

EPHEMERIS

August 2011

Report from TAM 9

Paul Kohlmeier

On July 14-17, the James Randi Educational Foundation held their annual meeting in Las Vegas at South Point. These are called TAMs, short for "The Amazing Meeting". This year the topics had a decidedly astronomical bent. This was the 9th such meeting and that inspired the subtitle "TAM 9 from Outer Space".

The keynote was delivered by Neil deGrasse Tyson. Dr. Tyson is well known for running the Hayden Planetarium and he hosts the PBS show "NOVA Science Now". Within this crowd (more than 1600 attendees) he is practically a rock star. His talk generated an extended standing ovation.

Other astronomers at the conference included Pamela Gay (she gave an impassioned plea for restoring science funding at the National level) and Phil Plait (he gave the most remembered speech from last year's meeting but only participated in panel discussions this year). Parts of both P.Z. Myers and Richard Dawkins talks dealt with what alien life might look like (i.e. not like the aliens on Star Trek).

Bill Nye (the Science Guy) talked about the Planetary Society, the group that he is now the Executive Director of. He also talked about learning from Carl Sagan. Many speakers mentioned the end of the Space Shuttle. One panel that included Nye, Tyson, Gay and Lawrence Krauss ("The Science of Star Trek") became quite animated as panelists argued over the need for manned space flights.

SJAA Activities Calendar

Jim Van Nuland

July (late)

- 22 Astronomy Class at Houge Park. 8:30 p.m. The topic: Summer Constellations / Highlight Objects. (outdoors)
- 22 Houge Park star party. Sunset 8:24 p.m., 50% moon rises 12:06 a.m. Star party hours: 9:30 until midnight.
- 30 Dark-Sky weekend. Sunset 8:17 p.m., 0% moon sets 8:09 p.m. Henry Coe Park's "Astronomy" lot has been reserved.

August

- 5 Houge Park star party. Sunset 8:11 p.m., 47% moon sets 11:41 p.m. Star party hours: 9:15 until midnight.
- 13 General Meeting. Board meeting at 6:30; General Meeting at 8:00 p.m. Our speaker is Dr. Elinor Gates of Lick Observatory. Her topic: Untwinkling the Stars: Improving our View of the Universe with Adaptive Optics.
- 19 Astronomy Class at Houge Park. 8:00 p.m. The topic: Star charts and planetarium programs.
- 19 Houge Park star party. Sunset

7:55 p.m., 66% moon rises 11:39 p.m. Star party hours: 9:00 until midnight.

- 27 Dark-Sky weekend. Sunset 7:44 p.m., 1% moon rises 6:08 a.m. Henry Coe Park's "Astronomy" lot has been reserved.

September

- 2 Houge Park star party. Sunset 7:35 p.m., 33% moon sets 10:24 p.m. Star party hours: 8:30 until 11:30 p.m.
- 10 General Meeting. Board meeting at 6:30; General Meeting at 8:00. Slide/Image & Equipment Night
- 23 Astronomy Class at Houge Park. 7:00 p.m. The topic: Deep sky observing - galaxies, nebulae, clusters, etc.
- 23 Houge Park star party. Sunset 7:03 p.m., 15% moon rises 3:44 a.m. Star party hours: 8:00 until 11:00 p.m.
- 24 Dark-Sky weekend. Sunset 7:02 p.m., 8% moon rises 4:54 a.m.

The Board of Directors meets before each general meeting at 6:30 p.m. All are welcome to attend.

24 hour news and information hotline:
(408) 559-1221
<http://www.sjaa.net>

Quiet skies

Akkana Peck

August is a pretty quiet time for planets, at least in the prime evening hours when most of us like to observe.

Saturn is still visible in the early evening, but it's sinking low — catch it early in the month and early in the evening. The ring tilt is about 8.6 degrees.

Uranus and Neptune are well placed and visible all night, though they transit fairly low in the sky. Uranus should be easy, showing a distinct green disk that makes it stand out from nearby stars ... though it's in a field that makes it rather hard to find, hidden away in Pisces away from any bright stars. Neptune is a bit harder — its pale blue-green disk needs a fair amount of magnification before it looks different from a star. It's in Aquarius, also fairly far from bright stars, but you can start looking for it off the left horn of Capricornus. It's at opposition on August 22.

Pluto, too, is catchable, though it's still located right next to M24 in the heart of the Sagittarius Milky Way, where it'll be awfully tough to tell it apart from all the other stars. But that's just the kind of tough job that justifies being a Plutocrat!

Jupiter rises in the late evening, a bit before midnight. Will the Southern Equatorial Band be dark again? Will the Great Red Spot stand out from it, or blend in? It's always a mystery what Jupiter will look like when it returns from a trip on the other side of the sun, so if you're up late, get an advance look at this fall's Jupiter showcase.

Mars is an early morning object, while Venus is too close to the sun to observe this month. Mercury makes a brief evening appearance around the beginning of the month but then goes to hide with Venus in the sun's glare. It's passing between us and the sun, what's called "inferior conjunction", so you should be able to catch a crescent Mercury if you have good horizons on the very first few days of August. But don't delay, or you'll lose it.

New GOES-R to Give More Tornado Warning Time

Dauna Coulter and Dr. Tony Phillip

So far this spring, more than 1,400 tornadoes have struck the U.S. Some of them have cut jaw-dropping trails of destruction across the countryside and, tragically, across inhabited communities, too. Hundreds of lives have been lost in the onslaught.

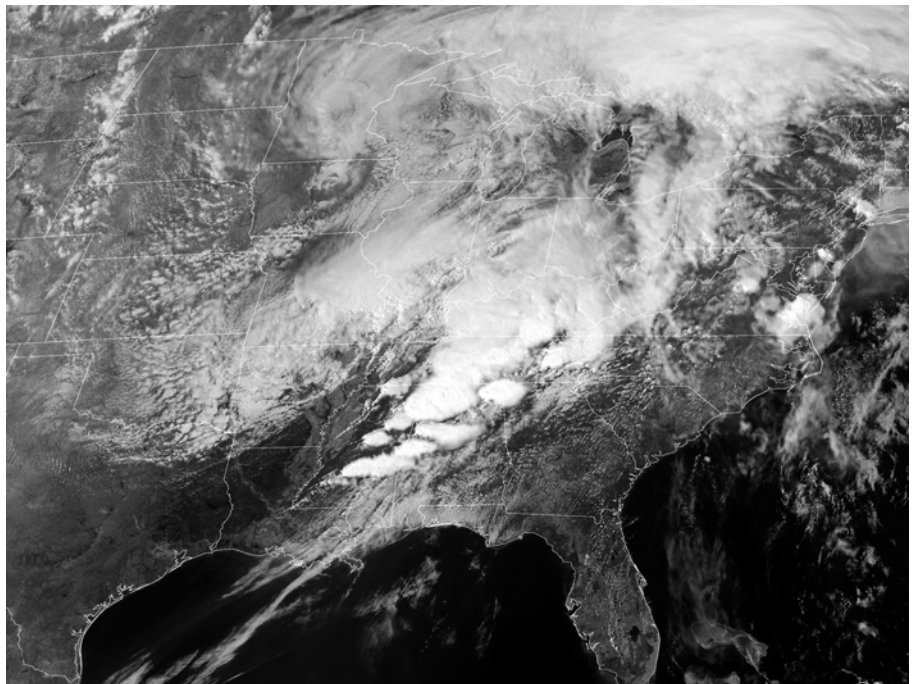
Throughout the season, the National Weather Service has routinely issued tornado alerts. In the case of the Alabama tornadoes of April 27th, forecasters warned of severe weather five full days before the twisters struck. Because they couldn't say precisely where the twisters would strike, however, many of their warnings went unheeded.

"If people get a hurricane warning, they often evacuate the area," notes NOAA's Steve Goodman. "But we react differently to tornado warnings."

Perhaps it's because tornadoes are smaller than hurricanes, and the odds of a direct hit seem so remote. Recent pictures from Tuscaloosa, Alabama, and Joplin, Missouri, however, show the perils of playing those odds. Goodman believes that more precise warnings could save lives.

To fine-tune tornado warnings, NOAA will soon launch the first in a series of next-generation weather satellites – GOES-R (Geostationary Operational Environmental Satellites-R series). The spacecraft is brimming with advanced sensors for measuring key ingredients of severe weather including winds, cloud growth, and lightning.

"GOES-R will be the first geostationary spacecraft to carry a lightning sensor," says Goodman, the GOES-R Program Senior Scientist. "Studies show that sudden changes in the total lightning activity correlate with storm intensity—



This GOES image shows the storms that spurred the intense April 27 tornado outbreak in the southern U.S. Animation showing the development of weather can be seen at <http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=50347>.

and with tornadoes.”

The lightning mapper will detect and map not only cloud-to-ground lightning, but also bolts within and between clouds. The kind of cloud-to-ground lightning we see from our front yards accounts for only 15-20 percent of total lightning. To get a clear idea of a storm's intensity, meteorologists need to know about all the lightning—a view GOES-R can provide.

All by itself, the lightning mapper will provide 7 minutes more lead time in tornado warnings, according to Goodman. GOES-R's state-of-the-art instruments will also improve long-range forecasts.

“The satellite's Advanced Baseline Imager (ABI), for instance, will provide a much clearer picture of clouds,” says NOAA research meteorologist Tim Schmit. Compared to lesser instruments already in orbit, ABI can better detect super-cold “overshooting tops,” evidence of enormous energy and upward velocity that correlate with subsequent severe weather.

“Accurate advanced notice of high-risk tornadic conditions can cue officials to close schools and businesses even before tornadoes are actually detected,” says Schmit.

Forecasters doubt tornadoes can ever be predicted with 100% accuracy. The twisters are just too capricious. GOES-R, however, is a step in the right direction.

Find out more about GOES-R's unprecedented capabilities at <http://www.goes-r.gov>. Young people can learn more about tornadoes and all kinds of other weather at <http://scijinks.gov>.

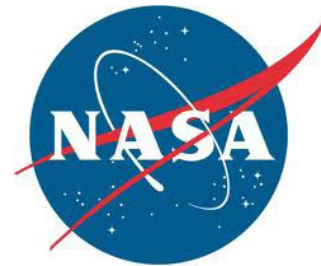
Astronomy Classes at Houge Park



Approximately once a month the SJAA holds a class oriented to beginners in astronomy. On June 24th, Gordon Reade taught a class on telescopes. The photo above shows Gordon with his Questar. Gordon does not have aperture envy. He assumes everyone else has weight envy. Just in case you are aperture hungry, Gordon discussed the features of a Dobsonian. Photos are courtesy of Michael Rossell. After the class, a Star Party was held at the park.



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



Finding Planets among the Stars

Dr. Tony Phillips

Strange but true: When it comes to finding new extra-solar planets, or exoplanets, stars can be an incredible nuisance.

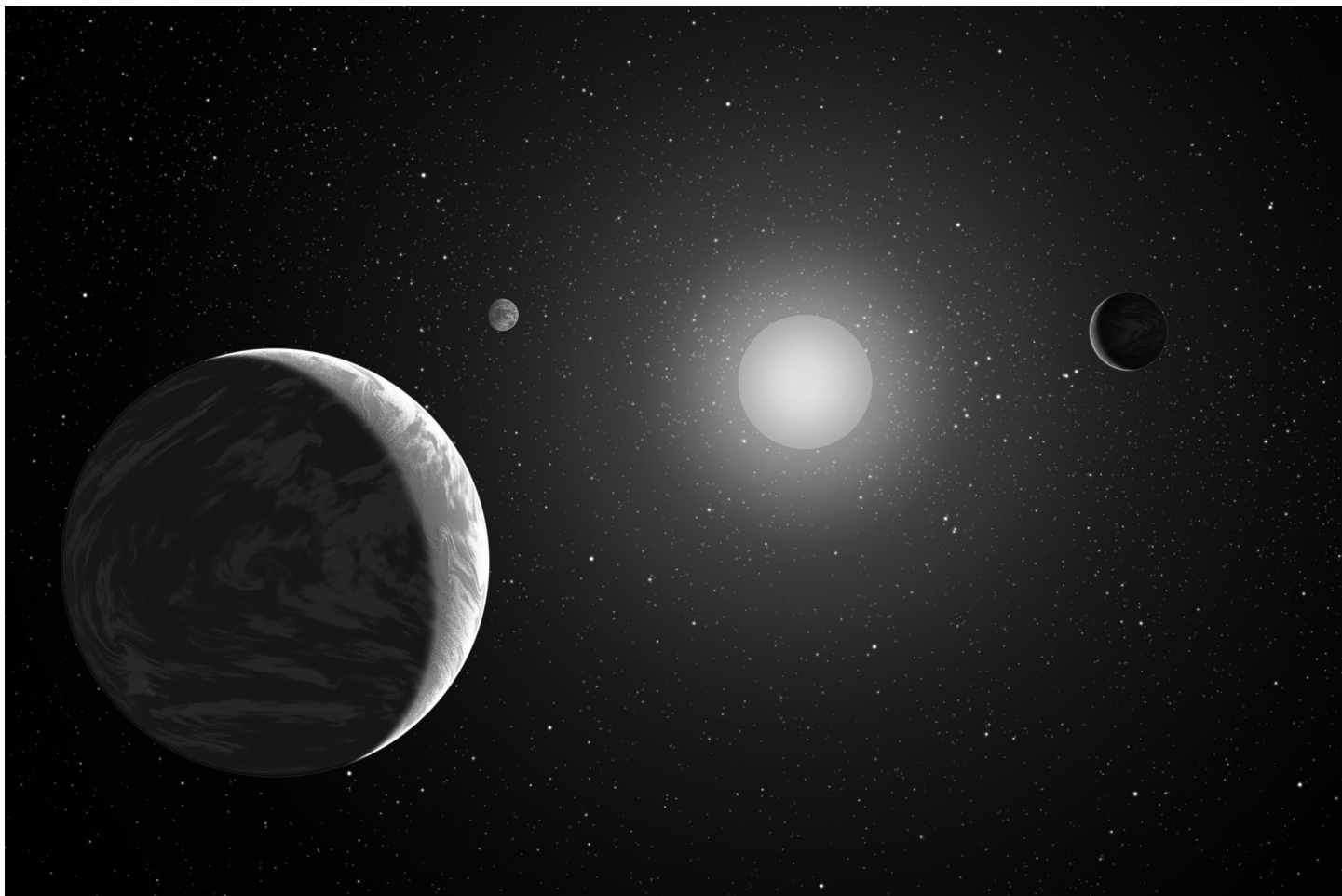
It's a matter of luminosity. Stars are bright, but their planets are not. Indeed, when an astronomer peers across light years to find a distant Earth-like world, what he often finds instead is an annoying glare. The light of the star itself makes the star's dim planetary system nearly impossible to see.

Talk about frustration! How would you like to be an astronomer who's constantly vexed by stars?

Fortunately, there may be a solution. It comes from NASA's Galaxy Evolution Explorer, an ultraviolet space telescope orbiting Earth since 2003. In a new study, researchers say the Galaxy Evolution Explorer is able to pinpoint dim stars that might not badly outshine their own planets.

We've discovered a new technique of using ultraviolet light to search for young, low-mass stars near the Earth," said David Rodriguez, a graduate student of astronomy at UCLA, and the study's lead author. "These M-class stars, also known as red dwarfs, make excellent targets for future direct imaging of exoplanets."

Young red dwarfs produce a telltale glow in the ultraviolet part of the electromagnetic spectrum that Galaxy



Exoplanets are easier to see directly when their star is a dim, red dwarf.

Evolution Explorer can sense. Because dwarf stars are so numerous—as a class, they account for more than two-thirds of the stars in the galaxy—astronomers could reap a rich bounty of targets.

In many ways, these stars represent a best-case scenario for planet hunting. They are close and in clear lines-of-sight, which generally makes viewing easier. Their low mass means they are dimmer than heavier stars, so their light is less likely to mask the feeble light of a planet. And because they are young, their planets are freshly formed, and thus warmer and brighter than older planetary bodies.

Astronomers know of more than five hundred distant planets, but very few have actually been seen. Many exoplanets are detected indirectly by means of their “wobbles”—the gravitational tugs they exert on their central stars. Some are found when they transit the parent star, momentarily dimming the glare, but not dimming it enough to reveal the planet itself.

The new Galaxy Evolution Explorer technique might eventually lead to planets that can be seen directly. That would be good because, as Rodriguez points out, “seeing is believing.”

And it just might make astronomers feel a little better about the stars.

The Galaxy Evolution Explorer Web site at <http://www.galex.caltech.edu>

describes many of the other discoveries and accomplishments of this mission. And for kids, how do astronomers know how far away a star or galaxy is? Play “How Old do I Look” on The Space Place at <http://spaceplace.nasa.gov/whats-older> and find out!

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

CalStar 2011



Nights of Sept 29, 30, October 1

The annual CalStar star party starts September 29. It is located at Lake San Antonio, south of King City. More information will be available soon. Check <http://www.sjaa.net> for the latest news.

Directions to Houge Park

Houge (rhymes with “Yogi”) Park is in San Jose, near Campbell and Los Gatos. From Hwy. 17, take the Camden Avenue exit. Go east 0.4 miles, and turn right at the light, onto Bascom Avenue. At the next light, turn left onto Woodard Road. At the first stop sign, turn right onto Twilight Drive. Go three blocks, cross Sunrise Drive, then turn left into the park.

From Hwy. 85, take the Bascom Avenue exit. Go north, and turn right at the first traffic light, onto White Oaks Road. At the first stop sign, turn left onto Twilight Drive. You will now be passing the park. Turn right at the first driveway, into the parking lot.

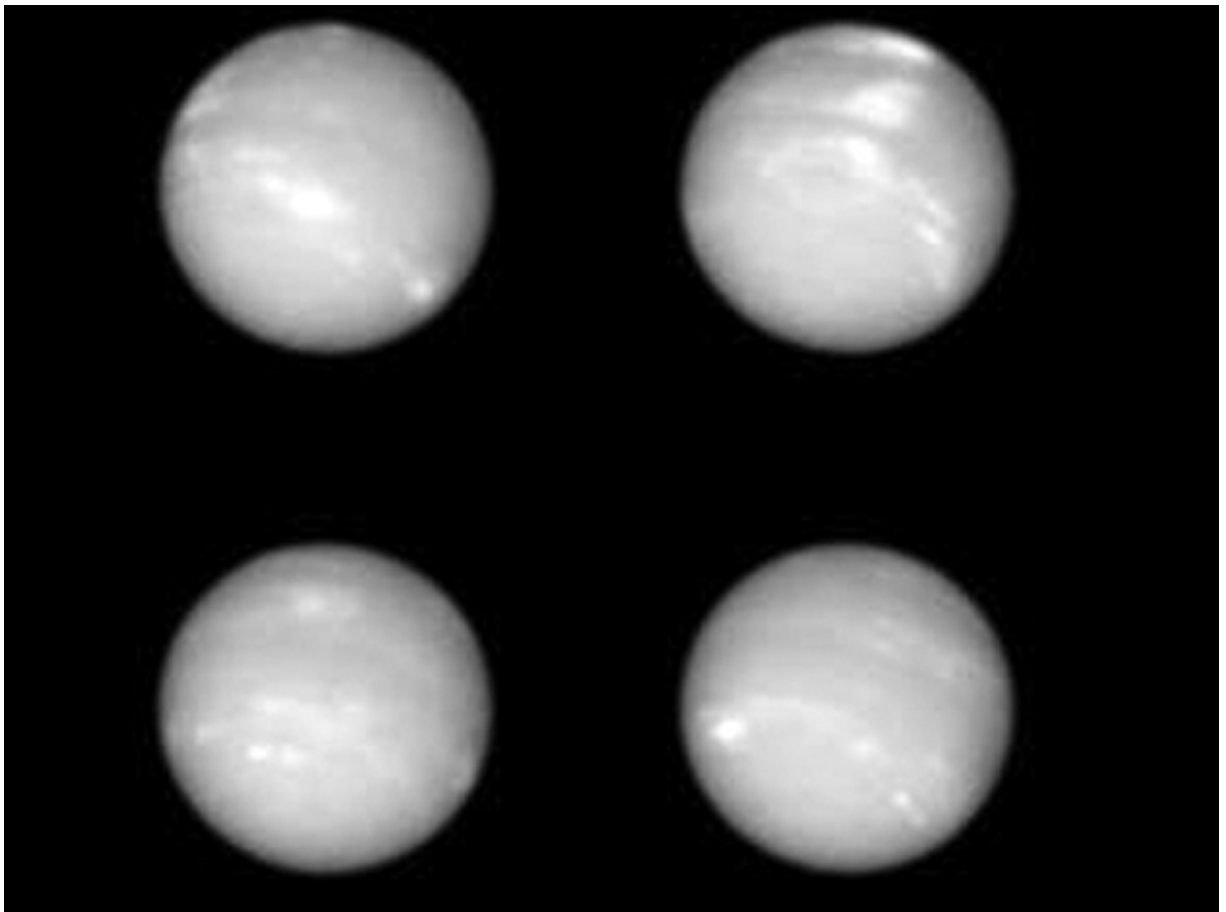
The Last Month In Astronomy

JUL-16-2011 **Dawn in orbit** The spacecraft called Dawn has gone into orbit around the asteroid Vesta. Vesta was the fourth asteroid to be discovered. Dawn was launched in September of 2007. It will orbit Vesta for one year. After that, it will leave Vesta and go into orbit around the asteroid (oops, dwarf planet) Ceres. <http://www.jpl.nasa.gov/news/news.cfm?release=2011-212>

JUL-13-2011 **Neptune News** You are probably aware that Neptune has finally completed its first orbit around the sun since it was discovered in 1846. But this new item is about rotation not revolution. Erich Karkoschka from the University of Arizona has used atmospheric features on the mysterious planet to compute a Neptunian day of 15 hours, 57 minutes and 59 seconds. The images used to make this calculation came from Hubble (see image below). The length of a Jovian day is easy because of the radio signals that Jupiter emits but those signals from the other gas giants are swamped by the solar wind. <http://www.astronomy.com/en/News-Observing/News/2011/06/Clocking%20Neptunes%20spin.aspx>

JUN-29-2011 **ULAS J1120+0641** The clumsily named quasar is the most distant quasar found to date. The light from this quasar took 12.9 billion years to reach us. That means we are seeing it just 770 million years after the Big Bang. It was found by the European Southern Observatory's Very Large Telescope (editor: so why is the telescope given a simple, even prosaic, name but the quasar is named like the merger of two phone numbers). According to Stephen Warren of the Imperial College London "This quasar is a vital early probe of the early universe ... It is a very rare object that will help us to understand how supermassive black holes grew a few hundred million years after the Big Bang." <http://www.astronomy.com/News-Observing/News/2011/06/Most%20distant%20quasar%20found.aspx>

JUN-22-2011 **Enceladus Salty** The Cassini spacecraft has discovered new evidence that there is a large salt water reservoir (read, ocean) beneath the surface of Enceladus. Ice grains found closer to the surface are richer in sodium and potassium than the more distant ice grains that were studied earlier. The data suggests a layer of water that might be 50 miles deep. As the outermost surface cracks open up, the decrease in pressure ejects a plume. Why is this important? "This finding is a crucial new piece of evidence showing that environmental conditions favorable to the emergence of life can be sustained on icy bodies orbiting gas giant planets" according to Nicolas Altobelli a Cassini scientist with the ESA. <http://www.jpl.nasa.gov/news/news.cfm?release=2011-190>



It Must Be Astronomical ...

"Sometimes when this place gets kind of empty

Sound of their breath fades with the light

I think about the loveless fascination

Under the Milky Way tonight

And it's something quite peculiar

Something that's shimmering and white

Leads you here despite your destination

Under the Milky Way tonight

I wish I knew what you were looking for

I might have known what you would find

Under the Milky Way tonight"

- Steven Kilbey & Karin Jansson (but you may know it from a Lincoln commercial)

School Star Parties

Completed Events					
	Total Sched.	Good Sky	Partial Success	Cloudy Fail	Cancel at noon
Jul	1	1			
Aug	4	4			
Sep	0				
Oct	7	5	1		1
Nov	13	9	3		1
Dec	8	1	2	0	5
Jan	8	2	2	0	4
Feb	6	6			
Mar	11	3	1		7
Apr	5	1	2		2
May	2	2			
Total	61	34	11	0	20

As of mid-May

Loaners

The loaner program offers members a means to try scopes of various sizes and technologies before you buy. For more information please see the loaner program web page: <http://www.sjaa.net/loaners.shtml>

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