The Indiana Space Grant Consortium spent almost two weeks at the State Fairgrounds in August 2008.

The INSGC staff were guests in the IMAX Theater booth underneath the Toyota Trucks Grandstand on the main thoroughfare. INSGC and IMAX joined forces in promoting the full feature animated film *Fly Me to the Moon* that was loosely based on the Apollo 11 moon landing (see story below). In addition to the IMAX activities, INSGC personnel interacted with the crowd promoting both INSGC projects and affiliates. Over 5,000 people directly interacted with INSGC during the fair. The many new contacts established at the fair have resulted in increased awareness of in-state scholarship opportunities as well as several potential new affiliates.

SpacePort Indiana through INSGC affiliate TMGLabs, Inc. with financial support from INSGC provided a tethered blimp (helium filled) to the WISH-TV Fair Booth site at the Indiana State Fair.

The balloon carried a camera and other equipment that enabled video pictures of the camera’s view of the fair and Wi-Fi capability to the WISH Booth for download and other uses by WISH and Space Port Indiana.

The field of the view of the camera on the blimp during the time aloft included the Ball State, Indiana University and Purdue University “days” exhibitions. A balloon launch also took place on August 15, 2008 in connection with WISH-TV “Weather Day.” The launch simulated, as much as is practical given the venue, an actual scientific weather balloon launching and carried a representative payload of scientific experiments from student workshops and Space Port Indiana technologies.

The payload of the balloon included several constructed by Space Port Indiana Space Camp participants. (see page 3) The balloon reached 103,000 ft and was successfully recovered near Steuben, Ohio. The blimp and balloon launch were covered by WISH-TV Indianapolis.

**2009 Events**

The success of the 2008 IMAX/INSGC booth and related activities with Space Port Indiana (TMGLabs) has resulted in a much larger presence for INSGC at the State Fair in 2009 (August 7-23, 2009). For 2009, INSGC (with the considerable aid of David Brown of IMAX and Brian Tanner of TMGLabs) has secured approximately 4,000 sq. ft. of the 6,000 sq. ft. Grand Hall.

This is being offered by the State Fair to promote Indiana contributions to both aerospace technology and space flight. Detailed planning is still in the beginning stages, but NASA has expressed strong support with the possibility of a NASA Education trailer, Indiana space artifacts and astronauts being discussed.

The IMAX Theater in the Indiana State Museum hosted “Fly Me to the Moon 3D” this summer. Visitors to the IMAX/INSGC booth at the Indiana State Fair were told of the free admission to all K-12 students (up to 2,500 tickets) compliments of IMAX and the Indiana State Grant Consortium. In addition, the free admission was widely promoted in IMAX advertisements for the film. Indiana K-12 students at most needed to present a student ID to gain admittance.

Additionally, Dr. David Ellis, senior research engineer working on the ARES IX Rocket Program at NASA, shared his expertise on the history and future of space exploration on August 6. Dr. Ellis’ visit is courtesy of TMGLabs, an affiliate of the Indiana Space Grant Consortium.

“Fly Me to the Moon 3D” immersed audiences in an animated space adventure that explores the historic Apollo 11 mission through the eyes of three tween-age flies.

With an entertaining story and 3D animation that defies gravity, kids learned about the monumental 1969 mission that landed the first man on the Moon. The G-rated film is voiced by celebrities Kelly Ripa, Christopher Lloyd, Nicollette Sheridan and Tim Curry, with a live action/animation cameo by real-life Apollo 11 astronaut Buzz Aldrin.

Dr. Ellis also spoke at SpacePort Indiana Space Camp (see related article page 3)
**Director’s Notes**

**Something Else on the List**

For me, like many of the other INSGC Affiliate Directors, November is a busy and challenging time of year. The increasing task demands, schedule plans for holiday activities, and changing weather and decreasing daylight all combine to affect workload and time availability.

For this reason, I am very appreciative and grateful to the directors who attended our Fall Teleconference in November. I had spent several days in advance of the conference talking with the INSGC Central Office staff regarding the topics to discuss, and had taken notes to myself to ensure that I would cover important Space Grant issues.

By the end of the teleconference, most of the items in my list have been checked off. However, after the meeting was over and we hung up the phone, the staff asked me about the topic I didn’t discuss. What was it, I wondered? The Atlanta meeting? Competition announcements for 2009? Plans for the State Fair?

"Your sabbatical?"

Oh, that’s the element I forgot to mention, although some of you have already heard the news. Most mornings in Spring 2009, I will be waking up in metropolitan Boston, and going into an office at Tufts. This will include several changes for me next semester, but one thing won’t change.

Space Grant continues to be one of my primary priorities and responsibilities for next spring, whether I am in western Indiana or Eastern Massachusetts. To be truthful, INSGC is one of the most valuable and essential aspects of my professional life. Wherever I happen to be, INSGC is a leading priority.

However, what does this sabbatical mean for INSGC activity? Our intention is... not much. The quality of the INSGC staff means that most things won’t change for our affiliates, students, and partners—we’re still here to promote education, outreach, and workforce development, and there will still be answers to your questions and concerns in a timely manner. We are making adjustment to increase our communications and operational effectiveness, by developing stronger uses of social networking, message service, and instant messaging technologies. Starting now, and continuing through next spring and beyond, there is another way to contact me: on AOL Instant Messenger (AIM), you can reach me as BCGris228.

We’ll be making other AIM addresses available as well, and increasing the functionality of our website and networking technologies. Starting now, these have a larger goal—we want INSGC to continue to be an effective tool for meeting NASA’s goals to Inspire, Engage, Educate, and Employ. They’re something else on the list to do, and something else to help us do better on our way forward.

Barrett Caldwell

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**NASA Celebrates 50 years**

NASA celebrates 50 years of scientific and technological excellence. NASA has powered us into the 21st century through signature accomplishments that are enduring icons of human achievement.

Among those accomplishments are technological innovations and scientific discoveries that have improved and shaped our lives on Earth in a myriad of ways. NASA celebrates the past and look forward to a promising new era of inspiration, innovation, and discovery.

Barrett Caldwell

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**NASA Aeronautics Scholarship Program**

NASA’s Aeronautics Mission Directorate is currently accepting scholarship applications from undergraduate and graduate students in aeronautics and related fields for the academic year beginning in Fall 2009.

**Undergraduate:**
Twenty (20) undergraduate students in their second (2nd) year of study will receive up to $15,000 per year for two (2) years and a summer internship at a NASA center with a $10,000 stipend.

**Graduate:**
Five (5) graduate students will receive up to $35,000 per year for three (3) years and two (2) summer internships at a NASA center with $10,000 stipends.

**Applications are due Jan. 16, 2009**—All applicants must be U.S. citizens. For more information visit [http://nasa.asee.org/](http://nasa.asee.org/)

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**Upcoming Events 2009**

- **Space Grant Award Program** – deadline February 13 (see page 6)
- **Spring Space Day** - University of Evansville – March 28
- **Spring Affiliates meeting** - Valparaiso University – April 17-18
- **SpacePort Indiana** – Space Camps
  - June 9-12
  - August 4-7
- **OPTIONS for Middle School Girls** – University of Evansville
  - June 28-July 2
- **Indiana State Fair** – Indianapolis - August 7-23
- **Purdue Space Day** – Purdue University November 7
SpacePort Indiana—Space Camp

SpacePort Indiana™ wrapped up its Space Camp 2008 August 8th and was a huge success. The Camp was filled to capacity with students aged 11-18 and focused on a variety of topics that would culminate in a successful launch of payloads.

Speakers from NASA, Raytheon and TMG Labs and INSGC (to name a few) brought unique insight and knowledge to students who didn’t know what to expect on day one but didn’t want to leave in the end. Model rockets, science experiments and a launch made it easy for students to understand what it takes to colonize, work and travel in an environment much different from here on Earth.

Media included the Columbus Republic and QMIX 107.3 and both covered activities during the Camp and reported very positively on the week’s events. Purdue College of Technology at Columbus, IMAX, The Indiana State Museum, Raytheon, and Indiana Space Grant Consortium were sponsors of this year’s Camp and made immeasurable contributions to its success.

The success of the launch was directly tied to spending four days with students, teaching all the principles and practices before hand. You could see the knowledge learned in the days preceding the launch as they prepared the payloads. Another launch with Space Camp payloads took place on August 15th at the Indiana State Fair.

UE Team Wins NASA Moon Buggy Race 2008

A team of 10 engineering students from the University of Evansville topped the competition at this year's NASA Moon Buggy competition in Huntsville, Alabama, marking the first time a UE team has won the competition.

The 16th annual NASA Great Moon buggy Race was held Saturday April 5, at the U.S. Space and Rocket Center in Huntsville, Alabama. The UE team was in first place after the race's first heat with a time of 4 minutes, 18 seconds. The UE team then had to wait as the remaining teams took their turns.

The UE team participated in 2007 where they finished in 7th place. Before this year’s competition the team managed to cut weight by 15 percent and improved the turning radius by half. That proved to make the difference, as the UE team outstripped its nearest competitor by 31 seconds. More than 60 teams competed in this year’s race.

Students are required to design a vehicle that addresses a series of engineering problems that are similar to problems faced by the original Moon buggy team.

NASA started the competition to give engineering students a real-life design challenge. Creating moon transportation on the moon was a problem that NASA tackled during the lunar missions. The competition requires students to follow many of the same rules NASA had.

Each team's buggy had to have two riders - a male and a female - and the buggy had to fit in a four-foot cube. Due to the limited oxygen for astronauts using such a buggy on the moon, the teams were judged on the time it took them to set up their vehicles as well as the time it took them the complete the 0.7 mile obstacle course, which includes simulated moon dust, gravel, sand and asphalt.

Competition in the national day-long event included Purdue University Calumet, Colorado School of Mines, Ohio State, University of Central Florida, and Pittsburgh State. The competition also included two universities from Canada, two from India, and one from Puerto Rico.

INDIANA SPACE GRANT CONSORTIUM NEW LOGO

The Indiana Space Grant Consortium is proud to unveil its new logo. The new logo has been seen around Indiana this past summer on T shirts, baseball hats, bumper stickers and a blimp! (see article on State Fair page 1)
Purdue Space Day 2008 "Exploration for a New Generation"

By Barrett Caldwell

The fall National Council of Space Grant Directors (NCSGD) Fall Meeting was held in downtown Atlanta October 26-28. Several highlighted and enthusiastically discussed issues affect INSGC broadly, and the NASA and Space Grant community in general.

Our briefing from NASA Headquarters described the continuing process to complete the 20th Year Program Performance and Results (PPR) evaluation effort. So far, INSGC is looking good in the PPR process, with a strong concurrence and participation rate from the affiliates; our next feedback will come after the first week of December, when peer reviews are due from other Space Grant Consortia and NASA.

Another major topic of discussion during the meeting was the challenge of effective matching of student intern applicants to NASA internship opportunities. Because of the number of internship programs and application models for students, there is no clear count of even how many students are involved in NASA internships each year. Our best estimate, however, suggests as many as 5,000 university students help support the NASA program, and benefit from substantial workforce development experience at NASA Centers, each year. I have been asked by the Executive Council of the NCSGD to lead a working group to address this issue, and to learn how we can do the best job possible to create effective matches between interested and qualified students and available NASA internship positions.

Planning for Space Grant and NASA was, and continues to be, constrained due to the uncertain state of the federal budget. The ongoing Continuing Resolution status of the budget was projected to continue through Spring 2009. Due to budget delays and cutbacks, NASA personnel were concerned about possible restrictions on travel to future Space Grant meetings. [Note: INSGC has just been informed that a NASA-wide restriction on FY 2009 conference travel is in place, effectively eliminating most conference activities planned for the first quarter of 2009.] Thus, there continue to be major areas of concern at NASA regarding the state of the federal budget and the economy.

The current INSGC budget is technically based on FY2008 funds; our program year officially starts on March 15, 2009. Current INSGC activities are not seriously affected, however; NASA did caution NCSGD to be prudent in the planning and funding of projects before July 2009. We at INSGC will continue to explore ways to maintain our programs and achieve our goals through this problematic period.
The NASA Reduced Gravity Student Flight Opportunity program enables upper-level undergraduate students to design zero-gravity flight experiments specifically for the NASA program. It is a team-based, hands-on multidisciplinary experience.

The selection process is very competitive and teams of undergraduate students from all over the country send in proposals for experiments to be performed in a reduced-gravity environment. The experiments have to be designed and fabricated to meet NASA’s safety regulations and only the best are chosen to be carried out by the student teams during a flight on NASA’s C-9 aircraft, also known as the Vomit Comet.

**NASA’s Student Ambassadors for the International Year of Astronomy**

**Courtney McManus**, an undergraduate in Aeronautics and Astronautics at Purdue, has been named one of NASA’s Student Ambassadors for the International Year of Astronomy, which begins in January, 2009. Courtney, like her other IYA Ambassadors, submitted an application with a plan for outreach and education programs for the coming year.

**Nathalie Haurberg** is a doctoral student at Indiana University in Bloomington and was runner up. Her primary focus for making IYA accessible to the public was to work with Wonderlab, a science museum for children in Bloomington, IN. Wonderlab focuses on hands-on interactive exhibits and Nathalie planned to design an engaging exhibit for the IYA which will stir up general interest in astronomy as well future IYA events. She also wants set up the small Celestron telescope when possible, she has found that an observers first gaze through a telescope are very rewarding and gives a rare opportunity to see what Galileo saw 400 years ago.


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**Spring Space Day at University of Evansville**

Based on Purdue Space Day (see page 4) held each fall, student at the University of Evansville in grades 1-8 took part in Spring Space Day at the University of Evansville. The event was held in conjunction with “UE Gives Back Day” which is a day where students from the University of Evansville give their time to community needs and events. The grade school students were given specific materials and asked to make a container representing a space capsule that would encompass an egg representing an astronaut. Balloons were attached to the containers and the egg was placed inside.

Each of these was dropped into a container of water first from a second floor level and those that survived that level were taken to the third floor level and dropped. Two astronauts survived.

The second project for this age group was making and testing paper space shuttles. They were given a lesson on how design affects flights and then asked to design and build a paper model. These models were then tested.

Students in grades 4-5 were given information about maneuvering robotics in space. They built a “grabber” and tested them to see how effective they could be at operating something that was not part of their body to move things. This group also tested their skills at piloting a “flying a stroma.” The task was to make the astronaut kind on specific target.

Students in grades 6-8 worked with electrical engineering and computer science students to program a scribber robot. They also worked with mechanical and civil engineering students to build a launch pad and launch an alka-seltzer® powered rocket.

Parents met with a University of Evansville College of Engineering and Computer Science Professor who led the group in exploration of how to encourage your student to stay interested in math and science. They also learned from other University of Evansville administrators and faculty tips on keeping students on track in school and what colleges are looking for in student preparation.

The 2009 Spring Space Day is planned for March 28, 2009.
High Altitude Ballooning Inspires STEM Education

INSGC affiliate director
Glen Kissel from University of Southern Indiana (USI) was a participant at the workshop in May at Taylor University.

The National Science Foundation awarded a three-year Course, Curriculum and Laboratory Improvement (CCLI) grant to Taylor University. The grant objective was to integrate Taylor’s high altitude research platform (HARP) program into the Science, Technology, Engineering and Math (STEM) curriculums of over 20 institutions with an ultimate goal of reaching 40 institutions, predominately in the Midwest over the three-year grant period.

The project “New Heights in STEM Undergraduate Learning” was accomplished through four two-day faculty/staff workshops held on the Taylor campus on May 21-22 and August 4-5, 2008. The participants began the training and preparation for an experiment-laden weather balloon flight to the edge of space and were assessing how to include ballooning into their own science and engineering curricula.

This novel use of weather balloon technology has been pioneered in Indiana by Taylor University using seed money from the Indiana Space Grant Consortium. Drawing on funds from the National Science Foundation and the expertise of a spin-off company, StratoStar Systems LLC, Taylor University has now expanded its outreach beyond the state. Attendees included not only Hoosier participants, but also teams from Minnesota, Wisconsin and the Menominee Nation in Wisconsin.

The teams selected an experiment to fly either to measure pressure, temperature, light intensity, relative humidity, energetic particles, or simply video-record views during the flight. The balloon ascended at a rate of 1000+ ft/min and was followed by two chase teams, where each chase van was equipped with a balloon tracking antenna and street atlas software coupled to the balloon’s incoming GPS (global positioning system) telemetry. The experiment pods landed with little or no damage after ascent to nearly 18 miles altitude by balloon and then descent by parachute.

Workshop attendees help to stabilize the balloon as it is being filled with helium.

Space Grant Award Programs
Deadline is February 13, 2009 — Internal selection due by March 16, 2009

**Discovery Program**
- Research Grant—Early career Faculty and Research Initiative
  - Amount Available: up to $10,000 – faculty salary limited to $3,000
  - Crosscutting Research—Team required: up to $25,000 for multiple institutions; up to $15,000 for multiple departments/units at a single institution
- Research Opportunities for Undergraduates and High School Students
  - Amount: up to $3500 per semester, including summer semester

**Dissemination and Engagement Programs**
- Academic Enrichment Programs: up to $3,500
- Informal Education Partnerships: up to $10,000
- Formal Professional Development / Education Partnership: up to $4,000 to high school teacher plus up to $2,000 for project costs

**Workforce Development Program**
- University Student Project: up to $6,000
- Student Summer Internship: up to $6,000
- Student Semester Internship: up to $7,500

**Course Development**
- Crosscutting Course Development: $10,000
- Fellowship Program
  - Doctoral fellowship in Science Education: $15,000
  - Doctoral fellowships in science and engineering disciplines: $15,000
  - MA/MS fellowships: $7,500

**INSGC Scholarship Program**
- Award Amount: $2,500 to undergraduates

OPTIONS for Middle School Girls

The University of Evansville 2008 OPTIONS for Middle School Girls was successfully completed this summer by 20 girls from the tri-state area.

OPTIONS for Middle School Girls is a four-night, five-day experience to introduce girls to the fields of engineering and computer science. Many females aren’t aware of the vast opportunities that exist in these typically male-dominated fields. The OPTIONS for Middle School Girls experience exposes the participants to the fundamentals of engineering and computer science through classes that culminate in hands-on projects.

During the experience, the participants stayed in a University of Evansville residence hall. Engineering students served as counselors and the resident director, Anita Long, is a computer science student and full-time staff member with the University of Evansville College of Engineering and Computer Science.

Icebreakers and a pizza party on registration night helped the participants, many of whom had never stayed away from home, to relax and get to know one another.

The next morning began at a local ropes course where, through several challenges, the participants learned leadership and teamwork.

Computer science class revealed how to write a short software program and to see the results through running the program. Melissa Bippus, alumnae of the University of Evansville and former participant in the OPTIONS for High School Girls program, taught the girls to solder and they learned about circuits as they built a sound reversing car.

Their design and engineering talents were tested through a challenge that required them to build a floating device and paddles out of zip ties, water noodles, and duct tape. The vessel had to be able to carry one passenger across and back in the swimming pool in the University’s fitness center. After learning about chemistry from Dr. Kristy Miller, a University of Evansville professor who, herself, was a participant in the OPTIONS for High School Girls program while a sophomore in high school, the group launched rockets they had designed during a class taught by university of Evansville mechanical engineering student, Cheryl Wadlaw.

Strength of materials was the subject taught by engineering student, Bonnie Koopmann. The participants learned to fashion 20 pound bond paper into columns that were tested to see how much weight they would hold.

Kelly Brumentz, a computer engineering student, guided the girls through more detailed understanding of circuits utilizing Snap Circuit® kits. Kenzie Koehler, an electrical engineering student supervised as the participants made vessels to protect an egg when dropped from a variety of heights.

The “Strong, Smart, Bold” program was utilized to teach the participants some self-defense moves and discuss risky behaviors that can lead to bad life decisions.

A portion of the final day was spent traveling to the Kimberly Clark plant where the participants, hosted by UE alumnae and former OPTIONS for High School participant, Michelle Joiner, toured the plant where paper products are made.

The final program, which invited the parents to campus to see what their students did all week, was capped off by a presentation prepared and presented by the participants for their parents.

The 2008 OPTIONS for Middle School Girls program was made possible through a grant from the Indiana Space Grant Consortium and Vectren, an energy company.

The 2009 event will take place June 28–July 2 at the University of Evansville.

Contact Tina Newman for more details at: (812) 488-2651 or email tn2@evansville.edu

Indiana Space Grant Consortium Affiliates

Indiana Space Grant Consortium (INSGC) is a source of NASA-related information, awards, and programs and seeks to spread the vision of NASA to increase science, technology, engineering, and math (STEM) awareness, NASA-related education; workforce development, outreach and research activities throughout the State of Indiana.

The consortium presently consists of academic (college and university), outreach (museums and science centers), and industrial affiliates. The spring 2008 INSGC Affiliate Directors meeting was hosted by Indiana State University in Terre Haute, IN. with special thanks to Dr. Susan Berta.

Spring 2009 Meeting

The Spring 2009 meeting will be held on April 17th–18th, 2009 and will be hosted by Bruce J. Hrivnak, PhD Professor of Physics & Astronomy Department of Physics & Astronomy Valparaiso University Valparaiso, IN 46383 (219) 464-5379

Please visit the web site for contact details.

http://insgc.org

Photo 1–R: Ann Broughton (INSGC Central Office), Susan Berta (ISU), Ron Geier (INSGC Central Office), Brian Tanner (TNGLabs), Joe Gangestad (Orbit Frontiers), Sarah Merchant (IPFW), Ben Koellick (BSU), Barret Caldwell (Director INSGC), Shane Pickert (Science Central), Peggy Fisherbecker (ISM), Adam Bengtsof (PU-C), Glenn Kessel (USI), Will Holmes (TU), Bruce Hrivnak (VU), Phil Gerhart (UE)

Not pictured who attended: Kay Whistler, Susan Geier, Pam Norman (Indiana InternNet), Dawn Underwood (ISU).
Indiana Space
Grant Consortium

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Indiana Space Grant Consortium Affiliates

**Academic Affiliates**

- Ball State University
  - Dr. Ronald H. Kaitchuck (Affiliate Director)
- Indiana State University
  - Dawn Underwood (Affiliate Contact)
- Indiana University - Bloomington
  - Dr. Richard H. Darshen (Affiliate Director)
- Indiana University - Purdue University Fort Wayne
  - Dr. Jihah Albayyari (Affiliate Director)
- Indiana University - Purdue University Indianapolis
  - Dr. Sivakumar Santhanakrishnan (Affiliate Director)
- Purdue University - Calumet
  - Dr. Adam W. Rengstorff (Affiliate Director)
- Taylor University
  - Dr. Will Holmes (Affiliate Director)
- University of Evansville
  - Dr. Philip Gerhart (Affiliate Director)
- University of Southern Indiana
  - Dr. Glen Kissel (Affiliate Director)
- Valparaiso University
  - Dr. Bruce J. Hrvnak (Affiliate Director)

**Outreach Affiliates**

- Brownsburg Challenger Learning Center
  - Mary Patterson (Affiliate Director)
- Challenger Learning Center of Northwest Indiana
  - Amanda Maynard (Affiliate Director)
- Imagination Station
  - (Affiliate Director currently vacant)
- IMAX Theater
  - Dave Brown (Affiliate Director)
- Indiana State Museum
  - Barry Dressel (Affiliate Director)
- Indianapolis Challenger Learning Center of Decatur Township
  - Cyndy Meriarty, NBCT-Flight Director
- Science Central
  - Shane Pickert & Lou Pepa (Co-directors)
- Terre Haute Children’s Museum
  - Linda Edwards (Affiliate Director)

**Industrial Affiliates**

- StratoStar Systems
  - Jason Krueger
- TMGLabs
  - Brian Tanner, Chief Technology Officer
- Orbit Frontiers, LLC
  - Joseph Gangstad, President

Full contact details can be found at: [http://insgc.org/](http://insgc.org/)