

For 2010 the GSFC Visitor Center Education funding was once again spent on both the Greenbelt Visitor Center and the Wallops Visitor Center. The table below lists the main areas in which the funding was spent mapped to the Education Framework Outcomes:

	<b>VC EDUCATION ELEMENT</b>	<b>EDUCATION FRAMEWORK OUTCOME/MEASURE</b>
1	Formulation of interim Outcomes in Advance of SEEC	Outcome 1,2,3
2	RSTEP program support	Outcome 2
3	Education Exhibits: GeoDome Staffing/Piloting and Education Exhibit Development, Content & Maintenance for Greenbelt and Wallops	Outcome 1, 2,3
4	Informal Education Support	Outcome 1,2,3
5	Informal Educator Museum Workshop	Outcome 2,3
6	Touch table programming	Outcome 2,3
7	Air Rocket Exhibit at Wallops	Outcome 2,3

**1. Name of Project:**

**Formulation of Interim Outcomes in Advance of Science Exploration and Exhibition Center (SEEC).**

Administered by: Lord Cultural Associates

Type of Agreement: Contract

Project Manager: Kris Brown

Center: Goddard Space Flight Center

Telephone Number: 301.286.4994

PROJECT DESCRIPTION

Goddard is investigating the possibility of implementing a new Education Center located at the current Visitor Center at the Greenbelt Campus. Last year we contracted a feasibility study and master plan for this new Education Center. This new task was to develop recommendations for the current Visitor Center that would take it on a path towards SEEC and the SEEC vision as identified in the feasibility study and master plan.

PROJECT GOALS

Develop recommendations that would be done in advance of SEEC's opening within budget constraints. Included were consideration of new or expanded exhibits, education programs and potential modifications to the operation of the existing Visitor Center.

PROJECT BENEFIT TO OUTCOME

This project has a direct benefit to both formal and informal education (Outcome 2

and 3). The existing Visitor Center is inadequate to showcase NASA's work and accomplishments in a Goddard context, both in programming and in exhibit space. An improved Visitor Center would be able to greatly contribute to meeting NASA's educational objectives.

The specific objectives of the Education Center are to:

- Inspire, engage and educate the next generation of scientists, engineers and technologists;
- Provide compelling experiences for all to increase understanding of our home planet and our place in the Universe;
- Create a destination of choice that effectively showcases NASA and Goddard's current work.

#### PROJECT ACCOMPLISHMENTS

Project accomplishments include identification of exhibit modifications, new exhibits, implementation of informal education programs and operations improvements to the current Visitor Center.

#### PROJECT CONTRIBUTIONS TO PART MEASURES

Some of these recommendations immediately applied to the current Visitor Center planning and will impact Outcome 2.4 and 3.1.

#### IMPROVEMENTS MADE IN THE PAST YEAR

As this is the first and only year for this study, no project improvements were made.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION Not applicable for this project.

## **2. Name of Project:**

### **RSTEP Program Support**

As Goddard Space Flight Center is home to NASA Earth Science, the fund supported the enhancement of informal Earth science remote sensing education efforts. Goddard's Remote Sensing Earth Science Teacher Program, (RSESTeP) is intended to impact 4-12 grades and provide metric guidance, methods and mechanisms to assess student impact as well as curriculum penetration in Earth sciences.

Administered by: Pat Coronado

Type of Agreement: Task on existing contract

Project Manager: Pat Coronado

Center: Goddard Space Flight Center

Telephone Number: 301.286.9323

#### PROJECT DESCRIPTION

RSESTeP trains Educators on how to use NASA resources to conduct three-tiered, satellite, aerial and ground-truthing missions of interest to local communities.

<http://education.gsfc.nasa.gov/rsestep/>. The schools use NASA data, the ERC, resources, equipment and science guidance to help carryout the school's Earth science missions.

### PROJECT GOALS

The funds identified supported training on how to use NASA resources to conduct three-tiered, satellite, aerial and ground-truthing missions of interest to local communities and provided coordination and guidance to the participating schools including delivery of professional development for middle school educators.

### PROJECT BENEFIT TO OUTCOME

This project has a direct benefit to both formal and informal education (Outcome 2 and 3).

### PROJECT ACCOMPLISHMENTS

A major accomplishment is a recent Space Act Agreement signed between NASA's Remote Sensing Earth Science Teacher Program (RSESTeP) and the Academy of Model Aeronautics (AMA). This agreement will allow certified Earth science teachers nationwide to continue to bring NASA Remote Sensing resources into their classrooms. Another accomplishment includes new remote sensing platforms (Next Gen – Mikrokopter, Quad LLC – Hexacopter, Kite Aerosol particle collector with Research Triangle Institute and RSESTeP Aquatic ROV Equipment) testing, operation and protocol development with United States Naval Academy. In addition, there was an Eastern Shore Horn Point NASA/NOAA Sea Grant/University of Maryland Sea Grass Monitoring Mission using NASA AQUA MODIS satellite data and Aquatic ROV Student STEM Sea Grass Monitoring Mission. RSESTeP also provided teacher support for NC, MT, AZ and CA and supported Climate Curriculum Development for Aerosol Focused Missions with GSFC Earth Scientists. The program started in 2005 and currently has RSESTeP teachers in 21 states engaging local students and communities while providing valued Earth Science data.

### PROJECT CONTRIBUTIONS TO PART MEASURES

This project has a direct benefit to both formal and informal education (Outcome 2 and 3).

### IMPROVEMENTS MADE IN THE PAST YEAR

As this is the first year for VC education support of this project, no project improvements were made. This funding is enabling sustainability of a high impact program.

### PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Not applicable for this project

### **3. Name of Project:**

**Education Exhibits: GeoDome Staffing/Piloting and Education Exhibit Development, Content & Maintenance at Greenbelt and Wallops**

Administered by: Carmel Conaty (Greenbelt) and Keith Kohler (Wallops)

Type of Agreement: Procurements

Project Manager: Carmel Conaty

Center: Goddard Space Flight Center  
Telephone Number: 301.286.7996

### PROJECT DESCRIPTION

1. Procurement of scale model of ISS with display case and graphics highlighting Goddard's role with ISS. Installation into the Greenbelt VC.
2. Renewal of warranties for exhibits for both Greenbelt and Wallops that were procured with previous years funds (Magic Planets, Touch Tables, GeoDome, SOS etc).
3. Piloting of GeoDome education programs in the Goddard Region and in Puerto Rico and staffing of the GeoDome exhibit for management of the loan program and delivery of programs.
4. Development of a NASA website for access to SOS data that is converted for smaller spherical displays.

### PROJECT GOALS

Previous years of VC education funds have resulted in procurement of high education value exhibits for both Greenbelt and Wallops Visitor Centers. These include Magic Planets, Touch Tables, GeoDome (Greenbelt), and SOS (Wallops). These high impact exhibits require maintenance and upgrades to software. In addition, the GeoDome and the Magic Planets are loaned to our partners in order to have a multiplicative impact. This requires that they be kept in working order. In order to keep these exhibits working at the highest levels, the warranties on both hardware and software were extended.

A goal for the GeoDome for FY10 funds was to fully implement the loan program for use in delivery to students as well as for professional development. The GeoDome was used in support of SOI programs and activities in the GSFC region and in Puerto Rico.

In partnership with SMD, the SOS data sets and movies that were converted for use on smaller spherical display units as part of the FY09 VC funds will be put on a NASA website. This will allow easy access to high education value images by all spherical display users. Education products and lessons will also be placed on this website which will be completed in FY11.

### PROJECT BENEFIT TO OUTCOME

This project has a direct benefit to both formal and informal education (Outcome 2 and 3).

### PROJECT ACCOMPLISHMENTS

Current GeoDome Education Programs implemented this year:

#### **Tour of the Universe**

The GeoDome Tour of the Universe is a portable planetarium program that uses the Uniview software to interactively deliver NASA science to elementary and middle school age students and their families. It is implemented at the Goddard Visitor Center on select weekends and during the summer and is available for loan to museums after training on operations and content. This education experience allows participants to seamlessly travel from  $10^{20}$  down to  $10^{-20}$ . All participants are able to view the same data, and lessons were presented an age and knowledge appropriate level. This program was delivered in English and Spanish to various audiences in the Goddard region and in Puerto Rico. It was also used in teacher professional development.

### **Dark Matter Program**

The GeoDome Dark Matter Program is a portable planetarium program that features Hubble, Chandra and WMAP data findings and visualizations to interactively deliver NASA science content to high school and college students and adults. It is implemented at the Goddard Visitor Center on select weekends and during the summer and is available for loan to museums after training on operations and content. This program is important because there is currently much ongoing research by scientists attempting to discover exactly what is dark matter, how much of it exists, and what effect it may have on the Universe as a whole.

### **GeoDome CSI NASA Earth Science Program**

This program takes a scientific question and treats it as a mystery to be solved. The first is “The Case of the Red Tide”, which looks at NASA Satellite Data, for use in the GeoDome. This program targets Middle School Students – the development is funded by Terra EPO and is connected with the NASA NEO website.

Additional GeoDome Earth Science programs are in development (funded by our Earth Science Division) and will be completed in 2011.

### **Piloting of GeoDome loan and education program in Puerto Rico**

The loan program was optimized with existing networks by utilizing the existing partnerships and networks through the ERC, including but not limited to a consortium of Universities within Puerto Rico. This consortium has access to underserved and underrepresented customers. In addition to an educational benefit, one outcome of the initiative would be would learning how to partner with existing education networks to serve formal and informal customers.

The dome was also used by partners in PA and NY for a total of thousands of students and hundreds of teachers.

Touch tables were installed in the NASA Visitor Centers at both Goddard and Wallops in November 2009. The Magic Planet also was installed at Wallops. Two portable Magic Planets were delivered to Greenbelt in December 2009. These tables, as well as the Magic Planets, have presented opportunities for students and the

general public to immerse themselves in some of the science research and space flight activities conducted by NASA.

Training on the Magic Planet was delivered at both Wallops and Greenbelt in January 2010.

The Magic Planets have been utilized for educator professional development and have been loaned to school districts and to the IV&V ERC in support of their education programs.

The GeoDome has been in use since summer of 2008 and has traveled up and down the east coast and to Puerto Rico for teacher professional development and for student programs.

The SOS at Wallops serves over 30,000 visitors annually.

#### PROJECT CONTRIBUTIONS TO PART MEASURES

These education exhibits at Wallops and Greenbelt contribute primarily to PART measures 2.4 and 3.1.

The Greenbelt Visitor Center hosts between 34,000 and 42,000 visitors annually, the majority of whom are K-12 students most of who engage with this educational exhibit.

Wallops received over 31,000 visitors in FY10 of which over 7,300 were student groups.

The two 18" portable Magic Planets were used in schools and museums by Goddard educators as part of professional development and school programs.

#### IMPROVEMENTS (e.g. project management, efficiencies, etc.) MADE IN THE PAST YEAR

As this is the first year for these exhibits, no project improvements were made.

#### PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Not applicable for this project.

#### **4. Name of Project: Informal Education Support**

Administered by: Paragon Tec

Type of Agreement: Task on existing contract

Project Manager: Carmel Conaty

Center: Goddard Space Flight Center

Telephone Number: 301.286.7996

Support to implement existing NASA/GSFC programs at the VC including SEEC piloting and recommendations from *Formulation of Interim Outcomes in Advance of Science Exploration and Exhibition Center (SEEC)*.

Models include: Family Science Night and Afterschool Universe, Beginning Engineering Science and Technology (BEST), Lectures, Citizen Science programs etc).

#### PROJECT DESCRIPTION

Currently the Visitor Center offers a limited portfolio of education programming that serves the community and reflects the NASA Goddard science and engineering content. In addition, the SEEC feasibility study and follow-on task will offer suggestions for new programs/exhibits that will lead the current Visitor Center on a path towards its new education center. This twelve month full-time informal education task includes: piloting elements of the SEEC follow-on task, identifying the customer and their needs, evaluation strategies for assessing impact, working with the science divisions and engineering on the content and designing and piloting programs.

In addition two summer internships were funded to support SOI programs and activities. The interns provided support for implementation of Visitor Center programs and professional development ERC activities during the summer. They also provided support for professional development including preservice teachers and supporting the building of the ERC network in the GSFC region.

#### PROJECT GOALS

Implement existing NASA/GSFC programs at the VC including SEEC piloting and recommendations from *Formulation of Interim Outcomes in Advance of Science Exploration and Exhibition Center (SEEC)*.

#### PROJECT BENEFIT TO OUTCOME

This project has a direct benefit to informal education (Outcome 3) and an indirect benefit to outcome 2.4

#### PROJECT ACCOMPLISHMENTS

This project has a direct benefit to informal education (Outcome 3) and an indirect benefit to outcome 2.4

#### IMPROVEMENTS MADE IN THE PAST YEAR

As this is the first year for this project, no project improvements were made.

### **5. Name of Project: Informal Education Workshop for Museum Educators in the Goddard Region.**

Administered by: Carmel Conaty

Type of Agreement: Task on existing contract

Project Manager: Carmel Conaty

Center: Goddard Space Flight Center

Telephone Number: 301.286.7996

### PROJECT DESCRIPTION

Goddard will host a three-day professional development workshop at the Visitor Center in September 2011. Up to 25 museum educators from up to twelve museums and science centers in the Goddard region will participate. Participants will be presented with an overview of NASA science and engineering and will choose a track in which to focus. They will all produce a product/event/program targeted at middle school children or educators that will align with the Summer of Innovation as applicable. This program is targeted at small and mid sized museums and science centers.

### PROJECT GOALS

- Increase the number of museums and science centers in the Goddard region that are using NASA expertise and content in their programs/exhibits and/or events.
- Develop improved communications and collaborations with museums and science centers in the Goddard region.

The intent is to make this an annual event and increase number of partnering institutions within the Goddard region (D.C to Maine).

This year's workshop participants will be provided with a customized agenda to meet the needs of their own institution, from climate change to lunar science. In addition, participants will learn of newly developed educational products and programs. Participants will gain the knowledge of how to obtain and utilize GSFC multimedia and scientific visualizations for their program and exhibits. The workshop participants will make connections with each other and with the work and people of Goddard. They will gain the additional support they will need to breathe new life into existing exhibits and inspire and engage the public with new educational STEM experiences.

### PROJECT BENEFIT TO OUTCOME

This project has a direct benefit to informal education (Outcome 3) and an indirect benefit to outcome 2.4

### PROJECT ACCOMPLISHMENTS

The workshop held in March of 2010 increased the number and amount of NASA content used in programs/exhibits and events. The 2011 workshop will have a similar impact.

The March 2010 participants responded overwhelmingly well to the content provided. They were especially pleased with: networking opportunities, knowledge of how to access NASA scientists, engineers and educators, and number of free resources available for their exhibits and programming. By providing the customized track sessions, the workshop was rated quite favorably from the 20 participants, scoring high with an average of 4.3 out of 5. Participants found the sessions useful and applicable to their own programming.

In addition to providing the content over the two days of the workshop, NASA GSFC also provided direct access to individuals that can help support their programs. For example, Kopernik Observatory in Vestal hosted Dr. Michelle Thaller for a lecture and other collaborations. MOST in Syracuse hosted Dr. Susan Hoban and Dr. Marci Delaney for two NASA BEST Students Professional Development workshops for Syracuse educators. Each of these events is a direct result of the connections made during this workshop.

In order to strengthen the relationship between these institutions and GSFC, as well as to ensure the information given during the workshop will be utilized, GSFC will provide a stipend of \$2000 to each of the museums/centers to establish a new exhibit, new program or refresh an existing program that targets middle school students and educators and aligned with NASA Summer of Innovation (SOI) goals and objectives.

In addition, the institutions with continuing programs stemming from this pilot project will be required to provide data to NASA GSFC that pertains to NASA's SOI initiative over the next two years. Many of the lessons we learned from the March 2010 workshop will be incorporated into the September 2011 workshop, particularly since we learned many of these institutions have a greater interest in student programming and require additional educational resources and hands-on activities that support their programs. We also have learned that there is value in longer sessions devoted to social networking amongst their peers and the subject matter experts of GSFC.

#### PROJECT CONTRIBUTIONS TO PART MEASURES

This project directly contributes to Outcome 3.2, Informal education professional development. Since one of the requirements for participating in this workshop is to hold an informal education related program or event, it will have a direct impact on the outcome measure 3.2.2.

#### IMPROVEMENTS MADE IN THE PAST YEAR

As this is the first year for this project, no project improvements were made.

#### PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Not applicable for this project.

#### **6. Name of Project: NASA Touch Table Programming**

Administered by: Keith Koehler (Wallops)

Type of Agreement: Procurement

Project Manager: Keith Koehler

Center: Goddard Space Flight Center

Telephone Number: 757-824-1579

#### PROJECT DESCRIPTION

The purpose of the project was to adopt a "design a space station" software program that is used at the National Air and Space Museum with the MT-50 touch table,

developed by Ideum. The Goddard Space Flight Center's NASA Visitor Center's at both its Greenbelt and Wallops locations employ this touch table. The table also is used in museums across the country.

#### PROJECT GOALS

Previous years of VC education funds have resulted in procurement of high education value exhibits for both Greenbelt and Wallops Visitor Centers, including the touch tables. Ideum will adapt the software program to its tables and allow visitors, using the hands-on exhibit, to learn about the process for developing a space station. In addition to the Goddard Visitor Centers, the space station will be available to other NASA centers that employ the MT-50 touch table.

#### PROJECT BENEFIT TO OUTCOME

This project has a direct benefit to both formal and informal education (Outcome 2 and 3).

PROJECT ACCOMPLISHMENTS The contractor has been selected and is working on the program development. This is expected to be completed and installed in the Visitor Center touch tables in the first part of calendar year 2011.

#### PROJECT CONTRIBUTIONS TO PART MEASURES

This project directly contributes to Outcome 2.4.

#### IMPROVEMENTS MADE IN THE PAST YEAR

As this is the first year for this project, no project improvements were made.

#### PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Not applicable for this project.

### **7. Name of Project: Air Rocket and Altimeter Exhibit at Wallops**

Administered by: Keith Kohler (Wallops)

Type of Agreement: Procurements

Project Manager: Keith Koehler

Center: Goddard Space Flight Center

Telephone Number: 757-824-1579

#### PROJECT DESCRIPTION

1. Construction of an air-rocket exhibit.
2. Construction of a radar-altimeter exhibit.

#### PROJECT GOALS

NASA Wallops has teamed with the Oregon Museum of Science and Industry to build two hands-on exhibits: an air-rocket exhibit and a radar altimetry exhibit. Both of these exhibits will provide a hands-on learning experience to the public and to students visiting the Center. The air-rocket exhibit explains and demonstrates

Newton's Laws related to rocketry. The altimeter exhibit will explain how altimetry works and its uses in satellite mapping, particularly sea heights. Both exhibits relate directly to research conducted at Wallops.

PROJECT BENEFIT TO OUTCOME

This project has a direct benefit to both formal and informal education (Outcome 2 and 3).

PROJECT ACCOMPLISHMENTS

The contractor has been selected and construction of the two exhibits is in process. The exhibits are expected to be delivered to Wallops in February 2011.

This project has a direct benefit to informal education (Outcome 3) and to outcome 2.4. Wallops Visitor Center had over 31,000 visitors in FY10 and that number is expected to rise in FY2011 due to launches in the next fiscal year.

IMPROVEMENTS MADE IN THE PAST YEAR

As this is the first year for this project, no project improvements were made.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION

Not applicable for this project.