



THE INNOVATION CATALYST

OCTOBER 2020

REFLECTIONS ON 2020 WITH SPO CHIEF DARRYL MITCHELL

With Fiscal Year 2020 now behind us, it's safe to say it was a year like no other. Like many other offices throughout Goddard, SPO transitioned to full-time telework in March, presenting the office with several obstacles to overcome. In-person events became obsolete, and SPO began exploring virtual platforms as tools for communication.

In many ways, SPO had a challenging year, but in others, the office found ways to shine, with the best New Technology Report (NTR) numbers since Fiscal Year 2014 and the launch of new initiatives that provided opportunities for dialogue within the Goddard community. *The Innovation Catalyst* swung by SPO Chief Darryl Mitchell's virtual office to capture his thoughts on this unique year.

THIS YEAR TOOK SOME UNEXPECTED TWISTS AND TURNS. WHAT ARE SOME OF THE MOST NOTABLE MOMENTS FOR SPO THIS YEAR?

One thing I want to highlight is our software-related accomplishments. First of all, we helped Goddard win NASA's Software of the Year award for the core Flight System (cFS). It had been quite a few years since Goddard had won that award, and after winning NASA's Invention of the Year award last year for the Modulated X-ray Source, it was a good data point in a very positive direction. Along with that, we've done a lot to improve the software catalog and make sure we have the most recent versions of our code available. We've made some good progress increasing accessibility to Goddard software. And then, of course, we've had a high number of NTR submissions this year.

WHAT ARE SOME FACTORS YOU'VE NOTICED THAT PLAYED INTO THIS YEAR'S SUCCESS WITH NTRS?

We ended the fiscal year with 278 NTRs, which is the most we've had since Fiscal Year 2014. It's truly a huge

accomplishment for the center, putting us in second place for the agency. In addition to that, we've reduced the time it takes to process NTRs by 35 percent, and as a result of that, we've eliminated our backlog. That puts us in a good position for Fiscal Year 2021. A third point: In 2014, when we had our all-time high of 305 NTRs, there was a concerted push to collect NTRs for a couple of months. We had tech managers and commercialization engineers calling people every day on the phone, and frankly, there were a fair number of NTRs we got out of that exercise that were bare bones. This year, all the NTRs we've received include the critical information necessary to make our evaluations. So on top of that, I'm also proud we've managed to get our review times down significantly and be more responsive to our customers on center.

THE STRATEGIC PARTNERSHIPS OFFICE WISHES YOU A...

HAPPY FISCAL NEW YEAR!

As we ring in Fiscal Year 2021, let's toast to a future of new technologies, exciting collaborations, and innovation for all!



REFLECTIONS ON 2020 WITH SPO CHIEF DARRYL MITCHELL (cont'd)

WHAT ARE SOME OTHER AREAS OF GROWTH YOU'VE SEEN THIS PAST YEAR?

Pretty much across the board, we've improved all of our metrics, so from SPO's performance perspective, I think we're doing fantastic. We've tried a lot of innovative new things with marketing and figuring out unique ways to engage the community. Goddard innovators have sent us many high-quality NTRs, and we're doing a better job of licensing the technologies described in them. I'm proud of the performance of the office across the board for 2020, in spite of all the disruptions that the pandemic has brought. I'd be happy with our performance if it was a normal year, but it's especially impressive when you consider that everyone is working remotely and trying to figure out how to operate in this virtual environment.

WHAT ARE SOME OF YOUR GOALS FOR SPO IN THE COMING YEAR?

From my perspective, the technology transfer program should focus on process improvement just as much as the number of NTRs received. In the end, I think it's more important for us to efficiently review our NTRs and be more effective at getting them licensed and transferred. We've made a lot of progress in that area, and there's more to be made. We'll continue to refine that and improve the way we interface with Goddard's innovators. People are more inclined to send us their NTRs when they know we're committed to advancing and evaluating their technologies.

WHAT ABOUT SPO'S OTHER PROGRAM AREAS?

Looking forward, I'd like to do more process improvement on the partnerships side, as well. I want to examine how effectively we implement partnerships and also work more closely with senior management to understand their priorities in terms of strategic partnering. I believe we can contribute to the center's strategic partnership needs in addition to processing the agreements that come to us.

For the SBIR/STTR program, Joe Famiglietti and Quenton Bonds have a lot of exciting ideas in the works. Quenton is organizing a new program called Tech Scout that will provide great value to the center and the agency as technology investment decisions are being made. I'm looking forward to seeing how that progresses in the coming months.

SPO's marketing team has been doing a fantastic job and getting a lot of attention for their innovative approaches to in-reach and outreach, such as The Coffee Break series we launched to communicate with innovators, and the Goddard Reads series, which brought together hundreds of members of the Goddard community to celebrate our partnership with Tor Books. The pandemic has challenged us to be more creative, and as we continue to work remotely, I want us to continue trying out new ways of interacting and reaching out.

ANYTHING ELSE YOU'D LIKE TO ADD?

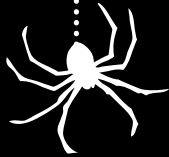
My biggest message is this: Our program has received a lot of scrutiny in the past few years, and we've taken quite a few steps to improve the areas that were brought to our attention. SPO is working with Goddard's Office of Patent Counsel to continue refining these changes, and we're looking at improving the interfaces and processes between our offices, as well. We take managing the center's intellectual property portfolio very seriously and want to do right by it. I ask the Goddard community to engage with us at any level. Whether you want to report a technology or you just have an idea you'd like to explore, please reach out to us with your thoughts. We're here for you!

You can get in touch with the Strategic Partnerships Office by emailing techtransfer@gsfc.nasa.gov.



Photo Credit: NASA/Samantha Kilgore

WE PUT THE
"SPO" IN
SPOOKY!



REPORT YOUR



TECHNOLOGY

For more NASA-themed pumpkin designs, [check out these choice gourds](#) from Goddard! Send pictures of your NASA Technology themed pumpkins to amy.k.klarup@nasa.gov! We'll share them in the November newsletter!

NATIVE AMERICAN HERITAGE REPRESENT
BLACK LIVES MATTER EQUALITY CIVIL
FREEDOM IMMIGRATION DREAMERS E
F SPEECH **DIVERSITY** LAND OF THE FRE
IDENCE FLAG CIVIL RIGHTS DISCRIMI
VERMENT STRENGTH **HIGHLIGHT** AFF

AWARENESS INCLUSIVE ACCESSIBLE SUPPORT OPPORTUNITY

October is National Disability Employment Awareness Month! As we observe the 30th anniversary of the Americans with Disabilities Act, a groundbreaking piece of legislation that sought to prevent discrimination against people with disabilities, we celebrate the gains we've made and look forward at the work yet to be done.

To promote awareness, SPO has compiled a list of resources at Goddard and at the agency level:

+ **GODDARD'S EQUAL OPPORTUNITY PROGRAMS OFFICE:**
<https://eeo.gsfc.nasa.gov/>

+ **NASA'S OFFICE OF DIVERSITY AND EQUAL OPPORTUNITY BLOG:**
<https://blogs.nasa.gov/odeo/2019/10/28/october-is-national-disability-employment-awareness-month/>

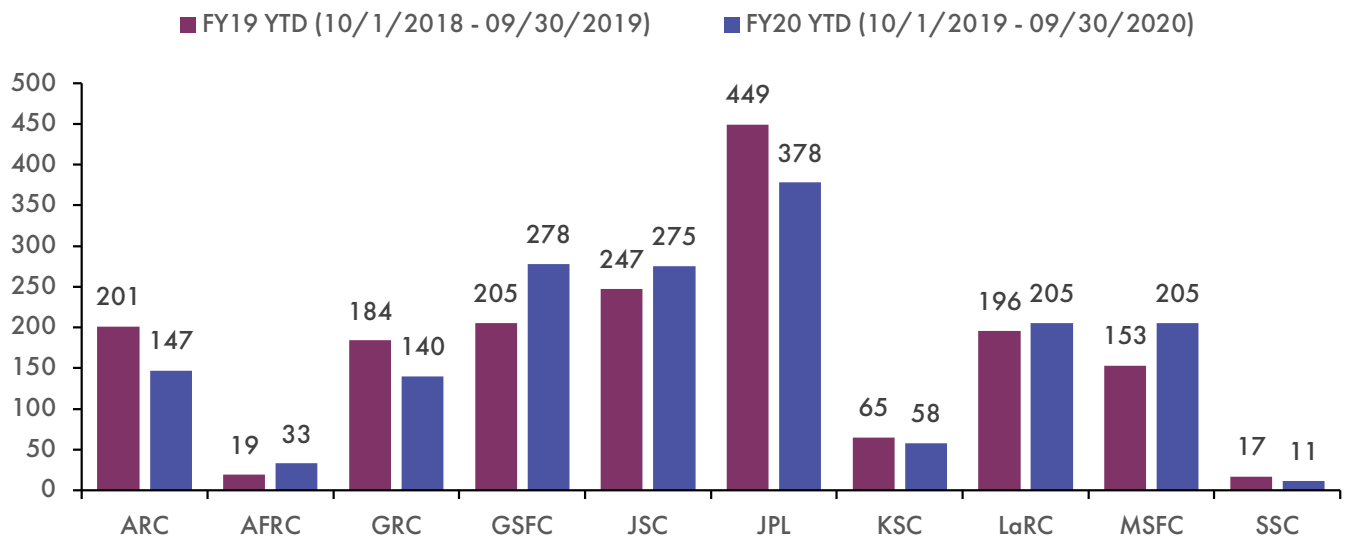
+ **CONTACT INFORMATION FOR GODDARD'S DISABILITY PROGRAM:**
Merechia Davis, 301-286-0561 or merechia.n.davis@nasa.gov

+ **LEARN MORE ABOUT NASA'S UNITY CAMPAIGN:**
<https://www.nasa.gov/offices/odeo/nasaunity>

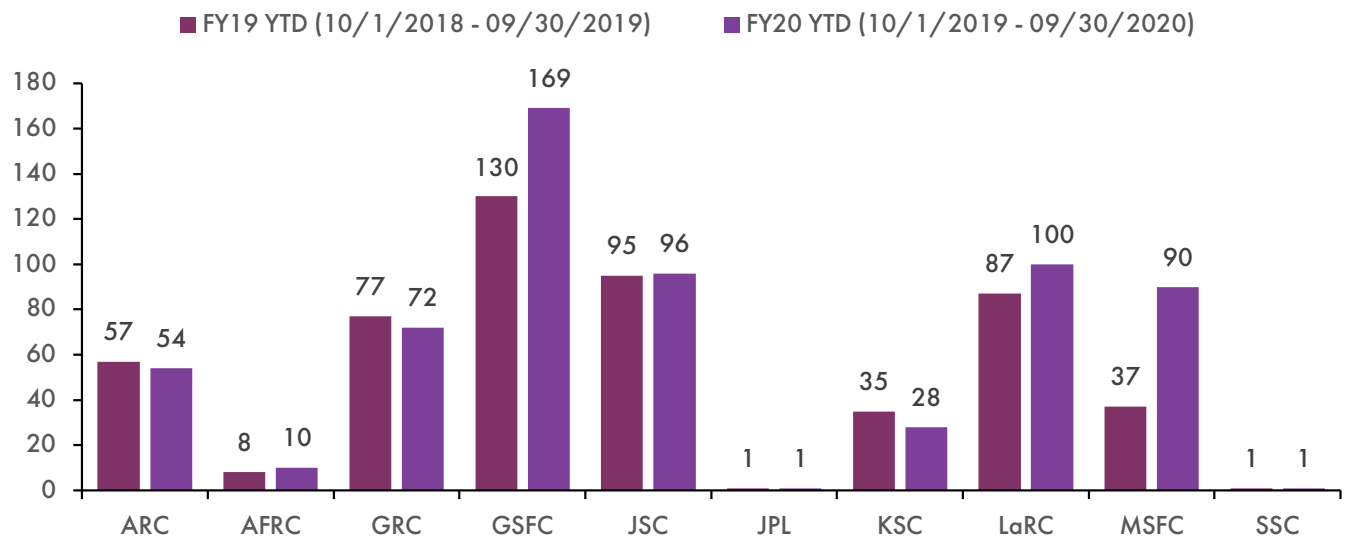
GODDARD *NTR* METRICS

Goddard's New Technology Report (NTR) numbers soared in Fiscal Year 2020! Goddard placed first in NTRs reported with a civil servant innovator and took second place for overall NTRs reported. Goddard's numbers went up by **36 PERCENT** from Fiscal Year 2019. SPO appreciates all the hard work from Goddard's innovator community!

TOTAL NTRs REPORTED

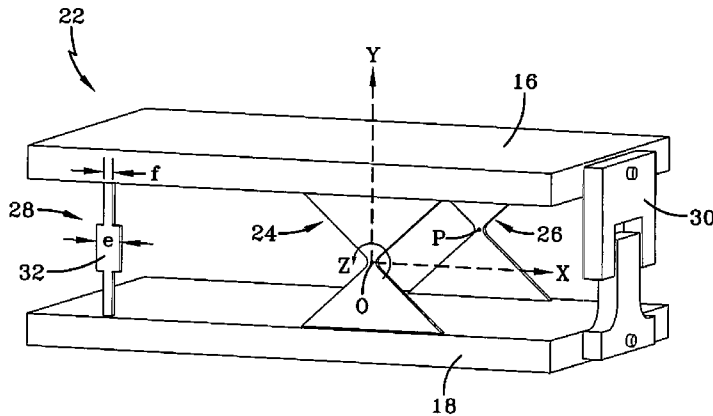


NTRs with at least One NASA Civil Servant Inventor



TECH TRIVIA TRANSFER

GUESS THE PATENT DRAWING



CLUE ONE: The technology combines two mechanical functions into a single unit that significantly improves gear drives across the board for electrical, internal combustion, and turbine motors.

CLUE TWO: The inventors are George M. Voellmer, Brian Weinberg, Constantinos Mavroidis, and John M. Vranish.

CLUE THREE: This invention involves two patents.

+ WANT TO KNOW THE ANSWERS?

[Click here](#) for Tech Transfer Trivia and [here](#) for the Guess The Patent Drawing.

How much do you know about NASA technology transfer? Find out with our monthly quiz!



Which Spinoff was recently inducted into the Space Technology Hall of Fame?

- A. Improved Firefighters Breathing System
- B. Audio Conference Bridge Technology
- C. Liquid Cooled Garments
- D. Cochlear Implant



You should only contact SPO with questions AFTER submitting your NTR.

A. True

B. False



What is the name of SPO's achievement-based program to recognize innovator participation in technology transfer?

- A. Tech Transfer Experts Program
- B. Achievers in Innovation Program
- C. Innovation Genius Program
- D. Master Innovator Program

IN CASE YOU MISSED IT...

Did you miss the past few issues of The Innovation Catalyst? Not to worry – here's a handy summary of SPO's activities from the past few months. As always, you can find an archive of past newsletters [on our website](#).



THE COFFEE BREAK

On July 9, SPO held the third installment of The Coffee Break series, in which representatives from SPO, co-Leads Quenton Bonds and Joseph Famiglietti, highlighted the SBIR/STTR program at Goddard and answered questions from attendees on how to get involved in the program.

The fourth installment of The Coffee Break series took place on August 13 and focused on the world of patenting. SPO Deputy Chief Kerry Leonard spoke to attendees about patents and representatives from the Office of Patent Counsel (OPC) took questions on the patenting process.

SPO Chief Darryl Mitchell presented at the fifth installment of The Coffee Break series on Sept. 17. This edition focused on Goddard partnerships, the differences between Space Act Agreements and Cooperative Research and Development Agreements (CRADAs), and general information on how to establish partnerships with outside organizations and businesses. Center Agreements Manager Enidia Santiago-Arce was available to answer questions from the audience after the talk was complete.

To learn more about future Coffee Break sessions, email valeriya.a.nakshun@nasa.gov.

SMALL SATELLITE CONFERENCE

The 2020 Small Satellite Conference took place online this year. Former Goddard Center Director and current National Reconnaissance Office Director Chris Scolese was the conference's keynote speaker. For more information about the conference, please visit <https://smallsat.wff.nasa.gov/>.



A VIRTUAL
EVENT SERIES
IN PARTNERSHIP
WITH TOR
BOOKS

GODDARD READS

SPO held a month-long event series celebrating the convergence of science, reading, and writing. The series kicked off on Tuesday, August 25, with authors Mary Robinette Kowal and Martha Wells, who appeared on Microsoft Teams to talk about their books and experience writing in the science fiction and fantasy genres. Kowal, author of "The Lady Astronaut" series, and Wells, author of "The Murderbot Diaries" series, are both affiliated with Tor Books, which has a Space Act Agreement with Goddard to provide access to subject matter experts for authors interested in writing about science and space.

Continuing the month of Goddard Reads events, Goddard's very own Kasha Patel gave a virtual presentation on September 1 about her work as a science writer and science comedienne. Goddard Science Writer Ellen Gray gave a presentation on September 8 about her decade-long experience covering Goddard's top science stories. On September 15, Tor Books author Karen Osborne closed out four weeks of events with a talk on her debut novel, "Architects of Memory," and how she incorporated subject-matter expertise into her writing process.

GET TO KNOW SPO ADIL ANIS



POSITION: Senior Commercialization Specialist

YEARS WITH SPO: 13 years and 4 months

ROLE AT SPO

As a Commercialization Specialist, I am involved in almost every step of the technology transfer process here at Goddard. This begins with harvesting NTRs to ensure new technologies are being reported to our office. When new technologies are reported, I perform technical and market-based evaluations of technologies to resolve their commercial potential and any applications (especially non-obvious) that the technology could be utilized for.

For technologies patented by Goddard, I heavily research these technologies and communicate with the inventors themselves in order to obtain a solid fundamental understanding of the technologies. I subsequently identify high-potential prospective licensees, obtain contact information through a subscribed database or from the growing number of industry contacts I have made while attending various technology sector conferences, and finally market Goddard patented technologies to them via email or calls.

After initial leads are generated, I work with the innovator(s) and Technology Managers (TMs) to set up technical discussions and determine feasibility of the technology in their desired application. Should we move forward from this process, I provide research and recommendations regarding licensing strategies and terms to the TMs, who ultimately make final decisions regarding licensing deals, terms, etc. I also perform this process for licensing requests that come to us through our licensing system (ATLAS) as well as information/licensing requests that come to the official SPO email address.

Finally, I am always learning in this position, something that is absolutely necessary. It is often necessary to become well-versed on a topic with which I do not have much formal education on in a very quick turn-around time in order to effectively and intelligently interface with engineers and executives in the industry and convey the benefits, novelties, and value proposition for certain Goddard technologies. This learning comes from lots of online research, scientific/research articles, business research tools, and, most importantly, the innovators themselves.

FAVORITE PART OF WORK DAY

My favorite part of the work day actually happens when I'm on travel at a conference, as this is where the magic happens! I usually attend a variety of technology sector conferences that Goddard has great overlap with. At these conferences, I scout other companies to get an understanding of the current state-of-the-art and where Goddard's technologies can fill industry technology gaps or improve upon commercial products. I interface with and develop relationships with these companies, and finally market Goddard technologies to them, providing a chance to pitch the technology proposition values to companies in-person, to receive real-time feedback on interests, and overall, to become much more educated on where these technologies will fit into industry.

STAR WARS OR STAR TREK, AND WHY

Star Wars. Why? Extended Universe (Legends). Excellent video game franchises. Lightsabers. If I need a Star Trek fix, I'll watch The Orville or Lower Decks.

VIDEO GAMES OR BOARD GAMES

Video games. Tetris, Mario Kart, Worms, Monster Hunter, and Quadradius. If you want a fun party board/card game though – check out Bohnanza.

BIGGEST PET PEEVE

Lack of self-awareness of your surroundings when outside. Driving below the speed limit in the far-left lane. People walking in-line on the sidewalk when people behind them want to pass.

FAVORITE QUOTE OR JOKE

"I know what it's like to lose. To feel so desperately that you're right, yet to fail nonetheless. It's frightening. Turns the legs to jelly. I ask you, to what end? Dread it. Run from it. Destiny arrives all the same. And now, it's here. Or should I say, I am."
-Thanos

MOST OBSCURE TALENT

I'm not sure if this is a talent, but I used to create multi-rotor RC drones from the ground up (hobby shops are great). This included the flight controller board/firmware and power distribution board. If that doesn't count as a talent, then I have a poker face of steel.

Photo Credit: NASA/Samantha Kilgore

TECH MANAGER SPOTLIGHT ERIC MCGILL

HOW DID YOUR CAREER PATH LEAD YOU TO SPO?

Long story, but here is the short version. I was a grad student in the late 1990s preparing to commit to a PhD program in molecular biology. I was going to study the role of zinc in citrate metabolism in prostate cancer cells. During that time, I had invented something at home but was unaware of patents or how the patent system worked. Serendipitously, I met a person who was auditing one of my grad courses, also interning in a Technology Transfer Office while in law school studying to become a patent attorney. I told him about the invention I was using at home, and he said it was likely patentable. After analyzing the commercialization potential of my invention, I ended up dropping out of my grad program to pursue the business opportunity. I enrolled in a Technology Commercialization graduate certificate program because I knew very little about business. I received two patents for the invention, formed a startup to prove that the product would sell, and eventually licensed the technology to a larger company more capable of expanding distribution.

During those years, I also worked as a product developer in the molecular diagnostics field where I developed chemistry for a robotic platform to detect DNA for diagnosing venereal diseases. I invented and received two patents for formulations I developed, but was very fascinated with the business and commercialization side of technology and science. The Technology Commercialization graduate certificate program taught the technology transfer process, and I began seeking opportunities for it at universities or wherever. I saw a job listing for a contracting position with a company supporting several DoD Technology Transfer offices. I took the position and was taught by some outstanding mentors and pioneers in the field. I eventually was recruited to Goddard to support a contract this office in 2013, and then took the civil servant position in 2017.

WHAT IS ONE THING THAT'S REALLY IMPORTANT TO KNOW ABOUT TECHNOLOGY TRANSFER?

Two things:

["Data suggests that every active license between the federal government and commercial entities contributes to roughly 18 jobs and \\$5 million in national economic activity per year on average."](#)

ERIC'S CODES:

420, 470, 500, 540, 550 + 610

YEARS WITH SPO: 7 years

["It has been further estimated that, because of the potential for technology transfer and spinoff industries, every \\$1 spent on basic research in space today will generate \\$40 worth of economic growth on Earth."](#)

DO YOU HAVE ANY BOOK, MUSIC, OR TV SHOW RECOMMENDATIONS?

My two book recommendations would be

"The Four Agreements" by Don Miguel Ruiz with Janet Mills and "The Lean Startup" by Eric Ries.

I recommend The Four Agreements because it is a really good overall self-improvement book with strong principles for life. It also explains how and why people interact with you in the manner we observe, which makes managing your interactions with people easier.

I also recommended The Lean Startup because it applies the scientific method and a data driven approach to technology commercialization and startups. It teaches a fiscally more efficient methodology for testing a business idea and improves the probability of success, or pulling the plug before too much investment is wasted.

IS THERE A GODDARD TECHNOLOGY THAT YOU'RE REALLY EXCITED ABOUT?

MXS is the Goddard technology that excites me more than others. I find MXS exciting because of its potential to revolutionize some aspects of medical diagnostics by enabling reduced size, weight, and power for some diagnostic equipment. Also, it has promise to make such devices safer by reducing the amount of radiation exposure to patients. Additionally, it has applications in communications.

DO YOU USE A NASA SPINOFF AT HOME? WHAT IS IT?

Not presently, but I previously used this product called Arctic Freeze. It's for the AC in your car. It was initially developed out of a Small Business Innovation Research (SBIR) contract in the 1990s. I believe it's still commercially available to recharge air conditioning units in cars.



Photo Credit: NASA/Samantha Kilgore & NASA/APOLLO 11

TECH MANAGERS AND CODES

With the new fiscal year, SPO welcomes two new technology managers: Viva Miller and Joshua Levine. Both tech managers have been with SPO previously. Miller worked at the U.S. Patent and Trademark Office and joined the office in 2018 for a detail position. Levine worked for SPO as a contractor prior to joining the office as a tech manager.

You'll hear more from Miller and Levine in future issues of The Innovation Catalyst, but in the meantime, here's an updated list of SPO's technology managers and the codes they cover. If a tech manager is assigned to your code, it means he or she would be the primary reviewer of your NTR. These assignments do not pertain to license agreements or other technology transfer activities. Please reach out to your technology manager if you have questions about submitting an NTR or if you would like to play a more active role in promoting technology transfer.



DENNIS SMALL

100, 200, 300, 600, 603-606 + 700



ERIC MCGILL

420, 470, 500, 540, 550 + 610



HOSSIN ABDELDAYEM

440, 460, 490, 660 + 670



VIVA MILLER

400, 410 + 580



JOSHUA LEVINE

450, 480, 590, 690 + 800



MANOHAR DESHPANDE

560

Photo Credit: NASA/Samantha Kilgore