

# THE CRITICAL PATH

A FLIGHT PROJECTS DIRECTORATE PUBLICATION ■ 2016 WINTER ISSUE

## PASSING THE TORCH

Senator Cardin looks forward to advancing the Goddard mission. [PAGE 16](#)

## OSIRIS-REX LOADED, LAUNCHED & CRUISING

O-REx is on its way to the asteroid Bennu! [PAGE 8](#)

## FOREVER EMBOLDENED

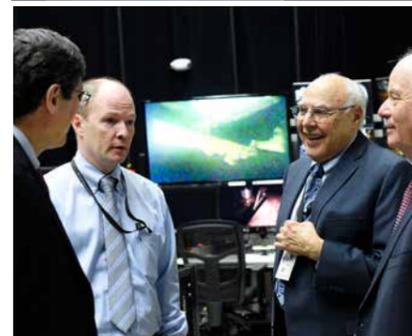
Meeting milestones and making memories with administrator Charlie Bolden. [PAGE 18](#)



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Enabling exploration and earth + space science by transforming concepts and questions into reality

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THE CRITICAL PATH

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**HAVE A STORY IDEA,  
NEWS ITEM OR LETTER FOR  
THE CRITICAL PATH?**  
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Don't forget to include your  
name and phone number.

*The deadline for the next  
issue is March 17, 2017*

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HELLO....



This past quarter has been most eventful with the successful launches of the OSIRIS-REx (September 8) and GOES-R (November 19) missions. OSIRIS-REx had a spectacular launch and is well along on its journey to the asteroid Bennu. It will reach Bennu in 2018 and will return a sample to Earth in just a few years. Congratulations to the O-REx team! Read more about this exciting mission beginning on **page 8**.

**F**ollowing a series of liquid apogee engine burns over the Thanksgiving weekend, GOES-R has reached its geostationary orbit location and will now begin its multi-month checkout prior to turning it over to NOAA and the National Weather Service. GOES-R will substantially increase the weather forecasting capabilities for our nation and the entire western hemisphere. Both of these launches mark the culmination of many years of work by hundreds of people. Congratulations to everybody who contributed to the success so far and all the best in the early operations/commissioning phases.

The launch activity does not slow down in 2017. Raven, NICER, JPSS-1, SET-1, ICON, TDRS M, TSIS, GOLD, and TESS are all currently manifested for next year. The teams are working very hard to complete their test programs and get on to space flight.

Congratulations to the HIRMES team for their recent competitively selected mission to build an infrared instrument that will fly on the SOFIA airborne observatory. We wait with high hopes for the selection announcements on three other missions that just completed their outstanding site visits – DAVINCI, Lucy, and PRAXyS.

Meanwhile in Goddard's I&T facility, the JWST team continues its test program with the telescope in the midst of vibration testing. In early 2017 this amazing telescope will leave Goddard and move to its next test location at the Johnson Space Center. I encourage

CONTINUED ON PAGE 4

all of you to visit Building 29 to have a look at the hardware before it leaves our Center for the last time.

On the operations side, our teams continue to keep our important investments flying (literally dozens of missions). Every week at Chris Scolese's senior staff meeting we see the fruits of their labors with presentations on the spectacular science results.

We've also had a significant effort going on with source evaluation boards including the Landsat-9 and Restore-L projects. I really appreciate the many hours of work these boards put into this critically important activity.

The mentions above are just a few examples of the work going on by our directorate staff. Truly amazing things are happening across all of the divisions.

On the people side I want to give a shout out to our recent Honor Award recipients who are highlighted later in this newsletter. Thank you all, including thanks to your families for their support.

Another highlight from this past quarter, the annual Employee Viewpoint Survey was released and I am very proud of our directorate's results which has us rated with an overall score of 83.4%, placing our directorate at the top of all directorates at Goddard. Of course there's always room for improvements and we are actively working on them, but we should all be proud of these results.

Finally, as previously announced in an e-mail message in October, we welcome Wanda Peters as our new Code 400 Deputy Director for Planning and Business Management. This is the position that Steve Shinn held until he moved up to the role of Goddard CFO. Having now worked with Wanda for nearly a year in a different capacity in the directorate office, I am very excited to have her join our directorate in a senior leadership role. If you haven't already met her, please drop by and say hi to her when you get a chance (if she doesn't get to you first).

I wish you all a very happy and healthy holiday season with your families and friends. Recharge your batteries and get ready for an exciting 2017! ▲

**David F. Mitchell**  
Director, Flight Projects  
[david.f.mitchell@nasa.gov](mailto:david.f.mitchell@nasa.gov)

# COMMON DATA MANAGEMENT SYSTEM

## DATA MANAGEMENT ARCHITECTURE CONVERGENCE IN FPD

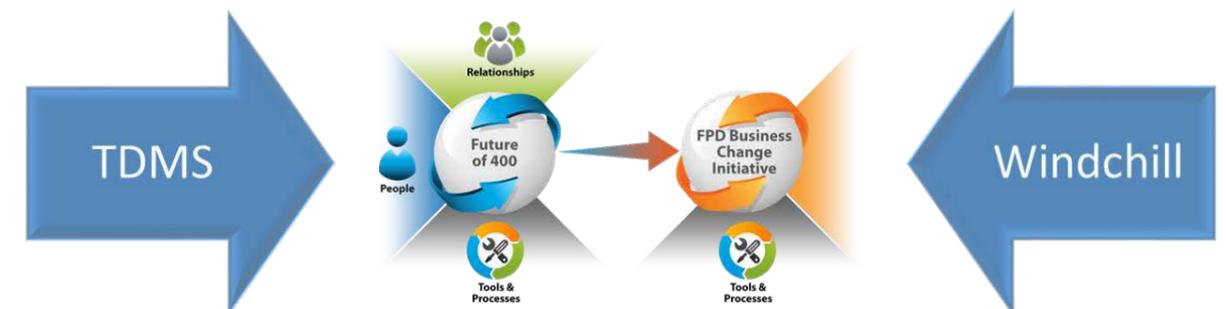


The Common Data Management System (CDMS) is the result of an initiative sponsored by the Flight Projects Directorate (FPD) following the Business Change Initiative in 2011. In 2014, FPD sponsored a review of the current configuration and data management systems in use in an effort to consistently apply best practices and actions to ensure cost-effective and on-time delivery of projects and their components. FPD determined a shared

functionality exists across most flight projects, creating an opportunity to establish a common data management system architecture. FPD recognized that using a singular solution could potentially improve efficiency, decrease information technology infrastructure costs, and increase data accuracy and integrity.

As a result of conducted assessments, FPD chose the Technical Data Management

System (TDMS) and Windchill as the most viable solutions to meet FPD and flight projects' needs. SharePoint will also be an option for projects in Pre-Phase A, or those that do not require extensive data management record keeping. Both TDMS and Windchill fulfill all Goddard Space Flight Center (GSFC) configuration management (CM) requirements.



# TDMS

TDMS is a tailorable system developed by the Instrument Projects Division (IPD)/Code 490 and provides an in-house integrated solution for data management to be deployed for flight projects. TDMS supports major functions of GSFC programs and projects, to include:

- Document management for both controlled and non-controlled documents
- Drawing management module
- Collaborative “shared files” directory structure for uploading and securely sharing non-controlled documentation
- Change control module, including review and approval capabilities, for baselining and versioning documents and drawings
- Work order authorization (WOA) management, including cross-project WOA cloning and the ability to run paperless WOAs
- Photo/video repository
- Risk management module
- New project wizard for quickly creating new projects
- In-system alerts that inform users and provide them with a list of required actions
- Project-specific calendar, quick links, and bulletin board for posting important information, upcoming events, and links for project users

TDMS is a fully functional, web-based data management system designed specifically for managing small-to-medium in-house, and some smaller out-of-house GSFC projects. Projects are easily created and customized with only a few mouse clicks, allowing team members to quickly start entering and managing their data. One of the primary objectives of TDMS is to provide a quick and affordable integrated data management solution that can be deployed across multiple projects.

For additional questions related to TDMS, please contact TDMS champions **Rob Lilly** (robert.b.lilly@nasa.gov, 301-286-4372) or **Toni Hegarty** (toni.m.hegarty@nasa.gov, 301-286-9389).



# WINDCHILL

Windchill is an industry-leading commercial web-based system that captures spacecraft configuration. It is used at NASA centers (e.g., Kennedy, Marshall, Johnson) as well as many aerospace firms, such as Lockheed Martin, who use it as their company-wide system of record for missions such as the Orion Multi-Purpose Crew Vehicle. Windchill is a suite that includes robust integration and functionality for:

- Integrated CM of documents and computer-aided drafting models and drawings through links
- Configuration change requests support configuration control board (CCB) and non-CCB reviews, with email notifications and integrated status reporting

- Document management for both controlled and non-controlled documents
- Robust features for risk, WOA, drawing, photo/video, and Contract Data Requirements List management
- Action item management with in-system alerts to inform users of required actions
- Bill of materials (BOM) functionalities new to GSFC:
  - Integrated BOM management for top-down configuration control of complete designs including mechanical/electrical/software
  - Baseline compare and BOM compare – comparing configuration changes between milestones (e.g., preliminary vs. critical design review)
  - As-built CM – associating as-built documentation to serialized instances of BOM
- Standard applications programming interfaces for integrations with other related applications such as requirements management, reliability analysis, and procurement

Windchill provides a particular benefit for missions with in-house engineering, especially those using Creo, by increasing collaboration by promoting document and model re-use and integration of designs from pre-Phase A through launch.

For additional questions related to Windchill, please contact Windchill champions **Mindy Hammond** (malinda.hammond@nasa.gov, 301-286-6019) or **Jon Verville** (jonathan.p.verville@nasa.gov, 301-286-8741).

## GOVERNANCE STRUCTURE

FPD senior management developed a governance structure to establish a formal governing process for the CM of the CDMS at the directorate level. The governance structure provides a decision-making framework to manage FPD's configuration management/data management architecture, which includes applications, services, and access level that determine the systems.



The CDMS Governance Board provides overall leadership and policy direction for FPD configuration management/data management systems. The Steering Committee oversees the enhancement of the two FPD tooling solutions: TDMS and Windchill. All changes and enhancements to Level 1 requirements will be referred to the Governance Board for final decisional authority.

## MOVING FORWARD

Existing projects will be grandfathered under their current systems, unless they would like to take advantage of the features of TDMS and/or Windchill. Project managers and/or principal investigators for new proposals and projects, and projects that would like to transition to one of the new systems, will need to meet with Steering Committee Chair, **Sharon Straka** (sharon.a.straka@nasa.gov, 301-286-9736), to discuss CDMS options for handling project data management needs. ▲

RACHEL GORE, CODE 400  
BUSINESS PROCESS ANALYST

# OSIRIS-REx

## LOADED, LAUNCHED & CRUISING

### O-REX IS ON ITS WAY TO THE ASTEROID BENNU!

**I**t was a week to go before the planned launch of the Origins, Spectral Interpretation, Resource Identification, Security—Regolith Explorer (OSIRIS-REx) when the September 1 SpaceX explosion rocked the Kennedy Space Center (KSC) Atlas V Vertical Integration Facility, just over a mile away, and rattled the team working there. It was a grim reminder of the challenges in the space business. September 2, hurricane Hermine hit the west coast of Florida and dumped rain for days across the state. But the team could not have asked for any better weather at the opening of the launch window on September 8, when the Atlas V 411 lifted off from launch complex (LC)-41 at 7:05 p.m. Separation an hour later also went as planned, with communication established with the Canberra tracking station. The spacecraft acquired the Sun, and the team stepped efficiently through the post-launch procedure. The Atlas V did such a great job targeting the insertion point that a course correction maneuver executed a month later was only performed to check out the propulsion system—a 50 centimeter/second burn!

**O**SIRIS-REx is on its way to the asteroid known as Bennu. After an Earth fly-by next September, the flight system will rendezvous with Bennu in October 2018, beginning almost 2 years of proximity operations. In the summer of 2020, OSIRIS-REx will descend, touch the surface, fire a pyro to release nitrogen, collect a sample of the asteroid, and then back away. Required to return only 60 grams, the system has the capability to return up to 2000 grams, although 150 to 600 grams is the expected range based on ground testing. After the Touch And Go (TAG) maneuver and a mass measurement to confirm enough sample, the ground controllers will command the system to stow the sample head within the Sample Return Capsule (SRC). After a March 2021 departure from Bennu, OSIRIS-REx will arrive back at Earth on September 24, 2023, and the SRC will parachute into the Utah Test and Training Range just before 9 a.m. MDT.

The team completed in-flight check-outs of the instruments in mid-September. The OSIRIS-REx Camera Suite (OCAMS), built by the University of Arizona, includes three optical cameras: the long-range PolyCam; the workhorse MapCam which includes color filters for mapping Bennu; and the sampling camera, SamCam, which will capture three images of the sample head every 5 seconds during TAG. The OSIRIS-REx Visible and near-Infra-Red Spectrometer (OVIRS), built by the Goddard Space Flight Center (GSFC), covers 0.4 to 4.2  $\mu\text{m}$ . The OSIRIS-REx Thermal Emission Spectrometer (OTES), built by Arizona State University, covers 5 to 50  $\mu\text{m}$ . The Canadian Space Agency provided, and MDA in Brampton, Ontario built, the OSIRIS-REx laser altimeter (OLA). The mission also carries a student experiment, the Regolith X-ray Imaging Spectrometer (REXIS), built by the Massachusetts Institute of Technology and Harvard University. In addition to the science instruments, the spacecraft carries two navigation cameras and a camera used during the stowing of the sample, which were also checked during this time.

CONTINUED FROM PAGE 9

The development team held the Post-Launch Assessment Review on October 25, then formally handed off project management to the Space Science Mission Operations Project Office, Code 444. The team is now preparing for the first deep space maneuver, scheduled for December 28, 2016. This 430-meter second maneuver will position OSIRIS-REx for its Earth fly-by in September 2017. The OSIRIS-REx mission is led by Dr. Dante Lauretta, University of Arizona, and development was managed under the Flight Projects Directorate, by the OSIRIS-REx Project, Code 433. GSFC also provided the OVIRS instrument – which was managed under Code 490. The spacecraft was built by Lockheed Martin at their Waterton, Colorado facility, and they are now operating the flight system. ▲



Ⓜ OSIRIS-REx Launch, Photo Credit: Kathleen Everett SRC from StowCam during in-flight checkout 9/16 Ⓜ



For more information on OSIRIS-REx, please see [www.asteroidmission.org](http://www.asteroidmission.org)

DAVID EVERETT, CODE 599  
OSIRIS-REx PROJECT SYSTEMS ENGINEER



# DIVERSITY & INCLUSION

Our former leader and Director of Flight Projects, George Morrow, is now GSFC's Deputy Center Director and Senior Center Champion for Diversity and Inclusion (D & I). Enjoy this short clip to see how D&I can increase the performance of your team through enhanced productivity, increased creativity and innovation, employee engagement, and team collaboration. Do your part to help us practice inclusion skills every day. For further information, contact one of Code 400's D&I representatives below.



## 2015 to 2017 Faces of FPD D&I Committee



## BEHIND THE BADGE

### GETTING TO KNOW THE FACES OF 400

# CHRISTINE NOLAN ESSIG

Christine Nolan Essig currently serves as the public outreach specialist for the James Webb Space Telescope within the Astrophysics Division of the Flight Projects Directorate.



#### BORN:

Washington, DC.

#### EDUCATION:

Bachelor of Fine Arts, The Boston Conservatory

#### LIFE BEFORE GODDARD:

Christine spent the past 10 years of her life as a Broadway actress and performer in New York City. She has been seen in the first national tour and Tony award-winning revival of HAIR on Broadway and in Fanny at New York City Center. She is a recipient of the Scholar of the Arts Talent Award and her concert work has spanned across the country, including performances with the NY Pops at Carnegie Hall.

Christine found her enthusiasm for space science was fueled during the tour of HAIR, after seeing the Perseid meteor shower in the Grand Canyon with her fellow cast-mates. She began reading about innovative projects, like Dava Newman's BioSuit, and learning about star formation from watching Michelle Thaller in How the Universe Works on a nightly basis after her performances on stage. Her genuine curiosity about the innovation that occurs at the intersection of the arts and sciences led to an invitation to speak at NASA from the Music and Drama Club (MAD) at GSFC. Christine decided to learn more about analytical approaches to innovation and creative problem solving in science and engineering. She viewed the James Webb Space Telescope from the clean room window more than six times before she was hired by ASRC in September 2016 to support educational outreach for JWST.

#### LIFE AT GODDARD:

Working at NASA is a dream come true for Christine. Her experience with the James Webb Space Telescope team has provided her with a vast amount of knowledge about the many moving parts that occur during flight missions at GSFC. She loves promoting and educating the public about the mission and hopes to help engage and recruit more creative talent to the space science community. "It's vital to use arts and media as a tool to educate and engage the public," she states. "Both science and art are human attempts to understand and describe the world around us. The subjects and methods have different traditions, and the intended audiences are different, but the motivations and goals are fundamentally the same." Christine supports the communications team and is working to revamp public

## BEHIND THE BADGE

# CHRISTINE NOLAN ESSIG

outreach opportunities at NASA. She plans to attain her Master's degree in order to continue working on large-scale projects with greater roles, responsibilities, and influence.

#### LIFE OUTSIDE OF GODDARD:

Christine lives in Bethesda, Maryland with her husband Richard. Upon her move to Washington D.C., she has immersed herself in the theatre scene and landed the lead role in the Constellation Theatre Company's production of Urinetown as Penelope Pennywise, which was recommended for the Helen Hayes Award. She has assisted the President's Committee on the Arts and the Humanities for the First Lady's Initiative, Turnaround Arts, which incorporates Science, Technology, Engineering, Arts and Math (STEAM) into educational curriculum across the country. Christine is an avid marathon runner, is on the Education Committee for the Washington Area Lawyers for the Arts (WALA), and loves designing rockets on her mobile app which uses Kepler's equations to model orbital physics. ▲

To learn more, you can visit her website at [www.ChristineNolanEssig.com](http://www.ChristineNolanEssig.com).



**It's vital to use arts and media as a tool to educate and engage the public. Both science and art are human attempts to understand and describe the world around us. The subjects and methods have different traditions, and the intended audiences are different, but the motivations and goals are fundamentally the same.**

**-Christine Nolan Essig**

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## BEHIND THE BADGE

# PRESTON BURCH

Preston Burch is presently on staff to the Flight Projects Directorate (FPD), backfilling for Tom McCarthy, FPD Deputy Director. Tom recently joined the Joint Polar Satellite System (JPSS) program office to work with the National Oceanic and Atmospheric Administration (NOAA) on restructuring the JPSS organization in order to integrate NOAA and NASA management and technical functions, and to facilitate

the transition of JPSS from a mostly development-oriented program to a long-term operational program. Preston is presently working closely with Dave Mitchell, Director of FPD, and Wanda Peters, who recently became the FPD Deputy Director for Planning and Business Management.

### BORN:

Freeport, Long island, NY

### EDUCATION:

BS, Physics – Adelphi University

### LIFE BEFORE GODDARD:

After high school, Preston worked as a lab tech for Reeves Instrument Co. in their materials and processes lab. Reeves made everything from rate integrating gyroscopes for the United States Air Force Corona (spy) satellites, to radar systems for NASA (VERLORT), to atomic bomb fuses. He did destructive physical analysis on electronics parts, ran the radiography lab, and a bunch of other stuff. He spent the 1963 summer as a riveter working for Grumman Aircraft Engineering Corporation (as it was then known) in wing final assembly on the Gulfstream I in Plant #1 in Bethpage (his dad had told him that if he wanted to be in aerospace he needed to learn the biz from the shop floor up like he did). Preston received a NASA research fellowship for the final two summers and worked part-time during the school year in the physics lab. After college, he joined Grumman as a

thermal vacuum test engineer on the Apollo Lunar Module. He said racing the Russians to the moon was a great adventure!

### LIFE AT GODDARD:

After 2 years on the lunar module, Preston came to Goddard in 1968 as a systems engineer in mission operations for Grumman on the Orbiting Astronomical Observatory (OAO) – the true progenitor to the Hubble Space Telescope (HST). He later became an integration and test director on OAO-C over in Building 7. After moving back to New York to be a stockbroker in the Big Apple for a couple of years (Shearson Hammill and then Merrill Lynch), he decided to go back to aerospace and

## BEHIND THE BADGE

# PRESTON BURCH

joined Pratt & Whitney in Connecticut as a test engineer in the high pressure compressor group. He says he loved the smell of jet fumes in the morning! He was lured back to Maryland to be a beltway bandit and helped start up OAO Corporation, where he worked on the Application Technology Satellite (ATS)-6 and the Tracking and Data Relay Satellite System (TDRSS). However, 5 years was enough of that, so he joined Computer Sciences Corporation to learn how to build and manage large data systems. He was assigned to a really big system at the CIA for about a year and half, then decided to continue his journey around the Beltway. He worked for Fairchild Space & Electronics Company for a year, moved on to EER, then to Integral Systems, and then founded Omitron, Inc., where he worked on the Gamma Ray Observatory (GRO) and some other missions. After 7 years building Omitron from a one-person company to approximately 40 employees, he decided it was time to put down roots and joined NASA Goddard as a civil servant in 1991. Joe Rothenberg was then the Hubble program manager, and he hired Preston as the deputy project manager to Ann Merwarth on the Hubble Operations and Ground Systems Project. When Ann retired, he moved up to project manager; in early 2001, John Campbell appointed Preston as HST program manager. When Hubble servicing ended in 2009, he worked on morphing the Hubble program office to become the Astrophysics Projects Division. In early 2010, he was asked to lead the establishment of the JPSS program. He is quick to point out that JPSS would not have succeeded without the inspired work in the early days of people like Liz Citrin, Art Whipple, Linda Greenslade, Dan Devito, Garry Gaukler, Ken Schwer, Pam Sullivan, Craig Tooley, Bryan Fafaul, Lauri Via, Sandy Marshall, Jim Gleason, and many others, and the total commitment and support of the Goddard center leadership.

### LIFE OUTSIDE OF GODDARD:

Preston and his wife Martha live in West Friendship, Maryland in Howard County. They have five children, 16 grandchildren (including a set of quadruplets and a set of twins) and three great-grandchildren. All the relatives and their home, which is set on three acres, keep them pretty busy. Preston's spare time is spent flying his Cessna 182S, which has been upgraded with all the latest in glass cockpit technology and automation. He has an instrument rating, which he works hard to keep current and proficient, and enables him to take long cross-country flights. He's flown the plane west of the Mississippi and as far south as Florida, and looks forward to flying down to the Bahamas soon. His other avocation is flying sailplanes (he owns three), and he's an active member of the Mid-Atlantic Soaring Association, which flies out of the Mid-Atlantic Soaring Center in Fairfield, PA (next door to Ski Liberty). ▲



**Flying and aviation have been my passion for as long as I can remember. Flying presents an inexhaustible range of intellectual challenges, opportunities, and experiences that satisfy my need for excitement, travel, sharing, and learning more about the changing world around me.**

**-Preston Burch**

# PASSING THE TORCH



MIKULSKI TO CARDIN - GODDARD WELCOMES ITS NEW CHAMPION

## SENATOR BEN CARDIN — LOOKING FORWARD TO ADVANCING THE GODDARD MISSION

On September 30, 2016, Senator Ben Cardin visited Goddard for a tour and an update on key missions.

During the discussion, Director Scolese highlighted the recent successful launch of OSIRIS-REx and the upcoming launches of Antares and the Geostationary Operational Environmental Satellite (GOES)-R. He also talked about recent Goddard assignments of the Pre-Aerosol, Clouds, and ocean Ecosystem (PACE) and Wide Field Infrared Survey Telescope (WFIRST) missions. In his opening remarks, Senator Cardin said that he recognizes how important Goddard is to the nation, and with Senator Mikulski's impending retirement, said he was looking forward to working and advancing Goddard priorities. The senator said he recognized that Senator Mikulski had been an advocate for science, and he wants to use "every tool in our toolbox to further the Goddard mission."

The tour portion of the visit highlighted the JWST, satellite servicing, a WFIRST model, Ice,

Cloud, and land Elevation Satellite (ICESat)-2 Advanced Topographic Laser Altimeter Systems (ATLAS), and test capabilities. During the visit to the integration and test complex, JWST project manager, Bill Ochs, provided an overview of JWST and highlighted upcoming milestones leading up to launch. Senator Cardin seemed intrigued by the concept of looking back in time and asked questions regarding the difference between optical/ultraviolet telescopes and those that are infrared. In the Satellite Servicing Robotic Operations Center, Satellite Servicing Capabilities Office (SSCO) project manager,



C. Scolese, B. Reed, F. Cepollina, B. Cardin at GSFC's Robotic Operations Ctr (ROC)

Ben Reed, described the evolution of satellite servicing from Hubble's legacy. He talked about the rendezvous challenge of Restore-L and described the robotic arm mechanics. Senator Cardin acknowledged satellite servicing as a national asset useful for many governmental organizations. Reed also talked about the Asteroid Redirect Mission (ARM) as well as using International Space Station (ISS) as a technology maturation platform. Senator Cardin questioned how NASA works with ISS partners in light of geopolitical concerns.

Mark Clampin, Sciences and Exploration Directorate Deputy Director, and Kevin Grady, WFIRST project manager, presented an overview of WFIRST using a scale model.

During the ICESat-2 ATLAS presentation, project scientist Thorsten Markus provided an overview of the mission. He related the mission to work on Senator Cardin's Environment and Public Works Committee.

## SENATOR BARBARA MIKULSKI — A LONGTIME ADVOCATE FOR GODDARD

After 30 years serving in the United States Congress, Maryland Senator Barbara Mikulski announced her retirement.

A long-time advocate for NASA, and GSFC in particular, Senator Mikulski visited Goddard earlier this year. The visit included a meeting with Center Director Scolese, a tour highlighting the JWST and WFIRST missions, a satellite servicing ribbon-cutting ceremony, and a town hall meeting with GSFC employees.

During the ribbon-cutting ceremony at the satellite servicing facility, Senator Mikulski provided extemporaneous remarks to a crowd of over 150 employees. She spoke emotionally and with passion of how proud she was of the people of Goddard and the need to service satellites.

Senator Mikulski received a standing ovation as she entered a packed auditorium for the town hall meeting. During the program, Director Scolese thanked Senator Mikulski for her support in the FY 2016 omnibus appropriations. Wallops Flight Facility (WFF) Director, Bill Wrobel, also thanked Senator Mikulski on a live video feed and she received a standing ovation from an auditorium full of people at WFF. During her remarks, Senator Mikulski

said how proud she was of Goddard. She talked about the science assets in Maryland including GSFC, the Applied Physics Laboratory (APL), the Space Telescope Science Institute (STScI), and WFF in Virginia. She mentioned the "bread and butter" of satellite servicing, and said Goddard's partnership with the National Oceanic and Atmospheric Administration (NOAA) is "significant." She talked about her partnership with Senator Shelby and the almost \$1B increase for NASA, mentioning support for commercial crew and increases for Earth science.



Mikulski at GSFC's Robotic Operations Center (ROC)

With a long career in public service and as the longest-serving female senator, Senator Mikulski has received many honors. The STScI in Baltimore named one of the world's largest astronomy databases after her (the Barbara A. Mikulski Archive for Space Telescopes). In 2012, NASA named a newly-discovered "Supernova Mikulski" in her honor. In November 2015, Senator Mikulski was awarded the Presidential Medal of Freedom by President Obama. ▲

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JWST PHOTOGRAPHER



# FOR EVER EMBOLDENED

## MEDIA EVENT HIGHLIGHTS NASA ADMINISTRATOR'S VISIT TO GODDARD

Rolling four major events into one, the James Webb Space Telescope (JWST) outreach team supported a visit from NASA Administrator Charlie Bolden on November 2, 2016. The day's events included a 'town hall' meeting, a media day that attracted more than 30 journalists, and a first-of-its-kind Artist Event for more than 20 creators. The goal of this Artist Event was to use the backdrop of the telescope to inspire the artists to create imaginative art through a variety of mediums—sketches, drawings, paintings, still photo images, digital art, and even music. The work of the artists has been showcased on several social media sites including Flickr, Instagram, Twitter and Facebook.

During the morning, a live NASA TV event, featuring Administrator Bolden and JWST Project Scientist, John Mather, was aired in front of the telescope in the Building 29 clean room. This broadcast featured live questions and answers with Bolden and

Mather. The media attending the event were given tours of the testing chambers and Webb scientists and engineers were available to answer their questions.

Leading up to the event, several news features were written, including a feature on the first important optical measurement of JWST's segmented mirror, "[James Webb Space Telescope Mirrors Will Piece Together Cosmic Puzzles](#)" and on the day of the event, a [center of curvature pre-test story](#) was released.

Administrator Bolden, who spoke movingly in front of a packed auditorium, blogged after his visit, "There are some moments that will stay with you your entire life. I'd be willing to bet that most of the people with whom I spent this morning at NASA's Goddard Space Flight Center would put the experience in that category. You see, we were able to see with our own eyes the amazing progress that's being made on the James Webb Space Telescope, which will soon be

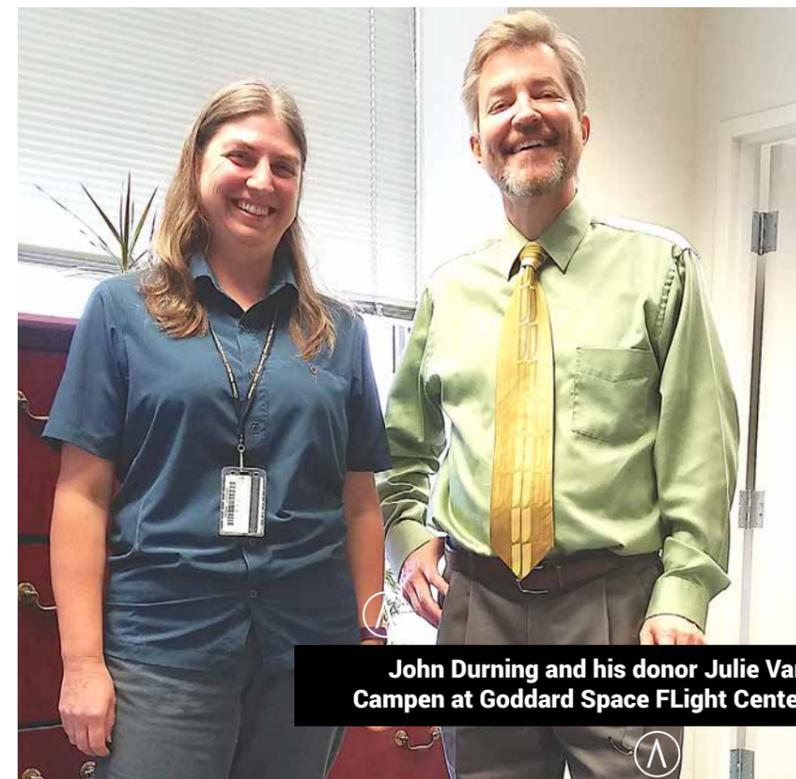
humanity's eye into the secrets and mysteries of the universe. ... Dr. Martin Luther King, Jr. once said "In a real sense all life is inter-related. All [people] are caught in an inescapable network of mutuality, tied in a single garment of destiny." One might also say that we are in a web of mutuality ... a "Webb" (pun intended) that has the potential to unite the world in understanding, discovery and awe." ▲

Check out the Top Ten Facts about the JWST [↗](#)

For more information about JWST, check out: [www.jwst.nasa.gov](http://www.jwst.nasa.gov) [↗](#)

LAURA BETZ, CODE 443  
JWST SCIENCE WRITER  
PHOTO CREDIT JOEL KOWSKY  
ART BY JEDIDIAH DORE

# GODDARD'S CIRCLE OF CAMARADERIE



John Durning and his donor Julie Van Campen at Goddard Space FLight Center

I have a unique vantage point of what a special place Goddard is and I wanted to share that with folks. I have a medical condition that requires a kidney transplant and have been on the transplant list for over a year. Being on that list is a very weird experience because your opportunity comes from someone else's misfortune. It's like that popular song from Semisonic called Closing Time, the refrain of which is, "Every new beginning comes from some other beginning's end."

It was hard to keep such a situation from folks I work with because of the logistics and medical leave that will be involved with such a procedure, when it comes to pass. As news spread amongst the team, I had the great fortune to have five co-workers step forward to consider donating to me and three of those went so far as to begin the process to determine whether they could. Folks may not be aware but that is a staggeringly high percentage of those who knew of my situation when compared to a typical general populace

response. In this country there are over 100,000 people waiting for kidney transplants with an average wait time of 3.5 years. Three thousand are added each month and only around 17,000 transplants are performed each year; about 4,700 die each year waiting for a transplant.

I think that response has more to do with the environment and culture of Goddard than anything to do with me specifically. It is because Goddard is a very special place. Each one of us comes to work every day knowing we play a part in the success of a specific mission, or several missions, no matter the organizational code. We come together as teams focused on a common goal. This teaming arrangement allows folks to work together, create bonds and friendships/acquaintances, and conclude



**If you weren't a team player when you came to Goddard, this environment we have created here can't help but have you become one.**

in satisfaction when the mission is successful. We take those experiences to our next project with a different team and the camaraderie circle grows larger. If you weren't a team player when you came to Goddard, this environment we have created here can't help but have you become one.

CONTINUED ON PAGE 20

Maybe we don't always appreciate it, but we come to work every day striving as a team towards a common goal on stuff for the betterment of humankind. We rely on each other for our success. This esprit de corps is unique – think of working at the Motor Vehicle Administration or post office or the like. These are all noble endeavors but lack the binding, focused goals that we tackle every day that create this unique work environment and I am just the beneficiary of such an environment.

As for me...well, Julie Van Campen, a co-worker, has been cleared as my donor and we will undergo the transplant in the near future. After some convalescing, I will be back at work in no time. I have always enjoyed and appreciated working at NASA and this experience has just deepened my admiration for the place and the people. ▲

JOHN DURNING, CODE 443  
JWST DEPUTY ASSOCIATE DIRECTOR/TECHNICAL

## INVESTING IN OUR FUTURE



**D**uring the months of May through August, you can spot hundreds of student interns across Goddard's campuses. In FPD, business and Science, Technology, Engineering, and Math (STEM) interns have awesome assignments supporting the projects, divisions, offices, and directorate.

During the summer of 2016, the Exploration and Space Communications Division hosted 48 interns from across the country. Their many projects made a valuable contribution to NASA's missions. In this video, the interns proudly describe their contribution.

The 2017 Summer Intern Program's application process is open and accepting applications.

**FOR MORE INFORMATION ON HOW TO APPLY FOR A NASA SUMMER INTERN POSITION, PLEASE GO TO:**

NASA Interns, Fellow & Scholars: One-Stop Shopping Initiative [↗](#)

DONNA SWANN, CODE 400  
ASSISTANT DIRECTOR,  
FLIGHTS PROJECT DIRECTORATE

# OUT & ABOUT

## LIFE'S HIGHLIGHTS OFF CAMPUS



**Matt Ritsko (Code 460) married his best friend and new addition to the NASA team, Tara Dulaney (Code 452/PAAC contract) on Kent Island on September 30, 2016.** They met while attending Penn State together 13 years ago and reconnected thanks to an outing with NASA colleagues. We wish them both a lifetime of happiness and continued success for the entire family at NASA!

**Congratulations to Karilys Montanez (Code 460) and Julian Ramirez (Code 563).** Karilys and Julian were married October 2, 2016, in San Juan, Puerto Rico.



**Mark Hubbard (Code 383/460) and his wife, Barb, are proud to announce the arrival of their seventh grandchild, John Allen McCain, who came into this world on Wednesday, November 9, 2016, at 9:45 a.m. at the Frederick Memorial Hospital in Frederick, Maryland.** He weighed in at 8.3 lbs. and is 21 inches long. Proud parents, Sara and John McCain, are thrilled with the arrival of their second child!

# AMBIGUITY, DECISION MAKING AND PROGRAM/PROJECT MANAGEMENT

## PICK A JAR, PICK A COLOR

Suppose that you are presented with two jars, each containing 100 red and black balls. Jar 1 contains 50 red balls and 50 black balls. Jar 2 also contains 100 red and black balls but the ratio of red to black balls is unknown.

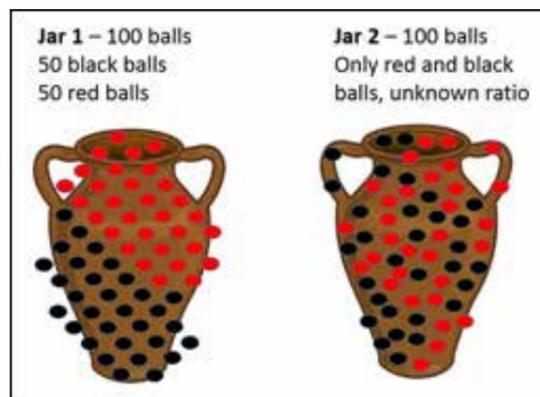


Figure 1 Illustration of the Ellsberg Paradox

You will receive a \$100 payoff if you correctly guess the color of the ball you draw from one of the jars. You must pick the color and select one of the jars to pick from.

This experiment, designed by Daniel Ellsberg, shows that most people prefer to pick from Jar 1, where the odds are known, rather than Jar 2, where the odds are unknown. People will gravitate toward the option that gives them more information, even if that information does not guarantee a better outcome. The “Ellsberg Paradox” is also known as the ambiguity effect or ambiguity bias. It is also reflected in expressions such as “better the devil you know than the devil you don’t”. This form of cognitive bias can lead us to make inappropriate decisions. It applies in a wide range of decision-making contexts, including those relevant to Goddard programs and projects.

What exactly is ambiguity? How is it different from uncertainty? How does ambiguity come

into play within a Goddard mission and how do we typically address it? We have well-established processes for risk management, but where does ambiguity fit in? Finally, how can we, as a learning organization, learn to tolerate and perhaps even leverage ambiguity? Let’s try to address these questions one at a time.

## HOW IS AMBIGUITY DIFFERENT FROM UNCERTAINTY?

Risky choices are those where the outcome isn’t known but the odds of success are. Flipping a coin is uncertain but not ambiguous. The distinction between uncertainty and ambiguity can be further explained via two images.

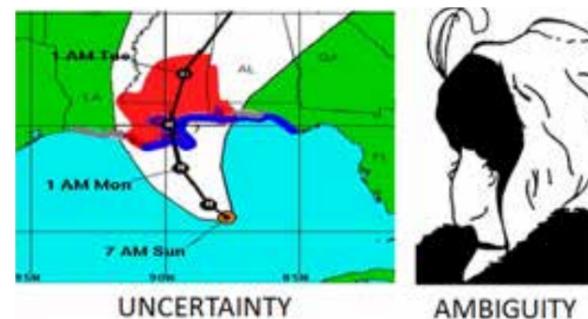


Figure 2. Hurricane Katrina forecast in 2005; “My Wife and My Mother in Law”, W.E. Hills, 1915.

The first image depicts the predicted path of Hurricane Katrina in 2005. The white area shows the uncertainty associated with the prediction. The second image is ambiguous because it has two possible interpretations, two equally valid meanings. Do you see both the old woman with the pointy chin and the young woman with her face turned away? Note that no amount of additional data will help you determine the correct interpretation of that image.

## HOW DOES AMBIGUITY IMPACT DECISION MAKING ON A PROGRAM OR PROJECT?

How do people generally react to ambiguity? Our aversion to ambiguity and our need for closure often push us to rush decisions. In a project

management context and engineering culture, a number of specific impacts can be observed. Engineers and project managers are no different from average people when it comes to ambiguity aversion. Being data driven and accustomed to rigorous problem solving and trades, they are more comfortable with situations where the odds can at least be estimated and are unprepared to recognize and address ambiguous situations. Under tight schedules, project managers may not have the luxury of delaying a decision. They are even more likely to avoid ambiguity when possible and to move ahead with solutions where the odds are known.

The risk management discipline is geared towards managing uncertainty, assessing the probability of specific events and their impact so that strategies can be put in place to eliminate or mitigate risks. Risk management, however, is not well equipped to handle ambiguity. One of the dangers associated with ambiguous threats is that they cannot easily be characterized within the traditional risk management processes. Ambiguous threats may end up on a watch list awaiting additional data that will never come. In addition, seeking additional data, by doing more tests for example, may have detrimental effects. This is true both in space engineering and in health. Additional testing may introduce new risk elements without a guarantee that it will resolve the ambiguity of previously available information.

Risk managers need to recognize the difference between ambiguity and uncertainty when handling risk-related information so that ambiguous threats are neither pushed aside (more likely), nor inappropriately characterized as risks (less likely).

This was illustrated in the very unfortunate case of the Columbia space shuttle. The foam strike during launch that eventually caused Columbia’s demise was a good example of an ambiguous threat. An ambiguous threat is characterized by an ambiguous warning sign and unknown potential for causing harm. Rodney Rocha spoke of “weak evidence” (Why didn’t they listen?).

## WHAT IS THE ROLE OF AMBIGUITY IN A LEARNING ORGANIZATION?

A learning organization requires a certain degree of psychological safety, a culture where everyone is able to speak up, express concerns, and have open conversations with peers and supervisors. If there is a lot of pushback when trying to communicate a concern about an ambiguous situation or threat (“don’t come to me unless

you have a solution”), the threat or concern is automatically downplayed and ignored rather than discussed and understood. A learning organization must learn to tolerate some degree of ambiguity. Even more importantly, a learning organization should learn to adequately distinguish between the uncertainty associated with risks that can be adequately managed with proven processes, and ambiguity, which does not (yet) have proven management methods within a project management context.

## FACING AMBIGUOUS THREATS

...When the foam strike occurred, the NASA officials supervising the launch did not have a clear line of sight to what would happen as a result. Engineers had noticed the foam strike during routine reviews of videos taken at the launch – unfortunately, not from the best angle to assess the damage – but senior managers downplayed the threat, noting that foam strikes had caused damage to shuttles in the past but had never resulted in a major accident. Some concerned engineers described the foam strike as “the largest ever” and asked that additional satellite images of the strike area be taken, but top managers rejected the requests. Management also chose not to have the astronauts conduct a spacewalk, which may have enabled them to observe, and perhaps even repair, the damage.

Roberto, Bohmer and Edmonson, Harvard Business Review, November 2006.

At Goddard and across NASA, case-based learning has been used extensively to strengthen the agency as a learning organization. Case studies are often purposefully ambiguous, giving the reader a number of perspectives that do not lead to a clear and simple solution. They are a very good illustration of the fact that while correct courses of action may be obvious in hindsight, project managers and their teams make decisions based on imperfect information, often facing ambiguous situations.

## WHAT CAN WE DO ABOUT IT?

To successfully address the potential negative impacts of ambiguity aversion, we must first accept the inevitability of ambiguity and get more comfortable with it; we must recognize

CONTINUED ON PAGE 24

the difference between risk, uncertainty and ambiguity, so that an ambiguous threat doesn't get ignored just because it's ambiguous and therefore more difficult to manage using existing risk management processes. In addition, understanding ambiguity may even lead to opportunities to better harness it for good (for more on this angle, read Jamie Holmes' book, **Nonsense: The Power of Not Knowing**).

Does knowing about the ambiguity bias change your decision in the two-jar Ellsberg experiment? Ambiguity aversion is only one of many cognitive biases affecting our decisions. Check out **20 Cognitive Biases that Affect Your Decisions**. ▲

## RESOURCES

### ARTICLES

"Facing Ambiguous Threats," by Michael Roberto, Richard M.J. Bohmer, and Amy C. Edmondson, November 2006 Harvard Business Review.

"Identifying the Biases behind Your Bad Decisions" by John Bershears and Francesca Gino, Harvard Business Review, October 31, 2014.

"How to Minimize Your Biases When Making Decisions" by Robert F. Wolf, September 24, 2012, Harvard Business Review.

### BOOK

**Nonsense: The Power of Not Knowing**, by Jamie Holmes. This book highlights some of the benefits of ambiguity and suggests ways to harness it.

### NASA-RELATED RESOURCES

#### A Catalog of NASA-Related Case Studies

"The Pursuit of Images of Columbia," NASA/GSFC/OCKO Case Study and associated resources, such as the Rodney Rocha interview segments, including "Why didn't they listen?" (Interview with Rodney Rocha).

Send comments to Barbara Fillip, Flight Projects Directorate Knowledge Management Lead.

BARBARA FILLIP, CODE 400  
FPD KNOWLEDGE MANAGEMENT LEAD



**There is always an easy solution to every human problem – neat, plausible, and wrong.**

**-H.L. Mencken**

## COMINGS & GOINGS

# July 1, 2016 through September 30, 2016

## COMINGS

- REBECCA LEVY** (external hire) to 474/ Joint Polar Satellite System (JPSS) Ground project, Resources Analyst
- SACHIDANANDA R. BABU** (from 533) to 407/Earth Science & Technology Office, Technology Development Manager
- JEFFREY S. SMITH** (from 551) to 448/ Astrophysics Focused Telescope Assets
- STEPHEN M. SCHMIDT** (from 592) to 490/Instrument Projects Division, Supv-Deputy Division Manager
- RYAN CORKEN** (Pathways Hire) to Earth Science Data and Information Systems (ESDIS) Project, Student Trainee
- ANGIE HEWITT** (external hire) to 410/ Geostationary Operational Environmental Satellite (GOES)-R program, Consultant
- SHINA DAVE** (from 501) to 423/ESDIS Project, Senior Resources Analyst
- MONICA GORMAN** (external hire) to 405/Research Analyst Office, Operations Research Analyst (ORA)
- CODY LANIER** (external hire) to 405/ Research Analyst Office, ORA
- JASON SCHWARTZ** (external hire) to 405/Research Analyst Office, ORA

## GOINGS

- JOSEPH FAMIGLIETTI** (from 407) to 102/Goddard Strategic Partnerships Office
- SUSIE JONES** (from 408) to 590/ Division, Secretary
- YI-PHENG NGAN** (from 454) to 567/Microwave and Telecommunications System Branch
- HOSSIN A. ABDELDAYEM** (from 405) to 102/ Goddard Strategic Partnerships Office (SPO)
- CLARIBEL C. FERROLINO** (from 474) to 152/Quality Assurance, Policy & Standards, Staff Accountant
- ANGIE HEWITT** retires from 410/ GOES-R Program, Deputy Program Business Manager
- SABA S. ASHRAFI** (from 444) to 210/ Procurement Operation Division, Student Trainee (Procurement)
- CELINA L. HANEWICH** (from 400) Detail to 130/Office of Communications, Public Affairs Specialist

## COMINGS & GOINGS

### REASSIGNMENTS, REALIGNMENTS & DETAILS WITHIN CODE 400

- MARY S. WALKER** (from 433) to 448/WFIRST Project, Wide Field Instrument Manager
- DONALD E. WHITEMAN** to 491/Advanced Topographic Laser Altimeter System (Atlas) Instrument Project, Deputy Instrument Project Manager
- CATHERINE L. PEDDIE** to 448/ AFTA Study Office, Supvy-Deputy Project Manager
- FELIPE P. ROMO** to 423/ ESDIS Project, Financial Manager
- JONATHAN G. BRYSON** (from 403) to 474/JPSS Ground Project, Deputy Project Manager-Resources
- ROBERT C. SMITH** to 408/Satellite Servicing Capabilities Office (SSCO), Supvy-Project Manager
- IRIS R. PHIPPS** (from 420) to 424/Total and Spectral Solar Irradiance Sensor (TSIS) Project, Senior Resources Analyst
- STEPHANIE A. GRAY** (from 401) to 403/FPD Business Management Office, Business Management Officer
- KEVIN N. MILLER** (from 440) to 401/Advanced Concepts & Formulation Office, Deputy Program Business Manager
- MALCOLM B. MILAM** (from 450) to 470/JPSS Program Office, Study Manager
- BRUCE KAMEN** (from 470) to 401/Advanced Concepts & Formulation Office, Instrument Captur Project Manager
- BEVERLY J. THOMAS** (from 460) to 458/Space Network Ground Segment Sustainment (SGSS) Project, Deputy Project Manager-Resources
- AZITA VALINIA** (from 407) to 440/Astrophysics Projects Division, Supvy-Deputy Program Manager
- ZULMA PHILLIPS** (from 441) to 408/ SSCO, Student Trainee



### REORGANIZATIONS WITHIN CODE 400

- RENAMED** - 450.2/Lunar Laser Communications Demonstration (LLCD) Office to Technology Enterprise and Mission Pathfinder Office (TEMPO)
- REALIGNED & RENAMED** - 448/ AFTA Study Office from 440/Astrophysics Projects Division to 400/Flight Projects Directorate, 448/ WFIRST Project Office

LISA HOFFMANN, CODE 400  
ADMINISTRATIVE OFFICER



**Q: DO YOU EVER QUESTION WHAT IT TAKES TO GET TO THE NEXT LEVEL IN YOUR ORGANIZATION?**

**Q: ARE YOU CONFIDENT THAT YOU ARE WORKING ON STRETCH GOALS TO BE MORE READY TO COMPETE FOR THE NEXT JOB OPPORTUNITY?**

**Q: DO YOU KNOW WHAT RESOURCES CAN HELP YOU PREPARE FOR A DISCUSSION WITH YOUR SUPERVISOR ON UPCOMING TRAINING AND DEVELOPMENT?**

**A Career Path Tool (CPT) was created to help employees and supervisors navigate their careers within flight projects.**

Check out the easy-to-use website, [HTTP://CAREERPATH.GSFC.NASA.GOV/CODE400/](http://careerpath.gsfc.nasa.gov/code400/) that now displays core civil servant professional administrative and technical positions and provides numerous career development paths across the directorate. Thanks to the many focus groups and subject matter experts who participated in the creation of our exciting new tool.



FIGURE 1

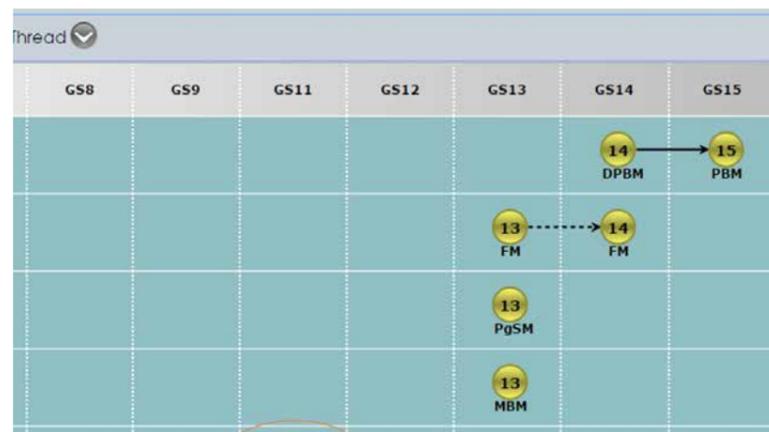


FIGURE 2

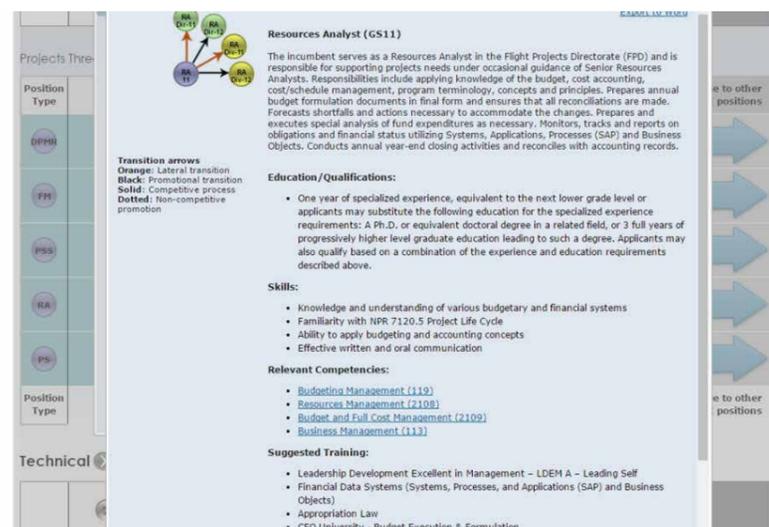


FIGURE 3

**1.** Opening up the Career Path tool, you will have an opportunity to select paths in the professional administrative or technical area.

**2.** The Career Path Tool provides “ladders” with position information that are easily accessible including suggestions for competencies, skills, transitions, and training activities.

**3.** This tool will assist employees with career planning, as well as training and development to enable a broader awareness of how to self-manage your career. The tool will also assist supervisors to help with succession planning and can be used during employee career development discussions by opening on the spot to collaboratively create an individual development plan.

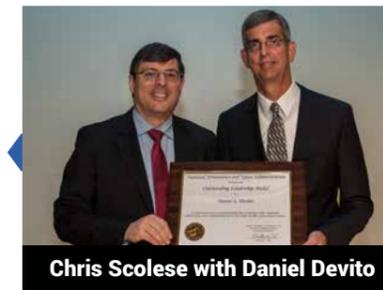
For any questions on career paths, please contact Donna Swann, 6-7871.

DONNA SWANN, CODE 400  
ASSISTANT DIRECTOR,  
FLIGHTS PROJECT DIRECTORATE



**OUTSTANDING LEADERSHIP MEDAL**

**DANIEL S DEVITO**  
In recognition of your outstanding leadership, formulation skills, stakeholder collaborations, and accomplishments of the Joint Polar Satellite System Ground Project.



Chris Scolese with Daniel Devito

**JAHI O WARTTS**  
Jahi Wartts has been an exceptional leader by re-planning the Advanced Topographic Laser Altimeter Systems (ATLAS) project development, mentoring subordinate employees, and working to institute change throughout the agency.

**JASON H HAIR**  
For outstanding leadership as the instrument project manager of the OSIRIS-REx Visible and Infrared Spectrometer (OVIRS), overcoming obstacles and delivering ahead of schedule



Chris Scolese with Jason Hair



Chris Scolese with Jahi Wartts

## OUTSTANDING LEADERSHIP MEDAL



Chris Scolese with William Sluder

### JOHN F. DURNING

For years of trusted leadership to successfully navigate the complex crossroads in the development of the James Webb Space Telescope (JWST).



Chris Scolese with Laura Milam-Hannin accepting on behalf of Kenneth O Schwer.

### KENNETH O SCHWER

For exceptional vision, guidance, and creativity in leading the development of the Instrument Projects Division.



Chris Scolese with Robert Estep

### ROBERT H ESTEP

For exemplary leadership as the soil moisture active passive in-house radiometer instrument manager, and commitment to deliver flight products on time and within budget.

### MATTHEW RITSKO

For your outstanding leadership as the Transiting Exoplanet Survey Satellite Deputy Project Manager for Resources.



Chris Scolese with Albert Vernacchio

### ALBERT VERNACCHIO

Bill Sluder has demonstrated outstanding leadership in the successful development, launch, and transition to operation of the Deep Space Climate Observatory (DSCOVR) mission, a nationally critical space weather observatory.

### JEFFREY FRANCIS VOLOSIN

For your efforts and accomplishment in encouraging collaboration and teamwork on Transiting Exoplanet Survey Satellite (TESS) project.



Chris Scolese with William Sluder

### WILLIAM H SLUDER

Bill Sluder has demonstrated extraordinary leadership as the Deputy Program Manager for Resources of Magnetospheric Multiscale (MMS) and Pre-Aerosol, Clouds, and ocean Ecosystem (PACE), while serving on the Venus Geological Surveyor (VGS) and Europa Probe-E proposals.

## EXCEPTIONAL ACHIEVEMENT MEDAL

### JAMES T PONTIUS

For delivering NASA's extremely complex contribution to the Japanese Astro-H Soft X-Ray Spectrometer (SXS) instrument ahead of schedule.



Chris Scolese with James Pontius

### LISA M. MAZZUCA

For your outstanding leadership of NASA's Search and Rescue (SAR) mission, providing important outreach and exceptional service to the global SAR community.



Chris Scolese with Lisa Mazzuca

### MARY GRACE REPH

For sustained, dedicated, and exemplary service in support of NASA's Satellite Servicing Capabilities Office.



Chris Scolese with Mary Grace Reph

### THERESA A PARKER-QUARLES

For your exceptional achievement in resolving interagency financial issues with expiring and canceling funding.

### CAROL GRUNSFELD

In recognition of your dedication and effective leadership of the business management team, substantially contributing to the successful development and launch of DSCOVR.

### ROBERT H SMITH

For exceptional achievement in the successful development, launch and transition to operation of the DSCOVR mission, a nationally critical space weather observatory.

## OUTSTANDING PUBLIC LEADERSHIP MEDAL

### TIMOTHY MARTIN

For your unparalleled leadership that directly contributed to the JWST instrument's cryo cooler delivery at a critical phase of the project's lifecycle.



Chris Scolese with Timothy Martin

## EXCEPTIONAL SERVICE MEDAL



Chris Scolese with Robert Estep



Chris Scolese with William Sluder

### JAMES HENRY PAWLOSKI

For excellence in simultaneously managing two missions during critical phases of operations; Global Precipitation Measurement (GPM)'s seamless transition to nominal operations and Tropical Rainfall Measuring Mission (TRMM)'s passivation.

### PAULA N TIDWELL

For forty-one years of superior financial leadership and reimbursable expertise both in the Space Network and Agency-wide.

CONTINUED ON PAGE 32

### EXCEPTIONAL ENGINEERING ACHIEVEMENT MEDAL

#### ROGER M CHIEI

For exemplary avionics work done in support of NASA's satellite servicing efforts.



Chris Scolese with Roger Chiei

### EXCEPTIONAL SCIENTIFIC ACHIEVEMENT MEDAL

#### JASPER HALEKAS

For your exceptional contributions to MAVEN's science return using the Solar Wind Ion Analyzer (SWIA) instrument.



Chris Scolese with Laila Andersson

#### LAILA ANDERSSON

For your exceptional contributions to MAVEN's science return using the Langmuir Probe and Waves (LPW) instrument.

### EXCEPTIONAL PUBLIC ACHIEVEMENT MEDAL

#### CHARLES E DIAZ

For nearly two decades of outstanding technical support spanning the life cycle of the James Webb Space Telescope.



Chris Scolese with Charles Diaz

#### DAVID WRIGHT

For your outstanding achievements to advance the design, development and testing of the Mid Infrared Instrument for the James Webb Space Telescope Program.

#### EUGENE SKELTON

For demonstrating systems engineering excellence in developing an independent U.S. Government rendezvous and relative navigation capability.

#### MARIA BEGONA VILA COSTAS

For years of exceptional achievement and leadership to design, develop and test JWST's Fine Guidance Sensor instrument as part of the Integrated Science Instrument Module.



Chris Scolese with Maria Vila Costas

### SILVER ACHIEVEMENT MEDAL

#### LORINDA YAM

For your integrity and excellence in transforming the schedule management of the GOES-R ground system in support of a project turnaround.



Chris Scolese with Lorinda Yam

#### STEPHEN ANDREW SHINN

For your exceptional efforts in promoting and modeling diversity and inclusion within the Goddard community as a Champion for D&I and the Hispanic Community.

### SILVER ACHIEVEMENT MEDAL (Team Award)

#### JOINT POLAR SATELLITE SYSTEM IDPS NAB TEAM

For the successful development, deployment and test of the JPSS Network Adapter Box (NAB) to address transition constraints between JPSS IDPS and its data users.

#### SPACE NETWORK TRANSITIONAL ARCHITECTURE RESEARCH TEAM

For successfully establishing a new operational space network ground station at Blossom Point Remote Station on budget and in an unprecedented fourteen months.

### GROUP ACHIEVEMENT AWARD

#### ASTROPHYSICS PROGRAM ANNUAL TECHNOLOGY REPORT TEAM

For excellent reporting of Strategic Astrophysics Technology (SAT) development by the 2015 GSFC Astrophysics Program Annual Technology Report (PATR) Production Team.

#### ERNEST ENGINEERING TEAM

For the successful delivery of the ERNESt study 2 months ahead of schedule; providing a ground-breaking framework for the future of NASA space communication and navigation.

#### HUBBLE CONTROL CENTER TECHNICAL REFRESH TEAM

For mitigating hardware and software obsolescence risk by the seamless installation of hardware/operating system platforms that will sustain the Hubble Space Telescope (HST) to 2020 and beyond

#### ISIM ELECTRICAL INTEGRATION TEAM

For your continued outstanding performance critical to the success of the Integrated Science Instrument Module for the James Webb Space Telescope

**JPSS SPACECRAFT-2/3/4 TEAM**

To the Joint Polar Satellite System Spacecraft Team (JPSS-2/3/4) for your tireless effort and dedication in support of a successful spacecraft procurement.

**MAVEN SCIENCE TEAM**

For exceptional science return from the Mars Atmosphere and Volatile Evolution Mission (MAVEN) spacecraft during its primary science mission.

**MMS BUSINESS TEAM**

For outstanding support and dedication to the success of the MMS Project.

**MMS INSTRUMENT SUITE TEAM**

In recognition of outstanding achievement in the engineering and operations development of the instrument suites contributing to the successful launch and commissioning of MMS.

**NASA SATELLITE LASER RANGING OPERATIONS TEAM**

For achieving record-breaking quantities of high-accuracy satellite ranging data resulting in NASA's most precise remote sensing Earth science ever.

**TRMM END OF MISSION TEAM**

For the flawless execution of the Tropical Rainfall Measuring Mission (TRMM) descent and passivation during the end of mission.

# DID YOU KNOW...?

Did you know the Dōngzhì Festival (the arrival of winter) is celebrated by the Chinese and other East Asians during the winter solstice? It is a time for families to gather and celebrate the return of longer hours of daylight and an increase in positive energy. It can be traced back to yin and yang philosophy.



**Cooked Tang Yuan - Sweet rice dumplings**  
CC BY-SA 4.0 - ALPHA

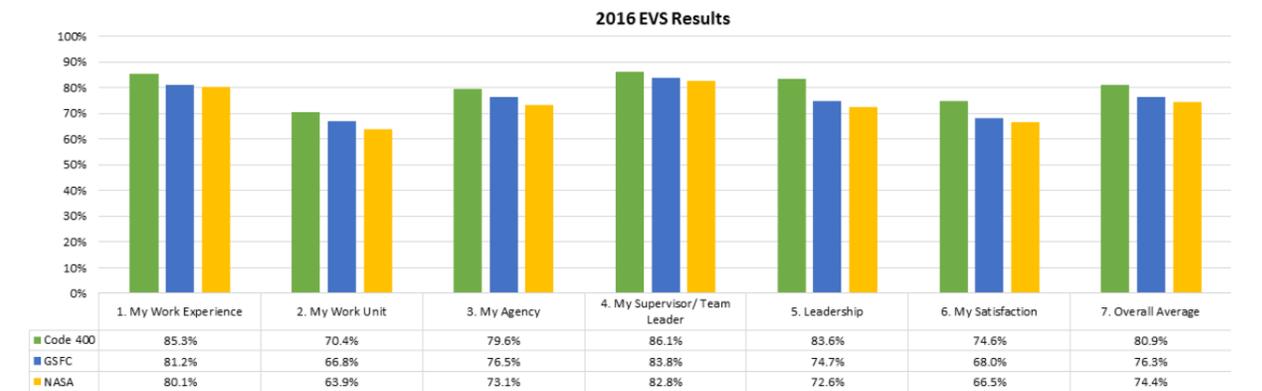
**We want to be in the know! If you have something to share, please send it to Code 400 Diversity and Inclusion Committee, c/o Matthew Ritsko at:matthew.w.ritsko@nasa.gov and we'll include it in a future issue of the Critical Path.**

# EMPLOYEE VIEWPOINT SURVEY

On an annual basis, the Office of Personnel Management (OPM) administers the Employee Viewpoint Survey (EVS) to all permanent Federal employees. This survey tool gathers opinions from employees on all aspects of their employment experience – from satisfaction with their job and agency, to views on their immediate supervisors, managers, and senior leaders. Results help drive organizational change.

**AND THE SCORES ARE IN FOR 2015...**

2016 results were recently announced and congratulations to GSFC for continuing to trend upward in every dimension for the last 3 years! A big shout-out to the Flight Projects Directorate (FPD) as we have the Center high score in three of the six dimensions in EVS as well as the high score for overall average, see chart below. Thank you for participating in this year's EVS. Your participation and feedback are critical to the improvement of the directorate, projects, divisions, and offices across FPD.



**BEST PLACES TO WORK**

The Partnership for Public Service rates and ranks Federal agencies into various categories, including the "Best Places to Work in the Federal Government." Scores taken from the EVS in this category measure the overall performance of agencies and agency components related to employee satisfaction and commitment. For the past 4 years, NASA has been ranked No. 1 and deemed the "Best Place to Work in Federal Government for Large Agencies." In 2016, FPD received the Center high score in two of the three questions used to rank this award, as well as the top score in overall average, see above. We are currently awaiting news if NASA will continue to hold the top award in 2016. These are excellent results and we continue to be extremely proud of the work we do and the place where we do amazing things.

## RESULTS AND PATH FORWARD

Results have been analyzed and are being addressed at all levels of NASA, GSFC, and divisions/offices throughout the FPD. According to our Code 400 responders, there is a strong understanding of the importance of the work we do in FPD. Employees realize how our work is aligned with NASA's overall mission and strategic vision. We are also determined to get the job done and eager to find opportunities to do our jobs better, ultimately contributing to the overall success of GSFC and NASA. No matter how high our scores, we still have areas of opportunity to focus on. One area we will explore further in the coming months will be awards and recognition. Your feedback is important! We'd love to hear from you if you have ideas for new and creative ways to recognize our hard-working individuals and teams. We look forward to collaborating with supervisors and employees to create an Action Plan that we will execute as we enter 2017! ▲

DONNA SWANN, CODE 400  
ASSISTANT DIRECTOR,  
FLIGHTS PROJECT DIRECTORATE

# FLIGHT PROJECTS

## LAUNCH SCHEDULE 2016/2017



**11/16**  
Geostationary Operational  
Environmental Satellite  
(GOES)-R



**1/17**  
Raven



**2/17**  
Neutron  
Star Interior  
Composition  
Explorer (NICER)  
Instrument



**3/17**  
Joint Polar  
Satellite  
System  
(JPSS)-1



**3/17**  
SET-1  
Instrument

NOVEMBER

DECEMBER

JANUARY

FEBRUARY

MARCH