Great Midwestern Space Grant Region Meeting

Collaboration Opportunities with Langley Research Center

Lloyd Evans

LaRC Office of Communications and Education

November 6, 2004

Langley Mission

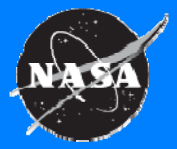
- In alliance with industry, other agencies, academia and the atmospheric research community, in the areas of aerospace vehicles, aerospace systems analysis and atmospheric science, we undertake innovative, high-payoff activities beyond the risk limit or capability of commercial enterprises and deliver validated technology, scientific knowledge and understanding of the Earth's atmosphere.

- Our success is measured by the extent to which our research results improve the quality of life.

Getting to Know LaRC

- 800 acres located in coastal Virginia
- Established in 1917 as the nation's first civilian aeronautics laboratory
- Staff of 3800 civil service and contract employees
- Aeronautics
- Atmospheric Sciences
- Atmospheres on distant planets
- NASA's Center of Excellence for Structures and Materials
- Wind tunnels and test facilities
- Aviation safety, quiet aircraft technology, small aircraft transportation and aerospace vehicles system technology
- NASA space programs involvement through atmospheric research and technology testing

LaRC Organization



Office of Director

Headquarter Functions
IPAO WTFGO
SSO AvSSPO

Office of Procurement

Office of Chief Counsel

Office of Equal Opportunity Programs

Office of Human Resources

Office of Communications & Education

Office of Chief Financial Officer

Office of Chief Information Officer

NASA Engineering & Safety Center

Safety & Mission Assurance Office

Strategic Partnership, Planning, & Management Office

Systems Management Office

Flight Research Services Directorate

Systems Engineering Directorate

Research & Technology Directorate

Center Operations Directorate

Flight Projects Office

Aeronautics Research Directorate

Exploration Systems & Space Operations Technology Directorate

Science Directorate

Systems Analysis & Advanced Concepts Directorate

Incubator Institute

Flight Research Services Directorate

- Real-time flight simulation of aerospace vehicles, including the environment and the pilot
- Development of discrete mathematical models of aerospace vehicles and subsystems
- Operation of simulation resources for NASA LaRC
- Pioneer and transfer innovative and dual-use applications of simulation technology
- Flight Systems Safety
- Flight Research
- Aircraft Services and Engineering

Systems Engineering Directorate

- Flight Systems
- Lidar/Laser Technology
- Sensor/Sensing Technology
- Information Technology
- Fabrication/Manufacturing Technology

Research and Technology Directorate

- Advanced materials and structures
- Damage tolerance and performance validation
- Nondestructive evaluation and health monitoring
- Impact dynamics of aerospace systems
- Quantify and control unsteady aerodynamics and aeroelastic phenomena of aerospace vehicles
- Applied and fundamental aerodynamic technologies
- Acoustic and aerothermodynamic technologies
- Hypersonic airbreathing propulsion technologies
- Advanced measurement, instrumentation, and testing
- Simulation and demonstration of earth flight and planetary entry of aerospace vehicles

Aeronautics Research Directorate

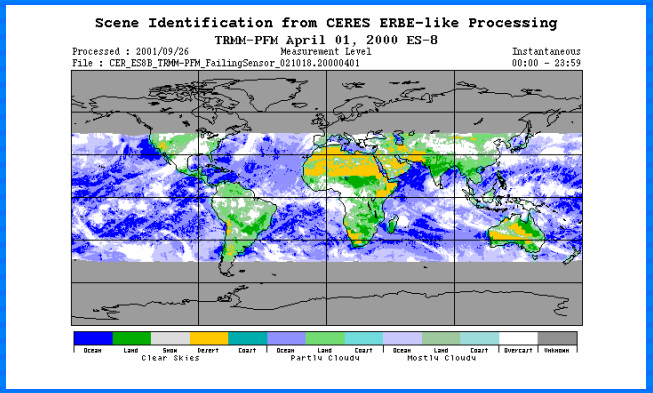
- Quiet aircraft technology
- Low-emission alternative power
- Ultra-efficient engines
- Hyper-X
- Advanced air transportation
- Small Aircraft Transportation System
- Vehicle safety technologies

Exploration Systems and Space Operations Technology Directorate

- Robotic and human exploration of the solar system
- Extend human presence to the Moon, Mars, and beyond
- Develop innovative technologies to support future exploration
- Promote international and commercial participation in exploration

Science Directorate

- Atmospheric Sciences
- Earth Sciences
- Climate Science
- Chemistry and Dynamics



Systems Analysis and Advanced Concepts Directorate

- Space transportation and planetary analysis
- Advanced civil airplane and transportation systems analysis
- Survivable, advanced, military vehicles
- Space mission analysis
- Multidisciplinary design optimization
- Computational aerosciences

Incubator Institute

Develops and incubates ideas to generate new business and to transform the institution, including the way we do research and technology development, and manage workforce and facilities.

NASA Pre-College Programs

- Aerospace Education Services Program (AESP)
- Educator Resource Center (ERC)
- NASA Explorer Schools (NES)
- Student Involvement Program (NSIP)
- Summer High School Apprenticeship Program (SHARP)

Aerospace Education Services Program

- AESP assists and supports educators in updating science, mathematics, geography, and technology curricula and in using new and evolving instructional methods

Aerospace Education Services Program cont.

- Professional Development tailored to fit state and local standards
- Student Programs to increase student interest in mathematics, science, geography, and technology through interactive demonstrations
- Special Programs for community organizations, libraries, and museums

Educator Resource Center Network

- ERCN helps educators access and use NASA science, mathematics, and technology instructional products that meet national and state standards

Educator Resource Center Network cont.

- NASA Educational Publications: lesson guides, educational activities, posters, etc.
- NASA Educational Videos: educators bring blank VHS tapes and use ERC dubbing system to copy from our collection
- NASA Portal: provides access and instruction on how to use the Internet to locate NASA instructional resources
- NASA Reference Materials: preview and use of the center multimedia materials
- NASA Educational Workshops: free workshops and training sessions in a number of areas

LaRC Education Resource Centers

- Virginia Air and Space Center
- Radford University
- Murray State University
- University of North Carolina at Charlotte
- South Carolina State University
- West Virginia University
- NASA IV&V Facility
- Wheeling Jesuit University

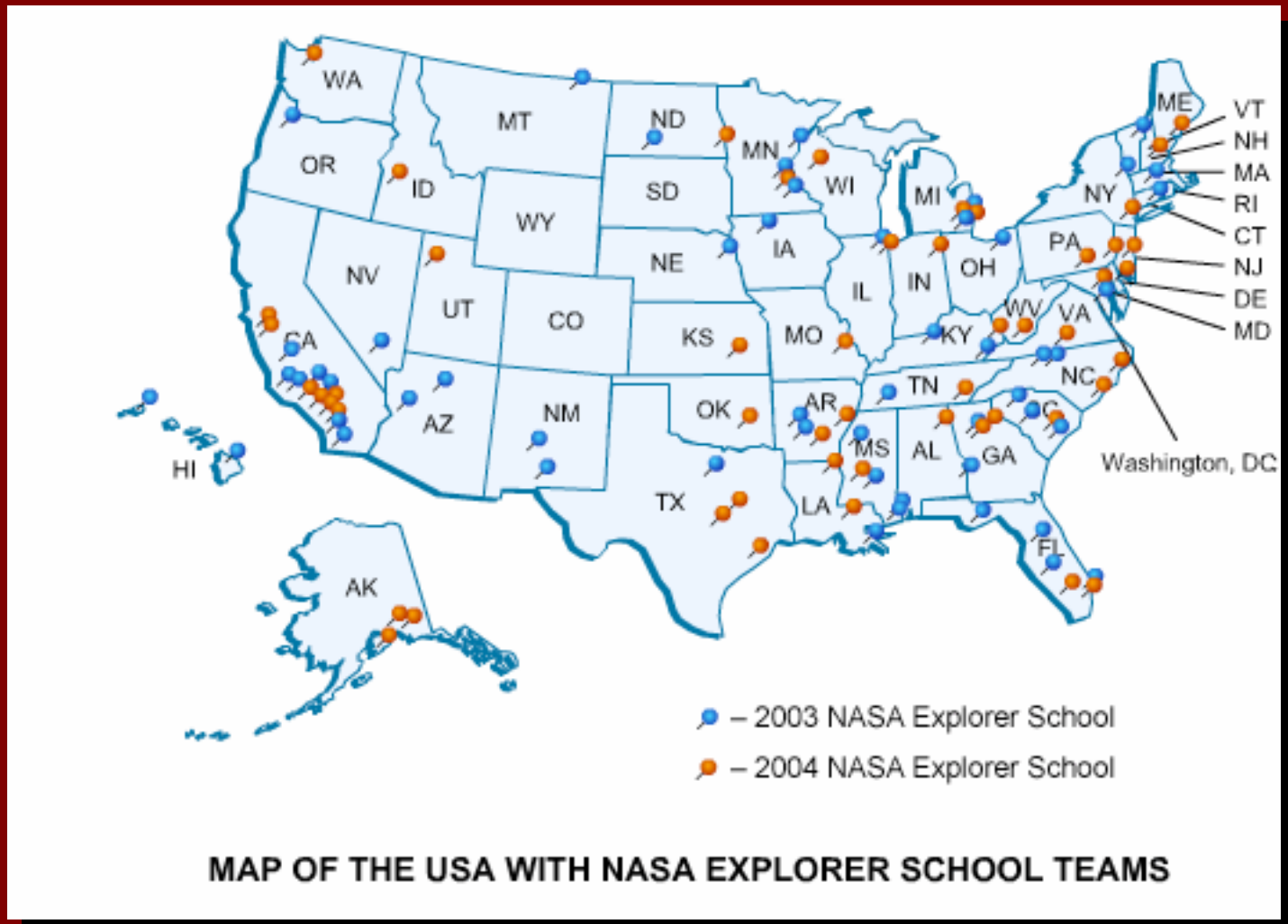
NASA Explorer Schools

- The NES program is a three-year partnership between NASA and selected school teams. The school teams and NASA personnel develop action plans in order to enrich science, mathematics, and technology instruction for grade levels 4-9.

NASA Explorer Schools cont.

- Educators and Administrators
  - Access to NASA learning/teaching tools
  - Participate in professional development workshops at a NASA Field Center
  - Earn graduate or professional development credit
- Students
  - Participate in authentic NASA science and space projects
  - Apply NASA science and technology knowledge to real world issues
  - Learn about NASA careers in mathematics, science, technology, and engineering
- Families
  - Increase involvement in child's education
  - Access interactive online NASA learning resources
- Schools
  - Identified as a NASA Explorer School
  - Eligible for grants to implement Explorer School Team Action Plan

NASA Explorer Schools cont.



MAP OF THE USA WITH NASA EXPLORER SCHOOL TEAMS

Summer High School Apprenticeship Program

- NASA SHARP offers students the opportunity to participate in an intensive science and engineering apprenticeship program. SHARP seeks to increase participation and success rates of students who are traditionally under-represented in science, technology, engineering, and mathematics.

Summer High School Apprenticeship Program cont.

- 8-week paid summer apprenticeship
- NASA field center or residential university placements
- Hands-on research experience
- Work with a mentor in a specific areas of science or technology
- Exposure to careers in science, technology, engineering, and mathematics
- Course, college, and career information

NASA Student Involvement Program

- The NASA Student Involvement Program (NSIP) is a national program of six investigations and design challenges for grades K-12 that link students directly with NASA's exciting missions of exploration and discovery.

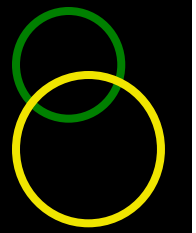
NASA Student Involvement Program cont.

- NSIP is open to all students in grades K-12, though some prizes are awarded only to U.S. citizens and legal residents.
- Competition Deadlines
  - The deadline for entering Space Flight Opportunities is January 15, 2005.
  - The deadline for all the other competitions is January 31, 2005.
- Judging
  - Teams of scientists, engineers, educators and journalists will judge the entries.
- Prizes
  - Participating teachers and students win prizes according to their competition category and grade level.

NASA Student Involvement Program cont.

National Competitions	Grades			
	K-1	2-4	5-8	9-12
My Planet, Earth	Whole class	Team or whole class		
Science & Technology Journalism	Whole class	Team or whole class	Team or individual	Team or individual
Aerospace Technology Engineering Challenge			Team or individual	
Design a Lunar-Based Mission to Mars & Beyond			Team or individual	Team or individual
Watching Earth Change			Team or individual	Team or individual
Space Flight Opportunities				Team or individual

For More Information



AESP

http://www.okstate.edu/aesp/

ERCN

http://vasc.org/erc/

NES

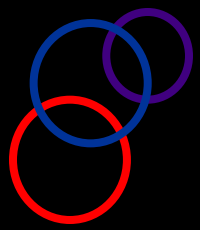
http://explorerschools.nasa.gov

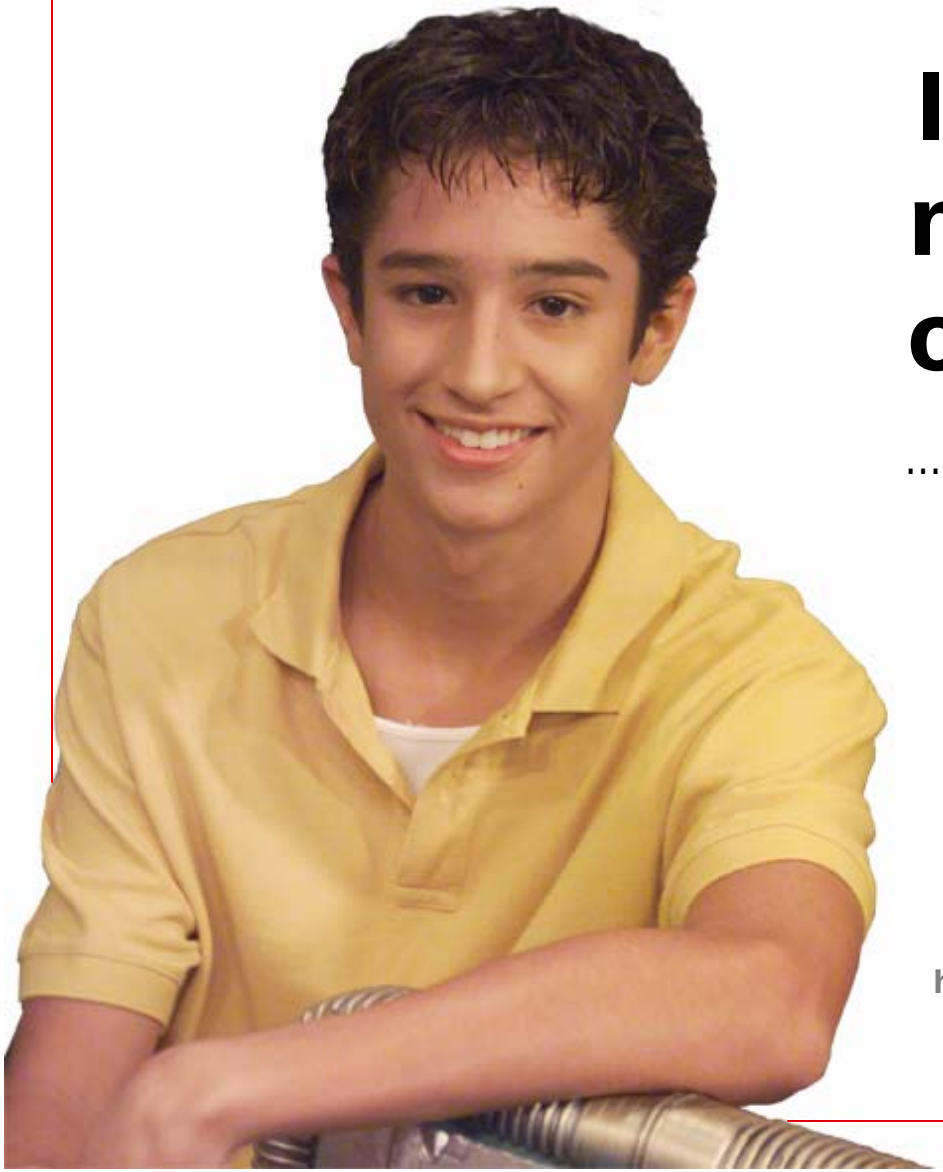
SHARP

http://nasasharp.com

NSIP

http://www.nsip.net





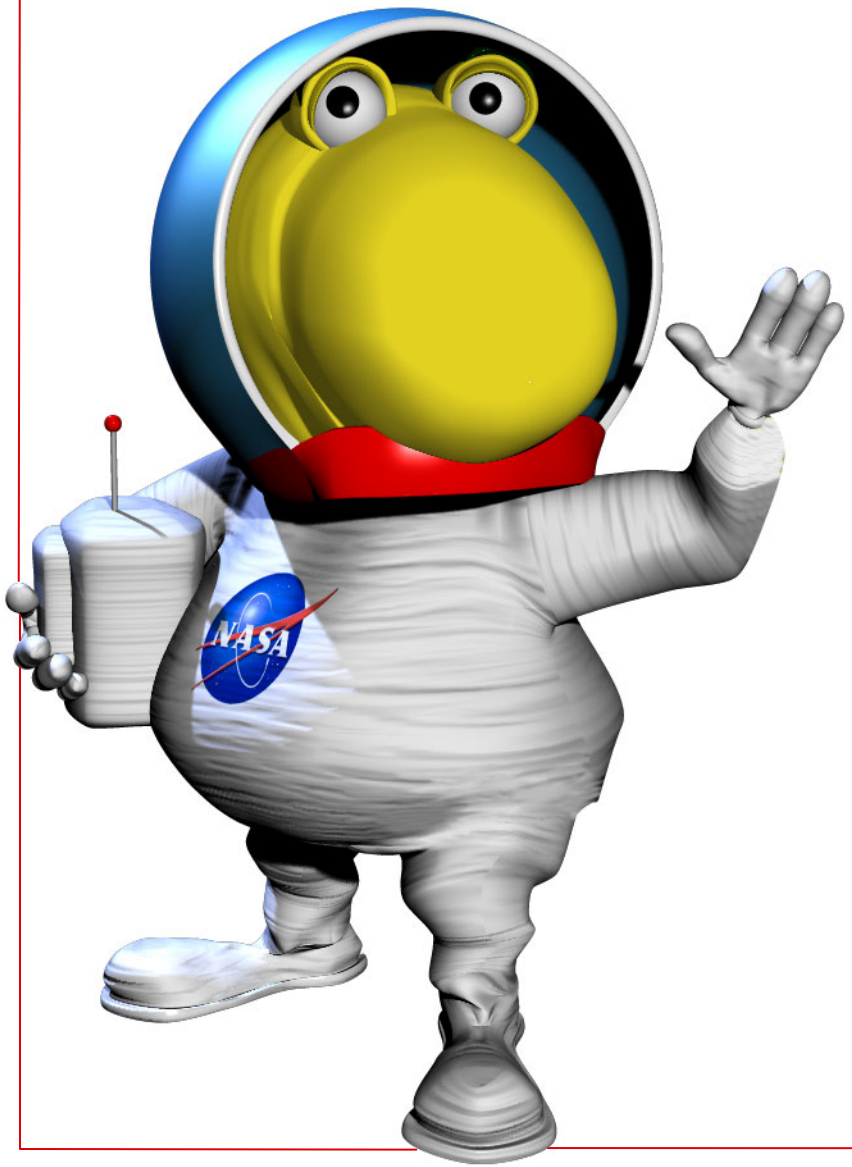
Inspiring the next generation of explorers…

…as only NASA can

Tony, tree house detective

Tony shares math, science, and technology with students on the NASA SCI Files™.

NASA Langley's Center for Distance Learning



Extend the potential of traditional and emerging instructional technology to provide sustainable distance learning programs that inspire students, create learning opportunities, complement NASA's education and outreach mission, and contribute to the achievement of critical workforce development and national STEM (science, technology, engineering, and mathematics) goals especially as they relate to minority (Hispanic) and under-served (Native American) groups

NASA CDL Mission

Use instructional technology and NASA to inspire the next generation of explorers

NASA's KSNN™

Grades K-2, 3-5

Explains the everyday phenomena of our world, corrects misconceptions, and answers frequently asked questions. Watch and interact as kids explain math, science, technology, and NASA facts. Look on the KSNN web site for a 1-minute video newsbreak, a follow-up written explanation, hands-on activity, and other resources.

Ted Toons

Ted Toons is featured on the animated newsbreaks for grades kindergarten through second.

NASA Langley's Center for Distance Learning

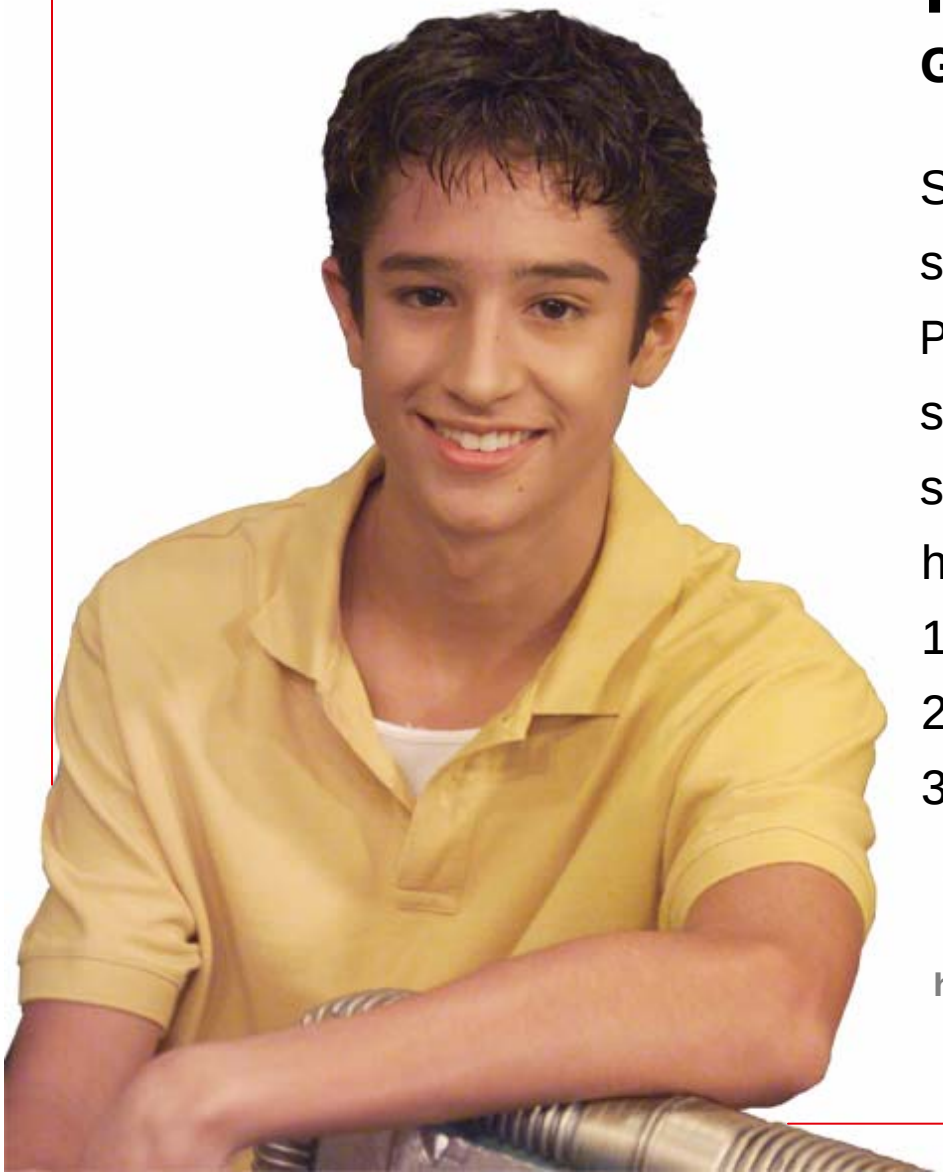
NASA's KSNN™

One-minute educational videos
for grades K-2 (animated)

NASA Langley's Center for Distance Learning

NASA's KSNN™

One-minute educational videos for grades 3-5 (Spanish).



NASA SCI Files™

Grades 3-5

Series of programs emphasizing standards-based instruction, Problem-Based Learning, and scientific inquiry. Each program supports the national standards and has three components:

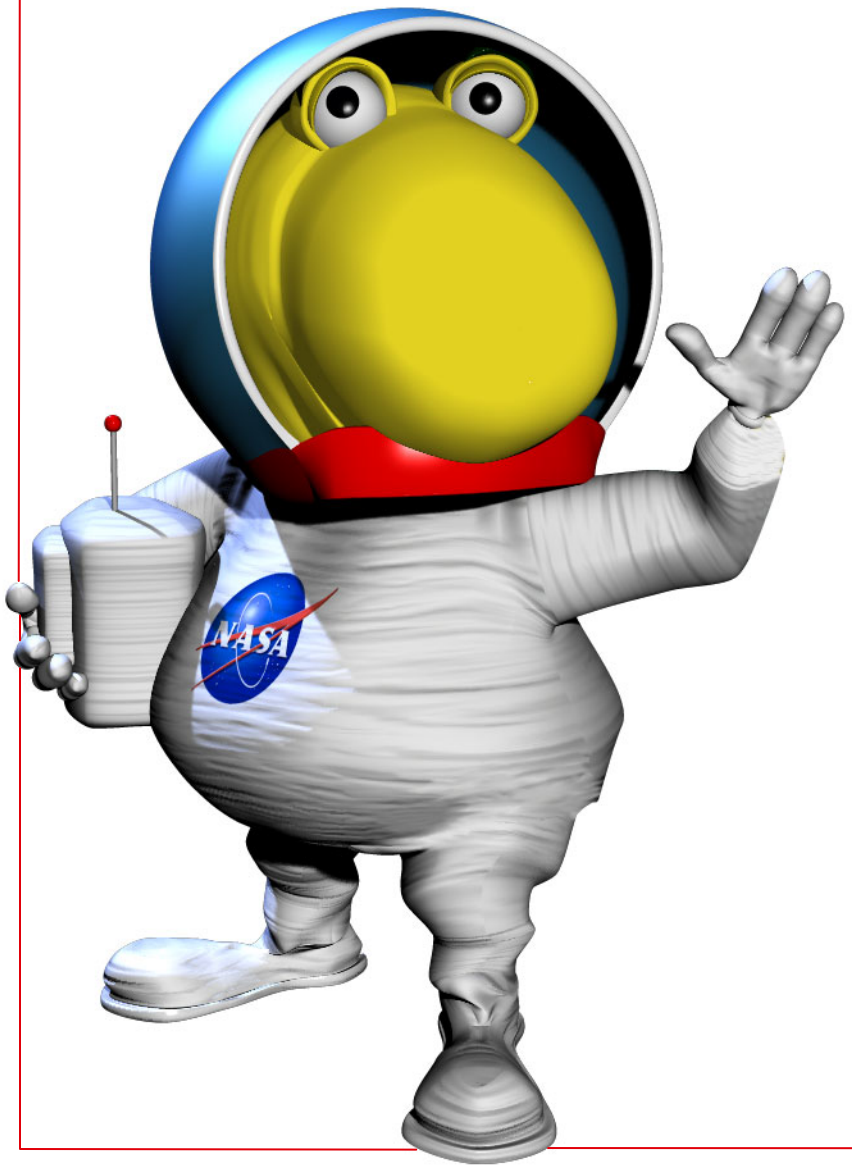
1. a 60-minute television broadcast;
2. a companion educator's guide; and
3. an interactive web site.

Tony, tree house detective

Tony shares math, science, and technology with students on the NASA SCI Files™.

The NASA SCI Files™

One-minute newsbreaks for
grades K-2 (animated) and 3-5.



NASA CONNECT™

Grades 6-8

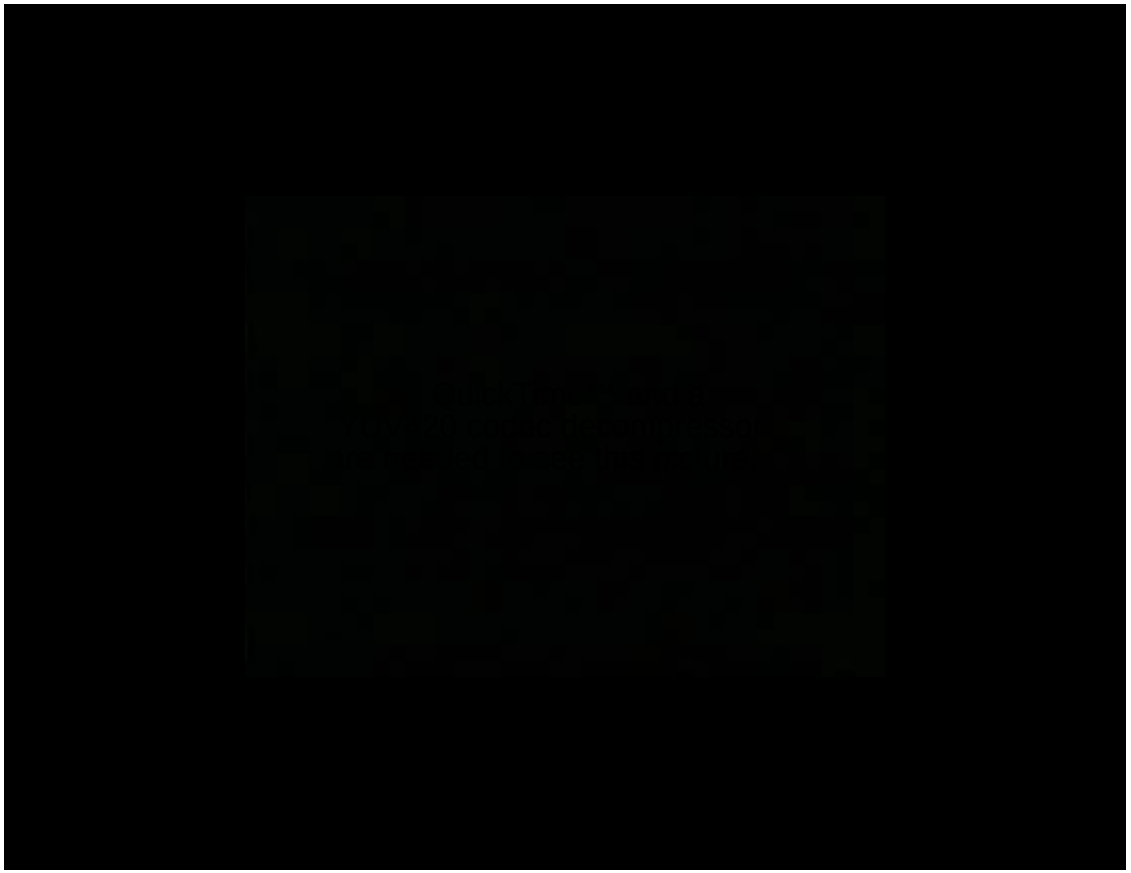
Series of math-focused programs. The series establishes a connection between the math, science, and technology concepts taught in the classroom to those same concepts used everyday by NASA researchers. Each program supports the national standards and has three components:

1. a 30-minute television broadcast;
2. a companion educator's guide; and
3. an online activity.

Norbert, co-host

Norbert leads students through math concepts with animated antics.

NASA Langley's Center for Distance Learning



NASA CONNECT™

30-minute math-focused broadcast for grades 6-8.

NASA LIVE™

All Grade Levels

Series of videoconferencing programs designed to engage students, teachers, and faculty in an interactive, virtual environment with NASA researchers, scientists, and other students and faculty. A ISDN and IP compatible videoconferencing system is required.

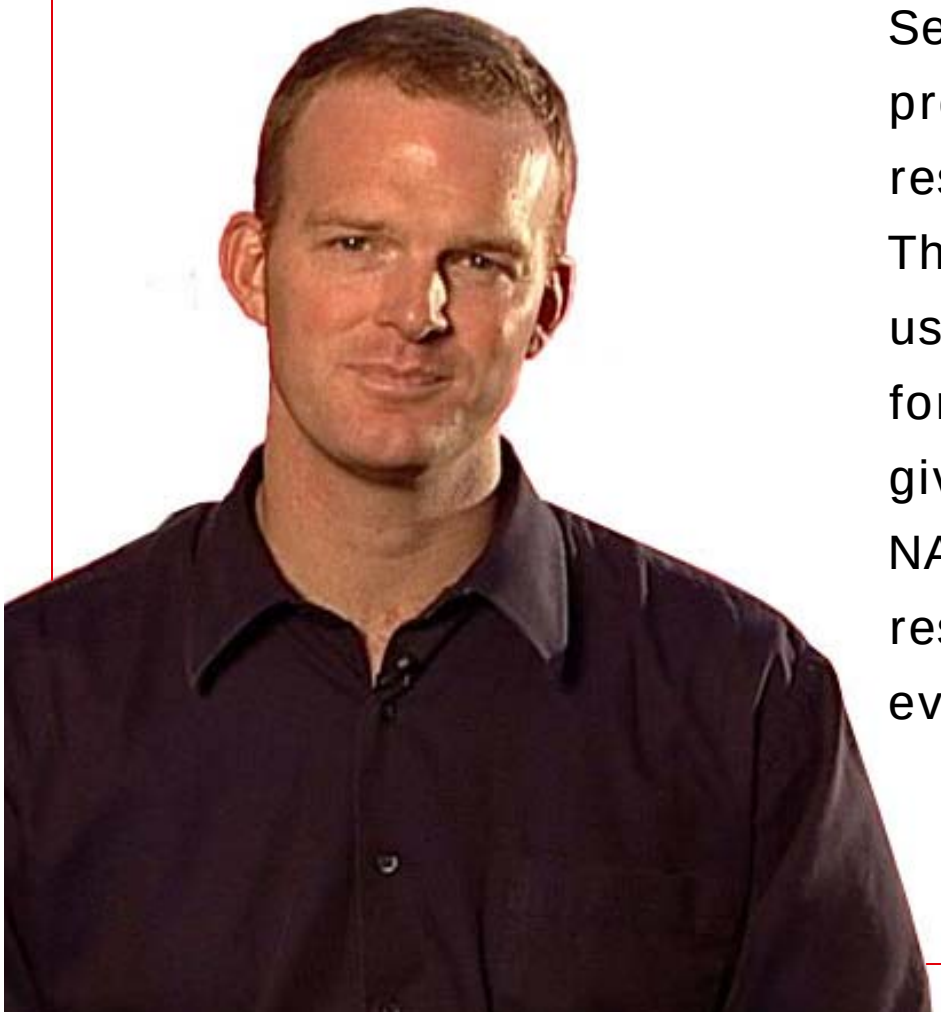
NASA LIVE™

Videoconferencing program to connect students around the world.

NASA's Destination Tomorrow™

Adult Learners

Series of 30-minute educational programs that focus on NASA research— past, present, and future. This Emmy®-award-winning series uses a five segment magazine format. Each of the five segments gives the audience an inside look at NASA and demonstrates how research and technology relate to our everyday lives.



Steele, host

Steele is one of the hosts of NASA's Destination Tomorrow™.

NASA Langley's Center for Distance Learning

NASA's Destination Tomorrow™

30-minute programs for adults

NASA Center for Distance Learning Strengths

✓ full range of FREE research, standards, teacher-based STEM distance learning programs that "span the K-16+ educational horizon"

✓ award winning programs use "high energy" media that incorporate classroom and web activities to inspire and motivate

✓ nationwide classroom mentor program through professional organization partners

✓ impact / value-added longitudinal evaluations and studies to continually improve program quality

✓ multi-channel, nationwide access and distribution

✓ multi-faceted national marketing program

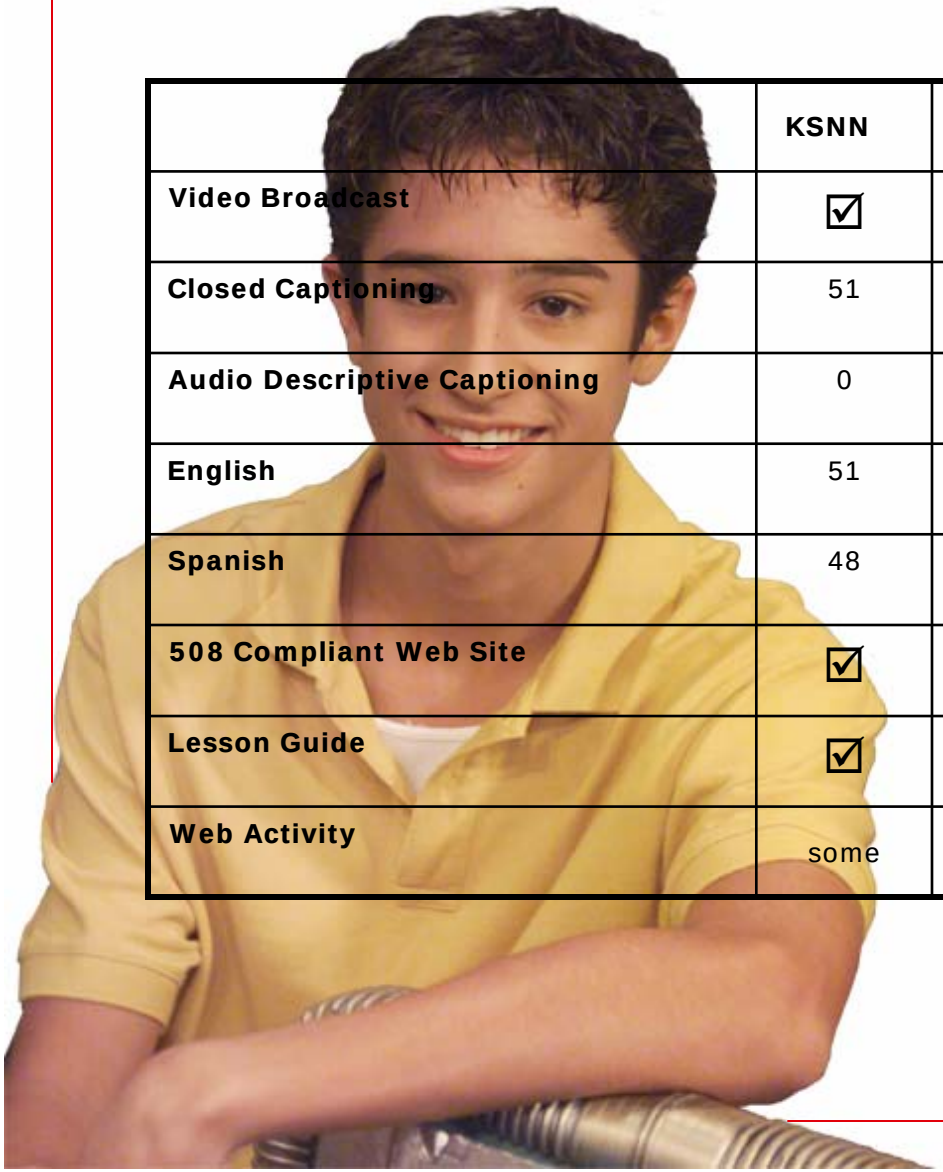
✓ 2-way dialogue with users through extensive database

Accessing FREE Center for Distance Learning Programs

- **PBS, ITV, and Cable Access Stations**
- **Satellite (KU- and C-Band)**
- **Channel One**
- **Apple Learning Interchange (ali.apple.com)**
- **South Carolina ETV (www.knowitall.org)**
- **NASA ERCs and NASA CORE**
- **dlcenter.larc.nasa.gov**

NASA Langley's Center for Distance Learning

NASA Center for Distance Learning Program Summary June 2004



	KSNN	SCIFiles	CONNECT	Destination
Video Broadcast	☑	☑	☑	☑
Closed Captioning	51	16	31	15
Audio Descriptive Captioning	0	8	8	10
English	51	15	31	15
Spanish	48	2	2	12
508 Compliant Web Site	☑	☑	☑	☑
Lesson Guide	☑	☑	☑	
Web Activity	some	☑	☑	

NASA Center for Distance Learning (CDL)
FY 2004 Accomplishments

Produced 4 NASA SCI Files™, 4 NASA CONNECT™, and 5 NASA's Destination Tomorrow™ programs

Registered 52,265 educators for NASA SCI Files™ and NASA CONNECT™

Registered 298 TV stations to air NASA SCI Files™, NASA CONNECT™, and NASA's Destination Tomorrow™

NASA Center for Distance Learning (CDL) FY 2004 Accomplishments

Received 17 awards (including 2 regional Emmy's® and the 2004 EdNet Award) for production, content, usability, and overall quality

Initiated informal education marketing plan that targets libraries, 4-H, Boys and Girls Clubs, and the YMCA

Launched the Hispanic Education Initiative and two new programs—NASA's Kids' Science News Network™ and Noticiencias NASA™

NASA Center for Distance Learning (CDL) FY 2004 Accomplishments

Developed distribution partnerships with Mad Science®, the Apple Learning Interchange, *Mag Rack*, knowitall.org, and Regal CineMedia®

NASA CDL programs received an (overall) excellent rating from independent review panel

NASA Center for Distance Learning (CDL)
FY 2005 Goals

Increase the number of registered educators for NASA SCI Files™ and NASA CONNECT™ by 10 percent

Increase the number of TV stations airing TV stations airing NASA SCI Files™, NASA CONNECT™, and NASA's Destination Tomorrow™ by 7 percent

Continue the development of NASA's Kids' Science News Network™ and Noticiencias NASA™

NASA Center for Distance Learning (CDL)
FY 2005 Goals

Increase program access by developing 5 partnerships

Attend, present, and exhibit at 8 national and regional conferences

Initiate marketing plan that targets independent, private and parochial schools

Close caption and audio (descriptive) caption the NASA SCI Files™, NASA CONNECT™, and NASA's Destination Tomorrow™

NASA Center for Distance Learning (CDL)
FY 2005 Goals

Produce NASA's Destination Tomorrow™ in High Definition TV

Improve direct marketing and cross-marketing performance with our partners

Win a One NASA Peer (Team) Award

University Program Opportunities

Research Opportunities

- aeronautical engineering
- mechanical engineering
- electrical engineering
- materials science
- computer science
- atmospheric science
- astrophysics
- physics
- chemistry
- selected other aerospace-related disciplines

Undergraduate Programs

- Langley Aerospace Summer Scholars (LARSS)
- NASA Summer Scholars (WISE, SPACE, IMAGE)
- NASA Science and Technology Scholarship Program (NASA-STSP)
- Pre-Service Teacher Program
  - Pre-Service Teacher Conference
  - Pre-Service Teacher Institutes

Langley Aerospace Research Summer Scholars (LARSS)

The LARSS Class of 2004

LARSS Details

- Interest in aerospace research
- Competitively selected
- Encourage students to earn graduate degrees

- Rising Juniors, Seniors, or First-Year Graduate Students
- U.S. Citizens Only
- Cumulative GPA of 3.0 or Higher
- 10-weeks: June 2 - August 8
- Stipend- $4,500

LARSS Video

QuickTime™ and a
YUV420 codec decompressor
are needed to see this picture.

NASA Summer Scholars (NSS)

- SPACE - Morehouse College
- WISE - Spelman College
- IMAGE - Florida A&M University

The NSS Class of 2004

Graves Hall, Morehouse College

Science Center, Spelman College

Lee Hall Auditorium, Florida A&M

NSS Details

- Open to full-time Spelman, Morehouse, and FAMU students
- Rising Sophomores or Juniors
- Mathematics, Computer Science, Engineering
- U.S. Citizenship
- Cumulative GPA of 3.0 or higher
- 10-weeks at LaRC

NASA Science and Technology Scholarship Program (NASA-STSP)

Program Features

- Scholarship eligibility for up to 4 academic years
- Scholarship recipients will receive up to $20,000 tuition support per year (tuition, fees, and other expenses)
- Scholarship recipients will receive up to $10,000 stipend support for annual research internship (mandatory) at a NASA Center/Installation and NASA-related research activities at home academic institution
- Scholarship recipient's academic programs approved and progress reviewed/approved annually by NASA
- Financial need, as determined by the academic institution, may be considered

NASA Science and Technology Scholarship Program (NASA-STSP)

Program Eligibility

- Eligible students - Rising Freshmen - Seniors
- Eligibility limited to U.S. Citizens and Permanent Residents
- Student eligibility for up to 4 academic years
- Full Time student at an accredited 2-year or 4-year institution
- Student academic program approved and progress reviewed annually by NASA
- Scholarship recipients must maintain an overall academic standing as required by the college/university, including a cumulative 3.0 GPA in all major coursework, to remain in the scholarship program.

Application Timeline

- NASA is currently competing the opportunity to administer this program. The CAN closed October 28. The winning organization will conduct an open competition for scholarships likely starting in December.

NASA Science and Technology Scholarship Program (NASA-STSP)

Service Obligation

- Scholarship recipients incur two years of obligated NASA service for each full academic year of scholarship enrollment; four year statutory maximum obligation
- Service obligation to begin within 60 days of graduation
- Deferment option for graduate studies (with NASA approval)
- Obligation will be served as a term appointment
- Penalties for breach of contract:
  - Enrollment year(s): repayment of scholarship tuition costs if academic year not completed (repay scholarship-related expense costs only, not stipend)
  - Upon graduation: repayment of scholarship tuition costs if service obligation not met (repay 3 times total scholarship expenses)

Pre-Service Teacher Conference
Alexandria, Virginia

PSTC Promotional Video

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Pre-Service Teacher Institute

Langley's PSTI Class of 2003, First Session

Langley's PSTI participants give their final presentations

Graduate Programs

- Harriet Jenkins Pre-Doctoral Fellowship Program (JPFP)
- Graduate Student Researchers Program (GSRP)

NASA Harriet G. Jenkins Predoctoral Fellowship Program (JPFP)

- Full-time, under-represented Master's or Doctoral students in Science, Technology, Engineering, or Mathematics
- Up to three years of support
- U.S. Citizens only
- The JPFP provides stipends and tuition offset Annual stipends for students pursuing master degrees start at $16,000. Annual stipends for students pursuing doctoral degrees start at $22,000. Regardless of the degree pursued, annual tuition offsets start at $8,500.
- Applications and transcripts due February 1, 2005
- Information and electronic application available at http://www.uncfsp.org

Graduate Student Researchers Program (GSRP)

The GSRP Class of 2004

GSRP Details

- Initiated in 1980
- 49 students supported by LaRC in 2004
- 331 awards nationally
- One-year Fellowships of $24,000
- U.S. Citizens only
- GPA 3.0 or higher
- Full-time Graduate status
- Renewable up to 3 years
- Research Driven
- Orientation July 20-22
- May not receive other Federal funds

GSRP Orientation Speaker, Ann Mennel, Head, Human Resources, LaRC

GSRP Promotional Video

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YUV420 codec decompressor
are needed to see this picture.

GSRP Promotional Video

QuickTime™ and a
YUV420 codec decompressor
are needed to see this picture.

Other Federal Opportunities

- National Research Council Resident Research Associateship (NRC RRA)
- Other NASA Internships
- Education-related grants

National Research Council Resident Research Associateship (NRC RRA)

The NRC RRA Class of 2004

National Research Associateship Program

- Provide postdoctoral scientist and engineers of unusual promise and ability opportunities for research on problems relevant to Langley's research goals
- Directly contribute to the overall research efforts of the Center
- Promote Diversity
- Stipends beginning at $46,500 ($6,500)

Dr. Carolyn Jordan briefs NRC program administrators on her research during an NRC Visit.

Contact Information

- LARSS & USRP
  - Denise Siegfeldt, (757) 864-5298, d.v.siegfeldt@larc.nasa.gov
  - Vicky Pelchy, (757) 864-8034, v.j.pelchy@larc.nasa.gov
- Summer Scholars
  - Kathy Powell, (757) 864-7164, k.c.powell@larc.nasa.gov
- NASA-STSP
  - Katie Blanding, (202) 358-0402, katie.blanding@nasa.gov
- Pre-Service Teacher Program
  - Adriane Dorrington, (757) 864-2380, a.e.dorrington@larc.nasa.gov
- JPFP
  - Melissa Green, (703) 205-7635, green@uncfsp.org
- GSRP & NRC RRA
  - Lloyd Evans, (757) 864-5209, l.b.evans@larc.nasa.gov
  - David Peterson, (757) 864-7162, d.j.peterson@.larc.nasa.gov

Thanks for your attention!