieces of similar design, low-power views tend to be brighter and have a wider field including more of the sky.

Anyone who has looked into the eyepiece at faint nebulae or galaxies through a telescope — no matter how large — immediately realized the views are not the same as the beautiful full-color images taken with the Hubble Space Telescope. One reason is because images are created with time exposures on film or electronic detectors that allow light to be collected over time. Our eyes don't work that way.

The eye's retina has cones and rods. Cones allow us to detect color, but in order to do so require more stimulation than a faint telescopic image usually provides. The rods are more sensitive but see in black and white. The rods are the workhorse when it comes to viewing faint objects.

Averted vision is a technique for directing an image to fall upon the rods where it is most effective. Because the rods are not located at the center of vision, the trick is to direct the vision slightly off to the side by not staring directly at the object. In doing so, the faint image may pop out and be visible, yet disappears when one looks straight at it using the cones.

American author Edgar Allan Poe was aware of the physiology behind averted vision. The following description is from his 1841 short story "The Murders in the Rue Morgue:

"To look at a star by glances – to view it in a side-long way, by turning toward it the exterior portions of the retina (more susceptible of feeble impressions of light than the interior), is to behold the star distinctly – is to have the best appreciation of its lustre – a lustre which grows dim just in proportion as we turn our vision fully upon it. A greater number of rays actually fall upon the eye in the latter case, but in the former, there is the more refined capacity for comprehension."

Another technique for seeing seemingly invisible faint objects is a light tapping of the tube, causing the image to jiggle. The eye likes motion, and once the image is detected after a slight rap on the tube, your averted vision may be able to hold the image steady.

Several of the above tips are valid whether or not you have a telescope. So get outside, as Poe wrote, "*to be enamoured of the Night for her own sake.*"

"Star Points" by Curtis Roelle appears in the Carroll County Times on the first Sunday of each month. Visit the website at <http://www.starpoints.org> or send email to StarPoints@gmail.com.

President's Message continued

We “generally” follow the county’s evening activities. In other words, if Carroll County cancels evening activities, WASI will follow suit. Additionally, we try to disseminate cancellations via email(s) to the YAHOO group as well as the members who are followers of our Facebook page. I realize that many of us have lived in harsher winter environments (myself included). Keep in mind that one of the very last places in the entire county to be plowed is usually Bear Branch Nature Center. We do not want folks to come out of a meeting and find themselves joining an unscheduled WASI slumber party with no amenities.

On February 25th, the Observatory committee met, so there should be a robust observatory update at our next monthly meeting.

I hope that everyone has a terrific March. It will be great to see everyone at the March meeting (weather permitting) on the 14th.

Clear skies everyone!

Upcoming WASI Observing and Events



Soldiers Delight Public Stargazing March 10, 8 p.m., at Soldiers Delight Natural Environment Area in Owings Mills

Monthly Meeting March 14, 7:30 p.m., at Bear Branch Nature Center (BBNC)

Messier Marathon March 24, 7 p.m. (backup date: March 23), at Marstown Observatory in New Windsor; for directions and updates, visit www.marstown.org

Girl Scout Day at the National Air & Space Museum's Udvar-Hazy Center
March 24, 10 a.m. to 3 p.m., in Chantilly, Virginia (contact Skip if you'd like to volunteer)

Planetarium Show March 30, 7:30 p.m., at BBNC

MARCH MEETING PROGRAM

Dr. Michelle Thaller (Goddard Space Flight Center) will present “The Search for Alien Life.”

When will we know, for sure, that life exists outside the Earth? It seems a simple question, but the answer may turn out to be quite complex. Would we even be able to recognize alien life if we found it? NASA scientists think they may be hot on the trail of proving the existence of extraterrestrial life, but as Carl Sagan once said, extraordinary claims require extraordinary evidence. Find out how we’re exploring the worlds of our own solar system searching for life. From seasonal natural gas emission on Mars to underground oceans on a moon of Saturn, life may well be out there, waiting for us to find it. And we’re looking farther afield as well. With over 3,000 new planets discovered around other stars, we’re combing the skies for signs of life. We may be the last generation of humans who wondered if they were truly alone.

Members are invited to join our guest for dinner before the meeting at 6 p.m. at Harry’s in Westminster.

March Message from Observing & Science Chair by Tom Lipka

Continued from last month...

Fellow astronomers: In this month's missive I now begin to narrow my focus by beginning with a minor clarification regarding the observational side of WASI. It should be pointed out that as far as an *amateur* club such as WASI is concerned the primary objective of the observational side of club activity is not so intimately tied to the science side as I may have implied. Yet they are not mutually exclusive either! There is a subtle yet minor distinction to be made where one falls on this issue based on his or her preferences, abilities and what they expect from the Club. Naturally it spans the spectrum. Some likely are here for the camaraderie and potential for social interaction such as can be had at star parties and monthly meetings. Others may be new to astronomy and are here to learn more from the experiences of established members; while more experienced members may be working on AL pins. Still other folks, having achieved a certain level of expertise, have moved on to personal projects having become more goal- or science-oriented and have developed their own methods and techniques along the way. Finally I think it is fair to say that everyone comes to WASI with eager anticipation of talks given by guest speakers from the professional community and who would like to learn from the experiences of fellow members. We all have something to offer and have much to gain. There is no and should be no clear dividing line in this regard, unlike my aforementioned distinction between the missions of the outreach and in-reach arms of WASI. Naturally the sheer pleasure derived from the casual solo observing, or the social aspect of attending star parties, meetings, observing events, and even outreach events is a reward unto itself! The point is it should be fun! With these in mind we can move forward with the understanding that the mission of this, the Observing & Science Chair and of myself in particular, will be to encourage and promote the regular practice of observational astronomy for everyone whilst stressing the science of astronomy along with those observations and encouraging members to help other members by writing and talking of their experiences.

Assuming that the weather does not force the cancellation of our March meeting, I will unveil a 20- to 30-minute presentation for a proposed in-reach presentation format that I hope becomes the standard for future meetings. Call it our "warm-up act" that sets the stage for the finalé of the guest speaker. Alternately, it will at least become the main event in the absence of a guest speaker. The purpose of this first installment is necessarily part demo (a structural outline to be filled in as this evolves), but will also contain a sampling of current/relevant material that illustrates the veritable multitude of possible subject material available for anyone to take up regardless of level of experience. Here is your chance to show others what you have been observing, or to "toot your horn" and to demonstrate that you are out there. For those who may be students, here's your chance to hone your writing and speaking skills and possibly earn some extra credit for school; and I'll be happy to sign off on it for you to your teacher/professor!

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Message from Observing & Science Chair, continued

Secondly, a few among us are already doing this but it's worth mentioning. Begin keeping a daily observing log. Bear in mind that this does not necessarily have to involve a telescope either! Any observation is acceptable and can be accomplished with binoculars or just an impromptu observation with the naked eye. I've made many interesting and noteworthy observations by virtue of simply driving to and from work! Over time, a substantial record or history will have been accumulated that others will benefit. Admittedly, I have been lax in this regard myself! Therefore, we can help each other to become better astronomers! An example of relevant data to include can be found all over the Internet, but for starters I would suggest using your basic composition book that can be found at any store that offers school and office supplies. Data to record might include:

Observer's or observers' names

Observing conditions (temps, clouds, seeing, etc., can also be inferred from BBNC CSC)

Simple sketch, picture, or video of subject (or a written description)

Equipment used:

Type of scope (e.g., Newtonian, Dob, Herschelian, SCT, R-C, etc.) and aperture (e.g., 8")

Focal ratio (f-value)

Size of objective and magnification

Field of View, if known

Description of subject and estimated magnitude

If binoculars were used list Type and Size (e.g., Nikon 10x50mm image stabilized)

If naked eye or impromptu then state same

Purpose of observation

Notes/Comments

Signature or initials of observer

That's it!

Such data will prove to be valuable to others over time, as well as to yourself, and would make fine additions to any observing log for posterity. Examples of other noteworthy observations to include are: solar phenomena, sunspots and prominences, and auroras. Daytime spotting of Venus (don't forget the transit!) and of the Moon and eclipses. When all else fails, if clouds get in the way, or nights are impossible, consider the effects resulting from the interplay of high-altitude ice crystals, clouds, and Sun (atmospheric optics). Try your hand at satellite tracking and ISS apparitions, especially those transiting Sun, Moon, and other objects of interest. Or track an asteroid over several nights. A simple drawing of the field of view is all that is needed here. Lastly, if putting pen or pencil to paper is not to your liking, or you are averse to public speaking, please consider submitting your observations to the Yahoo Groups or to WASI Forums. Consider these as your personal Astronomy Blog! That should appeal to those addicted to social media such as Facebook and Twitter, etc. (which yours truly is not!).

Clear Skies!

Tom Lipka

Observing and Science Chair



The Hidden Power of Sea Salt, Revealed

by Dauna Coulter

Last year, when NASA launched the Aquarius/SAC-D satellite carrying the first sensor for measuring sea salt from space, scientists expected the measurements to have unparalleled sensitivity. Yet the fine details it's revealing about ocean saltiness are surprising even the Aquarius team.

"We have just four months of data, but we're already seeing very rich detail in surface salinity patterns," says principal investigator Gary Lagerloef of Earth & Space Research in Seattle. "We're finding that Aquarius can monitor even small-scale changes such as specific river outflow and its influence on the ocean."

Using one of the most sensitive microwave radiometers ever built, Aquarius can sense as little as 0.2 parts salt to 1,000 parts water. That's about like a dash of salt in a gallon jug of water.

"You wouldn't even taste it," says Lagerloef. "Yet Aquarius can detect that amount from 408 miles above the Earth. And it's working even better than expected."

Salinity is critical because it changes the density of surface seawater, and density controls the ocean currents that move heat around our planet. A good example is the Gulf Stream, which carries heat to higher latitudes and moderates the climate.

"When variations in density divert ocean currents, weather patterns like temperature and rainfall are affected. In turn, precipitation and evaporation, and fresh water from river outflow and melt ice determine salinity. It's an intricately connected cycle."

The atmosphere is the ocean's partner. The freshwater exchange between the atmosphere and the ocean dominates the global water cycle. Seventy-eight percent of global rainfall occurs over the ocean, and 85 percent of global evaporation is from the ocean. An accurate picture of the ocean's salinity will help scientists better understand the profound ocean/atmosphere coupling that determines climate variability.

"Ocean salinity has been changing," says Lagerloef. "Decades of data from ships and buoys tell us so. Some ocean regions are seeing an increase in salinity, which means more fresh water is being lost through evaporation. Other areas are getting more rainfall and therefore lower salinity. We don't know why. We just know something fundamental is going on in the water cycle."

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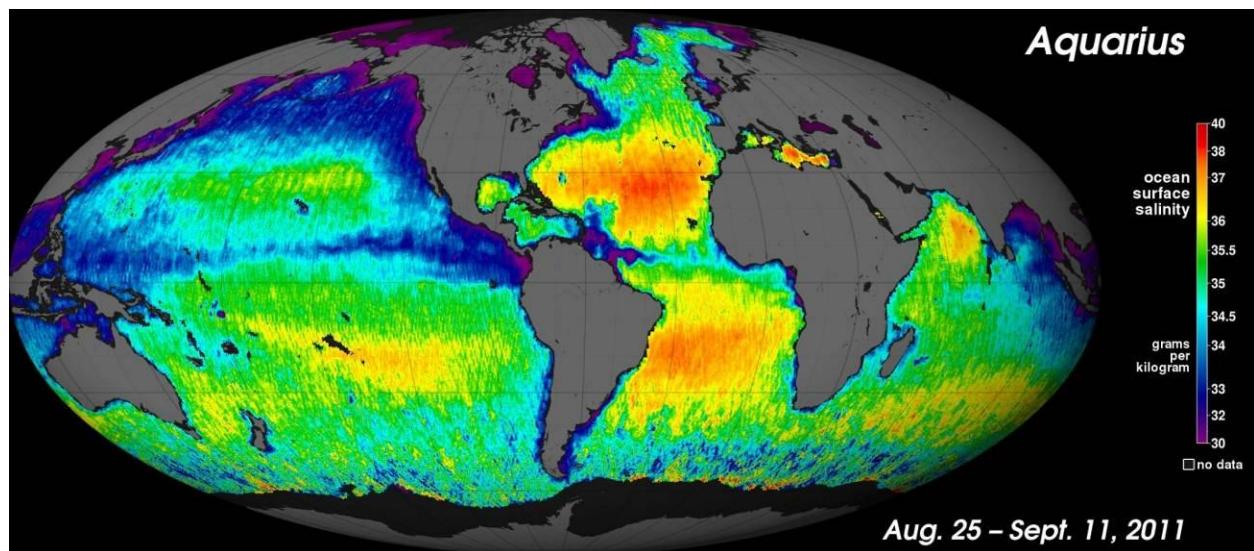
With Aquarius's comprehensive look at global salinity, scientists will have more clues to put it all together. Aquarius has collected as many sea-surface salinity measurements in the first few months as the entire 125-year historical record from ships and buoys.

"By this time next year, we'll have met two of our goals: a new global map of annual average salinity and a better understanding of the seasonal cycles that determine climate."

Stay tuned for the salty results. Read more about the Aquarius mission at aquarius.nasa.gov.

Other NASA oceanography missions are Jason-1 (studying ocean surface topography), Jason-2 (follow-on to Jason-1), Jason-3 (follow-on to Jason-2, planned for launch in 2014), and Seawinds on the QuikSCAT satellite (measures wind speeds over the entire ocean). The GRACE mission (Gravity Recovery and Climate Experiment), among its other gravitational field studies, monitors fresh water supplies underground. All these missions, including Aquarius, are sponsors of a fun and educational ocean game for kids called "Go with the Flow" at spaceplace.nasa.gov/ocean-currents.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Aquarius produced this map of global ocean salinity. It is a composite of the first two and a half weeks of data. Yellow and red represent areas of higher salinity, with blues and purples indicating areas of lower salinity.