

## Featured Stories



Artemis 1 Mission Manager Mike Sarafin addresses members of the Deep Space Network team in the Mission Support Area inside Building 230. Image Credit: PhotoLab

## Artemis Mission Manager Visits JPL, and Moon Seeds Do, Too

By Taylor Hill

Not long into the new year, members of the Deep Space Network received a special visitor on Lab: Artemis I Mission Manager Mike Sarafin, who wanted to take the time to thank members of the Lab's Deep Space Network in person for their effort in supporting communications with the spacecraft beyond low-Earth orbit.

The Jan. 25 visit marked the first stop on Sarafin's tour to thank NASA centers that assisted in the agency's return to manned lunar exploration missions.

In an hour-long presentation in the Mission Support Area of JPL's Space Flight Operations Facility (SFOF), Sarafin outlined the mission's accomplishments from launch to splashdown, showcasing the DSN's role in

handling communications during the mission's trajectory corrections, outbound powered flyby, retrograde orbit of the moon, return powered flyby burns, and return trajectory corrections.

"You guys helped to share this mission with the entire world, because we were able to share this imagery from the mission from your communications support," Sarafin said, showing a collage of Artemis 1's Earthrise images. "Operating a human-capable spacecraft at 268,000 miles from Earth — that's probably nothing to you interplanetary folks — but it was a big deal to us human spaceflight folks."

Sarafin was greeted by JPL Director Laurie Leshin, Interplanetary Network Director Suzanne Dodd, and DSN Project Manager Mike Levesque.

"It means a great deal to the DSN teams at JPL, which put in many, many long hours working with Artemis and adjusting antenna tracking schedules with each launch delay, to have Mike visit in person to show the Artemis Program appreciation for what they had done," Dodd said. "His visit really helps to energize us to continue our support for future Artemis missions and the return of humans to the surface of the moon."

NASA Planetary Science Division Director Lori Glaze also made the trip to JPL, thanking the DSN and Artemis teams for working together on coordinating communications around the 40-plus ongoing planetary missions, while adjusting for the ever-changing Artemis launch window and a set-in-stone Double Asteroid Redirection Test (DART) impact on Sept. 26, 2022.

"None of this works without you all here. We know that we're putting stress on the system we have at JPL, combined with the work going on in human exploration, we know there are challenges there, but your work was the reason we were able to return the impact images back home, and show the success of that mission to the world," Glaze said.

Levesque noted that the potential challenge of supporting the flagship Artemis launch in conjunction with the DART impact led the DSN team to request Artemis not launch on the day — the first time in his tenure as DSN project manager such a request was made.

"Between DART, the Artemis launch, and its eight CubeSat initial acquisitions potentially happening all at the same time, it was enough of a concern to raise it with Mike [Sarafin]," Levesque said, adding that multiple telecons and discussions were had leading up to the decision. "In the end, the consensus was it wasn't worth jeopardizing both missions, and we used the flexibility we had."

In the end, weather and other delays meant Artemis 1 wasn't ready for launch until Nov. 16, and the DSN team was able to shine during both the DART impact event and through Artemis 1's launch, CubeSat deployments, Moon orbit, and return.

"Having Mike and Lori Glaze there really was nice, as it signified the importance of the DSN to missions both human and robotic," Levesque said. "We're really kicking off a new era of DSN human spaceflight support with Artemis and its future missions. It's what we do, and it's why we're here."

Following the stop at JPL, Sarafin and the Artemis 1 team headed to Monrovia to pay a visit to the operations team at Peraton — which is contracted by NASA for mission planning and on-console support for the Deep Space Network. The next day, Sarafin headed out to the Goldstone Deep Space Communications Complex in Fort Irwin, and presented to the Deep Space Network employees on site. Members at the Madrid and Canberra facilities joined via Webex as well.

### **Seeds Sent to Space Return to JPL**

On the same day as Sarafin's visit, JPL received a "return-to-sender" package — but this was a welcome and expected one: the parcel had flown about 1.4 million miles around the Moon before making its return to the Lab.

As part of the official flight kit onboard Artemis 1's Orion spacecraft, JPL was granted permission to send an assortment of tree and plant seeds to fly on the uncrewed test mission that launched Nov. 16, 2022, orbiting the moon and successfully splashing back down on Earth on Dec. 11.



This image shows the seeds that flew on the Artemis 1 mission around the moon, and were returned to JPL on Jan. 25. Image Credit: Courtesy of David Rager

The seeds that made the journey include acorns from local oak trees, California poppies, pinyon pines, desert milkweed, pink lady apples, tomato seeds, and others. Now safely back home, the seeds are being tested for viability, and possibly planted at the Huntington Gardens, around Lab, and other locations to be determined.

"It's funny, because there's really nothing special about the seeds in terms of what species they are, but the journey they just took makes them extraterrestrial," said David Rager, manager of JPL's Design Lab.

Rager recalls first hearing about the idea of an Artemis spaceflight kit in 2021, in an innocuous meeting that had been added to his calendar labeled, "Official Flight Kick-off Meeting."

"It was in the middle of the pandemic, and it almost seemed like another Webex on the calendar for the day, but then it was this gathering of representatives from all of the different NASA centers, proposing things that could fly on Artemis," Rager said.

The parameters were that the items had to fit in, essentially, a shoebox that would be stowed underneath the "[Mooniikin](#)" astronaut used in the uncrewed flight test aboard the Orion spacecraft. Many of the items proposed were flags or badges of the centers that contributed to the mission, but the DesignLab wanted to go another route.

“We thought about the [Moon trees](#) grown from seeds taken on the Apollo missions, and wanted to continue that thread, so we asked if we could bring seeds on,” Rager said.

The DesignLab worked with the Huntington Gardens to select seeds significant to the region, and potentially viable for placement in “Moon gardens” locally. Details on potential locations are yet to be determined.

Additionally, two Mesa oak acorns sourced from trees at the Huntington Gardens were flown, and one was encased in resin and given as a parting gift for longtime JPL Chief of Staff Gail Robinson.

“It’s a bit serendipitous that the seeds and acorns were sent back to JPL on her last week,” Rager said. “After she spent more than 50 years here, it was special being able to give her that.”







## ‘Transpo Gang’ Leads the Way

By Vince Robbins

“Rise and shine! Easy money Mondays. Let’s get it!”

It’s a crisp, early morning outside of Building 177 – the Transportation Garage – and JPL’s Material Movement Coordinator Erik McGarity is starting the day his usual way: full of enthusiastic, coach-like catch phrases to fire up his team.

But once inside the transportation office, quiet focus sets in: McGarity trains his eyes on a map of JPL on a flatscreen TV. On the screen, little GPS pin drops crawl around the map of the Lab in real time. This is McGarity’s team in action.

“If it’s got wheels underneath it, we own it,” McGarity says – with the exception of rovers, of course. “From paperclips to spaceships, we do everything on Laboratory.”

Transportation and Fleet Management (2832) is a team of 18 JPLers tasked with supporting the movement of people and material, both on-Lab and off. Those pin drops moving around McGarity’s screen represent trucks, forklifts, government vehicles, heavy equipment, flight hardware, bus and shuttle services, priority mail, and anything else that moves around Lab – sometimes in plain sight and sometimes in more subtle ways.



*Fork Operator Rick Gonzales moving hardware outside of the Spacecraft Assembly Facility.*

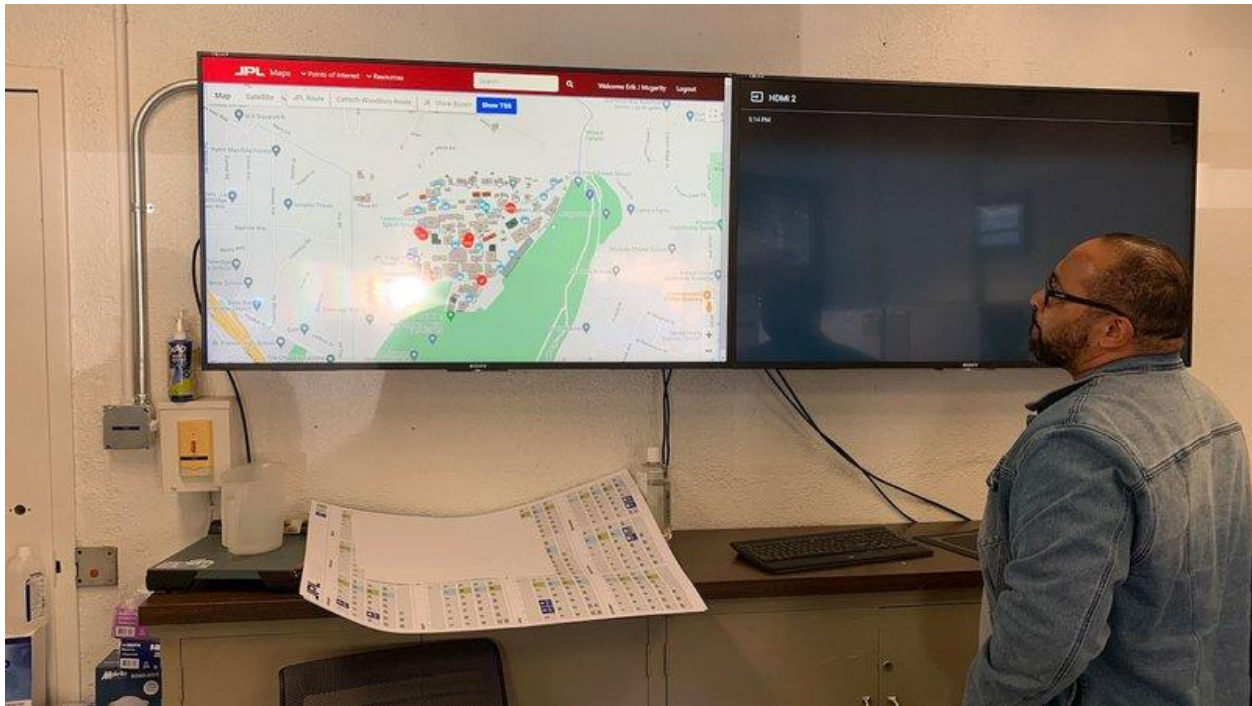
The Transpo Gang – an affectionate, self-dubbed moniker that caught on at JPL thanks to McGarity’s fun, behind-the-scenes updates on Slack – is made up of an energetic mix of JPLers with eclectic backgrounds. The team boasts expertise in a wide range of fields from their work prior to joining JPL, from heavy equipment to material handling, concrete fuel pipelines to natural gas compression.

“My team has a special skill set, skill mix. We have a lot of guys from a bunch of different walks of life that do a whole bunch of cool stuff,” McGarity says. “All of us are homegrown. We all learn here, we cut our teeth figuring [things] out – I mean, I was a school bus driver [before coming to JPL].”

Coordinating so many facets of transportation is a complex logistical job. Over the last several years, the team has leveraged technology to streamline and improve their processes.

“Before, it was all paper and cell phones. Every single ticket. Back in the day, we had four or five phone lines and they’re all ringing off the hook. And we had all these carbon copy tickets,” McGarity remembers.

But around 2017, McGarity says the team upgraded to a digital Transportation System Service with a dashboard that allows them to manage transportation tasks, as well as track drivers’ GPS locations in real time.



*Material Movement Coordinator Erik McGarity observes the movements of Transpo Gang.*

“See, we’re actually sophisticated too,” McGarity laughs. “That’s how we optimize delivery. That’s how we get it done.”

On any given day, McGarity says the team starts with an average of 60 to 80 job tickets assigned to a queue for the drivers to assess and complete. Every day brings unique challenges: from tight squeezes in the machine shop to complex maneuvers with oversized cargo.

### **‘Gettin’ it Done’**

McGarity recalls a challenging project years ago in which the Transpo Gang helped disassemble and move a 6-meter antenna up on the mesa near the Antenna Laboratory (212).

“They craned off the pieces and lowered them down onto our truck,” McGarity remembers. “Then we squeezed them through the gate.”

Coordinating with Caltech, JPL security escorts, local government officials, and law enforcement, the Transpo team then trucked the antenna pieces from the top of the hill above JPL to the Caltech campus where they assisted with the reassembly.





*Transpo Gang assists with a 6-meter antenna move on the JPL Mesa.*

Outside of sheer human power, they also have impressive tools to get the job done: trucks, trailers, tugging equipment, and the 55,000 lb. capacity forklift.

“We’re taking up two lanes rolling down the street in that bad boy,” says McGarity.

But he emphasizes that the key to his team’s success is the ability to solve problems with a bit of creativity.

“There are always hiccups,” says Heavy-Duty Driver Dan Miller. “We hire people that can think on the fly, that can see where our problems lie and how we can fix them in the moment.”

Recently, the team was tasked with a daunting challenge: wedging a 48-foot tractor trailer, which was used by the Deep Space Network, into a tight space outside of the Spacecraft Assembly Facility. After over a week of site surveys and strategizing, it took four team members and more than an hour of delicate maneuvering in between fences and around pipes to back the large vehicle into the narrow space under the NASA meatball logo on the south side of the building – a high-stakes parallel parking job if there ever was one.

“We get out there and scratch our chins and just...figure it out,” McGarity says. “It all just takes being brave, understanding the rules, understanding the physics...That’s just the way we move. Get it done, do it safe, do it smart, but let’s get it done.”





## Topside and Dockside

At any given time, if they aren't out on a job, you'll find most of the Transpo Gang in one of two places.

The first is the Transportation Office in building 177 along Explorer Road – “The Topside” – where McGarity and his team manage all of the program and project transportation needs across Lab. From flagship spacecraft to furniture moves to reverse logistics (a.k.a. getting rid of stuff), McGarity says the team tackles it all.

“If you need your furniture picked up, we do that. If you want a widget for your project picked up and taken somewhere, we do that. If you need someone to move a piece of spacecraft with care, we do all of that.”

The second nexus of action is the shipping and receiving distribution center in Building 171 on the south side of Surveyor Road. This is where Carlos Vera – heavy-duty driver and dock team leader – and his department handle procurements, priority mail, bulk mail, and any larger items such as raw materials or science equipment that projects send or receive. Whether it's an envelope headed across the street or a wooden crate with flight hardware headed to India, everything comes through this loading dock.



*Left to right: David Zapata, Carlos Vera, Daniel Chale in the 171 Shipping & Receiving dock.*

Vera says the shipping and receiving team was particularly swamped in the early stages of the pandemic. While mail and critical materials continued to arrive, there were far fewer JPLers around to take delivery of their packages.

“We worked as a team and put our ideas together,” Vera says, explaining that his group set up 13 different conference room locations around Lab to store, organize, and catalog packages until they were picked up or sent to their recipient.

When they're not moving, shipping, or receiving, Transpo Gang also handles bus and shuttle services around Lab, and manages a fleet of leased and rented government vehicles on Lab.

## 'A Family Atmosphere'

Camaraderie is at the heart of what drives the Transpo Gang. That bond has been forged by an impressive amount of combined years of service — their group supervisor, Sunjay Moorthy, has been at JPL for over 30 years, and their most senior team member has been on Lab for over 40 years.

McGarity himself has been at JPL for over 20 years, and reflects fondly on that team dynamic: "I grew up with [them]. I know their families and their kids' names, and they know my family. It's really a family atmosphere. We watch each other's backs and we take care of each other. That's how this group works."

McGarity says the Transportation and Fleet Management team proudly see themselves as an integral part of JPL's mission to explore our universe.

"I see it as being part of, in some way, American history. When I first started I was really eager and happy to be one of the guys to put his thumb on Curiosity. 'I helped do that,'" McGarity says. "When I see [films] like 'Goodnight Oppy,' I get kind of nostalgic. My [team] helped out with that. I make sure they know: 'You guys are important.'"

So, next time you get stuck behind a forklift taking up two lanes of traffic on Lab, take a deep breath — and take a moment to watch the Transpo Gang at work.

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More than 650 women, with anywhere from one week to 60-plus years of experience at JPL, gathered on the steps of Building 180. Image Credit: PhotoLab

## Women's Day Photo Highlights the Lab's Generational Connection

By Taylor Hill

For Europa Clipper Deputy Science Manager Trina Ray, JPL's annual International Women's Day photo op comes with a tinge of consternation.

The first time she remembers hearing about a group photo to celebrate the day was in 2017, when the Advisory Council for Women (ACW) put out a call for all women JPLers to meet in the Dark Room in Building 230.

"We shouldn't all fit in there," Ray remembers thinking. "There's 2,000 women here at JPL. We need to represent. This needs to be huge."

Over the years, she mulled ways to raise participation levels, but knew it would take more than one person and hopeful thinking. Then in May 2022, through some serendipitous timing, an idea took hold.

"It was right after Director Leshin's welcome event on the Mall, and I was waiting to talk with her when I saw Sue [Finley] walk by," Ray recalls. The two talked for a bit, and as Finley was walking away, Ray snapped a photo with both her and Leshin in the frame. "NASA's [longest serving female employee](#), and the newest serving one — who just happens to be our director," Ray said.

Two women, more than 63 years between their start days at JPL — a juxtaposition of all of those who have come before, laying the groundwork for those to come later, now leading the Lab into the future.

"I wanted that in the picture," Ray said.

So, over the past few months, Ray worked with the ACW, the Inclusion Office, and multiple volunteers across JPL to coordinate a sort of generational photoshoot, arranging a timelapse that started with



JPLers with 60-plus years of service, then adding in employees with 50 years, then 40, 30, 20, 10, 5, down to less than one year.

On Monday, March 6 at 11 a.m., the idea came to fruition. Hundreds of JPLers gathered on the Mall. With bullhorn in hand, Europa Clipper Lead Project Support and "volunteer cat-herder" Tara Nelson worked on directing individuals into clusters under numbered signs held high by volunteers that signified the different tenures.

It started with Finley, alone on the steps of Building 180. Then group by group – signifying decade by decade – joined in, until the steps were filled. Unprompted, the women on the steps began to cheer and clap for every decadal group that joined.

"I got goosebumps when that started happening," Ray said.



*More than 100 women submitted photos to be included in the International Women's Day group picture. Image Credit: Courtesy Tara Nelson*

In total, about 650 women participated in person, with another 100 participating virtually by sending in photos to be included in the historic snapshot.

"This timelapse really shows the near-exponential growth the Lab's seen in female representation from decade to decade," said Shannon Statham, Environmental Test Lab group supervisor and ACW events coordinator. "Seeing it unfold on the steps was beautiful."

Leshin, who stayed behind after the main picture was taken to snap some selfies with employees, said it was inspiring to see the collective power of women at JPL coming together through this timelapse.

"This year for the first time ever, we have more than 2,000 women working at JPL," Leshin said. "There are women who have been here 40, 50, 60 years, and we realize that we stand on their shoulders every single day, as we continue to move this Lab forward. I got to stand with a group of women who are all in their first years, they're all just starting out on their JPL journeys, kind of like I am. It's awesome to see where they are going to go, and I can't wait to 'Dare Mighty Things' with all of them."

For Finley, the picture day was a day to reflect on how things have changed, and how they've stayed the same.

“There’s definitely more women here than when I started, that’s evident, and that’s wonderful,” she said looking around at the hundreds of faces joining her on the steps. “But what has always been a constant, is I have always been treated as a colleague at JPL by everyone. Never anything less. And that’s what I believe makes this place special.”

As for her feelings toward the Women’s Day photo, Ray said she’s now delighted with the result. “This was all wonderful. It took so many people to make this come together. The coordination and execution of it were incredible, and the turnout made me smile.”

Maybe next year, the steps of Building 180 won’t suffice.

“We can hope,” Ray smiled.

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Margaret Meixner. Image Credit: PhotoLab

## Margaret Meixner Touches Down at JPL as Head of Astrophysics and Space Sciences Section

By Taylor Hill

In her first few weeks at JPL, Margaret Meixner went through what she calls “strategy season” on Lab, where she was pulled into multiple strategic sessions for a top-down view of how JPL works writ-large.

“It’s a lot, but starting out, it’s given me a sort of high-level view of how the astronomy and physics section fits in at JPL, who we partner with, and our main touchpoints,” Meixner said. “Now that I’m starting to get the acronyms down, it’s thrilling to get going in this position. I’m excited to start the work, both on empowering our scientists and staff to do the work, and continuing my research on the James Webb Space Telescope and PRIMA proposal.”

Meixner comes to JPL with an illustrious 30-year career in astrophysics research and mission experience, most recently as director of science operations for SOFIA (Stratospheric Observatory for Infrared Astronomy)—the infrared telescope built into a 747 aircraft.

When NASA sunsetted the observatory in 2022, JPL’s Science Division Deputy Manager Leonidas Moustakas said the stars aligned to bring Meixner to JPL.

“Shouleh (Nikzad, Division 32 Manager) and I conducted a broad search for the section manager position, and it ended up being a bit of serendipity that a scientist with Margaret’s pedigree was available and interested, and we couldn’t be happier she’s landed here,” Moustakas said.

A renowned astronomer, Meixner’s specializations include infrared instrumentation (ground based and space based), Magellanic Clouds, the evolution of dust in galaxies, dying stars, forming stars, and the



interstellar medium. Below, Meixner talks about her path to JPL, her plans as section manager of 326, and what being a woman in a senior leadership role means for her and the Lab.

### **What originally sparked your interest in astronomy and physics?**

I had a middle school teacher who was just one of those charismatic teachers you just hope your kids have when they're going through it. And their enthusiasm really sparked my interest in all the sciences, but especially astronomy. It seemed the most mysterious to me, and I just remember thinking there's a lot to learn here that we don't know much about, and that was attractive.

And your parents played a large role in your pull toward STEM subjects?

### **My parents were big drivers in telling me to get my education, and early on it was driven home, "Math, math, math, math." Fortunately, I was much better at math than I was in English.**

My mother was a high school mathematics teacher and I think she was just shy of getting her Master's in industrial engineering, but then decided to do teaching, and my dad was just shy of a PhD in electrical engineering. He used to tell all four of his children, "I want you all to grow up and get your PhDs." For me, it was like OK, that's a lot, but it also suited me because I was always very curious and loved the idea of spending my life pursuing research ideas. I thought that would be an enjoyable way to go through life. I also remember my dad saying that, "Math was the language of the universe, so if you can do math, you can do science."

### **Growing up in Rockville, Maryland, you decided to stay close to home by attending University of Maryland, College Park. What was that experience like?**

As an undergrad, I had a practical bent, too, so I ended up with two degrees: one in mathematics and one in electrical engineering, with a heavy emphasis in physics. I did a senior engineering honors thesis in radio astronomy with renowned astronomer Leo Blitz, and I was like, oh, this is really cool. That experience, along with my parents' influence, made me interested in pursuing an advanced degree.

### **Then you're on to Berkeley and you chose the astronomy route?**

So, I decided to go for a PhD in astronomy, mostly driven by that wonder that I felt, and so much being unknown, and potentially learned. I went to UC Berkeley and did a lot of radio astronomy, and also got heavily involved in mid infrared wavelength instruments. I did my thesis research using a mid-infrared camera on two telescopes located on Mauna Kea, Hawaii. That was a great experience in really learning the ins and outs of an instrument. We were schlepping this mid-infrared camera up there, it would break, we'd have to go fix it, and then we'd get data. It was a lot of work, and a lot of fun. I like making instruments work, and at the time, in the late '80s and early '90s, I liked the newness of infrared astronomy, as it was gaining steam in the field.

### **When did JPL cross your horizon?**

Out of grad school, I went to become a professor at University of Illinois and I got involved in the Infrared Space Observatory (ISO) telescope. I learned about JPL because at least parts of all the big infrared missions were built here, and I also got familiar with Caltech's IPAC (Infrared Processing and Analysis Center), which was the science center for a lot of the missions I was interested in.

I actually I would come visit at least yearly either Caltech or JPL to work with the data of the space missions, and then when I became a member of the James Webb Space Telescope's MIRI Science team around 2002, I learned a lot about JPL because they were key in building the Mid-Infrared instrument. That's my favorite wavelength range because there's so much you can learn about the nature of dust because of the spectral features that you see there. There's a lot of important diagnostics for learning

about gas and dust in the interstellar medium. It's just a really cool wavelength range and James Webb is showing that, and what we'll be able to glean knowledge from its findings in spades.



**The Spitzer Space Telescope was a big part of your connection here as well?**

Spitzer was built here right, and Spitzer was a huge part of my career. I had moved from the University of Illinois to the Space Telescope Science Institute in 2002, and I led a Spitzer legacy program called SAGE (Surveying the Agents of Galaxy Evolution), where we were studying the large Magellanic Cloud and imagining all the dusty inhabitants. To me, it was interesting because I like dust, but it's interesting for other people because people are interested in galaxy evolution. How things get enriched with metals and dust is a key player in that, right? All these key transition phases from when you produce metals are apparent in dust, so when stars die, they produce dust that's enriched in metals that they create in their nuclear furnaces in the center.

The studies that looked at star formation in the Magellanic Clouds were not very thorough and not very comprehensive until we had the Spitzer Survey. It was the first survey that actually showed where all the really massive young stellar objects were, which was very exciting and there were lots of them.

So Spitzer was really my introduction to the stellar success that JPL is known for. For over 20 years, I was visiting JPL and Caltech almost annually.

**Over your career, what do you look for in the place you work?**

I think it's changed over my career. I am always looking for opportunities to tackle something interesting: Research-wise or working with teams and building a mission, or just the ability to work with students. There's an undercurrent through my career of looking for opportunities in particular wavelength ranges and in the infrared space that I find interesting, and I gravitated to NASA for that reason. If you want to do something or be involved in something major for space, you can't do that at a university. If you want to build something major, you need large teams working together for years at a time, and you need the structure to support that. Places like JPL are set up this way. We're set up to build missions.

I've also always looked for opportunities to continue doing research projects, and having the opportunities to mentor younger science students and postdocs, which is something I've always enjoyed doing. And JPL values that, too.

## What does it mean for you personally to be in such an influential position at JPL?

Being a woman in STEM, you think about what opportunities you can improve. There has to be a culture change, right? I was on the astrophysics advisory committee for NASA when the former Administrator, Jim Bridenstine, put in place that one of the agency's core values would be inclusion. I was very impressed by that.

I know personally that by diversifying teams, you come up with much better, richer results. It does require work and you can't just say you have a good network of people. If you really want to be inclusive you have to go broad, you have to set up pretty clear criteria of what you're looking for in the job, and really stick to that. There's always a comfort level with picking someone you know, or someone you're familiar with, but you have to think about what's best for the job. By diversifying things, you do improve. You may have to push things, and sometimes that gets uncomfortable. But there has to be a clear sign that this is where we're going to go.

## Can you talk about transitioning from directing the SOFIA team to JPL?

One of the sad things that came out of the decadal survey to me personally, was the recommendation to end SOFIA, which occurred in 2022. But one of the positives to come out of the survey was the determination that the wavelength range SOFIA covered is a really important wavelength range. And the decadal survey recommended that there should be probe opportunities, an X-ray or far-infrared probe, and I got on one of the probe proposal teams that's being led out of JPL and Goddard, the PRIMA team. That kept me feeling positive, but on the flip side, with SOFIA, it was hard to see the work we'd done as a team come to an end. The amount of work the team had produced within the budget constraints is, it's a model at some level of what you can do.



*Before starting at JPL, Meixner was director of science mission operations for SOFIA, the flying observatory outfitted on a Boeing 747.*

I got to fly on SOFIA six times, and it's a transformative experience. To go up in the plane and watch how things operate. On one of the flights, I saw the aurora borealis, which was incredible, because we



happened to be heading in a straight northern flight path to Canada. It was a really cool mission. In my two years on the mission, we really did transform how it was operating, and we hit peak metrics in terms of numbers of flights, and number of annual science publications. But there was a decision to stop investing in this mission, and so while that was happening, some people on the PRIMA team asked if I was interested in this position at JPL.

So, I went and took a look, applied, interviewed, and wonderfully got the job.

**Finally, what are some of the goals you hope to accomplish starting off in 326?**

I have a wonderful deputy in Graca Rocha, and assistant manager Jason Rhodes, and we'll get together with the group supervisors and the 7X Directorate to figure out what are the most important things we should be working on, and identify where are our future opportunities. We have to work to make sure we have the staff in place, or that staff can realign themselves to work on those opportunities. JPL is going to be a success if we can make the people in our division successful. That's a core goal I have to reach for in my role.

On the research side, I have guaranteed time on James Webb, and we've submitted about a dozen observing proposals as well, so I'll be working on some James Webb science for the foreseeable future. I'll also be continuing my work with the PRIMA team. There is a major proposal deadline this fall, and I'll be working with them to make sure that's a success.

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*Front row, left to right: Robert Parks, Louis Dunn, and William Pickering in April 1954, dedicating Building 125, the new Guided Missile Electronics facility. Parks succeeded Pickering as chief of Division 3.*

## **Post-War JPL: Louis Dunn Leaves JPL and an 'Electronicker' Takes Charge**

**By Erik Conway**

“Dr. Louis G. Dunn, Director of the Jet Propulsion Laboratory, in a surprise announcement August 26, announced his resignation effective September 1. He has joined the staff of Ramo-Wooldrige Corporation, Los Angeles electronic research and development firm, as Principal Executive in charge of the Guided Missile Research Division.”

That’s how JPL’s employee newsletter, the Lab-Oratory, reported on Louis Dunn’s sudden departure in Sept. 1954. Dunn had been Director since Frank Malina’s departure in 1946, and while he was a very quiet person, hiding even from his own assistants, he had maintained a policy of interviewing all new hires at JPL for a number of years. So practically everyone knew him.

It was Louis Dunn who had brought the “Red Scare” of the late 1940s and early 1950s to JPL. In January 1949, he had set up a meeting with FBI agents at which, as one recent history puts it: Dunn “declared that his lab had been infiltrated by Communists.” He told them that he doubted the loyalty of physicist Sidney Weinbaum, Martin Summerfield, who had just returned to JPL from Aerojet, and two other Jewish members of the staff; co-founder Qian Xuesen, who was also just returning to JPL from the Massachusetts Institute of Technology; W. Z. ‘Jimmy’ Chien, who had already left JPL and returned to Tsinghua University; and one of Malina’s secretaries.

Dunn had no evidence against any of them, which the agents duly noted. He then undertook a personal surveillance campaign against these employees, tracking their reading habits at the JPL library and reporting on them. The FBI also investigated, mostly focusing on Weinbaum, Summerfield, and Qian. The bureau eventually gained a perjury conviction against Weinbaum for not declaring his Communist party membership on his post-war Personal Security Questionnaire. He had, in fact, been the organizer of

Professional Unit 122, but there was never any evidence of espionage on his part, or on the part of any others in that group.

Summerfield left JPL again soon after Dunn's denouncement, and spent the rest of his career at Princeton University. Qian was eventually placed under house arrest, and returned to the People's Republic of China in 1955.

Dunn's personal involvement in the Red Scare at JPL does not appear to have affected his tenure or influenced his departure. Simon Ramo, the president of Ramo-Wooldridge, asked Louis Dunn to become his technical deputy for ballistic missile programs. This would make Dunn, in effect, the technical director for the Air Force's Atlas Intercontinental Ballistic Missile (ICBM) program. He jumped at the chance (and moved in one office down from Col. Charles Terhune, who would become JPL's deputy director in 1971). Dunn left Ramo-Wooldridge in 1963 for Aerojet General, and later left aerospace entirely to raise cattle. He passed away in 1979.

Dunn's sudden departure left Caltech's president, Lee DuBridge, with a big hole to fill very quickly. He agreed to Dunn's recommendation of the Corporal missile program's director, William Pickering.

Pickering was born in Wellington, New Zealand, in 1910. He emigrated to the U.S. in 1929, and applied to Caltech shortly after arriving in Los Angeles. He completed a bachelor's degree in electrical engineering in 1932. Then Caltech's president, cosmic ray physicist Robert Millikan, pressured Pickering into switching to physics for his master's and Ph.D. work. So Pickering also became a specialist in cosmic ray physics. But getting the cosmic ray data back from a high-altitude balloon meant using telemetry, and it was Pickering's skill in telemetry that had brought him to JPL.

In 1944, at Malina's request, Pickering started a remote-control section at JPL. He became one of a handful of Caltech faculty who split his time between campus and Lab. Pickering's section developed the WAC Corporal's telemetry system and the Corporal's telemetry, guidance and control systems. In 1951, Pickering was appointed chief of Division 3, Guided Missile Electronics, and soon after accepted the additional duty of directing the Corporal program.

For all his success at the Lab, Pickering did not expect a job offer for the top position. He recalled many years later, "I was surprised when [DuBridge] called me, quite frankly, because my thinking of the Laboratory was that it was still primarily aeronautics and chemistry and mechanical engineering with electronics just tacked on. And so the idea that I, as an 'electronicker', would be offered the job did not occur to me."

When Pickering accepted the directorship, JPL had 1100 employees and a budget of about \$11 million (or about \$120 million today). The Lab-Otratory published an open letter from him to the staff, which he sensed might see the sudden transition as threatening to their own jobs. He emphasized stability and the Army's support, which he described as unwavering. And he wrote, "The Laboratory is undertaking problems in research and development which can only be solved by a real team activity."

Pickering seems to have thought that his time as director would be relatively short. He asked for, and received, a leave of absence from Caltech to take on the directorship, intending to return to campus to resume his teaching and research. Instead he became JPL's longest-serving director. He retired from JPL in 1975 at the age of 65, returning only briefly to campus before going into business for himself.

Pickering's directorship proved transformational for JPL. A few years after taking the job, he would lead JPL out of the Army's missile business and into space exploration.



## Fiesta Fallout

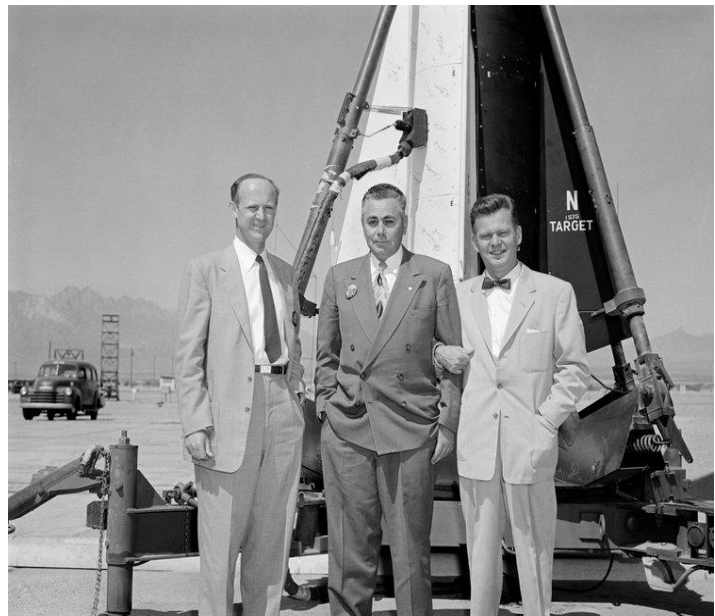
In 2003, Pickering remembered the first time he personally fired a Corporal. It was meant to be a celebration of JPL's phasing out of the Corporal program. The missile, known as Round 100, was displayed at JPL and signed by Lab personnel before being shipped to White Sands Proving Ground.

"So I pushed the firing button, and instead of going north it went east. And that was very embarrassing, because we had decided to have a big party afterwards."

The automatic pilot had failed, and the range safety officer destroyed the missile. Parts of it came down in the JPLer's camp.

Homer J. Stewart, who was Chief of JPL's Research Analysis Section, recalled it too: "As a matter of fact, we had organized a fiesta. As preparation for the Round 100 meeting. . . Bill [Pickering] had had the boys put together a film of all the old Corporal fiascos of the development series, which is now called [The Corporal Story](#) and is a widely used and valued technical film even today." The fiesta was something of a bust—perhaps 30 of the expected 100 guests showed. "I must say The Corporal Story was received with great sympathy as a movie. In fact, you might say maudlin sympathy."

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## Events



### Von Karman Lecture - Earth Surface Mineral Dust Source Investigation (EMIT) Mission

Thursday, April 20  
7 to 8 p.m.

[Watch on YouTube](#)

When strong winds on one continent stir up mineral rock dust, those airborne particles can travel thousands of miles and affect entirely different continents. The suspended dust in the air can heat or cool the atmosphere and Earth's surface. That heating or cooling effect is the focus of NASA's Earth Surface Mineral Dust Source Investigation (EMIT) mission, which will measure the surface composition of Earth's deserts and arid regions, helping us understand the impacts dust has on the planet's climate.

EMIT's versatile imaging spectrometer can also help map super-emitters of methane — a powerful greenhouse gas — from space, and is already contributing to meaningful climate action.

**Speaker:** Robert Green, Principal Investigator, EMIT, NASA/JPL

**Host:** Nikki Wyrick, Public Services Office, NASA/JPL

**Co-host:** Jocelyn Argueta, Public Outreach Specialist, NASA/JPL

# JPL Family News

## Retirees

The following JPL employees recently announced their retirements:

### 40+ Years:

**David E. Brinza**, Section 5150, 41 years

### 30+ Years:

**Geoffrey K. James**, Section 3200, 35 years

**James E. Black**, Section 2830, 35 years

**Darlene S. Lee**, Section 3521, 33 years

**Teresa L. Bingham**, Section 252E, 31 years

### 20+ Years:

**Mary M. Soria**, Section 386F, 22 years

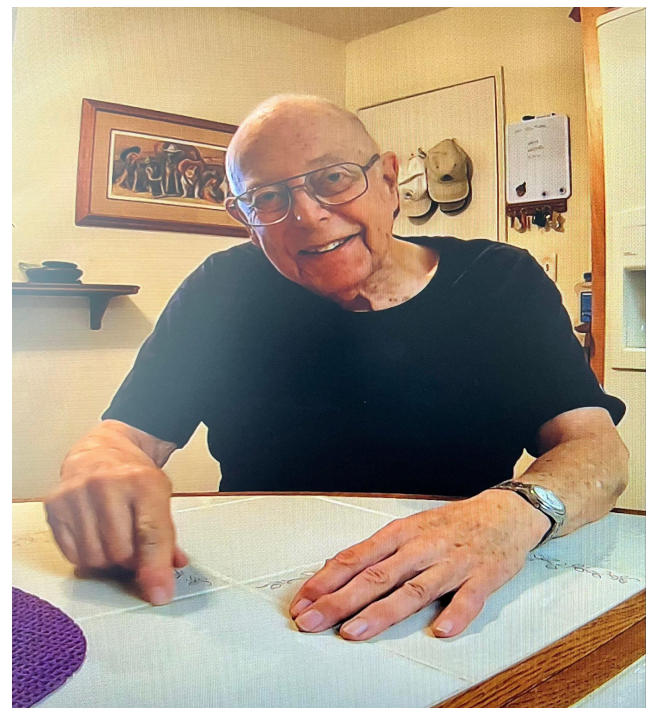
### 10+ Years:

**Alice Dominguez**, Section 5142, 15 years

## Passings

Passings must be submitted through Human Resources, which coordinates with the family of the deceased.

**Don Deane Howard** passed away peacefully, surrounded by loved ones and his favorite cat Scarlet on March 15, 2023, at the age of 87. Don retired as the section manager of section 512 Quality Assurance in 1997. He started at JPL in 1960 when the flight hardware quality assurance group was first formed. He worked on the following projects: Ranger, Surveyor, Mariner, Voyager 1&2, Viking, Galileo, Magellan, Cassini, and a whole host of Earth orbiters, including WFPC1&II. He supported 16 launches at the cape during the 1960s, and early 1970s. Drove across the United States 14 times to support launches at the cape, with a majority of those trips with the family in a camper, along with our very large St Bernard Brandy. Don's greatest joy and accomplishments involved his deep commitment to JPL and the projects he supported. He always said, "Working at JPL was not just a career, but an opportunity to contribute to the science of the world." He also said, "You must contribute, give back and strengthen our section and JPL. Don't just take." Don's wife Judie Howard also worked at JPL for over 30 years. And his Nephew Sean Howard is still at JPL after 37 years.



Don is survived by his son, David Hollars of Tampa, Cyndi Schroeder of Independence, Lesa Graybill of Boise; nephew, Sean Howard of Pasadena.



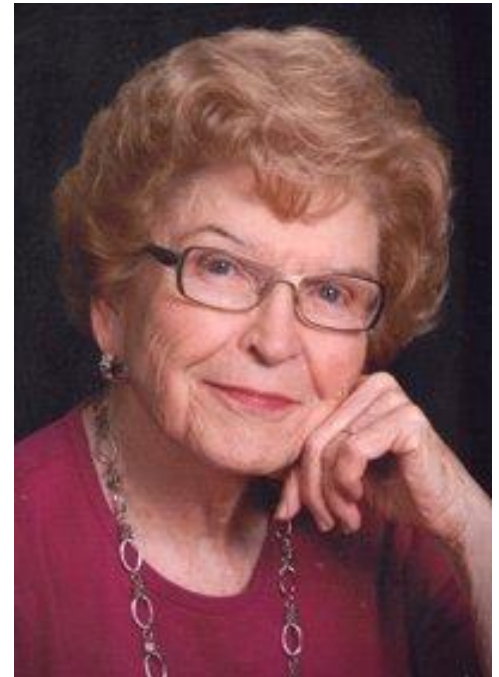
Don and Judie's ashes will be interred at the Riverside National Cemetery on April 28, 2023, with a small family gathering. A memorial service will be planned for some time at the end of May.

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After recently suffering a debilitating stroke, **Barbara Paulson**, passed away on February 26, 2023, at the age of 94. She was well-known during her 45-year career at JPL as one of the "Rocket Girls," a nickname from Nathalia Holt's best-selling book *Rise of the Rocket Girls*.

Barbara Lewis Paulson was born on April 11, 1928, in Columbus, Ohio, to George C. and Anna C. Lewis. Her father died when she was 12 years old. After attending Ohio State University for one year (where she took all of the math courses she could), Barbara and her family moved to Southern California.

In 1948, at the age of nineteen, Barbara began what would be her long and illustrious career at NASA's Jet Propulsion Laboratory in Pasadena, California. As a mathematician, she was hired by Macie Roberts, who, was then responsible for a small group of "human computers" (all women), who, with only the use of mechanical pencils, light tables, and graph paper, supported engineers with calculations and hand plots of trajectories of rocket testing for the U.S. Army. In her book, Holt reports that Barbara's starting wage was 90 cents an hour (more than twice the minimum wage!!)



Some of the early rocket testing was in the Arroyo Seco. Macie's group was located in Bldg. 11 near the East Gate. When they heard a rocket ignite, they knew it was time for one of them to go get the test results for their next set of calculations. With the Corporal rocket, more and more of the testing was carried out at White Sands, NM. Barbara never went there, but once she was allowed to sign her name on one of the Corporals that was headed to White Sands.

Slide rules and Friden calculators were also used. As electronic computers were developed, the group used some of the earliest models and continued through to the most advanced ones that JPL acquired. They learned various programming languages as required.

In 1958, NASA was formed and JPL was assigned the responsibility for planetary exploration. The first American satellite, Explorer I, was developed at JPL. On the day of launch, Feb. 1, 1958, Barbara was in the Control Room plotting the trajectory as numbers came in on the Teletype from stations around the world. The physicist, Richard Feynman, was behind her, watching her plot. Everyone was waiting for the signal that Explorer I was in orbit, but the signal was late. Finally, her calculations showed that Explorer I had indeed escaped the atmosphere and soon the signal came in from the satellite. According to Holt's book, Barbara turned to the roomful of people and said, "She made it!"

For 45 years, Barbara worked at JPL on most, if not all, of the major projects. A common sentiment is shared by the retired engineer, Joe Beerer: "She was such a pleasure to work with, always had a cheerful disposition, had a sharp mind and a professional approach to her work. Over the years she worked on programming tasks for me on MVM73, Voyager, Galileo, Mars Observer, and MGS." Barbara and her fellow computers broke the boundaries of race, gender, and science.

When Macie Roberts retired, Barbara became the new supervisor of the computer group.

With her husband Harry, whom she married in 1959, Barbara had two daughters, Karen and Kathy. Some women at JPL, and at other companies at the time, left work soon after they first became pregnant. But

Barbara's work was too vital, and also gave her too much satisfaction, to leave. When she was 7 months pregnant with Karen, Barbara asked for a parking spot closer to her building. She was not only denied, she was essentially fired, with no promise of a job later on. Insurance restrictions were the reasons given, as they were in most U.S. companies in the 1950s. She was devastated! She did leave, as required, and was replaced by Helen Ling as the new supervisor. Helen had joined the group in the early '50s. The engineers were impressed with her work and she quickly fit into the friendly group. When Barbara was ready to return, Helen hired her back and she was as indispensable as before. She last worked in Division 31.

Barbara's beloved, Harry, died in 2003. In 2012, at the age of 88, Barbara moved to Clive, Iowa, where both her daughters were living with their families at the time.

Barbara's enduring faith and sense of service kept her busy at church and with ministerial involvements.

Barbara is survived by her daughters, Karen Bishop and Kathleen (and Kevin) Knutson of Iowa, 4 grandchildren, and 5 great-grandchildren. Her many friends, particularly the other "Rocket Girls", will miss her.

Barbara's Celebration of Life Service will take place in July at the Lutheran Church of Hope in West Des Moines, Iowa.

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**Bradley I. Compton** died on Jan. 6, 2023 at the age of 71. He worked at JPL for 45 years, from March 1975 to January 2020, most recently in Section 393E Mission Command and Control.

Compton was the mission control team chief/ground operations engineer at JPL in Space Flight Operations. This encompassed development, test and integration, launch, and mission operations. He specialized in team leadership roles for projects such as the Mars Science Laboratory, Mars Exploration Rovers, Galileo, Magellan, Voyager, and Viking. Compton contributed to planning, development, and implementation of the Multi-Mission Control Team activities.

He received numerous awards while at JPL, including the NASA Exceptional Service Medal for leading the Galileo Mission Control Team, NASA Exceptional Service Medal for development and management of the Magellan Mission Control Team, NOVA Commitment to Excellence Award for Galileo Testbed Flight Software testing, and the Process Improvement Award for the MSOP (Mars Surveyor Operations Project) uplink operations automation.

Compton is survived by his wife, Cynthia L. Compton; mother Betty Jo Compton; brother Alan and his wife Hannah Compton; brother Clint and his wife Gina Compton; nieces and nephews, Ashly Palomino, Travis Compton, Amber Compton, Aden Compton, Alicia Compton, Josh and Brittany Pierce.

A celebration of life party will be planned in the near future.

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**Roberta "Bobbie" Buckmaster** died on Dec. 31, 2022 at the age of 81.

Bobbie worked at JPL in various roles over 23 years, starting her JPL career as a secretary with the Deep Space Network (DSN). At the time of her retirement in 2014, she was supporting the Mars Science Laboratory (MSL) project as a staff assistant. One of Bobbie's greatest thrills from her time at JPL was being able to watch the MSL launch from KSC. She took great pride in her work at JPL, and cherished the friendships she developed with her colleagues over the years.

Bobbie was preceded in death by her parents, Robert and Virginia Stricklin; her siblings, Robert, Betty Ann, Patricia, Thomas, and Ginger. She is survived by her sister, Barbara Wagner. She is also survived by her loving children: daughter, Cynthia Jones; sons, Jeffrey Hunt, Stephan Hunt, and Kristofer Buckmaster;

grandchildren: Cody Hunt, Madison Hunt, Brianna Jeffries, Amanda Trahan, Zachary Hunt, Cooper Hunt, Konner Buckmaster and Sophia Buckmaster.



# Awards & Honors

JPLers often Dare Mighty Things, and nearly as often earn awards or professional designations. JPL Space will periodically feature a roundup of recent honorees. Please join us in congratulating your accomplished colleagues.

## **Marie Levine**

### **2023 Woman of the Year**

Marie Levine has been selected alongside fifteen other remarkable women to become a 2023 Woman of the Year from California's 30th Congressional District for the U.S. House of Representatives under Congressman Adam Schiff. These women have made significant contributions to their communities through civic engagement, community service, and leadership in their respective fields. [Award citation](#)

## **NASA's Global Climate Change Website**

### **Anthem Award**

The Anthem Awards honors the purpose & mission-driven work of people, companies, and organizations worldwide. By amplifying the voices that spark global change, we're defining a new benchmark for impactful work that inspires others to take action in their own communities. [Award citation](#)

## **Dariusz Divsalar**

### **2023 Ellis Island Medal of Honor**

The medal is presented each year on Ellis Island to a select group of individuals whose accomplishments in their fields and inspired service to our nation are worthy of commendation. The medal has been officially recognized by both Houses of Congress as one of our nation's most prestigious awards and its honorees are recorded annually in the official Congressional Record. [Award citation](#)

## **Adrian Tang**

### **IEEE Region 6 Outstanding Engineer Award 2022**

This award honors those members who have advanced our knowledge and improved Humanity through any of the technical subjects covered by the Societies, Councils, and Affinity Groups of the IEEE. [Award citation](#)

## **Engineer's Council Outstanding Engineering Achievement Merit Award 2023**

For pioneering innovations by infusing CMOS millimeter waves SOC technology into space instruments for planetary sciences and astronomy. [Award citation](#)

## **Election to the National Academy of Inventors as Senior Member**

NAI's Senior Member program honors early-stage innovators and inventors whose success in patents, licensing and commercialization has the potential to positively impact the welfare of society. Senior members are rising leaders in their fields whose work has gained momentum toward significant achievement in innovation. [Award citation](#)

## **Nacer Chahat**

### **Rennais de l'année (Personality of the Year in Rennes, France)**

Elected by the readers of Ouest France (French newspaper). Chahat received his master degrees and his Ph.D. degree from University of Rennes. [Award citation](#)