National Aeronautics and Space Administration

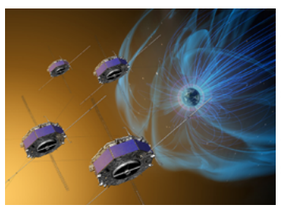
Goddard View

Volume 12 Issue 9
September 2016

www.nasa.gov

GoddardView

TRENDING



MMS Spacecraft Achieve Tightest Flying Formation
The four spacecraft of the Magnetospheric Multiscale mission flew just 4.5 miles apart on Sept. 15, their tightest formation to date since setting into space in March 2015 to study magnetic reconnection around Earth.

Junior U.S. Senator From Maryland Tours Goddard's Facilities
Sen. Ben Cardin, D-Md., paid a visit to Goddard on Sept. 30, receiving updates from program managers on the James Webb Space Telescope as well as various other missions and technology development efforts.

HACE Celebrates National Hispanic Heritage Month
Flamenco dancers and Latin American cuisine were just a few of the highlights at the Goddard Hispanic Advisory Committee for Employees' luncheon in celebration of National Hispanic Heritage Month.

Kickoff Event Sets CFC Into Motion
Under the theme "Show Some Love," Goddard kicked off the 2016 Combined Federal Campaign workplace giving program with a charity fair and personal stories highlighting the impact of the campaign.

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On the cover: Engineers encapsulate the OSIRIS-REx spacecraft prior to its launch on Sept. 8. Photo credit: NASA/Dimitri Gerondidakis

NP-2016-9-502-GSFC

GoddardView Info

Goddard View is an official publication of NASA's Goddard Space Flight Center in Greenbelt, Maryland. Goddard View showcases people and achievements in the Goddard community that support the center's mission to explore, discover and understand our dynamic universe. Goddard View is published by the Goddard Office of Communications.

You may submit story ideas to the editor at darrell.d.delarosa@nasa.gov. All contributions are subject to editing and will be published as space allows.

LRO MISSION PRESENTS 'THE MOON AND MORE'

By Sarah Schlieder

Space meets "The Voice" in a new music video about Earth's nearest celestial neighbor: the moon.

NASA's Goddard Space Flight Center has collaborated with musicians Matt Cusson and Javier Colon – Season 1 winner of NBC's "The Voice" singing competition – on a new song inspired by NASA's Lunar Reconnaissance Orbiter mission.

The song and music video, entitled "The Moon and More," focuses on the inspirational nature of studying the moon – the cornerstone to learning more about the solar system – and how LRO has ushered in a new era of lunar science.

"I wanted to create a unique production for the LRO mission that centered around music as a way to engage kids, parents and educators,"said Goddard video producer David Ladd. "A major focus was also to convey an important and encouraging message to kids, particularly children of color, that nothing is beyond their reach. You can achieve the goals you set and take yourself to places you never thought possible, just as NASA has done in going back to the moon with LRO and its continued journey into the solar system."

When Ladd first approached Cusson and Colon about his idea, they immediately jumped at the opportunity.

"This project brought me back to when I was a kid watching NASA launch the shuttle missions," Colon said. "Every kid at some point wants to fly, and I think that dream has a lot to do with NASA's exploration of space and discoveries."

"It was exciting to have this chance to work with NASA," Cusson said. "As a musician, you don't usually think that this is something you could do. But I was honored to offer up my skills and music, and to bring the worlds of science and music together."

Since its launch on June 18, 2009, LRO has collected a vast amount of data, contributing to our knowledge about Earth's moon. The LRO mission team believes "The Moon and More" will have a lasting impact.

"A number of us working on LRO have had something inspire us to pursue careers in science and engineering," said LRO Deputy Project Scientist Noah Petro. "This video serves as an opportunity to inspire future generations to follow their dreams into the sciences or the arts."

Filming locations included the Intrepid Sea, Air and Space Museum in New York; the Smithsonian National Air and Space Museum in Washington, D.C.; the Connecticut Science Center in Hartford; the Hartt School performing arts conservatory at the University of Hartford in Connecticut; and the "Living on Mars" mural in the Bronx, New York. The mural is a collaboration between NASA and CITYarts, Inc., a nonprofit public arts organization.

LRO is managed by Goddard as a project under NASA's Discovery Program. The Discovery Program is managed by NASA's Marshall Space Flight Center in Huntsville, Alabama, for the Science Mission Directorate at NASA Headquarters in Washington. ■

Above: Musicians Javier Colon (left) and Matt Cusson filming part of "The Moon and More" music video in front of the space shuttle Enterprise at the Intrepid Sea, Air and Space Museum in New York.

Photo credit: NASA/Goddard/David Ladd

STUDENTS AND NASA TEAM UP TO PUSH SPACE COMMUNICATIONS AND NAVIGATION FORWARD

By Ashley Morrow

Millions of students across the country take on internships every year, but not all have the chance to be part of an innovative team pushing the boundaries of space communications. Summer interns with the Goddard Exploration and Space Communications Projects Division tackled projects critical to human and robotic spaceflight.

This summer, ESC hosted 48 interns from 25 different schools and 19 different states. The students joined a nationwide team of interns supporting NASA's Space Communications and Navigation Program Office, which integrates all three of NASA's communications networks: the Deep Space Network managed by NASA's Jet Propulsion Laboratory in Pasadena, California, and the Goddard-managed Space Network and Near Earth Network. Together, these networks are responsible for all data transfer to and from NASA missions in space. The SCaN teams at NASA's Glenn Research Center in Cleveland also hosted interns.

The Goddard team worked on projects ranging from building high-efficiency radios for CubeSats to exploring theoretical communications methods and assisting with the division's financial management, all of which were directly applicable to SCaN's mission to create and maintain an evolving portfolio of space communications services.

"Our assignments were specifically targeted at enhancing SCaN's network capabilities, technology infusion and gains in process efficiency," said Mike Weiss, ESC associate program manager at Goddard. "We want to give interns work that both helps NASA's capabilities and helps them educationally."

In essence, these students became an extension of the ESC team. In a process similar to hiring an employee, the team set out to leverage knowledge the interns already had to assign each proposed project to the right individual or team, ensuring each student had the opportunity to work on assignments meaningful both to their studies and the division. At the end of the summer, the students presented their work to SCaN and ESC leadership, demonstrating their projects' utility to the team.

"We gave them some really challenging projects we knew they were capable of just from doing our homework and looking at their résumés or sometimes talking to their schools," added Weiss. "And they delivered. They gave us some great things we're continuing to work on."

NEN Now, an online simulation interface showing the activities of the Near Earth Network and its components, is just one example. Set for release later this year on both Web and mobile platforms, it was built almost entirely by the efforts of interns with guidance from ESC software engineer Ryan Turner.

"NEN Now started as an idea JPL had to create a graphical representation of the activity of the Deep Space Network," said Weiss. "SCaN and ESC together had a vision to create both a Near Earth Network and a Space Network version and then merge everything together to show SCaN's integrated communications capability."

Over the course of several semesters, Turner's interns developed a concept for NEN Now, created a proof of concept, demonstrated their idea and took it to an operational state. The site will be available to the public by 2017. This summer, they also began to develop SN Now for Web and mobile platforms, the final step in creating a big-picture view of the SCaN networks' activities.

In many cases, such as that of SN Now, projects will be carried on by the next group of interns. ESC is working on developing – and in some cases, has already implemented – a year-long pipeline of interns. Others who began work this summer will continue their projects from afar through agreements with their schools.

"The point is that we can execute ideas effectively and efficiently by having interns as integral members of our teams," said Sandra Vilevac, ESC intern program coordinator. "Our innovative implementation of ideas is dependent upon the fresh and new ideas that the interns provide. They are a breath of fresh air in our daily work, helping to reinvigorate and inspire the team."

Vilevac and the team are already beginning to think about their next set of team members as they work to increase the number of interns SCaN and ESC can hire, reaching deep into Goddard's talent pool to provide the best intern-mentor experience. ■

Center: The 48 summer interns from the Goddard Exploration and Space Communications Projects Division.

Photo credit: NASA/Goddard/Sandra Vilevac

THE FIVE-YEAR MISSION, 50 YEARS LATER: EMPLOYEES REFLECT ON GREATEST STAR TREK MEMORIES

On Sept. 8, 1966, the original "Star Trek" series premiered on television, redefining science fiction and igniting a fascination with space exploration for many of its viewers. As the fictional five-year mission celebrates 50 years, Goddard fans reflect on their favorite moments and share the impact the iconic franchise has had on their lives.

At my coed fraternity at MIT, a whole gang of us would watch "Star Trek: The Next Generation" every day. It wasn't only a vision of the diversity of worlds and life that might be out there that drew me in. It was also Star Trek's vision of how humanity itself is changed by the exploration of space and then by meeting others who are genuinely, fundamentally different from ourselves. The vision is a very optimistic, sunny vision of humanity at peace with itself.

Aki Roberge, Research Astrophysicist

My favorite episode is "The Enemy Within" in which a transporter malfunction causes two Captain Kirks – one good, one evil – to beam aboard the ship. Both coexist, but in the end they realize they must be joined together again for one cannot exist without the other. It contains some exceptional acting and drama, and the message is quite universal. If evil cannot be used as a comparative tool against good, then good would not exist.

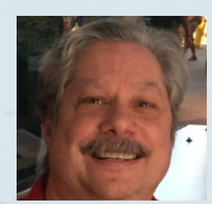
Todd Stevens, Audio-Visual Coordinator

Of course, watching "Star Trek" with Nichelle Nichols on the TV screen as a little girl was impactful for me. As an essential team member of the Star Trek leadership team, Lt. Uhura planted the seed that perhaps women of color could play key roles in future space travel. The diversity of "Star Trek" just felt right, and that is exactly how it should be.

Aprille Ericsson, Aerospace Engineer

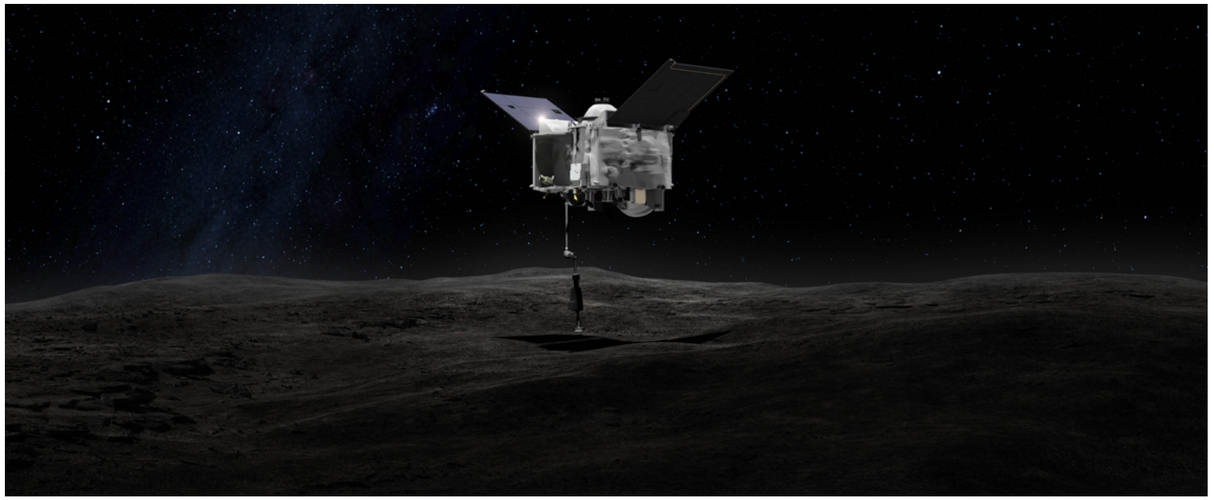
My favorite episode was "The Corbomite Maneuver." The Enterprise was confronted by a gigantic starship – the Fesarius – and its grotesque captain Balok, who threatened to destroy the Enterprise. Captain Kirk bluffed his way out of the confrontation and discovered that Balok was really a hyperintelligent, playful and childlike alien, testing whether the humans were warlike.

David Batchelor, Aerospace Technologist



My favorite episode is by far "The Doomsday Machine." But one moment.... There are so many! I suppose it comes close with "The Devil In The Dark" in which there's the realization that a presumed monster – the deadly Horta – was simply a mother defending her young. Who really was the devil and who was in the dark?

David Quinn, Mission Director, Space Science Mission Operations



By Nancy Neal Jones

Its science instruments have been powered on, and NASA's Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer spacecraft continues on its journey to an asteroid. The spacecraft has passed its initial instrument check with flying colors as it speeds toward a 2018 rendezvous with the asteroid Bennu, from which it will collect a sample and return it to Earth by 2023.

Not long after launching on Sept. 8, OSIRIS-REx ran the first check of its onboard instruments. Starting on Sept. 19, engineers controlling OSIRIS-REx powered on and operated the mission's five science instruments and one of its navigational instruments. The data received from the checkout indicate that the spacecraft and its instruments are healthy.

Instrument testing began with the OSIRIS-REx Camera Suite (OCAMS), which was provided by the University of Arizona. OCAMS executed its power-on and test sequence with no issues. The cameras recorded a star field in Taurus north of the constellation Orion along with Orion's bright red star Betelgeuse. The three OCAMS cameras performed flawlessly during the test.

The OSIRIS-REx Laser Altimeter (OLA), contributed by the Canadian Space Agency, conducted its test sequences, which included a firing of its laser. All telemetry received from the OLA instrument was as expected.

Both the Goddard-created OSIRIS-REx Visible and Infrared Spectrometer (OVIRS) and the OSIRIS-REx Thermal Emissions Spectrometer (OTES), provided by Arizona State University, were separately powered on for tests. Data from both during the checkout showed that the instruments are healthy. The science measurements acquired from OTES exceeded the instrument's performance requirements.

The Regolith X-ray Imaging Spectrometer (REXIS), a student experiment from the Massachusetts Institute of Technology, executed its functional test with no problems. The Touch and Go Camera System (TAGCAMS) navigational camera was powered on and tested, and it operated as expected. As part of its checkout, TAGCAMS took an image of the spacecraft's Sample Return Capsule.

NASA's Goddard Space Flight Center provides overall mission management, systems engineering, and safety and mission assurance for OSIRIS-REx. Dante Lauretta of the University of Arizona, Tucson, is the principal investigator. Lockheed Martin Space Systems in Denver built the spacecraft and is providing spacecraft flight operations.

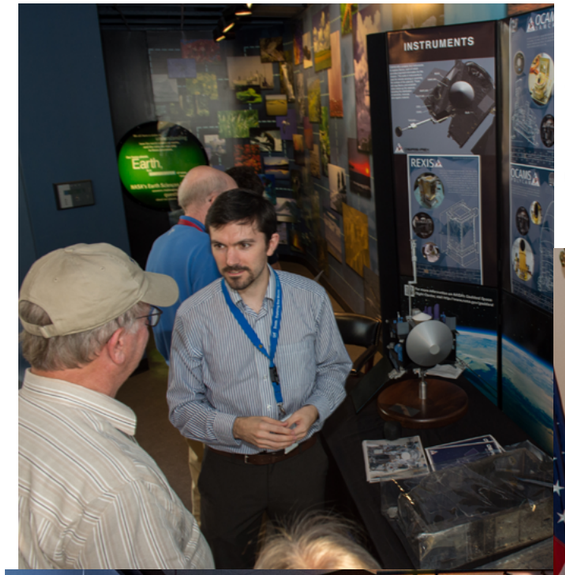
OSIRIS-REx is the third mission in NASA's New Frontiers Program. NASA's Marshall Space Flight Center in Huntsville, Alabama, manages the agency's New Frontiers Program on behalf of its Science Mission Directorate in Washington. ■

Above: Artist rendering of the OSIRIS-REx asteroid sample return mission.

Photo credit: NASA

ASTEROID-BOUND SPACECRAFT ACES INSTRUMENT CHECK

EMPLOYEES AND PUBLIC GATHER TO CELEBRATE OSIRIS-REX LAUNCH



Space enthusiasts of all ages gathered at the Goddard Visitor Center on Sept. 8 to view the launch of the OSIRIS-REx asteroid sample return mission from Cape Canaveral, Florida.

Festivities included presentations from Goddard scientists about the mission, as well as the chance to learn about other NASA projects. A celebratory cake was shared by attendees upon the spacecraft's successful launch. ■

Photo credits: NASA/Goddard/Bill Hrybyk

EMPLOYEE SPOTLIGHT

Goddard is pleased to welcome these new employees to the NASA community.

Julie Hurst

Code 803, Lifting Devices and Equipment Manager

Why Goddard?: I enjoy that my role helps support many diverse projects.

Hobbies/interests: gardening, arts and crafts, reading

Charles E. Juenger

Code 830, Pathways Intern, Aircraft Office

Why Goddard?: Two things fascinate me: the miracle of flight and exploration into space.

Hobbies/interests: science fiction and fantasy books

Lisa Wu

Code 591, Student Trainee, Engineering

Why Goddard?: NASA provides challenging work at the forefront of discovery, invention and innovation.

Hobbies/interests: figure skating, crafting, traveling, cooking, eating

Michael Disbrow

Code 803, Flight Safety Engineer

Why Goddard?: New and exciting challenges for a great agency.

Hobbies/interests: family, woodworking, programming, outdoor events

Dylan Kline

Code 546, Student Trainee, Engineering

Why Goddard?: Everybody's love and passion for their jobs here made it the most desirable place for me to work.

Hobbies/interests: music, graphic design, movies

Monique L. Smith

Code 801, Pathways Intern, Resources Management Office

Why Goddard?: Opportunity to learn more about government accounting, budgeting and training to become an analyst.

Hobbies/interests: swimming, traveling

Jacob Stahl

Code 597, Student Trainee, Engineering

Why Goddard?: To fulfill my goal of contributing to both the space program and science.

Hobbies/interests: astronomy, rocketry, sports, outdoors

HELIOPHYSICS SUMMER SCHOOL CELEBRATES 10 YEARS

By Lina Tran

More than 30 young scientists from around the world flocked to Boulder, Colorado, this summer for NASA's Heliophysics Summer School. This year marks the school's 10th anniversary, a notable milestone for this pioneering program.

Heliophysics is the study of the sun and its effects throughout our solar system. Our sun sends out a constant flow of charged particles called the solar wind. This solar material travels to the far reaches of our solar system, carving out an immense region called the heliosphere – a radiation-filled, magnetic space environment dominated by the sun's influence. Every planet, asteroid, comet, moon and spacecraft in the solar system lies inside the vast realm of the heliosphere.

The goal of heliophysics is to understand the sun, heliosphere and planetary environments as parts of a single, dynamic system. Thus, the field is highly cross-disciplinary, weaving together sub-disciplines like astrophysics, planetary science, atmospheric science, space weather and solar physics.

"A new science needs new scientists," said Lika Guhathakurta, an astrophysicist at NASA Headquarters in Washington. "And 10 years ago we set out to create them. The Heliophysics Summer School was established to train a generation of young scientists and give them a broad, coherent perspective."

However, training the heliophysicists of tomorrow requires textbooks. The shift from focused sub-disciplines to broader, sun-Earth solar-system-wide inquiry began only recently, making heliophysics a relatively young field of science. Consequently, there were previously no textbook collections that covered heliophysics as a unified field.

Now, the Heliophysics Summer School's teaching materials are brought together to create the first set of heliophysics textbooks for use at universities worldwide. Following the summer school, young scientists have gone on to earn prestigious postdoctoral fellowships and research grants, and even return to the program as faculty. The Heliophysics Summer School has trained more than 300 early-career scientists since its inception in 2006.

The Heliophysics Summer School was established and remains supported by NASA's Living With a Star program, an initiative managed by NASA's Goddard Space Flight Center. This program is focused on aspects of the sun-Earth system that are relevant to life and society.

The summer school is funded by NASA and managed by the University Corporation for Atmospheric Research in Boulder, Colorado. ■

Above: Students and faculty members from the 2016 class of the Heliophysics Summer School.

Photo courtesy: Lika Guhathakurta

SPACE LEADERS GATHER AT THE SMITHSONIAN IN “THE SEARCH FOR LIFE”

By Jacque Lofton

The OSIRIS-REx spacecraft launched from Cape Canaveral, Florida, on Sept. 8, embarking on a seven-year journey to return an asteroid sample to Earth by 2023. As it makes its way to the asteroid Bennu and back, the mission may uncover clues as to whether life may exist elsewhere.

On Sept. 21, less than two weeks after the launch, space leaders from industry, academia, NASA and other agencies asked whether we are alone in the universe during an annual fall lecture and reception at the Smithsonian National Air and Space Museum in Washington, D.C. Sponsored by The Maryland Space Business Roundtable and supported by NASA’s Goddard Space Flight Center, this year’s lecture – entitled “The Search for Life” – featured some of the brightest minds on the matter speaking in front of the floor-to-ceiling, high-definition video screen inside the museum’s Lockheed Martin IMAX Theater.

“This event is always a highlight of the year, and no matter how many times I have the privilege to attend an event here at the Air and Space Museum, it never fails to inspire me,” said Goddard Center Director Chris Scolese, who delivered opening remarks along with NASA Administrator Charlie Bolden and Roger Launius, the museum’s associate director of collections and curatorial affairs.

John Holdren, President Barack Obama’s lead advisor on science and technology, served as the first keynote speaker, followed by Gavin Schmidt, director of NASA’s Goddard Institute for Space Studies in New York. A renowned climatologist, Schmidt explained how Earth’s climate has helped life evolve on our planet.

Goddard astrobiologist Jen Eigenbrode went on to speak about the possibility of finding life in other places within our solar system, such as Mars or moons from other planets, while Goddard astrophysicist Aki Roberge discussed whether life could exist on exoplanets, which are planets outside our solar system.

Piers Sellers, Goddard deputy director of sciences and exploration, presented on the possibility of finding intelligent life, tying together NASA’s work to date on the subject and its ambitions for future missions to Mars and elsewhere.

Approximately 750 people attended this year’s event, including special guests of the Wounded Warrior Project – a nonprofit organization offering a variety of programs for wounded veterans – from Fort Belvoir, Virginia.

“It’s always great seeing so many people, both leaders and guests, gather around this time of year to share their collective passion for space,” said Leslee Scott, Goddard public affairs specialist who helped organize the event.

Following the lecture, attendees viewed a screening of “Into the Unknown: The James Webb Space Telescope.” Directed by Academy Award-nominated filmmaker Nathaniel Kahn, the documentary explores the space community’s hopes for Webb, which will be the most powerful space telescope ever built upon its completion in 2018. The film discusses how the observatory may shed light on the beginnings of life and what Webb means for the future of exploration in the decades to come.

“This is our 17th year co-hosting this event with the museum and The Maryland Space Business Roundtable,” said Scolese. “And there is undoubtedly no better venue in the world to celebrate the incredible achievements of NASA and its industry partners as together we explore new frontiers on Earth and in space.” ■

Center: Roger Launius, associate director of collections and curatorial affairs at the Smithsonian National Air and Space Museum, delivers opening remarks during “The Search for Life” lecture.

Opposite: Goddard astrobiologist Jen Eigenbrode delivers her presentation on the possible existence of life outside our planet (top). Guests enjoy the reception surrounded by the museum’s model spacecraft (bottom).

Photo credits: NASA/Goddard/Bill Hrybyk

PETER WYPER: BACK TO THE SOLAR PHYSICS

By Kelly Ramos

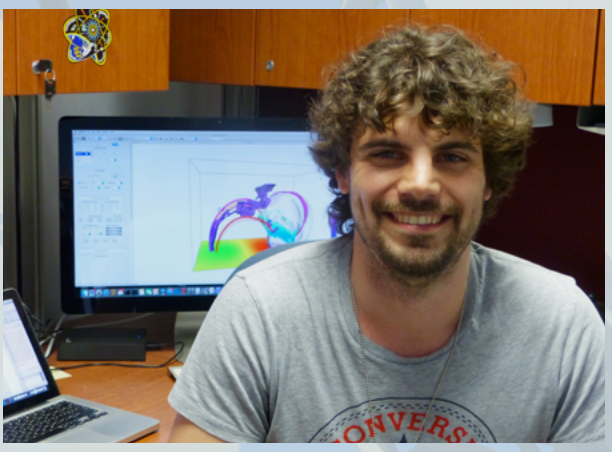
Solar atmospheric scientist and movie lover Peter F. Wyper makes numerical simulations to understand the solar atmosphere.

What is your role at NASA?

I am in the area of solar physics, and what I do is use numerical simulations – essentially big experiments done on a computer – to try and understand the things we see in the solar atmosphere. NASA satellites see cool explosions and things, and it's my job to try and simulate, interpret and understand them.

What is your typical day on the job like?

I wander in around 9:30 a.m. I make a big cup of tea, because I'm British. Then I check on my simulations from the night before. I'll check if any interesting papers have been submitted recently. And then it varies. I might be writing a paper or a piece of code, or debugging a code – anything at that point to start moving forward.



Do you use any cool tools, instruments or specialized pieces of equipment to do your job?

Because a lot of my job involves simulations, I use quite a few visualization tools for them. Part of my day is spent using visualization software to draw loads of field lines, or maybe clouds of dense things and less dense things, and fly around them to understand what's going on. That's probably the coolest thing I get to play with. I don't mess around with hardware and satellites and that kind of stuff. That's all a bit weird to me.

Why did you choose your profession?

It wasn't really deliberate. I got here in a roundabout route. I did maths at university, and I had several charismatic lecturers who were in the area of solar physics. I did courses that they taught and that was the first time I saw it. I didn't really have a plan after university. I thought, I don't want to go into the corporate world. I'll do a Ph.D., and I'll try this research thing out. That went well, and then I kind of kept being led down that road. I'm now here! I never thought I'd work at NASA one day.

Why did you come to work at Goddard?

I never planned actually to come to Goddard. The recession brought me to Goddard. There were very few post-doc positions coming up two years ago in the United Kingdom. And those were already set aside, so that made me have to think bigger. It made me get out of my comfort zone and think about moving outside the United Kingdom, and it brought me here through the post-doc program.

Who is the most influential person in your life?

I could be a bit soppy and say my wife. To do your Ph.D. is hard and then struggling through several years of post-doc without knowing what and where your next job is going to be and how you're going to do it – all of that is really tough. It's good to have somebody who has your back. I met my wife at university, and she's been there for all of this. It's pretty cool that she chose a job that is very transferable so that she could come with me.

What do you do outside of work?

I do a lot of running. If I'm not running, I'm in the pub. If I'm not in the pub, I'm watching TV and films. I love films. I love watching films and going to cinemas. I go to the cinema once a month or every two weeks. Sunshine, beer and film.

What is your favorite movie?

"Back to the Future" basically defines me. I love rock music because of that film. I love 80s culture because of that film. I may have gotten into science because of that film. I've always wanted to be as cool as Marty McFly, but as clever as Doc Brown. That was my favorite film growing up and probably still is.

If you could be any planet, which one would you be and why?

Jupiter. Aside from the sun, it is the center of attention, and it can get angry and turbulent, but can also look cool from a distance. ■

Center: Peter Wyper

Photo credit: NASA/Goddard/Kelly Ramos