MarsBots

This summer 60 Arizona third and fourth graders participated in “MarsBots,” an interdisciplinary science camp for elementary students focusing on robotics and Mars.

The camp, sponsored by the Phoenix E/PO program, teamed up with NASA’s Science, Engineering, Mathematics, and Aerospace Academy (SEMAA) at Central Arizona College, a Phoenix E/PO partner.

MarsBots lessons introduce elementary students to the fundamentals of robotics and what robotic exploration has taught us about Mars.

Three camps were held this summer in Flagstaff and Tucson to validate the MarsBots Learning Module. The Learning Module design and camps were led by Katy Wilkins of the SEMAA program and Mary Lara of DeMiguel Elementary School in Flagstaff.

The final Learning Module will be distributed through the Phoenix website, the SEMAA national office, and it will be submitted to the Mars Public Engagement Program at JPL. MarsBots will enhance Mars Public Engagement’s robotics strand by adding activities suitable for elementary students.

If you want more information about the MarsBots Learning Module or activity ideas for your outreach events please contact Lisa Tidwell (ltidwell@lpl.arizona.edu or 520-626-1974).
**BalloonSat**

**Student from Arizona are now getting a chance to reach the edge of space with the help of their teachers and the support of the Phoenix E/PO program and Arizona’s NASA Space Grant.**

This summer, the Changes in Altitudes program, run through the Northern Arizona University Space Grant, sent five teachers to Colorado to learn the art of running a space hardware program.

The Arizona teachers, who serve underserved and underrepresented grades 5-12 students, participated in the Starting Student Space Hardware Programs IV: A How-to Workshop. “All the teachers have chosen their student teams and received their payload supplies and are busy working on their payloads and learning how to solder,” said Kathleen Stigmon, NAU/ NASA Space Grant.

Each teacher and student team designs and builds a small 5-inch cube “BalloonSat”, which houses several sensors and a camera to take images of the edge of space. The “satellites” will be launched with the help of the Arizona Near Space Research team on high-altitude balloons and reach highs of over 100,000 feet.

The Changes in Altitudes program will start the new application process sometime in the spring for five new teachers. Next year, the program plans to hold the teacher workshop in Flagstaff.

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**E/PO Partner Highlights**

*Each issue will highlight one of the Phoenix E/PO partners. In this first issue, we want to introduce you to your Phoenix E/PO team in Tucson.*

**Peter Smith, Principal Investigator**- Peter is in charge of the entire Phoenix mission, including the education and public outreach program. Peter has been with the Lunar and Planetary Lab at The University of Arizona since 1978 participating in many of the seminal space missions that have explored our solar system.

**Doug Lombardi, E/PO Manager**- Doug joined the Phoenix Mission as the E/PO Manager in early 2004. His charge is to create a program that will excite, encourage, and nurture the exploration of questions from students and the public about Mars, the Solar System, and space exploration.

**Lisa Tidwell, E/PO Coordinator**- Lisa joined the Phoenix team as the E/PO Coordinator in June 2005. She worked at the Johnson Space Center and was a NASA Space Grant intern and fellow at Arizona State University involved with spacecraft design, public outreach and media relations.

**Andy Shaner, Graduate Student**- Andy conducts the daily operations of the E/PO program’s internal evaluation effort. He has a bachelor's degree in science education and is a second year graduate student pursuing a PhD in Teaching and Teacher Education with a minor in planetary sciences.

**Peter Smith, Principal Investigator**- Peter is in charge of the entire Phoenix Mission as the E/PO Manager in early 2004. His charge is to create a program that will excite, encourage, and nurture the exploration of questions from students and the public about Mars, the Solar System, and space exploration.

**Jesse Cornia, Undergraduate Student**- Jesse is the Phoenix Mission Web Developer managing the Web site. In addition, he helps with the robotics outreach. He is a criminal justice administration sophomore at the University of Arizona and has worked for the mission for one and a half years.

**Katelun May, Undergraduate Student**- Katelun became a member of the Phoenix E/PO team in August 2004 as a NASA Space Grant Intern. She is creating unique ways to introduce Newton’s three laws of motion to middle school classrooms. Katelun is currently studying Aerospace Engineering at the University of Arizona.

**Matthew Bunting, Undergraduate Student**- Matt is an E/PO assistant working with the Phoenix team since July 2005. Matt is studying electrical engineering at the University of Arizona and has an intense interest in robotic engineering and is looking forward to a career involving robotic design and innovation.

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**E/PO Products**

*Check out the presentations and outreach tools at: [http://phoenix.lpl.arizona.edu/multimedia/](http://phoenix.lpl.arizona.edu/multimedia/).*

**Images:** New Lander image, Mission images, Phoenix Poster image, Phoenix Sticker image, Phoenix logo*

**Fact Sheets:** Mission Overview, Water and Life

**Videos/Visualizations:** EDL animation, Kid’s Science News Network: Water and Life, Water Hammer Test of the Pulse Thruster System, Kid’s Science News Network: Water Ice on Mars?, NASA SCI Files™: The Case of Great Space Exploration Segment 1

* The logo without text can be downloaded from the Outreach Library on the team Web site under Images and Animations or by contacting Doug Lombardi (lombardi@lpl.arizona.edu or 520-626-8973)

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**To learn more visit:** [http://phoenix.lpl.arizona.edu](http://phoenix.lpl.arizona.edu)