New Moon!

NASA Lunar Science Institute Education and Outreach Program

Lunar Exploration Analysis Group

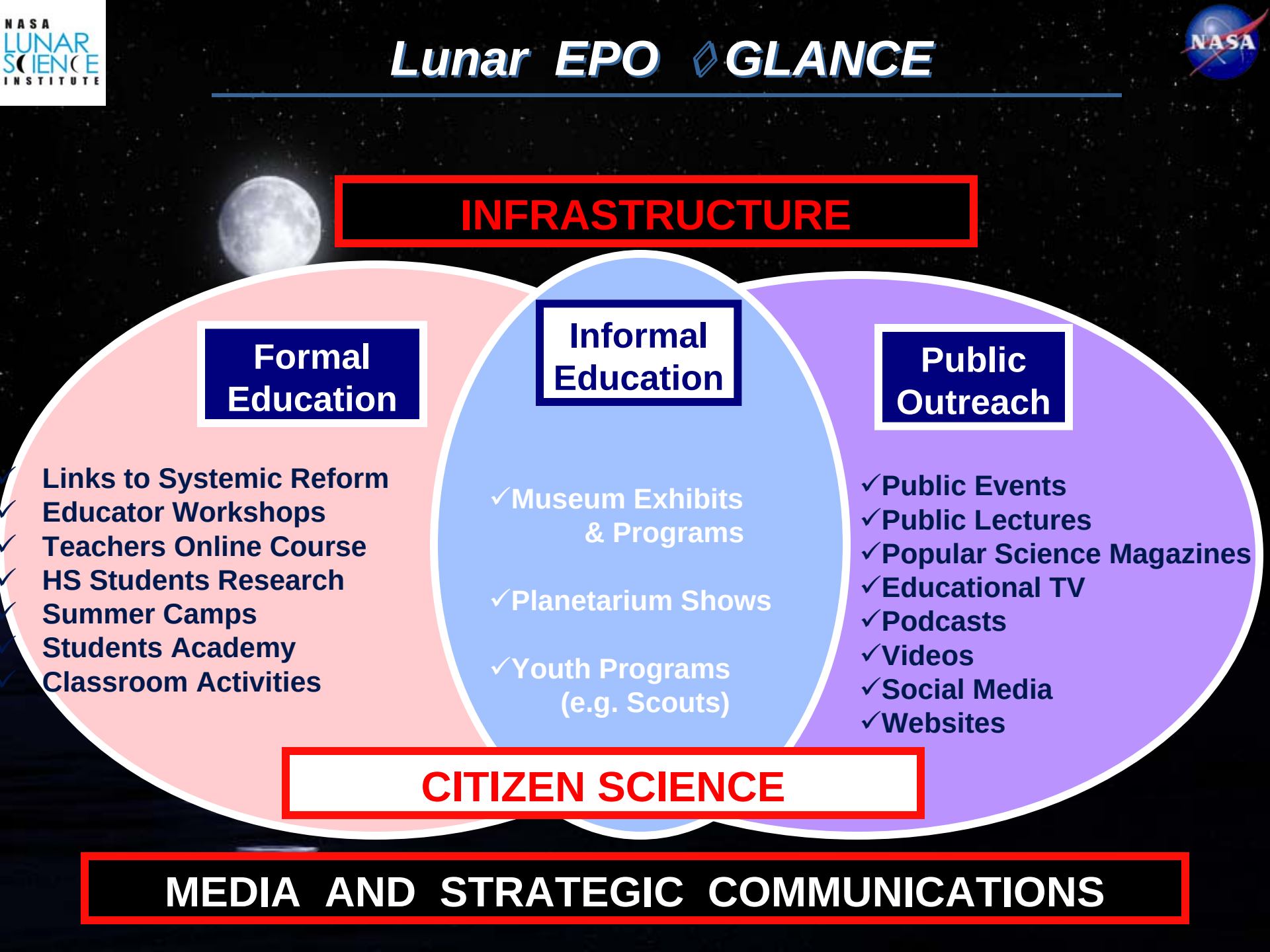
Doris Daou

Director of Communications and Outreach

14 September 2010

Doris.Daou-1@nasa.gov

Lunar EPO GLANCE



INFRASTUCTURE

- NASA HQ:
  - Reporting Guidelines News EPO Workshops
- National/International Conferences & Events Presence:
  - InOMN LPSC EPSC AGU DPS AAS IAU CAP ASP NSTA
- Funding:
  - NLSI Summer Students Internships
  - NLSI Supplemental EPO Grants
  - ROSES-EPO Grants
  - Products + Partnerships + Resources
  - International Observe the Moon Night
- Focus/Working Groups :
  - Special Needs Media Multi-Media Citizen Science (Higher Ed Connections)

Partnerships/other NASA Programs

- International Observe the Moon Night
- My Moon
- Moon Zoo
- Next Generation Lunar Scientists and Engineers
- Center for Astronomy Education for College Teachers
- Astronomical Society of the Pacific
- International Year of Astronomy
- Astronomers Without Borders
- Solar System Ambassador Program
- Museum Alliance Program
- Museum and Visualization Alliance for a high-leverage opportunity and for greater distribution.
- The JPL and Johnson Space Center ongoing program with the Girl Scouts of America

Working Group
Exceptional Moon Focus Group

- Identify needs within Lunar and user community (formal, informal & homeschool educators)
- Identify existing lunar-related resources that are accessible for students / audiences with disabilities
  - ✓ NASA CORE, web, publications
- Facilitate adaptation(s) of new / existing education materials for use by students / audiences with disabilities
  - ✓ (Blind/Visually Impaired, Deaf/Hearing Impaired, Mobility Impaired, ADD/ADHD, and more)

RunyonC@cofc.edu

- Ensure ADA / 508 compliant (federal regs)

NLSI ◊ Formal Education

- 6th and 7th Grade Students 2 Weeks Summer Camp
- "Unknown Moon" during "Space Academy" educational event for middle school students at APL
- High school research experiences through online mentoring
- High school student research with the Summer Science Program, Inc.
- Lunar Extreme Workshops (LEWS) for high school students and teachers ➔ Develop Curriculum
- Educator "Of the Moon, On the Moon, From the Moon" Institutes = 2 day workshops, grade 6-12
- High School Teacher Workshops
- Online Course for Teachers: Lunar Geology

NASA Samples Available for Loan from JSC

Short Term Loans

- Each NASA Center has samples to provide for requests in their region of responsibility
- Traveling samples are encapsulated in clear acrylic pyramids

Long Term Loans

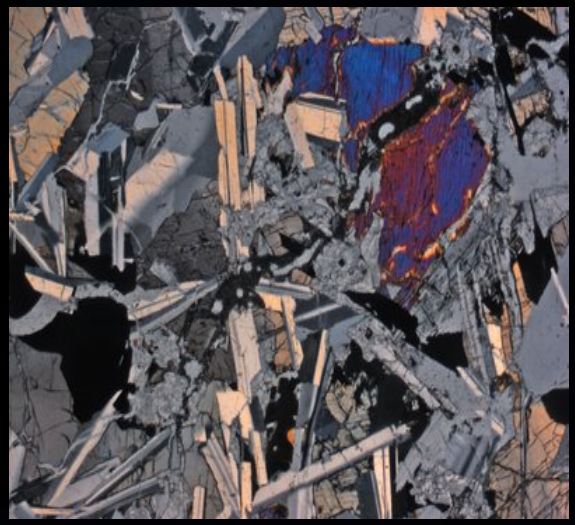
- Typically at museums and science centers
- JSC considers, evaluates, and approves (disapproves) all requests
- Currently, there are 65 long term samples displays in the world

Jaclyn.Allen-1@nasa.gov

NASA Samples Available for Loan from JSC

Lunar and Meteorite Sample Education Disks

- Two week loans available from JSC for classrooms, libraries, science centers, and museums
- Loans to certified educators who are trained in security and education use
- Lunar kits contain six Apollo rock and regolith samples, analogue Earth rocks and soil simulant, education resource materials
- Meteorite kits contain six different meteorites and Education resource materials



Lunar and Meteorite Thin Section Sets

- Sets of 12 thin sections – either meteorite or lunar
- Available from JSC for college courses

LRO Professional Development

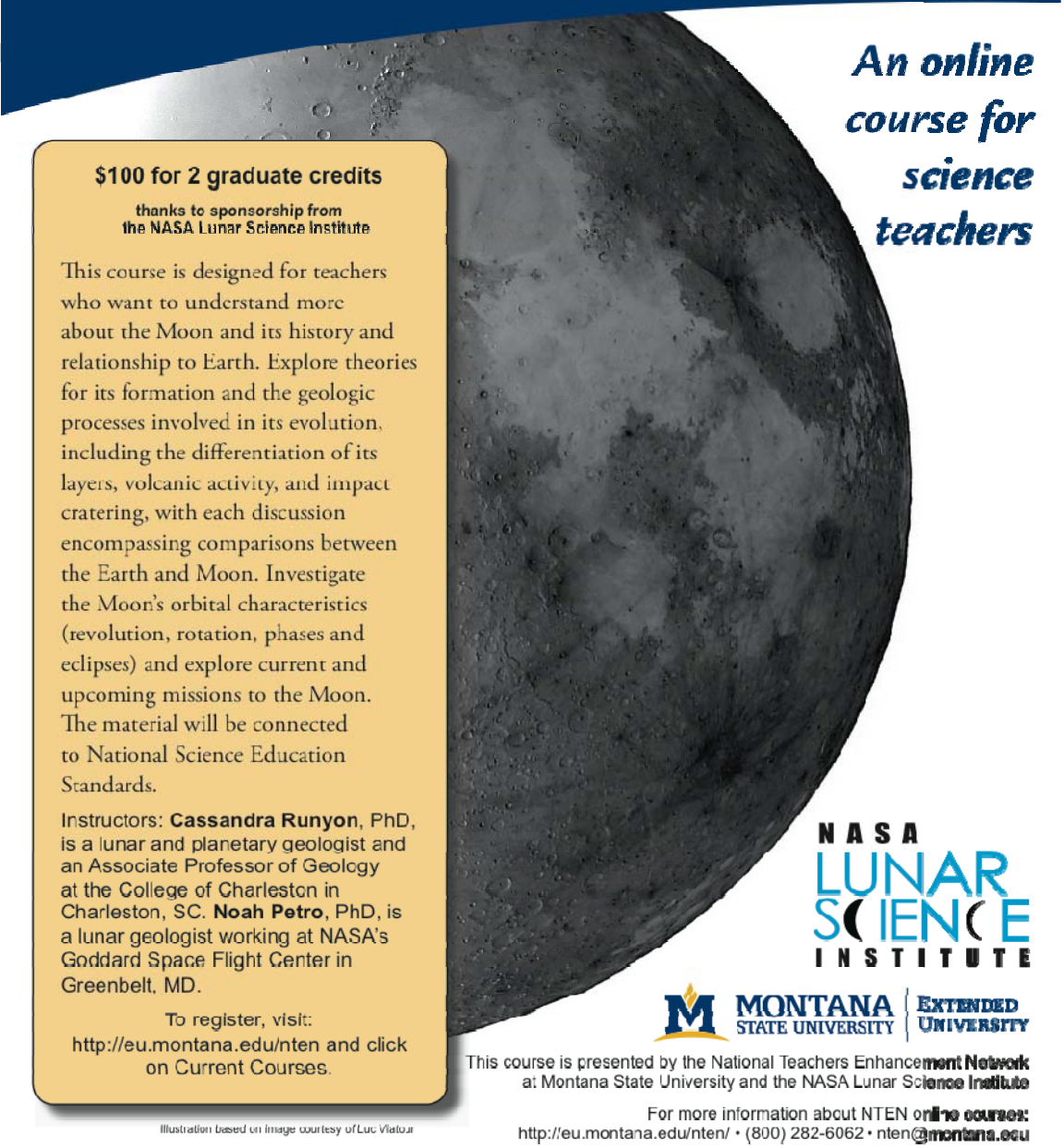
- Summer 2011
- Arizona State University, Adler Planetarium, Denver Museum of Nature and Science, Boston University, Applied Physics Laboratory (MD)

- Summer 2012 – Locations TBD

brooke.c.hsu@nasa.gov

Geology of the Moon (ERTH 580-50)

2-credit online course begins Sept. 28



An online course for science teachers

$100 for 2 graduate credits

thanks to sponsorship from the NASA Lunar Science Institute

This course is designed for teachers who want to understand more about the Moon and its history and relationship to Earth. Explore theories for its formation and the geologic processes involved in its evolution, including the differentiation of its layers, volcanic activity, and impact cratering, with each discussion encompassing comparisons between the Earth and Moon. Investigate the Moon's orbital characteristics (revolution, rotation, phases and eclipses) and explore current and upcoming missions to the Moon. The material will be connected to National Science Education Standards.

Instructors: **Cassandra Runyon**, PhD, is a lunar and planetary geologist and an Associate Professor of Geology at the College of Charleston in Charleston, SC. **Noah Petro**, PhD, is a lunar geologist working at NASA's Goddard Space Flight Center in Greenbelt, MD.

To register, visit: http://eu.montana.edu/nten and click on Current Courses.

Illustration based on image courtesy of Luc Viatour

NASA LUNAR SCIENCE INSTITUTE

MONTANA STATE UNIVERSITY | EXTENDED UNIVERSITY

This course is presented by the National Teachers Enhancement Network at Montana State University and the NASA Lunar Science Institute

For more information about NTEN online courses: http://eu.montana.edu/nten/ • (800) 282-6062 • nten@montana.edu

EPO Leads :

- Cass Runyon @ Brown/MIT

Sponsored by NLSI Central

RunyonC@cofc.edu

Online Course:

- K-12 Preservice Teachers
- 2 Credits at MSU
- Sept. 28 through Nov. 29
- 25 enrollees from 16 states

Lunar Sci Grad Con

- **What:** Lunar Science Conference for Graduate/ Undergraduate Students
- **Who:** NLSI Graduate and Undergraduate Students
- **When:** Plan to hold within the NLSI Lunar Science Forums
- **Goal:** Opportunity for Lunar Science Graduate students to connect and talk about their work
- **Open to anyone:** Specially undergrads, grads, postdocs, early career, anyone new to lunar science

brad.bailey@nasa.gov

NLSI LSF ➔ Student Poster Competition

- **What:** 1st, 2nd and 3rd place selections = awards of $1,500, $1000 and $500

- **Eligibility Requirements:**
  - Participants must be enrolled in a degree program at the time of abstract submission
  - The award is intended primarily for students at the graduate level,
  - however, individuals at the undergraduate level are also eligible to compete, Postdocs are NOT eligible
  - Eligibility is open to both U.S. citizens and Non-U.S. citizensAbstract

brad.bailey@nasa.gov

- **Requirements:**
  - Only one abstract per student will be considered for an award
  - The student must be the senior author of the abstract and the major contributor to the material presented, and the person presenting the poster
  - The majority of the material should not have been previously presented at another meeting

- **Criteria for Selection:**
  - **Originality of the research**
  - **Quality of the execution Impact to the field of lunar science**
  - **Clarity of presentation, including accessibility to the non-expert.**

Next Generation Lunar Scientists and Engineers

- **Goal:** To prepare the next generation; To encourage immediate integration into lunar community; To increase and encourage effective communication among and between scientists, engineers, and the public
- **Open to anyone:** Specially undergrads, grads, postdocs, early career, anyone new to lunar science and engineering
- **Workshops:** Workshops prior to LPSCs and future NLSI Forums

Lora.V.Bleacher@nasa.gov
jacob.e.bleacher@nasa.gov
noah.e.petro@nasa.gov

NLSI Informal Education

- **Portable Exhibits : Lunar Art**
  - Include lunar imagery, photography, film, sound, science, folklore and more!
- **Traveling lunar exhibits that present current lunar science and exploration for libraries and other informal educational venues**
- **Lunar-related hands-on activities for library learning environments and training for librarians**
- **"Back to the Moon, Back to the Future" -- Planetarium Show**
- **"Max Goes to the Moon" – Planetarium Show**

Lunar Science Participatory Exploration for Students

Goldstone Apple Valley Radio Telescope
Lewis Center for Educational Research
http://www.lewiscenter.org/gavrt/

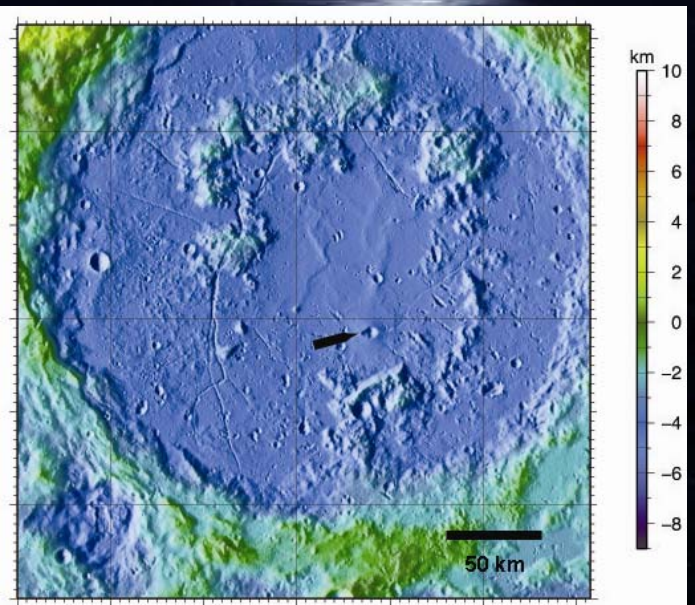
brian.h.day@nasa.gov

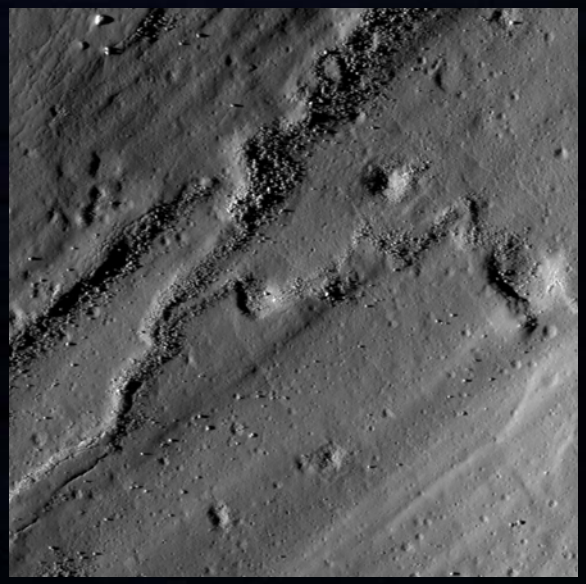
Lunar Impact Monitoring Program
NASA Meteoroid Environment Office
http://www.nasa.gov/centers/marshall/news/lunar/

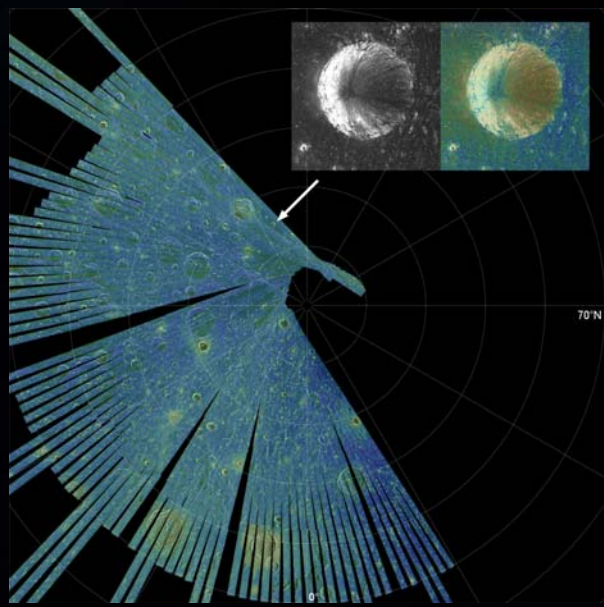
Using LRO Data in the Classroom

- Authentic research experiences for students
- Lunar Student Imaging Project
- Moon Exploration Student Data Teams
- Lunar Topography with LOLA

brooke.c.hsu@nasa.gov



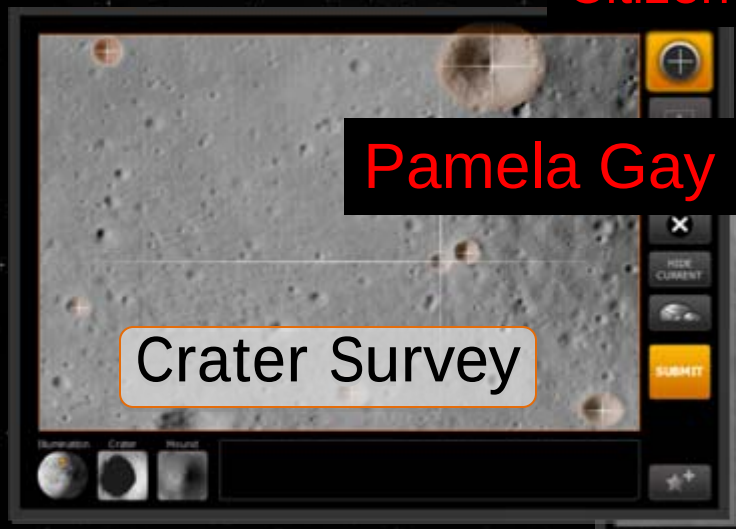




MOON ZOO

Citizen Science in Action

Pamela Gay : starstryder@gmail.com



Launched May 11, 2010

Over 2 million craters / areas of interest annotated as of June 15, 2010

Averaging 5,000+ users per day, >14,000 participants so far!

***** Directly engages the public in identifying geological (& sometimes technological) features on the Moon.

* Users can explore educational content, including video tutorials, articles, glossary terms, and flash interactive activities.

* There also is a blog and a forum to encourage collaboration and social learning, and a twitter feed for general communications.

Moon Zoo Continued Involvement

Together, this suite of software facilitates Moon Zoo users in contributing to science while learning about the Moon and geology.

- Domestic and international NLSI scientist involvement
- Perspectives on image prioritization, user interface
- Online design and development
- Education and Outreach efforts

Delia.L.Santiago@nasa.gov

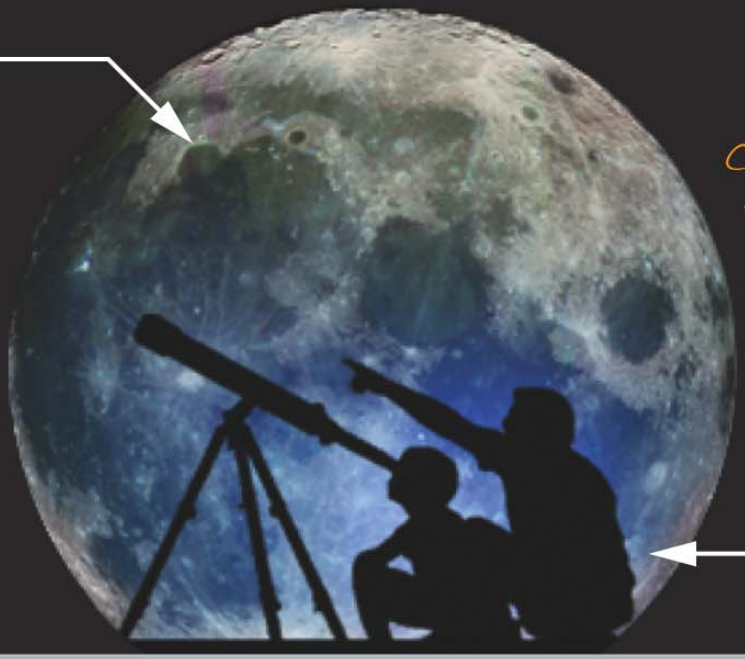
Outreach

COMING TO YOU 09.18.2010 ← The Date

International Observe the Moon Night

SEEING THE MOON IN A WHOLE NEW LIGHT

The Moon →



Check out our website for more information about our closest neighbor, the Observe the Moon program, or to find an event near you!

Take a guided tour of the Moon!

← This could be you!

http://observethemoonnight.org

Purpose:

- Engage lunar science and education communities, partner networks, amateur astronomers, space enthusiasts, and general public in an annual lunar observation campaign that shares excitement of lunar science and exploration
- Enable public to maintain curiosity about the Moon and gain better understanding of Moon's formation, evolution, and place in night sky

What's Planned for 2010:

- Theme: "Seeing the Moon… in a whole new light"
- Lunar Photography contest
- Tweet-ups (@observethemoon)
- Website: http://observethemoonnight.org
- InOMN kits: Outreach materials, Moon observation journals, Moon maps

Who - National Program Partners:

- Lunar Reconnaissance Orbiter Education and Public Outreach
- NASA Lunar Science Institute
- Lunar Planetary Institute
- Ames Research Center
- Marshall Space Flight Center
- The Astronomical Society of the Pacific
- The Astronomers without Borders Group
- Bryce Canyon National Park

Who - International Programs and Partners:

- Φ The Astronomers without Borders International Volunteers
- Φ The Gemini Observatory in Chile
- Φ The Canadian Lunar Research Network (NLSI Node)
- Φ European Planetary Science Conference (2010 LOC Rome)
- Φ The Canadian IYA Committee (CASCA)
- Φ Afghanistan

Website

http://observethemoonnight.org

- General info about InOMN
- Information about local InOMN events
- Moon info and activities
- Event-hosting tips
- InOMN kits
- Links to contests and social media
- InOMN merchandise

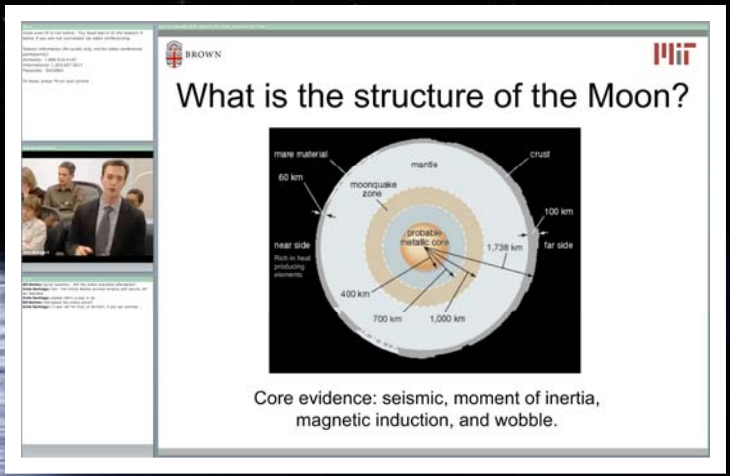
Example InOMN Event

- Observing the Moon with telescopes
- Lunar Talk by a Local Expert
- Hands-on activities
- Tweet-up (#InOMN10)
- Refreshments
- Evaluations

223 Events = 128 U.S + 95 international

Director Seminars Series

- NLSI has a monthly virtual seminar series that allows anyone with a telephone and internet connection to learn from world class lunar scientists.
- Participants use Adobe Connect for slide sharing and chat, and either video conferencing or teleconferencing options. Support capabilities range from HD to web cams.



- Regular seminar attendance from all NLSI domestic teams, international partners, France.
- Twenty to thirty sites connect via teleconference options.
- Talks are archived, with the presentations, for anyone to access.

Delia.L.Santiago@nasa.gov

MyMoon

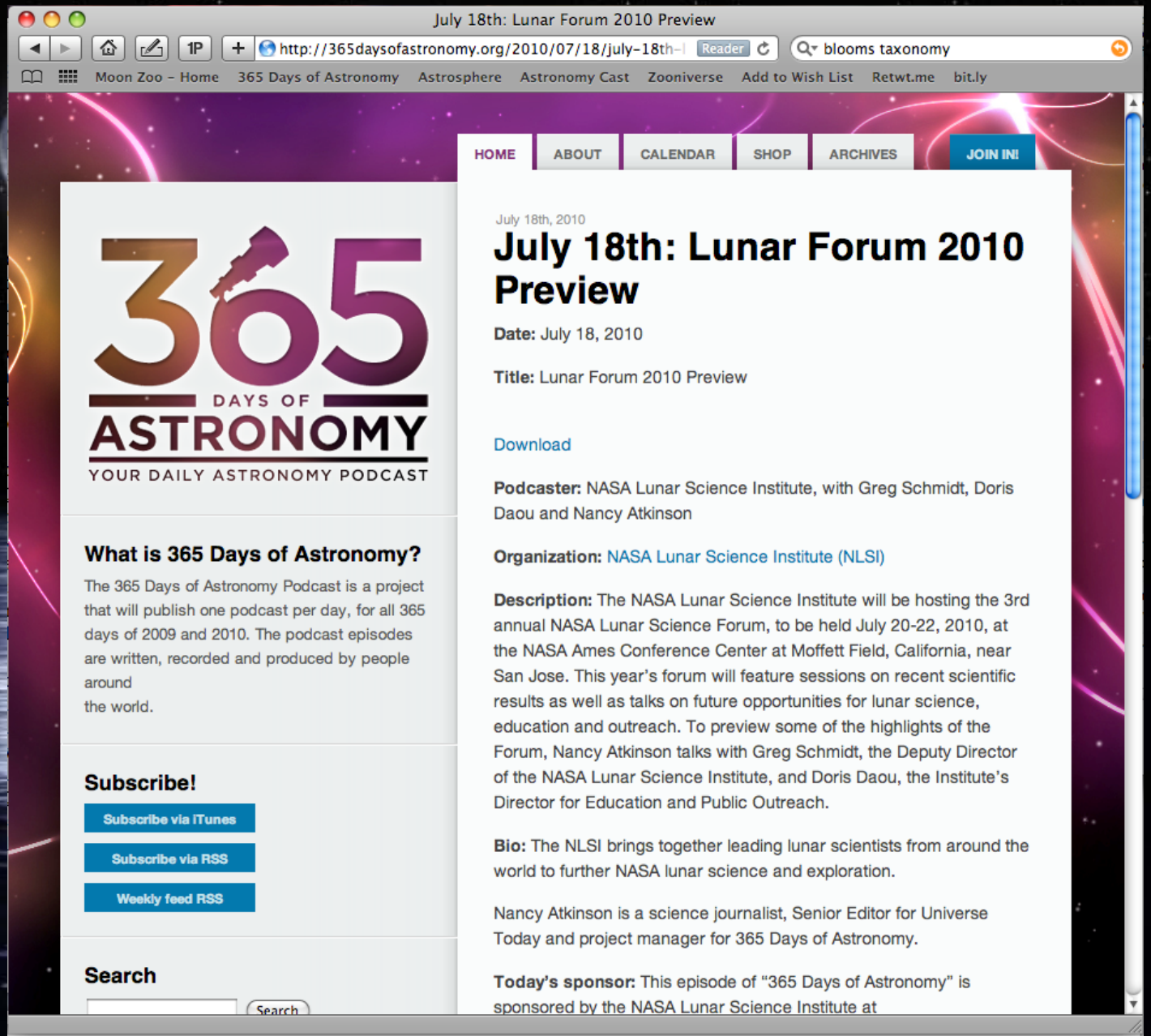
- A social media learning portal that engages the general public in lunar science and exploration, with a focus on adults ages 18-25 (an audience primarily not engaged in lunar science)
- MyMoon strives to facilitate conversations with the audience to improve, and to add content to, the site
- Contests, polls, and blogs give the audience a chance to participate
- Social media is used to promote events and to allow the audience to communicate with MyMoon and each other
- YouTube and Flickr accounts are integrated into the website with Twitter integration in development; MyMoon also has a Facebook group page
- Public webcasts through Adobe Connect allow real-time interaction with lunar scientists, artists, authors, etc.

Shaner@lpi.usra.edu

NLSI Social Media

- **Social Media**
  - Facebook, Twitter, and blogs are used to communicate science results and students and teacher experiences to the public
- ***"As it Happened: How We Went to the Moon"* vodcasts**
  - Series of 11 episodes following the Apollo Missions.
- ***"NLSI Podcasts Series"***
  - Various Interviews NLSI Scientists

Social Media



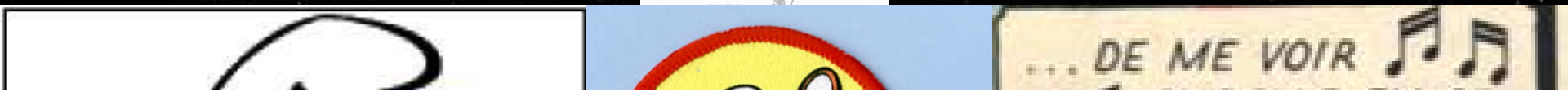
NLSI Professional Development Workshops for Journalists

- **Designed to prepare journalists for the briefings**

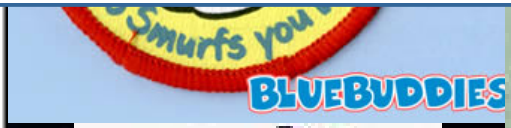
- 15-20 journalists and 5-6 scientists
- 3-4 days long
- No expectation of an immediate story
- Level of detail and background goes far beyond a typical briefing
- Interaction designed to be two-way between the media and the scientists
- Substantial background materials, image banks and videos, primers, etc.

ecobabe@spaceeducation.org

Education and Public Outreach (EPO)



More than Just Glamour!



NASA
LUNAR
SCIENCE
INSTITUTE
Bringing
Lunar Science
To a new generation
…….. And the World!
Lunarscience.nasa.gov
COPYRIGHT 2005-2007 SPACEREF.COM