

Southwest Florida Astronomical Society SWFAS



The Eyepiece November 2014

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A MESSAGE FROM THE PRESIDENT

At last, cool clear weather has started to arrive!

I would like to thank Doug Heatherly for doing the newsletter this month and next while Ron is on vacation and moving. (It is late purely because of me.)

We have a special meeting this Thursday the 6th. The Calusa Nature Center is having an open house for all the groups that meet there on Thursday Nights so that the community can learn about the groups and the Nature Center. Admission is free that night to the museum and the groups are allowing full access. We have our Telescope Renaissance that night for those who need help with telescopes. Our key event is the talk by Brian McGaffney - Nutwood Observatory and dark sky preserve in Canada. (Special thanks to Tom Woosnam for arranging this.) We are planning to start events off at 7:00 pm with the talk getting underway at 7:30pm. There will not be any official business meeting, the newsletter here (and emails) will have to do for event information this month.

We only have a few events scheduled this month, primarily the CRP Star Party and the Home School group that same night at Koreshan State Park in Estero (Get with Carol Stewart if interested in helping out there.)

Just after the last meeting, we had the partial lunar eclipse, which was pretty cloudy. We then had the Cub Scout Extravaganza on the 17th and 18th. Special thanks to Brian Shultiss, Don Palmer and Tony Heiner for observing Friday night, which was gorgeous, and Tony Heiner and Tom Segur who did solar observing on Saturday.

Sunday the 19th was Ding Darling Days, which had ok turnout (it was cancelled last year) and we had a very nice sunspot group and nice prominences. I also had a chance to meet and talk with Luke Gommermann from Big Cypress National Preserve. As he indicated in his email, it may be possible to get things setup where we could use Burns Lake in Ochopee for an astronomy only weekend with camping available. This would allow us to leave equipment setup for the weekend. If this is something you would be considering, then let me know. I will see if I can take my camper there as a base. It is a primitive camping area, no power/utilities. (I have to find out when hunting is happening, as those dates would be closed.) I am thinking more after the 1st of the year. It would most likely be the weekend they do public events as he wants us to help out at that first. I gave him some of our regular handouts so he could use them at his event.

On the 23rd we had the partial solar eclipse. I setup at Centennial Park and had great coverage from Channel 20/NBC-2 with a live shot at 6:00 with Chad Oliver and 11:00 with Andrea Hubbell as well as interest from the News-Press/Kevin Lollar.

On the 24th, Kelly had her Astronomy for Amateurs event at Hickey's Creek Park. Again, the weather cooperated and we had a beautiful night. The CRP Star Party the next night was also a great night with nice clear skies. It's been a while since we have had such good observing weather!

As a reminder, the December meeting is our Election meeting. If you are interested in any of the positions or need to make a change, please let me know beforehand. We really do need a program coordinator to help get programs planned. It does not mean you have to do them, just help with finding people to do the programs and coordinating with them and the planetarium staff and the officers/coordinators. The topics do not all have to be 100% astronomy related, it could involve other areas that affect observing/astronomy.

We could also use someone to help with the Night Sky Network, putting up our events on the calendar and then following up with reporting them. This would entail primarily website work and a few emails/calls to get info for the reports.

I have a request in from Harns Marsh Elementary to do a Science Night. I will see what we can do ahead of 1st Quarter in Dec or Jan, as we don't have planets to speak of and the moon would be the best thing. I also have another request for a daytime visit to Manatee Elementary 5th grade if anyone is interested in that please contact me.

Note the City of Cape Coral Parks and Rec nights in Jan/Feb!

The January Meeting would fall on the 1st, so at this time, the meeting is being cancelled. This can be discussed further at the December business meeting, as some were interested in shifting it to the next week. (As FGCU classes begin on the 5th, I doubt we can do anything down there this time.)

Brian

SWFAS CALENDAR OF EVENTS 2014/2015

Thursday, November 6 th	Monthly Meeting - Brian McGaffney Talk and Telescope Renaissance	Calusa Nature Center & Planetarium	7:00 pm	Brian Risley
Wed Nov 12 th	Franklin Park Elementary	Ft Myers	Daytime	Carol Stewart
Sat Nov 22 nd	Star Party	CRP	Dusk	Bruce Dissette
Sat Nov 22 nd	Homeschool Event	Koreshan Park - Estero	Dusk	Carol Stewart
Thurs, Dec 4 th	Monthly Meeting – Officer Elections	Calusa Nature Center & Planetarium	7:30 pm	Brian Risley
Sat Dec 6 th	Nature Center Event	Calusa Nature Center & Planetarium	7:30 pm	Heather Preston
Sat Dec 6 th	Big Cypress	Big Cypress Ochopee	6:30 pm	Luke Gommermann
Sat Dec 20 th	Star Party	CRP	Dusk	Bruce Dissette
Thurs Jan 1 st , 2015	No Meeting		Holiday	
Sat Jan 3 rd , 2015	Nature Center Event	Calusa Nature Center & Planetarium	7:30 pm	Heather Preston
Fri Jan 16 th	Astronomy for Amateurs	Hickey's Creek Park	6:30 pm	Kelly Flaherty
Sat Jan 17 th	Star Party	CRP	Dusk	Bruce Dissette
Thurs Jan 22 nd	School Event	Country Oaks Elementary – Labelle	Dusk	Brian Risley

Fri Jan 23 rd	Oasis Elementary Star Party	Cape Coral	Dusk	Carol Stewart Johnnie Royal
Fri Jan 23 rd	Big Cypress	Big Cypress Ochopee	6:30 pm	Luke Gommermann
Sat Jan 24 th	Cape Coral Star Party/ Camp Out	Jaycee Park	Dusk	Brian Risley Katie Locklin
Thursday, February 5 th	Monthly Meeting – Program TBD	Calusa Nature Center & Planetarium	7:30 pm	Brian Risley
Sat Feb 7 th	Shell Point Star Party	Shell Point Village	Dusk	Doug Heatherly
Fri Feb 13 th	Cape Coral Star Party	Rotary Park	Dusk	Brian Risley Katie Locklin
Sat Feb 14 th	Edison Day of Discovery	Centennial Park	10-4	Brian Risley
Fri Feb 20 th	Astronomy for Amateurs	Hickey's Creek Park	7:00 pm	Kelly Flaherty
Sat Feb 21 st	Star Party	CRP	Dusk	Bruce Dissette
Sat Feb 21 st	Big Cypress	Big Cypress Ochopee	6:30 pm	Luke Gommermann
Sat Feb 28 th	Burrowing Owl Festival	Rotary Park	8-4	Brian Risley
Thurs, Mar 5 th	Monthly Meeting – Program TBD	Calusa Nature Center & Planetarium	7:30 pm	Brian Risley
Fri March 20 th	Big Cypress	Big Cypress Ochopee	6:30 pm	Luke Gommermann
Sat March 21 st	Star Party	CRP	Dusk	Bruce Dissette
Thurs, April 2 nd	Monthly Meeting – Jack Berninger Program	Calusa Nature Center & Planetarium	7:30 pm (Program 1 st then bus meeting)	Brian Risley

Minutes of the Southwest Florida Astronomical Society – October 2, 2014

The regular monthly meeting of the Southwest Florida Astronomical Society was called to order at 7:36 pm by president Brian Risley in the Calusa Nature Center Planetarium. Eighteen members were present.

Five new members / visitors were introduced.

The new staff person for the Planetarium, Heather Preston, was introduced.

Past events listed in the printed agenda were reviewed.

Upcoming events listed in the printed agenda were discussed.

The November 6 meeting will begin at 7pm, but there will not be a business meeting. Brian McGaffney will be presenting a program about the Nutwood Observatory and dark sky preserve in Canada. Telescope renaissance night will also be held for anyone needing help with equipment. Simultaneously, several other organizations that use the Nature Center will be hosting events.

2015 Space Calendars are available from Carol Stewart. Contact her to order by November 9. The price depends on the number being ordered.

Solar observing is taking place at various Charlotte County Libraries. Solar observing is also being held at noon on Fridays at the Nature Center.

Vice President Bruce Dissette announced that the January 2015 CRP star party will be on the 17th. He is determining the dates for the remainder of the year. Bruce is also presenting programs at the Fort Myers Beach Library.

Doug Heatherly is taking over the newsletter responsibilities until Ron Madl returns in 2015.

Carol Stewart made a motion, seconded by Bruce Dissette to approve the September 4 minutes as e-mailed. The motion carried on a voice vote.

Treasurer Tony Heiner reported a September balance of \$2288.68. Brian Shultis made a motion, seconded by Tom Segur to accept the report. The motion carried on a voice vote.

Kelly Flaherty expressed thanks for the dew heater the club is purchasing for the County telescope.

Brian Risley reported the Celestar telescope is back in and available for check-out.

Website coordinator Bill Francis reported on website development issues.

We are still seeking a volunteer to be program coordinator.

Items from the David Alexander estate are still available for purchase.

The business meeting was adjourned.

Brian Risley presented a program on astronomical events and observing opportunities occurring during the fall and early winter.

submitted by Don Palmer, secretary

November Night Sky

On November evenings, the eastern sky is a busy place—a stargazers delight. At mid-month, there is a meteor shower to enjoy!

Of the constellations on November's sky map, the easiest to identify is Orion, the Hunter. Orion is the brightest of all constellations, with no fewer than seven bright stars. Two of these, Betelgeuse and Rigel, are among the ten brightest stars in the sky. Orion appears to be reclining on his back at this hour. Betelgeuse is to the left, and Rigel is on the right, with the three bright stars of Orion's Belt standing vertically between them. Compare the colors of Betelgeuse and Rigel; the former has an orangish tint while the latter is bright white.

Below Orion, just rising from the horizon is Sirius, the brightest star of all. (Not counting the Sun, of course!) Sirius is part of the constellation Canis Major, the Greater Dog, and one of two canines that assist Orion in his eternal quest to catch Lepus, the Hare. As part of Canis Major, Sirius became known as the Dog Star and gave rise to the term "the dog days of summer."

When Sirius is near the horizon, it appears to twinkle more than any other star. There are two reasons for this.

First, the light from any star so near the horizon passes through more of Earth's atmosphere than a star that is higher in the sky. This is why the Sun appears reddened when rising or setting; we're seeing it through lots of churning atmosphere at those times.

The second reason Sirius twinkles so much is that its brightness exaggerates the effects of atmospheric turbulence. In fact, as Sirius twinkles, it sometimes appears to change color, flashing green or red—even purple! All stars twinkle, but Sirius near the horizon out-twinkles them all.

To the left of Sirius shines Procyon, the eighth brightest star, part of Canis Minor, the Lessor Dog and Orion's second canine companion. Procyon's name derives from a Greek word that means "before the dog." You see, Procyon always rises before Sirius the Dog Star and precedes Sirius across the sky. Thus Procyon is forever "before the dog."

To the left of Orion, you'll find Gemini, the Twins, featuring the bright stars Castor and Pollux. In one version of their mythological tale, Pollux was divine and therefore immortal, but his brother Castor was human and was killed in battle. Pollux wished to share his immortality with his beloved brother and Zeus agreed, transforming the two into the constellation Gemini and placing them in the sky, together forever.

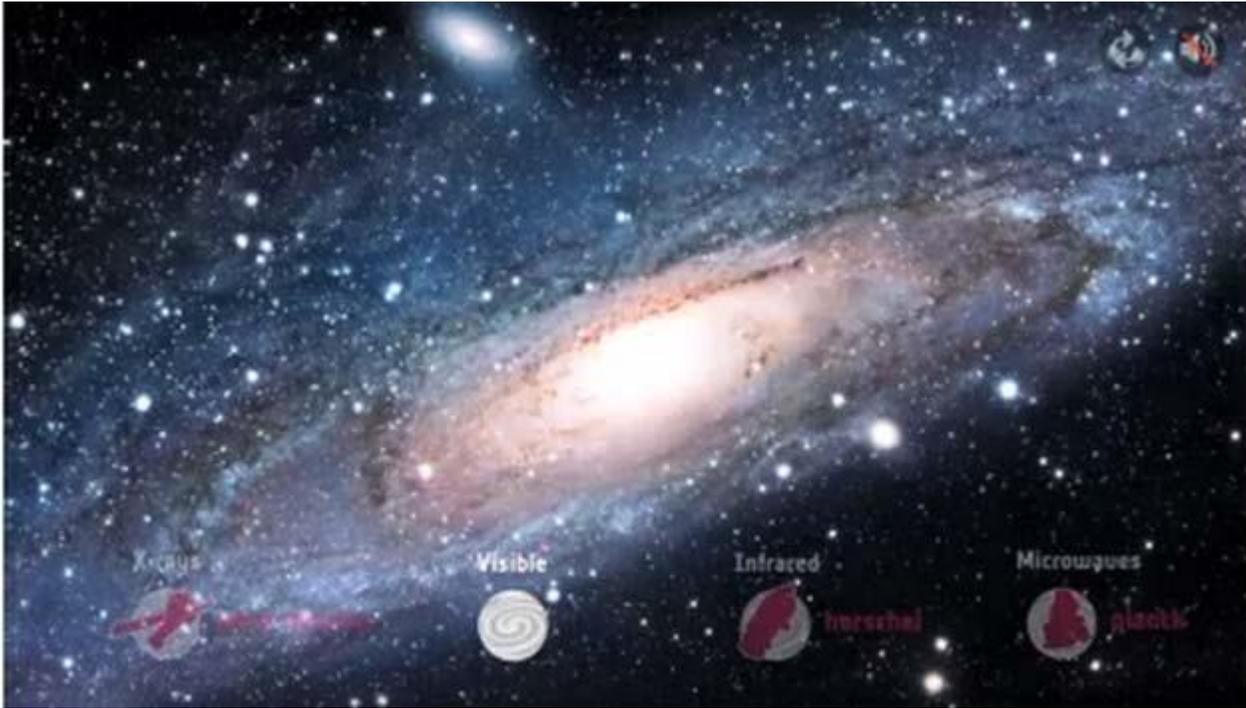
Above Gemini is the lopsided pentagon of Auriga, the Charioteer. The bright star Capella anchors Auriga's upper left corner. Exactly which mythological charioteer Auriga represents is up for debate. It might be Erichthonius, who invented the first chariot to be drawn by four horses. Or it could be the god Neptune emerging from the sea riding a chariot.

Auriga shares the star Elnath with the constellation Taurus, the Bull. Taurus has been recognized as a bull since prehistoric times. Its brightest star is the orangish Aldebaran whose name means "follower" in Arabic, so called because the star appears to follow the distinctive Pleiades star cluster through the night sky.

Finally, make plans to observe the excellent Leonid meteor shower starting late on November 16 and continuing through the wee hours of the 17th. The Leonids are one of the year's most reliable meteor shows and usually produce about 15 "shooting stars" per hour when viewed from a dark location. The meteors may appear anywhere in the sky, so lie down or recline and cast your eyes toward the largest open area of sky you can see. Good hunting!

Andromeda Galaxy in the November Sky

The Andromeda galaxy, our Milky Way's closest neighbor, is the most distant object in the sky that you can see with your unaided eye — but only on a clear night from a location with a very dark sky. The galaxy is a beautiful spiral, but one fact you may not be aware of: We're safe for a few billion years, but Andromeda is headed our way and on a collision course with the Milky Way. Here we explain that cosmic train wreck, plus explain Andromeda's location, shape and other facts.



Located just to the north of the constellation bearing its name, the Andromeda galaxy appears as a long, hazy patch in the sky. It should appear as a smudge in the sky, even with moderate light pollution. If you live in a more populated place, you may have more trouble. Binoculars will clearly reveal its shape.

The visible fuzzy patch of stars stretches about as long as the width of the full moon, and half as wide; only with significant magnification can you tell it stretches six times that length in fullness.

A spiral galaxy like the Milky Way, Andromeda contains a concentrated bulge of matter in the middle, surrounded by a disk of gas, dust, and stars 260,000 light-years long, more than 2.5 times as long as the Milky Way. Though Andromeda contains approximately a trillion stars to the quarter to half a billion in the Milky Way, our galaxy is actually more massive, because it is thought to contain more dark matter.

Amazingly, this stretch of stars, which in our sky appears about as long as the full moon and half as wide, lies 2.5 million light-years away, further than any star you can see with your eyes. Also known as M31, it is the closest galaxy to the Milky Way - and it's moving closer every day.

Andromeda on a Collision course

Andromeda's proximity will be deadly to our galaxy. The two galaxies are rushing closer to one another at about 70 miles per second (112 kilometers per second). Astronomers estimate that it will collide with the Milky Way in about 5 billion years. By that time, the sun will have swollen into a red giant and swallowed up the terrestrial planets, so Earth will have other things to worry about.

Still, the fresh influx of dust should boost star formation in the new Milkomeda galaxy, and the Earthless sun may well leave the Milky Way for good. After a messy phase, where arms project crazily from the combined pair, the two should settle into a smooth elliptical galaxy.

Galaxy collisions are a normal part of the universe's evolution. In fact, both Andromeda and the Milky Way bear signs of having already crashed into other galaxies. Andromeda boasts a large ring of dust in its center, giving it an interesting shape. Astronomers believe this dust may have formed when it swallowed an existing galaxy.

Why did it take so long to discover Uranus?

Right in Plain Sight

If you know where to look, and your eyes are strong enough, you might be able to see Uranus without a telescope or binoculars. It's not very bright and barely large enough, but it does sometimes appear in our night sky.

In spite of this, Uranus wasn't officially discovered until 1781. Ancient Babylonians knew about all of the planets from Mercury to Saturn long before that. Why did it take so long for people to find lonely Uranus?

What to Call It?

Actually, it wasn't a matter of finding it. It was a matter of knowing that it was a planet. The story of Uranus's discovery is full of people not realizing what they were seeing. People may have seen Uranus as early as 128 B.C. but, each time they saw it, they said it was a star.

In fact, the man who we credit with discovering the planet got it wrong too! Sure, he knew it wasn't a star, but he didn't think it was a planet either. On March 13, 1781, William Herschel—an amateur astronomer—located an object in the night sky. After measuring it, he determined that this object moved too quickly to be a star. It had to be a comet, he thought.

A Great Debate

Herschel told other astronomers about the new "comet." They were confused. The problem was that a comet as bright as this object would have to be pretty close to the sun, but a comet that close to the sun would have to be moving through the sky much faster than this thing was moving. It also didn't have a coma or a tail like comets have.

These other astronomers began to study the object too. They figured out that its orbit was pretty close to circular—just like the orbit of a planet. That was enough for most of them to call it a planet. By 1783, Herschel also accepted that it must be a planet. After he tried to name it after King George III, the planet was named Uranus, after the Greek god of the sky.

High Tide on Io!



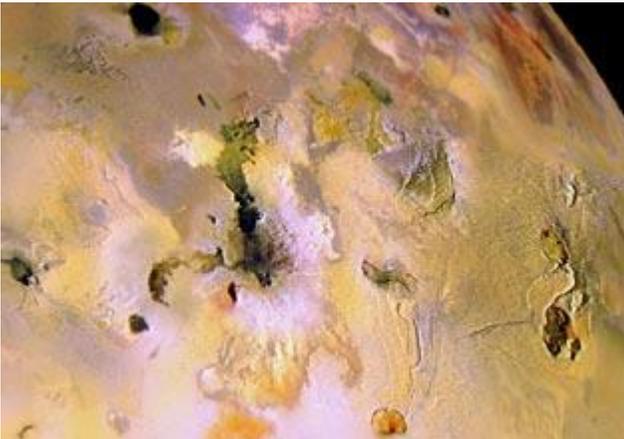
Jupiter's moon **Io** looks like a giant pizza. This poor moon suffers from huge "Io-quakes" and violent volcanoes.

On planet Jupiter's moon Io ("EYE-oh"), the ground itself moves up and down like an elevator taking people to the top and bottom of a 30-story building!

On Earth, we have ocean tides because the moon's gravity pulls a little harder on the side closer to the moon than the side farther from the moon. On Io, the gravity of Jupiter and Jupiter's other large moons yank on Io every which way. Although there are no oceans on Io, its "solid ground" tides are more than five times as high as the highest ocean tides on Earth!

Actually, Earth has solid ground tides too, but they amount to less than 20 centimeters (about 8 inches).

All this bending causes heat to build up inside Io. Io gets so hot inside that some of the material inside melts and boils and tries to escape any way it can. So it blows holes in the surface! That's what volcanoes are. Some on Io have shot their hot gas plume 300 kilometers (about 200 miles) into space!



The Galileo spacecraft took this picture of Io during its closest flyby in October 1999. Galileo was only about 600 kilometers (400 miles) from Io's surface.

NASA's Galileo spacecraft, which orbited and studied the Jupiter system from 1995 to 2003, flew closer to Io than any other spacecraft. It revealed gigantic lava flows and lava lakes, and towering, collapsing mountains.

Tips for Stepping up your Astronomy Hobby

How to Photograph a Meteor Shower

When a meteor shower is coming up, have you thought of trying your hand at meteor photography? Here are some techniques to help you on your way. Photographing meteors is relatively easy, with two big caveats: you need a “fast” lens — photography-speak for a wide-aperture lens that lets in a large amount of light — and luck. Long story short: the best way to shoot a meteor shower is with a fast, wide-angle lens on a DSLR camera mounted on a tripod, with a shutter-release cable and clear, dark skies. Meteor photography is a bit different from nightscape photography or capturing auroras because, unlike the Milky Way and the Northern Lights, the typical meteor only blazes for a fraction of a second. Longer exposures won’t help you capture these quick flashes. Even moderately bright meteors of magnitude 2 or so will barely register when shooting with the standard f/3.5 zoom lens that commonly comes with DSLR cameras. To record most naked-eye meteors, you’ll want to use a fast, wide-angle lens, such as an 18-mm f/2 lens, and a high ISO value (800 or greater). That’s not to say you can’t get anything with a point-and-shoot camera. Most pocket cameras do not have lenses as photographically “fast” as what’s available for DSLR cameras. But if your pocket camera meets these requirements, then go for it! Even a slower lens should still catch the brightest meteors, if not the fainter ones. Two capabilities you’ll need for sure, though, are sequential shooting (often a setting on your camera that looks like three overlapping rectangles) and the ability to keep the shutter open for longer than a few seconds. Tracking isn’t necessary for meteor photography because even 30-second exposures will not trail stars objectionably if you’re shooting with a wide-angle lens. Still, mounting your cameras on a tracking head will allow you to combine all your meteor shots into a single composite, which is how the experts create deep images with dozens of meteors.

Catching the Big One

Part of meteor showers’ allure is their transience, but that also means you can’t predict where any given meteor will appear. So many successful meteor photographers use more than one camera, aiming each one at a different sky location to ensure they don’t miss “the big one.” If you aim at the radiant (the point in the sky where the meteors all trace back to), you’ll capture mostly short streaks and occasional “head-on” meteors that appear like a star winking in and out. But the best shooting stars are often seen about 90° away from the radiant, where they appear as long trails or multiple flashes. The very rare trail might remain for a few minutes. The trick is to point your camera and then leave it there — resist the temptation to chase after meteors around the sky. For your best chances at catching meteors, choose a dark location far from city lights. A picturesque foreground can only add to the appeal of your night’s work. Clear skies and good luck!

Citizen Science Projects

The internet has become a priceless tool for the citizen-science movement, in which private citizens all over the world can make meaningful contributions to science.

With as little as a computer and some curiosity, you can help scientists determine targets for space telescopes, or look for signs of life on Kepler planets. Some projects, like the famous SETI@home application, simply use your computer's down-time to sift through vast quantities of data — no user input required. Others, like GalaxyZoo, ask you to look at pictures and classify objects based on shape or size.

With the wealth of projects out there, there is sure to be something that's a good fit for you.

Here is a list of some of the projects

Agent Exoplanet: Search for exoplanets using data from the Las Cumbres Observatory in California.

Be A Martian: Get a passport to Mars and help NASA identify and measure craters, mountains, and other Martian features.

Constellation: Let scientists use the spare time on your computer to do calculations for aerospace simulations.

Cosmology@Home: Distributed-computing project that tests theories about the genesis of the universe.

DASCH: Volunteers Needed to Preserve Astronomical History and Promote Discovery.

Einstein@Home: Free time on your computer can help astrophysicists find weak pulsar signals in data from LIGO.

GalaxyZoo: Classify galaxies based on shape, using imagery taken from the Hubble Space Telescope.

The Great World-Wide Star Count: Annual international star-counting event that tracks light pollution in your neighborhood

HiWish: Make suggestions to scientists at the High-Resolution Imaging Science Experiment about what Mars features to

Ice Investigators: Help determine the New Horizons spacecraft's final target in the Kuiper Belt.

Mapper: Help NASA scientists learn more about where to look for life on Mars by studying lakes in British Columbia.

MeteorCounter: App for iPhone, iPad, and iPod Touch that lets you count and categorize shooting stars.

The Milky Way Project: Find "dust bubbles" in the Milky Way to help scientists learn about star formation and galactic evolution.

MoonZoo: Help classify the surface of the moon using imagery from the Lunar Reconnaissance Orbiter.

Planet Hunters: Search for planets orbiting extra-solar stars by examining stars' light curves.

RadioJOVE: Buy amateur radio kits and learn how to analyze radio emissions from Jupiter, the Sun, and the Milky Way.

SCOPE: Be the first to measure and classify an uncategorized star.

SETI@home: Let scientists use your computer's free time to look for signs of extraterrestrial intelligence in radio signals

SETLive: Use data from the Allen Telescope Array to search for signs of life on planets found by the Kepler mission.

Solar Storm Watch: Watch for solar storms in data coming from the STEREO sun-monitoring satellites.

Stardust@home: Help locate tiny particles of interstellar dust that the Stardust spacecraft picked up from the comet Wild 2 in 2004.

TheSkyNet: Put your computer's idle time to use looking through radio-wave data from distant stars and galaxies.

TomatoSphere: Student-targeted project seeking to help scientists understand some of the issues related to long-term space travel.

If you are involved with one of these projects (or get involved) let us know your experience

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