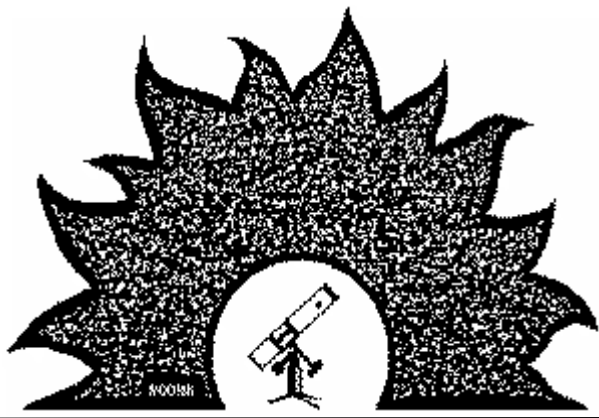




PAStimes

Phoenix Astronomical Society
www.pasaz.org

November 2006
Volume 59, Issue 3

PHOENIX ASTRONOMICAL SOCIETY — ESTABLISHED 1948

Dr. Timothy N. Titus To Be Nov 2 Speaker

Dr. Titus is a Space Scientist with the USGS Astrogeology Research Program.

"The mission of the USGS Astrogeology Research Program is to establish and maintain geoscientific and technical expertise in planetary science and remote sensing to perform the following tasks:

- *scientifically study and map extraterrestrial bodies,

- *plan and conduct planetary exploration missions, and

- *explore and develop new technologies in data processing and analysis, archiving, and distribution."

<http://astrogeology.usgs.gov/About/>

Titus will be giving a talk entitled:
The Martian Polar Caps: From Dry Ice Blizzards to Black Dry Ice - its not even a nice place to visit. The meeting as always starts at 7:00 P.M.

Ode to the Thunderhorse.

by T.N. Titus

The dark clouds of war hide the mountain that would be our future. In time the clouds will clear. Will they leave behind a gentle covering of pure snow that will melt in the spring, renewing the cycle of life, or will the clouds leave a blizzard of destruction, ensuring death for decades?

We are the band of Thunderhorse. The call has come to ride to the mountain. Whether the clouds bring gentle snows or frigid blizzards, we will stand by our brothers. Some must remain at the base. Others are riding to the top. Many more of us may follow. But as long as the clouds remain - We Ride!



PAS Classifieds On Line

Buy, Sell, Or Trade Astro Equipment Or Supplies

By Terri, prez

PAS is offering, to PAS members only, the availability of posting your ad on the PAS website of items you wish to depart with or acquire. Write up an ad, send it off to Barbara, our webmaster. We will post it on line. Be sure to include contact info, a photo if you can, a brief description, asking prices, and anything else you wish to have someone know about your item. We will get it posted. When it sells, you will need to contact Barbara and let her know to remove it from the site. This offer is open to PAS MEMBERS only. So, sign up to be a PAS member today!

For Non PAS members, we still offer the Newsletter as a source of advertising. We have the ad section of the newsletter that allows anyone to put their ad in the newsletter. Those items go to Don, our Editor. PAS Members get to post in the newsletter for free. Non PAS members are asked to make a small donation, a \$1 or \$2 to help out. The ad runs for one month but for no extra donation, can be renewed until the item is sold. One donation runs ad until ad is no longer needed. And each month, you must tell Don you need the ad renewed by the 15th of the month so he remembers to put it in for you. If you write a check for

your donation, make it out to PAS. Or deliver the ad to Don at the next meeting with your donation. Before you leave the meeting, get a receipt from Mike, our Treasurer, for your donation.

We want to help you sell your astronomy stuff. Please only include items of astronomical interest, or rocketry. This can include accessories, eyepieces, chairs for viewing, binoculars, toys, games, anything you might receive as a gift at the White Elephant Gift Exchange we hold once a year at the PAS Social. If you are unsure if it is astronomy related, ask one of us. ***

October Five Meeting review

By Terri, Prez

Wow, Did you know there was so many really cool things to see on the Sun? I didn't. I figured one or two items were visible and worth seeing but Thursday night, at the PAS meeting, Steve Dodder, our guest speaker, took us on a fantastic tour of the Sun. What a nice presentation. We had animations of the Sun and examples of the different things you can see on the Sun. The items that he mentioned like: Prominences, Sun Spots, Limb Darkening, Granulation, Plage, Solar Flares, Coronal Mass Ejections, White Light Flares, Solar Fringes, Spicules, Faculae, and more, are exactly what I'm going to look for at our Solar Even of the Year - the Mercury Transit, coming up this month (November 8th). Steve was entertaining, informative, and very good at his topic. He told me prior to the meeting that he loves this topic and can talk on it for hours, so as soon as we were done with opening announcements, I gave him the podium to start his talk. I didn't want to chance we miss anything important. THANK YOU Steve! Awesome presentation, and everyone there seemed very entranced with the data, images, and animations that were shared. Did you know that you should get your eyes "dark adapted" before viewing the Sun? That's something everyone was keeping secret from me. See what you missed at this meeting? You ought to make it to the next one for more really awesome information and a great time.

Thanks goes to Ed and Dave for the cookies and water. Everyone seemed to enjoy the snacks. When you enjoy your snacks, may I trouble everyone to please clean up after yourself. We had several empty water bottles to pick up after this meeting. Just pick up the trash you had and put it in a nearby trash bin. It's that easy and then Ed and I don't have to clean up after everyone. Ed and I thank for your help.

I opened the meeting with an announcement that the DUES ARE DUE. Get those in to Mike today! It makes the bookwork easier on Mike if all dues are collected by October 31st. If you haven't already done that, please do.

I talked a bit about our Mercury Transit coming up. If you need a few flyers to put up at work, see Terri at a meeting or event. I will have all of them on me and we want all of them to get out to the public. Post them up at work, school, everywhere! Ed will be posting them around PVCC for us.

Jerry did a brief announcement about the upcoming Rocket Launch. The next scheduled launch is Oct 28th and 29th and for more info you can go to the website and get the maps needed to go to these rocket launches at <http://ahpra.org/launches.html>. The website will be on the back page of the newsletter for

future research.

I'd like to thank Sue Sutter for filling in for John Pulis as Hostess. She did a marvelous job getting everyone to sign in at the meeting. John had a little trouble with his car. He said, on my home answering machine which I heard when I got home from the meeting, that his car got a bit dinged up and they had to tow it away. So, he had no transportation for that night. So, I really THANK SUE for helping out where needed.

I'd like to request that someone from the meeting, each month, take over doing the 50/50 raffle collection of money and tickets. Does anyone want to volunteer to do this each month at the meeting? Let me know at the November PAS meeting. I can use an extra hand. SEE YOU AT NEXT MONTH'S PAS MEETING!



Steve Dodder Speaking at the October PAS meeting

A Special Meeting Was Called To Amend PAS Constitution

By Terri, Prez

Attendance wasn't very high at the October PAS meeting, however, those PAS folk who attended did get to vote on the change to the PAS Constitution. Don announced the situation with a little help from Terri to make sure we were clear on what we were voting on, and then Terri asked for a show of hand of anyone who opposed. It was unanimous.

The change is this: The PAS Constitution

only allowed for full dues paying members, sustaining members (those paying more than the required rate), and honorary members. So, we voted to be able to add additional options on our dues sheet to reflect the changing times. Thus, we wanted to make it available for a six month membership for those folks who only live here for six or so months out of the year. Instead of having to pay for a full year, we now offer a reduced rate if you are a snow bird. Be proud to be a snow bird, you

are the only one with sense enough to get out of here during the heat of the summer. So, the option will be added to the dues sheet in the next week or so, and will give some of our six month Arizona members a chance to sign up without feeling compelled to belong to the club the whole year. Watch for more voting options coming up in May. Don has edited the constitution and Terri will update the Dues sheet to reflect the change. ***

WOW Star Party Reviews For October

Received from James, our RSVP for these events
Wow October 3

Everything went well at the WOW event last night. I expect the same for this evening, weather permitting. I got a lot of questions about the planetary status of Pluto. People like Pluto and even wanted to see it. They seemed disappointed when I told them it would look like a small point of light. Jupiter is a hit and the moon is out thankfully. Alberio is a good target close to zenith. I never saw so many people impressed by the North Star. I was at low power and didn't even split it. Josh is very gracious and fed us well. He is grateful we are there and is going to give me a shirt. It really is a fun event and fairly close to my house. ***

WOW October 10

All went well last night. The kids got to see many different star clusters. The first group saw Jupiter. ET is always a big hit and now requested by the officers there. The double open in Perseus and M8 are both popular. Alberio is well received and the city lights are more popular than one might expect.

I had 48 students last night. It was a lot of work and I was thinking of ways to better explain the science behind telescopes. I think I will make some diagrams of reflec-

tors, refractors, and casagrain to show how the light is manipulated. I also have an idea on how to explain why a telescope magnifies.

This project is good for one's ego. On the way out one of the students asked me if I was a scientist who wore a white coat on the job. I wanted to say, "no, I'm an idiot who is unemployed." I of course didn't say that.

Anyway, I see a myself doing a better job in the future. I know what to expect in what kinds of questions I should expect. I feel I have learned from doing this event several times and can work up a teaching lesson. The students all want to be there and want to learn. There are very few goof-offs which makes teaching easier.

I will say it is easier with two people but I can handle it alone. I noticed the focuser on my reflector is moving when the telescope is pointed at the horizon. I must continually refocus the telescope. I was wondering if anyone in the club had an extra one for sale cheap. Remember I don't have a job. I see Orion has a new two inch focuser on sale for about \$70 dollars. The one I have on it now is a 1.25 inch. It would be for a good cause.

Wow October nine

Luckily I had a small group of students last night. All went fairly well. I have some trouble finding objects in the light polluted

sky. Go-to's have an advantage there. Jupiter was up early and I showed them some double stars. I was able to find ET (NGC 457) and I found a Farris Wheel in the city which was a big hit. The moon did not come out until after nine. The people running WOW are more into astronomy and ask more questions than the children.

Josh said there are supposed to be about 50 children tonight. It should be quite an experience working with that many people.***

WOW October 18

Last night's event went fairly well. There were about 40 students there and they were broken into two groups. The first group was the most uninterested group of students I have seen there. The second group was better. This group was more interested in making noise and fooling around than learning something. My magnification lesson was OK. It is a hard concept to grasp under good conditions. Luckily Chet was there to help out. I do like doing the WOW events but I should have a job by the time the November WOW's start. I hope Chet can do them. ***

Aristarchus of Samos developed a heliocentric system hundreds of years before the birth of Christ. Archimedes used his model to get a distance to the stars of about 1 light year in modern units. Source: Coming of age in the Milky Way, Tim Ferris.

PVCC STAR PARTY Oct 5th Review

By Terri, Prez

This was a fun star party. Rod, Don, Mike, Chet and I were the main scopes. Greg joined us this evening. We had two people from the public join us, and three PVCC students. The night was nice until about 9 PM when the Moon became clouded. Up to that point we saw Andromeda Galaxy through Rod's scope, some galaxies through Chet's scope, I had the Ring

Nebula and the Perseids Double Cluster, and Greg and Don had the Moon most of the evening. John brought his scope and was out there having fun with us. PVCC Dave had Bubba open and was on the Moon most of the night.

We even saw Andrew for a bit of time. The lack of public did not affect our attitudes, we still had a great time. We were

set up by the Telescope Dome Platform. Those arriving at the future star parties should note that they need to drive slowly into the observing area. The Dust is too much for the scopes. Thank you to those who attended with and without scopes. ***

In Russia black holes are known as frozen stars - this is because the phrase "black hole" has a distinctly unsavoury use already. Source: N. Stevens.

Bookman's Telescope Class And Future Plans

By Terri, Prez

Oct 1st - Thanks goes to John Pulis, Kevin Harcey, & Rod & Sue for attending. We had no real public show up for this meeting, so Sue and I made plans for the next year of Bookman's classes. We also talked and planned for the PAS Social. We made good use of our time. What we did decide is that we are going to bring projects to the Bookman classes and if no one shows up from the

public, we will put our time to use by working on projects that we want help with. So, plan to attend the next Bookman's Telescope Class, bring a project so that if we don't have public to help with their telescopes, we will have a project to work on. Please see, in this issue, the articles on the PAS Social.

Sue and I had a conversation at the Bookman Telescope Class about the future of these

classes. We decided, with the help of William, that we think it would be good to hold a few more classes during Christmas and shortly after. And then for the schedule, we decided to do the classes every other month to try to get more people to attend. So, I will be scheduling those classes with Bookman's, and you can RSVP to let me know you wish to attend. We hope to see you there! ***

Temple Beth Star Party Oct 6th

By Terri, Prez

It was a windy night until sundown. We went out to the star party and I wasn't too sure we should be out there. Don was there before me. I arrived, and then Jeff arrived about an hour later. After we set up, the lights being as bright as they were due to the activities from that night, we didn't see much. In fact, we just barely got to see the Sun before it set, in Don's telescope.

Then we all focused on Jupiter until the

clouds ate it. If not the clouds, then the buildings. And then there was the Moon. Being a full moon and the October Harvest Moon, it was big, bright and really the only object that was visible that night.

I had my scope zoomed in on Copernicus. Don showed the whole moon. I'm not sure what Jeff showed but everyone who attended loved the Moon. So, that is what they got. The event closed down early. Jeff left and Don and I packed up the table. We

chatted for a while and then departed. If not for the Moon, we would have had a really hard time finding objects due to the flood lights. But, the star party was a success. This is our 4th year doing this event. We hope to continue it for many more. ***

As always, we enjoyed having you. You are right, the people absolutely loved having you. It adds so much to the celebration, we are glad that you consider us. Next year you are invited! Terry Taubman

Montessori School Star Party Oct 2nd

by Terri, President

This turned out to be an awesome star party. Rod & Don beat me down there. Good thing, as we passed it on the way there. Once there, we set up down in an area they called the soccer field. It wasn't easy to get down to but once we were all set up things went smoother.

Chet arrived and set up a Solar System, which I thought was really awesome, with Styrofoam orbs. Then Mike arrived and they set him up in the area called the Garden with his Meteorites. Jeff showed up at a time when no one knew he arrived and he was up in the parking lot. I had asked Betty if we could set up up there next time but she said we shouldn't because of parking restrictions in the area. So, if we do this star party again, and I do hope we can, we will be in the soccer field again.

We started the night with Jupiter. We must have had about 60 kids and their parents. Then as it got dark, we were fed these really wonderful, delicious sandwiches with Turkey, Roast Beef, Ham and toppings. Yummy! And bottled water. And I wish to let Betty know we really appreciated the food.

Then we showed the Moon, and the kids did a story time and book signing with the author. Mike said I should have gone to see the author's robe. I would have been impressed, but once the star party got underway, there was no way I could leave my scope.

We showed quite a few objects throughout the night. The clouds stole some of them but most were really nice to view. I think we impressed the group. And I was impressed because even though we had kids running around and playing, most of them were well behaved and once they were told not to touch the scopes, they did pretty good with that. I think everyone who volunteered had a great time and filled their tummy and wish to send their thanks to Betty for inviting us out there.

Jeff had this to say:

That was an interesting star party. I thought it was going to be in a soccer field? When I got there I had a hard time even finding a place to park. I did manage to find a spot and set up. We had several dozen kids and parents come by and observe. I showed the moon mostly under low and high power. There were two mountain peaks on the terminator just coming into sunlight that were

spectacular. We got a lot of ohhs an ahhs, I never had a chance to find Neptune or Uranus as we were kept pretty busy with the moon. I was able to find M31 and many were impressed with it. Even though there were clouds, I feel it was still a successful party.

Received in email

It was a heavenly night on October 2nd at Mission Montessori Academy. The stage was set during the day with the visit of international children's author Jennifer Morgan who has written a trilogy of books - It Started with a Bang, From Lava to Life, and Mammals who Morph. After a short storytelling for parents and children, and book signing, all of the families collected on the soccer field to look at the night sky through the help of a great crew of astronomers and their scopes.

They were so knowledgeable and friendly, patient and expert in their field. The parents have replied that this was the very best event ever. Mission Montessori is so grateful for the help and information that the Phoenix Astronomical Society provided. Please let us know if we can help you in the future. Betty Matthews, Principal

P.A.S. Wins Night Sky Network contest

Marni Berendsen and Vivian White
Night Sky Network

Congratulations! The Phoenix Astronomical Society has won the Night Sky Network award for this quarter: the beautiful NASA Moon Globe and award winning Max Goes to the Moon picture book!

Winners were selected at random from among over 500 events logged on the Network website from July 1, 2006 through September 30, 2006. The award is donated by the Astronomical Society of the Pacific.

Your winning event was the presentation you put on for first graders and Moon craters. It sounds like a wonderful combination of observing and doing activities. Keep up the good work!

We will be shipping your Moon Globe and Max Goes to the Moon book in the next couple of days to your club's shipping address. Your status as a winner will be announced next week on the Night Sky

Network Discussion Board and in our next newsletter.

The complete list of winning clubs is:
Amateur Astronomers Inc.
North Eugene High School Astronomy Club
Phoenix Astronomical Society
Salt Lake City Astronomical Society
STARS

Again, we congratulate you on your dedication to astronomy outreach!***

ARROWHEAD ELEMENTARY SCHOOL REVIEW

By Terri, Prez

The date was Oct 16th. The sky was awesomely clear. We could not have asked for a clearer sky. After seeing many clouds all day, I figured we'd have clouds to fight with but not one cloud in the sky. It was awesome!

I wish to thank my Team. Chet was out there finding all sorts of really awesome items, along with Rod and James, and me. We only had four scopes and we had a ton of kids. Mike was in the cafeteria with his meteorites. They served cake, so some of my folks had cake. What a night!

During the evening we had the sign in sheet available, and we allowed everyone to leave their name and email to hear more about the events we have through the PAS Digest. Along with that we also did the survey. I wish to thank those wonderful folks who did the survey in exchange for a current issue of Night Sky Magazine: Sara Hood, Jacob Trask, Jack & Ruth Murray, Candace

Kimball, Aliyah, & Tawnia mcGurthy. If they supplied an address they will be receiving a free issue of this newsletter.

The evening showed Jupiter for most of the time. After Jupiter left us we were on several objects such as Andromeda Galaxy, Perseus Double Cluster, Hercules Globular Cluster, the Ring Nebula, Alberio, and a bunch more. The light pollution washed out most of the items up to 40 degrees from the horizon, but we did show quite a few items.

Everyone seemed to enjoy it and Carol thanks us millions of times for coming out. I wish to thank Carol for inviting us and we hope to do it again for you next year. Thanks to all who attended, all who participated in looking through the scopes, and all who helped us pack up at the end, and for the snack of the cake. ***

Received in email

Arrowhead Star Party was the high light of my week. I can NOT wait till the next ones, I even am dragging my boyfriend along. He

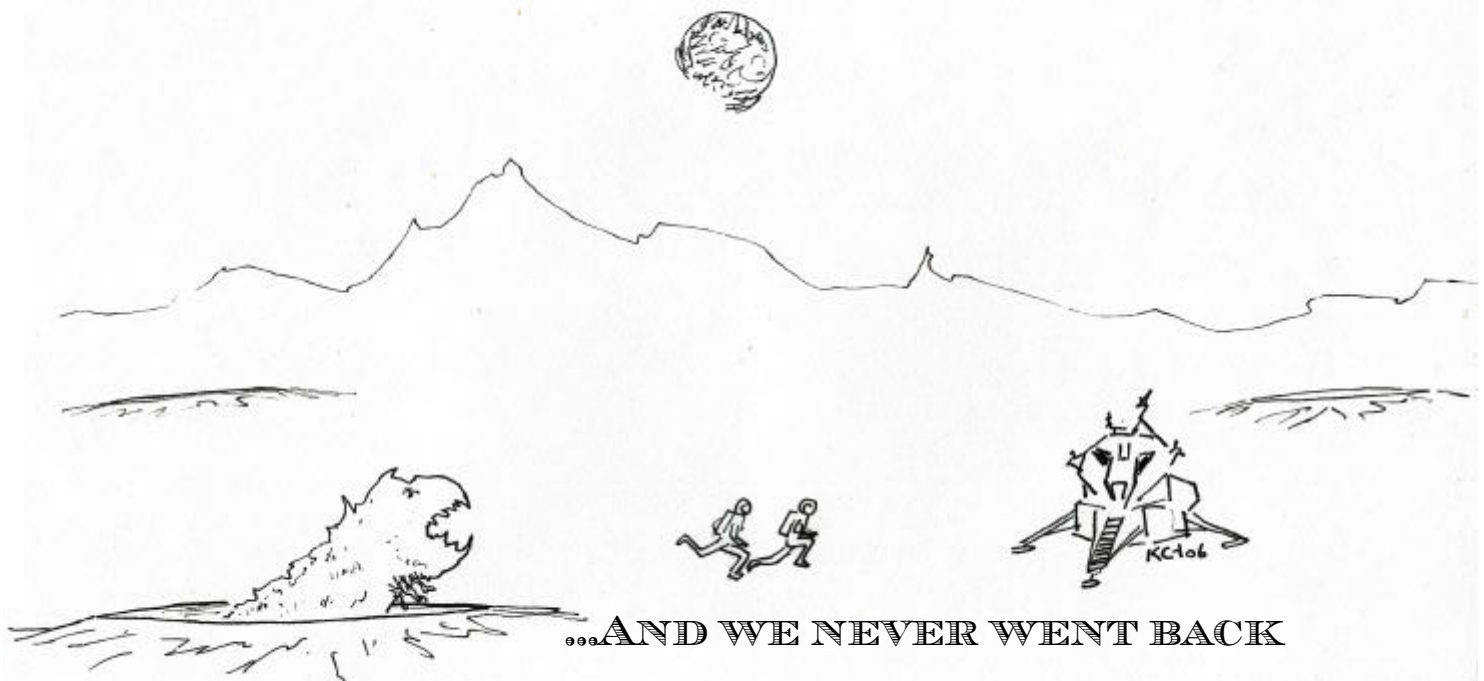
*loves stars to... so he claims. Haha. But that has been the only thing I've been thinking about, not even kidding. You guys are really awesome. My mom really liked you guys, and you really made her smile. She's had a rough couple of years, and hasn't been out of the house that much, but when we got home she wouldn't shut up about you guys are what she got to see! My mom and I are like exactly the same, we LOVE the sky. We both have been trying to find new ways to learn more stuff about it... and I think we found it. You really don't have ANY idea how much this means to me... just because my mom was actually... smiling! This means the world to me. This stuff is exactly what we LOVE. Thank you for making my dream come true with all these opportunities, especially my moms. I can NOT wait till the Black Canyon City one... !!! We will try to attend as many as we possibly can! I can't wait to see all you goofy kids again. Lol. Well I'm off to bed, it's way past my bed time. Thanks again for being so AWESOME!!! ;) Candace Kimball ****

A theologian and an astronomer were talking together one day. The astronomer said that after reading widely in the field of religion, he had concluded that all religion could be summed up in a single phrase. "Do

unto others as you would have them do unto you," he said, with a bit of smugness, knowing that his field is so much more complex.

After a brief pause, the theologian replied that after reading widely in the area of astron-

omy he had concluded that all of it could be summed up in a single phrase also. "Oh, and what is that?" the astronaut inquired. "Twinkle, twinkle, little star; how I wonder what you are!"



Star Party At Mosaic Restaurant

By Terri, Prez

I'm so EXCITED! This was a most awesome star party. We were invited to do a star party at a restaurant for the American Bar Association and it turned out to be awesome!

This group of people was so wonderful, inquisitive, and interested in what we had to offer in the night sky, it made our night so

much more fun. Rod, Don and I set up our scopes outside in the parking lot.

We caught Jupiter, and a few people got to see it. Then as Jupiter left the sky we had the Ring Nebula, Pleiades, Andromeda, and the Perseus Double Cluster. Rod found Uranus and Neptune and Don was working on M13 and Alberio. The weather could not have been better. The seeing wasn't 100% but

we worked with it at about 80%. We enjoyed the company of these folks from AMA and the folks from Mosaic who were just as thrilled to see the night sky. This was one AWESOME Star Party. I wish to thank Matt, Deb & Summer for their assistance and asking us to join them for this party. We hope to do more star parties for them in the near future. ***

PAS Social Things to Know

By Terri, Prez

The PAS Social is January 27th. If you plan to attend this awesome event, you need to know a few things. We are probably going to need to have some folks who want to help out with the decorations. So, here is the plan.

1. We will have everyone bring, one decoration per family attending, a Holiday related table decoration. This is to decorate your table where you will be sitting to eat. Every family brings one, please. You will be sharing tables, however, where you choose to sit, is where your decoration should go.

2. We will need some door prizes. We need a main Door prize, we need a Dart game prize, and we need a Pool prize, and we need a Mystery prize. If you donate, you can tell me which prize you would like to donate for. Let's say you are competing in the Dart game, don't supply a dart game prize if you think you will win that game, instead, donate a Pool game prize. Just an idea. But we need four prizes to give away at the Social, and these must come from the attendees.

3. We need some of you to meet with Sue and Terri at the Social location to make the plans for the decorations, etc. If you would like to attend, let me know.

4. We would like to have each person who attends bring a food to share. And if we can make a list of what kind of foods we need, that would be awesome. So, if you know what you want to bring, let me know.

5. We need everyone to bring a drink to share. A person could bring a two liter bottle, or a six pack of something (no alcohol). One kind of drink per person.

6. Everyone who wants to be involved in the White Elephant gift exchange needs to bring one gift per person in the game. A gift is a requirement of this game. The gift should be between \$5-\$20. If you are going for the lower end of expenses, remember to make it a pack of 2 or 3 items. Please give a gift you

would love to receive at this fun event. And remember to disguise it well. Make it really enticing so someone will want to receive it. And we prefer it is astronomy related.

7. Matt is bringing a TV and DVD player. If you wish to watch a DVD or share one you have, bring it along and spend some time with Matt watching it.

8. On the way into the party, there will be a set of sign up sheets set up on a piano covered with a table cloth for which you will want to sign up as to what event you wish to be involved in. You don't have to be involved in everything, but you can if you want to. Items on the list will be the Dart Game, the Pool Game, and the Movie.

9. You may bring friends, family, anyone you know who would be interested in an astronomy related party. However, if they are going to be in the White Dwarf Gift Exchange, they need to bring a gift. And if they are going to eat and drink, they need to bring food and drink per person. And if they are going to be attending, they need to know that we are not hiring a clean up crew. Everyone needs to pick up after themselves. Put your trash in the right place when you are done. This is a party, and we are all in the clean up mode that whole night. Please do your part to clean up.

10. We need an RSVP for coffee. Do we have coffee drinkers in the group who would love to have coffee that night? We have a coffee pot but will not be making any if we don't know who wants coffee as their drink.

11. Music: We are going to use a laptop. Bring, to the next few meetings, PAS General or Meeting of the Minds, the CD's of appropriate party music. Give your CD to William at the beginning of the meeting, he will rip it to his laptop and make a randomly playing music file. You will get the CD back at the end of the meeting. Remember, we want appropriate party music. I don't think KMFDM is appropriate to a party. However,

if you want 60's, 70's, 80's rock, or some country music, or some holiday music, get it to William in a CD format and let's get a whole collection of music. We will start this right away.

12. Ideas: We would like to discuss ideas for the Social. What would you think would be a good thing to do or have at the Social. I have a list of events already above, but if you can think of something else that's cool, let me know so we can consider it. Let's discuss this further at the next MOM. Kevin came up with having photos of astronomy pictures cast up on the wall as entertainment while we are eating. If we can make that work, i will do it if you guys think it would be a good idea. Send ideas my way. This is a Party, let's make it fun for everyone.

13. We will need a white board for keeping score while playing the Dart game.

14. We will need help with the set up, and clean up of this party. Volunteers are requested to sign up to assist.

15. And everyone attending MUST RSVP so we have an idea how much ice, coffee and other things we need for that night. This includes the friends and family members. When you RSVP, include everyone's name.

16. We predict we will have about 30-40 people at this event. The location can hold 150 people. But the supply of plates, ice and other things won't be enough for that many people if we don't know how many are attending. Please RSVP sooner than later. Thanks. ***

Q: How many astronomers does it take to change a light bulb?

1) None! Astronomers aren't afraid of the dark.

2) See the FAQs.

"How do I deal with telescope-pollution?"

"Can I use my bulb in the daytime?"



The Planet in the Machine

By Diane K. Fisher and Tony Phillips

The story goes that a butterfly flapping its wings in Brazil can, over time, cause a tornado in Kansas. The "butterfly effect" is a common term to evoke the complexity of interdependent variables affecting weather around the globe. It alludes to the notion that small changes in initial conditions can cause wildly varying outcomes.

Now imagine millions of butterflies flapping their wings. And flies and crickets and birds. Now you understand why weather is so complex.

All kidding aside, insects are not in control. The real "butterfly effect" is driven by, for example, global winds and ocean currents, polar ice (melting *and* freezing), clouds and rain, and blowing desert dust. All these things interact with one another in bewilderingly complicated ways.

And then there's the human race. If a butterfly can cause a tornado, what can humans cause with their boundlessly reckless disturbances of initial conditions?

Understanding how it all fits together is a relatively new field called Earth system science. Earth system scientists work on building and fine-tuning mathematical models (computer programs) that describe the complex inter-relationships of Earth's carbon, water, energy, and trace gases as they are exchanged between the terrestrial biosphere and the atmosphere. Ultimately, they hope to understand Earth as an integrated system, and model changes in climate over the next 50-100 years. The better the models, the more accurate and detailed will be the image in the crystal ball.

NASA's Earth System Science program provides real-world data for these models via a swarm of Earth-observing satellites. The satellites, which go by names like Terra and Aqua, keep an eye on Earth's land, biosphere, atmosphere, clouds, ice, and oceans. The

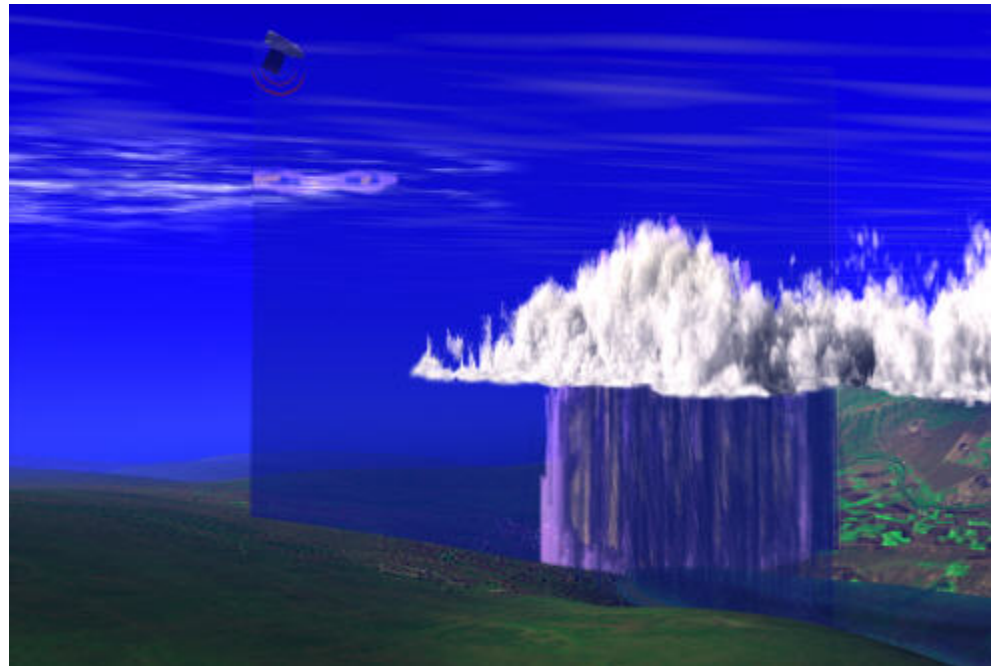
data they collect are crucial to the modeling efforts.

Some models aim to predict short-term effects—in other words, weather. They may become part of severe weather warning systems and actually save lives. Other models aim to predict long-term effects—or climate. But, long-term predictions are much more difficult and much less likely to be believed by the general population, since only time can actually prove or disprove their validity. After all, small errors become large errors as the model is left to run into the future. However, as the models are further validated with near- and longer-term data, and as different models converge on a common scenario, they

become more and more trustworthy to show us the future while we can still do something about it—we hope.

For a listing and more information on each of NASA's (and their partners') Earth data-gathering missions, visit science.hq.nasa.gov/missions/earth.html. Kids can get an easy introduction to Earth system science and play Earthy word games at spaceplace.nasa.gov/en/kids/earth/wordfind.

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



CloudSat is one of the Earth observing satellites collecting data that will help develop and refine atmospheric circulation models and other types of weather and climate models. CloudSat's unique radar system reads the vertical structure of clouds, including liquid water and ice content, and how clouds affect the distribution of the Sun's energy in the atmosphere. See animation of this data simulation at www.nasa.gov/mission_pages/calipso/multimedia/cloud_calip_mm.html.

NASA SPACE PLACE

With nearly four million visits per year, we knew The Space Place web site was popular. But we had a different kind of evidence for our impact the week of Oct. 2, when the TV game show Jeopardy featured "Kids' Week."

All the contestants were very bright, well-informed, elementary-school age kids. And the questions were written just for them. To our surprise and delight, one of the questions (in the form of an answer, of course) was: "The popular web sites Space Place and StarChild are sponsored by this organiza-

tion." The buzzer sounded immediately, as the child with the fastest reflexes got the chance to answer.

"What is NASA?"

Right on!

You, our partners, have done a great deal to make The Space Place so well known. By your dedication to the education and motivation of our youth, and your support and promotion of resources such as The Space Place, you have helped us to spread our messages about the importance and excitement of space and Earth science, technology, and discovery.

We are glad for our partnership with you and anticipate a long-continuing, mutually beneficial relationship.

All the best, Nancy Leon and The Space Place Team

Terri Writes: The NASA Space Place Team, which includes my very good partner, Nancy Leon, is where PAS gets a lot of its really cool items for the kids to receive as prizes for the Treasure Hunts and other kid related activities. Many, many thanks goes to Nancy and her Team. ***



Two Wonderful Articles by Dr. Dee

PASTimes has received two more wonderful articles by Dr. Laurice Dee Ph. D. As always we welcome her writings and wish we had the room to print them here. However we are going to do a short review of them instead.

The first article is entitled **A Most Interesting Question** and is about a question a family member asked, in a

letter to her, about infinity, specifically about whether the universe is infinite.

The Second article is an update on the SOHO and Ulysses spacecraft updates. SOHO is a satellite in the Lagrange 1 point of the Earth Sun system, from which, it has a constant view of the Sun. Ulysses studies the poles of the Sun by orbiting the per-

pendicular to the plane of the ecliptic. Dee gives more info on these satellites in her excellent article about them.

We encourage our readers to check out these two articles and all the others that Dee has written. They may be found at www.pasaz.org and clicking on the word "downloads" and scrolling to the bottom of the page.

Ads in PASTimes

Ads in PASTimes run for a month and may be renewed on a month by month basis, if submitted by deadline, space permitting. Ads in PASTimes are FREE to members all others are asked to make a small donation. Donations are to be sent to the Editor who will forward them to the Treasurer.

SWAP MEET AT DECEMBER PAS MEETING

Bring your items to Sell or Trade at the December PAS meeting. The Swap Meet will be held right there in the Library. Prior to the meeting, supply a sign on your item with asking price, and a page for people to put their bid. At the end of the meeting, I will announce we will have 10 minutes or so to go around, look at the items, put our final bid and then close the Auction - so to speak. So, start looking around. What items have you had sitting around your house, taking up space, that could be helping some other astronomer enjoy our favorite hobby? Bring them along in December. I will bring the markers and paper for the signs. You bring the item and the idea of what you want to sell it for. I wish everyone luck in their sales.

Oct. 26 Thursday	7:30 PM	Paradise Valley Comm. College 18401 N. 32nd St Phoenix, AZ 85032 Room G-147	PAS Meeting of the Minds No children please (business meeting) Dinner prior to the meeting at Dee's Johnny's Pizza 15443 N Cave Creek Rd, Phoenix 5-7 PM RSVP with Rod Sutter by at least the day before so he can reserve enough seats for us all.
Oct. 27 Friday	5 PM To 9:30 PM	ALL SAINTS SCHOOL 6300 N. Central Ave Phoenix, AZ	PAS/School Star Party *** Volunteers Needed Set-up at 4:30*** Sunset is at 5:39 P.M. * Weather Permitting *
Oct. 28 Saturday		Thunderbird Star Party	SAC is hosting the annual Thunderbird Park Star Party. Thunderbird Park is North on 59th Ave to the top, above Beardsley. P.A.S. is not part of this star party, however, if you are looking for a good, public event to attend, feel free to. Jeff will be there. Saguaro Astronomy Club
Oct 27 Friday	5 PM to 9 PM	Paradise Valley Community Center 17402 N 40th St Phoenix, AZ 85032	City of Phoenix Parks Star Party/Camp-out *** Volunteers Needed *** *Private- Only for children enrolled in the WOW program* Please email James DeSantis if you can help out. *Weather Permitting *
Nov. 1 Wednesday			Deadline for placing your order for the Year in Space desk calendar. Contact Terri Finch for more information.
Nov 2 Wednesday			Deadline to pay for your Year In Space calendar. See Terri for details
Nov. 2 Thursday	7 PM	Paradise Valley Comm. College 18401 N. 32nd St. Phoenix, AZ 85032 Library	PAS General Meeting Tim Titus, USGS "Martian Polar Caps: From Dry Ice Blizzards to Black Dry Ice - It's not even a nice place to Visit"
Nov. 3 Friday	6 PM to 9 PM	Arizona Science Center Heritage Square 600 E. Washington St. Phoenix, AZ 85004	PAS Adult Night Out Public Star Party "Mars Explorers: Still Driving After All These Years", John Grant, Smithsonian Institute View the Moon, Galaxies and more. RSVP with Terri Finch to attend or to help out. * Weather Permitting * *** Volunteers Needed ***
Nov. 3			PAS MEMBERS ONLY STAR PARTY
Nov. 3 Friday	5 PM to 9 PM	Cesar Chavez Park 7858 S. 35th Ave Phoenix, AZ 85339	City of Phoenix Parks Star Party/Camp-out Volunteers Needed *Private- Only for children enrolled in the WOW program* Please email James DeSantis if you can help out. *Weather Permitting *
Nov. 8 Wednesday	2 PM to 8 PM	Paradise Valley Comm. Col- lege 18401 N. 32nd St Phoenix, AZ 85032 Union Hills and 32nd St.	PAS/PVCC Public Star Party *** Volunteers Needed *** On Wednesday, Nov 08, 2006 Mercury will transit the Sun for the first time since 2003. The transit or passage of a planet across the face of the Sun is a relatively rare occurrence. As seen from Earth, only transits of Mercury and Venus are possible. There are approximately 13 tran- sits of Mercury each century. In comparison, transits of Venus occur in pairs with more than a century separating each pair.
Nov. 8 Wednesday		ASU West See Terri for address	PAS/ASU West Public Star Party *** Volunteers Needed *** Mercury transits the Sun (see info above). The online flyer is at http://www.west.asu.edu/at PCS/TransitOfMercury.jpg Sunset is at 5:28 P.M. RSVP with Terri Finch to help out or attend. * Weather Permitting *
Nov. 11 Saturday	Sundown to Moonrise	Spur Cross Ranch Parks and Recreation 44000 N. Spur Cross Road Cave Creek, AZ 85331	PAS 3rd Quarter Moon Star Party All are Welcome! The evenings are getting very cool now so bring warm cloths with you. Sunset is at 5:26 P.M. and moon rise is at 11:19 P.M. RSVP with Mike Marron to attend. Tau- rid meteor shower. * Weather Permitting *
Nov. 16 Thursday	7:30 PM	Paradise Valley Comm. College 18401 N. 32nd St	PAS Meeting of the Minds No children please (business meeting) Dinner prior to the meeting at Dee's Johnny's Pizza 15443 N Cave Creek Rd, Phoenix 5-7 PM, RSVP with Rod Sutter by at least the day before so he can reserve enough seats for us all.
Nov. 17 Friday	5 PM to 9 PM	Cesar Chavez Park 7858 S. 35th Ave Phoenix, AZ 85339	City of Phoenix Parks Star Party/Camp-out *** Volunteers Needed *** *Private- Only for children enrolled in the WOW program* Please email James DeSantis if you can help out. *Weather Permitting *
Nov. 18 Saturday	Sundown till ?	Star Party at Mike's Carefree	PAS Deep Sky Star Party ***Members Only*** It's getting chilly so be sure to bring a jacket with you. Mike's star parties are usually sleep overs, so bring what you need for that, if you'd like to stay the night. Sunset is at 5:22 and sunrise is at 7:05. RSVP with Mike Marron for a map. Leonid meteor shower.* Weather Permitting *
Nov. 30 Thursday	6 PM to 10 PM	Paradise Valley Comm. College 18401 N. 32nd St Phoenix, AZ 85032 Union Hills and 32nd St.	PAS/PVCC Public Star Party*** Volunteers Needed *** Planet Quest Telescope Treasure Hunt (hunt for the elements that form planets).RSVP with Terri Finch to attend or to help out. Sunset is at 5:18 P.M. * Weather Permitting *

For more details and the latest information please visit the events page of our website

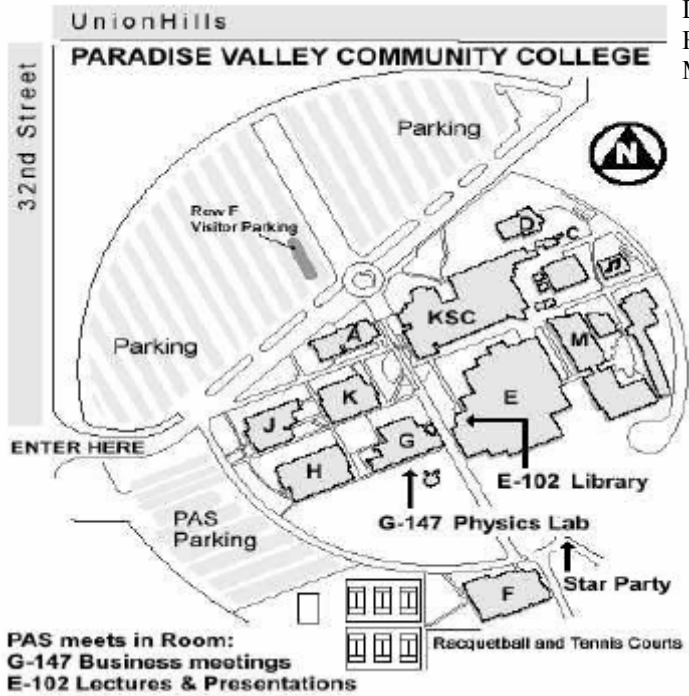
www.pasaz.org

Don Boyd PASTimes Editor
701 W. Del Rio St.
Chandler AZ 85225

To:
{MM:Notes 1}
{MM:First Name} {MM>Last Name}
{MM:Address Line 1}
{MM:City} {MM:State} {MM:ZIP Code}

PAS is incorporated in the state of Arizona as a non-profit, scientific and educational 501(c)(3) organization. Our newsletter PASTimes is published monthly from September to May and distributed by US PS and the Internet. All Issues are available for download on our website www.pasaz.org Ads for astronomy equipment are provided as a courtesy to sellers and buyers, and do not constitute any endorsement by PAS. All Photos by Don Boyd unless otherwise credited.

Map To PAS Meeting Location



Upcoming PAS Meetings

December 7th: Chet Schuler CCD Imaging Techniques
February 1st: Dennis Young Collimating a Telescope
March 1 st: Don Garnett "A Close Up Look at Our Neighbor Galaxy M33 With the Hubble Space Telescope"

November 15, 2006

Sunrise: 6:58
Sunset: 5:26



Q1: October 30



Full: November 5



Q3: November 12



New: November 20

Phoenix Astronomical Society Contact Info

President	Terri Finch	602-561-5398	President@pasaz.org
Vice President	Matt Kohl	623-221-2261	VicePresident@pasaz.org
Treasurer	Mike Marron	480-488-3031	Treasurer@pasaz.org
Newsletter Editor	Don Boyd	480-963-7189	Editor@pasaz.org
MultiMedia Director / Librarian	Rod Sutter	602-971-9129	MultiMediaDirector@pasaz.org
PAS Hostess	Amanda Sallas	602-547-2420	PASHostess@pasaz.org
PAS Host	John Pulis	623-696-0885	
Webmaster / Dark Sky Advocate	Barbara Hartman	623-374-5364	Webmaster@pasaz.org
P. R. Director	Steve Snyder	602-686-3334	PRDirector@pasaz.org
WOW Contact	James Desantis	620-256-0171	jld314159@yahoo.com
Rocketry Liaison	Jerry Belcher	623-328-9290	http://ahpra.org/launches.html

Astro Events

November 8: Mercury Transits the Sun
November 17 Leonid meteor shower few but could be long and bright
November 25 Mercury at greatest elongation 20° west of the Sun