

# Greetings *Explore!* Community

This newsletter is intended to highlight Earth and space science information and opportunities for informal educators. If you have events, resources, news, or activities to share, or would like to give us feedback, please contact us at [explore@lpi.usra.edu](mailto:explore@lpi.usra.edu).

In this issue:

<a href="#">Calendar</a>	<a href="#">Becky Recommends!</a>
<a href="#">Spotlight on <i>Explorers!</i></a>	<a href="#">Events and Opportunities</a>
<a href="#">Resources / New Book Releases</a>	<a href="#">Workshops and Courses</a>
<a href="#">Mission News and Science</a>	



## February

28-Mar 2 The Informal Science Education Association of Texas annual conference

## March

21-23 National AfterSchool Association annual conference  
29-Apr 1 Association of College and Research Libraries conference

## April

11-14 Texas Library Association Annual Conference  
17-20 Alabama Library Association Annual Convention



April 15-21 Celebrate National Library Week!  
Bring awareness to your community of the extensive resources offered to them through their local library! For a sample press release, Op-ed, and public service announcement, and more helpful information about National Library week, visit <http://www.ala.org/ala/pio/natllibraryweek/nlw.htm>



# Spotlight On ...



## The Lunar and Planetary Institute's Center for Information and Research Services

The Center for Information and Research Services at the Lunar and Planetary Institute (LPI) maintains a current collection of space-science-related materials in a variety of media, including books, journals, documents, maps, and images. These resources are provided to scientists, educators, librarians, and students – and can be a great resource for materials and information on school projects!

The LPI library is an active participant in the interlibrary loan program. Some products and materials that may be of particular interest to *Explore!* librarians and after-school providers include:

- Books (for children and adults)
- Videos/DVDs/CDs for children and adults on space-related topics
- Answers to space science questions and information about space science books and reference materials

The library catalog is available on-line at: <http://www.lpi.usra.edu/library/library.shtml>

The Center hosts a Regional Planetary Image Facility, one of eighteen established by NASA to provide access to planetary images and maps for the scientific and educational communities. The Center houses imagery and cartographic products from missions such as Apollo, Clementine, Galileo, Viking, Voyager and Mars Global Surveyor.

Visit the Center online at <http://www.lpi.usra.edu/library/>! Explore the resources available to you! For help or additional information, email: [cirs2@lpi.usra.edu](mailto:cirs2@lpi.usra.edu).



## The LPI Resource Connection

When ordering space science books and resources for your collection, don't forget to visit our Lunar and Planetary Institute's Web sites! For children's space books go to: SkyTellers:

(<http://www.lpi.usra.edu/education/skytellers/intro.shtml>) or Explore!

<http://www.lpi.usra.edu/education/explore/explorations.shtml>, then to your topics of interest. For the latest space-related books for adults go to:  
<http://www.lpi.usra.edu/publications/books.shtml>

### **Saturn - A New View**

Hardback book by L.Lovett, J.Horvath, and, J.Cuzzi. As a result of the ongoing Cassini-Huygens mission, photographs of Saturn, its rings and its moons have come streaming back to Earth, together with enough data to keep hundreds of scientists engrossed for decades. Reproduced here are 150 of the best of those images, among them rings from the unlit side never visible from Earth and panoramas of the surface of Titan, Saturn's largest moon. This breathtaking volume, including authoritative essays on the planetary system and the mission, reveals the planet, its ethereally beautiful rings, and its 40+ moons in ways never before seen or recorded.

### **International Polar Year**

NASA's Science Mission Directorate's participation in the International Polar Year (IPY), designated from March 2007 to March 2009, will provide new insights into the polar regions of Earth, the Moon, and Mars. Numerous education and public outreach projects are planned to complement research and exploration activities. Educator resources include:

- The International Polar Year Website (<http://www.ipy.org/index.php?/ipy/audience/C27/>) – Educators can access numerous articles, brochures, posters, links to classroom activities, blogs, and additional resources, as well as world-wide educational events and traveling exhibits associated with the IPY.
- Exploring Ice in the Solar System ([http://btc.montana.edu/messenger/teachers/MEMS\\_CompPlanetology.php](http://btc.montana.edu/messenger/teachers/MEMS_CompPlanetology.php)) – A plethora of inquiry based activities support explorers in grades pre-K through 5 as they investigate the physical processes and properties of ice, and extend their exploration to Earth's icy regions and beyond, to ice elsewhere in the solar system.
- Tour of the Cryosphere (<http://www.nasa.gov/vision/earth/environment/cryosphere.html>) -Visitors explore Earth's icy polar realms in this animation, commencing in Antarctica and continuing to polar sea ice and onward to the North Pole. They gain a sense of both the natural annual changes in ice, and the increasing loss of ice globally in association with rising temperatures. The movie underscores the role of the cryosphere within the Earth system.
- Polar Palooza (<http://passporttoknowledge.com/polar-palooza/>) – Living and working in Earth's extreme polar environments will come alive through several live presentations, broadcasts, and podcasts. *Stories from a Changing Planet* encompasses live presentations, throughout IPY, by leading polar researchers

and Arctic residents at science centers, museums, libraries and schools across North America. In addition, video clips and podcasts from the poles will be archived at the Web site with other classroom resources.

## **New Children's Book Releases**

The following are recently released children's books focusing on a particular aspect of Earth or space science. Their inclusion is not intended as an endorsement.



### **The World of Astronomy**

*Carole Stott, Kingfisher (reprint), April 2006, ISBN 0753460068*

Stott offers a compendium of cool space facts for children ages 9-12. Additionally, she explores important landmarks in the history of astronomy and introduces children to today's high-tech space equipment.

### **Guide to Space**

*Peter Bond, DK Children (reprint), September 2006, ISBN 0756622301*

This oversized book contains a wealth of space information about known, as well as little known, objects in space and is also replete with spectacular images for children ages 9-12 (and up).

### **Puzzle Quest Through Space**

*Clint Twist and Pat Kelleher, Andromeda Children's Books, September 2006, ISBN 1861991614* What an interesting *twist* to learning (pun intended)! Twist's and Kelleher's book contains 8 space-themed game boards along with all the facts and explanations players need to win. There are games for single as well as two or more players. Reading level ages 7-10.

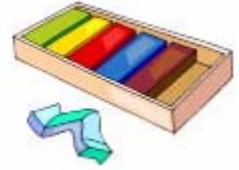
### **Al Espacio: La Carrera la Luna.**

*Philip Wilkinson, Dorling Kindersley Publishing Inc., 2006, ISBN 0756621283*

This is a new translation of a bestselling DK Reader from the Spacebusters series. This book describes the voyage of Apollo 11, its three astronauts, and details of the mission that put the first man on the Moon in 1969. This version is designed to introduce children to the Spanish language and encourage fluency and literacy. The exciting storyline will inspire children to try out new vocabulary and develop their reading skills as they learn about favorite subjects. For ages 4-8.



## Becky Recommends



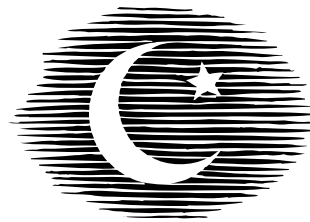
As the activity designer for several of the *Explore!* modules, I am always on the lookout for great ways to engage children in Earth and space science. The following activity is the fourth in a series of activities on the Moon. All activities in *Becky Recommends!* are designed for tight budgets and tight spaces, and are *always* educational and fun!

### Fishing for Phrases

#### What's Needed?

For each child:

- 16 unlined index cards
- A pencil, black crayon, or black marker
- Optional: Colored pencils or markers for making each phase a different color



#### Play!

In this variation of the classic card game “Go Fish”, children reinforce their knowledge of Moon phase names, the lunar phase cycle, and its sequential pattern.

#### Who?

Children ages 8-12

#### How Long?

45 minutes

Divide children into groups of 4 to 6 players. Distribute 16 index cards for each player. Invite the players to color and label the eight phases of the Moon on their index cards, making two complete sets of Moon Phases. Have the children combine one set of Moon Phases from each of them; shuffle these and place them in the “Moon Pond” in the middle. Then have them collect the second set to shuffle and deal to the players, with each player receiving eight cards.

While there are many possible variations on this game, the object is to collect as many *pairs* of phases as possible until all cards are gone, or the allotted time has expired. As in the card game “Go Fish,” each player in turn asks the child to their left for the cards they need to make pairs. If their neighbor does not have the requested card, they must “go fish” in the Moon Pond. As pairs are matched, they are placed in a pile to the side of the player. The children should ask for Moon phases by name (“Do you have a waning gibbous?”)

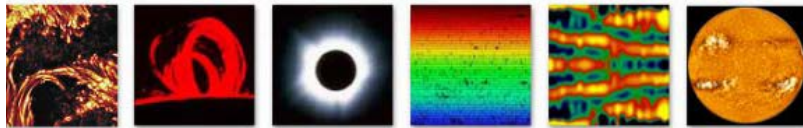
When a child collects all 8 sets, they call out “Month of Moons!” and place them in the correct sequential order to win!

### Solar Week--February 26th-March 2nd.

Solar Week is ideal for children interested in studying the solar system, stars, and astronomy in general. It's also for kids wondering what it's like being a scientist, and possible career choices. Participation makes for a fun computer lab activity as well, so let your imaginations fly! Go to <http://www.solarweek.org> for more information.



## Events and Opportunities



Interact live with the scientists during Feb. 26-Mar. 2nd, 2007!

National Solar Observatory

### NASA Space Settlement Contest

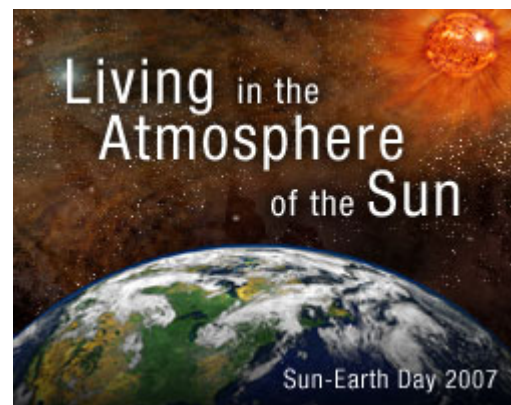
This annual contest, co-sponsored by NASA Ames and the National Space Society (NSS) is for 6-12th graders from anywhere in the world. Individuals, small teams of two to six, and large teams of seven or more (often whole classrooms with teacher leadership) may enter. Grades 6-9 and 10-12 are judged separately, except for the grand prize. Students develop space settlement designs and related materials. These are judged at NASA Ames. Submissions must be received by March 31, 2007. For more information, go to <http://www.nas.nasa.gov/About/Education/SpaceSettlement/Contest/>.

### Sun-Earth Day 2007 Webcasts

Sun-Earth Day occurs on or near the spring equinox, which is March 20, 2007. For more information about Sun-Earth Day, visit <http://sunearthday.nasa.gov>.

This year's theme is Living in the Atmosphere of the Sun. In celebration of Sun-Earth day, NASA will present the following two webcasts:

- *The Sun's Impact on the Solar System: Moon, Mars and Beyond* will include scientists from Goddard Space Flight Center, Langley Research Center, and University of Arizona. The webcast will be archived and available at <http://sunearthday.nasa.gov/> by March 2<sup>nd</sup>.
- March 20, 1:00 - 2:00 p.m. EDT *Living in the Atmosphere of the Sun*. The webcast will feature NASA Heliophysics (solar and geospace) missions and their interrelated stories as they study our Sun and its impact on Earth and other planets. For more information about the webcasts, go to [http://sunearthday.nasa.gov/2007/events/feb22\\_webcast.php](http://sunearthday.nasa.gov/2007/events/feb22_webcast.php).



### Online Public Lectures by NASA Earth Scientists

NASA Goddard Space Flight Center and The Library of Congress announce free public presentations by top NASA scientists on current topics such as climate change, urban sprawl, and natural disasters. The lectures will be recorded and available for viewing after the event at: <http://www.loc.gov/rr/scitech/>. Upcoming presentations include:

- April 3, 2007 -- *Honey Bees, Satellites, and Climate Change*, Wayne Esaias, Ocean Sciences Branch, NASA GSFC
- June 27, 2007 -- *City Lights, Spy Satellites, and Urban Sprawl*, Marc Imhoff, Terra Project Scientist, NASA GSFC

### Globe at Night

The GLOBE Program, the National Optical Astronomy Observatory (NOAO) and many other organizations are sponsoring Globe at Night. Join thousands of students, families and citizen-scientists around the globe hunting for stars during March 8 - 21, 2007. Take part in this international event to observe the nighttime sky and learn more about light pollution around the world. For more information, go to <http://www.globe.gov/GaN/>.



### SkyTellers and Explore! Workshops -

Offered at the National AfterSchool Association's annual conference in Phoenix <http://www.naaconference.org/>

**We hope to see you!**

**March 21** – Workshop participants view the SkyTellers *Constellations* story and play a game of StarDarts! to reinforce understanding of how the constellations got their names and why stars that appear so close together can really be light years apart!

**March 23** – Explore! Health in Space with UV Man! Participants construct UV Man! and equip him with special radiation detectors to investigate the source of ultraviolet radiation in this 90 minute suite of activities. They explore how we can protect UV Man! — and ourselves! — from being exposed to too much UV radiation.

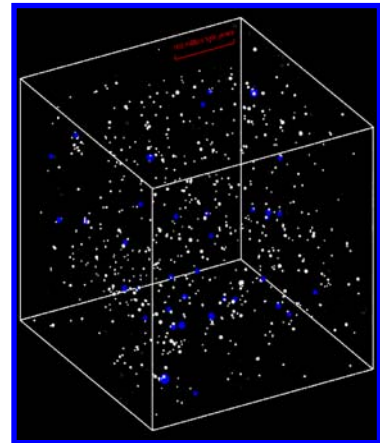
## Mission News and Science

### Distant Quasars Live in Massive Dark Matter Halos

Modified from

<http://www.sdss.org/news/releases/20070209.quasar.html>

Using a map of more than 4,000 luminous quasars in the distant universe, scientists from the Sloan Digital Sky Survey (SDSS-II) have shown that these brilliant beacons are strongly clumped, with huge clusters of quasars separated by vast stretches of empty space. The strong clustering shows that the quasars lie within massive concentrations of dark matter.

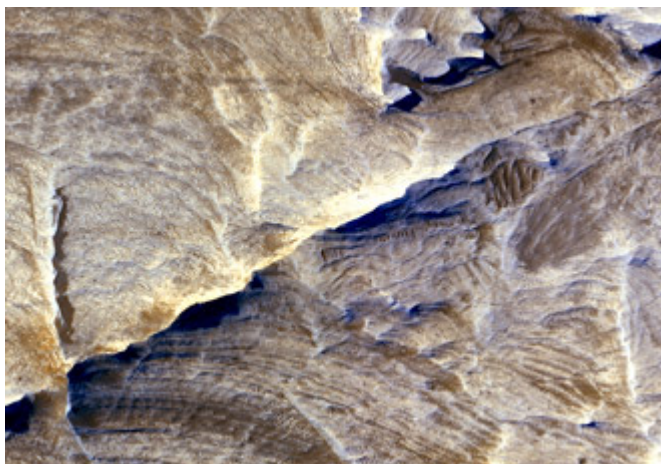


Quasars are the brightest objects in the universe. They occur as swirling gas falls into supermassive black holes at the centers of otherwise ordinary galaxies. Their great luminosities allow them to be seen at enormous distances, and since light travels at a finite speed, quasar maps provide a glimpse of structure when the universe was a small fraction of its current age. Astronomers can use the position of the quasars and how they are clustered to infer the mass of the dark matter halo that surrounds them. In this new study, astronomers have shown that the brightest quasars, which are powered by the most massive black holes, are found in the most massive dark matter halos in the early universe.

### Surprises from the Sun's South Pole

Modified from <http://sci.esa.int/science-e/www/object/index.cfm?fobjectid=40628>

The latest high-latitude excursion of the joint ESA-NASA Ulysses mission has already produced some surprises. In December, although very close to the minimum of its 11-year sunspot cycle, the Sun showed that it is still capable of producing a series of remarkably energetic outbursts. The solar storms, which were confined to the zone around its equator, produced intense bursts of particle radiation that were clearly observed by near-Earth satellites. Scientists were surprised to detect similar increases in radiation with the instruments on board Ulysses, even though it was three times as far away and almost over the south solar pole. Scientists are busy trying to understand how the charged particles made it all the way to the poles.



### Mars Orbiter Sees Effects of Ancient Underground Fluids

Modified from

[http://www.nasa.gov/mission\\_pages/MRO/news/mro-20070215.html](http://www.nasa.gov/mission_pages/MRO/news/mro-20070215.html)

Liquid or gas flowed through cracks penetrating underground rock on ancient Mars, according to a report based on some of the first observations by NASA's Mars Reconnaissance

Orbiter. Scientists have seen the cracks filled with minerals, deposited by liquid or gases, using the powerful telescopic camera on the Mars Reconnaissance Orbiter. Mineralization took place deep underground, along faults and fractures. These mineral deposits became visible after overlying layers were eroded away over millions of years. Dr. Chris Okubo, a geologist at the University of Arizona, Tucson, discovered the patterns in an image of exposed layers in a Martian canyon named Candor Chasma. The haloes visible along fractures seen in the Candor Chasma image appear to be slightly raised relative to surrounding, darker rock. This is evidence that the circulating fluids hardened the lining of the fractures, as well as bleaching it. The harder material would not erode away as quickly as softer material farther from the fractures. The most likely origin for these features is that minerals that were dissolved in water came out of solution and became part of the rock material lining the fractures. Another possibility is that the circulating fluid was a gas, which may or may not have included water vapor in its composition. Images showing the haloes along fractures are available at [http://www.nasa.gov/mission\\_pages/MRO/news/20070215.html](http://www.nasa.gov/mission_pages/MRO/news/20070215.html) .