

Jennifer Rocca

Growing up in a very small Colorado town, Jennifer Rocca had a fabulous view of the stars through her telescope. For her, as with many kids, space was cool, and she wanted to become an astronaut or an aerospace engineer.   
  
But in an economically depressed town where most didn't attend college, Rocca had few role models. Her high school guidance counselor told her aerospace was not for women. She didn't want him to be right.   
  
Today, Rocca is a JPL systems engineer that played a crucial role in the launch of the Dawn mission—a mission that will be the first spacecraft to travel to and orbit two bodies – Vesta and Ceres, both residents of the asteroid belt. Scientists want to examine asteroids to unravel clues about the origins of our solar system. Ceres has a special appeal since it is the largest member of the belt, which lies between Mars and Jupiter.   
  
Overseeing the launch phase requires a precise knowledge of how the spacecraft works. The team conducted several drills of launch day to ensure that everyone was well rehearsed on what to expect. Rocca created a step-by-step, four-inch-thick manual of what should happen and when, and what to do if one small step does not go according to plan. Rocca was also part of the 2005 Deep Impact mission, where a spacecraft was essentially "run over" by the nucleus of comet Tempel 1.

Before coming to JPL in 2000, Rocca earned a Bachelor of Science degree in Aerospace Engineering Sciences from the University of Colorado in Boulder (1998), and a Master of Science degree in Aerospace and Astronautics at Stanford University (2000). Partly because of her own experiences growing up, Rocca believes it's important to meet with young people and share the excitement and realities of a career involving space.   
  
For young women considering an engineering degree, Rocca notes, "The ratio of men to women is getting a lot better, but it's not easy. If you're in a room of 60 students, and there are four women, you can bet you won't be anonymous. The professor is going to know your name."   
  


David Jefferson

By day, he navigates spacecraft through the depths of outer space, but by night, he's a keyboardist and music composer. David Jefferson, a JPL employee for 15 years, currently works on the Mars Odyssey navigation team. Previously, he was a member of the team that guided the Stardust capsule back to Earth in January 2006, and the team that put the Deep Impact spacecraft on track for its encounter with a comet in July 2005.   
  
David grew up in Queens, New York. While attending high school, he spoke with a family member who was working at an aerospace company. Those conversations sparked David's interest in working in a space-related research environment.   
  
"I was doing well in math and science, and I was really excited about the work NASA was doing with the Shuttle and Voyager, so I decided to try aeronautics in college," he says. A lot of hard work earned him entrance to the Massachusetts Institute of Technology in Cambridge, Mass., where he received a degree in aerospace engineering.   
  
Jefferson says he enjoys working in a science-related industry because it allows to him to explore and constantly learn more about our solar system and beyond. "Space is attractively mysterious," he says. "It's such a great opportunity to work at a place that makes new discoveries about space and even our own planet, all the time."   
  
David says it is important for young African-American students to study engineering and science. "When we work in those positions, we are playing an active role in shaping the destiny of the country and working on improving our community as well."   
  
As much as he loves traveling through space "virtually aboard" different spacecraft, David loves music and plays the keyboard with various bands performing around Southern California. When he's not trying to keep up with his two young daughters and spending time with his wife, Dawn, who is a writer, he tries to find time to record his own music.

 Helen Worden

A bag of groceries isn't a meal, and a pile of bricks isn't a house. It takes skill to turn raw materials into finished products. And how well they turn out depends both on the quality of the ingredients and how they are handled.   
  
JPL's Dr. Helen Worden helps turn raw satellite observations into measurements that tell us more about some important gases in the air we breathe than we have known before.   
  
Worden is algorithm team leader for the Tropospheric Emission Spectrometer, an instrument launched into space onboard NASA's Aura satellite. The instrument measures ozone and other gases in the lowest layer of the atmosphere, the troposphere, which extends from Earth's surface up to about 12 kilometers (7 miles).   
  
Making those measurements isn't simple. "Understanding the data that comes from the instrument requires a lot of processing," says Worden. "We have to convert raw data into something we understand about the atmosphere, for example, how much pollution there is.

"The best part of my job is figuring out the data," says Worden. "It's like solving a puzzle. It's something that didn't make sense when you first looked at it and then you figure it out. It's also the worst part of my job -- not understanding the data," she adds, "that and the meetings."   
  
Worden comes from a family of scientists and engineers. Her father was a physicist. Her older sister has a Ph.D. in engineering and works for Ball Aerospace. She met her husband, now a radar analyst engineer at Raytheon, at Cornell University where they both received their Ph.D.s in high-energy physics.   
  
Originally from Seattle, Washington, Worden lived in several different places while her parents' work in rural community development took them to Venezuela and Chile, among other assignments. "I can remember when I was really young being more interested in art," says Worden, "and I loved to draw, like my daughter. But I really started enjoying math in school."

Ed Massey

Ed Massey has dedicated 20 years of his life working on NASA/JPL missions and projects. He is the manager of NASA's Voyager Interstellar mission and the Ulysses project, a joint mission between NASA and the European Space Agency.   
  
"I've worked at JPL for so long because I enjoy coming to work every day," Massey says. "I can schedule my day but it never works out that way, there is always something exciting to do."   
  
The twin Voyager spacecraft launched almost thirty years ago. Voyager I is now 100 times more distant from the sun than Earth. The Ulysses spacecraft is currently scanning the sun's magnetic field, solar radio noise and cosmic dust between the poles and equator-- giving a more complete perspective of the sun's atmosphere. In 1998, Massey became the manager of both projects. "I really feel like what I'm doing will help make a difference in how we view the solar system."   
  
Prior to joining JPL, Massey had already achieved extensive experience in military space operations. He worked in missile data reduction and analysis, along with satellite operations at a remote tracking station and at the Air Force Satellite Control Facility.   
  
Massey earned his bachelor's degree in electrical engineering from Tuskegee University in Alabama, where he joined Omega Psi Phi fraternity. He remains active in the school's alumni chapter and is in charge of the fraternity's Web site. Massey received a master's degree in systems management from the University of Southern California and is a member of the American Geophysical Union, the European Geophysical Society, and the Air Force Association.   
  
When he's not working on his space missions, Massey enjoys traveling the world with his wife of 40 years, Claudette, and spending time with their two daughters.

Chris Boxe

[](http://www.jpl.nasa.gov/images/people/chris-boxe-browse.jpg)

Christopher Boxe isn't yet 30 years old, but he's already become an expert in the field of environmental science. He's a scientist and engineer, with two master's degrees -- one in planetary science, the other in environmental science -- and a Ph. D in environmental science and engineering from the California Institute of Technology.   
  
As a child Boxe lived in Kingston, Jamaica. He and his family moved to the United States when he was 6 years old to escape poverty, and allow him and his older brother to attend better schools. Boxe was interested in space and decided to study geological and planetary sciences at Morehouse College in Atlanta. Morehouse is the nation's only historically black, private liberal arts college for men. There he met a man who would change his life: Dr. James King, Jr. who worked at JPL for almost 35 years as a senior chemist and assistant laboratory director for technical divisions. King taught Boxe chemistry and encouraged him to pursue his post-grad and doctoral studies at Caltech. "Dr. King and my advisers at Caltech were patient and gave me opportunities to prove my intellectual potential," Boxe said. "Dr. King really helped shaped my career."   
  
During his current post-doctoral fellowship at JPL, Boxe conducts laboratory and computer simulations of surface chemistry on Earth to determine how it relates to environmental occurrences such as climate change. "My personal opinion is that global warming is occurring," he says. "The real question to answer is to what extent it is caused by human-induced activity as opposed to natural causes."   
  
Trying to figure out the answer, Boxe and his colleague Alfonso Saiz-Lopez created a complex computer system, known as a condense phase-to-air transfer model, that studies Antarctic sea-ice and its interaction with gases over coastal Antarctica.   
  
King also inspired Boxe's desire to work in academia. One of his goals is to teach environmental chemistry at Georgia Institute of Technology in Atlanta. "I really want to inspire minority students to attain a higher education, especially students at Morehouse and other schools in the Atlanta University Center Consortium, which includes Spelman College and Clark Atlanta University," he said. "Interacting with students is my passion, and it's what really drives me. For me, there's no better way to constantly learn than studying."

**What Kinds of Jobs Do People Have at JPL?**

It takes a wide range of skills, knowledge and experience to explore planets, study galaxies and monitor Earth from space. Here are just a few examples of JPL scientists and engineers:   
  
• **Planetary geologists** study the terrain of other planets through images and   science instruments. They also study rocks and terrain here on Earth.   
  
• **Vulcanologists** study volcanoes on Earth, other planets and moons. Jupiter’s moon Io is the most volcanically active body in the solar system.   
  
• **Software engineers** program computers so spacecraft will follow our instructions.   
  
• **Mechanical engineers** think about how the spacecraft and instruments will work as a whole system and they help build them with that in mind.   
  
**Careers at NASA and JPL, however, are not only for scientists and engineers.**   
  
• **Business people** help plan and pay for projects.   
  
• **Animators, writers and Web developers** illustrate and explain what our missions do.   
  
• **Educators** teach science and math ideas and activities to teachers and students.   
  
**The jobs are as creative as the mission of space exploration.**