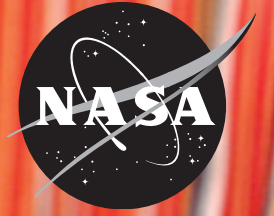


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# GoddardView

## Foam Balls to Future Space Shuttles

Pg 2

## Ringside Seat to the Universe's First Split Second

Pg 4

## 44th Goddard Symposium – 'Dreams Becoming Reality'

Pg 7



## Foam Balls to Future Space Shuttles

By Amy Pruet

The Chesapeake Regional FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competition held March 16-18 proved the future of engineering is in good hands. Over 2,500 high school students, teachers and mentors packed the Halsey Field House of the U.S. Naval Academy in Annapolis, Md. as 64 impressive student-built robots were waged in a friendly battle to earn the title of top robot.

The Chesapeake Regional FIRST Robotics Competition is an annual event that is part of the FIRST robotics program where high school students interested in robotics form teams and answer the challenge to build a robot in six weeks time to perform certain actions. After the six-week period, teams ship their robots to one of 37 regional competitions, one being Chesapeake, where they test their solution against those of other students.

This year's challenge, "Aim High," asked students to have their 28-inch by 30-inch by 60-inch, 120 pound robots compete in a sort of high-tech, basketball-meets-soccer game. Each 2-minute match consisted of six teams, three robots to each side—picture a pick up game of three-on-three—that work collectively to score points. The students have the option of pursuing a number of options to increase overall score, but the main bulk of points are derived from scoring goals. A raised center goal and two goals located on the floor are the prime targets for the 7-inch foam balls. Of course, all of this is done in addition to playing defense to keep other teams from scoring. The resulting competition produces a sporting event unlike any other in the world.

Each tense, action-packed match at the Chesapeake regional, complete with screams of utter joy and occasionally cries of disappointment at the successes and malfunctions from the audience which contained wide-eyed team members, was an amazing site to behold. The robots' designs and structural integrity were challenged at every turn as the bolts and other miscellaneous metal pieces that had to be swept off the field after every match attested. And, even when emotions ran the most high, "gracious professionalism" reigned. The phrase is

[Continued pg 3](#)



Photo credit: Debora McCallum

Caption: It's 2006 and the girls represented well in this year's FIRST competition!

## Table of Contents

### Inside [Goddard](#)

Foam Balls to Future Space Shuttles - 2

### [Goddard Updates](#)

Ringside Seat to the Universe's First Split Second - 4

SGT Wins NASA's George M. Low Quality Award - 5

Great Expectations Coaching and Alternative Dispute Resolution - 6

44th Goddard Symposium – "Dreams Becoming Reality" - 7

### [Goddard Family](#)

Employee Spotlight - 8

[Cover caption: First winners medals.](#)

[Photo Credit: Debora McCallum](#)

## GoddardView Info

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**Managing Editor:** Trusilla Steele

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Deadlines: News items and brief announcements for publication in the Goddard View must be received by noon of the 1st and 3rd Wednesday of the month. You may submit contributions to the editor via e-mail at [alittle@pop100.gsfc.nasa.gov](mailto:alittle@pop100.gsfc.nasa.gov). Ideas for new stories are welcome but will be published as space allows. All submissions are subject to editing.



## Foam Balls to Future Space Shuttles

Continued from pg 2

the FIRST credo describing the endless positive attitudes, eagerness to assist other teams in rebuilding or reprogramming a stubborn robot and eternal energy that is promoted and abounds.

Garret County Public Schools' Team 1629 from McHenry, Md.; Enrico Fermi High School, Team 175, of Enfield, Conn. and Harford Technical High School, Team 1184, of Bel Air, Md. together earned the highest points and the banner proclaiming them to be the Chesapeake Regional Competition winners. With a win comes the honor and prestige that accompanies such a success. A team of qualified referees and 24 of the area's leading professionals in engineering and other technical fields ensured fairness and equality throughout the weekend.

"As a referee, I enjoyed not only observing all of the robots and the student's solutions and strategies, but the teams interaction, such as veterans teams helping out rookie teams," says Scott Mooney, Chesapeake Regional referee and Technology Coordinator at Northwestern High School in Hyattsville, Md. "Even though the event was a competition, teams constantly helped each other. For instance, in the final matches, Team 1629, one of the competition's winners, took a time-out when one of the opposing team's robots needed extra time to complete repairs. It is not only the real-world experience in science, technology and engineering that makes FIRST an excellent program, but also the lessons in life the students learn that makes it exceptional."

For additional information on the Chesapeake Regional FIRST Robotics Competition, visit <http://www.mitc.org/first/>.

For additional information on the FIRST organization, visit: <http://www.usfirst.org/robotics/>. ■

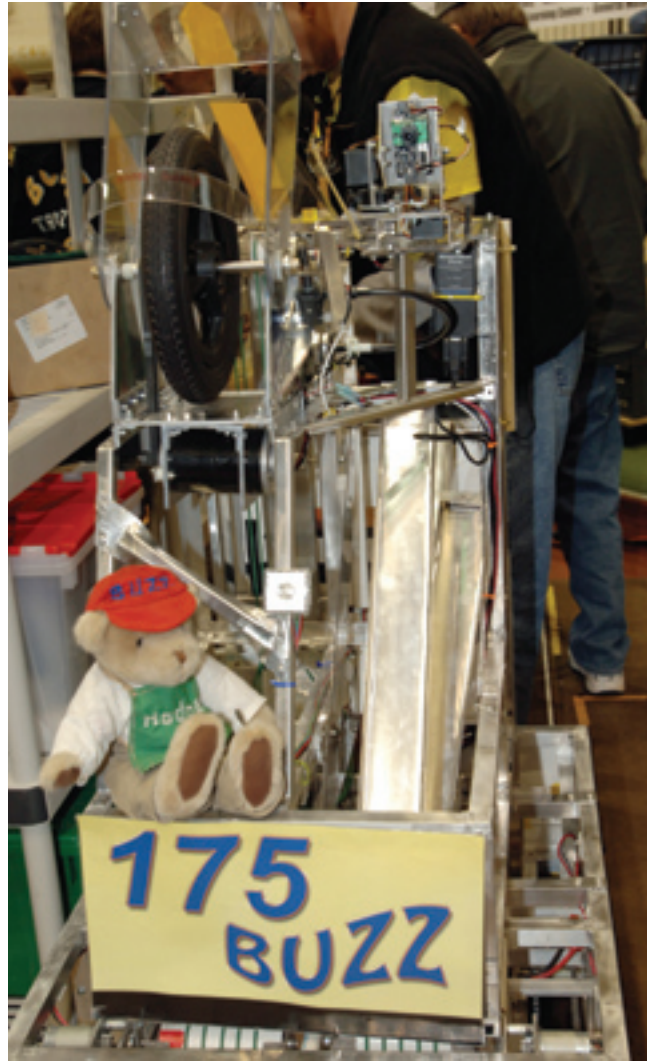


Photo credit: Debora McCallum

Caption: Robot "Buzz 175" one of this years FIRST competition winners.



Photo credit: Debora McCallum

Caption: FIRST finalists.

## Ringside Seat to the Universe's First Split Second

By Christopher Wanjek

You don't get much closer to the big bang than this.

Scientists peering back to the oldest light in the universe have evidence to support the concept of inflation, which poses that the universe expanded many trillion times its size faster than a snap of the fingers at the outset of the big bang. We're talking about when the universe was less than a trillionth of a trillionth of a second old. In that crucial split second, changes occurred that allowed for the creation of stars and galaxies hundreds of millions of years later.

The new finding was made with NASA's Wilkinson Microwave Anisotropy Probe (WMAP) and is based on three years of continuous observations of the cosmic microwave background, the afterglow light from the first moments of the universe.

It's admittedly mind-boggling. Inflation poses that the universe expanded far faster than the speed of light and grew from a subatomic size to a golf-ball size almost instantaneously. This concept, however, was a mere product of calculations done with pencil and paper around 1980. The idea stands on much firmer ground today.

*"Inflation was an amazing concept when it was first proposed 25 years ago, and now we can support it with real observations," said WMAP team member Dr. Gary Hinshaw of NASA Goddard Space Flight Center in Greenbelt, Md., a lead author on one of the scientific papers submitted for publication.*

How do we gaze back to the infant universe? The cosmic microwave background is a fossilized record of what occurred way back when. Embedded in this light are subtle patterns that point to very specific conditions about the early universe. Previous observations have focused on the temperature patterns of this light, which have provided an accurate age of the universe and insights into its geometry and composition. The temperature differences, varying by about a millionth of a degree, point to density differences—a little more matter here, a little less matter there. Over the course of millions of years, gravity exploited the density differences to create the structure of the universe—stars and galaxies separated by vast voids.

The new WMAP observations give not only a more detailed temperature map, but also the first full-sky map of the polarization of the microwave background. This major breakthrough enables scientists to obtain much deeper insight into what happened within the first trillionth of a second, when cosmic inflation perhaps occurred. The polarization signal is at least 100 times fainter than the temperature signal.

The WMAP team is announcing two major results: evidence for cosmic inflation, and confirmation of when stars first turned on. Both results depended on a combination of temperature and polarization data. WMAP finds that the first stars—the forebears of all subsequent generations of stars and of life itself—were fully formed remarkably early, only about 400 million years after inflation. This is called the era of reionization, the point when the light from the first stars ionized hydrogen atoms, liberating electrons from the protons.

Polarization is affected by the environment through which the light passes, such as the polarized glare of sunlight produced when it reflects off of a shiny object. Scientists are hunting for two kinds of polarization signals in the microwave background. One, called the E-mode, points to the era of reionization. This is the polarization caused by the microwave background scattering off of the ionized hydrogen. The other is called B-mode, which points directly to inflation.

WMAP detected E-mode polarization but not B-mode yet. B-mode detection could provide smoking-gun evidence for inflation. But with the temperature map plus the E-mode polarization map, the WMAP team can say several things about inflation. For example, scientists now have an upper limit on the energy of inflation. Also, WMAP data support basic predictions of inflation about the size and strength of spacetime fluctuations and how they get weaker on smaller length scales.

"It blows my mind that we can now distinguish between different versions of what happened within the first trillionth of a second of the universe," said Dr. Charles Bennett of the Johns Hopkins University in Baltimore, WMAP principal investigator. And it's only going to get better as WMAP continues to soak up light. The polarization detection will grow stronger.

"The longer WMAP observes, the more it reveals about how our universe grew from microscopic quantum fluctuations to the vast expanses of stars and galaxies we see today," Bennett said.

The European Space Agency plans to launch a mission called Planck by 2008 that will study microwave background polarization. A proposed NASA Beyond Einstein inflation probe would search for B-mode signals, the calling card of the big bang.

WMAP was launched on June 30, 2001, and is now a million miles from Earth in the direction opposite the Sun.

The WMAP team includes researchers at NASA Goddard; Johns Hopkins University; Princeton University; the Canadian Institute of Theoretical Astrophysics in Toronto; University of Texas at Austin; Cornell University; University of Chicago; Brown University in Providence, R.I.; University of British Columbia; University of Pennsylvania in Philadelphia; and University of California, Los Angeles.

For more information, visit: <http://wmap.gsfc.nasa.gov/results/> ■

### Did You Know?

#### Bar Codes:

Bar code labels were developed to track NASA's inventory of millions of space shuttle parts and to withstand the extreme conditions of space.



## SGT Wins NASA's George M. Low Quality Award

By Alana Little

*"To be the premier partner with the federal government and to provide high value technical solutions that advance the state of humanity and human knowledge"—SGT Mission*

Every year NASA awards both large and small businesses their highest honor—the George M. Low Award, for recognition of their commitment to quality and continuous improvements that demonstrate excellence and outstanding technical and managerial achievements in quality and performance on NASA-related contracts or subcontracts. This year's award was given to Stinger Ghaffarian Technologies (SGT), Inc.

SGT's co-founders, Harold Stinger and Dr. Kam Ghaffarian, accepted the George M. Low trophy at the Annual NASA-Industry Conference on Excellence in Alexandria, Va on Friday, March 3, 2006. This conference was attended by senior managers and engineers from Government and industry. Every year, this conference serves as a forum for NASA and its contractor partners to exchange ideas, success stories and lessons learned—providing the opportunity for participants to apply quality management practices in their own organizations. SGT, Inc. was nominated by Goddard Space Flight Center in the Small Business Service category.

The George M. Low Award demonstrates NASA's commitment to promote excellence and continual improvement by challenging the NASA contractor community to be a global benchmark of quality management practices. Each recipient was evaluated according to seven criteria. These criteria include technical, cost and schedule performance, but also innovation, management leadership, alignment of organizational goals with NASA's strategic plans,

customer orientation and adherence to the quality management philosophy. The award was named after George M. Low, a NASA leader who was dedicated to quality and excellence. Low's career and achievements spanned many fields: space science, aeronautics, technology, and education. He provided management and direction for the Mercury, Gemini, Apollo, and advanced manned missions programs.

"It's very nice when good things happen to nice people, said Steven Klosko, Vice President, Science Division at SGT. "Ninety percent of the work we do is for NASA... we try to be a good corporate citizen... Dr. Stinger was president of the Maryland Business Roundtable, and we are very involved with the Goddard Contract Association. We also have a pretty outstanding record in terms of performance on our contracts as well."

"Working side by side with our NASA customers, we have an excellent perspective of the dynamics ongoing within NASA's programs and implementation of its strategic vision," said Dr. Stinger.

SGT has grown from a staff of 4 in 1994 to 840 in 2006 which attests to a corporate culture dedicated to customer satisfaction and the development of customer focused business processes.

SGT, Inc. is a privately held SBA-certified African American, Veteran-owned Small Business, headquartered in Greenbelt, Md, USA. SGT, Inc. provides aerospace engineering, scientific, information systems, and program management services to NASA, NOAA, USGS, and various other government and commercial organizations.

For information about the award and the conference please visit: <http://www.hq.nasa.gov/office/codeq/gml/index.htm> ■



Photo credit: Courtesy of SGT

Left to right: Mr. Bryan OConnor, Chief, NASA HQ, Safety and Mission Assurance, Dr. Kam Ghaffarian, SGT Executive VP & COO, Mr. Harold Stinger, SGT President & CEO, Honorable Michael Griffin, NASA Administrator

## Great Expectations Coaching and Alternative Dispute Resolution

By Alana Little

Every month Elly Cleaver, Alternative Dispute Resolution Guru and Rhona Post, Executive Coach will present a lively lunch-and-learn discussion about how our assumptions and expectations about ourselves and others make us crazy! The goal of the seminars, sponsored by the GSFC Alternative Dispute Resolution Office (ADR) and Organizational Leadership and Culture Office is to help participants feel less stressed about their personal assumptions or expectations and allow them to walk away with new tools to combat the ever-present assumption trap.

“The seminar was born out of the need to educate employees on ways to avoid conflict, communication breakdowns, stress and to teach people to actually learn how to define their expectations and then communicate them to other people. We wanted to make these sessions exciting, turn them into something that would speak to the every day issues before they become large scale issues that the ADR office would then have to resolve,” explained Rhona.

When people communicate with each other they are prefacing the conversation with their past experiences and even with their past interactions. They often times don't ask questions to clarify those assumptions which are acted upon and therefore, miscommunication occurs. Both Elly and Rhona have found that employees are making assumptions about their supervisors and vice versa and no one is asking the right questions of each other. “I have found in my line of work that many conflicts are caused by people jumping to conclusions or making assumptions about a comment, a meeting or any interaction,” said Elly Cleaver, Director of GSFC ADR.

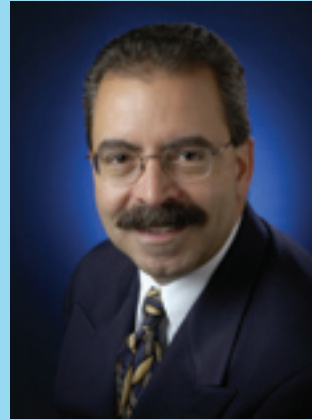
The result of these two professionals coming together is a monthly gathering that's part informational, part inspirational and totally confrontational. There is no hiding behind old perceptions and views at these sessions, as all are encouraged to voice their opinions and ask questions in an environment of safe, fun, non-judgmental learning.

“One of the muscles that need strengthening is identifying what you expect, learning how to articulate your assumptions and then grounding them with someone else. If more people do that, Elly will have less business in ADR,” said Rhona.

Elly and Rhona plan to hold another “Great Expectations” seminar on April 3, and future seminars will include topics on communication styles. Look for the next announcement in an upcoming issue of *Dateline*. ■

## HE & IT Magazine Celebrates Orlando Figueroa

By Alana Little



“Engineers, modern wizards whose scientific mastery drives American industrial progress, are the people who create America's wealth.” -Hispanic Engineer and Information Technology Magazine, March 2006

Every year Hispanic Engineer and Information Technology Magazine celebrate the top 100 Most Important Hispanics in

Technology and Business. This year, one of the special honorees is our very own Orlando Figueroa, Director of Applied Engineering and Technology at Goddard Space Flight Center.

Honorees are chosen for this annual list because of their leadership and outstanding work in the field of technology. This list includes many of the nation's highest achieving Hispanic executives, managers and researchers in industry, government, and academia. These are men and women who have demonstrated leadership on a broad front, not only in the workplace, but also in their communities.

Mr. Figueroa is being recognized for his ability in understanding how technology is to be used and developed; as a leader whose unwavering work ethic and commitment to meeting both personal and organizational goals undergirds the success of the Center enterprise and as an engineer who has mastered the difficult art of turning ideas into viable technology.

This Goddard leader's career is punctuated by awards and achievements such as the receipt of the Federal Employee of the Year Medal, a prestigious national award that recognizes the accomplishments of America's public servants which was awarded to Mr. Figueroa on September 28, 2005.

The award event will be held on Friday, September 15, 2006, during Hispanic Heritage month in Baltimore, Md. The honorees will be featured in the upcoming issue of Hispanic Engineer & Information Technology (HE&IT) magazine, which is distributed to engineering colleges and universities with high Hispanic enrollments, Hispanic professionals, and high-level government and industry policy makers and executives across the country. ■

## 44th Goddard Symposium – “Dreams Becoming Reality”

By James Kalshoven

Attendees turned out in record numbers for this year's Robert H. Goddard Memorial Symposium, held March 14-15 at the Greenbelt Marriott Hotel.

NASA Goddard Space Flight Center supports this American Astronautical Society (AAS)-sponsored annual two-day event. This year's theme, “80 Years after Robert Goddard's First Rocket Flight: Engineers, Scientists, and the Vision” addressed the historical anniversary and the Vision connection to the father of modern rocketry – Robert H. Goddard.

AAS President Mark Craig welcomed a crowd of more than 200 people on day one. Craig introduced Goddard Center Director, Ed Weiler, who in turn introduced this year's keynote speaker NASA Administrator Michael Griffin. The Administrator referenced Robert Goddard's “dreams becoming reality” and discussed plans to implement the Vision for Space Exploration beginning with the Constellation Program. Griffin also discussed NASA's rationale for science growing at the rate of inflation and stressed the need to complete the International Space Station, retire the Shuttle by 2010, and hopefully squeeze in a final servicing mission to the Hubble Space Telescope. He also summarized launch vehicle capabilities needed to implement the “Vision” along with the commercial opportunities.

Seven technical sessions filled the two-day event. On the first day, NASA Exploration Systems Mission Directorate Associate Administrator, Scott Horowitz keynoted a session on *Exploration and the Vision*, moderated by Constellation Program Manager, Jeffery Hanley, Johnson Space Center.



Caption: NASA Administrator Michael Griffin provides the keynote address on day one to a packed audience.

A session on *Exploring with Humans and Robots – The Synergy of Human and Robotic Exploration*, moderated by GSFC Deputy Director, Mike Ryschkewitsch, followed with panelists from NASA and academia. NASA Chief Engineer and former GSFC Deputy Director, Chris Scolese moderated a panel on *Engineering the Exploration – The Challenge of Systems Engineering*. Lisa Guerra, Acting Director for NASA's Exploration Systems Mission Directorate Integration Office, led a panel on *Engineering Innovation and the Vision*.

Guest speaker John Marburger, Director of the White House Office of Science Technology Policy, provided the keynote on day two, discussing the “Vision” in terms of being long-term, sustainable, and affordable. He said, “The fundamental goal of this Vision is to advance U.S. scientific, security and economic interests through a robust space exploration program.” He also spoke of the “Vision” in terms of the American Competitiveness Initiative highlighted in President Bush's recent State of the Union address.

Technical sessions on day two began with *Future Human Capital Needs of the Vision*, led by former Goddard Director and current President of the Universal Space Network, Joseph Rothenburg. The panel consisted of a broad representation from leaders in industry, NASA, and academia addressing the educational and early career aspects impacting the workforce needs of the long term “Vision.”

During the luncheon on day two, AAS President Mark Craig presented the President of the Committee on Space Research (COSPAR), Roger-Maurice Bonnet with the AAS Advancement of International Cooperation Award. Craig also bestowed the AAS Eugene M. Emme Astronautical Literature Award to Margaret Weitekamp for her book entitled “Right Stuff, Wrong Sex: America's First Women in Space Program.”

Dr. Laurie Leshin, Director of Goddard's Science and Exploration Directorate, and George Morrow, Deputy Director of Goddard's Flight Programs and Projects Directorate, moderated a unique afternoon session *Science is Exploration*. Each introduced leaders from their directorates who discussed the major science thrust in areas of Earth Science, Heliophysics, Astrophysics, and Planetary Science.

The Symposium concluded with a session on *Exploration is Science*, moderated by NASA Associate Administrator for Science, Mary Cleave. The panel included two former NASA Science Associate Administrators, Wes Huntress and Lennard Fisk, the President of COSPAR, Roger Bonnet, and NOAA Climate Program Office Director, Chet Koblinsky.

A series of innovative outreach videos were presented throughout the symposium, which highlighted the integrated nature of NASA's outreach efforts as an important element of our scientific research, technology development, and mission formulation and implementation.

Continued pg 8



## Employee Spotlight

Sarah Dewitt

By Alana Little



So what do you say about a woman whose last project garnered over 40 television interviews with Goddard scientists, several dozen animations and thousands of hits to the website she helped design?

“Sarah does a fantastic job of getting Goddard stories out to both the news media and the general public,” said Mark Hess, Chief of

Goddard’s Public Affairs Office. “Much in the same way that a conductor brings an orchestra together, Sarah does a masterful job of combining words, video and animations that communicate the interesting and important work happening here at Goddard.”

The project that got not only Sarah DeWitt, Associate Producer for Earth Science, but Goddard so much media attention was NASA’s Hurricane Resource Web Page which was developed by a team of GSFC writers, web designers, data visualizers, and scientists, and became invaluable during the 2005 hurricane season. During her daily duties, Sarah interviews scientists for the Earth Science program and puts together animations and data visualizations that depict the science that people here at Goddard are working on. “My job is to collect all this then put it together into a coherent piece that can be used to make a bigger story... it falls somewhere in between documentary filmmaking and television journalism,” she said.

The 2005 hurricane season was very intense, and Sarah worked tirelessly to get the information that people needed to the public as quickly and accurately as possible. Sarah said, “I felt I had succeeded in this project because our images and scientists got so much widespread coverage, from

National Public Radio to Larry King Live to Rolling Stone magazine... it took a lot of creativity, and it was very rewarding. I had to use some innovative ideas to get this information out to the public such as using the web and for on-demand television products, pod casting,” –the distribution of audio or video files, such as radio programs or music videos, over the internet for listening on mobile devices and personal computers. “The second thing is that this was something that mattered to the public. It was so important to get the information out quickly and accurately, especially during a time of such confusion. It was very gratifying for our team to be recognized by the Center at the Goddard Honor Awards.”

When she’s not working on award-winning resource pages for Goddard, Sarah is working on her graduate dissertation at Montana State University by pulling together everything she’s learned here at Goddard, in film school and during her undergraduate program at Colorado College, into a cohesive project. Right now she is focusing on climate change science and the role of the scientist as spokes person in the public eye. “Right now there are a lot of celebrities standing up saying that climate change is a really big problem that we need to pay attention to and my thesis will ask why can’t a scientist do that just as well or even better than an actor or musician.” “This project is directly related to my job at Goddard because it will highlight exactly what Goddard is capable of by using our personnel resources better than we already are because the talent pool here is so great... we have so much potential here for people to really step into the spotlight and really become recognized by the public as authorities on climate change.”

And if all that wasn’t enough, Sarah unwinds by singing in a band called The Cads which can be seen playing around Washington, D.C. She started singing in high school because, she “wasn’t good at playing the guitar.” “It’s standard upbeat Rock music and it’s just how I unwind,” she said. ■

To see Sarah’s work on NASA’s Hurricane Resource Web Page please visit: [www.nasa.gov/hurricane](http://www.nasa.gov/hurricane)

## 44th Goddard Symposium – “Dreams Becoming Reality”

*Continued from pg 7*

Goddard’s James Kalshoven led the planning committee. GSFC and industry employees made up the ten member team who worked closely with AAS Executive Secretary, Jim Kirkpatrick and AAS President, Mark Craig to generate this year’s theme, as well as a coherent selection of sessions, moderators, and presenters. Contacts for the first day were handled primarily by Mike Calabrese of SGT, Inc, Pat Rainey of The Boeing Company, and Vicki Oxenham,

Harley Thronson, and Barbara Pfarr of Goddard. Kathy Nado of Computer Sciences Corporation, and Vic Teplitz and Don Savage of Goddard managed the second day’s sessions. Mike Calabrese provided ideas and topics for the outreach videos which were produced by Erica Drezek of Honeywell.

More information on the symposium including the complete agenda, several presentations, as well as the videos can be found at the AAS web site at: