

# Southern Skies

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## In This Issue

President's Message .....	1
IPS Report .....	2
Editor's Message: Deadlines and Guidelines .....	3
SEPA Membership Form .....	3
Small Talk .....	4
Astro Video Review: <i>Our Amazing Solar System</i> .....	5
Featured Facility: Calusa Nature Center and Planetarium, Fort Meyers, Florida .....	6
Digital Cosmos: <i>Celestia</i> .....	8
News from SEPA States .....	10
HST's Greatest Hits of '96 Slides .....	14
HST's Greatest Hits of '97 Slides .....	15
HST's Greatest Hits of '98 Slides .....	16
HST's Greatest Hits of '99 Slides .....	17
JPL '98 Slides.....	18
JPL '99 Slides.....	19
<i>The New York Times</i> Arts & Leisure Weekend Press Release .....	20
<i>Southern Skies</i> Writers' Submission Guidelines.....	21
Some Insight into Video and DVD .....	22
MAPSEPA Conference Sights .....	26
Paul Campbell Fellowship Award Nomination Form.....	26

The deadline for the next issue of *Southern Skies* is October 1. Send submission either on a 3.5" disk or *via* email attached file to <dteague2@midsouth.rr.com> or <teagued1@k12tn.net>.

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# President's Message

I hope everyone who attended this year's joint MAPS/SEPA conference enjoyed the function as much as I did. It was beneficial to meet with colleagues from another region. It gives us a better chance to see how other planetarium professionals accomplish their goals and deal with situations that we may eventually encounter. Two highlights of this conference were the presentations of long time planetarium professionals William A. Gutsch, PhD and JPL's Nagin Cox.

I want to thank Eric Melenbrink and the entire staff of the Science Museum of Virginia and the Ethyl Corporation IMAX®Dome & Planetarium for putting together a wonderful conference. I know how much work goes into hosting a conference, and I greatly appreciate the effort put forth by this staff. If you did not attend this year's conference, try to make plans for next year's, which will be at the Fernbank Science Center in Atlanta, Georgia. If some of you are having problems affording conference visits, keep in mind that in the next few months we should be able to offer monies via the SEPA scholarship fund. Past President David Maness started this program. In a future SEPA journal we will print a set of requirements and guidelines for these funds.

At this year's conference, we had elections for several items. First of all the 2006 conference will be held in Cocoa Beach, Florida. We also elected Adam Thanz of Bays Mountain Planetarium in Kingsport, Tennessee as President-Elect. Duncan Teague and John Hare were re-elected to their respective positions of Secretary/Treasurer and IPS Representative. Congratulations to all of these fine people.

Three Campbell Fellowship Award recipients were named at this year's conference banquet: John Bell, Kris McCall, and Gary Meibaum. They were all deserving recipients of this prestigious award. I must say that the people in attendance will not soon forget Kris's emotional acceptance of the award and Dave Maness's presentation to John Bell. Congratulations, once to all three. Two individuals were also awarded SEPA Emeritus membership: Mike Ryan and Jim Hooks. These two gentlemen are the first to be awarded this status.

On a more somber note, Phil Groce presented a slide show in memory of Kosuke "Kosy" Sasaki. Kosy was a long time Minolta representative who passed away just before the conference. Kosy was well known by many of the conference attendees, and he will be missed by all who knew him. Kosy's wife and son were in attendance for this memorial.

It was also announced by SEPA Council that by next year's conference SEPA will try to produce a solar system planetarium show for free distribution



amongst SEPA institutions. Jon Bell is heading this project.

Also at this year's conference George Fleenor spoke of the efforts of the IDA in combating light pollution. We all know how important this issue is, and I will echo his sentiment and encourage everyone to join the organization in attempting to help with the effort. If your facility is able to afford a light pollution display to help inform the public on this issue, please contact George. He has a couple of displays that may fit into your facility's budget.

I would ask that everyone please check the SEPA Website. Webmaster Drew Gilmore is trying to update the Website. He has found that many of the member institution links are no longer valid. If you are from one of these facilities, please contact Drew *via* the Website and give him the updated information.

**Michael Sandras**  
President  
Kenner Science Center  
Planetarium  
Kenner, Louisiana

# IPS Report

**John Hare**  
**IPS Representative**  
**Ash Enterprises**  
**Bradenton, Florida**

The 17th biennial IPS Conference was held at L'Hemisfèric in Valencia, Spain in early July. Over 350 delegates from around the world, including large numbers from Europe and Asia in addition to the heavy North American turnout, attended the conference. The host city couldn't have been more appealing. With a quaint Old Town including a plethora of sidewalk cafes and shops, a modern science museum complex, a world-class aquarium, and the turquoise waters and white sandy beaches of the Mediterranean, non-conference time was challenged to include as much as the schedule and one's stamina would allow. The unfavorable exchange rate of the euro to the dollar was more than offset by the (surprisingly) low prices for food, drink, transportation, and goods.

Conference site invitations for the 2008 IPS Conference were presented to Council. That marked the deadline for invitations. Contrary to my earlier mention that the site would be voted on at the Council meeting, the vote will take place at the next Council meeting (this was changed a while back).

Invitations have been received from:

- Morelia, Mexico
- Glasgow, Scotland
- Chicago, USA
- Oakland, USA

I'll furnish specific details in a future issue of *Southern Skies*.

Another item of significance was the presentation of the consultant's report addressing future options and recommendations for the Organization. Recommendations included conferences held annually alternating between a US site and an International site. A paid Secretariat was also recommended with the position being part time at first. The concern over the projected dues increase of anywhere from 100 to 200 percent and for other recommendations of the report resulted in Council postponing any decisions until further studies and feedback could be conducted. Stay tuned!

Digital technology was the obvious focus of the conference although there were several optical/mechanical announcements of consequence. Delegates had to endure long nighttime hours in the planetarium to view the hours and hours of content and sales pitches. Conference meals were elegant and leisurely but time was wasted that could have been used to offset the lateness of the nighttime sessions. All things considered, the demonstrations, vendor displays, workshops, papers, and countless opportunities for socializing/networking/shop talk, added up to a meeting that you should not have missed!

Don't forget: Melbourne in 2006!

At right are some scenes from the July International Planetarium Society Conference in Valencia, Spain (Photos courtesy of John and Linda Hare)



# Editor's Message: Deadlines and Guidelines

Throughout the year, I hear an occasional lament from a few members who wish some aspects of our operation as an association were handled differently. Some wish that SEPA would revert to making dues payable on a conference-to-conference basis instead of on a year-to-year basis, and they ask why SEPA made this change.

The answer is that the majority of the members want dues to be payable on a calendar year basis. This summer at the Richmond conference the membership reaffirmed this position.

The membership voted to make my job as editor of *Southern Skies* easier. I have been sending dues invoices along with the last issue of the old calendar year and with the first two issues of the new calendar year—three times a year. That was because we had previously decided to extend to the members a *grace period* of two issues of *Southern Skies* to pay dues.

No more.

From now on, you will receive only one dues reminder and one grace period issue of *Southern Skies*. We're adults, and we should be able to meet deadlines. If you can't pay your dues on time, then you won't be kept on SEPA's membership roles. It's sad that it's come to this, but this is the way it's going to be.

There was also a consensus to retain several features in *Southern Skies*. We will keep the membership form on page three even though there is a PDF form on our Web site. If you can't find it, contact Webmaster Drew Gilmore at <drewbert@mac.com>. The Paul Campbell nomination form will stay. It serves to remind us of the qualifications a member must have to be nominated for this award. The State News section will stay, until we finally reach the point at which no one sends in any information for this feature.

Many times per year individuals will ask me what are the deadlines for submissions to *Southern Skies*. The deadlines are printed on the front page of each issue. They are January 1, April 1, July 1, and October 1. You are hereby notified that these deadlines must be honored or your submission **will not be accepted** for the upcoming issue.

It is also my intent to make my job as editor easier by requiring writers to follow certain guidelines so that I won't have to spend so much of my time correcting the text files I receive. That should allow me to spend my time formatting and composing the layout of *Southern Skies* instead of correcting grammar, style, and matters of consistency. You'll find these guidelines on page 21. Follow them. Seriously.



Duncan Teague  
Secretary-Treasurer  
*Southern Skies* Editor  
Craigmont Planetarium

## SEPA Membership Form

Please send your check for \$25 (or \$15 if outside the SEPA geographical region) to SEPA, c/o Craigmont Planetarium, 3333 Covington Pike, Memphis, TN 38128-3902

Name \_\_\_\_\_

Organization \_\_\_\_\_

Planetarium \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip Code \_\_\_\_\_

Voice Phone \_\_\_\_\_

Fax Phone \_\_\_\_\_

E-mail Address \_\_\_\_\_

Staff Position \_\_\_\_\_

IPS Member? Yes \_\_\_\_\_ No \_\_\_\_\_

Contribution to Scholarship Award Account: \$ \_\_\_\_\_



Elizabeth Wasiluk  
Hedgesville High School  
Planetarium  
Hedgesville, West Virginia

Before the school year ended I was off to attend a Contemporary Laboratory Experiences in Astronomy workshop in Gettysburg, Pennsylvania. It's a series of computer simulated labs developed at Gettysburg College by Larry Marshall and his staff for use in introductory astronomy classes. Labs involve realistic experiences observing some of the more complicated areas in astronomy in a fun learning environment.

There are all sorts of animations including watching the moons of Jupiter orbit the planet, taking spectra of stars and galaxies, watching the rotation rate of sunspots on the surface of the Sun, converting spectra from photographs to line graphs on the computer, and operating a virtual observatory by realistically opening the dome and asking for observing time.

The workshops incorporate calculations but are designed so the labs can be adapted to your teaching style and the level at which you are teaching astronomy.

The software is free for downloading from the Web site by going to [www.gettysburg.edu/academics/physics/clea/CLEAhome.html](http://www.gettysburg.edu/academics/physics/clea/CLEAhome.html).

Project CLEA has been around for a long time, and I have used it in the past while teaching astronomy, but it was great to be able to take this workshop with other astronomy instructors and share ideas with them. It was a great group from all over North America, and the participants seemed to be evenly split between high school, community college, and four-year college teachers.

There were several people associated with planetaria, and we agreed that the Project CLEA Labs would be useful for those of us who do summer camps, mentor students or teach an astronomy class. The labs are fun, easy to use, and well documented.

We heard talks by astronomers from RIT and Swarthmore College and were introduced to the Gettysburg College Observatory's remote controlled, 16-inch Cassegrain that's used to study asteroids and variable stars. There is also a radio telescope dish at the Observatory. Check out the Web page [www.gettysburg.edu/academics/physics/clea/obshome.html](http://www.gettysburg.edu/academics/physics/clea/obshome.html).

The workshop lasted from June 3 – 12 but my academic year lasted until June 9. Originally we were to go until June 1st when I applied for back in October. Snow days had a way of extending the school year, but I gave my exam on June 2 I and got grades done in a hurry so I could attend.

During our stay at Gettysburg, the *transit of Venus* occurred. We were unable to view it because a thick fog got in our way. If you go to the link listed above and click on the green workshop button, and then on the news and photos from the workshop, you can see images from the workshop on a day-by-day basis.

The final three days we spent at the National Radio Astronomy Observatory at Green Bank, West Virginia where we got time to observe on the 40-foot radio telescope. We looked at hydrogen along the plane of the Milky Way from 6 hour 30 minutes right ascension to 8 hours right ascension. I have never taken a radio spectrum with the 40 foot before. We met astronomers studying comets LINEAR and NEAT on the Green Bank Telescope, the largest steerable dish radio telescope in the world.

We toured the Gettysburg Battle Site and listened to bluegrass music at Green Bank after we presented our projects done with the 40-foot radio telescope. Remember that the 40-foot radio telescope is available to astronomy instructors for use with their students. To offset the price of the transportation to Green Bank, the dorm rooms for students are priced at an economical \$5.00 a day. Go to [www.nrao.edu/students/](http://www.nrao.edu/students/). Green Bank also offers summer workshops.

During the MAPSEPA conference I was off to the Wright Center for Innovative Science Education at Tufts University in Medford, Massachusetts and was in a workshop on Science Literacy Through Science Fiction. Marianne Tomsaic who teaches journalism and English at my high school attended with me. Lawrence Krauss of *The Science of Star Trek* fame spoke.

Marianne and I viewed the NASA video with an interview with Kim Stanley Robinson of *The Red/Green/Blue Mars* trilogy. Then we headed to the Borders at Baileys Crossroads, Virginia to hear him speak about his new trilogy, *Forty Days Without Rain*, a science fiction epic about global warming.

After that workshop ended I was off to Penn State to take one graduate class on Stars and Planets and another on Galaxies and Cosmology.

It is with great sadness that I learned about the passing of Kosy Sasaki. For many years Kosi did service for planetarium folks with Minolta projectors. Recently his health prohibited him from continuing in his job.

I have fond memories of his being a "wild man" at past planetarium conferences. I also have fond memories of his picking up my camera at conferences and saying, "Lizabet, Minolta good camera." He will be dearly missed, and as a friend confided in me, we all have no doubt that Kosy is now inspecting the stars from a much better vantage point.

So there was my summer. What have you been up to? Anything you found of particular merit as you attended the joint MAPSEPA meeting in Richmond, especially in the realm of small planetaria? Do drop a word and send me info so I can note it in Small Talk next time.

# Astro Video Review

## Our Amazing Solar System

It's budget time, so I can't buy anything online to review. I get a great idea. I'll check out something in our Science Store. After all, I got my copy of Solar Max there. I poke around on the shelves a bit and find a title, *Our Amazing Solar System*. With my new video in hand I trot upstairs to my desk to do what I always do, an Internet search to see if I could have gotten it cheaper at Amazon.com. To my amazement, it wasn't even listed. My red flag is at the ready. I do a Google and come up with two Websites. One is the finleyholiday.com, the makers of this video; the other, spaceuniverse.com. Both list the price as \$24.95. I feel only slightly ripped off... at this point.

Popping in the DVD at home I settle on the sofa for a solar system tour. Twenty minutes later I wake up. OK. I work in a planetarium. I have seen many tours of the solar system. Maybe I was just too tired to be up at all. I decided to try again a few days later.

This time I pop it into my husband's computer. Soda in hand and cat in my lap, I go for it. Twenty minutes later and I now clearly understand why I fell asleep. After thirty-two minutes I decided that I would have to take a break. I would need munchies if I were to make it through.

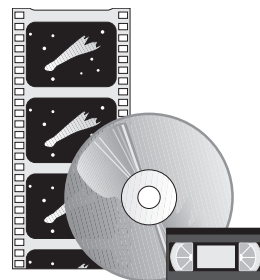
What was wrong? For starters, it was too dramatic. One might go away thinking that Darth Vader and the Death Star were going to show up any second or that every place in the inner solar system was horrible and violent. Sure, it would be awful for a human but the over dramatization of the "tortured landscapes" took away from the wealth of information contained in the narrative as well as your ability to enjoy the wonders of seeing some of the great images that were used. At about forty minutes I also began to realize that any and all kinds of music were up for grabs (even the Nutcracker wasn't spared) and slashing edits were used to make sure the correct mood music was in place for each image. Flow was often sacrificed for this purpose, and at sixty minutes I realized why. There is not one single moment in the whole video that is without sound. The music, at some level, is behind everything, even the interviews with Dr. Saunders in the bonus materials. It was so pervasive it would at times overshadow the adequate narrator (Joseph Campanella). It was a shame too. What was being said wasn't that bad, and the show covered quite a bit of information. A little silence would have been golden.

In some cases images were used effectively and in others they were not. For the typical viewer, the images would have been just fine, and some would probably be pretty amazing. For those in the planetarium industry, you will be able to reminisce about each show you used that clearly recognizable piece of footage.

After viewing the video, I checked out the other sections of the DVD. There is a downloadable screen-saver of the solar system. There is the chapter section, of course, and the resource section. Maybe the resources would be useful if you were a teacher or home schooling but if you work in the planetarium field and haven't got these links in your favorites yet..., you must be new and I welcome you aboard. (Also listed is the contact to Finly-Holiday films if you wish to order these JPL/NASA images from them, rather than from JPL/NASA.) Last but not least there is the bonus materials section. Click on it and you are transported to a mini movie called *On Robot Wings*. This is great if you didn't get enough of the fly-overs from the actual movie. One missed opportunity was the Earth/Moon encounter by Galileo. This is fantastic footage even to those of us who have seen it over and over again. Yet there is no explanation that the footage you are seeing is real. Those who aren't aware of the Galileo mission might interpret this section as just bad CG. The best section is the Magellan-Venus section. A good narrator explains the fly-over, and features are pointed out as if you were traveling in an airliner.

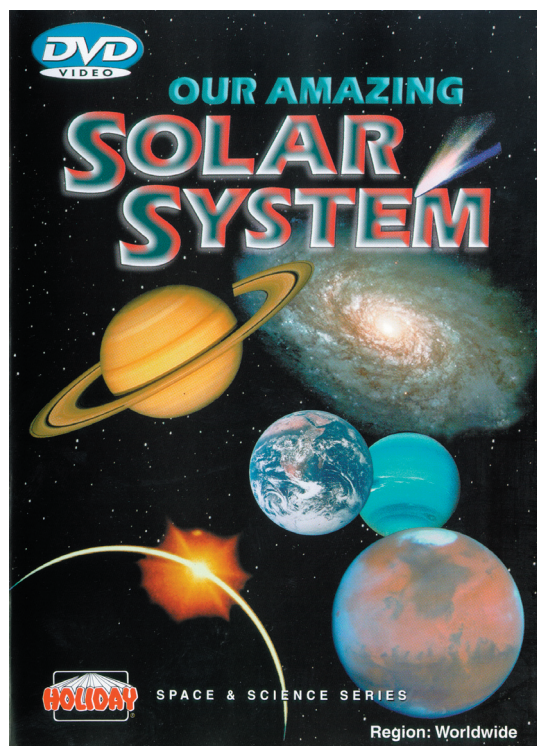
Our Amazing Solar System is produced by Finly-Holiday Films. It was written and edited by Steve Skoostsky. The back of the cover lists this information along with something else. Satisfaction Guaranteed or Your Money Back.

My stamp is on the envelope.



Priscilla Bernardo  
Orlando Science Center  
Planetarium  
Orlando, Florida

*Our Amazing Solar System*



# Featured Facility

## Calusa Nature Center and Planetarium, Fort Meyers, Florida



Mike Chesman  
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Author  
Carole Helper  
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and Planetarium

The Calusa Nature Center and Planetarium was founded in the late 1960s by the Lee County chapter of the Association for Early Childhood Education. They assembled suitcase museums housed in army-style footlockers relating to birds, sea life, Native Americans, botany, and other Florida natural history subjects.

These collections were taken to schools and used in interactive classroom exercises. At the same time, the local chapter of the Junior League had voted to establish a museum as a long-term project. They took over the suitcase project as a way to display what an eventual museum would offer.

In 1970, a consultant spoke to the Junior League and told them about the space age NASA money to build planetariums to educate children. He insisted that they call the museum a junior museum and add a planetarium. In that way, they could clearly qualify for the NASA grant.

In 1972, the City of Fort Myers granted a 50-year lease at \$1 a year on 105 acres, and the center was granted corporate status as the Junior Museum and Planetarium of Lee County. Several expansions were made in the 1980s, and in 1994 the name was changed to Calusa Nature Center and Planetarium, Inc.

Despite the name, ground wasn't broken for the planetarium until May 1984, and the planetarium, dreamt of since the beginnings of the organization, was finally opened in December 1986 with a tilted Spitz dome and 512 star projector on an elevator. The planetarium also features a six-projector dissolving partial panorama system, a slew-zoom projector, and 12 main slide projectors. One of the features added was a Cinema 360 projection system, which has since been removed. The first regularly scheduled planetarium show was Star of Wonder, which has been presented each December since. A Laser Fantasy two-color laser system was added in the late 1980s.

In 1989 a cement-lined pond was constructed next to the planetarium. A male and a female alligator, Al and Alice, were donated by a local alligator farm. Children enjoy passing by the alligators on their way to planetarium shows. Al growls amorously on spring mornings and also during some of our planetarium laser shows. He seems particularly fond of Dark Side of the Moon.

Since the very beginning, a major fundraiser for the Nature Center is our annual Haunted Walk. The first was in 1967, in a vacated funeral home. In 1980, the first Haunted Walk at the Nature Center itself was held. In the fall of that year the Nature Center had operating funds left for only two months and new funds were three months away. The Haunted Walk fundraiser saved the Nature Center that year. The walk gets bigger and scarier each year, and the planetarium provides short laser shows every 20 minutes throughout the event. In 2003, Haunted Walk earned \$72,000.

Planetarium improvements were made in the 1990s. The Dork automation system was replaced by new East Coast Control Systems automation, and the Spitz 512 was automated. Things appear to be looking up for the Calusa Nature Center Planetarium. We give planetarium shows 360 days each year and offer a year-round schedule of educational programs and outreach activities. We most recently added an LCD video projector and an automated DVD player in 2003. In June 2004 we were awarded a grant that will allow purchase of a second video projector on a moveable mount and an all-sky system in addition to other goodies, as well as the production budget to create a show entitled Boating Safety with Manatees. Our Capital Campaign will soon begin with the \$2 Million Phase 1 slated for improvements to the planetarium, including equipment improvements, a new enclosed front entrance, and a river otter exhibit just outside. We have been designated "Best Nature Center" in the state by readers of the statewide Florida Monthly Magazine in 2000, 2001, and most recently in 2003.

The first logo of the Nature Center was the drawing at the left side of this page. The raccoon in the tree represented the local flora and fauna. He gazes at a distant star with the hope that a planetarium will soon be built. In reality, it took more than 16 years from incorporation until the opening of the planetarium.





Above: The entrance to the Calusa Nature Center and Planetarium

Below: The Spitz 512 projector housed in a 40-foot tilted dome with 90 unidirectional seats



# Digital Cosmos: *Celestia*



Paul Trembley  
Orlando Science Center  
Planetarium  
Orlando, Florida

## *Celestia*

One of the hottest trends for computers is open source software—software for which you can freely rewrite the code to suite your needs or to enhance its existing features. Most of this software runs under the Linux OS and in some areas is taking a bite out of Microsoft's traditional territory. But there are some open source packages that will run under MacOS and Windows™. For the astronomy profession there is *Celestia*—a real time 3D space simulator that allows users to see what Earth would like from the ISS, or to see Saturn as Cassini will see it.

Created in 2001 by Chris Laurel of Seattle, *Celestia* is a free program that allows you complete control over your virtual solar system. Written in C++ the code is available for download from <[www.SourceForge.net](http://www.SourceForge.net)>.

Since 2001, over 1000 members of the public are part of the *Celestia* forum community. Over two million people have downloaded the program for use at home or school in over 22 countries around the world. All users are invited to become a part of this community at <[www.shatters.net/forum/profile.php?mode=register](http://www.shatters.net/forum/profile.php?mode=register)>.

So just what can you do with *Celestia*? A better question would be what can't you do with it? Here is just a partial list of features taken from the V1.3.1 user's guide:

- Hover over each of the nine planets in our solar system as they rotate slowly below you. See clouds actually drift by (where applicable). Look carefully and you may see mountains, canyons, and craters on the planet surfaces with shadows being cast by them as the Sun sets low on the horizon.
- Take a spin down to the Earth's surface at a lazy speed or at thousands of miles/km per hour in your own spacecraft. Skim over the oceans of Earth as you actually fly below the clouds. See the sky turn a pale blue and eventually, transform into the crimson color of a sunset. Soar back into space in time to see the lights come on in the cities of Earth and glow an eerie white as the dark side of Earth turns below you.
- Position yourself above the giant gas world of Jupiter and watch as its large moons drift across the face of the planet, casting eclipse shadows on its banded clouds and Great Red Spot.
- Hover far beyond Saturn, speed up time, and count its many moons revolving around its magnificent ringed body like pearls swirling on an invisible necklace. Watch as one moon eclipses another.
- Journey to the frozen wasteland of Pluto and its moon Charon, and imagine their icy coldness as the Sun's faint light casts pale shadows across their cratered ice surfaces.
- Take up station behind comet Halley, set *Celestia's* clock back in time, and follow this famous comet on a trip into the inner solar system, sailing past Earth with its gaseous blue tail streaming out behind it.
- Set your spacecraft speed and journey from the Earth's surface up to the International Space Station or the Hubble Space Telescope. Test your skill rendezvousing with them as they orbit Earth every 90 minutes.
- Fly out to the very edges of our solar system, locate, and follow behind Voyager 1 and 2 as they speed farther and farther away from their creators back on Earth, headed on a one way journey through the blackness of frigid space toward distant stars that will take them millions of years to reach.
- Set your ship at faster-than-light speed and sail to Rigel Kentaurus A and B, located 4.3 light years from Earth. See if you can find their tiny red dwarf companion Proxima Centauri, the closest star to our own Sun, or choose to observe rotating sunspots on any of a whopping 2,000,000 other stars drawn by your computer in the *Celestia* universe (to see all of those stars, a separate add-on is required).
- Download some of the many stunning add-ons available for *Celestia*, and your experience becomes filled with even more wonders. Visit the Discovery, a spaceship from the film *2001, a Space Odyssey*, dark, abandoned and adrift somewhere in Jupiter space with the HAL computer inside.
- Journey to the edges of a massive rotating black hole as it spins near its stellar companion.
- Track the spacecraft Cassini as it approaches a precise rendezvous with Saturn in 2004.
- Journey to Earth's future and be witness to the end of our planet as a swollen Red Giant sun consumes it.
- Witness a pulsar imbedded deep in the Crab Nebula spinning rapidly as it sends its twin beacons of light through the nebula gas.
- Travel back in time to witness a re-creation of what the Earth looked like billions of years ago. Be there as Orpheus, a planet the size of Mars crashes into it, creating our Moon and sending it into an orbit within a few thousand miles of Earth.



- Travel forward to the year 2900 CE to observe giant mirrors melt the Martian polar ice caps and help to terraform the planet into a verdant world of water, plants, and cities of the future.
- Drop “up” to the massive rotating Space Station V from the film, *2001, a Space Odyssey* in the year 2400 CE and see if you can land your *Celestia* 1 spaceship in its cavernous landing bay.
- Instantly change the appearance and detail of planets and moons using the Alternative Textures command.
- Are you a Star Wars fan? The *Celestia* community has made available for download an entire Star Wars solar system. Orbit the planet Tatooine and you will be amazed at the realism of its arid deserts. Fly *via* hyperjump over the ice world, Hoth, or to the green world of Endor, but be careful for tractor beams. Somewhere in that solar system will be the giant imperial Deathstar, glinting as the light from the system’s yellow sun actually reflects off its evil metallic skin as imperial tie fighters keep guard.
- Approach an entire fleet of Borg cubes as you command the USS Enterprise NCC-1701E from the Star Trek series.

You will note that the *Celestia* community has add-ons available, and that is the secret to this amazing software. The creation and inclusion of new objects is relatively simple. Most are created using programs such as 3D Studio, Lightwave, and Maya. A quick Google search for “*Celestia* Models” returned several hundred hits.

So, other than being able to add your favorite spaceship, is this thing useful? Well, depending on your needs it is very useful. It is not a planetarium program such as *The Sky* or *Starry Night*. It is a simulator, and you have to keep that in mind when using it. Here at OSC we are considering adding several *Celestia* kiosks to the floor, something that *Celestia* lends itself to with preprogrammed scripts and movies. Since the code is open, any changes we need made to the GUI can be made by a local programmer.

*Celestia* has even been adopted in part by NASA with a Web site for downloading *Celestia* add ins <<http://exp.arc.nasa.gov/downloads/celestia/extras>>. At last check the entire Internet *Celestia* library was over 3 GB in size.

The *Celestia* package for computers running Microsoft Windows® 95, 98, ME, 2000, XP, or NT 4.0 is offered as a fully “executable” program. It will install itself into your computer. The current Windows version is available for download at <http://www.shatters.net/celestia/download.html>.

For Apple Macintosh users running MacOS X there is *Celestia* version 1.3.1. You can find the Mac version at <<http://prdownloads.sourceforge.net/celestia/celestia-osx-1.3.1-1.dmg>>.

*Celestia* is available for Linux in three different

versions (1.3.0). All of them are available in a single tarred, gzipped source archive at <<http://www.shatters.net/celestia/download.html>>. Which version you choose to install depends upon which desktop environment you have installed. All versions of *Celestia* for Linux require that you have OpenGL installed.

In theory you should be able to run the software with a 600 MHz box with 128 MB of RAM. In this case *Celestia* may run slowly, lock up, or not run at all. (This from the user’s guide.) I tested this on a 2.8 GHz machine with 128 MB of RAM, and while it ran at a nice speed, it still crashed at times. And that brings up the one big issue with open source software. It is only as bug free as the programmers can make it. With nearly 1000 people adding their own bits to the whole, some versions and add-ons are not as stable as others. While this is the exception, you will run into some buggy code.

Assuming you have downloaded *Celestia* and have it running, how hard is it to use? Not too bad, in fact, rather intuitive. First thing you should do is load the demo script and let it run. It will show you lots of nifty things the base version can do. (Click File, Open Scripts). Since this is not a planetarium program, you don’t have to worry with things like your location on earth, time zones, *etc.* Selecting what object to see is found under the menu heading of Navigation. Setting things like zoom factor and time can be found under Time. You can also bookmark locations in space. A rather odd concept at first, but very useful. Another nice feature is the ability to imbed a *Celestia* hyperlink into a document. For example:



**Earth from *Celestia* space—click [here](#) once only, to go to this location now**

By clicking on the word “here” the *Celestia* program will open and run the needed script to recreate the view as seen above. You can capture JPEGs of views as well as AVI files of simulations.

There is an eclipse finder, but a unique one, in that you pick the objects that are eclipsing. How about viewing a solar eclipse from Saturn? Or watching as two of Jupiter’s moon’s eclipse each other? Of course a single click will allow you to watch the event from the best vantage point.

*(continued on page 20)*

# News from SEPA States



George Fleenor  
Geographics Imaging  
Bradenton, Florida

## The Orlando Science Center, Orlando

Paul Trembly reports: Not counting the 300+ people we had for the Venus transit, and the opening of *RingWorld*, our most exciting time has been recovering from getting hit by lightning. Sky-Skan has done a great job of getting us back on our feet and bearing a couple of third party products, we were back up within just over a week.

We are gearing up for the start of school (Aug 9th here in O-Town) and will be running the film *Forces of Nature* and will continue to offer *RingWorld* as well as the rest of our show library.

We have started a monthly mixer evening on third Fridays called Cocktails and the Cosmos. Patterned after successful events in Atlanta and Houston, it is advertised to singles and young professionals as a relaxing opportunity to mingle, network, and have fun; while at the same time encountering the views from our telescopes and enjoy programs under the dome. The first two have been very successful.

## Science Center of Pinellas County

Marie Stempinski, PR Director reports: The Spirit of Columbia Planetarium & Theater that features the Minolta Medialoglobe planetarium projector is the innovative pride of The Science Center. With this state-of-the-art machine, the Science Center continues to educate children through adults on the vast realm of space.

The Carol Samuels Observatory features a Meade 16-inch telescope. Free astronomy viewing is offered every month during the school year and is operated in cooperation with the St. Petersburg Astronomy Club.

The Science Center is gearing up for Super Saturday. Each Saturday the Science Center is open from 10 – 4. We feature self-guided tours, a Planetarium show, and a laser show.

We are planning a Super Saturday once a month for 12 months (November 2004 – October 2005). All Super Saturdays (except the November birthday party and the March Archeology Day) will cost \$5 per person with \$1 off for members, and children under three are free. Presentations include our regular self-guided tour of displays and planetarium show plus the event or special presentation listed for that month. During the November and March Super Saturdays there will be a \$3 charge for the planetarium show.

We plan to give out goodie bags on Super Saturdays and include a program. Sponsorships are available in the program.

Business Card Sponsors (Science Partners) will receive: an ad or their name in the program.

Major Sponsors (Silver Adventurer, Gold Voyager, and Diamond Explorer: \$1,200, \$2,400, and \$5,000 or more) will also be listed in advertising for Super Saturdays. They will also have a table booth space and be able to have a display or display their product on Super Saturdays plus other benefits per category.

Projected dates and events: Most are still in the planning stages.

November 6: 45<sup>th</sup> Birthday Party: Speakers, display on the history of the Science Center, cake, soft drinks, and goodies.

December 11: Professor Daryl Schrader of St. Petersburg College will present Einstein's Theory of Relativity and Black Holes.

January: New Veterinary Science Display: Presented by vet(s) with handouts and give a ways.

February 5: Devil Rays trainer Ken Crenshaw, and Dr. Koko Eaton (team orthopedist) demonstrate what happens when you hit, bat and catch a ball, with special appearances by team players. Team give-a-ways. Pop corn, peanuts, and soft drinks.

March 5: Trail of the Lost Tribes Organization and the Central Gulf Coast Archeology Society. 16th Century Indian Village, with Demonstrations and Native American dance, storytelling, and songs.

April: Matt Allen, The Gator Guy, and Sawgrass, our alligator, explain gator mating, habitat, and safety for both gators and humans.

May: Channel 10 Meteorologist. Hurricane Preparation. Presentation will be in the Laser Theatre with handouts and demonstrations.

June: The Science of Cooking: Chef Edith James of Saffron's Restaurant turns out delicious dishes and explains how chemistry works in the kitchen!

July: Wetland: Examine the on-site wetland area at the Science Center and discover the plants and animals that call it home!

August: Beaks, Bills and Feathers: Presentation by the Sea Bird Sanctuary including live birds.

September: Strange but True! Optical illusions, glowing minerals, how air pressure effects movement and much more. Don Huffman presents, The mysteries of physics are explained!

October: Our Oceans and Marine Life: A professor from the Marine Science Department at USF discusses the Gulf of Mexico, our oceans and native marine life. The 600-gallon touch tank and laser theatre are included in the presentation.



**St. Petersburg Community College,  
St. Petersburg**

Daryl Schrader reports: Craig Joseph and Daryl Schrader gave a series of lectures on astronomy in conjunction with the Smithsonian Institution's new Hubble Space Telescope: New Views of the Universe exhibition this summer. The exhibit is at the Florida International Museum in downtown St. Petersburg, from now through September 18<sup>th</sup>. The planetarium shows that Craig does at the college have been tied into the exhibit.

The St. Petersburg Astronomy Club, one of the largest and oldest in the Southeast, elected Daryl Schrader, Astronomer Emeritus for his service to the astronomy club since the '70s.

The connection to the west and north wings of the science building is now under construc-

tion. This is where the new 20-inch telescope and observatory complex will be housed when it is finished sometime session I.

**Alexander Brest Planetarium, Jacksonville**

Patrick McQuillan reports: The Alexander Brest Planetarium at the Museum of Science and History in Jacksonville is running *HubbleVision* (LochNess Productions) and *What's Up?* as our fall public programs.

Laser shows continue to be popular with the fall line up including *Eclectic '80s*, *Laser Swing*, and *Pink Floyd Dark Side of the Moon*. If you run ILDA compatible laser programs and are looking for new shows, give us a call. All of our shows are for sale. And finally, school groups have once again filled the theater during week-day mornings.



**George Fleenor  
Geographics Imaging  
Bradenton, Florida**

**Saint Charles Parish Library Planetarium, Luling**

Gary Meibaum reports: We are continuing to add programs to our library of shows for our Mediaglobe. Having completed a successful conversion and animation of *RingWorld*, we are in the process of doing the same to Loch Ness's *Larry, and Cat in Space*. With the completion of *Larry* we will have a dozen full length shows ready to go. This process involves the use of Adobe's Digital Video Collection which includes Photoshop (for editing the images), After Effects (for animation), and Premiere to create the digital movies which are shown using the Mediaglobe. We are quite happy with the type of programming we are able to offer to our public and urge others to look into this new world of digital media. I urge those of you who have digital capabilities, be it full dome projection or partial dome, to look into using digital techniques to add some movement to your shows and to integrate your static or video images wherever you can. If you would like further information on this process, feel free to contact me at <gmeibaum@stcharles.lib.la.us>.

**Lafayette Natural History Museum & Planetarium,  
Lafayette**

Dave Hostetter reports: Our biggest news is that after a 1½ year search, we have hired Mr. Doug Nelson as Assistant Planetarium Curator. Doug comes to us from Houston, with a strong amateur background in astronomy and good experience in public speaking with audiences of all ages. We are delighted to have him with us. This will allow us to offer Saturday public planetarium programs beginning in June, and Friday school programs beginning next school year, as well as creating more time for development and production of new programming.

Like many planetaria, we ran *RingWorld* during the spring. Beginning in mid-June, our summer program will be *The Explorers*.

This past spring we began experimenting with programming and materials in French as a service to the area's many French Immersion classes. We now have available a pre-recorded French language presentation.

Teachers can also borrow a set of French language posters about space flight and a French language CD developed in France for Semaine de la Francophonie, a week each spring of celebration of the French language. These programs and materials will be available throughout next school year and beyond (if demand is sufficient).

The French planetarium program, *Les mystères du ciel austral*, will also be offered to the public on Saturday mornings from July through September to determine if there is a demand for such a thing on a regular basis.

Working with these French materials has been an interesting experience, considering that no one on the planetarium staff actually speaks French.

The planetarium sponsored a number of star parties and observing sessions during the spring. We did public solar observing in March for International Sun-Earth Day, a star party in March for the five planets, Astronomy Day, which occurred a month earlier than the official date because of scheduling conflicts, and a comet party in May. There was another comet party in June, but it there was little or nothing to see of the transit by the time the Sun rises over obstructions.

Every summer we celebrate American space flight with activities, workshops, and field trips during the Apollo 11 anniversary in July, a series we call Space Frontier Week. This year it will include a pair of public presentations by Mr. Kevin Power of Stennis Space Center, the first events in what we hope will be a growing partnership with Stennis.



**Jon Elvert  
Pennington Planetarium  
Baton Rouge, Louisiana**



Glenn Dantzer  
Settlemeyre Planetarium  
Rock Hill, South Carolina

### Dupont Planetarium, Aiken

The Dupont Planetarium at the University of South Carolina Aiken had a very busy spring with the installation of four new shows and providing special public observing events.

In March we created the *Seasons, Solar System and Stars Show (S^5)*. This was a live children's show that we provided to cover the topics listed in the show title. This was actually an interim show to cover similar topics presented in *In My Backyard* from the Calgary Science Centre planetarium. Because of some scheduling issues, some school groups hoped to see *In My Backyard* in March, but it did not open until May. We used a number of visuals from *In My Backyard* so that we could deliver similar content to our school groups that wanted to see that show. The affected school groups were given the option to reschedule or to see the *S^5* show. Many decided to see the *S^5* show, which turned out to be a great success.

We created the show *Roving the Red Planet* in March as well. This show included general information about Mars, discussed the spectacular close encounter between Mars and Earth that took place in August 2003, and focused on the discoveries made by the successful Rover missions. A significant portion of the show was devoted to visuals and content provided by the rovers, Opportunity and Spirit.

In April we installed the *Transit of Venus* program that was made available through the Great Lakes Planetarium Association. It debuted on National Astronomy Day and was last shown on the morning of the transit. As already mentioned, *In My Backyard* opened for school groups in May and opened for the public in July. This show has been very well received

by our audiences.

Our annual spring Earth and Sky Night was held on National Astronomy Day. We showed the *Transit of Venus* program to highlight the theme of the 2004 National Astronomy Day. We provided a variety of hands-on activities to highlight our Earth and sky. The Augusta Astronomy Club had members on our grounds with their telescopes for or visitors to enjoy.

The final event to mark our busy spring was the transit of Venus. An interesting local note is that a team of German scientists came to our city of Aiken, South Carolina to view the 1882 transit. The Aiken County Historical Museum co-sponsored the event, and about 75 people attended. Unfortunately, it was cloudy during the entire transit. However, we were able to view some live Web casts from Portugal and the Netherlands.

### Settlemeyre Planetarium, Rock Hill

We had a very busy spring, which is normal for us. Our attendance has passed 10,000 visitors, and that is the national average for us according to Loch Ness's calculations.

We have been offering children's shows twice a day during the month of June and will do so for July. Our summer weekend shows are also geared to families as well as four offerings of our popular *Carolina Skies* live sky show.

Next school year we are integrating two additional shows into the schedule. We will be offering *The Friendly Stars* for K4 and K5 as well as a live sky program called *Earth and Sky Connection* for the 7th grade. Hope you all had a great year and good luck in the coming school year.



Jim Greenhouse  
Sharpe Planetarium  
Memphis, Tennessee

### Bays Mountain Park Planetarium, Kingsport

Mike Chesman reports: We're recovering from the great conference in Richmond and our hats are off to the staff at the Science Museum of Virginia. Great job folks! The conference had a happy impact directly to Bays Mountain Planetarium as my colleague Adam Thanz was voted President-Elect.

Back at home, Woodrow Grizzle, our newest staff member did a great job handling planetarium and astronomy day camp activities in our absence. He's been having the young campers make small models of Saturn using old CD discs. You'll get to meet Woodrow at next year's SEPA event in Atlanta, which will be his first planetarium conference ever.

After an extremely successful run of the *RingWorld* program we are geared up for the 35<sup>th</sup> anniversary of the Apollo 11 mission with our in-house production, *Exploring the Moon*. I'm currently working on the script for our fall show (as yet untitled) about meteors, comets, and asteroids. How fortuitous is that? Dolores Hill gave that fantastic workshop on meteorites at the Richmond conference while I was still doing research for the script.

Summer projects for us also include some sprucing up of our observatory buildings. We'll be resurfacing the interior walls of our 16 foot dome structure and making some repairs to our roll-off shed. We didn't use the observatory for the transit of Venus because of the lack of a low eastern horizon. However, we did conduct a public event from a local mall parking lot, and had about 100 public join us for that dawn event. We all got to see it, although clouds arrived in time to block third contact. Our local CBS affiliate conducted a live broadcast from the event, and I was interviewed several times during the broadcast.

### McGavock High School Planetarium, Nashville

Dave Van Hoven reports: I retired from my position of teacher at McGavock H.S. this past May. That in itself is not the reason for the (at least temporary) demise of the planetarium. As of this date, the planetarium and the astronomy course offerings are "on hold." It seems that the Tennessee Department of Education determined that our one semester and full year astronomy course offerings were in violation of the regulations. That is, both of the offerings were

under a “special” course offering and not under the “core” category to grant credit for physical science. That we had somehow escaped for 33 years is beyond my comprehension.

#### **Sudekum Planetarium, Nashville**

Kris McCall reports: Mark your calendar now for the Tennessee Organization of Planetariums (TOP) meeting, scheduled for January 10 and 11, 2005. Your host will be the Sudekum Planetarium at the Adventure Science Center in Nashville, Tennessee.

Activities will begin at 1:00 p.m. Monday, January 10, and continue until late into the evening. Presentations will resume Tuesday morning and wrap up at lunch time. For 2005 we are trying to arrange a trip to a local impact site with the retired geophysicist who has done most of the research in this area.

Registration is \$25, which covers breaks and breakfast Tuesday morning. Individuals pay for lunch and dinner when we go out as a group for meals. Attendees are welcome to spend the night at the Science Center, where there are two showers, to keep costs down. We can also refer you to area hotels.

Of course, you don't have to work in Tennessee to join us. Everyone is invited to this informal gathering of planetarium professionals. If you have any questions or need additional information, please do not hesitate to let me know.

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#### **Falls Church High School Planetarium, Falls Church**

Gary Purinton reports: We conducted our second annual Fifth Grade Astronomy Olympics. It had a written component testing students knowledge of astronomy and space science and a star and constellation identification component in the planetarium. Elementary schools from across the county sent two teams of two students each to the competition. The total combined score for each school's teams determined the winners. Contact Gary Purinton at <Gary.Purinton@fcps.edu>.

#### **Virginia Living Museum Planetarium, Newport News**

The Virginia Living Museum is a lively place. More changes have taken place. Melissa Marsh replaced Missy Brooks who returned to the classroom.

Our new 62,000 square foot exhibit building opened on time on March 28. The Governor cut the ribbon. I was disappointed he never rode the elevator to tour the new Abbitt Observatory, but it was because of the clouds. Our new observatory sports a new 16-inch Meade Schmidt-Cassegrain on a Pier-Tech mount. We had to work out some bugs in the electrical wiring for the dome.

In the planetarium theater we are running a new in-house production called *Endangered Skies*. This is a story drawn from my own experiences about a particular summer learning the value of looking up. Onto this I spliced SEPA's own production of *Saving*

#### **Sharpe Planetarium, Memphis**

Edwin Faughn and I attended the SEPA conference and discovered a lot of useful information. Many thanks to the Science Museum of Virginia staff for putting together a great meeting.

Along with almost everyone else it seems, we ran *RingWorld* during the summer while Cassini achieved orbit and started sending back spectacular pictures. Seeing the latest information from Saturn on the ViewSpace monitor outside the planetarium is a great supplement to our coverage of the Cassini mission. ViewSpace also continues to have recent pictures from the Mars missions.

A new Elvis laser program was produced this year and runs August 9 – 16. Right after that, Loch Ness's *Cowboy Astronomer* starts as the new feature show. *Sol & Co.*, a family show, runs through September.

The very popular Observing on the Lawn program is moving to the Lichterman Nature Center and changing names to Night Sky Watch. Along with the telescopic observing, the nature center staff will be doing night hikes during the event. This fall, they are scheduled for September 24, October 22 and November 19.

The hallway outside the planetarium is getting a make-over that will include some astronomy photographs taken by a local doctor. They are on transparencies and will be displayed in light boxes.

*the Night* to teach people some methods they can use to help decrease light pollution. It runs daily at 11 a.m., 1:30, and 3:30 p.m. We also offer a live tour of the night sky at 2:30 p.m. on weekends. After this we plan to show *RingWorld*.

Since opening, my initial fears that our attendance might suffer have been allayed somewhat. I thought that people might not want to walk from the new to the old building for the planetarium programs. What we have found since opening is that our attendance so far is about double the pre-opening numbers.

If you are ever in the area, stop in and ask to speak with my staff or me and we will be happy to give you a brief tour of exhibits and observatory if we can between programs.

After opening the new building we are increasing our evening event schedule. We plan more Evening Under the Stars events scheduled for the first Friday of every month through summer. They will feature Space Day, Venus Transit, Cassini at Saturn, and the Perseid meteor shower. We have arranged for guest speakers for most of these nights.

#### **Jane and George Hastings**

I saw them at the conference. Jane is recovering well from knee surgery. In spite of that they both helped out a great deal on the conference and especially the wonderful side trip to Montecello, and UVA's observatory.



**Jim Greenhouse  
Sharpe Planetarium  
Memphis, Tennessee**



**Dave Maness  
Virginia Living Museum  
Planetarium  
Newport News, Virginia**

# HST's Greatest Hits '96

Duncan Teague  
D T Publishing  
8858 Carriage Creek Road  
Arlington, Tennessee  
38002-8972

The Space Telescope Science Institute (STScI) provided slides of Hubble images to individuals within regional affiliates who arranged to duplicate and distribute them. At our '96 conference, I was designated to receive and coordinate STScI materials and make them available to SEPA members.

Below you'll find a brief description of all 40 images distributed in 1996. Numbers next to the descriptions are shortened versions of STScI press release numbers, *e.g.*, 21a refers to PR 96-21a.

The entire set of 40 slides is \$50.00, including postage and handling. Send your check or purchase order to the address at the left.

- 01a\_\_\_Hubble's deepest ever view of the universe, revealing 1,500+ extremely faint galaxies in various stages of their development
- 01b\_\_\_Sample galaxies from the same Hubble deep field
- 02\_\_\_The inner region of a warped dust disk around Beta Pictoris once hidden because of the star's glare
- 03\_\_\_An image of the Egg Nebula taken by WFPC2; it shows the emergence of some mysterious searchlight beams emanating from behind a dying star
- 04\_\_\_The first direct image of a star other than the Sun: Betelgeuse.
- 05\_\_\_In more detail than has ever been seen before, the process a star like the Sun goes through when it dies
- 09a\_\_\_In clear, detailed pictures the first ever images of Pluto's surface; four views
- 09b\_\_\_Pluto surface map
- 10\_\_\_Gravitational lens effect captures image of primeval galaxy
- 11\_\_\_Images of the globular cluster Mayall II, consisting of 300,000 old stars, in orbit around the Andromeda galaxy
- 13a\_\_\_The Helix Nebula, NGC 7293 showing the collision of gases near a dying star
- 13b\_\_\_Helix Nebula detail with cometary knots surrounding the dying star
- 14\_\_\_A view of Comet Hyakutake that focuses on the near-nucleus region of the comet
- 15\_\_\_Three layers of Uranus's atmosphere taken with infrared filters; both clear and hazy layers created by a mixture of gases
- 16\_\_\_Image taken of Saturn where its rings appear edge-on because of the position of the Earth in Saturn's orbital plane
- 17\_\_\_A view of several star generations found in the central region of the Whirlpool Galaxy
- 18a\_\_\_A rare view of Saturn's rings seen just after the Sun had set below the ring plane
- 18b\_\_\_A series of 10 images of several small moons orbiting Saturn
- 21a\_\_\_NGC 1365, a barred spiral galaxy located in the Fornax cluster
- 21b\_\_\_NGC 4639, a spiral galaxy located in the Virgo cluster
- 22a\_\_\_The Crab Nebula and a detail of the pulsar in its center
- 22b\_\_\_Sequence of three images showing changes in the Crab Nebula pulsar
- 23a\_\_\_Huge, billowing pair of gas and dust clouds in Eta Carinae
- 23b\_\_\_Expansion of Eta Carinae debris
- 25\_\_\_Hubble's 100,000th exposure captures an image of a distant quasar
- 27\_\_\_A vast nebula, NGC 604, which is known for a great starbirth region
- 29a\_\_\_18 gigantic star clusters which may be building blocks for a new galaxy
- 29b\_\_\_Blue sub-galactic clumps which may be galaxies under construction
- 30\_\_\_Jupiter's moon Io passing above turbulent clouds
- 31\_\_\_Clusters of stars and a fishhook-shaped cloud of gases found in NGC2366, a giant star forming region
- 32\_\_\_Changes in Jupiter's auroral emissions
- 33\_\_\_Views of weather on opposite hemispheres of Neptune
- 34\_\_\_A Martian dust storm around the edge of the north polar cap
- 35a\_\_\_A survey of quasar host galaxies
- 35b\_\_\_A quasar caught in the act of colliding with its companion galaxy
- 36a\_\_\_Supersonic comet-like objects in the Cartwheel Galaxy
- 36b\_\_\_Cartwheel Galaxy composite image
- 36c\_\_\_Cartwheel Galaxy illustration
- 38a\_\_\_M8, the Lagoon Nebula showing giant "twisters" and star wisps
- 38b\_\_\_M8, the Lagoon Nebula detail showing eerie funnels and twisted-rope structures



# HST's Greatest Hits '97

The Space Telescope Science Institute (STScI) provided slides of Hubble images to individuals within regional affiliates who arranged to duplicate and distribute them. At our '96 conference, I was designated to receive and coordinate STScI materials and make them available to SEPA members.

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The entire set of 39 slides is \$48.75, including postage and handling. Send a check or purchase order to the address at the right.

- 01\_\_\_ Central supermassive black holes in galaxies NGC 3377, NGC 3379, and NGC 4486B:
- 03\_\_\_ SN1987A Fireball: One tenth light year long dumbbell structure expanding at six million miles per hour in supernova 1987A
- 08\_\_\_ Changes in the nucleus of Comet Hale-Bopp as it moved closer to the Sun beginning in the September of 1995
- 09a\_\_\_ Transition from spring and summer in Mars's northern hemisphere; photo taken shortly before opposition
- 09b\_\_\_ Three photos of Mars taken six hours apart with 90° difference between images; photos taken shortly before opposition
- 11\_\_\_ The Egg nebula in which stars are born and die violently; the photo shows jets of gas being blasted into space
- 12\_\_\_ A supermassive black hole located in galaxy M84
- 13\_\_\_ NICMOS captures a region of the Orion nebula filled with action as a center for the birth of new stars
- 14\_\_\_ Supernova 1987A: different colors represent different elements in the ring
- 15a\_\_\_ A view of Mars's cloud cover
- 15b\_\_\_ Seasonal changes in Mars's northern polar ice cap
- 15c\_\_\_ Four views of Mars rotated 90° between images during summer in Mars's northern hemisphere
- 16\_\_\_ The Cone Nebula: six baby sun-like stars surround their mother
- 17\_\_\_ A collision between two spiral galaxies in the heart of galaxy Arp 220
- 18\_\_\_ Fireworks near a black hole in the core of Seyfert galaxy NGC 4151
- 19\_\_\_ STIS reveals an invisible high-speed collision around a supernova
- 20\_\_\_ Hubble pinpoints the optical counterparts of a  $\gamma$ -ray burst in a distant galaxy
- 21\_\_\_ Hubble captures a volcanic eruption plume from Jupiter's moon Io
- 22\_\_\_ A gamma-ray burst blazes from a titanic explosion in deep space
- 23\_\_\_ Hubble's look at Mars shows a canyon dust storm, cloudy conditions for Pathfinder's landing in July 1997
- 24a\_\_\_ Dissipation of a large dust storm on Mars
- 24b\_\_\_ Hubble shows dust and water ice clouds that exhibit substantial daily variations
- 25\_\_\_ Powerful telescopes discover the largest galaxy in the universe
- 26\_\_\_ Hubble separates components in the Mira binary star system
- 27\_\_\_ Hubble reveals a huge crater on the surface of the asteroid Vesta
- 28\_\_\_ Hubble finds a bare black hole pouring out light
- 29\_\_\_ Hubble shows blobs of gas formed by some nova outbursts
- 30\_\_\_ Hubble keeps track of a fading  $\gamma$ -ray burst
- 31\_\_\_ Mars at the beginning of autumn in the Martian northern hemisphere
- 32\_\_\_ Hubble sees a neutron star alone in space
- 33\_\_\_ Hubble identifies what might be the most luminous star known
- 34a\_\_\_ Hubble reveals some stellar fireworks accompanying galaxy collisions
- 34b\_\_\_ Detailed images of colliding galaxies
- 35\_\_\_ Hubble shows images of a blue straggler star
- 36a\_\_\_ Hubble tracks clouds on Uranus
- 36b\_\_\_ Hubble spots northern hemispheric clouds on Uranus
- 37\_\_\_ Hubble shows infrared view of a moon, the ring, and the clouds of Jupiter
- 38a\_\_\_ Hubble sees a supersonic exhaust from a nebula
- 38b\_\_\_ Hubble's planetary nebula gallery

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# HST's Greatest Hits '98

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The Space Telescope Science Institute (STScI) provided slides of Hubble images to individuals within regional affiliates who arranged to duplicate and distribute them. At our '96 conference, I was designated to receive and coordinate STScI materials and make them available to SEPA members.

Below you'll find a brief description of all 40 images distributed in 1998. Numbers next to the descriptions are shortened versions of STScI press release numbers, *e.g.*, 26a refers to PR 98-26a.

The entire set of 40 slides is \$50.00, including postage and handling. Send your check or purchase order to the address at the left.

- 01\_\_\_ COBE's infrared view of the Universe: three maps of the full sky seen in infrared light
- 02\_\_\_ Distant supernovae: light sources determine the universe's expansion rate
- 03\_\_\_ Beta Pictoris: disk indicates planets, and possible brown dwarf companion
- 04\_\_\_ Jupiter aurorae: a "curtain" of light extends several hundred miles beyond Jupiter's limb
- 05\_\_\_ Saturn's aurorae: "curtains" of light extend 1,000 miles above cloud tops
- 08\_\_\_ Supernova 1987A: a collision between the expanding blast wave and its circumstellar ring
- 10\_\_\_ Serendipitous asteroids: HST images show curved trails of asteroids
- 11a\_\_\_ Planetary nebula NGC 7027: a brief stage in the evolution of a medium mass star
- 11b\_\_\_ The Cotton Candy Nebula and The Silkworm Nebula: phases of stellar burnout
- 12\_\_\_ Star birth in barred spiral galaxy NGC 1808 possibly due to interaction with NGC 1792
- 14a\_\_\_ Centaurus A: nearest active galaxy to Earth shows the turbulent firestorm of starbirth
- 14b\_\_\_ Centaurus A: tilted disk of gas at the galaxy's core surrounds suspected black hole
- 15\_\_\_ Stingray Nebula: Henize 1357, the youngest known planetary nebula
- 16\_\_\_ NGC 1818: globular cluster of over 20,000 stars in the Large Magellanic Cloud
- 17a\_\_\_ GRB 971214:  $\gamma$ -ray burst; most energetic event in the universe
- 17b\_\_\_ GRB 971214:  $\gamma$ -ray burst; comparison of Keck Telescope and HST views
- 18\_\_\_ Saturn: details of the clouds and hazes in the atmosphere of the ringed planet
- 19\_\_\_ Possibly the first extrasolar planet ever to be imaged orbiting about a newborn binary star
- 20\_\_\_ Four of NASA's proposed designs for the Next Generation Space Telescope (NGST)
- 21\_\_\_ Galaxy NGC 4314: bright ring of starbirth around the galaxy's core
- 22\_\_\_ NGC7052: galaxy with 300 million solar mass black hole in its center
- 25\_\_\_ N81 in the Small Magellanic Cloud: a celestial maternity ward
- 26a\_\_\_ Galaxy Cluster MS1054-03321: thousands of galaxies eight billion light years from the Earth
- 26b\_\_\_ Supernova 1996CL: a March 1996 exploding star in galaxy cluster MS1054-0321
- 27\_\_\_ Distant galaxy clusters: left, in Virgo; upper right, in Andromeda; lower right, in Taurus
- 28\_\_\_ NGC7742: a small Seyfert 2 active galaxy probably powered by a black hole in its core
- 29\_\_\_ Saturn: pastel yellows, browns, and greys distinguish cloud differences
- 30\_\_\_ Sagittarius Star Cloud: HST peers into the heart of the Milky Way
- 31\_\_\_ NGC7635, the Bubble Nebula: shows an expanding shell of glowing gas surrounding a hot star
- 32a\_\_\_ Infrared views: left: faintest galaxies ever seen; right: objects 12 billion light years away
- 32b\_\_\_ Deep field galaxy: left: visible light areas of starbirth; right, infrared disk structure
- 34\_\_\_ Neptune: a look at the eighth planet's stormy disposition
- 35\_\_\_ Uranus, August 8, 1998: its four major rings and 10 of its 17 currently known satellites; false color image
- 36\_\_\_ NGC6210 planetary nebula described as looking like a turtle swallowing a sea shell
- 37\_\_\_ Quasar PG1115+080 and the gravitational lens effect:
- 38\_\_\_ Nebula M1-67 around star WR124: gas ejected into space at 100,000 mph
- 39\_\_\_ NGC3132: southern hemisphere's "Eight-Burst" or "Southern Ring" Nebula
- 41a\_\_\_ HST deep field south: thousands of galaxies in Tucana, near the South Celestial Pole
- 41b\_\_\_ HST deep field south: infrared, visible light, and ultraviolet views of distant galaxies
- 42\_\_\_ NGC253 galaxy: edge-on spiral galaxy just beyond our Local Group

# HST's Greatest Hits '99

The Space Telescope Science Institute (STScI) provided slides of Hubble images to individuals within regional affiliates who arranged to duplicate and distribute them. At our '96 conference, I was designated to receive and coordinate STScI materials and make them available to SEPA members.

Below you'll find a brief description of all 42 images distributed in 1999. Numbers next to the descriptions are shortened versions of STScI press release numbers, e.g., 43a refers to PR 99-43a.

The entire set of 42 slides is \$52.50, including postage and handling. Send your check or purchase order to the address at right.

- 01\_\_\_M57 Ring Nebula: the sharpest view yet of this planetary nebula
- 02\_\_\_Combined deep view of infrared and visible light galaxies
- 03\_\_\_HD141569: stellar dust rings of a star in the constellation Libra
- 04\_\_\_SNH1987A: the self-destruction of a massive star in the Large Magellanic Cloud
- 05a\_\_\_Six images of a young stellar disk found in the constellation Taurus
- 05b\_\_\_Four images featuring disks around various young stars in Taurus
- 06\_\_\_NGC1316: the silhouette of dark clouds against a glowing nucleus of an elliptical galaxy
- 07\_\_\_Mars: visible, infrared light images; evidence of water bearing minerals
- 08\_\_\_Proxima Centauri: a detailed image of the Sun's nearest stellar neighbor
- 09\_\_\_GRB990123: fading visible light fire ball in a  $\gamma$ -ray burster
- 10\_\_\_Six images showcasing different views of spiral galaxies
- 12\_\_\_Tarantula Nebula: multiple generations of stars in the brilliant cluster of Hodge 301
- 13\_\_\_Jupiter: images of the volatile moon Io sweeping across Jupiter's face
- 14\_\_\_Copernicus: the 58 mile wide (93 km) impact crater on the Moon
- 16\_\_\_NGC4650A: a polar ring galaxy
- 18\_\_\_Rings, arcs, and crosses as seen in Hubble's top ten gravitational lens effect images
- 19\_\_\_NGC4603: magnificent spiral galaxy associated with the Centaurus cluster
- 20\_\_\_NGC3603: various stages of the life cycle of stars in a giant galactic nebula
- 21\_\_\_AB Aurigae: a swirling disk of dust and gas surrounding a developing star
- 22\_\_\_Mars: a colossal polar cyclone
- 23\_\_\_N159: a turbulent cauldron of starbirth in the Large Magellanic Cloud
- 25\_\_\_NGC4414: magnificent details in the dusty spiral galaxy
- 26\_\_\_NGC6093: a stellar swarm in a dense globular cluster
- 27\_\_\_Mars: the red planet at opposition during April – May, 1999
- 28\_\_\_MS1054-03: galaxy collisions in distant clusters
- 29\_\_\_Jupiter: an ancient storm in its atmosphere (The Great Red Spot)
- 30\_\_\_Giant star clusters near the galactic center
- 31\_\_\_HCG 87: a minuet of four galaxies
- 32\_\_\_HE2-104: small, bright nebula embedded in the center of a larger nebula
- 33a\_\_\_R136 in 30 Doradus: a grand view of the birth of stars
- 33b\_\_\_R136 in 30 Doradus: two detailed views of a highly active region of star birth
- 34a\_\_\_NGC1365: a barred spiral galaxy reveals a bulge in its center
- 34b\_\_\_Eight different views of the central bulges of spiral galaxies
- 35\_\_\_HH32: a magnificent example of a "Herbig-Haro object"
- 36\_\_\_NGC2261: Hubble's variable nebula illuminated by R Monocerotis (R Mon)
- 37\_\_\_NGC2346: a butterfly shaped nebula
- 38\_\_\_NGC2440: planetary nebula ejected from a dying star
- 39\_\_\_OH231.8+4.2: the "rotten egg" nebula
- 40\_\_\_M32: hot blue stars deep inside a dwarf elliptical galaxy
- 41\_\_\_NGC2207 and IC2163: two spiral galaxies passing by each other
- 42\_\_\_M20: Trifid Nebula reveals stellar nursery torn apart
- 43a\_\_\_M87: the jet near the galaxy's central black hole

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# JPL's Best Images of '98

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NASA JPL has sent us the following slides for the Galileo Mission and others. Slides are \$1.25 each on both the current page and the following page.

- P-35036B \_ Launch of Galileo on STS-34 Atlantis
- P-35213 \_\_\_ Deployment of Galileo and IUS
- P-37218 \_\_\_ Venus Colorized Clouds
- P-37327 \_\_\_ Moon: Western Hemisphere
- P-37539 \_\_\_ Infared Image of Low Clouds on Venus
- P-37593 \_\_\_ Earth: Ross Ice Shelf, Antarctica
- P-37630 \_\_\_ Global Images of Earth
- P-40449 \_\_\_ Gaspra: Highest Resolution Mosaic
- P-41383 \_\_\_ Gaspra Approach Sequence
- P-41432 \_\_\_ Moon: North Pole
- P-41474 \_\_\_ Earth: Northeast Africa and the Arabian Peninsula
- P-41493 \_\_\_ Earth: False Color Mosaic of the Andes Mountains
- P-41508 \_\_\_ Earth: Moon Conjunction
- P-42501A \_\_\_ South Polar Projection of Earth
- P-42964 \_\_\_ Asteroid Ida: Five Frames Mosaic
- P-44130 \_\_\_ Asteroid Ida: Limb at moment of Closest Approach
- P-44131 \_\_\_ Ida and Dactyl: Enhanced Color
- P-44297 \_\_\_ High Resolution View of Dactyl
- P-44520 \_\_\_ Asteroid Ida Rotation Sequence
- P-44542 \_\_\_ Comet Shoemaker-Levy 9 Fragment W Impact on Jupiter
- P-47058 \_\_\_ Ganymede: Comparison of Voyager and Galileo Resolution
- P-47065 \_\_\_ Ganymede: Mixture of Terrains and Large Impact Crater in Unuk Sulcus Region
- P-47162 \_\_\_ Full Disk Views of Io (Natural and Enhanced Color)
- P-47179 \_\_\_ Three Views of Io
- P-47182 \_\_\_ Jupiter's Great Red Spot
- P-47183 \_\_\_ Dark Bands on Europa
- P-47194 \_\_\_ Live volcano on Io
- P-47196 \_\_\_ False Color Great Red Spot
- P-47903 \_\_\_ NIMS Ganymede Surface Map
- P-47905 \_\_\_ Five Color Views of Io
- P-47906 \_\_\_ Europa In Color
- P-47935 \_\_\_ Io Glowing in the Dark
- P-47961 \_\_\_ Ganymede's Nippur Sulcus
- P-47970 \_\_\_ Ganymede Color Global
- P-47971 \_\_\_ Io in front of Jupiter
- P-47972 \_\_\_ Changing Volcanoes on Io
- P-48035 \_\_\_ Stereo View of Ganymede's Galileo Region
- P-48040 \_\_\_ Natural and False Color Views of Europa
- P-48063 \_\_\_ Thunderheads on Jupiter
- P-48112 \_\_\_ Ganymede Uruk Sulcus High Resolution Mosaic Shown in Context
- P-48113 \_\_\_ Ganymede Galileo Regio High Resolution Mosaic Shown in Context
- P-48114 \_\_\_ Jupiter's Great Red Spot
- P-48122 \_\_\_ Two views of Jupiter's Great Red Spot
- P-48127 \_\_\_ Ridges on Europa
- P-48145 \_\_\_ Io: Volcanically Active Regions
- P-48188 \_\_\_ The Main of Ring of Jupiter
- P-48231 \_\_\_ Callisto Crater Chain at High Resolution Shown in Context
- P-48236 \_\_\_ Europa: Ice Floes
- P-48293 \_\_\_ Callisto: Scarp Mosaic
- P-48294 \_\_\_ False Color Mosaic of Jupiter's Belt-Zone Boundary
- P-48299 \_\_\_ Asgard Scarp Mosaic
- P-48445 \_\_\_ True Color Mosaic of Jupiter's Belt-Zone Boundary
- P-48496 \_\_\_ Color Global Mosaic of Io
- P-48526 \_\_\_ Europa Ice Rafts
- P-48527 \_\_\_ Closeup of Europa's Surface
- P-48532 \_\_\_ Mosaic of Europa's Ridges, Craters
- P-48584 \_\_\_ Io's Sodium Cloud
- P-48698 \_\_\_ E4 True and False Color Hot Spot Mosaic
- P-48700 \_\_\_ Jupiter Equatorial Region
- P-48952 \_\_\_ Jupiter's White Ovals, True and False Color
- P-48954 \_\_\_ Ancient Impact Basin on Europa
- P-48956 \_\_\_ Active Volcanic Plumes On Io
- P-49344 \_\_\_ Arizona-sized Io Eruption
- P-49434 \_\_\_ Europa: Ice Rafting View
- P-49435 \_\_\_ High Resoultion Mosaic of Ridges, Plains, and Mountains on Europa
- P-49436 \_\_\_ Regional Mosaic of Chaos and Gray Band on Europa
- 
- P-48439A \_\_\_ The Mars '98 Lander
- P-48440A \_\_\_ The Mars '98 Lander
- P-48494A \_\_\_ The Mars 98 Orbiter/Lander
- P-48495A \_\_\_ The Mars 98 Orbiter/Lander
- P-48567 \_\_\_ Dr. Peter Tsou holds Aerogel
- P-48589 \_\_\_ Stardust Spacecraft
- P-48691 \_\_\_ Deep Space 1 Spacecraft



# JPL's Best Images of '99

JPL-19-12	___	NASA/JPL	P-48505AC	___	Huygens probe
JPL-25125	___	Model of Sojourner	P-48505BC	___	Huygens probe
JPL-27089AC	___	Cassini arrival and orbit	P-48565	___	Titan IV launch
JPL-27089BC	___	Cassini interplanetary trajectory	P-48597	___	Cassini ready for shipment
JPL-27748	___	Thermal vacuum testing	P-48630	___	Saturn tour trajectory
JPL-28046BC	___	High-gain antenna	P-48664	___	Cruise stage at KSC
JPL-28162AC	___	Cassini assembly	P-48702	___	Pathfinder on Mars
MGS-001	___	Scientists assemble MGS	P-48707	___	Cruise stage, spacecraft
MGS-002	___	Scientists assemble MGS	P-48753	___	E.D.L. sequence
MGS-003	___	MGS configuration	P-48824	___	Sojourner and Pathfinder
MGS-004	___	MGS orbit around Mars	P-48827	___	The airbags by Sojourner
MGS-005	___	Launch of MGS	P-48841	___	Sojourner touchdown
P-23062	___	Saturnian clouds	P-48842	___	APXS studies "Barnacle Bill"
P-23209	___	The Saturn System	P-48845	___	"Twin Peaks"
P-23925	___	Saturn ring spokes	P-48847	___	The rock "Yogi"
P-41101	___	Huygens descent profile	P-48866	___	"Barnacle Bill" mosaic
P-42810AAC	___	Huygens, exploded view	P-48871	___	Rover's APXS at work
P-42810AC	___	Huygens probe interior	P-48877	___	"Wedge" and "Flattop"
P-43538	___	Saturn: Rings and Moons	P-48878	___	Near "Barnacle Bill"
P-43560	___	Mars global view	P-48889	___	"Barnacle Bill" and "Yogi"
P-43836	___	Scientists' home countries	P-48891	___	360° b&w panorama
P-43862	___	Pathfinder landing	P-48893	___	"Yogi" and rover tracks
P-43966AC	___	Spacecraft, country flags	P-48894	___	Sagan Memorial Station
P-44233	___	Mars landing area	P-48901	___	Sojourner wheelie on "Yogi"
P-44293Ac	___	Cruise stage	P-48902	___	Rover's view of rocks, lander
P-45424	___	Huygens probe release	P-48908	___	The "Rock Garden"
P-45893AC	___	Saturn, Titan's landscape	P-48909	___	Martian terrain, "Wedge"
P-46225AC	___	Mapping Titan	P-48911	___	Sojourner, "Wedge"
P-46278	___	The Cassini mural	P-48912	___	Forward ramp Twin Peaks
P-46356	___	Cassini with Huygens	P-48913	___	The "Rock Garden"
P-46427	___	Petal deployment, Mars Yard	P-48914	___	A closer view
P-46428	___	Airbag inflation test	P-48915	___	The rover petal
P-46506AC	___	Saturn as seen from Rhea	P-48916	___	Twin Peaks
P-46507	___	Saturn orbit insertion	P-48917	___	Martian terrain
P-46507AC	___	Cassini enters Saturn orbit	P-48918	___	"Barnacle Bill," "Yogi," "Couch"
P-46586	___	Cassini orbital tour	P-48919	___	Sojourner, "Barnacle Bill"
P-46620	___	Pathfinder landing	P-48920	___	"Couch" on the horizon
P-46655	___	Science targets	P-48921	___	The rock "Yogi"
P-46656	___	Enceladus and Iapetus	P-48922	___	Airbags, petal, and "Yogi"
P-46898BC	___	Cassini's trajectory	P-48923	___	Martian landscape
P-47340AC	___	Propulsion module	P-48924	___	"Calvin" and "Hobbes"
P-47936CC	___	Huygens probe installation	P-48925	___	"Calvin" and "Hobbes"
P-47991	___	Pathfinder arrival at KSC	P-48926	___	Martian terrain
P-47992Ac	___	Cruise stack arrival at KSC	P-48927	___	Petal and terrain
P-47992Bc	___	Sojourner checking at KSC	P-48928	___	"Little Matterhorn"
P-48012DC	___	Transporting Cassini	P-48931	___	New 360° gallery panorama
P-48045BC	___	Cassini fully assembled	P-48970	___	North Twin Peak
P-48045CC	___	Ready for transport	P-48982	___	The forward ramp
P-48154Bc	___	Pathfinder mated to rocket	P-49025	___	Airbag bounce marks
P-48155Ac	___	Launch 12/4/96, 2:11 a.m.	P-49026	___	Airbag roll marks
P-48155Bc	___	Petal closing at KSC	P-49028	___	Classes of Martian rocks
P-48156	___	Full stack mated to booster	P-49029	___	Classes of Martian rocks
P-48313BC	___	Cassini in the space center			

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You can follow objects, track them, orbit them, ride on them. The possibilities are endless. Best of all it's free. The more complicated simulations do take some time to setup. It isn't a program for everyone. It is very robust, but it is one of the best programs for visualization that I have come across in quite a while.

There is a 38 page users guide that covers scripts, keyboard shortcuts, and joystick control, as well as lots of Web links. It is worth looking at, not only as a possible exhibit, but also as a teaching tool—not just for astronomy, but for programming as well. It is not often that you get to crawl around the code of a software package as complex as *Celestia*. Students

of Computer Science will find this a wonderful learning experience. There is so much material and scripts on the Web that you may not even need to create anything new. Odds are someone has already created it.

One last word: While running *Celestia* at work, one of my staff asked an interesting question: Is there any possible use of *Celestia* movies in conjunction with a FullDome projection system? Not having such a system ourselves, I don't know the answer to that one. I am sure that there is someone in SEPA land who knows the answer, and no doubt we would be interested in finding out.

President-Elect Patsy Wilson received the adjacent press release and forwarded it to *Southern Skies* for publication in this edited form. For more information, including details omitted from this version, contact the individual at the bottom of the release.



In January 2005, *The New York Times* is launching the 4th annual Arts & Leisure Weekend, a signature celebration that leverages one of *The Times's* key strengths, its unrivaled coverage of the arts. In 2004 hundreds of arts institutions throughout the U.S. and in Europe opened their doors to *Times* readers and arts lovers with special offers, discounts, and events. By using the national stand-alone program guides that appeared in the paper and on <NYTimes.com> consumers enjoyed museums, theater, movies, restaurants, and much, much more. Join us for what will prove to be an even bigger and more exciting cultural extravaganza.

If your organization decides to participate in this exciting weekend with a special offer, it will benefit from a large promotion and marketing campaign. Please note that this program is a free promotional opportunity; there is no advertising commitment necessary. You simply need to make the required promotional offer to *New York Times* readers, as outlined below.

Promotion elements will include:

- Three, four-color program guides to run nationally in *The New York Times* on 12/15, 1/2, and 1/5
- Participation forms due by close of business on Thursday, October 28
- National advertising campaign driving consumers to program guides and micro-site on <nytimes.com>
- Sweepstakes ads encouraging *Times* readers to sign up for email updates
- Half-page or larger national teaser ad campaign; ads may list institutions that signed on at press time
- National ads driving consumers to <nytimes.com/alweekend> for the latest promotion updates
- Four quarter page ads in *The International Herald Tribune*
- Reader notices on the front page of *The Times*
- Full page ad in *Film Comment Magazine*
- Full-page thank you ad in *The Times* after Arts & Leisure Weekend, mentioning each institution
- Micro site on <nytimes.com> featuring listings of participating institutions, links to your institution's Web site, banners and <nytimes.com> user email campaigns to drive Web users to site and program guides, e-mail blasts to consumers signed-up for ALW updates
- Radio spots in the New York market on classical music station, WQXR, and Metro Traffic
- Bonus distribution of the final January 5 Program Guide
- National public relations campaign

What are the special ALW offers?

- Theater and performing arts: Buy best seat available at full price, and receive second ticket free
- Museums and other attractions: Buy one admission, get one free, January 7 – 9 for readers who show the Arts & Leisure Weekend pass available in the final program guides and online
- Film: Free screenings, half-priced tickets, and other offers to be discussed on an individual basis

How can your institution participate?

- Fill out and submit a Participation Form on The Web at: <www.nytimes.com/forms>

For additional questions, contact: Roberta Nordman at <alworgs@nytimes.com> or call (212) 556-1135

# Southern Skies Writers' Submission Guidelines

It's time consuming to have to edit submissions to *Southern Skies* for issues of formatting, typography, style, and consistency before I compose each journal. Effective October 1<sup>st</sup>, unless these guidelines are followed, submissions will be returned for compliance.

- **Never** double space after punctuation or in any other instance. This is the only rule that has no exception.
- Don't use quotation marks around anything that isn't a direct quote from a speaker. The names of star shows are italicized in *Southern Skies*. Don't put star show names inside quotation marks.
- When you **do** use quotation marks, punctuation goes **inside**, not outside quotation marks.
- Italicize foreign words and any punctuation that immediately follows an italicized word.
- Use italics or bold characters to show emphasis instead of capitalizing words. *Italics* shouts a little bit. **Bold** shouts a lot.
- The general rule for whether to capitalize a word is the following: if you're not sure, don't.
- For consistency, capitalize Sun, Moon, and Earth when referring to our solar system's star, Earth's natural satellite, and our home planet.
- Do **not** capitalize seasons or cardinal directions.
- Only very rarely should one use an exclamation point and never multiple instances of exclamation points. One cannot use this punctuation mark as a substitute for good, strong writing.
- Use the typographically correct symbols for double and single quotes, not the marks that mean feet and inches. Your word processor can do it. Learn how. The typographically correct symbols are "curly," not "straight;" e-mail messages do not transmit the typographically correct symbols, so send submissions as attachments, not in the body text of an e-mail.
- Use the **en dash** for a series of events, and use a space before and after the **en dash**, e.g., Monday – Friday; September – October; 8:00 – 9:00. The **en dash** (–) is not a hyphen (-). Learn how to type the **en dash** with your word processor.

- Use the **em dash**, without spaces, to show an abrupt change of thought. The **em dash** (—) isn't two hyphens (--). Learn how to type the **em dash** with your word processor.
- Use the correct **ellipsis** character: ... This is **not** three periods with or without spaces between.
- Learn the difference between *it's* and *its*. Learn the difference between *there* and *their*. Learn the difference between *then* and *than*. Learn the difference between *from* and *than*.
- The nouns that name decades of time use a leading apostrophe to indicate the missing numerals that refer to the century. They're not possessive. '80s is correct; 80's and '80's are incorrect.
- Spell out numbers from one to ten. Use numerals for numbers greater than ten.
- Note the format for state news submissions and follow that format. Provide the name of the facility and the city. Don't include the state name after the city. It's unnecessary.
- Don't use the tab key to indent. When your text imports into my template, the template will automatically indent the first line the proper amount as long as you have merely formatted the first line of the paragraph to be **indented**. If there's a **tab** marker present in that text, the first line will indent the distance I have already established in my template **plus** the extra distance of any tabs in your text.
- Don't skip a line between paragraphs.
- Graphic files included with your article should be in a generic, cross-platform format. Don't use some file format proprietary to a special software program you use. Acceptable graphic file formats include the following: .eps, .gif, .jpg, .psd (Photoshop), and .tif.
- Text files should be created from a widely used word processor, e.g., Microsoft Word (.doc), or rich text format (.rtf), or plain text (.txt).
- If you want images to be included with your column or article, send them. Don't ask me to go to some Website and download them myself. If you don't have time, neither do I.

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# Some Insight into Video and DVD

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In the world of planetaria, each month goes by with some new technology to learn. For many of us, this may be why we are in this field. For others, it may be a problem to keep up. Going to conferences, like the recent 2004 MAPSEPA event in Richmond, Virginia, is a way to learn about what's new. Sometimes though, due to time constraints, not all technologies are covered thoroughly or at all. I have been asked by a number of planetarians about DVDs, creating them, and using them in the theater. That's where this journal can bridge the gap. I would like to discuss some aspects of video and DVD formats and their use in the planetarium.

## Video Knowhow

Video is a way of displaying many still images, or frames, quickly so they give the impression of motion. In North America, video is in the NTSC (National Television Standards Committee) format which is 29.97 frames per second (fps). But, these frames are actually two interlaced fields. So each frame has two parts, making about 60 fields per second. Unfortunately, this technology means that only half of your video projector is being used at any one time. Every other scan line is being used. For those of you who want to get an even better image on the dome from the same DVD (Digital Versatile Disc), you'll then want to display a progressive scan image. This can be done if your video projector is a data projector. You won't see the scan lines since all of the lines will be used. With a DVD player that has the progressive scan feature, both of the interlaced fields will be "sewn together" and shown as one frame. DVDs can also have different aspect ratios of 4x3 or 16x9 (TV or movie theater style). There are many other features of DVDs, but they will not be discussed here. Film movie DVDs typically have a 16x9 aspect ratio. This gives a wide "panoramic" feel. For the planetarium, the full, 4x3 image is usually used. As a special note, if you use or are looking into a hard drive video system, then you can use higher resolution imagery. But, you need the hardware to be able to display such images on your dome. Jeff Bowen's workshop during the 2004 MAPSEPA conference covered such topics.

When dealing with digital video (DV), there are some additional details to learn. Current DVDs, and digital video cameras, use a file size that is 720x480 pixels. This is a matrix made of 720 pixels across and 480 pixels down. Pixel means "picture element." As a still image, it is not a very high resolution, but when about 30 of these im-

ages go by each second, they look good. Have you watched any good quality DVD movies lately? Also, these pixels are not square, they are rectangular. Think of it this way: Make the 720x480 image fit into a space for 640x480 pixels. The result is the 720x480 image will be squashed vertically. Therefore, the DV format has a pixel aspect ratio of 0.9. Or, each pixel is a tiny, vertically oriented rectangle. Another feature to be aware of is the field time code and dominance. The field time code is called drop frame, which means there are 29.97 fps instead of 30 fps. Field dominance is a term used to indicate which of the interlaced fields comes first. The standard for DV video is to use the lower field first. This dominance goes by one of the following names: bottom, lower, even, or first field dominant.

Now that you understand the basics of the DV format, I bet you're wondering how you can take advantage of this knowledge. Most of us will be using a DVD to get the imagery onto the dome. All of the planetaria support vendors have programming capabilities to automate search and play of DVDs. For this, the DVD player needs to be controllable, usually by a serial port on the back. You could also use the analog method by pressing buttons on the remote to play during a show. Even so, to get your motion imagery onto a DVD is another task. This can be done in a variety of ways. You could use a stand-alone DVD recorder unit. You play a video source into the device and press record. It is simple, but it may not be the best quality. The route many of us will probably take is to create a DVD on a computer and then use that DVD in a programmable DVD deck.

Creating a DVD requires some knowledge of its structure because of the way in which we use it in the theater. DVDs have menus and tracks. The menus are just that, ways of accessing the tracks of video. A track can be video or a slideshow. Slideshows are where there are stills held for a certain amount of time. Chapter markers can be added to a track to allow for easy navigation. Audio can be linked with these tracks, as can subtitles. You can have up to 10,000 menus and 99 tracks on a single DVD. Within each track, up to 99 chapter markers can be used as well as 8 audio streams and 32 subtitle streams. Also, each track can have its own single aspect ratio. Some tracks can be in 4x3 mode while some can be in 16x9. No single track can have both. In addition, menus can have motion imagery as well as sound. For the planetarium, it is best to keep things simple and to avoid potential



problems. If you create a DVD for a planetarium program, then it is best to have only one menu with all of the motion and still imagery on one track using chapter markers. At this point, you have two parts to contend with. Getting your video and stills together and making the DVD.

### Get Your Assets Together!

Assets can be your video, stills, audio, text for subtitles, and DVD-ROM content that you want on your DVD. Your video can be from a DV camera or created on your computer. DV cameras are tiny devices that are getting better and cheaper each year. As of summer 2004, they are as low as \$300, especially if you find them online. About as small as your hand, they record on 60-minute tapes that are half the physical size of an audio cassette. The format it records in is DV video with 16-bit, 48 kHz stereo audio. The DV video format has a "lossy" compression ratio. This means that information is lost when the video you are recording is converted into DV video. It is quite good, but there may be some slight degradation. DV video is still better than laserdiscs, though. DV audio has a better sampling rate than audio CDs which are at 44.1 kHz. The drawbacks of this system are that the video is interlaced and the built-in audio microphones record all sounds, instead of just a singular subject. If you have seen me film for the 2003 or 2004 conference archive, you would have seen me use one of these small DV cameras along with a "shotgun" style microphone. This type of mic can isolate, though not perfectly, a subject. A lavalier mic is better, but needs to "worn." For studio use, a good omnidirectional mic can be used for narration. You probably already have one of these. As always, your final product is as good as your assets. Be aware, some of these cameras store their video on mini DVDs. Do not use these as the video files they create are even more compressed than DV video and may not have the quality needed for editing. As a side note, some of these cameras have analog video (RCA & S-Video) and audio inputs and can accommodate A-V digitizing on the fly directly into your computer. A great perk for those with unreplaceable analog video sources. Check out Canon's DV camera, ZR80 (\$299 on-line).

To create video sequences on your computer, there are many routes one can take: transitions between stills, 2 or 3-D animation, video export from a program, etc. If you have a number of stills that you want to make look nice, you can use a video editor program like Apple's free iMovie or not free Final Cut Express. PC users can use Adobe's Premier. These programs have all sorts of cool transitions to go from one scene, video or still, to another. These programs allow you to apply all sorts of filters to a scene, like sepia tone for example. You can even zoom (in or out), pan (go

left, right, up or down), and rotate with a video or still scene. You see this in documentaries when they are using archival photographs. This is a great way to emphasize parts of an image to stress what's important in relation to your script. An example would be to talk about the Orion Nebula in general and show all of the nebula. As you describe the interior and get into proplyds, you could be zooming and rotating in on the proplyds at the same time. This makes for a dramatic and effective illustration of your narration and only one image is being used. Just make sure you are using the highest resolution still you can get your hands on. You don't want to pass the 1:1 point where individual pixels of the image are being enlarged greater than the pixels in your projector. The image will fall apart at this point. To have much greater control over effects, use Apple's Motion or Adobe's After Effects. If you are using a non-data video projector, be aware of potential overscanning. The effect is when the video source is enlarged so you don't see the full frame. Have you noticed when old movies on TV have some of the titles beyond the boundary of the TV set? In your editor program, turn on the motion and title safe areas. Motion safe areas show where you shouldn't put important action. Title safe areas are where you shouldn't put any titles. Also, avoid thin lines, especially if they are one pixel thick as they will strobe if projected with a non-data projector. Use at least 3 pixel wide lines. When you are ready to export your product, make sure your final exported asset is 720x480, 0.9 pixel aspect ratio, 29.97 fps, non-interlaced, millions of colors, and "animation" or "none" compression. When you make an uncompressed video file, it is huge, about 30.6 MB/s. To compare, a DV video file is 3.5 MB/s and a DVD video file is 1 MB/s for a compression rate of 8 Mbps. The reason to not compress is so that you don't lose any information until the final DVD creation. If you are going to mix this with actual video footage, then you need to make it interlaced with the lower field dominant.

Animation is not an easy task to do. This requires special software and the ability to create your objects. If you are able to do this, follow the export settings mentioned in the previous paragraph.

Video export from a program is when a program like Celestia can export to a QuickTime video file. Celestia is an Open-GL graphics solar system fly around program and is freeware for both Macs and PCs. The PC version at this time can export your motions to a video file. Power Point for both systems will also export to a QuickTime video file.

Once you have your video assets, you can use a video editor to paste together all the sections. If you don't want to have one scene merge into the next, add about five seconds of a black still in between. The reason you want to put all of your video segments together in one track is to guarantee your

programmable DVD player being able to access all of your video segments. If they were each in different tracks, the automation system may have trouble finding them. Be safe, don't risk potential problems in the theater and use one track. If you want, you can put in chapter markers about 2 seconds prior to the first frame of a video section to mark the beginning of a segment. For any audio you may want, you will also need to add at this time and put in sync with your video. This final large video sequence should then be rendered out to the same uncompressed video format mentioned earlier. That is, if you have enough hard drive space. You could render out to the DV setting if you must. You will end up with a QuickTime or AVI file that has both audio and video. The next paragraph will show how you may be able to skip this rendering step.

### The Creation of a DVD

To make a DVD play in commercial players, it needs to be created with the correct format. To set the record straight, there are two DVD formats. One is a DVD-ROM format that typically has regular computer files, or it can have DVD video files, but will ONLY play in a computer. To play in a commercial player, it needs to be made with the DVD video format, and the file structure of the DVD needs to follow certain guidelines. The DVD needs to have a "VIDEO\_TS" and an "AUDIO\_TS" folder directly under the disc. It can have other folders as well, but the other two folders must be found in the highest level of hierarchy. Within the "VIDEO\_TS" folder are files with extensions like IFO, BUP, and VOB. The IFO files are information files that describe the contents of the VOB (video object) file. The BUP file is a backup file of the IFO and is identical to it. The VOB file is the compressed video and audio assets of a track. The first VOB file, VIDEO\_TS.VOB, is the main menu and is usually less than 1 MB if it has no motion. The largest VOB file is typically your main asset. If it's the next VOB file, it will have the name: VTS\_01\_1.VOB. DVD audio discs have files under the "AUDIO\_TS" folder, otherwise they are typically empty. I do want to say that if you use a regular DVD creation program like Apple's free iDVD or not free DVD Studio Pro or Adobe's Encore DVD, you don't have to worry about these things. They will create the proper folder hierarchy. Another point to make is that it shouldn't matter what type of blank DVD you use. Modern players should play any type of DVD. Using either a -R (minus R) or +R (plus R) disc is determined only by the DVD burner you're using. Use a good quality disc, and if you can utilize a 4x or 8x burner (meaning if your computer is fast and stable enough to handle the four or eight times recording speed), use these discs to take advantage of the reduction

in burning time. A single speed burner takes one hour to burn a 1x DVD.

The type of DVD creation program you are using will determine how much work you need to do. Let's start with a complex program like DVD Studio Pro. In this type of program, you will need to manually create a menu, render your video and audio separately, and then burn the disc. The creation of a DVD disc requires the compression of your video assets to an MPEG2 format file. Apple's Compressor program (that is part of DVD Studio Pro) and Adobe's Premier allow you to render your MPEG2 file directly from your video editor like Final Cut Express and Premier. This saves a lot of time as you don't have to create an intermediate video file. These programs allow you to set the amount of compression, so you want to use the best setting possible. DVD players can only take advantage of a compression rating of 9.8 Mbps (Megabits per second) or lower. This value is also the data rate in which the video file plays. The low end limit is 2 Mbps. The more video you want on a DVD, the higher the compression rate, which will be indicated by a lower number. This means more digitizing artifacts will be seen, i.e. lower quality. That's why better made DVDs of two hour commercial movies are made on dual-layer discs, which doubles the amount of potential storage and allows for a better compression rating. If you have 60 minutes of video or less, which I highly recommend, you can use a quality setting of 8.2. You will also see sub-settings within the data rate. The way it determines how to compress is also important to know. If you have more than 60 minutes of video, the best to use is the two-pass, VBR (variable bit rate) setting. This means that the compressor program will scan the complete video file while making notes as to where to set the reference frames. The second pass will actually do the compression. The VBR part means that it will compress some parts a little more if the quality is not as critical. High quality settings are needed for lots of motion and scene changes. Imagine the car chase sequence in "The French Connection." If you keep to less than 60 minutes, use the single pass non-VBR setting. You don't have to worry about file size as it will definitely fit on a single-layer DVD. Using 60 minutes of video also means you don't have to compress the audio. So you can use the uncompressed 16 bit, 48 kHz stereo setting. Surround sound users need to check out Apple's A.Pack program.

At this point, you have separate audio and video files. The menu is the next thing to create. Since you want it very basic and potentially hassle-free in your theater, do not use any motion in your menu. A still image is not motion, so you can use one for the background. If you made only one track, then just make one button for the track and link the

video and audio assets to the button. The last step is to burn the DVD. The program will “mux” the matching video and audio files into one VOB file and burn the disc. To mux is to mate the audio and video so they play together.

Using a simple program like iDVD makes life a lot easier. To take advantage of the high quality compression, chose the 60 minute, high quality setting in the preferences. Make a non-motion menu. Drag your QuickTime video/audio file onto the menu. This will automatically make a button. Press “Burn.” The program will automatically render the mpeg2 video file, mux the audio and video, and burn the disc. There are no settings to worry about. Every disc I have made, no matter how complex, has never failed.

The next step is to test out the disc in your theater. Make sure everything plays and looks the way you want. Once you have a working disc, you’ll want to make a back-up. Use your OS’s imager program. Insert the DVD, and make an image from your device (DVD drive). Burn this image onto another DVD. If you make an image from the volume (the disc itself), it will make a DVD-ROM disc, not a DVD video disc. You can also use DVD-RWs. These are re-recordable and good for the evaluation process.

#### **Time To Pay The Piper.**

Now that you’re chomping at the digital bit, what do you need to make a DVD? First, a computer that is fast and stable enough to not crash and handle the data rate to burn to a DVD. An Apple purchased within the last few years should be fine. PC users need a machine that is designed to edit video and burn DVDs. There are too many variations of parts and specifications to list here. Either machine will need a DVD burner. I highly recommend at least one extra hard drive. The hard drive should be at least 7200 RPM and about 160 GB or greater. If it has 8 MB of cache, that’s good, too. You can install a DVD burner and hard drive yourself into a computer tower. If you want a second extra hard drive, determine if your machine can handle more than two total hard drives. If not, you can buy an external drive or an external case and install the drive inside. A DVD burner can be external, too. Anything external needs to be AT LEAST FireWire (IEEE 1394) or USB 2.0. If you have more than one drive, alternate where your files are rendered. If your raw assets are on drive 1, render out the QuickTime or AVI file on drive 2. To make the MPEG2 file or VOB file, render this back on drive 1. This method will keep your files going from one drive to another. You can have only one drive, but it will be reading and writing on the same drive and takes twice the time. It is recommended by Apple and Adobe to have four drives: one for the operating system and software, one for the audio, one for

the video, and one to render to. A good amount of RAM is also needed. At least half to one GB is necessary. The software needed depends on how much control you want or need. For most of us, the basic programs are all that are needed. For Apple users, that means GarageBand to create, mix, and edit music and narration, iMovie for your video and audio editor and effects like zoom, pan, etc., and iDVD to make the DVD disc. These are free with new Apple computers. If you need to purchase the latest versions of these programs, they are part of iLife and it costs \$49. Education and government facilities can get it for \$29. High end Mac software includes Final Cut Pro or Final Cut Express (video editors), Motion or Adobe’s After Effects (really nice effects generators) and DVD Studio Pro. Education and government discounts apply here, too. PC users also have choices. Plain programs exist, but I am not familiar with ones that have a very low cost (less than \$50 to free). I do not want to suggest a program that I am not familiar with. For the high end, get Adobe’s Video Suite Professional which includes Photoshop, Premier, After Effects Pro, Audition (an excellent audio editor), and Encore DVD. You can’t go wrong with this suite.

The future of motion imagery is looking fine, resolution-wise. Video cameras will be high-definition and progressive. This means four times the resolution and no interlacing. This is what George Lucas used to film Episodes 1-3 of Star Wars. They will also be made with built-in mini hard drives. You won’t have to compress the video file if you don’t want. (Huge files, though.) DVDs will also be high-def. Current Apple hardware and software are already designed to deal with such creatures.

At some point, many of us will have changed over to hard drive servers for image display in our theaters. Some of us will even have all-dome projection, Until then, I feel that DVDs will be the presentation device of choice.

May the pixels be with you.

#### **References:**

- Bowen Technovation; Digital Video and Graphics for Planetaria and Exhibits... A Workshop (Download the videoworkshop.pdf document for details.) <<http://www.bowentechnovation.com/planetarium/videoworkshop.htm>>
- DVD Studio Pro 2 Help.pdf (Available with the program DVD Studio Pro 2.)
- Secrets of Home Theater and High Fidelity; A Secrets DVD Benchmark Review (Check out the article index on the bottom of the page.) <[http://www.hometheaterhifi.com/volume\\_7\\_3/dvd-benchmark-introduction-9-2000.html](http://www.hometheaterhifi.com/volume_7_3/dvd-benchmark-introduction-9-2000.html)>

# MAPSEPA Conference Sights



Top Left: Paul Campbell Fellowship Awards for 2004 were presented to, from left to right: Jon Bell, Kris McCall, and Gary Meibaum (Photo by Adam Thanz)



Bottom Right: Kosuke "Kosy" Sasaki's family and friends, from left to right: Philip Groce, Chako Sasaki, Storm's girlfriend, Storm Sasaki, and Joanne Young (Photo by Adam Thanz)

## Paul Campbell Fellowship Award Nomination Form

Nominees must have been a member of SEPA for at least ten years, and they must display qualities in each of five areas, as represented by the five-pointed star shaped award: integrity, friendship, service, knowledge, and vision. Please submit this form to any SEPA Council member.

Nominee's name: \_\_\_\_\_

Qualifications: \_\_\_\_\_

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