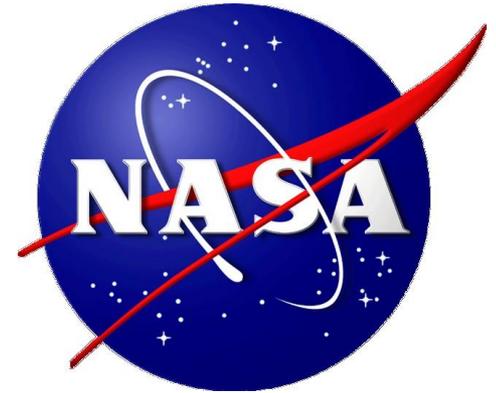


A (very) Brief Review of Space Grant History and Accomplishments



John P. Wefel

Louisiana Space Consortium

Louisiana State University

Baton Rouge, LA



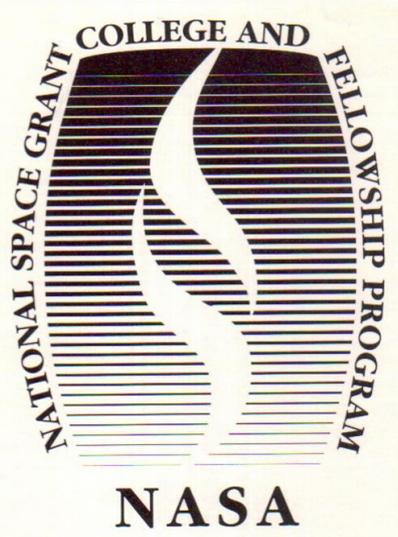
Seattle, WA October, 2012

In the Beginning

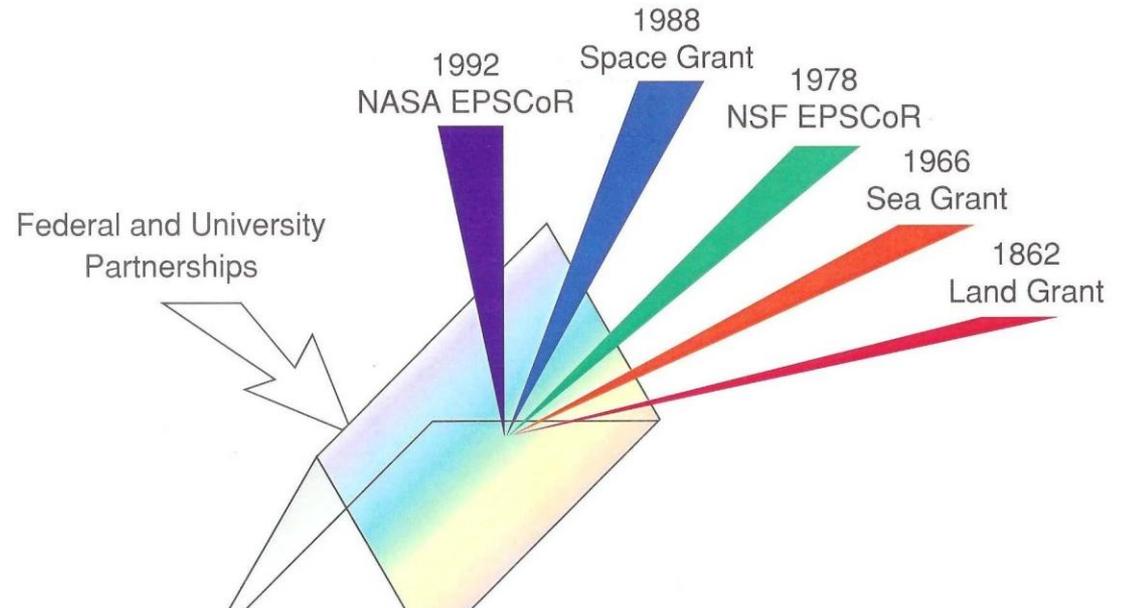
there was Land Grant

then Sea Grant

..... and then Space Grant



LANDMARK LEGISLATION



Space Grant: The Early Years

Making SG 'happen': **Elaine Schwartz, Frank Owens, Lynne Keffer** But a national program manager was needed.

Enter Julius Dasch



Enlist the UAOs

at the NASA Centers

Gerald Soffen – GSFC

Harry Ashkenas -- JPL

Stanley Goldstein -- JSC

Warren Camp – KSC

Samuel Massenberg – LaRC

Francis Montegani – LeRC (now GRC)

Frank Six -- MSFC

Armond Joyce -- SSC

Barbara Hastings -- ARC

Establishing the network

Building programs

Forming partnerships

Generating matching funds

“feeling our way = childhood”

Utilize Fellows

Elizabeth Ward

Richard Devon

Mike Odell

J-M Wersinger

?? ??

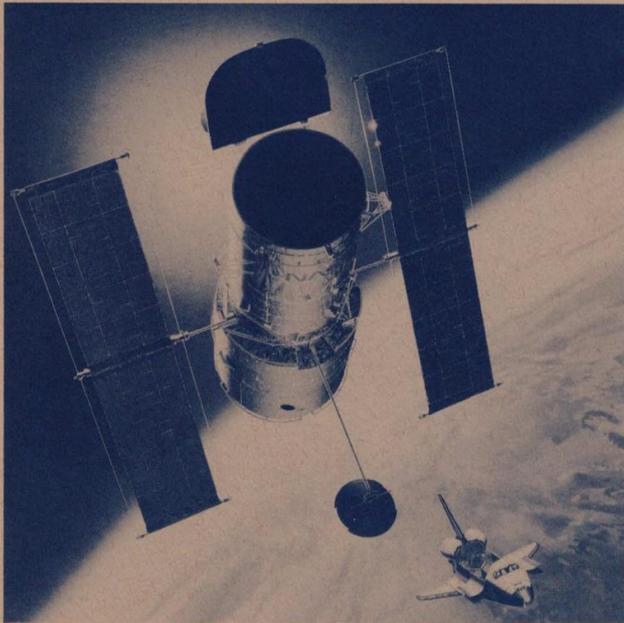
PL 100-147: ...”increase the understanding, assessment, development and utilization of space resources by promoting a strong educational base, responsive research and training activities, and broad and prompt dissemination of knowledge and technology.”

Task: Forming the Network

Completing the National Network

NATIONAL SPACE GRANT COLLEGE AND FELLOWSHIP PROGRAM

Phase II – Space Grant State Consortia

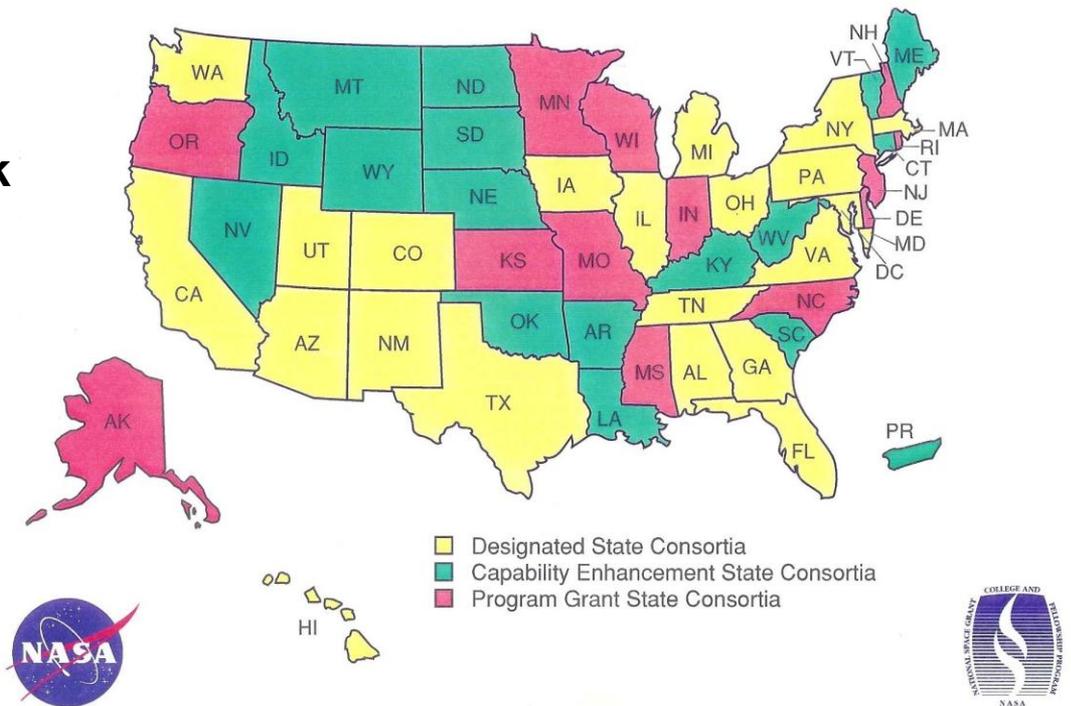


NASA
National Aeronautics and
Space Administration

May, 1990

Office of External Relations
Educational Affairs Division
University Programs Branch

SPACE GRANT CONSORTIA DISTRIBUTION BY GRANT TYPE



Two-tier Structure: Phase 1 (designated) and phase 2 consortia – continues to the present

348 affiliates in 1991

Capability Enhancement Consortia were forerunners of the NASA EPSCoR program

Meanwhile, hard at work in a small office off Church street was a young programmer, Katie Pruzan and Richard Devon (PA) working on “databases,” which would lead, in a few years, to the Consortium Management Information System (**CMIS**) and would bring Susan Stewart into SG.

The Lost Dr. Seuss Poem



CMIS is the Best!

CMIS is the very best!
CMIS does my job so bless.
CMIS comes but once a year, lifting hearts in winter's drear.
CMIS is the best I said, still why a twinge of fear and dread?

CMIS does such havoc wreak, I cannot see, I cannot speak.
CMIS jumbles all my thoughts, and fills with numbers - eights and naughts.
CMIS works but not a lot, in wee small hours like 'leventy-clock.
CMIS makes me work much more, just slide that pizza 'neath the door.
CMIS keeps me in for weeks, our colleagues think we must be freaks.
CMIS testing is my joy, more bugs I find each year - Oh Boy!

CMIS data is no bluff, does NASA really read this stuff?
CMIS gives me much to thank, like knocks from Julius, Diane and Frank
CMIS isn't all that bad, calling Susan makes me glad
CMIS data: the Holy Grail, balance the matrix without fail!

CMIS is the very best!
CMIS! I'll sing with my dying breath.
CMIS sent new friends today...in clean white coats to take me away!!!!

Woods Hole, MA -- 1991



First Space Grant Strategic Planning Meeting

Involved both the Phase 1 and the newly selected Phase 2 Directors

Unfortunately, my copy of the document produced has not been unearthed.

Forming the National Council of Space Grant Directors

Charter

The **name** of this organization shall be: **NATIONAL COUNCIL OF SPACE GRANT DIRECTORS**, a voluntary affiliation of institutional representatives.

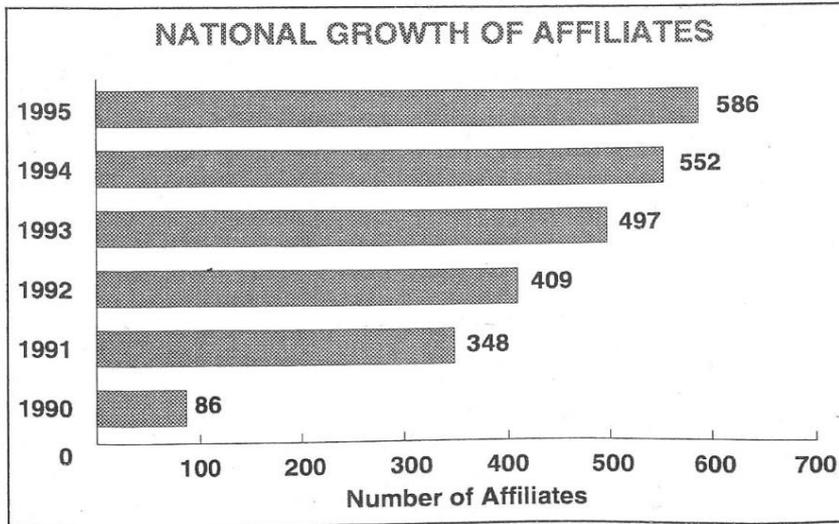
The **objectives** of the **NATIONAL COUNCIL OF SPACE GRANT DIRECTORS** (hereinafter referred to as the Council) are as follows:

- A. To aid in the development of the evolution of the role of the Space Grant Program
- B. To increase the communication among the Directors of Space Grant programs (in support of the stated NASA goal of creating a network of universities involved in space related teaching, and research and development)
- C. To provide a forum for mutual support of the directors in the performance of their respective responsibilities for leadership to their individual Space Grant programs
- D. To identify areas of common interests in which cooperation and collaboration among programs may prove beneficial
- E. To develop mechanisms to accomplish such cooperation

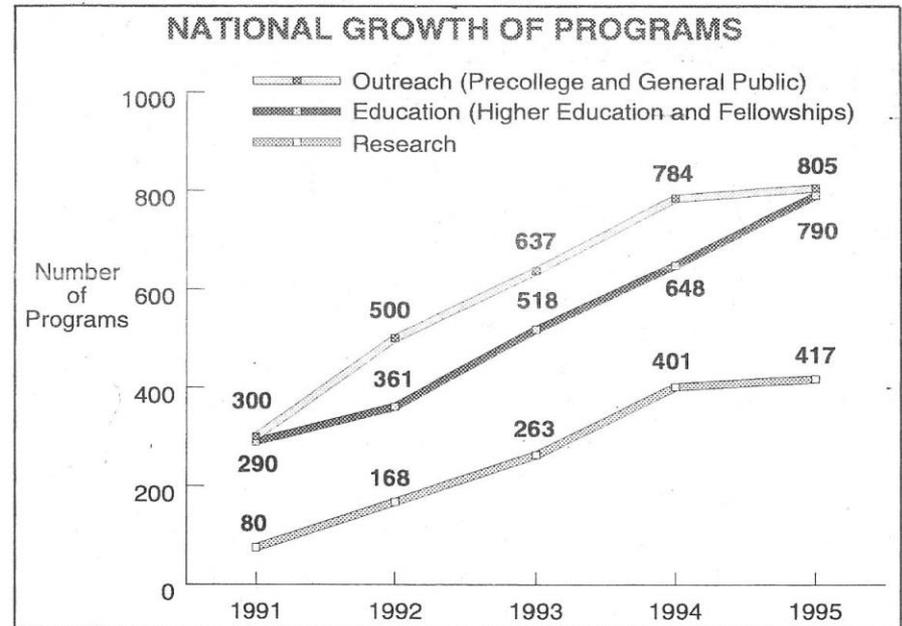
It is the expectation and the intent that the National Council of Space Grant Directors serves as a vehicle for building and maintaining a dynamic relationship within the academic, research, and industrial communities for space-related activities. Further, it is expected that these collaborative efforts will facilitate interactions between Member Institutions and federal agencies, most notably NASA. Subsequently, this unique relationship shall strengthen each member's ability to develop space-related activities.

..... And the Network keeps growing

.... And the programs keep growing



- ### PROGRAM PARTICIPANTS IN 1995
- 586 TOTAL AFFILIATES
- 410 Academic institutions, including
 - 343 Four year colleges and universities
 - 67 Community colleges
 - Of these academic institutions:
 - 36 Historically Black colleges and universities
 - 16 Other minority universities
 - 11 Hispanic serving institutions
 - 7 Tribal colleges
 - 68 Industrial affiliates
 - 31 State and local government agency offices
 - 41 Nonprofit organizations
 - 36 "Other"



Initiatives and Accomplishments

Cooperative Extension: Bringing the fruits of the space program to the end-user, employing, possibly, Ag extension agents and involving cooperation with Dept. of Agriculture, or the like.

Native American Tribal Colleges: Outreach to the native American community for joint STEM programs.

Regional SG Networks: Working together / sharing ideas in contiguous geographical regions.

Enterprise Working Groups: Making SG known to and utilized by the NASA strategic enterprises for, initially E/PO activities, and then R&D activities.

Minority Serving Institutions: expanding SG reach to specifically include HBCUs and other MSIs

Community Colleges: Expanding SG programs to the community and technical college systems around the country.



NASA sponsored Space Grant, EPSCoR & JOVE meeting, Williamsburg, VA, May, 1996

Posters, Presentations, Exhibits,
panel discussions and tours

Keynote: Administrator Dan Goldin



Space Grant: Coming of age

(the teen-age years)

NCSGD takes over responsibility for national/regional meetings – Spring in DC; Fall rotating around country.

Diane DeTroye joins the program

Congressional Office visits

Strategic Planning

CMIS becomes major ‘tool’

NASA re-organizes

Program development

Expansion of programs and network

Search for resources

Developing an Identity

Locally (“NASA in your state”)

Nationally (with NASA, Congress)

Student Payloads

Establish support organizations

Education produces new framework

... and **Thank You** to our SG Coordinators (who really make the program run)



**National Council of Space Grant Directors
Fall Meeting
October 22-25, 1999**

Strategic Planning -- Part two

Initiated at a meeting in Colorado under leadership of John Gregory, AL and a facilitator

Developed Vision Statement and established working groups to define Missions

Approved Vision and Missions at next national meeting

Had group sessions on defining Goals and then Objectives

Pat Hynes, NM, took the lead in pulling all of this together (Kudos to the working group leads, Lisa Brown, Dave Bartlett, Frank Tai, and Dorcas Metcalf.)

NASA worked with the process and offered valuable advice

National Council of Space Grant Directors Planning 2001 – 2006

Vision:

The National Space Grant College and Fellowship Program is a national network of colleges and universities working to expand opportunities for Americans to understand and participate in NASA's aeronautics and space programs by supporting and enhancing science and engineering education, research, and outreach programs.

Missions:

- #1 Using our national network of scientists, engineers, and educators, enable the development of a diverse workforce of future scientists, engineers, technology professionals, and educators.
- #2 Stimulate and nurture innovative programs to assure the development and transfer of practical applications in aerospace research and education.
- #3 Cultivate a nationwide network of partners from universities, industry, museums, science centers, state and local agencies, to pursue state and national aerospace research, education, and economic development goals.
- #4 Provide access to the excitement, knowledge, and technology from America's Earth, Air and Space programs.
- #5 Educate students at all levels by encouraging and supporting interdisciplinary and multi-disciplinary research experiences and education programs.
- #6 Serve the general public by contributing to scientific literacy.

The 12 goals that fall under various missions have been omitted to save space

.... And the network keeps expanding

NASA Space Grant College & Fellowship Program FY 1999 Fact Sheet



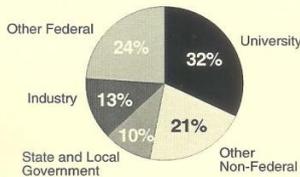
52 UNIVERSITY-BASED CONSORTIA
NASA INVESTMENT \$19.1M FY 1999

PARTICIPANTS

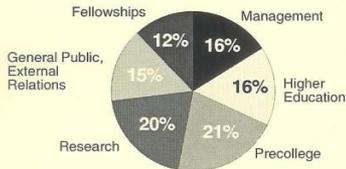
- 761 Affiliates Nationwide
- 500 Colleges/Universities
- 63 Business/Industry
- 34 State/Local Government
- 164 Other Affiliates

\$53.6M in Leveraged Funds

1999 Sources of Leveraged Funds



1999 Total Cost of Projects



• Student Awards \$8.3M Awarded

- 1,631 Undergraduate Scholarships
- 551 Graduate Fellowships
- 21.6% Underrepresented Groups
- 43.1% Women

ACCOMPLISHMENTS

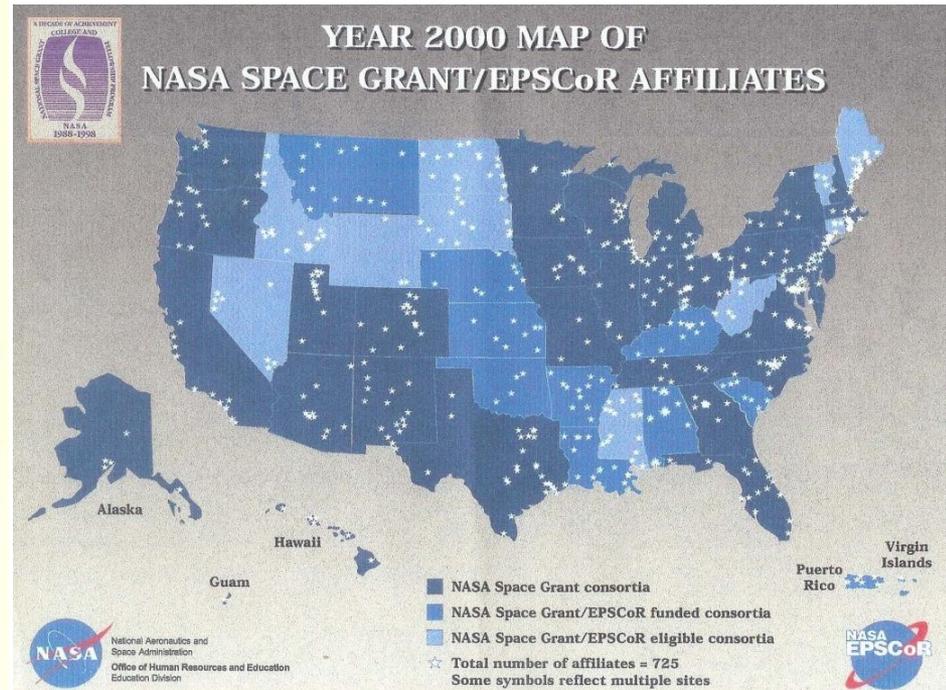
- **Research**
 - 573 Programs
 - \$6.5M Funded Proposals
 - 384 Publications
- **Education**
 - 444 College and University Programs
 - 604 Precollege Programs
 - \$14.2M Funded Proposals
- **Public Service**
 - 399 Programs
 - 4.9 Million People Served

2000 Space Grant Affiliates



Total number of affiliates = 761
*(Some symbols reflect multiple sites)

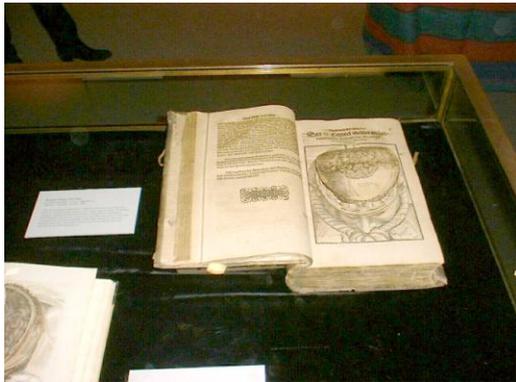
Fact Sheets are very useful for telling the Space Grant story – nationally and by jurisdiction



For more information, contact the NASA Space Grant College & Fellowship Program
On-line at: <http://www.hq.nasa.gov/spacegrant/>
Office of Human Resources and Education, Education Division
NASA Headquarters, 300 E St., S.W., Washington, D.C. 20546

725 Affiliates

Space Grant visits the National Academy of Science in 2001 in Washington, DC



Pictures courtesy Richard Hackney

Space Grant: A Maturing Program (adulthood)

Julius retires and Diane takes over as program manager

Multi-year funding discovered/employed

Emphasize University based programs

Partnership with ESMD

Senior Design, Interns, Faculty programs, Systems engineering

Joint programs with other agencies, e.g. NSF

Building upon success

Developing new options

Serving more students

Partnerships

Continued 'quest' for resources

External Relations

Establish Congressional Office Visits: provides opportunity to demonstrate the successes of SG in each state/jurisdiction and build support + recognition for the program.



Develop National Space Grant Alliance: establishes a 'voice' for SG in Washington, DC for interactions with NASA, other agencies, and congress. Contribute to policy planning and inter-agency activities.

Form National Space Grant Foundation: provides long-term support for SG; takes on tasks that help all programs; act as contractor/broker for different sub-programs / projects.

Work with State agencies: engage, at the state level, with education reform, economic development, etc. agencies. Brings SG to the attention of state leaders.



Student Launch Initiatives

Hands-on, full mission cycle, management, teaming Experience

Reduced Gravity Flight Experiments

Sounding Balloon Experiments

High Altitude Student Platform

Rocket payloads

Rocket Construction/Launch

CubeSats (flying/ flown)

Small Sats (ElaNa)

SSEP and ISS

.... And on to MARS



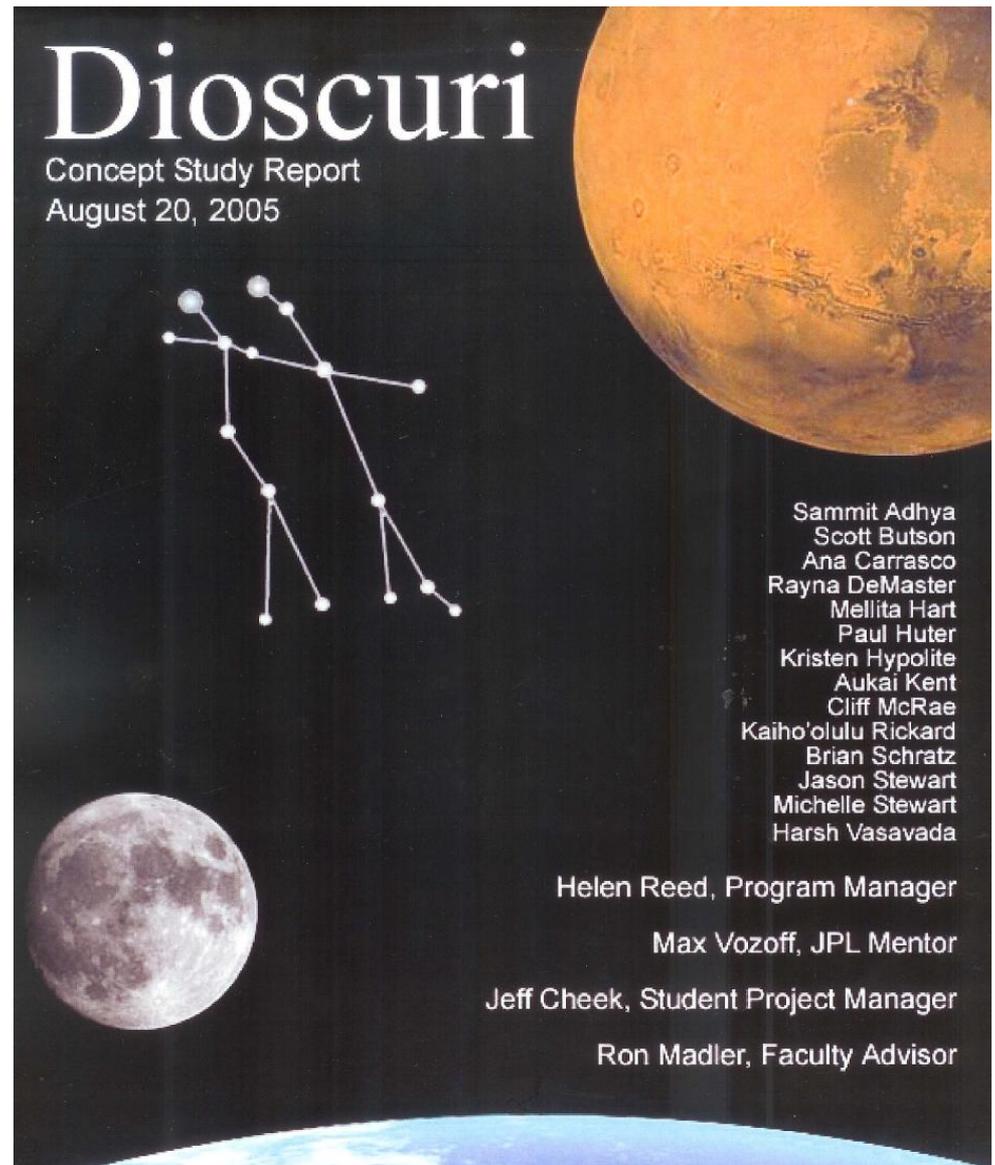
Student Exploration of MARS

Groups of students worked in team(s) at JPL to define a student 'add-on' experiment that could fly on MSL or another mission.

Validated the concept of student-led experiments as a part of mainstream solar system exploration.

Experiment was not approved for flight But there may well be a next time.

NOTE: There is now a large 'industry' developing sub-orbital opportunities / Facilities



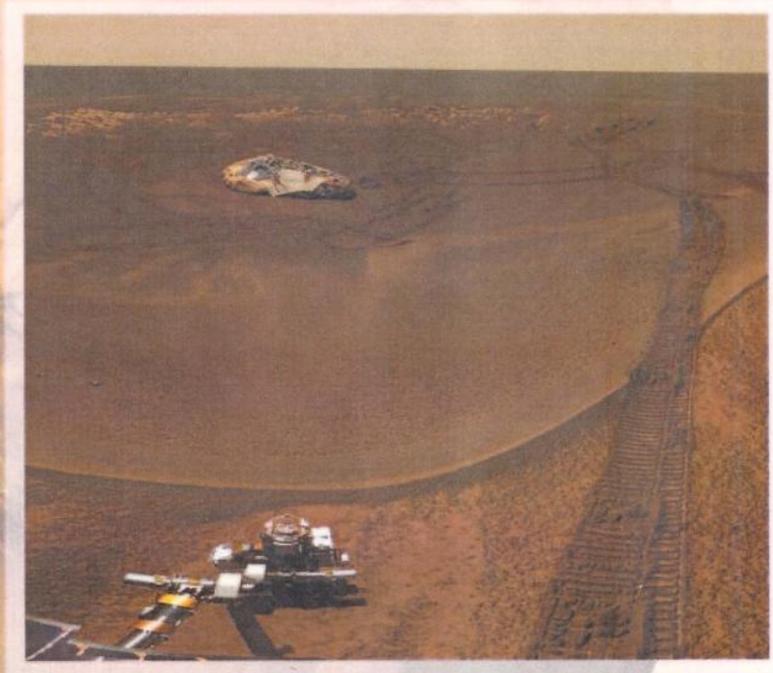
**NASA revises its Mission
in light of the “Vision for
Space Exploration”**

**Major re-organization of
NASA offices**

**Re-focus of Space Grant
Goals and Objectives**

The New Age of Exploration

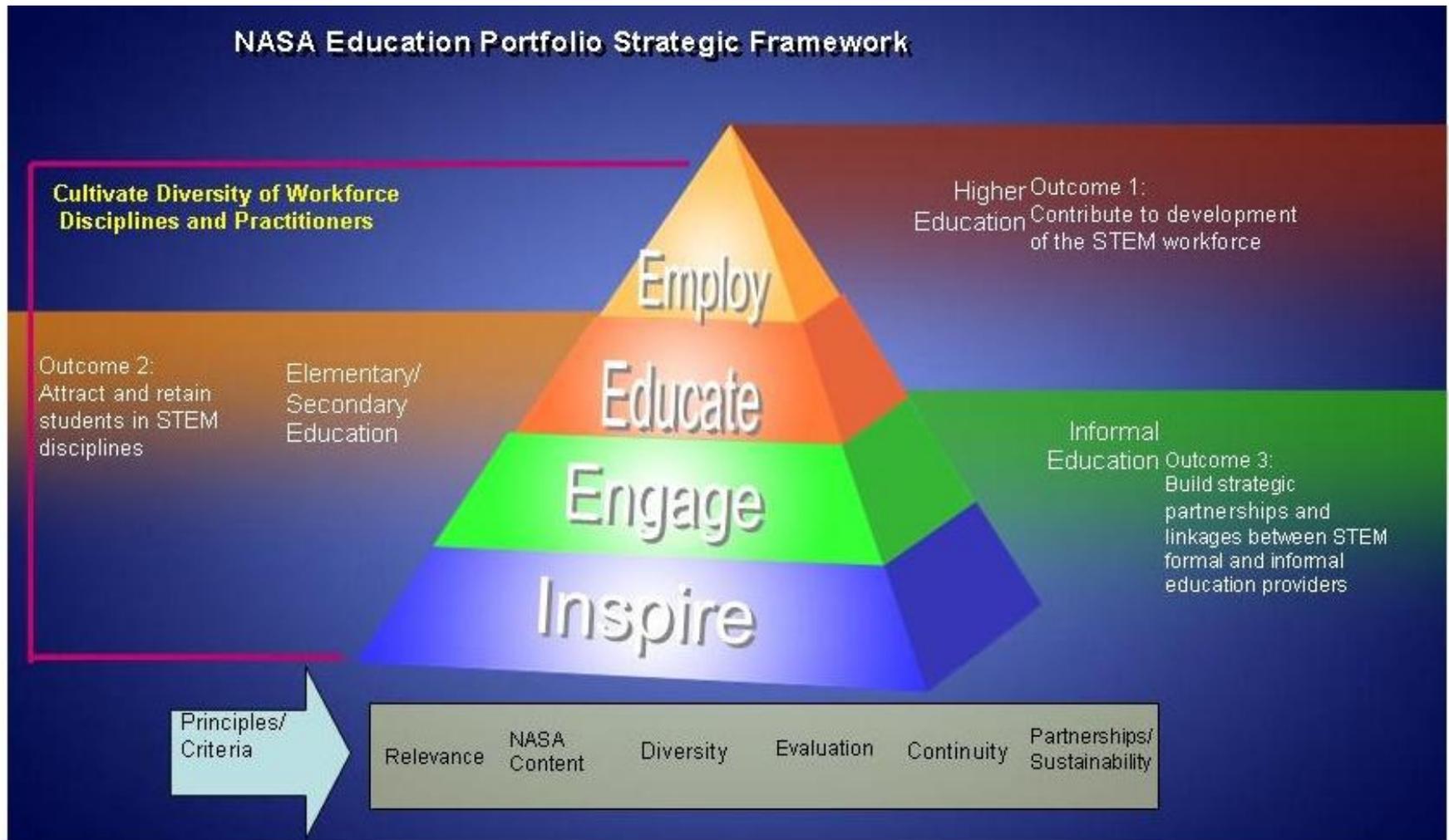
NASA's Direction for 2005 and Beyond



February 2005

National Aeronautics and Space Administration

.... all the while working within the NASA Education Strategic Framework



Pre-College programs

In the beginning Phase 1 consortia were heavily involved in K-12 projects, while not as much for Phase 2 consortia. Over the years, SG has evolved into a University based program with a smaller focus on pre-college (10-20% depending upon jurisdiction).

But, this is fertile ground for collaboration, and there have been many with state education stakeholders, other federal (Ed, NSF), NASA centers and business/industry. In addition, SGs were involved, often as E/PO leads, in a number of NASA missions. Further, there is effort to move some university developed programs (e.g. BalloonSats) down to the high school level.

The majority of projects focus on educator enhancement (in-service and pre-service) but there are unique opportunities (e.g. SSEP, SOI) that SG consortia have been able to 'capitalize upon' to achieve great outcomes.



Pre-college and Informal Education

There are now about 76 affiliates that are science centers, museums, or planetarium and that number has built steadily from the beginning. SG helps these institutions to sponsor programs that often involve teacher training (pre-college) and then a student experience. The latter often bring parents into the project and other members of the general public – much like Challenger Center projects with which SGs have cooperated over the years. Thus, there is often a ‘fine line’ between these two areas.

Cooperation/collaboration ranges from the simple, e.g. providing speakers/expertise for an event, to more complex, e.g. involving a NASA exhibit or the like. Often a big ‘reward’ can be achieved with little expenditure of funds, just some volunteer time. **SG personnel, historically, have been willing to volunteer.**

There have been many, many projects – some of which have been described at regional and national meetings as many of you know.

Summer Internships

Partnering with NASA Centers and NASA Contractors for student experiences

Exemplary Partnership with ESMD

Intern Fred Moxley being congratulated by John Mather after being named a *John C. Mather Scholar* at the GSFC Academy in 2010



Summer 2010 Robotics Academy at MSFC

Design Projects / Competitions

Probably the grand-dady of these is The Great MoonBuggy Race held each year at MSFC (F. Six). SG consortia have sponsored teams at both high school and college level to participate / compete.

FAA Design Competition coordinated by Virginia is another of long standing.

Then there is SG involvement in many othersLunabotics, FIRST robotics (and BEST & ZERO), rocketry challenge, FameLab, senior design (ESMD or other), SPHERES, Lunar Space Station, USLI, SAE Aero, Student Solar Spectrograph and the list goes on and on including non-NASA players like the Conrad Foundation, AIAA, etc.

There has been a nearly exponential growth in this area and SG has been a part of it both on the organization/management level and at the student level. **WHY?** Because it offers great opportunities for student learning, retention and workforce development through teamwork and experiencing the full project life cycle.

RockOn! 2009

The Next How To Workshop

June 21 – 26, 2009

NASA's Wallops Flight Facility

Register by April 6, 2009 @

spacegrant.colorado.edu/rockon

The RockOn workshop is designed to be the next step beyond the Boulder BalloonSat and Ballooning Workshop. During the RockOn 2008 workshop, teams of 3 built a sounding rocket payload (RocketSat) from a kit in three days and launched it into space on the fifth day. The hardware in the kit may be used on future RocketSat and possibly CubeSat flights. Wallops will be providing the rocket (two stage in 2009) and launch operations during the workshop. Wallops will also provide tours and briefings on sounding rocket environments for future flights. This hands-on workshop is not about learning to build rockets. It is about learning to build and then building sounding rocket payloads. RockOn is supported by the Colorado and Virginia Space Grant programs with significant cost sharing from NASA's Wallops Flight Facility and NASA Education. Workshop registration for 2009 will be \$1,699 which includes kit hardware (that teams take home), breakfast and lunch each day plus one dinner, t-shirt, handbook, software, and more plus a priceless experience. For more information on the workshop, please visit the website.



RockOn! 2008



June 27, 2008

Photo taken by a student built RocketSat from 250,000 feet

.... And the student / workforce training projects continue

Since every year there is a new group of students (and, often, faculty) to be served

Space Grant provides Continuity

National Space Grant Foundation is busy

Current Programs

eXploration Habitat (X-Hab) Academic Innovation Challenge 2013

John Mather Nobel Scholars

NASA Space Science Student Ambassadors Program

NASA Summer of Innovation Mini-Grant Program

NASA/ESMD Space Grant Project

National Space Grant Distinguished Service Award

Pathevo and Space Systems Engineering Website

Satellite Engineering for the Development of Puerto Rico's Aerospace Workforce

Space Grant Support Services

The William A. Hiscock Space Grant Scholarship Fund

Virginia Aerospace Science and Technology Program

WISH: Women in STEM High School Aerospace Scholars

Is SG meeting its promise, i.e. “pulling its weight” ?



Space Grant Performance Metrics OEd APGs – 2010 Reporting



Performance Metric	Office of Education Result	Space Grant Result	Office of Education Result	Space Grant Result	Space Grant Contribution to OEd Result
Percent of graduates employed by NASA, aerospace contractors, universities, and other ed. Institutions (“significant awards”: \geq \$5,000, \geq 160 hours, or cost-benefit)	46%	42%	Total Students 1,380	Total Students 1,166	84%
Percent of students moving to advanced education (“significant awards”)	42%	44%	Total Students 1,236	Total Students 1,086	88%
Percentage and Number of underrepresented students in higher education programs	39%	29%	Total Students 6,415	Total Students 3,884	61%
Percentage and Number of female students in higher education programs	42%	39%	Total Students 6,950	Total Students 5,128	74%
Performance Metric	Office of Education Target		Office of Education Result	Space Grant Result	Space Grant Contribution to OEd Result
Number of Institutions served in EPSCoR States	200		234	217	93%
Ratio of funds leveraged by NASA funding support	80%		83%	80%	N/A
Number of New or Revised Courses	60		320	179	56%

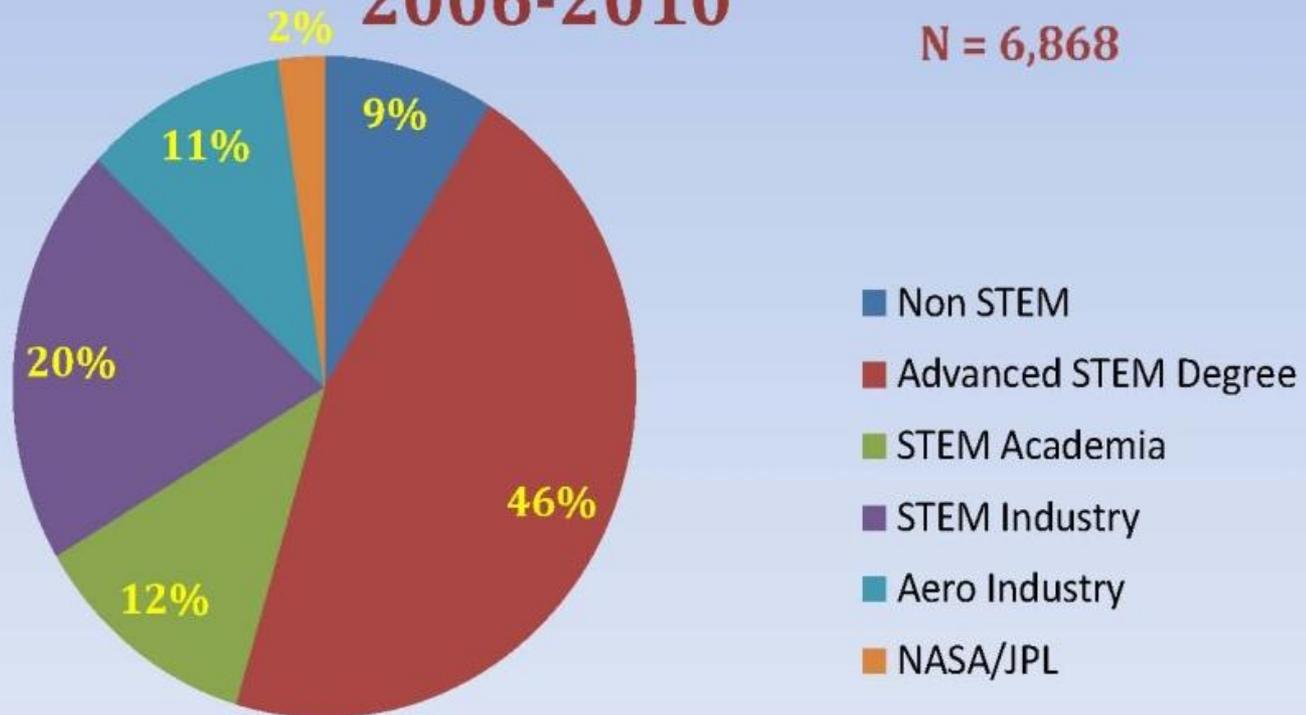


Recruit and train U.S. citizens, especially women, underrepresented minorities, and persons with disabilities.

Space Grant Longitudinal Tracking

2006-2010

N = 6,868



and the Space Grant “Family” continues to grow



Washington, DC NCSGD Meeting -- 2009

And be recognized

The new Space Grant Display at the National Space Symposium in Colorado – April, 2012



Space Grant: Are We Into A Mid-Life Crisis ?

OR things that may keep you awake nights

Congress refuses to do its job
in passing appropriation bills

Late receipt of program funds causes
students to be non-supported

Politics replaces Policy

One-liners substitute for facts
and analyses

New EDT review

Explosive growth in Commercial
Space

Unaccounted for funds

Major re-organization at NASA's Office of Education

Program delays

Sequestration and the "Fiscal Cliff"

Dearth of Aerospace jobs

STEM Ed 'scores' decline

Program cuts /eliminations at many (most) universities due to
state budget shortfalls

NASA to the rescue



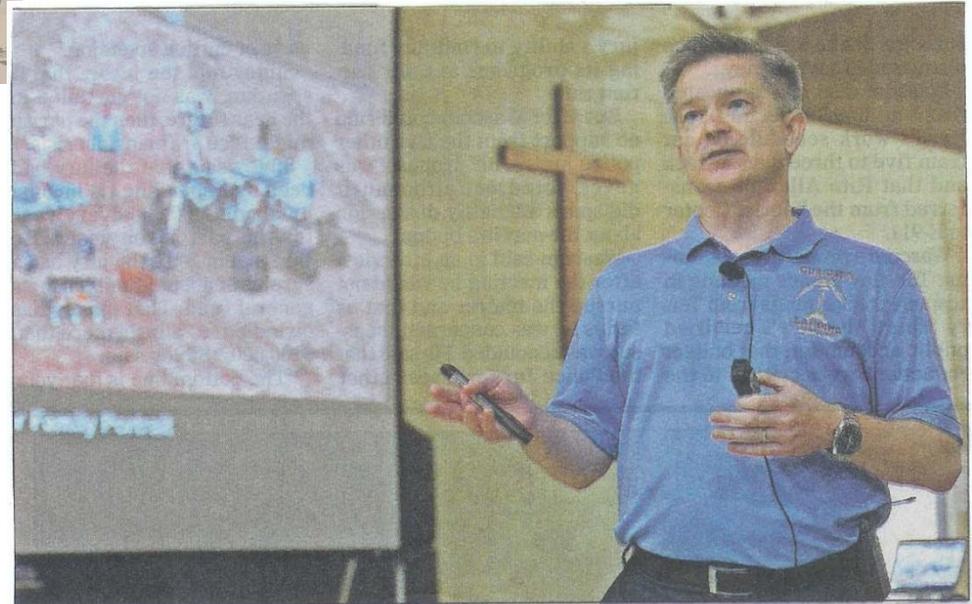
CONGRATULATIONS to the entire MSL Team on a marvelous achievement And the great science yet to come

INSPIRATION

EXCITEMENT

Keith Comeaux, JPL, a Baton Rouge Native, inspires Middle, High School and College students

HOPE



Advocate staff photo by BILL FEIG

Keith Comeaux explains to students at Catholic High School on Wednesday how his NASA cruise and engineering operations team designed and planned the recent successful landing of the Curiosity rover on Mars. Comeaux plans to speak to physics and engineering students at LSU on Thursday and Friday. Baton Rouge Advocate, Thursday October 11, 2012

PLUS

A new course for Human Space Exploration

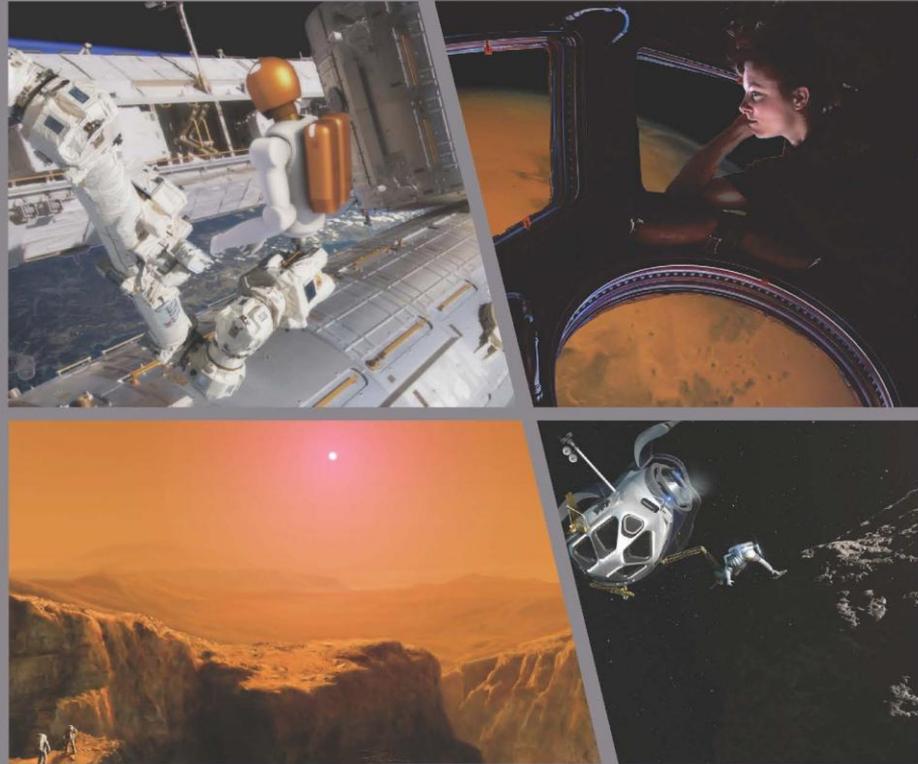
Hopefully, this can / will excite the next generation of students to become explorers

National Aeronautics and Space Administration



Voyages

Charting the Course for Sustainable Human Space Exploration



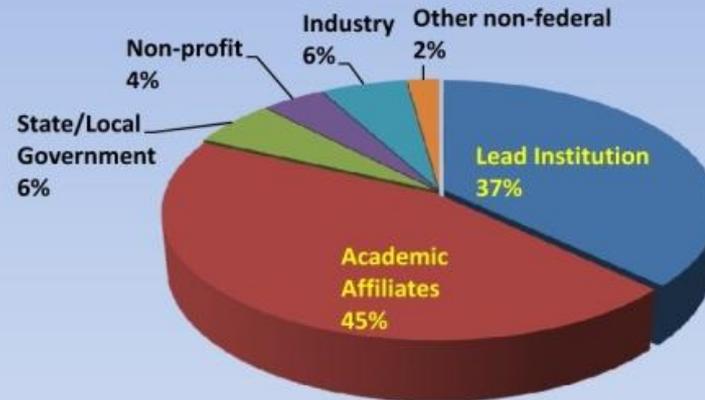
..... Plus our Network keeps expanding



The Space Grant National Network: Composition and Leverage



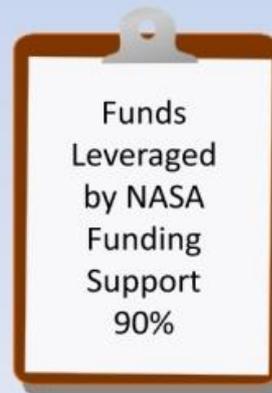
Affiliate Partner Type	Number
IHE- Bachelors and/or Graduate Degree	549
IHE- Community/2-Year Institutions	112
Total Academic Affiliate Partners	661
Government (Federal/State/Local)	77
Industry	91
Museum/Science Center/Planetarium	75
Other and Other Non-Profit Organizations	102
Total Non-Academic Affiliate Partners	345
Total Affiliate Partners	1,006



Diversity of Academic Affiliates is a Key Emphasis of the Program*:

- 43 Hispanic Serving Institutions
- 47 Historically Black Colleges or Universities
- 22 Tribal Colleges or Universities
- 21 Other Minority Universities

* MSIs = 20% of the total academic affiliates



Establish and maintain a national network of universities

The Future: It is in your hands

Thanks



DC, March 2012

BR native recounts Mars mission

BY CHARLES LUSSIER

Advocate staff writer

Keith Comeaux is spending his vacation this week talking to his alma maters, Catholic High and LSU, telling once again the story of how he and a team of NASA engineers and scientists thrilled the world by landing a one-ton roving laboratory in a crater on Mars.

The Mars rover named Curiosity landed barely two months ago, on Aug. 6, and Comeaux, the flight director for the project, has been speaking to groups ever since. He appeared via Skype to fourth- and fifth-graders in late August at Copper Mill Elementary School.

On Wednesday, he wasn't in Pasadena, Calif., at NASA's Jet Propulsion Laboratory, but in the gym at Catholic High addressing a school assembly. Later that day he spoke to two physics classes at the all-boys high school he graduated from in 1985. On Thursday and Friday he will be talking to physics and engineering students at LSU.

"This is my way of giving back to the community," explained Comeaux, a Baton Rouge native.

In his continuing work with the Mars rover, Comeaux and his team have been working during daylight hours on Mars, which lately has meant working many nights on Earth. It's a pattern that will continue for another month, he said.



Advocate staff photo by BILL FEIG

Keith Comeaux explains to students at Catholic High School on Wednesday how his NASA cruise and engineering operations team designed and planned the recent successful landing of the Curiosity rover on Mars. Comeaux plans to speak to physics and engineering students at LSU on Thursday and Friday.

"My wife hates it," he said.

Comeaux started his presentation with a short video that included a segment of him cheering after the official "touchdown" was signaled when the rover made its successful landing.

"It's a little weird to see yourself jumping up and down on a Jumbotron in Times Square," he said.

Comeaux said part of the reason for the jubilation is because during practice landings on Earth, the rover didn't fare so well.

"Every single time, there was a glitch," he said.

The rover landed in Gale Crater and is moving slowly, about a football field length a day, to the base of a 15,000-foot mountain called Mount Sharp. There,

Comeaux said, they hope to find evidence of microbial life in the rocks. The crater was chosen because it's thought to be the bottom of ancient lake that existed when Mars was a warm, wet planet, he said.

He said they've found water — "unfortunately, it's frozen" — and bedrock, suggesting the former presence of water, but not microbial life as yet.

Comeaux said that his current job wasn't his "dream job."

"I wanted to fly and be a pilot," he said.

Poor vision, a problem that he said could be corrected surgically today, prevented him from pursuing that path, so he ended up going into engineering and in 2006 took his current job with NASA.

He said the education he got at Catholic High, where he learned the "marriage of physics and calculus," helped prepare him for the job with NASA.

He said current Catholic High students may have similar opportunities in 20 years when NASA, according to current timetables, attempts to fly a manned mission to Mars.

When Comeaux finished, he earned a standing ovation from the audience.

After the assembly, Comeaux spoke in more detail to two physics classes filled with Catholic High seniors. Students were still asking questions as the bell rang for the next class period.

Greg Sollie, Catholic High's physics teacher, said Comeaux has a great demeanor and is an effective communicator. He said he also appreciated how Comeaux uses his own story as an inspiring example.

"He has a great ability to show the things that are important to do that will open doors to a better future," Sollie said.