International Year of Astronomy 2009
NASA Programs: Diversity Highlights

Hashima Hasan (NASA Headquarters, Washington DC), **Denise Smith** (Space Telescope Science Institute, Baltimore, MD) and **Mangala Sharma** (Space Telescope Science Institute, Baltimore, MD)

BACKGROUND:

NASA's Science Mission Directorate (SMD) has embraced the opportunity presented by the International Year of Astronomy (IYA) 2009, to take the exciting science generated by NASA missions in astrophysics, planetary science and heliophysics to students, educators and the public worldwide. NASA is an Organizational Associate of the International Astronomical Union (IAU) IYA 2009 program, and as an integral component of national U.S. IYA team, has aligned its activities to the overarching themes outlined by the team. NASA Science Mission Directorate (SMD) celebration of the International Year of Astronomy (IYA) 2009 was kicked off in January 2009 with a sneak preview of a multi-wavelength image of M101, and of other images from NASA space science. Since then some of the exciting science generated by NASA missions in astrophysics, planetary science and heliophysics, which has been given an IYA2009 flavor, has been made available to students, educators and the public worldwide. Some examples of the progress of NASA programs will be presented. The traveling exhibit of NASA images to public libraries around the country has been a spectacular success and is being extended to include more libraries. NASA IYA Student Ambassadors met at summer workshop and presented their projects. NASA's *Afterschool Universe* has provided IYA training to community-based organizations, while pre-launch teacher workshops associated with the Kepler and WISE missions have been designed to engage educators in the science of these missions. IYA activities have been associated with several missions launched this year. These include the Hubble Servicing Mission 4, Kepler, Herschel/Planck, LCROSS. NASA IYA programs have captured the imagination of the public and continue to keep it engaged in the scientific exploration of the universe. NASA's *Go Observe!* program provides guidance to the public to observe the object of the month and links to related NASA educational activities. NASA's IYA website **astronomy2009.nasa.gov** is a key resource to guide visitors to NASA resources and enable participation in special events.

NASA International Year of Astronomy (IYA) programs engage underserved and underrepresented communities by reaching out to wider audiences at non-traditional venues and creating new approaches and partnerships.

NASA IYA GOALS:

- provide opportunities for youth and adults to make their own observations of the universe
- increase awareness of astronomy
- strengthen interest in science and science education
- enhance collaboration across and beyond NASA

NASA IYA website: astronomy2009.nasa.gov

GLOSSARY:

Underrepresented in science and engineering: Hispanic, African American, Pacific Islander, and Native American origin.

Underutilized: groups with the talent and ability to participate in the SMD program and thus should be - but are not - involved. E.g.: minorities, women and the physically challenged.

Underserved: people in areas where goods or services are in short supply (e.g.: small towns, rural communities, or in economically depressed areas). Also groups with which NASA has not historically had a significant relationship (e.g. community colleges).

NASA IYA programs engage underserved, underrepresented & underutilized groups in astronomy and space science.

NASA IYA ORGANIZATION:

Organized through NASA Science Mission Directorate

Planning lead: Hashima Hasan

Coordinated by NASA Science Mission Directorate Forums

Key partners: science and education/public outreach professionals associated with NASA science missions and research programs

"From Earth to the Universe" includes NASA-funded tactile and Braille exhibit panels.

Exhibit of dramatic astronomical images at non-traditional venues e.g. airports, public parks, shopping malls, seen by millions – including significant populations of women and girls

Tactile displays for the visually impaired community and Braille version of Sun, Eta Carinae, Crab Nebula, Whirlpool Galaxy, Kinds of Light panels with materials based on the book Touch the Invisible Sky.

NASA image panels have captions in English and Spanish.

Leads: Kim Kowal Arcand, Megan Watzke
Read more: www.fromearthtotheuniverse.org/tactile.php

"Afterschool Universe" targets girls' involvement in astronomy & space science.

Out-of-school-time, hands-on astronomy series for middle school students

Partners: Girl Scouts, Great Science for Girls, DC Children and Youth Investment Trust Corporation, etc.

Leads: Anita Krishnamurthi, James Lochner et al.
Read more: universe.nasa.gov/au

"Visions of the Universe" exhibit reaches under-served communities via public libraries.

Traveling exhibit on how our views of the universe have changed over the past 400 years

Will reach 55 small towns in rural areas and large cities during 2009 and 2010

Distributed in partnership with American Library Association

Leads: D. Smith, B. Eisenhamer, F. Summers, M. Dussault
Read more: http://amazing-space.stsci.edu/visions/

Observing Programs encourage all to experience the wonders of the universe.

Night Sky Network – nationwide coalition of amateur astronomy clubs engage schools, Girl Scouts, underserved communities et al. in astronomy with IYA Discovery Guides keyed to NASA celestial object of the month

MicroObservatory facilitates equal access to science through free robotic telescopes that users control over the Internet

E/PO leads: Astronomical Society of the Pacific, Origins Education Forum, Smithsonian Astrophysical Observatory
Read more: nightsky.jpl.nasa.gov, www.astrosociety.org/iya, microobservatory.org

"NASA IYA Student Ambassadors" focus on un-derrepresented and underserved communities.

55 undergraduate and graduate students (>50% women) share NASA science and astronomy with local communities

Reach out to underserved groups in rural areas and small towns in US

Students serve as peer role models inspiring younger audiences

Lead: Hashima Hasan, et al.
Administered by: National Space Grant Foundation

Workshop started community dialog on better engaging girls in astronomy and space science.

Part of NASA IYA's contribution to "She is an Astronomer" global cornerstone project

30 astronomers and educators discussed resources, strategies and best practices to engage and sustain girls' interest in science during mini-workshop at Astronomical Society of the Pacific's 2009 conference

Highlighted lessons learned from research, out-of-school-time activities in partnership with Girl Scouts, Great Science for Girls, etc.

What next: build knowledgebase of resources and research on equitable science education, collaborate and network existing and new programs, navigate E/PO funding landscape.

Read more: "Successful Strategies for Engaging Girls and Young Women in Astronomy" by Mangala Sharma, Denise Smith, Mary Dussault, Hashima Hasan, Anita Krishnamurthi, Leslie Lowes, and Maryann Stimmer, submitted to 2009 ASP meeting conference proceedings "Science Education and Outreach: Forging a Path to the Future"

NASA IYA SUCCESSES

Overarching theme "The Universe—Yours to Discover" has provided focus for education and public outreach efforts—and we'll keep up the momentum

Reached broader and diverse audiences across age groups, variety of cultures and backgrounds, more women, and through non-traditional venues

Raised awareness of astronomical discovery and of NASA science in rural and small towns

Targeted science and science education for girls and underserved groups

Created collaborations with new partners