National Space Grant College and Fellowship Program

National Meeting
Fall 2010
Portland, ME
• NASA Direction -- Deputy AA for Education
   Jim Stofan
• 2009 Data Reporting and PART Results
• 2009 CDC/MSIPDC Results and Findings
• Congratulations
• Opportunities for 2011
• Overall 2010 Summer of Innovation Pilot
• Steckler Update
2009 Data Reporting
### Space Grant Response to PART 2010

#### Percentage of student participants employed by NASA, Aerospace contractors, universities and other educational institutions

<table>
<thead>
<tr>
<th>FY09 FINAL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total # HE Participants Reported</td>
<td>20,648</td>
</tr>
<tr>
<td># students signif investment</td>
<td>4,024</td>
</tr>
<tr>
<td># still in degree program</td>
<td>3,631</td>
</tr>
<tr>
<td># seeking advanced degree</td>
<td>1,086</td>
</tr>
<tr>
<td># Eligible for workforce</td>
<td>1,385</td>
</tr>
<tr>
<td># Employed NASA</td>
<td>45</td>
</tr>
<tr>
<td># Employed Aero</td>
<td>220</td>
</tr>
<tr>
<td># Employed STEM Acad</td>
<td>229</td>
</tr>
<tr>
<td># Employed STEM Ind.</td>
<td>485</td>
</tr>
<tr>
<td># Employed non-STEM</td>
<td>190</td>
</tr>
<tr>
<td>Other</td>
<td>216</td>
</tr>
</tbody>
</table>

#### Percentage of undergraduate students who move on to advanced education in NASA-related disciplines

Number of underrepresented and underserved students participating in NASA Education Programs

<table>
<thead>
<tr>
<th>FY09 FINAL</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Total # HE Participants Reported</td>
<td>20,648</td>
</tr>
<tr>
<td># underserved/underep students</td>
<td>3,884</td>
</tr>
<tr>
<td># not reporting ethnicity</td>
<td>0</td>
</tr>
<tr>
<td># males</td>
<td>8,131</td>
</tr>
<tr>
<td># females</td>
<td>5,128</td>
</tr>
<tr>
<td># not reporting gender</td>
<td>7,421</td>
</tr>
</tbody>
</table>

- Underrepresented denominator = 20,648 - 7,421 = 13,227
- Underrepresented % = 3,884/13,227 = 29.36%
- Gender representation = Males 8,131 + Females 5,096 = 13,227
- Female % = 5,096/13,227 = 38.53%

- National NCES = 25.5%
- SG Goal = 40%

Number of Courses (New and Revised) | 179
Number of Precollege Students      | 124,813
Number of Precollege Teachers (In-Service) | 14,415
Number of Informal Educators       | 1,898

As of 9-27-2010
### 2009 Data Reporting

<table>
<thead>
<tr>
<th>Affiliate Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutions of Higher Education (Bachelor’s and/or Graduate Degrees)</td>
<td>546</td>
</tr>
<tr>
<td>Institutions of Higher Education/Community College/2 year Institutions</td>
<td>106</td>
</tr>
<tr>
<td><strong>Total Academic</strong></td>
<td>652</td>
</tr>
<tr>
<td>Government (Federal/State/Local)</td>
<td>83</td>
</tr>
<tr>
<td>Industry</td>
<td>87</td>
</tr>
<tr>
<td>Museum/Science Center/Planetarium</td>
<td>76</td>
</tr>
<tr>
<td>Other Non-profit organization</td>
<td>59</td>
</tr>
<tr>
<td>Other</td>
<td>30</td>
</tr>
<tr>
<td><strong>Total non-Academic</strong></td>
<td>335</td>
</tr>
<tr>
<td><strong>Total Affiliates</strong></td>
<td>987</td>
</tr>
</tbody>
</table>

**National Network has grown:**
- **652 Academic Affiliates**
- **987 Affiliates Comprise the National Network**
<table>
<thead>
<tr>
<th>Affiliate Classification</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSI - Hispanic Serving Institution</td>
<td>40</td>
</tr>
<tr>
<td>HBCU (Historically Black College or University)</td>
<td>48</td>
</tr>
<tr>
<td>OMU - Other Minority College/University</td>
<td>20</td>
</tr>
<tr>
<td>TCU - or University</td>
<td>23</td>
</tr>
<tr>
<td>Institution Serving Primarily Women</td>
<td>9</td>
</tr>
<tr>
<td>Academic Inst. for Persons w/Disabilities</td>
<td>1</td>
</tr>
</tbody>
</table>
Expenditure Summary
NASA + Match

$76.6M Base, Augmentation, CDC, MSIPDC
FY2009 Student Data Tables

Table A1 – All Direct Student Participant Demographics
n=13,594

Table A2 – All Direct Funded Students (subset of A1)
n=5,487

Table A3 – All Direct Funded Students by Institution
n=5,487

Table B – Longitudinal Tracking
n=4,024

Number of Students who “made their next” in 2009
n=2,255
Cumulative Results

Space Grant Longitudinal Tracking*
2006-2009

N = 4,696 graduates

* Significant Awards

- 47% NASA/JPL
- 20% Aero Industry
- 11% STEM Industry
- 10% STEM Academia
- 9% Advanced STEM Degree
- 3% Non STEM

*Significant Awards
Space Grant Longitudinal Tracking

2006: Students Making Next Step, n=374
2007: Students Making Next Step, n=915
2008: Students Making Next Step, n=1,152
2009: Students Making Next Step, n=2,255
• Percent employed by NASA, aerospace contractors, universities, and other ed. institutions (>$5,000, ≥ 160 hours, or cost-benefit)
  – 2008 Space Grant result = 52%
  – 2009 Space Grant result = 42%
  – 2009 Total Space Grant students = 494 (reduction of 154 students)

• Percent of students moving to advanced education (>$5,000, ≥160 hours, or cost-benefit)
  – 2008 Space Grant result = 44.6%
  – 2009 Space Grant result = 43.9%
  – 2009 Total Space Grant students = 1,086 (increase of 511 students)
• Number of underrepresented students in higher education programs
  – 2008 Total Space Grant students = 4,588
  – 2009 Total Space Grant students = 3,884 (reduction of 704 students)

• Non-PART Measure -- Number of female students in higher education programs
  – 2008 Total Space Grant female students = 6,066
  – 2009 Total Space Grant female students = 5,096 (reduction of 970 students)
• Number of institutions served in EPSCoR states
  – 2008 Space Grant result = 199
  – 2009 Space Grant result = 234

• Ratio of funds leveraged by NASA funding support
  – 2008 Space Grant result = 80%
  – 2009 Space Grant result = 83%

• Number of new or revised courses developed with NASA support
  – 2008 Space Grant result = 147
  – 2009 Space Grant result = 179
• Purpose
  – Focus on developing strong and meaningful collaborations with minority-serving institutions

• Successful MSI proposals
  – Contribute to the engagement of MSIs
  – Contribute to the development of NASA’s future workforce within these types of institutions
  – Collaborations to develop, enhance and promote a significant and sustainable partnership with the minority serving institution
• Awarded States: Colorado, Illinois, Maryland, Montana, New Mexico, New York, Wisconsin
• Total monies awarded: $1,388,742
• 160 Direct College Student Participants:
  – Underrepresented Minority Students: 100
  – Female: 56
• 82 Students Directly Funded:
  – Underrepresented Minority Students: 54
  – Female: 34
• 5 New Courses
• 2 Revised Courses
• Three of the seven awarded consortia successfully added new MSI affiliates, with 8 new MSI affiliates total
• Purpose focus on the higher education component of the science, technology, engineering, and mathematics (STEM) pipeline which contributes to NASA Office of Education Outcome 1

• The anticipated results:
  – Prepare increasing numbers of students for NASA-related careers or for the pursuit of advanced degrees in STEM;
  – Meaningful, hands-on experiences;
  – Increase the number and diversity of students, faculty and researchers from underrepresented groups (minorities and women);
  – Promote involvement of consortium affiliates;
  – Purposeful partnerships with community colleges and/or minority-serving institutions
2009 Consortium Development Competition

- Awardees: Maine, Nevada, South Carolina, South Dakota, Vermont
- Total monies awarded: $1,705,030
- 131 Direct College Student Participants:
  - Underrepresented Minority Students: 12
  - Female: 38
- 117 Students Directly Funded:
  - Underrepresented Minority Students: 9
  - Female: 33
- New affiliates: 0
- 4 New Courses
- 5 Revised Courses

**Two consortia met or exceed their target for recruiting/engaging students from underrepresented minority groups**

**One consortium met or exceeded the percentage goal for recruitment/engagement of women.**
2011 Opportunities

- An omnibus or ROSES type solicitation for 2011 MUREP projects
  - Curriculum Improvement Partnership Awards for the Integration of Research (CIPAIR)
  - NASA Science and Technology Institute for Minority Institutions (NSTI-MI)
  - Innovations in Global Climate Change Education (IGCCE)
  - MUREP Small Projects umbrella: Transformational Performance in STEM Using Innovative Solutions
- EPSCoR Research
- Details TBD
  - Summer of Innovation
  - Innovations in STEM Higher Education: flight projects related
  - K-12 Opportunity
  - Informal Education Opportunity
Space Grant Microgravity Week
“Grant Us Space”

• Timeline
  • Announcement in mid-November, 2010
  • Letter of intent due mid-January, 2011
  • Proposals due February 2, 2011
  • Selections announced in mid-March, 2011
  • Targeting July 7-16, 2011 for the flight week activities

• Flight team slots allocated regionally
  • Western: 5
  • Southeast: 3
  • Great MidWest: 2
  • Mid-Atlantic: 2
  • Northeast: 2

• Proposals must show direct tie to current NASA research
• Strongly encourage participation by MSIs, new institutions, and community colleges
2010 CDC Awardees

- Maine
- New Jersey
- Nevada
- South Carolina
- South Dakota
- Vermont
• 16 proposals submitted
• 12 selected
• 7 awardees with SG connections:
  • Vermont
  • New York
  • Montana
  • Michigan (2)
  • Alaska
  • Alabama

• 2nd announcement released: Submissions due Nov. 15, 2010
Summer of Innovation
Capacity Building Awards

• 16 selections
• 4 with facilitated involvement from Space Grant
  • Georgia (2)
  • Nebraska
  • New Mexico
  • Virginia
- 8 selected
- 2 with Space Grant as lead institution or facilitated involvement
  - Maine
  - North Carolina
Summer of Innovation

Objectives

1. **Professional development** and training opportunities for **teachers who will lead students** through the *Summer of Innovation* summer learning program.

2. An **intensive and interactive middle school education experience** that accelerates student learning and improves student STEM skills and knowledge.

3. Strategic infusion of **NASA content** and educational resource materials.

4. A **community of STEM education stakeholders** that is able to sustain student interest and achievement.

5. **Assessments of effectiveness** of *Summer of Innovation* interventions and the effectiveness of the STEM learning communities developed through this pilot.

According to the National Summer Learning Association, *Summer of Innovation* will counter summer slide (the loss of academic skills over the summer) and other issues facing students who are underrepresented, underserved and underperforming in STEM.
Project Overview

Multi-Faceted Approach

- Space Grant Awards
- Contract Award
- Center Collaboration
- Partnerships Devel.
- National Call

STEM Learning Communities

Evaluation

Infusion of NASA Content

Student Engagement

Teacher Professional Development

Communications, Awareness & Messaging

Project Assessment
## Project Summary

### Current Activities

- Data Collection in Office of Education Performance Management (OEPM) System from all sites
- Follow-up meeting with OMB on September 27, 2010
- Local and third party evaluations underway
- Best Practices Benchmarking Study
- Pilot Project Lessons Learned Assessment
- Development of Key Performance Indicators and Metrics
- Announcement of Opportunity for Partnerships
- Closing events and culminating activities
Project Summary (continued)

◆ **Planned Key Activities**
  
  – All-Hands Lessons Learned Session – September 21-23 at NASA HQ
  – USA Science and Engineering Festival – October 23-24, National Mall
  – Education Partnership Summit – October 30 – November 1, Orlando, FL
  – SoI will be presented at the National Summer Learning Association (NSLA) Conference, November 9, Indianapolis, IN

◆ **Major Challenges**

  – Late start has impacted overall implementation, and sites ability to reach participant goals
  – Working through issues with 3rd Party Evaluation and OEPM system (i.e., GPRA req.)

◆ **Preliminary Lessons Learned**

  – Partnerships and collaborations at all levels are key to project success
  – Initial evaluation strategy was too ambitious
  – More resources required for project evaluation
  – Single implementation strategy will not serve all populations and locations
  – Clearer requirements and expectations in solicitation documents
  – Plan sufficient time for solicitations and project implementation
Summer of Innovation

Implementation Team – 2010 Pilot

Imagine It!     Explore It!     Do It!
New Mexico Space Grant
Wyoming Space Grant

Powering STEM Education in Wyoming with Wind Energy

Wyoming NASA Space Grant Consortium, Director: Dr. Paul Johnson
Wyoming Department of Education, SLO Program Manager: Amber Ash

Wyoming in support of NASA's STEM Education, Science, and Technology Programs.

Contact:

Incorporate STEM into the classroom with these innovative teaching strategies:

- Incorporate STEM into the classroom with these innovative teaching strategies:
  - Use real-world applications of STEM concepts.
  - Engage students in hands-on projects and experiments.
  - Integrate technology into lesson plans.

Resources:

- Accessibility:
  - Materials and equipment for students with disabilities.
  - Assistive technologies to support learning.

Contact:

NASA Space Grant Consortium

WYOMING NASA Space Grant Consortium
What is Steckler?

- Awards granted in three phases
- Phase I
  - Awards NTE $70,000 for 9 months
  - 18 Awards granted in January 2010
  - Completed with Phase I Mid term May 18
  - Final Phase I Forum November 15th -17th
- Phase II
  - 5 Awards NTE $250,000 for 2 years
- Phase III
  - 2 awards NTE $275,000 for 2 years
Steckler Accomplishments

**Technical**
- University of Arizona:
  - Completed a 150 day continuous crop production operation, monitoring input resources including: water, CO2, plant nutrients and electrical energy
  - Two peer reviewed publications

- Cornell University
  - Developed and deployed an operational Solar Storm Early Warning System using SMS messaging

- University of Central Florida
  - Completed a long-term study of plant growth in low pressure environments
  - Two peer reviewed publications accepted or in press

**Educational**
- University of Arizona:
  - Conducted a poster presentation entitled, “International Collaboration on Bioregenerative Systems for Space and Earth Applications in Sperlonga, Italy”

- University of New Mexico:

- University of Central Florida:
  - Developed a teaching module for transpiration in low pressure environments, as well as online teaching modules at crazy4mars, [http://www.4frontiers.com/educators/lesson_unit_plans.php](http://www.4frontiers.com/educators/lesson_unit_plans.php).
Phase I Forum
- November 15-17, 2010 at South Shore Harbour Resort & Conference Center in League City, TX
- 18- Phase 1 awardees presenting their up-to-date research and accomplishments

Phase II Announcement
- Coming Soon