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PSF NEWS

Planetary Studies Foundation

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In loving memory

DIANE M. SIPIERA

Dec. 20, 1955 – Dec. 17, 2025

It is with sadness that we announce the passing of Diane M. Sipiera, who passed away in December, surrounded by her family.

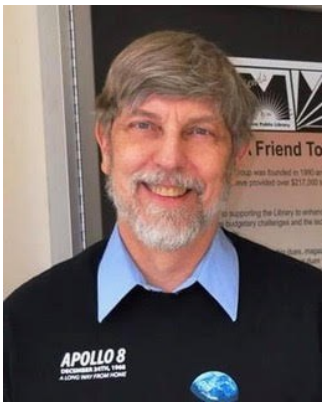
We remember her as an educator and lifelong learner. She was an avid supporter of the sciences, and deep believer in the importance of children's science education.

Due to her passing, we were delayed with this Winter issue, however, we will dedicate the Spring issue of PSF News to Diane and her contributions to our organization. We invite anyone wishing to share a message about Diane's impact on their interest in science to email Andrea Nolan at amcplanets@gmail.com.

For those who wish to donate to the PSF in memory of Diane, please use the form on the back of the newsletter. Thank you

Please note: The President's Message and Donor's Spotlight were written prior to Diane's December passing.

PRESIDENT'S MESSAGE



As we look back on the past twelve months of 2025, we see that it has been a particularly difficult year for both academics and science. It was my hope that by the end of the year that the various cuts made to both governmental and academic funding would have stabilized and returned to that of previous years. Given all this uncertainty, the PSF Board of Directors decided to continue with a more conservative approach to spending and careful management of our financial resources. If this is implying a "gloom and doom" report for 2025, that is certainly not the case. Over the past 36 years, your Planetary Studies Foundation has weathered many potential storms including Covid 19 and the apparent "ups and downs" of the financial world.

For 2025, there were two very significant accomplishments. First, the final transfer of PSF's enormous meteorite research collection to the Yale Peabody Museum (YPM). This, added to the previous transfer of thousands of meteorites in 2017 and 2023, made the YPM one of the world's top ten collections. For us, PSF's name will be associated with this collection for as long as there is a Yale Peabody Museum. This also fulfills PSF's obligation to make our meteorites readily accessible for future research. Our second major accomplishment took place a little closer to home. Observatory Director, Jim Dole, and his staff had a record breaking attendance year at our Doug Firebaugh Astronomical Observatory in Freeport, Illinois. It is still so pleasing to see our staff share in the visitor's "first-time" experience of seeing Saturn's rings. Words cannot express how much dedication and enthusiasm Jim and his staff put into the operation and maintenance of our Doug Firebaugh Observatory. As a bonus, activities at the observatory have attracted many new student members. We all look forward to the 2026 observing season that begins next May.

PSF's three part goal for 2026 is to maintain our financial stability, minimize spending, and continue our meteorite research. New meteorites are continuing to come in for classification through the efforts of our Associate Curator, Grant Harkness. The final compilation and review of the data before submission remains the responsibility of our Senior Research Scientist Dr. Tony Irving. These new meteorites will eventually join all the others at their permanent home at the Yale Peabody Museum.

Now on a more personal note, for the past 50+ years of my academic life I have always worn two hats. It all began back in 1971 when I graduated with a B.A. Degree in History and a minor in Earth Science. My specific courses of study focused on the history of the United States and ancient Mediterranean civilizations. It was only at the beginning of my senior year that I became convinced that I could make a career out of my infatuation with astronomy and geology. Fortunately, I made the right decision and was eventually awarded an M.S. degree in Earth Science (1975) and a Ph.D. in Natural Sciences (2004). Without those two degrees it would never have been possible for me to have had a successful career in the sciences. Although my professional life seems to have been centered on meteorites and Antarctic exploration, I never forgot my first love of history. Now as an "old timer" with apparently more time on my hands, I cannot avoid noticing from a historical perspective what is happening to our country. The current administration in Washington seems to have lost touch with what has made the United States the most envied country in the world. Without question our form of government is not perfect and is still often referred to as an experiment in democracy. Just the word democracy itself implies a potential problem in trying to please all its citizens at the same time. To quote Abraham Lincoln "You can please some of the people all of the time, you can please all of the people some of the time, but you can't please all of the people all of the time." That certainly appears to be true at this time in our country's existence. July 4th, 2026, marks the 250th anniversary of the signing of the Declaration of Independence. This date could offer us the opportunity to pause, reflect and re-evaluate what our country truly stands for. From my scientist's perspective on experiments and anticipated results, I hope that this wonderful experiment in democracy does not end with negative results.

In closing, this Fourth Quarter president's message has certainly been different from previous years. For me this year has certainly been very different from any of the other 77 years I have experienced. I must admit I do not like changes in both my comfortable world and the world around me. Yet, for over 4 ½ billion years the only constant in this world is change. For the Sipiera family, 2025 certainly had its emotional ups and downs. Health issues seem to have plagued us right from the start, but we are survivors and draw strength from our family and friends. One of the nicest things about the Christmas Season is all the love and kindness that goes along with it. With that we can all survive. So, from the ever-growing Sipiera Family I offer to all our friends, PSF members, and dedicated supporters a very Merry Christmas, Happy Holidays, and a Happy New Year.

Paul P. Sipiera

DONOR'S SPOTLIGHT

Douglas Firebaugh Astronomical Observatory Fund

Mary Lynn M. Luy
Diane and Paul Sipiera

MEMBERS' CORNER

Welcome to Our Newest Member

Elle Jacqueline Winders
Born on October 30th to her proud parents

Zeke & Emily Winders

Astronaut Visit

October 22, 2025
Judson University, Elgin, IL

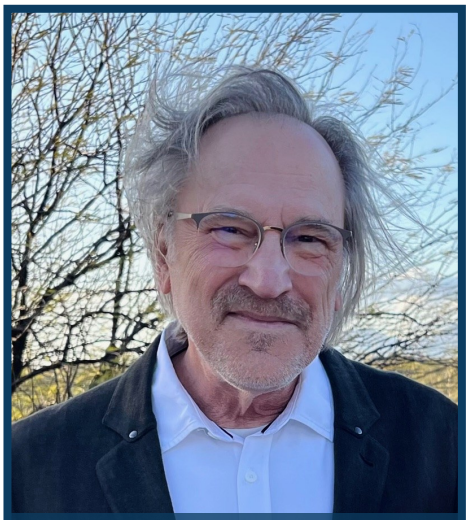
APOLLO 16
Charles M. Duke, Jr.

It was virtually by accident that we learned about Charlie Duke's visit on October 22nd to Judson University in Elgin, IL. Taking advantage of this opportunity, Paul and Caroline Sipiera quickly reserved seats and planned on attending the event. The planned format for Charlie and Dotty Duke's presentation was essentially a Q & A session with the overflow theater audience. Their individual responses both reflected on the Apollo 16 mission and how being an astronaut affected their personal lives. Their presentation was truly an inspirational experience.

Member Spotlight: André Bormanis

Eight years ago, we sat down with writer, producer, and science consultant, Andre Bormanis, to talk about his impressive career rooted in astronomy, physics, public policy, and science-fiction storytelling. He has worked as a science consultant on Star Trek: The Next Generation, Star Trek: Deep Space Nine, Star Trek: Voyager, and Star Trek: Enterprise. Mr. Bormanis served as the director of scientific research for the remake of the Cosmos series, and served as science consultant and writer-producer on The Orville. Now, almost a decade later, Mr. Bormanis is still pursuing interesting projects and was so gracious to do a follow-up interview with us.

In this follow-up conversation, we look back at how his career and thinking have evolved, examine how real-world science is shaping modern storytelling, and explore what the future might hold for humanity's place in the cosmos.

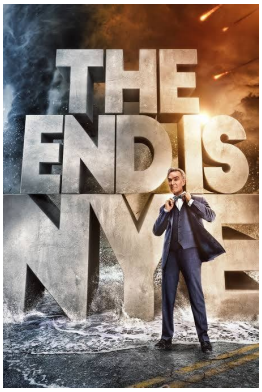


Andre Bormanis in Tucson, AZ

PSF News (PSF): Looking back at the past eight years, what's changed most in your career or creative direction? What are you working on now?

Andre Bormanis (AB): Since we last talked, I've done two more seasons of *The Orville*, another

season of *Cosmos*, and one season of a new show, *The End is Nye*, with Bill Nye. Of course the big event of the past eight years was the Covid pandemic. We had started shooting Season Three of *The Orville* when we went into lockdown in March 2020. Shooting was suspended for the rest of the year. We resumed production in early 2021 under strict Covid safety protocols, which lengthened the production schedule considerably. My writing partner Brannon Braga and I wrote four episodes for Season Three. Post-production took us well into 2022, so I think altogether we spent a little over three years making that season. We also started writing *The End is Nye*, a narrative documentary



starring Bill Nye about global environmental challenges and how we might prevent or address them. We shot that show in Montreal, Canada, in late summer and fall of 2022, so I lived in Montreal for about four months. It's a wonderful, lovely city and we had a great Canadian crew. I really enjoyed living and working there.

In 2023 the Writer's Guild of America (of which I've been a member for almost thirty years) and the Screen Actors Guild went on strike to fight for better terms in our contracts, primarily concerning how we will be compensated for streaming series reruns, and the growing use of A.I. in film and television. So the past few years have been very eventful!

Currently I'm pitching some new TV show ideas, and a book I wrote called *The Guide to the Orville* was published in October 2024. It's an

"in universe" book, meaning it treats the ship and its crew, along with the adventures they experience in our episodes, as if they are real. It was great fun to write and I'm very happy with how it turned out.

PSF: In our previous interview, you talked about possibly returning to science policy or think-tank work. Do you still feel pulled in that direction?

AB: Not really, but I still stay informed about what's happening in the real-world regarding science in the United States, which is facing a lot of hostility from certain parts of society these days. I'm very concerned that as a country we may begin to lose our edge in science and technology. I would like to be more involved in the debate, but I haven't done real policy work in a long time, other than weighing in on a panel discussion or something. At this point in my life, I'm probably too old to do that kind of work professionally again.

PSF: Planetary science has exploded with new discoveries, are there any that you're most excited about or have inspired you creatively?

AB: The various exoplanets the James Webb Telescope has been imaging and observing is very exciting to me. The recent discovery of interstellar comets coming through our solar system is also amazing. 3I / Atlas is a fascinating object—although I should hasten to say I don't believe it's a spaceship!

We're still getting data from the Voyager 1 spacecraft, which is now almost one light-day away from Earth, which is a spectacular achievement. New Horizons is still gathering data out in the Kuiper Belt. The Perseverance rover on Mars recently discovered a rock formation that might hold signs of ancient microbial life. Juno is still operating at Jupiter, and we have another spacecraft, the Europa Clipper, heading there to study the icy moon Europa in even greater detail starting in 2030. All of these missions, and the many others in operation or in the planning stages, inspire me to continue to write about space exploration.

PSF: You really launched your career serving as a science consultant for Star Trek. Do you think the role of a science consultant has evolved with the public becoming more scientifically savvy and / or more realistic sci-fi being produced?

AB: I think the role of the science consultant is pretty much the same as it was when I started: give film and TV writers and producers the most up-to-date and accurate technical and scientific information you can and help them use that information in ways that improve their stories without distorting or violating basic scientific principles. In the end they will do whatever they want to do with what you tell them, but I always do my best to make their scripts work dramatically without bending scientific reality beyond its breaking point.

PSF: What do you see as the biggest challenge in engaging the public with complex planetary-science topics today?

AB: Convincing the public that it matters, that it's worth spending a small portion of their tax dollars on scientific exploration. The benefits may not be immediately obvious, and they may not be practical in the sense of creating some useful new technology, but it is important for us as a species to keep expanding our horizons, to see what's out there in the depths of space, and to experience the sense of awe and wonder that space exploration provides.

PSF: Humans are scheduled to return to the moon in 2027 with the NASA Artemis III mission, what are your thoughts on this mission? Which hurdles are still the most underestimated?

I always do my best to make their [TV writers and producers] scripts work dramatically without bending scientific reality beyond its breaking point.

AB: I would be very surprised if humans return to the moon by 2027. China will probably not be ready before 2030, which seems to be when they're planning to make a first attempt. The bottleneck in the American program is the SpaceX Starship. It is an amazing vehicle, and potentially an extraordinary

Continued on next page

leap forward in space access. But I think it will take several years at least to perfect the technology of on-orbit refueling, which, at the time I'm writing this, hasn't even been attempted. According to current plans, six or seven on-orbit Starship refueling missions will be needed to get a single lunar-version of Starship to the moon and back. I just don't see them mastering that in the next two years.

PSF: What are you most excited about going into 2026?

AB: I think the next several years are going to be very exciting and very challenging in many ways. Artificial Intelligence may prove to be an unprecedented revolution in human history, or it may turn out to be more hype than a genuine breakthrough in computing. I'm also very excited about what the Very Rubin Observatory in Chile will discover in the next decade as it scans the skies with unprecedented sensitivity. It's certainly a great time to be an astronomer!

PSF: What advice would you give to our younger readers / science enthusiasts?

AB: Young people these days watch lots of YouTube and other videos on science and math, and keep up with websites like Space.com, but I would encourage them to read books too. There are so many great science books by people like Carl Sagan, Bill Bryson, Mary Roach, and lots of others. Go to your local library or bookstore and browse the science and nature shelves! Subscribe to a magazine like Popular Science, Astronomy or Sky & Telescope. And make friends with people who share your interests.

I would also really encourage young people to get out in nature, whether it's a local park, a national park, the shores of a river, or out in the mountains… away from cities and light pollution. Go somewhere you can see the Milky Way. Join a local astronomy club. Most cities have astronomy clubs that sponsor monthly star parties. I still remember the first time I saw Saturn through a telescope, over fifty years ago. It took my breath away. It was so inspiring for me, and it still is. ♦

We are thankful Mr. Bormanis' time to participate in our interview. It was a 2025 wish of Diane Sipiera's to re-visit Andre's career and find out what was going on his world. She was incredibly proud to call him a PSF Member and enjoyed his work.

Farming Beyond Earth: The Future of Agriculture in Space

By: Avery Engle

Avery is a student at Kansas State University, studying Animal Science on the Pre-Veterinary Path with a certificate in equine science. This summer, she will be lifeguarding, shadowing with local vets, and helping the PSF with various projects. She has always had a love for nature and astronomy.

Growing produce in outer space is possible in movies like *The Martian*, *Wall-E* and *Passengers*, but is it really possible in real life? Fortunately it is, and how cool is it that two of the most interesting topics — agriculture and outer space — can coexist!

You may be wondering, what is the need for farming so far? Well, as humanity explores deeper into space, sustainable food sources become critical. Fresh produce is vital for astronauts' physical and mental well being, especially for long-duration trips. Pre-packaged meals don't provide adequate vitamins and minerals as compared to fresh fruits and vegetables, so normalizing agriculture in space would be a huge win for astronauts and researchers.

NASA has been at the forefront of space agriculture research, specifically with the Vegetable Production System commonly known as "Veggie". This system allows astronauts to grow various plants, including lettuce and zinnias, in a controlled environment using LED lighting and specialized growth media. In some sense, space agriculture is similar to hydroponic agriculture, and the first successful harvest of red romaine lettuce occurred in 2015, marking a significant milestone in demonstrating that plants can thrive in microgravity.

This small milestone may prove to be crucial down the road. Due to urban sprawl, farmland has decreased substantially, which can have effects on the ability to sustain larger populations. As of now, we are on track to have a worldwide population of 10 billion by 2050, and with already decreasing farm-land, we may need other alternatives.

While its need may seem far-fetched and years away, space agriculture research needs to continue, not only for the betterment of the quality of life of astronauts, but also as a future alternative for humanity. As Neil Armstrong would say, farming beyond Earth may be "One small step for man, but one giant leap for mankind."

Photo courtesy of NASA

WINTER CELESTIAL CALENDAR

Feb. 1 — Full Moon

The Moon will be near its closest approach to the Earth and its face will be fully illuminated.

Did you know? Early Native American tribes called this the "Snow Moon" because the heaviest snows usually fell during this time of the year.

Feb. 17 — New Moon

The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This is the best time to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

Feb. 19 — Mercury at Greatest Eastern Elongation

The planet Mercury reaches greatest eastern elongation of 18.1 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the evening sky. Look for the planet low in the western sky just after sunset.

Mar. 3 — Full Moon

The Moon will be near its closest approach to the Earth and its face will be fully illuminated.

Did you know? Early Native American tribes called this the "Worm Moon" because this was the time of year when the ground would begin to soften and earthworms would reappear.

Mar. 3 — Total Lunar Eclipse

A total lunar eclipse occurs when the Moon passes completely through the Earth's dark shadow, or umbra. During this type of eclipse, the Moon will gradually get darker and then take on a rusty red color. The eclipse will be visible in select U.S. cities, be sure to check out an eclipse map.

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☐ ***Donation in memory of Diane M. Sipiera***

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