

(Please click on the image or text in each of the items in the Table of Contents to jump directly to that section.)

AIAA SharkSat



5

Congratulations! AIAA CSULB Student Branch and SharkSat! Selected by NASA for CubeSat Mission to Space!



(Please click on the image or text in each of the items in the Table of Contents to jump directly to that section.)



6

NASA Selects New Round of Candidates for CubeSat Missions to Station (2024 March 18)



9

Cover Page Description and Artwork Contributor



10

A Total Eclipse of the Sun. (by Dr. David H. Levy)



12

Francis Gary Powers, Jr. Takes Us on an Incredible Journey with "Spy Pilot" (2024 March 5)(by Ms. Michelle Evans)



14

SEEING THE FUTURE: How to Use Rapid Collaborative Visualization (RCV) to Convert Concepts to Capabilities in Innovation Ecosystems (March 9) (Photos, plus article by Rick Baumgartner and Dennis Leung)



22

SPACE ENVIRONMENTS SEMINAR —PART II, by Dr. Henry B. Garrett (2024 March 23)



25

SpinLaunch (An article inspired by the Feb. 23 mini-Conference) (by Mr. Jerry Lockenour)

(Please click on the image or text in each of the items in the Table of Contents to jump directly to that section.)



26

AIAA LA-LV Aero Alumni Meeting (2024 March 13)



27

AIAA LA Outreach for the Bell Garden K-12 Science Fair Judging (2024 March 7)



29

AIAA LA Outreach to Hawthorne Business Expo (2024 March 14)



31

How a young boy from India became a Space Architect in the US (by Prof. Madhu Thangavelu)(March 18)



33

AIAA LA Outreach to CAMS CARPA Initiative 2024 Proof of Concept Presentation (2024 March 20)



35

Falcon 9 Launch on March 10 (Photo Gallery) (Ms. Michelle Evans)



37

Eclipses (by Ron Miller) (A Chesley Bonestell article) (2024 March 25)



53

What medical equipment and experiments to be carried for the I-HAB module of the Lunar Gateway



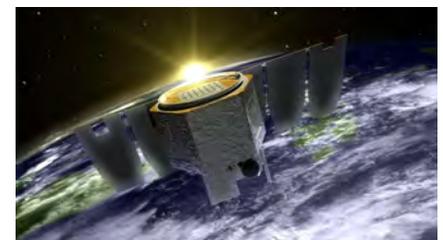
55

NASA Unveils Design for Message Heading to Jupiter's Moon Europa (2024 March 8)



58

Rocket Lab Unveils Spacecraft Bus Lineup (Long Beach, CA)(2024 February 27)



60

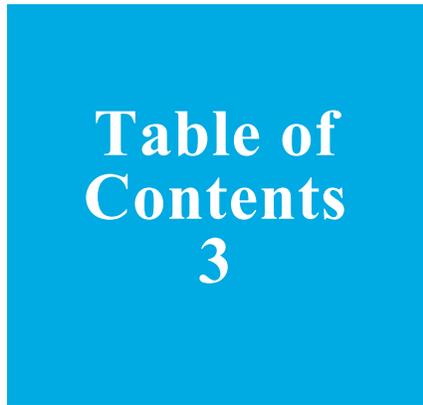
Night-Shining Cloud Mission Ends; Yields High Science Results for NASA (2024 March 1)

(Please click on the image or text in each of the items in the Table of Contents to jump directly to that section.)



63

Remembering Allan McDonald: He Refused To Approve Challenger Launch, Exposed Cover-Up (excerpt)



64

URANUS AND NEPTUNE:
NOW SHOWING THEIR TRUE COLORS!
(by Ron Miller) (A Chesley Bonestell article)(Jan. 30)



70

Welcome ! New AIAA Members!
(Los Angeles Section)



71

Aerospace News Digest



73

Upcoming Section Meetings (LA Section)



74

Congratulations
Dr. Jeff Puschell
for being inducted to the National Academy
of Engineering (NAE) Class 2024
(2024 February 6)



75

Congratulations! Millennium Space
Systems / Victus Nox SmallSat
AIAA Los Angeles Section Technical
Excellence Award 2024
(2024 March 26)



76

AIAA Los Angeles
2024 Elections Announcement

Congratulations! AIAA CSULB Student Branch and SharkSat! Selected by NASA for CubeSat Mission to Space! (2024 March 18)

(<https://www.nasa.gov/centers-and-facilities/kennedy/nasa-selects-new-round-of-candidates-for-cubesat-missions-to-station/>)

"The SharkSat team is the first and only CubeSat team in CSULB, which consists of a team with a variety of different majors. We are designing and building a 2U CubeSat that will monitor light pollution around Earth. In our first year the team not only just started but had our CubeSat mission proposal accepted by NASA! We are guaranteed a ride-share opportunity fully paid for, which means we are going to Space!"

- Jaime Ormeno, SharkSat Project Lead

AIAA SharkSat



The crowdfunding (student learning project) campaign ends March 31, at 12:00 AM PDT! You can also donate to the team through CSULB's AIAA donation link: <https://commerce.cashnet.com/CSULB-SLD2-Donations?itemcode=SLD2-DONATE>. Under SLD organization select American Institute of Aeronautics & Astronautics"

Disclaimer: The views of the speakers or authors do not represent the views of AIAA or the AIAA Los Angeles-Las Vegas Section. Advertising space is available in the AIAA Los Angeles-Las Vegas Newsletter: Business card, quarter page, half page, and full page, non-AIAA LA-LV 3rd-party business/issues
 The newsletter has over 9,000 subscribers, and has been growing.
 To inquire about purchasing advertising or suggesting/providing articles, email Newsletter Editor at editor.aiaalav@gmail.com, or, editor-newsletter@aiaa-lalv.org

NASA Selects New Round of Candidates for CubeSat Missions to Station

by NASA (2024 March 18)

(<https://www.nasa.gov/centers-and-facilities/kennedy/nasa-selects-new-round-of-candidates-for-cubesat-missions-to-station/>)



Students from the University of Michigan work on their Measurement of Actuator Response and In Orbit (MARIO) CubeSat which launched to the International Space Station in November 2022. (Photo credit: University of Michigan)

NASA selected 10 small research satellites across eight states to fly to the International Space Station as part of the agency's efforts to expand education and science opportunities, support technology advancement, and provide for workforce development.

These small satellites, or CubeSats, use a standard size and form measured in units. One unit (1U) is 10x10x11 centimeters and allows for the modular design of larger CubeSats measuring up to 12U. CubeSats encourage greater collaboration across government, industry, and academia because they are modular and inexpensive to build and launch. The small satellites allow for rapid development and provide a cost-effective means for science investigations and technology demonstrations in space.

This year's selections include the first project from Delaware, three from minority serving institutions, and a submission from a K-12 school. New participants include the University of Delaware, Oakwood School in California, California State University, Long Beach, California State Polytechnic University, Pomona, and the University of Chicago.

NASA's CubeSat Launch Initiative (CSLI) selected the missions, currently planned to launch in 2025 to 2028, in response to a call for proposals on Aug. 7, 2023.

NASA Selects New Round of Candidates for CubeSat Missions to Station

The complete list of organizations and CubeSats chosen during CSLI 15th selection round are:

- **University of Louisiana at Lafayette** – CAPE-Twiggs (Cajun Advanced Picosatellite Experiment) will serve as a first prototype of a 3U CubeSat designed to contain and launch tethered SlimSat modules into very low-Earth orbit. Having launched successful CubeSat missions in the past, the university’s current project will work with several other schools with little or no experience on the design, build, and operations of their own SlimSat module. CAPE-Twiggs will enhance both STEM education and the ability to conduct regular and collaborative space-based experiments on a larger scale.
- **Oakwood School in California** – NyanSat is a 2U CubeSat designed and built by a K-12 independent school in rural California. This mission will serve as template for educational outreach and space technology development. NyanSat features several technology development payloads, each designed to test and demonstrate the efficacy of various new systems in the space environment. Included among these are the acoustic spacecraft mapping and sounding payload, aimed at simplifying sensor architectures in spacecraft and providing supplementary mission information, and the cryptographic ledgers in space payload, intended to verify the feasibility of space-based digital notaries for on-Earth and in-geospace transactions.
- **University of Hawaii at Manoa** – CREPES (CubeSat Relativistic Electron and Proton Energy Separator) aims to study solar energetic particle events and increase our knowledge of the Sun. CREPES will fly a new type of micropattern gaseous detector using gas electron multipliers to amplify the signals of radiation. Data obtained from these measurements is expected to contribute to the understanding of space weather and development of space climatology. The University of Hawaii at Manoa is a minority serving institution and has previously launched a CubeSat with the program.
- **California State University, Long Beach** – *SharkSat-1 seeks to monitor LED-induced blue light pollution across Earth. LED lights are popular due to their cost efficiency, but their impacts are currently being studied by climate and health researchers. Data collected by SharkSat-1 will create a database for experts to create light pollution maps. California State University, Long Beach, is a minority serving institution.*
- **University of Delaware** – DAPPER (Delaware Atmospheric Plasma Probe Experiment) will map average variations in electron density and temperature versus latitude and time of day in the ionosphere’s F2 layer. Another objective is to determine the preferred size for a Langmuir probe to measure ionospheric electrons from a CubeSat. This is the first CubeSat selection from Delaware for CSLI and aims to provide students with hands-on learning experiences on flight systems.
- **Saint Louis University** – DARLA-02 (Demonstration of Artificial Reasoning, Learning, and Analysis) will demonstrate autonomous event response on a 3U spacecraft and create a dynamic map of the radio frequency background noise in the amateur ultra-high frequency band. DARLA-02 follows DARLA, which is targeted to launch with CSLI in 2024. This follow-up seeks to double the amount of time the spacecraft can be in science mode in orbit.

NASA Selects New Round of Candidates for CubeSat Missions to Station

- California State Polytechnic University, Pomona** – The Pleiades Five mission will be the first to use a commoditized CubeSat architecture to provide effective and sustainable educational opportunities for future generations of the space industry. California State Polytechnic University, Pomona, will partner with five other universities and offer a pathway enabling students to design, test, launch, and operate a low-cost educational 1U CubeSat within one academic year. California State Polytechnic University, Pomona, is a minority serving institution.
- University of Chicago** – PULSE-A (Polarization modUlated Laser Satellite Experiment) will demonstrate a way to increase the speed of space-to-ground communications. PULSE-A also aims to make space-to-ground operations more difficult to intercept and jam through an on-orbit tech demonstration. PULSE-A will use 10 Mbps polarization-keyed laser communications instead of radio frequency for a space to Earth call. Free-space optical communications improves on power, bandwidth, and effective data transfer rates over radio frequency.
- Utah State University** – GASRATS (Get Away Special Radio and Antenna Transparency Satellite) will demonstrate a novel transparent patch antenna integrated on top of a solar panel. Having a dual-purpose use of the external surface of a satellite and combining power generation with communications capabilities, tackles the common space mission constraints of power and mass limitations. Utah State University has previously participated in CSLI, deploying GASPACS (Get Away Special Passive Attitude Control Satellite) in early 2022 to test inflatable structures in space.
- NASA’s Marshall Space Flight Center** – GPDm (Green Propulsion Dual Mode) will test chemical and electrospray capability of the low-toxicity or “green” rocket propellant known as Advanced Spacecraft Energetic Non-Toxic (ASCENT) during an in-space flight demonstration. The project is a partnership with the Massachusetts Institute of Technology and Georgia Institute of Technology to develop a chemical propulsion subsystem that will include a 3D printed tank, manifold, and propellant management device.

NASA has selected CubeSat missions from 45 states, the District of Columbia, and Puerto Rico, and launched about 160 CubeSats into space on an ELaNa (Educational Launch of a Nanosatellite) manifest.



Photo credit: NASA

The CubeSat Launch Initiative is managed by NASA’s Launch Services Program based at the agency’s Kennedy Space Center in Florida. For more information about CSLI, visit: https://go.nasa.gov/CubeSat_initiative

Cover Page Description and Artwork Contributor



COVER-

SpaceX 'Starship' heads into
a Pacific sunrise.

art work by: JAMES VAUGHAN
<https://jamesvaughanphotoillus.com/>

<https://jamesvaughanphotoillus.com/>

A Total Eclipse of the Sun

by Dr. David H. Levy, Comet and Asteroid Hunter, Co-Discoverer, Shoemaker-Levy 9 (2024 April article)



This shows the partial eclipse (one of my first observing sessions in my life) On October 2, 1959, Mom, my brother Gerry, and I saw my first eclipse.

As I am writing this April 2024 edition of Skyward, in less than a month there will be a total eclipse of the Sun. The Moon's great shadow will trace a path across North America, including the United States, and Eastern Canada.

A total eclipse of the Sun is one of the most breathtaking sights all of Nature has to offer. The Sun will vanish. In its place will be a jeweled crown. The Moon's dark central shadow will touch the Earth in the Pacific Ocean at sunrise and hit the North American coast over Mexico, north of Guadalajara. The shadow will then cross the border into the United States (where I will be, and hope that the shadow will not get stopped at the border) and head for Dallas. Millions of people in several major cities across the United States will enjoy a stunning experience of a total eclipse of the Sun, including San Antonio, Austin, Dallas, Indianapolis, and Carbondale. The shadow will cross the border into Canada, where cities like Hamilton, Niagara Falls, Kingston, most of the Thousand Islands in the St Lawrence River, and Montreal, will experience totality. Downtown Montreal will experience a twilight sky early in the afternoon—its street lights will switch on-- and then the shadow will race through Sherbrooke on its way towards Newfoundland. Finally, the shadow will head over the Atlantic Ocean where sunset will mark the end of this incredible, precious event.

A Total Eclipse of the Sun

2. For readers who are very close to the Moon's deep central shadow, so that, say, more than 99% of the Sun is covered by the Moon, nothing is gained. A 99.99% eclipse is still a partial eclipse. The closer to the path of the Moon's shadow, the more important it is to make the effort to get into the shadow.

3. If the sky is clear the atmosphere of the Sun, the magnificent corona (roughly circular since the sunspot cycle is near its maximum) will prevent total darkness. If the sky is cloudy, then it could become very dark. By far the darkest total solar eclipse for me was on March 7, 1970 in Nova Scotia; the sky was covered by a layer of stratus cloud. It was so dark that I could barely see my fingers.

4. I can't remember the fourth piece of advice.

Viewing a total solar eclipse should be on everybody's bucket list. It is a unique and unforgettable event. Surrounding the Sun, the brighter planets like Venus and Jupiter might appear, and although Comet Pons–Brooks will be in the sky northwest of Jupiter, about a quarter of the way between Jupiter and the Sun, it will probably be difficult to spot.

I have seen 99 eclipses. If the sky is clear on the night of the full Moon on March 24/25, then I will see what is called a penumbral eclipse of the Moon during which the Moon is dimmed a bit by the outer shadow of the Earth. It will be what we call an almost total penumbral eclipse of the Moon during which almost all of the Moon will be embedded in the outer shadow of the Earth but none of the umbra, or inner shadow. That will be my 100th Eclipse. And then, the total eclipse on April the 8th will be my 101st.

In his autobiography *Starlight Nights*, published in 1965, Leslie Peltier wrote about the first eclipse he saw on June 8, 1918. Revising a little bit, Samuel Taylor Coleridge's *The Rime of the Ancient Mariner*, Peltier changed the original

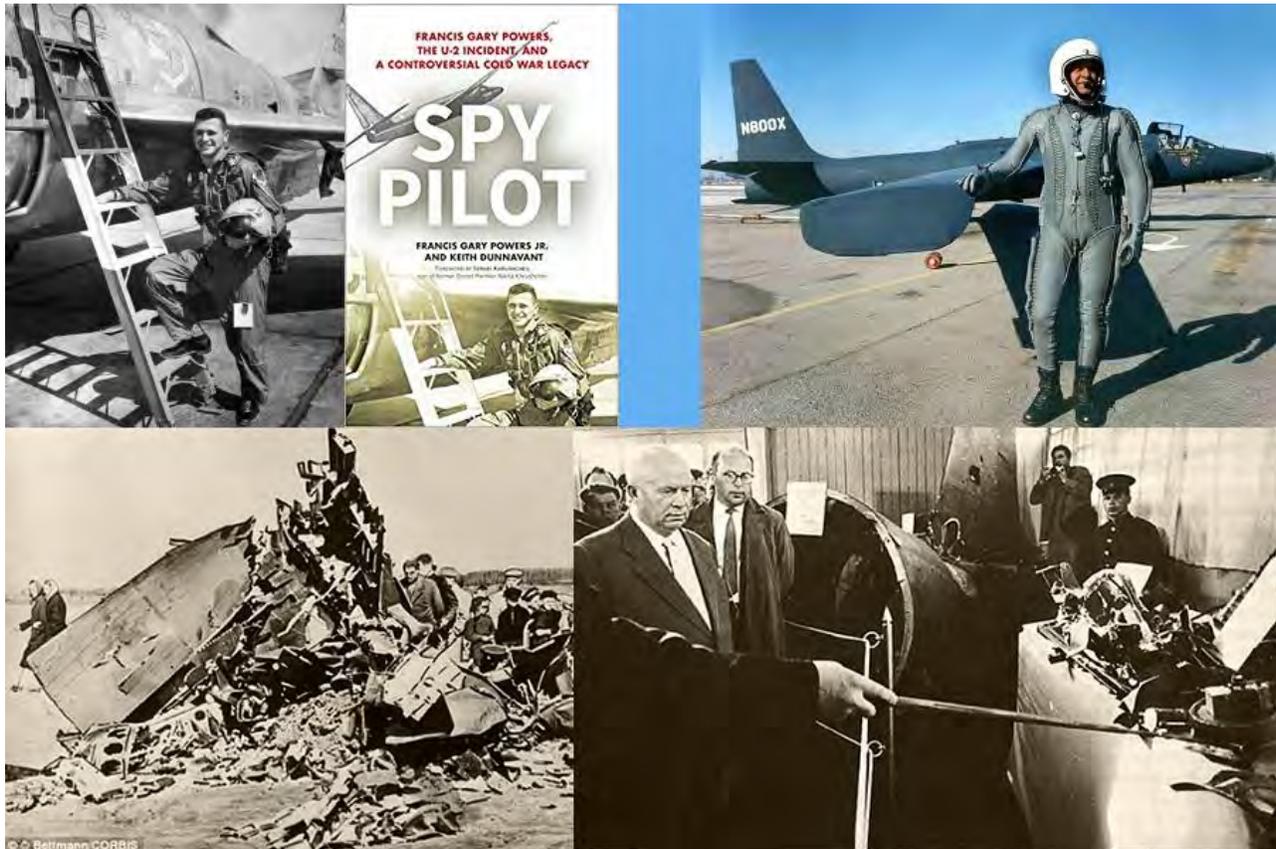
The hornéd Moon, with one bright star/ Within the nether tip.
 ...to the less poetic but more correct, and surely more fun,
 "A hornéd Sun, with one dark Moon/Within its nether tip."



This shows one of the total eclipses Wendee and I have seen.

Francis Gary Powers, Jr. Takes Us on an Incredible Journey with "Spy Pilot"

by Ms. Michelle Evans, AIAA Distinguished Speaker; Author, Bestseller "The X-15 Rocket Plane, Flying the First Wings into Space"
 Founder and President, Mach 25 Media (www.Mach25Media.com) (AIAA Los Angeles Section Meeting on 2024 March 5)



(2024 March 5) *Spy Pilot, Francis Gary Powers, the U-2 Incident, and a Controversial Cold War Legacy*

Event Information: <https://lp.constantcontactpages.com/ev/reg/bsdejx8/lp/bd902c15-beed-460e-9a71-6809be63163a>

I was very excited when I first got the notice about the March 5th AIAA event "Spy Pilot" with Francis Gary Powers, Jr., son of famed U-2 pilot Francis Gary Powers. I've traveled the country giving talks about my book on the X-15 research aircraft, and many of the places where I have done presentations have told me about when Gary was at their organization's event, and what a great speaker he is about his father's life and the Cold War in general. It was a great thing to finally get to catch up with him and hear Gary's talk in person. He definitely lived up to everything I have heard.

The AIAA event was originally scheduled to take place at the Peninsula Center Library in Rolling Hills, but an opportunity arose to move it to a venue at the Northrop Grumman facility in Redondo Beach, so a last minute change occurred. I arrived early that afternoon since I drove up from South Orange County and wanted to miss traffic. After spending some time in the parking lot reading, then looking around the old campus for a bit (and finding a neat large scale model of the James Webb Space Telescope), I headed downstairs and checked in. I spoke with Ken Lui briefly, then saw Gary at his author's table, so I wandered over. It was wonderful to finally have the opportunity to meet him. I purchased a full set of his books, and he also included a really cool Challenge Coin from his Cold War Museum with a U-2 Dragon Lady embossed on the front. We talked about his father and his books, I spoke a bit about the X-15, and we compared notes on writing. Interestingly, it took him 30 years of research to write "Spy Pilot" which is the same number of years I worked on research, interviews, and writing for my own book

Francis Gary Powers, Jr. Takes Us on an Incredible Journey with "Spy Pilot"

The excellent food arrived, and we had a great dinner sharing conversations, before he was able to start his talk. Gary explained how he was born more than five years after his father was shot down over the Soviet Union while flying a U-2 reconnaissance mission on 1 May 1960. So for Gary, he had no direct personal recollections of what his father went through at that time. As Gary was growing up, he said that he never really connected that much with how famous his father was, and what a pivotal player he had been in the Cold War. He was only 12 when his father died in a tragic news helicopter crash in August 1977, and it was years later before he really started to put things together when he first found out that Gary Senior had been on the cover of Time magazine (as well as many other publications). That was when he started to delve deeper into his father's life.

One of the things Gary discovered was how often maligned his father had been, and how many things had been reported incorrectly about the incidents surrounding that fateful May Day in 1960. Many people seemed to think that he should have committed suicide, rather than allowing himself be captured—and so many other wrong-headed notions. It became his mission to get the real story out to the world at large, and Gary has now spent many years doing just that. His first project was publishing his father's letters from his Soviet prison cell, then to uncover the real story behind all that had happened, which is what has taken Gary 30 years to properly accomplish. This culminated in his recent publication of "Spy Pilot" and is highly recommended reading.

There are two other major achievements that Gary Powers, Jr. has accomplished. The first is the establishment of The Cold War Museum in 1996, which opened its doors to the public at Vint Hill, Virginia, in 2011. The location was previously a Top Secret US Army intelligence base, which had monitored radio signals from World War II through the end of the Cold War. The second achievement was to be the technical advisor on the 2015 Steven Spielberg movie "Bridge of Spies" which starred Tom Hanks. The story revolved around his father's infamous U-2 flight, shoot down, imprisonment, and eventual repatriation in exchange for Soviet spy Rudolf Abel. He worked diligently to bring the authentic story to the big screen, but as is often the case, many things get changed in translation to a motion picture in order to move the story forward in a thrilling way. I found this out firsthand with my own work as a technical advisor on the Neil Armstrong biopic in 2018, "First Man."

The Northrop Grumman site where Gary's presentation took place is itself a historic location. The former aerospace giant TRW used to be headquartered there, and the lower level cafeteria in Building S, where the talk was given, has hosted many great events over the decades, and even has a place in the lore of Star Trek: The Original Series. For those who might recall, that spot was used in the final episode of the first season of Star Trek: "Operation: Annihilate." Captain Kirk's brother Sam was killed, and the USS Enterprise's First Officer Spock, was attacked by flying alien creatures. For me personally, it also has significance in that I graduated from Aviation High School, which was literally next door to TRW. I spent a lot of time visiting those buildings, and later went to meetings of the Space Park chapter of the International Plastic Modelers Society in that same cafeteria space, even participating in a talk on the X-15 there one evening, and won a First Place trophy for an X-15 model that I displayed.

It is unfortunate that Northrop Grumman would not allow any photographs of the event to share with those who couldn't attend. It did seem a bit incongruous to allow a public event there, but to treat the cafeteria as if it were somehow a top secret location, even requiring escorts to go to the restrooms! But with all that aside, I want to thank Ken Lui and the Los Angeles/Las Vegas AIAA section for hosting this excellent event, and also thank Francis Gary Powers, Jr. for the great service he has done for his father and for documenting this pivotal event in Cold War history.

To learn more about Gary Powers, his work and his books, check out his web site: <http://garypowers.com/>

And to learn more about the Cold War Museum, check out this link: <https://coldwar.org/>

SEEING THE FUTURE: How to Use Rapid Collaborative Visualization (RCV) to Convert Concepts to Capabilities in Innovation Ecosystems

by Rick Baumgartner and Dennis Leung

(An article for the AIAA Los Angeles Section meeting on 2024 March 9:

<https://www.aiaa-lalv.org/blogs/2024-blogs/2024-march/2024-march-5>)

Authors' Note: We presented the 1.1 BETA version of the Rapid Collaborative Visualization (RCV) framework in the SEEING THE FUTURE seminar at the AIAA LA/LV Chapter Town Hall on March 9, 2024. We created RCV after meeting at an AIAA LA/LV event in late 2023. Special Thanks to 2024 AIAA Sustained Service Award winner Ken Lui, Chair of the Los Angeles-Las Vegas Section.

THE FUTURE IS VISUAL

To meet strategic and market goals America's innovators must create and field better capabilities faster than our adversaries and competitors. Unfortunately, everyday legacy tools widely used in innovation ecosystems are not up to the task. A new low-cost, low-tech, easy-to-learn framework called Rapid Collaborative Visualization (RCV) could be part of the solution.

The RCV framework includes three basic sets of guidelines that teams can adapt to specific project or mission requirements:

- Working Definitions
- Organizing Elements
- Best Practices

Learning the basics of RCV takes about an hour. There are no prerequisites. Anyone in an innovation ecosystem can integrate RCV into their existing workflow, and you can start immediately.

We believe integrating RCV into existing research and development workflows will help stakeholders:

- Maximize Return On Investment
- Reduce Budget/Schedule Risk
- Engage Team Creativity
- Generate Internal and External Support
- Provide a Common Understanding of Project Status and Challenges
- Provide a Archive of Team Decisions

RCV GUIDELINE 1: WORKING DEFINITIONS

Let's take a moment to define key RCV terms.

"Innovation"

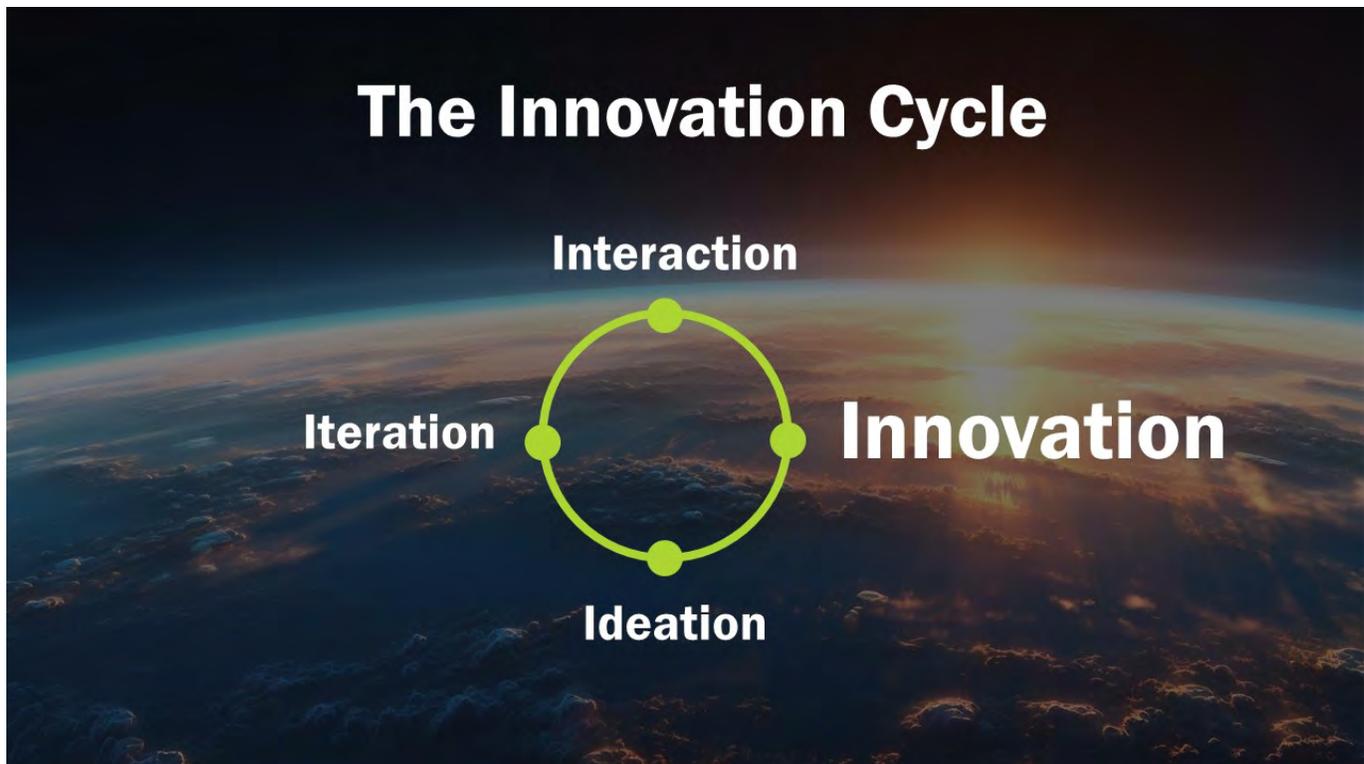
Our current working definition of innovation is "the practical implementation of ideas" (adapted from Schumpeter, 1948).

SEEING THE FUTURE: How to Use Rapid Collaborative Visualization (RCV) to Convert Concepts to Capabilities in Innovation Ecosystems

“Interaction, Ideation, and Iteration”

The main practical drivers of innovation are:

- INTERACTION: “Engaging in person-to-person or person-to-group conversations or exchanges”
- IDEATION: “Generating and articulating new or updated solutions”
- ITERATION: “Creating a new version of a work in progress”



“Legacy Tools”

“Legacy Tools” include the tools we’ve used for the last three decades to plan and manage research and development projects. Legacy tools include emails, reports, reviews, meetings, spreadsheets, word processors, project management software, presentations, the Internet, whiteboards, and the occasional product or service visualization or animation.

We do not expect RCV to replace legacy tools. The authors created the SEEING THE FUTURE seminar and this article using legacy tools. However, these tools alone do not generate interaction, ideation, and iteration at the rate required to out-innovate our adversaries and competitors.

Can we make legacy tools SIGNIFICANTLY faster so that we innovate faster? Perhaps. Is it worth taking the time and energy to do this? Perhaps not.

What if there were a low-cost, low-tech, easy-to-learn framework we could add right now to our legacy toolset to increase the rate of interaction, ideation, and iteration?

SEEING THE FUTURE: How to Use Rapid Collaborative Visualization (RCV) to Convert Concepts to Capabilities in Innovation Ecosystems

RAPID COLLABORATIVE VISUALIZATION

Let’s take a minute to examine the term “Rapid Collaborative Visualization.”

“Visualization” is “the act or process of interpreting in visual terms or of putting into visible form” (Merriam-Webster Dictionary).

“Collaborative Visualization” is “Visualization” PLUS “the shared use of computer-supported, interactive visual representations of data by more than one person with the common goal of contributing to joint information processing activities” (Isenberg et al, 2011).

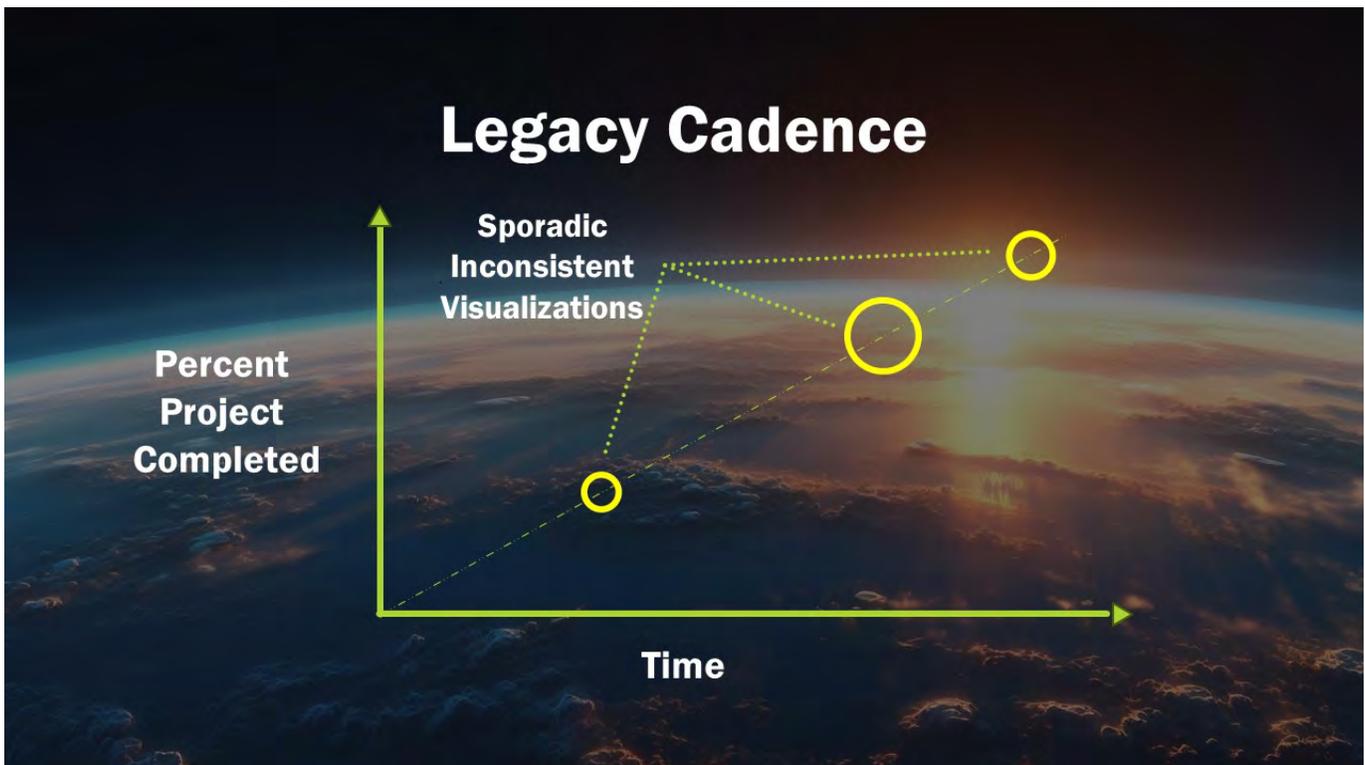
“Rapid Collaborative Visualization” is “Collaborative Visualization” PLUS

- Rapid Development Frameworks (e.g. Agile)
- Low-Cost, Open Source Tools/Formats (e.g. Blender, USD)
- Generative AI (e.g. Sora et al)
- Sustained Delivery Cadence

CADENCE

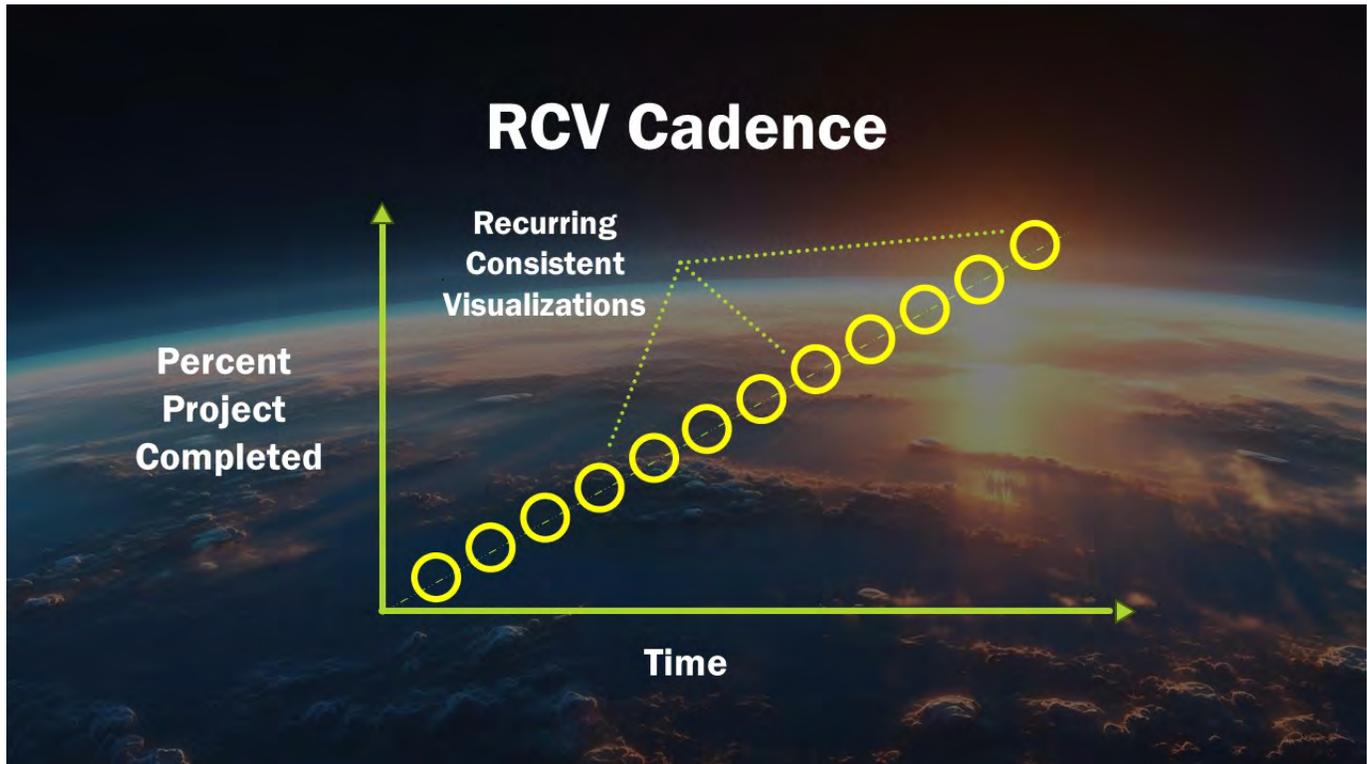
In the RCV context “cadence” is “ a regular and repeated pattern of activity” (Merriam-Webster Dictionary).

In a legacy innovation environment, visualizations are typically sporadic and inconsistent “special events” that often interfere with the daily workflow.



SEEING THE FUTURE: How to Use Rapid Collaborative Visualization (RCV) to Convert Concepts to Capabilities in Innovation Ecosystems

In an RCV environment, creating or revising visualizations is a recurring team task that generates ongoing deliverables. RCV visualizations are not special events; they are an essential part of the everyday project workflow, like weekly meetings or monthly status reports.



The rate at which you iterate visualizations in an RCV framework depends on your project's specific requirements. There is no "ideal" RCV update/revision rate.

RCV GUIDELINE 2: ORGANIZING ELEMENTS

The RCV framework proposes five Organizing Elements to help teams plan and track their RCV visualizations:

- Teams
- Targets
- Tools
- Techniques
- Types

SEEING THE FUTURE: How to Use Rapid Collaborative Visualization (RCV) to Convert Concepts to Capabilities in Innovation Ecosystems



The Elements List

Teams integrating RCV into their workflow write a one-page Elements List itemizing their understanding of each Organizing Element. This list changes as your project changes. The following section defines each Element and presents examples you can use in your own Elements List.

Teams

Definition: “Groups of people with a stake in the mission or project”

Examples: Project Staff, Administrators, Customers, Audiences, Users, Sponsors, Advisors, Supporters, Subject Matter Experts, Funders, Contractors, Vendors, Suppliers, and Consultants. People involved in innovation projects are frequently members of more than one Team. For example, an Administrator can also be an Audience member and a Supporter.

For the Elements List, list the Teams that will be most involved at the current point in the project’s lifecycle. Iterate as needed.

Targets

Definition: “Goals, objectives or desired results”

Examples: Schedule Milestones, Budget Limits, Resource Limitations, Requirements, Specifications, a “GO” Decision

For the Elements List, list the Targets that pertain to the current point in the project’s lifecycle.

SEEING THE FUTURE: How to Use Rapid Collaborative Visualization (RCV) to Convert Concepts to Capabilities in Innovation Ecosystems

Techniques

Definition: “Actions teams take to achieve Targets”

Examples: Talking (Meetings, Calls) Writing (Email, Messaging, Presenting), Sketching, Authoring (creating visualizations), Storytelling

For the Elements List, itemize the Techniques under considerations for the next iteration of your visualization.

Tools

Definition: “Things Teams use to create RCV visualizations”

Examples: Pens/Markers/Whiteboards/Paper/Sticky Notes Smart Phones/Tablets, Cameras/Scanners, Storyboards, Authoring Software (e.g., Modeling & Simulation, CAD/CAM/CAE, Animation/VFX, Unreal/Unity, Legacy Software (Emails/Messaging, Spreadsheets, Databases, Project Management, Presentation Tools, Online Storage.

For the Elements list, itemize the Tools under consideration for the next iteration of your visualization.

Types

Definition: “Categories of RCV visualizations”

Examples: Sketches, Slide Decks, Concept Art, Live Action/Animation/Motion Graphics, Narrative/Documentary, Games/Simulations, Synthetic Objects/Environments, Extended Reality (AR/MR/VR, Digital Twins

For the RCV Elements list, itemize the Types of visualization under consideration for the next iteration of your visualization.

An RCV visualization does not have to be an animation, video, or virtual environment. It can be a set of sequential sketches on a whiteboard that a team later converts to a more complex form in a subsequent iteration.

RCV GUIDELINE 3: BEST PRACTICES

Start Now

Have a conversation with one or more Teams (Interact. Sketch or describe in the first visualization you’ll create (Ideate. Create a visualization (Iterate.

Start Simple

Use existing team knowledge to create your first RCV visualization. RCV visualizations do not need epic animations with blockbuster graphics and special effects. RCV visualizations can be simple sequences of rough thumbnail sketches on paper or photos of brainstorming results on sticky notes. The message is far more important than the medium.

SEEING THE FUTURE: How to Use Rapid Collaborative Visualization (RCV) to Convert Concepts to Capabilities in Innovation Ecosystems

Keep It Going

The power of RCV comes from creating regularly recurring visualizations. RCV loses its impact when the delivery cadence is interrupted for too long.

Tell a Story

RCV visualizations can tell simple or complex stories. It depends on project goals, the capabilities of your colleagues, and the tools and techniques available. Questions to ask yourself and your team:

- What is the story's Beginning, Middle, and End?
- What is the point of view (e.g. First Person, Third Person)?
- What do I want viewers to Know, Feel, and Do after seeing the visualization?

Use Generative AI

Generative AI tools and techniques may help you create visualizations representing your project or mission. However, the generative AI arena is moving too fast to make recommendations. You may find Matt Wolfe's site, www.futuretools.io, helpful when considering generative AI tools.

Use Low-Cost Open Source Tools and Formats

Use open-source modeling and animation tools like Blender, Unreal Engine, and Unity and open-source file formats like Universal Scene Description (USD).

CONCLUSION

The purpose of RCV is to help innovation teams rapidly convert concepts to capabilities — it is not to create a series of visualizations.

Your visualizations do not have to rival the latest sci-fi blockbuster (unless you have the budget for it!). Instead, think of RCV as a new tool in your innovation toolset. As the pioneer French aviator Antoine de Saint Exupéry wrote in 1948:

“Your task is not only to foresee the future, it is also to enable it.”

Start RCV now for your project or mission. Please let us know what works and what doesn't. Contact us if you have questions about RCV and the SEEING THE FUTURE seminar, or if you would like us to present the latest iteration of the seminar for your organization or team.

Rick Baumgartner

baumgartnermedia@gmail.com

LinkedIn: [linkedin.com/in/rbaumgartner](https://www.linkedin.com/in/rbaumgartner)

Dennis Leung

dennisleung@dibashiconsulting.com

LinkedIn: [linkedin.com/in/dennis-leung-a9550b/](https://www.linkedin.com/in/dennis-leung-a9550b/)

Copyright © by Dennis Leung Dibashi Consulting and Rick Baumgartner. All Rights Reserved.

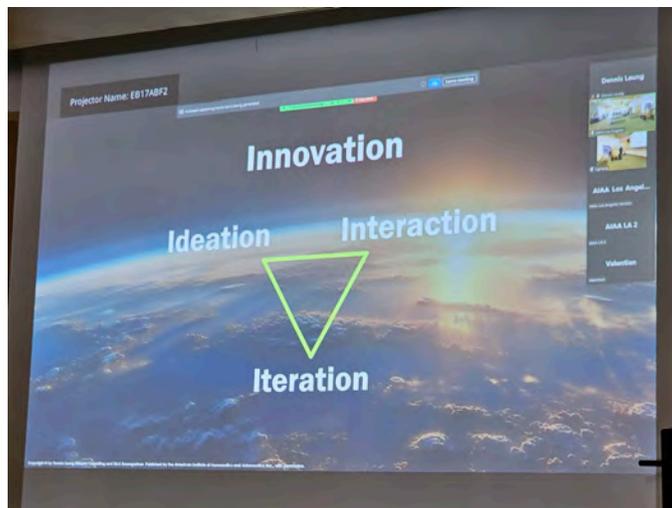
SEEING THE FUTURE: How to Use Rapid Collaborative Visualization (RCV) to Convert Concepts to Capabilities in Innovation Ecosystems



Mr. Dennis Leung (left) and Mr. Rick Baumgartner (right) took turns presenting on March 9, 2024.



Attendees in person and on-line listened to the presentation attentively.



It's very informative and fun for both in-person and on-line attendees.

SPACE ENVIRONMENTS SEMINAR—PART II, by Dr. Henry B. Garrett (3/23)

(Photos Only) (<https://www.aiaa-lalv.org/blogs/2024-blogs/2024-march/2024-march-23>)



It was raining in the morning, but inside the meeting room we have the warm refreshment and an exciting presentation / meeting.



All were set for welcoming the attendees in person and on-line.



Attendees enjoyed the presentation and lecture by Dr. Henry Garrett.

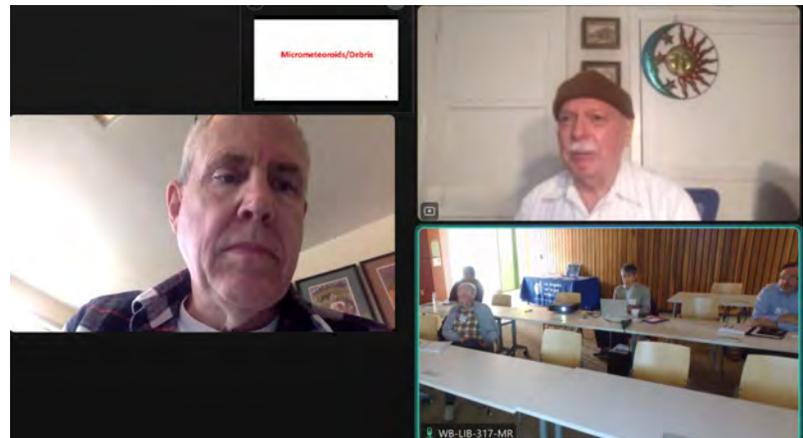
SPACE ENVIRONMENTS SEMINAR—PART II, by Dr. Henry B. Garrett (3/23)



In-person attendees networked and chatted during the lunch break. It turned sunny outside and it was beautiful!

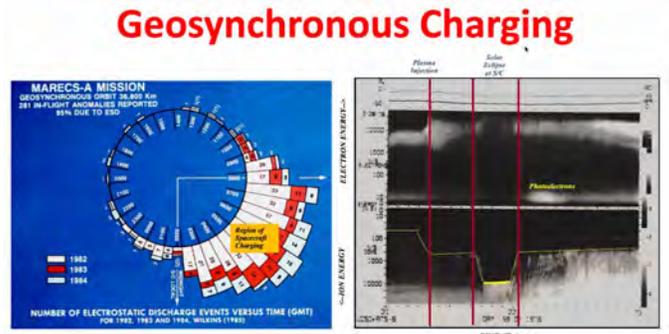
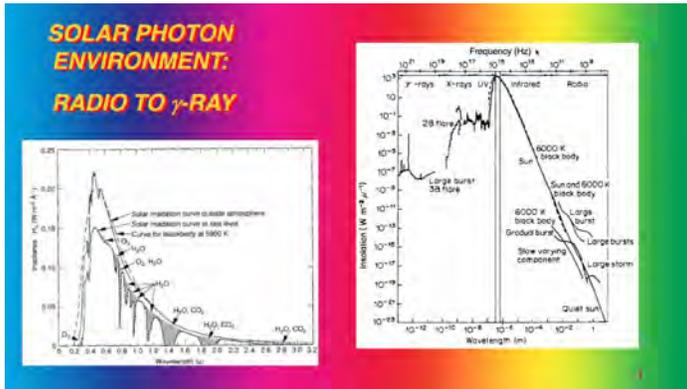


Attendees took notes and asked questions.

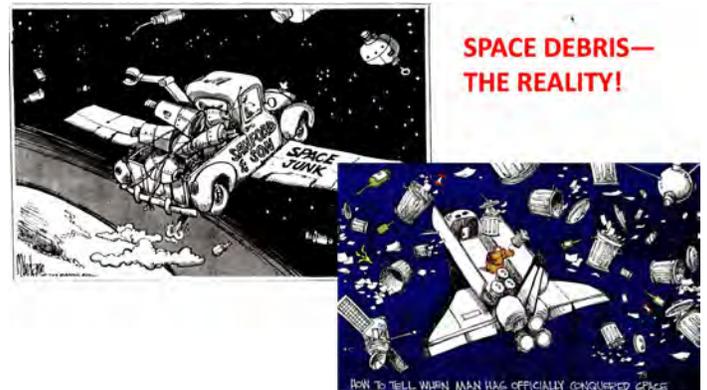
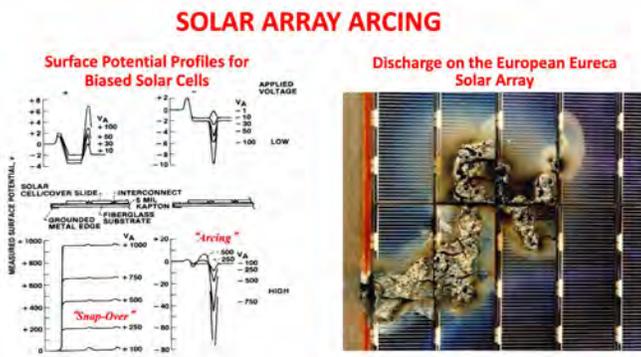


In-person and on-line attendees asked questions and interacted with the speaker enthusiastically.

SPACE ENVIRONMENTS SEMINAR—PART II, by Dr. Henry B. Garrett (3/23)



Screenshots showed rich contents of the lecture.



The presentation was not only informative, but also great fun and humorous.



From Roswell to the Moon and Beyond: A 60 Year Career in Space... or how I phoned home

Dr. Henry B. Garrett, Col.(USAF Ret)
2725 Brookhill Ave.
La Crescenta, CA 91214

Cell: 818-862-0602
Home: 818-248-5343
henry.b.garrett@att.net

The image also features a book cover for 'AMAZING ROSWELL MYSTERIES' and a poster for the 'ROSWELL UFO FESTIVAL'.

(Left) The Whipple Shield was very interesting. (Right) Dr. Henry Garret has an exciting career.

SpinLaunch

by Mr. Jerry Lockenour (2024 March 13)

(An article inspired by the Feb. 23 mini-Conference, (<https://www.aiaa-lalv.org/blogs/2024-blogs/2024-february/2024-february-23>))



The SpinLaunch system was described during the AIAA LA-LV University Student Branch Mini-Conference, Feb 23rd, 2024. This meeting was hosted at the SpinLaunch facility in Long Beach.

SpinLaunch is in the process of developing a means to launch satellites without using the classical large first stage rocket. Their approach is to “throw” what would normally be the 2nd stage rocket & satellite to 30,000 ft using a large (~100m) diameter circular vacuum chamber with a spinning arm with the rocket at the end of the arm. The arm rotates at high rpm inside the vacuum chamber with the rocket/satellite system at the end of the arm. They said the rocket would be released at about 5,000 mph and it would coast (unpowered) to about 30,000 ft at which point the rocket motor would be ignited and the satellite would be sent into Earth orbit. And their thinking is that they could launch up to 5 or 6 systems per day using the same SpinLaunch device.

They discussed the fact that the rocket/satellite system would experience up to 9,000 g’s at the end of the spinning arm prior to release. They have tested several electronic devices (cell phones and existing cube sats) up to 10,000 g’s and they have survived. The other challenge is the shock of transition from the vacuum chamber to sea level atmosphere at 5,000 mph. This has to be quite an instantaneous shock. They may have done more testing of this but I don’t recall that being discussed at the meeting.

If this system ends up being successful, it obviously would be a very cost effective and environmentally friendly satellite launch system. But obviously it could not be used to launch astronauts (surviving 9,000 g’s) into space, so we will still need a different/conventional system that the human animal can tolerate.

Jerry Lockenour
AIAA Associate Fellow
3-13-24

AIAA Los Angeles Aero Alumni (retirees from aerospace) Meeting (March 13)

(Screenshots only) (<https://www.aiaa-lalv.org/blogs/2024-blogs/2024-february/2024-february-14>)



Aero alumni (retirees from aerospace industries) and other attendees met on March 13 and discussed interesting topics, including the Section Feb. 23 SpinLaunch event, Boeing Whistleblower news, recent Boeing Safety issues, new launch companies, commercial space business, Ukraine situations, etc.



Mr. Mike Ciminera's new book with AIAA was discussed as well, continued from the previous discussions.

AIAA LA Outreach for the Bell Garden K-12 Science Fair Judging (2024 March 7)

(Photos Only) (<https://www.aiaa-lalv.org/blogs/2024-blogs/2024-march/2024-march-7>)



Ms. Monica Maynard, explained to the judges about the process and criteria, helping them to get ready for the science fair judging.



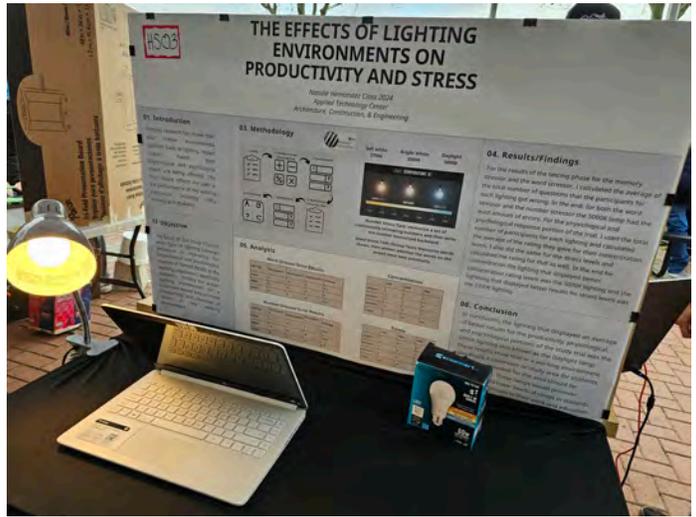
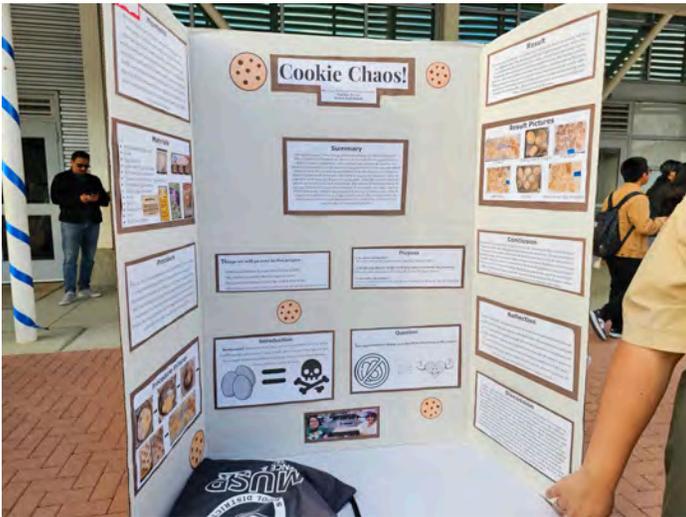
Judges listened to the instructions, and tried to get familiar with the software tool for judging. Dr. Scott Walker (right), moved around and helped some judges.

AIAA LA Outreach for the Bell Garden K-12 Science Fair Judging (2024 March 7)

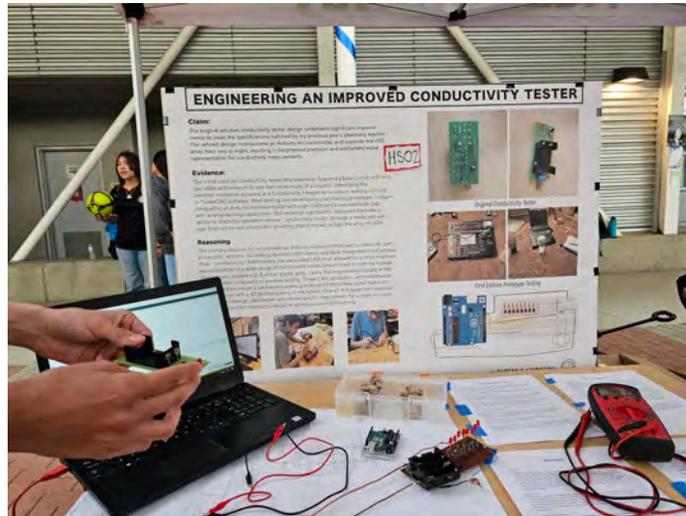
(Photos Only)



A Student Mars Settlement project, focusing on energy on Mars.



Interesting projects and fun topics, with hard work.



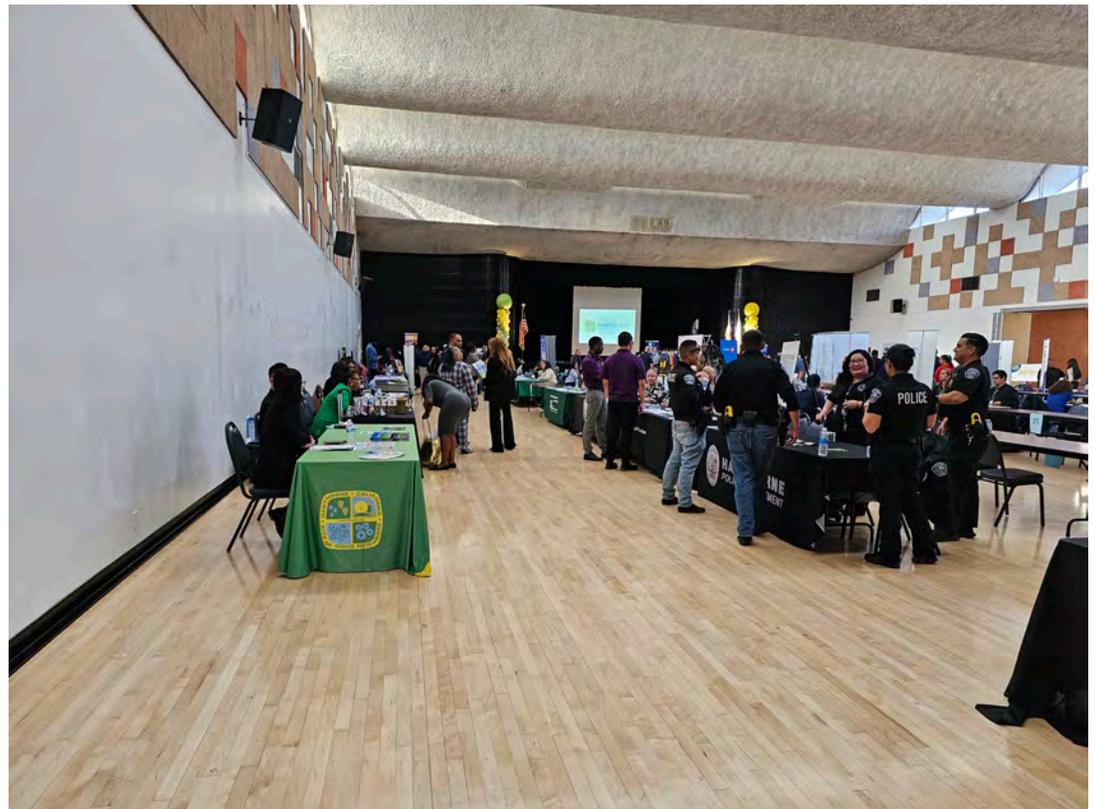
Some student projects saw hands-on efforts with practical and even environmental applications.

AIAA Los Angeles Section Outreach to Hawthorne Business Expo (2024 March 14)

(Photos Only) (<https://www.aiaa-lalv.org/blogs/2024-blogs/2024-march/2024-march-14>)



The Annual Hawthorne Business Expo is a great occasion to connect to the local businesses for AIAA/Los Angeles Career and Workforce Development (including small businesses and independent tracks of careers.)



It was quite interesting and well attended. The Hawthorne and nearby areas have many aerospace related companies (and other sectors) and opportunities.

AIAA Los Angeles Section Outreach to Hawthorne Business Expo (2024 March 14)

(Photos Only)



It was welcoming and delightful, with many participants.



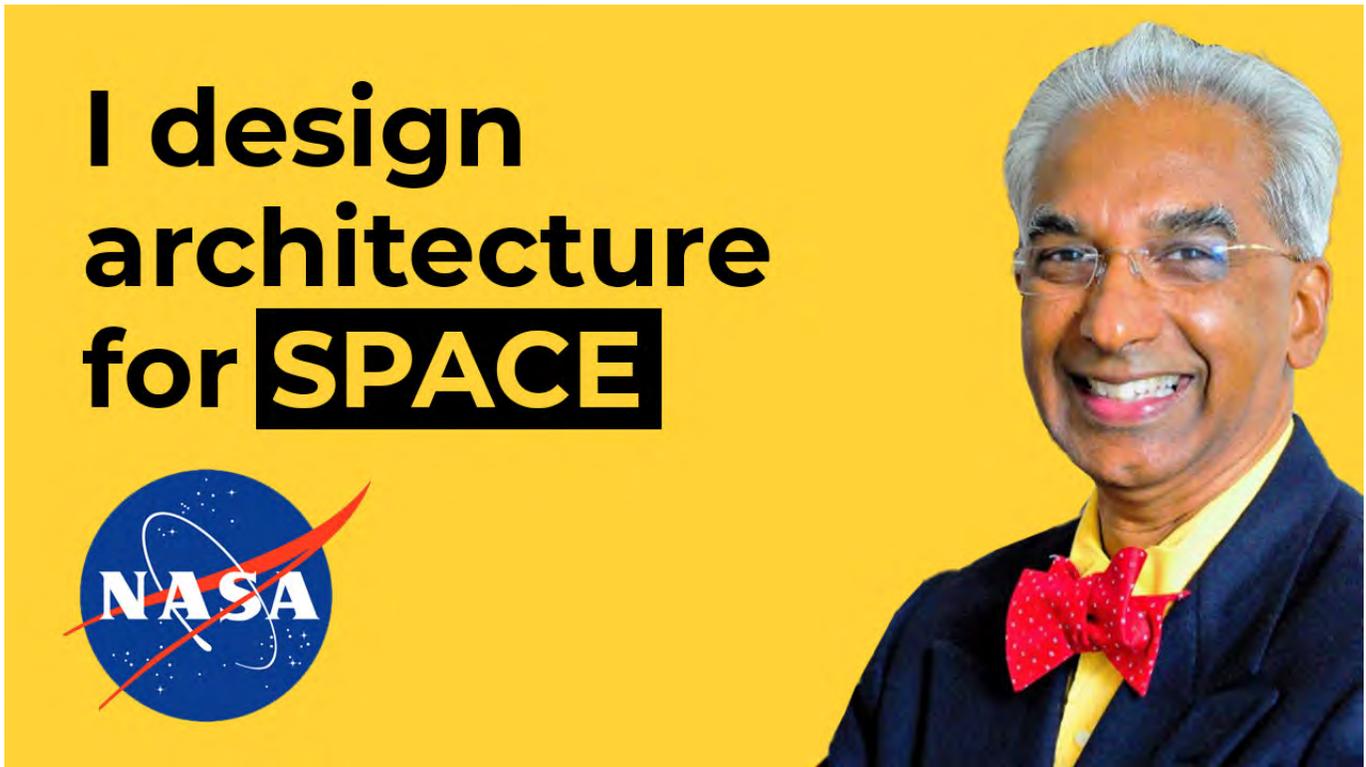
Visitors walked around and checked out the booths, in the mean while, there were recognitions and programs on the stage.



(Left) Some visitors had fun and posed for photos. (Right) A service dog loyally waited for the owner during the booth visit and networking.

How a young boy from India became a Space Architect in the US

(by/with Prof. Madhu Thangavelu (March 18) (<https://www.youtube.com/watch?v=wmNbUmRGXV4>))



A civil architectural education imparts qualities that are very helpful in providing solutions to complex, unstructured problems, such as those we find in the dynamic policies we encounter in the space industry. While engineering analyses and methods bring laser focus, especially in quantifying resources, assets and processes for mission manifest and execution, architectural methods hold dear to the qualities of the program that often determine aspects of the mission including vision(aka "big picture") ideation, alternative concept creation and spacecraft configurations.

Having spent some years studying engineering and architecture, this interview brought to mind some of the issues that professionals trained in the architecture discipline help to tackle alongside the analytical skills developed in engineering school.

It should be no surprise that the architect and the engineer work together to realize the vision of the same built structure or spacecraft.

It is good to see many visions created by architects being pursued by spacecraft engineers.

Space missions, especially those scientifically oriented exploration missions that were promoted by the governmental space agencies of the world in the 20th century are giving way to much more holistic visions for missions like Space tourism being heralded by commercial space actors, that touch heart and soul of all society. Thanks to Space Architects who are continually dreaming up, proposing and exploring new concepts to bring the whole world together, opening new frontiers in human experience.

How a young boy from India became a Space Architect in the US

Watch "How a young boy from India became a Space Architect in the US" on YouTube <https://www.youtube.com/watch?v=wmNbUmRGXV4>

00:00 - Coming up in the video

01:07 - Introduction

02:41 - What got Madhu interested in Space?

04:40 - First Moon Landing 1969

08:58 - Colonizing the Moon

09:33 - Wishing Buzz Aldrin a happy birthday

12:39 - How architects get involved in Space Architecture

17:33 - A spacesuit is very uncomfortable

19:59 - How can an architect become a space architect

23:09 - Bjarke Ingels group designing for the moon

26:24 - Space Tourism

32:39 - Is Space Exploration worth it?

38:04 - Advice for Architects and students

42:49 - Bonus Conversation

Madhu Thangavelu conducts the ASTE527 Graduate Space Concept Synthesis Studio in the Department of Astronautical Engineering within the Viterbi School of Engineering, and he teaches Space Architecture in the School of Architecture at the University of Southern California. He has a background in both disciplines. He is on the faculty of the International Space University based in Strasbourg, France, an institution that trains promising young space professionals for leadership in international space activities. He is a former AIAA Vice Chair for Education. He is on the board of directors of the National Space Society and is Vice President of NSS for India Region and the North American activities coordinator for the Moon Village Association.

AIAA LA Outreach to CAMS CARPA Initiative 2024 Proof of Concept Presentation (2024 March 20) (Photos Only)(<https://www.aiaa-lalv.org/blogs/2024-blogs/2024-march/2024-march-20>)



Two student teams took turns and presented their approaches for a student robot assignment. Professional/industrial reviewers listened and gave their evaluations.

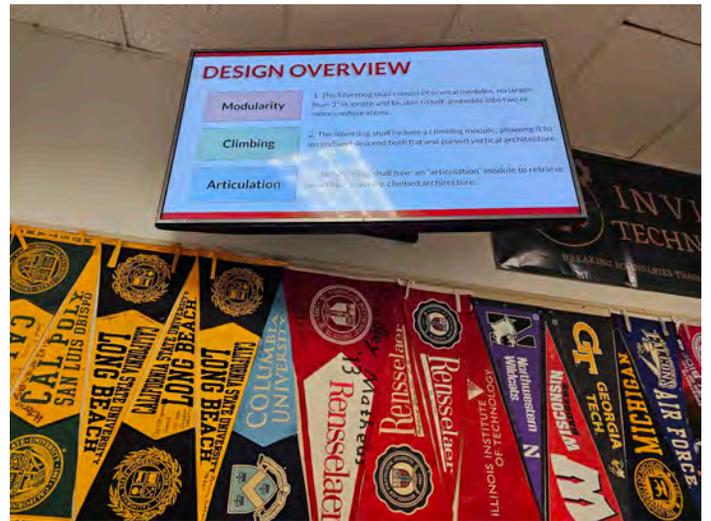


Mr. Ian Clavio, AIAA Los Angeles Section Council Member, is an alumnus from CAMS, and his name is on the Hall of Fame in this classroom, the second line from top, at the end.

AIAA LA Outreach to CAMS CARPA Initiative 2024 Proof of Concept Presentation (2024 March 20) (Photos Only)



Reviewers from industries followed the presentations and asked questions.



(Left) A professional asked some questions. (Right) Students' presentation on the design overview.



(Left) Students in a team answered questions. (Right) Enthusiastic reviewers paid attention to students' explanations.

Falcon 9 Launch on March 10 (Photo Gallery)

(March 10 2024)

by Ms. Michelle Evans, AIAA Distinguished Speaker; Author, Bestseller "The X-15 Rocket Plane, Flying the First Wings into Space"

Founder and President, Mach 25 Media (www.Mach25Media.com)



A Falcon 9 launch on Sunday, March 10, in the evening at 9:08 pm, going by the flag in the El Toro Cemetery, behind our garage.



The Falcon 9 rose higher in the sky.

Falcon 9 Launch on March 10 (Photo Gallery)

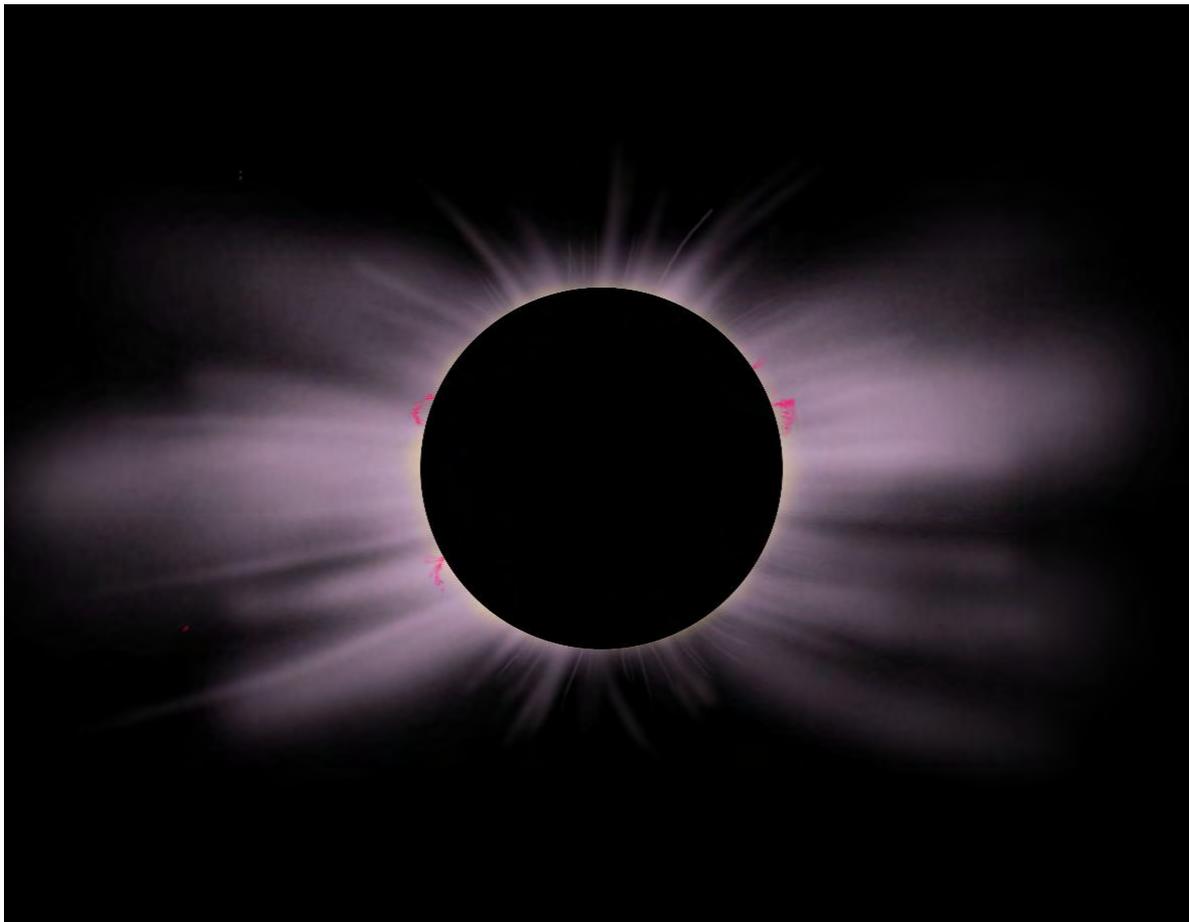


*This 3rd shot clearly shows the shock waves moving through the exhaust, pretty cool!
All three images were all at 1/60th/sec at 300mm.*

Eclipses

by Ron Miller (Co-Producer of Chesley Bonestell: A Brush With the Future) (2024 March 25)

(<https://mailchi.mp/916cbb0bbbd/eclipsing-chesley-bonestell>)



Total Eclipse of the Sun (2017) painted by Ron Miller

Every now and then people on the Earth are treated to a weird and beautiful sight. The sky will grow dark in the middle of the day and stars can be seen even at noon. The air will grow chilly and gloomy. Birds will stop singing,

Eclipses

thinking that night has fallen. Where the Sun was is now a dark circle surrounded by an eerily glowing halo.



Wikipedia

Photograph of a solar eclipse taken on June 21, 2020

Eclipses have been observed since ancient times, though their cause was unknown. Some of the earliest written accounts are by ancient Chinese astronomers. Eclipses were awesome events that some thought foretold great evil.

Eclipses

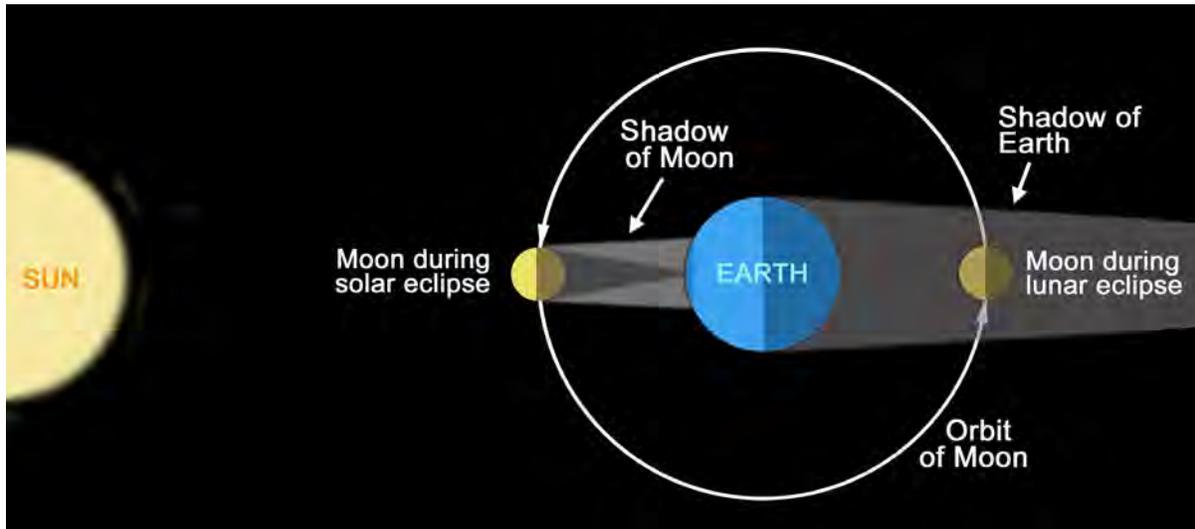


Wikipedia

Astronomers Studying an Eclipse painted by Antoine Canon in 1571

But by the Sixth Century B.C., Greek scientists had figured out what produced them. It was nothing more than the Moon passing in front of the Sun.

Eclipses



© Ron Miller

A Solar Eclipse versus a Lunar Eclipse

During a **Solar Eclipse**, the Moon and the Sun appear to be almost exactly the same size in the sky. Because the Moon orbits the Earth while the Earth revolves around the Sun, there are occasions when the Moon passes directly between the Earth and the Sun. The Moon's orbit is tipped slightly, so this doesn't happen every time the Moon goes around the Earth. (Otherwise, we'd have an eclipse every month.) When the alignment is perfect, the result is a **Total Eclipse**, but if the Moon slightly misses covering the Sun completely, the result is a partial eclipse. During a total eclipse, the Moon covers the brilliant solar disk and the Sun's glowing atmosphere becomes visible to the naked eye. The sky grows dark, and stars may be visible in the middle of the day. It's an eerie experience. Since the Moon is in constant motion as it circles the Earth, no eclipse lasts longer than about eight minutes, and most are much shorter.

Eclipses



Natarajangesan

**Diamond Ring effect at the end of totality during the August 21, 2017 solar eclipse in Oregon.
Some prominences can also be seen along the edges.**

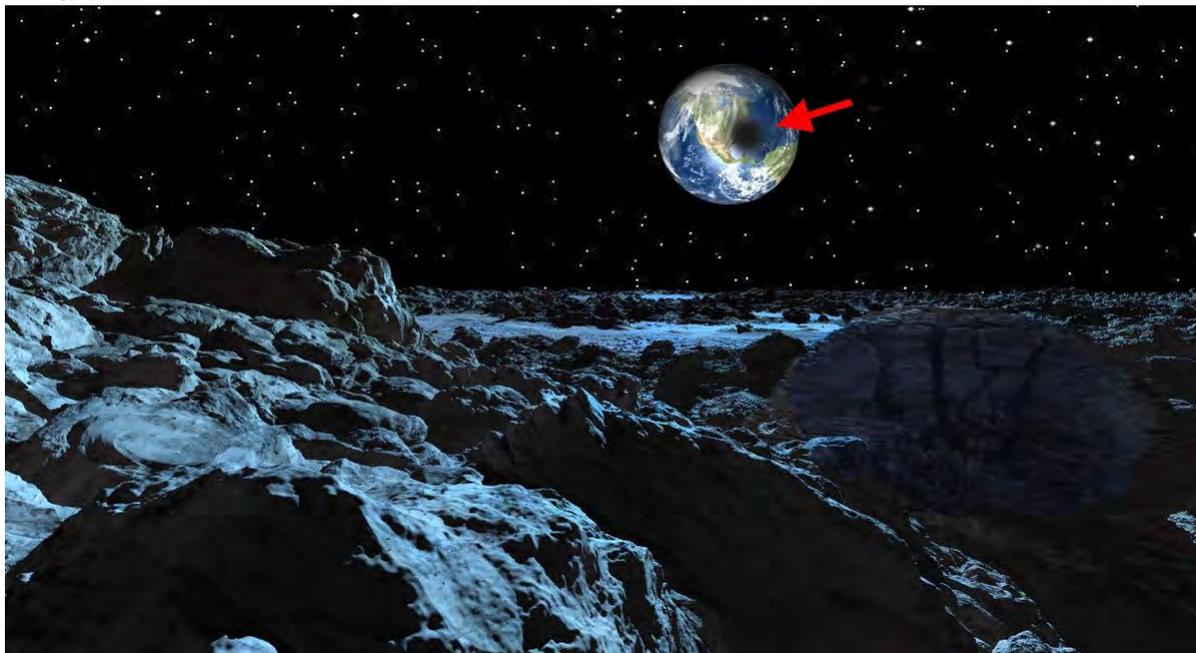
Eclipses are very beautiful, awe-inspiring sights, but they are also important for scientists. When they occur, astronomers study the corona, as well as prominences and flares as they erupt past the dark edge of the Moon.

Eclipses



An Eclipse as Seen From the Earth (2017) painted by Ron Miller

The above is a painting that shows an eclipse as it would be seen from the Earth.



An Eclipse as seen from The Moon (2017) painted by Ron Miller

This is the exact same eclipse, painted as it would appear if you were standing on the Moon. Notice the lunar shadow that is cast on the Earth.

Eclipses

A Total Eclipse is coming soon!

On April 8, 2024, a solar eclipse will take place in the heavens above the United States. The narrow pathway that the eclipse takes where you can see a full, total eclipse from the ground is called the **Path of Totality**. If you are fortunate enough to live in a part of the country where you can see the eclipse, be sure to wear certified eclipse-protective eyewear! Sunglasses are not enough.



NASA

The Path of Totality for the Solar Eclipse on April 8, 2024

This eclipse will not be visible throughout most of the United States but you can watch it virtually when it happens by clicking on the map above.

Eclipses

HERE'S YOUR CHANCE TO POCKET A ROCKET!

by Christopher Darryn

Associate Producer of *Chesley Bonestell: A Brush With the Future*



U.S. Mint

Obverse of Innovation Dollar

In 2018, the U.S. Mint began to release a series of four special \$1 coins that, every year, celebrates “innovations and innovators” from each of the fifty states, the District of Columbia and five US territories.



U.S. Mint

Reverse of Alabama Innovation Dollar

For 2024, the Mint is preparing to launch an American Innovation Dollar representing the state of Alabama, which chose the image of NASA's historic Saturn V rocket as its example of American Innovation.

Eclipses



Wikipedia

A Saturn V rocket lifts off from Cape Canaveral.

The Saturn V rocket was a marvel of engineering built under the supervision of aerospace engineer Wernher von Braun at the George C. Marshall Space Flight Center in Huntsville, Alabama. Capable of producing a tremendous 7.6 million pounds of thrust, equivalent to 85 Hoover Dams, it stood as tall as a 36-story building and could lift a payload of 58 tons into space.

Eclipses



Wikipedia

July 16, 1969 – A Saturn V powers the Apollo 11 crew to the first landing of humans on the Moon.

NASA launched thirteen Saturn V rockets between 1967 and 1973. The first Saturn V rocket was deployed for the uncrewed Apollo 4 mission in 1967. Nine of the rockets took crews to orbit the Moon and eventually land on its surface. The last Saturn V, launched in 1973 without a crew, carried the Skylab space station into Low Earth Orbit.

Eclipses

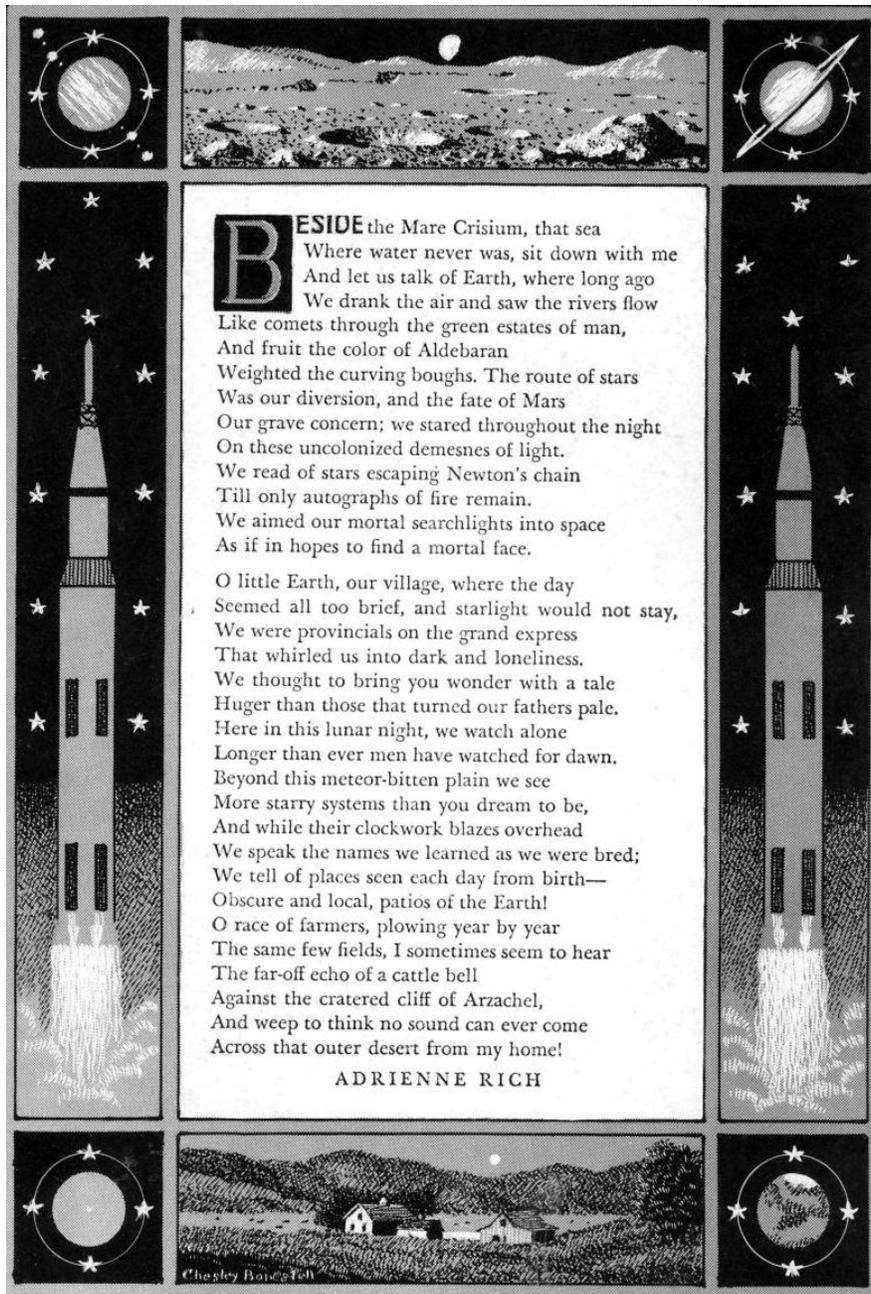


Wikipedia

Wernher von Braun standing beside the massive F-1 engines that powered the Saturn V.

In 1969, Chesley Bonestell (1888–1986), known as the "**Father of Space Art**," created a special pen and ink rendering to personally commemorate the Apollo 11 Moon mission. A frame depicting the giant rocket, along with scenes of the Moon seen from the Earth and the Earth from the Moon, surrounds a poem called "***The Explorers***," written in 1953 by Adrienne Rich. Look carefully at the bottom, just left of center, for Chesley's signature.

Eclipses

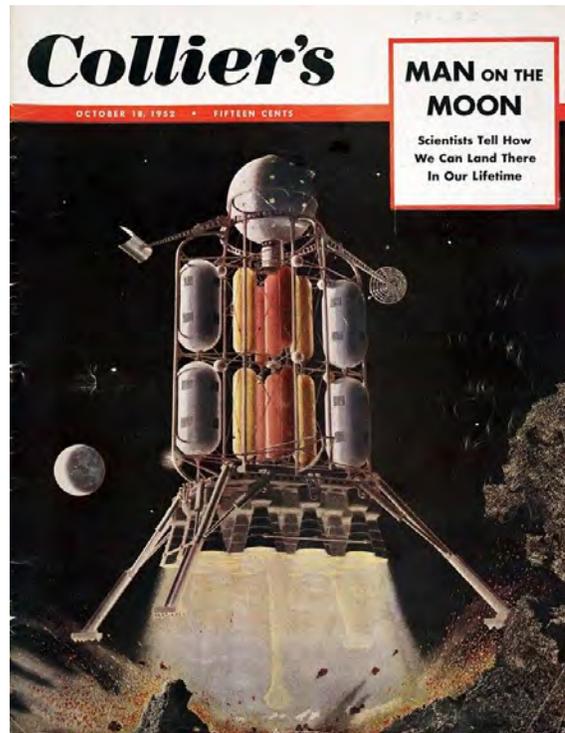


Ron Miller

Chesley is credited with playing an essential role in launching America's space program and arguably, in all that has blossomed in the private sector, as well. Geza Gyuk, Senior Director of Astronomy at the Adler Planetarium, once said: **"Bonestell's work was seminal in the birth of the Space Age."** But it was writer Andrew James Walls who may have summed Chesley's contribution to space exploration best in his article "How Space Art Will Get Us to Mars" — **"NASA may have built the rockets. But it was artists like Bonestell who communicated, in a visual language we all speak, what space travel was all about."**

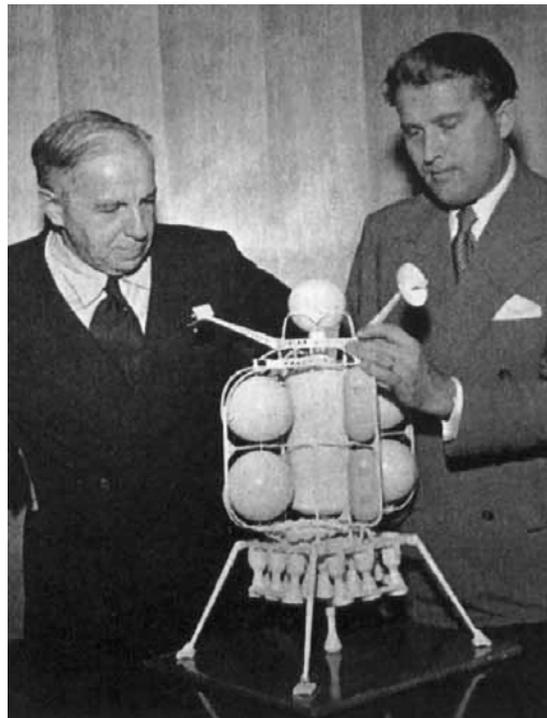
Eclipses

Chesley, using his art, quite often communicated Wernher von Braun's visions of the future:



Collier's

Touchdown on the Moon (1951) painted by Chesley Bonestell



Chesley Bonestell and Wernher von Braun inspect a model of their proposed lunar lander.

Eclipses

"In my many years of association with Chesley (Bonestell) I have learned to respect, nay fear this wonderful artist's obsession with perfection. My file cabinet is filled with sketches of rocket ships I had prepared to help in his artwork— only to have them returned to me with penetrating detailed questions

Wernher von Braun

Chesley and Wernher were indeed an innovative team and we salute their many accomplishments that began the exploration of the Final Frontier.



U.S. Mint

The American Innovation \$1 Coin Program captures the spirit of ingenuity that defines America's history of commitment to exploration and discovery. Available in uncirculated and proof finishes, this coin will appeal to both collectors and space enthusiasts alike, reminding us of our nation's pioneering spirit and the greatness that it has achieved.



For information about purchasing Alabama Saturn V coins, click on the image above.

Eclipses

A VERY UNIQUE SALUTE TO CHESLEY BONESTELL!

SPECIAL PLATTSBURGH STATE ART MUSEUM EXHIBITION

"THE FATHER OF SPACE ART: CHESLEY KNIGHT BONESTELL"

The Plattsburgh State Art Museum is proud to present a showing of selected works from the Jay Whipple III collection of original Bonestell paintings. Rarely put on public display, don't miss this once-in-a-lifetime opportunity to experience the works of this visionary artist!

THE CONQUEST of SPACE
A HISTORY OF THE AMERICAN SPACE PROGRAM
 REPRODUCED WITH PERMISSION FROM THE NATIONAL SPACE SOCIETY
 Painted by CHESLEY BONESTELL with text by WILLY LEY

Chesley Bonestell
1888-1986

"I never knew what other worlds looked like until I saw Bonestell's paintings of the solar system."
- Carl Sagan

Exhibit Dates: March 26-May 18, 2024
 Reception: March 28, 4-6pm
 Slatkin Study Room
 Second Floor, John Myers Building
 101 Broad Street
 Plattsburgh, New York 12901

STATE UNIVERSITY OF NEW YORK
PLATTSBURGH

For more information about Chesley Bonestell
SCAN HERE

The **Plattsburgh State Art Museum** in Plattsburgh, NY is hosting a spectacular tribute to Chesley Bonestell with events that include:

Eclipses

- Original Bonestells on display:

From March 26 - May 18, 2024, the museum is exhibiting a rarely shown, specially curated collection of original Bonestell paintings, courtesy of collector Jay Whipple III. This exhibition is called “**The Father of Space Art: Chesley Knight Bonestell.**”

- Free Screening with Q&A:

On Sunday, April 7, 2024, at 1:30 p.m., the Plattsburgh State Art Museum is hosting a free screening of the award-winning documentary ***Chesley Bonestell: A Brush With The Future***. This will be followed by a live, in-person Q&A with Producer/Writer/Director **Douglass M. Stewart, Jr.** and rocket engineer **Rocco Lardiere**, a film participant. One of the film’s Co-Producers, renowned space artist **Ron Miller**, will join the discussion via Zoom.

- Next Day Bonus in the Heavens Above:

Because it lies in the Path of Totality, the town of Plattsburgh will experience a Total Eclipse of the Sun on Monday, April 8, 2024. How cool is that? Don’t forget your special eclipse-certified protective glasses! 🕶️



Special thanks to Jay Whipple III, James Castle, Kristina Hays, Melvin Schuetz, Tonya Cribb, Edith Ellis and the Plattsburgh State Art Museum.

Bonestell paintings courtesy of Bonestell LLC.

What medical equipment and experiments to be carried for the I-HAB module of the Lunar Gateway

by Madeleine Bourdeaux, 3AF (June 9, 2022)(Marseille)



GATEWAY (Moon Space Station) (Wikipedia)

France signed the Artemis Accords in early June 2022 in Washington, USA.

This is in line with increased cooperation in the field of human space exploration between France and the United States for peaceful purposes.

France would therefore contribute to the extension of the Lunar Gateway in addition to the PPE and HALO modules. But what extension are we talking about?

It seems premature to say that it will be the French participation in the I-HAB and ESPRIT programmes. It is likely that other European countries will contribute to the programmes of these two modules, according to a division of tasks to be defined.

Concerning the I-HAB module of the Lunar Gateway, a future small space station smaller than those of the ISS and whose orbit will be in cislunar space, the medical equipment and experiments to be carried on board will have to be defined.

I-HAB will probably not feature a porthole.

The external environment of I-HAB will be hostile (deep space, radiation, etc.) the astronauts, once the modules of the Lunar Gateway are fully assembled in space, will be confined and prone to boredom and depression if they are not active there.

Aids to combat the risk of depression should be considered (use of aromatherapy?)

Will on-board medical equipment take measurements of their heart system in particular and their vital systems more generally?

What medical equipment and experiments to be carried for the I-HAB module of the Lunar Gateway

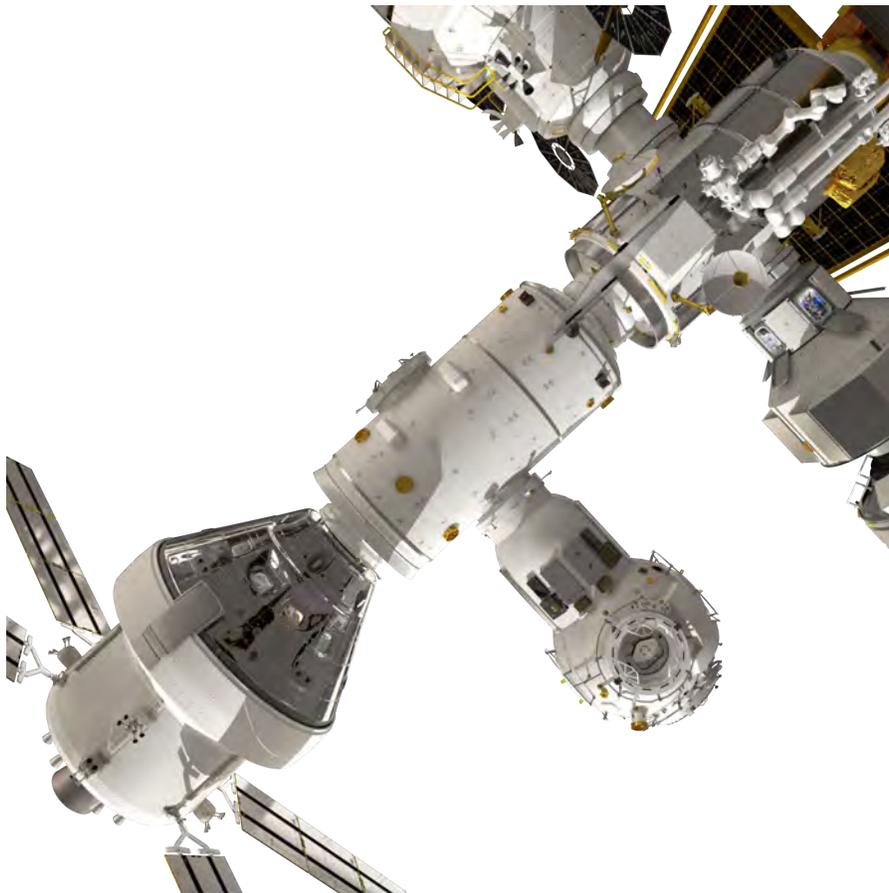
Will there be a place in I-HAB for on-board experiments on Biology? I don't know.

It will be necessary to provide an on-board first aid kit (pharmacy, etc.) in case of medical emergency. Chronobiological rhythms could also be studied.

The astronauts' occupation of the future Lunar Gateway will be temporary, in several phases and will be carried out in several trips thanks to the SLS and the manned spacecraft ORION.

As for the scientific experiments to be carried on board, they will probably be reduced and will have to be designed in such a way that the astronauts of the United States, Japan, Canada, Europe, other countries (?) will be very busy operating them, in addition to their daily activities of maintaining and monitoring the operation of the Lunar Gateway systems.

Finally, the astronauts will have to do some physical activity.



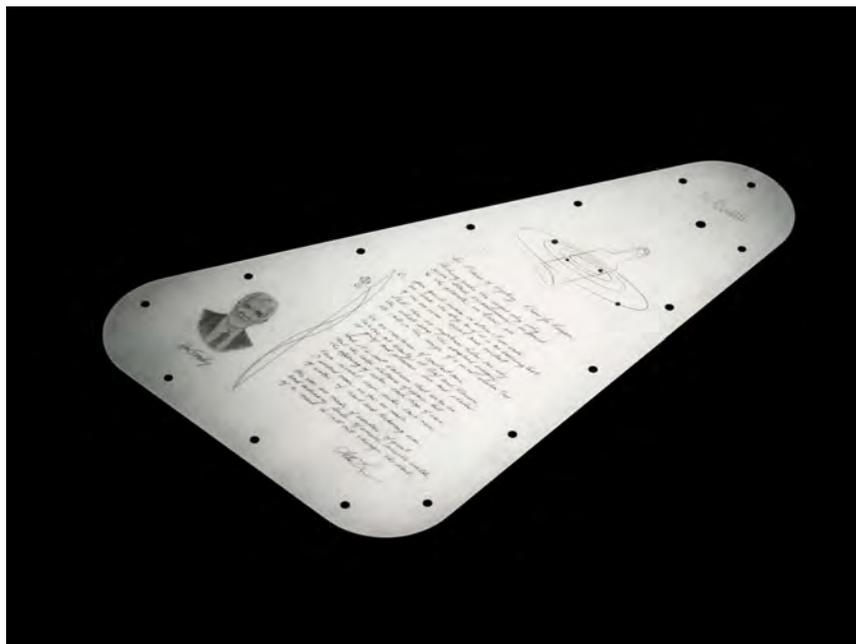
Gateway on I-Hab (credits: ESA)

https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/Gateway_International_Habitat

NASA Unveils Design for Message Heading to Jupiter's Moon Europa

by NASA (2024 March 8)

<https://www.jpl.nasa.gov/news/nasa-unveils-design-for-message-heading-to-jupiters-moon-europa>



This side of a commemorative plate mounted on NASA's Europa Clipper spacecraft features U.S. Poet Laureate Ada Limón's handwritten "In Praise of Mystery: A Poem for Europa." It will be affixed with a silicon microchip stenciled with names submitted by the public. Credit: NASA/JPL-Caltech ([Full Image Details "Europa Clipper's 'Golden Record'"](#))

When it launches in October, the agency's Europa Clipper spacecraft will carry a richly layered dispatch that includes more than 2.6 million names submitted by the public.

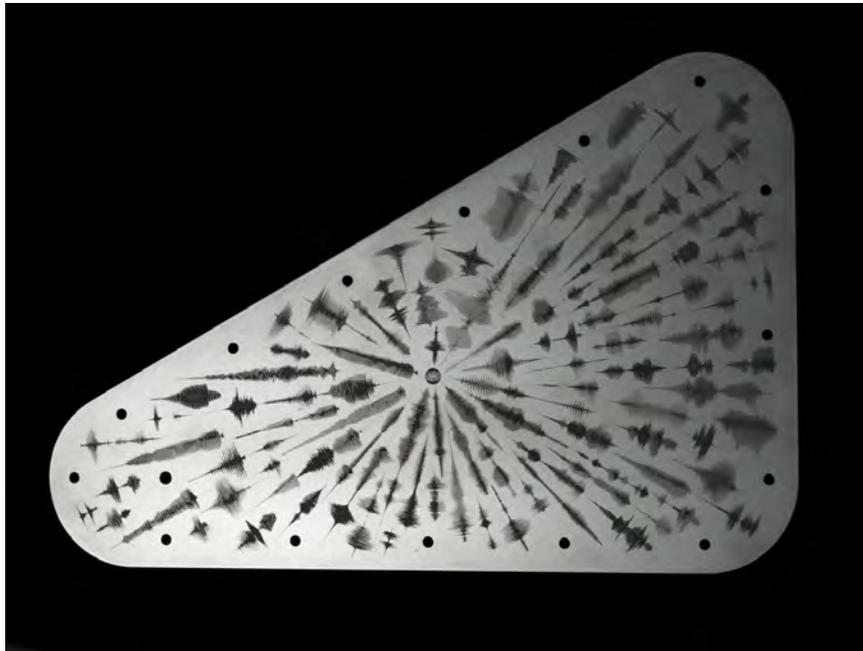
Following in NASA's storied tradition of sending inspirational messages into space, the agency has special plans for Europa Clipper, which later this year will launch toward Jupiter's moon Europa. The moon shows strong evidence of an ocean under its icy crust, with more than twice the amount of water of all of Earth's oceans combined. A triangular metal plate on the spacecraft will honor that connection to Earth in several ways.

At the heart of the artifact is an engraving of U.S. Poet Laureate Ada Limón's handwritten "In Praise of Mystery: A Poem for Europa," along with a silicon microchip stenciled with more than 2.6 million names submitted by the public. The microchip will be the centerpiece of an illustration of a bottle amid the Jovian system – a reference to NASA's "Message in a Bottle" campaign, which invited the public to send their names with the spacecraft.

A 'Golden Record' for Europa

Made of the metal tantalum and about 7 by 11 inches (18 by 28 centimeters), the plate features graphic elements on both sides. The outward-facing panel features art that highlights Earth's connection to Europa. Linguists collected recordings of the word "water" spoken in 103 languages, from families of languages around the world. The audio files were converted into waveforms (visual representations of sound waves) and etched into the plate. The waveforms radiate out from a symbol representing the American Sign Language sign for "water."

NASA Unveils Design for Message Heading to Jupiter's Moon Europa



The art on this side of the plate, which will seal an opening of the vault on NASA's Europa Clipper, features waveforms that are visual representations of the sound waves formed by the word "water" in 103 languages. At center is a symbol representing the American Sign Language sign for "water." Credit: NASA/JPL-Caltech ([Full Image Details: Europa Clipper's 'Water Words'](#))

To hear audio of the spoken languages and see the sign, go to: go.nasa.gov/MakeWaves.

In the spirit of the Voyager spacecraft's Golden Record, which carries sounds and images to convey the richness and diversity of life on Earth, the layered message on Europa Clipper aims to spark the imagination and offer a unifying vision.

"The content and design of Europa Clipper's vault plate are swimming with meaning," said Lori Glaze, director of the Planetary Science Division at NASA Headquarters in Washington. "The plate combines the best humanity has to offer across the universe – science, technology, education, art, and math. The message of connection through water, essential for all forms of life as we know it, perfectly illustrates Earth's tie to this mysterious ocean world we are setting out to explore."

Reaching Out to the Cosmos

In 2030, after a 1.6-billion-mile (2.6-billion-kilometer) journey, Europa Clipper will begin orbiting Jupiter, making 49 close flybys of Europa. To determine if there are conditions that could support life, the spacecraft's powerful suite of science instruments will gather data about the moon's subsurface ocean, icy crust, thin atmosphere, and space environment. The electronics for those instruments are housed in a massive metal vault designed to protect them from Jupiter's punishing radiation. The commemorative plate will seal an opening in the vault.

NASA Unveils Design for Message Heading to Jupiter's Moon Europa



Learn more about how Europa Clipper's vault plate engravings were designed and the inspiration for the plate's multilayered message. Credit: NASA/JPL-Caltech (<https://www.youtube.com/watch?v=8coGQ9kvBas>)

Because searching for habitable conditions is central to the mission, the Drake Equation is etched onto the plate as well – on the inward-facing side. Astronomer Frank Drake developed the mathematical formulation in 1961 to estimate the possibility of finding advanced civilizations beyond Earth. The equation has inspired and guided research in astrobiology and related fields ever since.

In addition, artwork on the inward-facing side of the plate will include a reference to the radio frequencies considered plausible for interstellar communication, symbolizing how humanity uses this radio band to listen for messages from the cosmos. These particular frequencies match the radio waves emitted in space by the components of water and are known by astronomers as the “water hole.” On the plate, they are depicted as radio emission lines.

Finally, the plate includes a portrait of one of the founders of planetary science, Ron Greeley, whose early efforts to develop a Europa mission two decades ago laid the foundation for Europa Clipper.

“We’ve packed a lot of thought and inspiration into this plate design, as we have into this mission itself,” says Project Scientist Robert Pappalardo of NASA’s Jet Propulsion Laboratory in Southern California. “It’s been a decades-long journey, and we can’t wait to see what Europa Clipper shows us at this water world.”

Once assembly of Europa Clipper has been completed at JPL, the spacecraft will be shipped to NASA’s Kennedy Space Center in Florida in preparation for its October launch.

More About the Mission

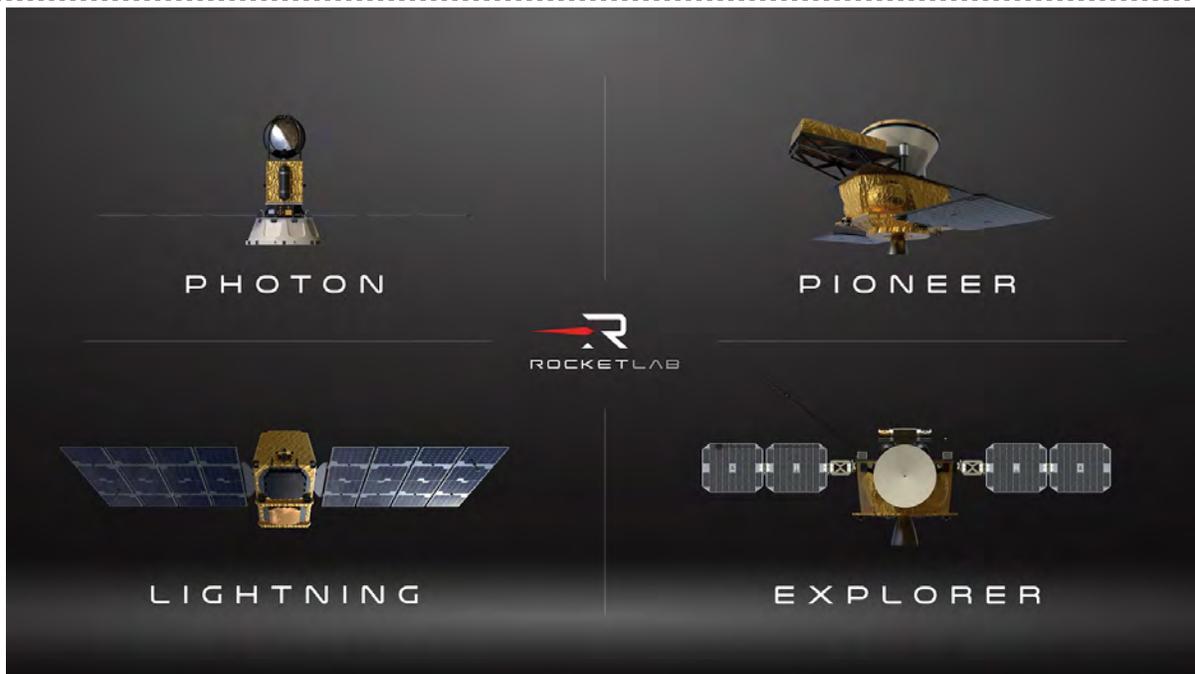
Europa Clipper’s main science goal is to determine whether there are places below Jupiter’s icy moon, Europa, that could support life. The mission’s three main science objectives are to determine the thickness of the moon’s icy shell and its surface interactions with the ocean below, to investigate its composition, and to characterize its geology. The mission’s detailed exploration of Europa will help scientists better understand the astrobiological potential for habitable worlds beyond our planet.

Find more information about Europa here: europa.nasa.gov

Rocket Lab Unveils Spacecraft Bus Lineup

by Rocket Lab (2024 February 27)

(<https://www.rocketlabusa.com/updates/new-blog-post-16/>)



Updated family of advanced spacecraft delivers speed, affordability, performance, and configurability for a range of mission profiles and customers

Long Beach, Calif. 27 February 2024 – Rocket Lab USA, Inc (Nasdaq: RKLB) (“Rocket Lab” or “the Company”), a leading launch and space systems company, today introduced its family of spacecraft buses, consolidating the custom designs Rocket Lab has developed for multiple customers and missions. The family of spacecraft is the result of more than four years of development into Rocket Lab’s space systems capabilities.

“We’ve had the privilege of developing, launching, and operating spacecraft for a broad range of customers and they’ve all told us the same thing: They need reliable and highly capable spacecraft built quickly and affordably. Photon was the start, but the Rocket Lab spacecraft family has grown,” said Rocket Lab founder and CEO Peter Beck. “We’ve developed a configurable spacecraft line that delivers high performance at scale, supported by an experienced team, technical maturity, a vertically-integrated supply chain, and advanced manufacturing, test and operations facilities. We’ve designed these spacecraft through close collaboration with our customers to support real missions at constellation scale. The hard development work is done, and now these spacecraft are available as off-the-shelf products, or they can be further customized to meet specific mission requirements.”

The spacecraft share many common components and subsystems, designed and manufactured in-house by Rocket Lab, including carbon composite structures, star trackers, reaction wheels, solar arrays, radios, separation systems, avionics, flight and ground software.

“Through vertical integration, we’re able to deliver spacecraft quickly, affordably and reliably using flight-proven components”, says Rocket Lab Vice President Space Systems, Brad Clevenger. “We’ve struck the right balance between commonality to deliver cost-effective, rapid production and ensuring our spacecraft are configurable to suit unique and specific mission profiles.”

Rocket Lab Unveils Spacecraft Bus Lineup

Rocket Lab's family of spacecraft includes:

Photon: The original Rocket Lab spacecraft, Photon is the Company's integrated launch-plus-spacecraft solution. Photon is a modified Electron Kick Stage with power, propulsion, and communications to deliver a capable low Earth orbit (LEO) platform that serves civil, defense and commercial customers across a range of missions. With a mass of 200-300kg, Photon is launched on Electron for responsive space and other challenging missions like [cryogenic fuel demonstration](#), taking advantage of precision orbit insertion, launch on demand, and the lowest launch environments in industry.

Lightning: Rocket Lab's newest spacecraft bus is designed for a 12+ year orbital lifespan in LEO, delivers high power and high radiation tolerance, incorporating redundancy in critical subsystems. This ~3 kW bus is ideal for high operational duty cycle telecommunications and remote sensing applications. Lightning can be launched on Neutron and other medium and heavy launch vehicles. Lightning is based on the same design as the custom spacecraft Rocket Lab developed for MDA and [Globalstar](#) and is the basis for the Company's bus for the [Space Development Agency](#).

Pioneer: A highly configurable medium delta-V platform designed to support payloads up to 120 kg and unique mission profiles, including [re-entry missions for Varda Space Industries](#), and dynamic space operations. Depending on the mission profile, Pioneer can be launched on Electron, Neutron or other launch vehicles.

Explorer: A high delta-V spacecraft with large propellant tanks, deep space capable avionics, and ranging transponders. Explorer enables small spacecraft missions to planetary destinations like Mars and Venus, the Moon, highly eccentric Earth orbits, geosynchronous Earth orbit (GEO), Earth-moon Lagrange points, Earth-sun Lagrange points, and near Earth objects (NEOs). Depending on the mission profile, Explorer can be launched on Electron, Neutron or other launch vehicles. Explorer gained flight heritage during the [CAPSTONE mission to the Moon for NASA](#) and forms the basis of the twin spacecraft Rocket Lab is developing for the [ESCAPADE mission to Mars](#) for NASA and the University of California, Berkeley.

Each member of Rocket Lab's spacecraft family is currently in production in a range of quantities for different customers, with more than 40 satellites currently in backlog. To support the rapid production of our family of spacecraft, Rocket Lab has established an advanced spacecraft development and manufacturing complex at the Company's Long Beach headquarters. The facility includes over 10,000 sq. ft. of cleanroom and 40,000 sq. ft. of additional production & test facilities designed to support constellation class manufacturing and satellite assembly, integration and test for commercial, civil and national security customers.

Learn more about Rocket Lab's family of spacecraft here. www.rocketlabusa.com/spacecraft

Night-Shining Cloud Mission Ends; Yields High Science Results for NASA

by NASA (2024 March 1)

<https://www.jpl.nasa.gov/news/nasa-unveils-design-for-message-heading-to-jupiters-moon-europa>



NASA's Aeronomy of Ice in the Mesosphere (AIM) mission, seen in this visualization, contributed to NASA's understanding of the region that borders between Earth's atmosphere and space. NASA

NASA Editor's Note: This article was edited to add information about mission partner institutions.

After 16 years studying Earth's highest clouds for the benefit of humanity – polar mesospheric clouds – from its orbit some 350 miles above the ground, NASA's Aeronomy of Ice in the Mesosphere, or AIM, mission has come to an end.

Initially slated for a two-year mission, AIM was extended numerous times due to its high science return. While AIM has faced hurdles over the years – from software hiccups to hardware issues – an incredibly dedicated team kept the spacecraft running for much longer than anyone could have anticipated. On March 13, 2023, the spacecraft's battery failed following several years of declining performance. Multiple attempts to maintain power to the spacecraft were made, but no further data could be collected, so the mission has now ended.

"AIM was dedicated to studying the atmospheric region that borders between our atmosphere and space," said AIM mission scientist Diego Janches, of NASA's Goddard Space Flight Center in Greenbelt, Maryland. "AIM's help understanding this region has been of critical importance to providing insights on how the lower atmosphere affects space weather."

Known as night-shining or noctilucent clouds, they are seen at twilight in the summer months, typically at high latitudes near the North and South Poles. Before the mission, scientists knew these types of clouds varied with latitude, season, and solar activity, but didn't know why. This mission was launched to understand the variations and study why the clouds form and their links to climate change by measuring the thermal, chemical, and other properties of the environment in which the clouds form.

Night-Shining Cloud Mission Ends; Yields High Science Results for NASA



Noctilucent clouds appeared in the sky above Edmonton, Alberta, in Canada on July 2, 2011. NASA/Dave Hughes

“NASA’s AIM has been an incredibly successful mission,” said Scott Bailey, AIM principal investigator and professor at Virginia Tech. “It has answered core questions that have helped us understand how noctilucent clouds and atmospheric gravity waves vary over time and location.”

Over the years, AIM made many big discoveries. Data from the mission has thus far led to nearly 400 peer-reviewed publications. This includes findings on how these clouds can be created by meteor smoke and water vapor from rocket exhaust, how events near Earth’s surface can trigger changes in the clouds, and how ice high in the atmosphere can cause mysterious radar echoes, which are created in certain regions of the atmosphere during the summer.

As the mission progressed, scientists realized AIM’s data could also be used to study undulations in the air called atmospheric gravity waves. These waves transfer momentum and energy as they travel through the atmosphere. They link weather events at Earth’s surface with atmospheric disturbances that occur far away from the initial event, including in the uppermost part of the atmosphere where they can disrupt GPS signals.

“We’ve had many difficulties, but we’ve still gotten an incredible amount of data from AIM because of our really excellent, heroic, and hardworking team that comes through every time,” Bailey said.

AIM’s first hurdles started only months after launch in 2007, when the telecommunication receiver started to malfunction intermittently. With a clever use of radio signals, the team was able to reprogram the spacecraft to communicate in Morse code, which allowed it to maintain communications even after the receiver stopped working. While communication with the spacecraft became thousands of times slower than planned, AIM was still able to make its measurements and send home 99% of the data it collected.

Night-Shining Cloud Mission Ends; Yields High Science Results for NASA

Shortly thereafter, the spacecraft again encountered a mission-threatening issue. The spacecraft repeatedly sent itself into safe mode, which effectively shut down the spacecraft and required a time-consuming series of tasks to reboot. But again, the engineers were able to upload new software to the spacecraft to circumvent the issue and keep AIM functional. The new software patch has prevented over a thousand such incidents on the spacecraft since.

In 2019, AIM's battery started to decline, but through great effort and ingenuity, the mission operations team maintained the battery power, enabling the spacecraft to continue returning data. In early 2023, the battery experienced a significant drop-off in performance which meant the spacecraft could not regularly receive commands or collect data. Unfortunately, this hardware issue was not one that could be repaired remotely, and the satellite finally ceased collecting data in March 2023.

"We're saddened to see AIM reach the end of its lifetime, but it's been amazing how long it has lasted," Bailey said. "It's given us more data and insight into noctilucent clouds and atmospheric gravity waves than we could ever have hoped for."

Though the spacecraft has seen its last night-shining clouds, scientists will continue to study AIM's data for years to come. As for the spacecraft itself, it will slowly lose orbital height and burn up upon atmosphere re-entry in 2026.

"There are still gigabytes upon gigabytes of AIM data to study," said Cora Randall, AIM deputy principal investigator and senior research scientist at the Laboratory for Atmospheric and Space Physics in Boulder, Colorado. "And as our models and computational capabilities continue to improve, people will make many more discoveries using the AIM datasets."

For more information about the mission, visit: <https://go.nasa.gov/3TgIDwD>

AIM is a NASA-funded mission managed by NASA's Goddard Space Flight Center in Greenbelt, Maryland, and led by the AIM principal investigator from Virginia Tech and previously led by a former principal investigator, James Russell, at the Center for Atmospheric Sciences at Hampton University in Hampton, Virginia.

Remembering Allan McDonald: He Refused To Approve Challenger Launch, Exposed Cover-Up (excerpts only with URL/link)

by Howard Berkes / NPR (2021 March 7)

<https://www.npr.org/2021/03/07/974534021/remembering-allan-mcdonald-he-refused-to-approve-challenger-launch-exposed-cover>



Allan McDonald in 2016 holds a commemorative poster honoring the seven astronauts killed aboard the space shuttle Challenger. Howard Berkes/NPR

On Jan. 27, 1986, Allan McDonald stood on the cusp of history.

McDonald directed the booster rocket project at NASA contractor Morton Thiokol. He was responsible for the two massive rockets, filled with explosive fuel, that lifted space shuttles skyward. He was at the Kennedy Space Center in Florida for the launch of the Challenger "to approve or disapprove a launch if something came up," he told me in 2016, 30 years after Challenger exploded.

His job was to sign and submit an official form. Sign the form, he believed, and he'd risk the lives of the seven astronauts set to board the spacecraft the next morning. Refuse to sign, and he'd risk his job, his career and the good life he'd built for his wife and four children.

.....

(For the rest of the article, please click here and continue reading. Thank you.)

<https://www.npr.org/2021/03/07/974534021/remembering-allan-mcdonald-he-refused-to-approve-challenger-launch-exposed-cover>

URANUS AND NEPTUNE: NOW SHOWING THEIR TRUE COLORS!

by Ron Miller (Co-Producer of Chesley Bonestell: A Brush With the Future) (2024 January 30)



NASA / JPL-Cal Tech / Bjorn Jonnson

Uranus and Neptune, as seen in their natural colors in 2024.

The distant planets Uranus and Neptune are once again, in the news. Original photographs of these two planets, taken by the Voyager 2 spacecraft and first made public 40 years ago, were recently examined by a team of astronomers at the University of Oxford, led by Professor Patrick Irwin.



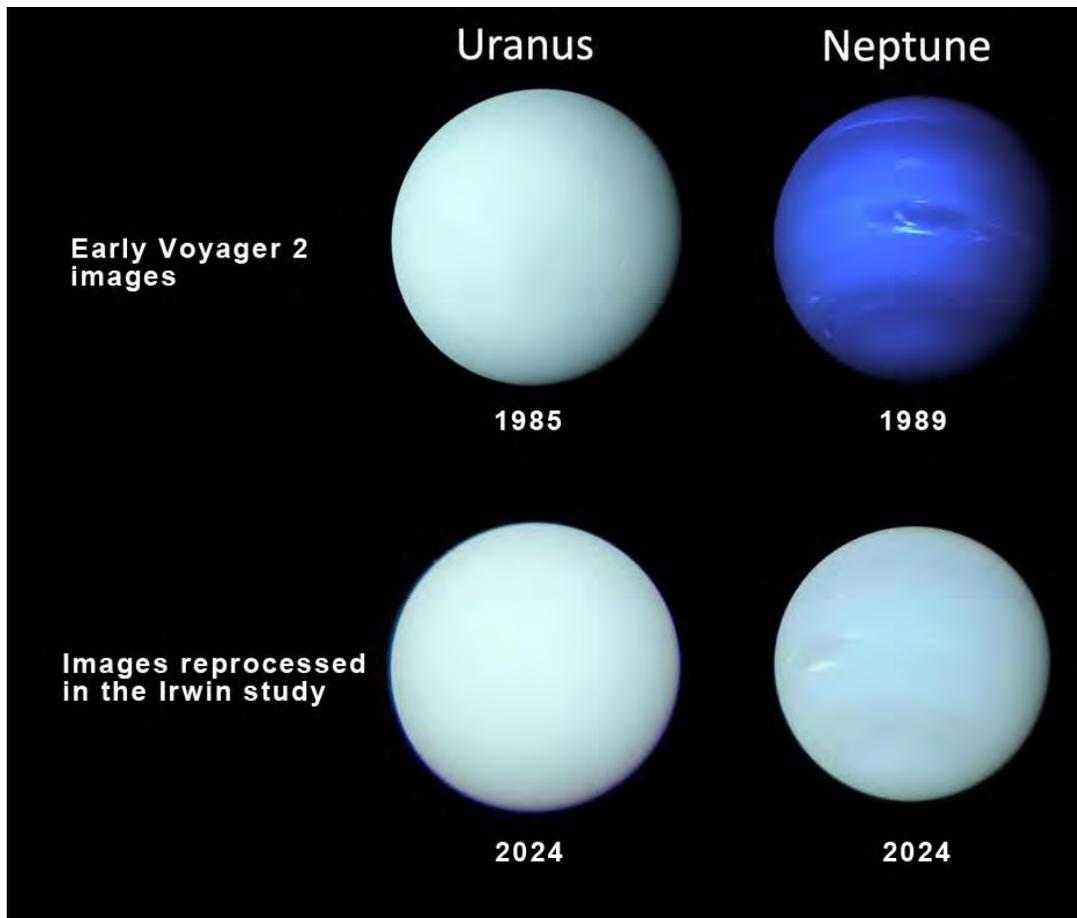
University of Oxford

Professor Patrick Irwin

They suspected that the images were misleading. Unlike the gaudy bands of clouds that decorate Jupiter and Saturn, the visible atmospheres of Uranus and Neptune are far more subtle in their details and coloring. To bring out these features, NASA enhanced the images using photographic filters. This was successful but at the same time gave a wrong impression because they wouldn't be how these worlds would appear in reality.

What would they actually look like to a visiting astronaut? To answer that question, Professor Irwin set out to create “the most accurate representation yet” of these two planets.

URANUS AND NEPTUNE: NOW SHOWING THEIR TRUE COLORS!



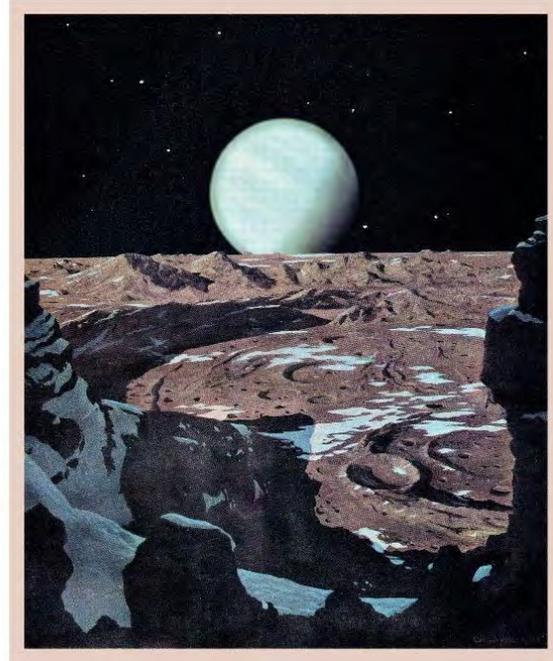
Patrick Irwin

**TOP ROW: Older, enhanced NASA images of Uranus and Neptune.
 BOTTOM ROW: Newly reprocessed images showing true colors.**

The results were images showing the planets for the first time in their true, natural colors. Cloud details are now far more subtle. In fact, the two planets – already often referred to as “twins” – appear to be far more alike in resemblance than everyone had thought . . . everyone but Chesley Bonestell!

Over the course of his long career, this “Father of Space Art” only rarely created paintings of Uranus and Neptune. The first time was in 1949, in his classic book, *The Conquest of Space*. Two illustrations, both in black and white, showed the planets as they might appear from one of their satellites. Both depict them as bright, nearly featureless disks. In 1972, over a decade before NASA’s Voyager 2 took the first close-up photos of these two planets, Bonestell and Arthur C. Clarke collaborated on a book, *Beyond Jupiter*, that described a speculative Voyager-like Uranus and Neptune. Bonestell illustrated these in two full-page, color paintings. And in both they uncannily resemble the corrected images published by NASA, both in color and detail.

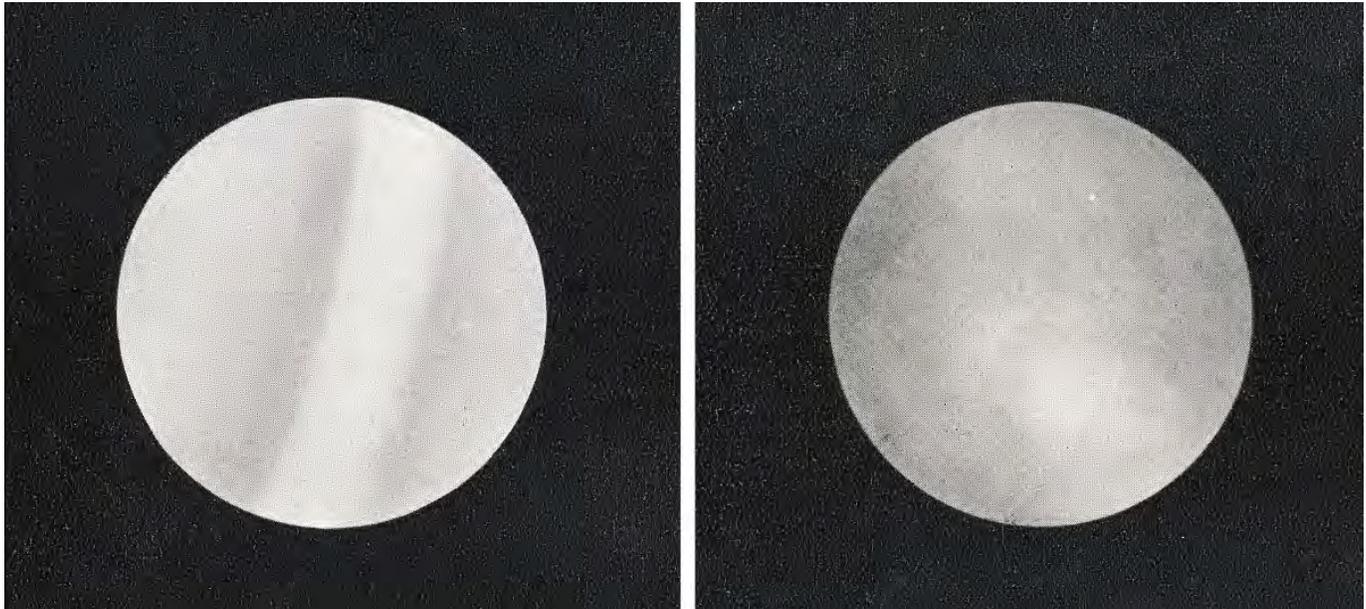
URANUS AND NEPTUNE: NOW SHOWING THEIR TRUE COLORS!



Uranus (left) and Neptune (right), as depicted by Chesley Bonestell in 1972.

How did Bonestell manage to do this? To answer that question, we need to take a look at the history of the discovery of these two planets. Uranus and Neptune are among the most mysterious planets in the solar system. They are enormous balls of frigid, poisonous gases, each nearly four times larger than the Earth. For the first hundred years since their discovery, little more was known about these two celestial bodies other than what could be observed and measured from our planet . . . and that was little enough. Uranus and Neptune are very far away—Uranus is 1,690,000,000 miles (2,719,210,000 km) from Earth and Neptune is 2,700,000,000 miles (4,344,300,000 km) away. Even through the most powerful telescopes, the two planets look like tiny beads, one blue, one blue-green, much too small to see any details on their surfaces. In 1882, physicist J.A. Gillett and educator W.J. Rolfe wrote that Uranus “as seen in a large telescope . . . has a decidedly sea-green color; but no markings have with certainty been detected on its disk.” Regarding Neptune, “no telescope has revealed any markings on its disk.” As early as 1909, French astronomer-artist Lucien Rudaux had written that Uranus, even through a small telescope, appears a “distinct bluish-green” and Neptune “perhaps a more marked bluish-green . . .”

URANUS AND NEPTUNE: NOW SHOWING THEIR TRUE COLORS!

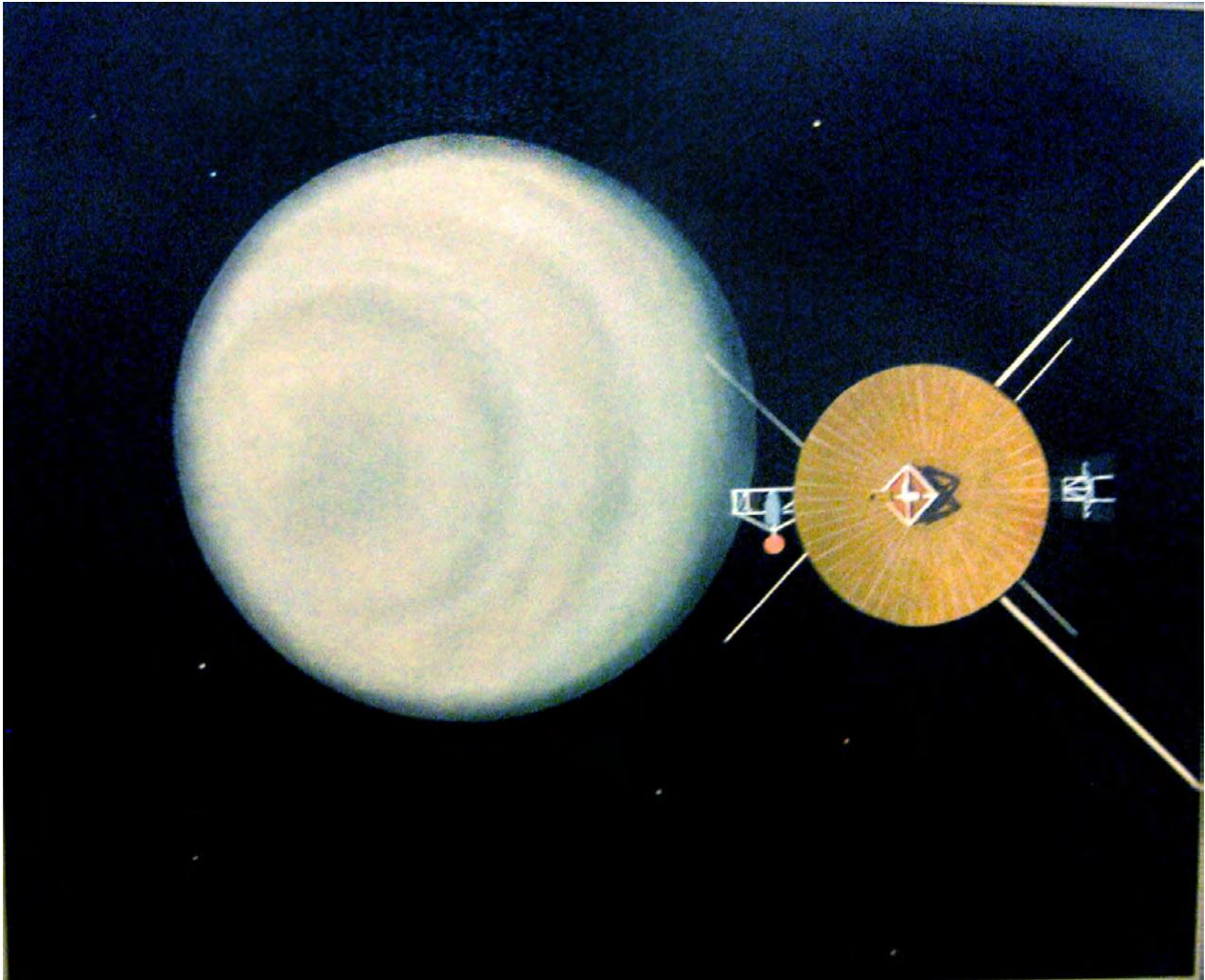


Uranus (left) as observed in 1915 and Neptune as seen in 1916.

In 1924, astronomer Mary Proctor wrote that "In the telescope, Uranus shows a greenish disk, and there are faint belts resembling those of Jupiter." Also in 1924, astronomers T.E.R. Phillips and W.H. Stevenson described Uranus as a "sea-green slightly flattened disk." The markings," they go on to say, "are, however, very faint." In the late 1940s, Rudaux and astronomer Gerard de Vaucouleurs reported that under the best conditions "Uranus appears to be of a greenish-blue color . . . and has a system of faint dark belts parallel with the equator."

This was the information that Bonestell had to work with at the time he did his illustrations of the two planets. And since these were observations made by the human eye, they naturally turned out to closely match the images returned by Voyager 2, once Professor Irwin had restored the planets to their natural color. So what is to Bonestell's credit in this case is not so much an ability to foresee what Professor Irwin later discovered as it is an example of the careful, meticulous research he undertook before starting on any painting. As a result of this attention to detail, his depictions of Uranus and Neptune ring true today.

URANUS AND NEPTUNE: NOW SHOWING THEIR TRUE COLORS!



Painting by Chesley Bonestell

In their 1972 book, *Beyond Jupiter*, Chesley Bonestell and Arthur C. Clarke envisioned this imaginary fly-by of Uranus taking place on February 1, 1984. In reality, NASA's Voyager 2 spacecraft encountered Uranus on January 24, 1986.

EDITOR'S NOTE: *Ron Miller is one of the Co-Producers of **Chesley Bonestell: A Brush With The Future**, as well as being an author and illustrator of over 75 books on the subject of space. You'll find his depiction of the Milky Way on the cover of the February 2024 issue of **Scientific American**.*

URANUS AND NEPTUNE: NOW SHOWING THEIR TRUE COLORS!



Milky Way Streamers by Ron Miller.

Welcome ! New AIAA Members! (LA-LV Section)

*Welcome, new members!
And, Congratulations!*



	Joon Vin	Kwak
	Seojoon	Kwon
Dr	Peter	Chun
	Derek	Madrid
	Daniel	Gonzalez
Mr	Kurt A	Magsumbol
Mr	Quang H	Nguyen
Mr	Christopher	Dedman-Rollet
	Anthony	Sims
	Andres S	Gomez
	Scarlett	Hao
	Dan	Hart
	Eran	Dutt
	Brianna	Sandoval
	Ray	Santiago
Mr	Mychal J.A.	Bradfield
	Madeleine	Lavi
	Beatrice	Suherman
	Jacob D	Johnson
Ms	Bianca R	Perry
	Melika	Mahdavisaei
	Martin	Landa
Mr	Aleem	Ahmed
	Stormy	Christa
Mr	Ian A	Brown
Mr	Jose E	Giacoman
	Mayra	Arangure
	Dylan	Hoang
	Isabella	Doherty

	Jackson T	Haubursin
	Jose A	Machado
	KyleJ	Mayor
Mr	Michael E	Rouse
	Amirreza	Yazdanfar
	Gabriela H.	Antonio
	Paul G	Holden
	Gabriel	Lopez
	Quang Huy	Nguyen
	Adam T	Villa
	Euge A	Yamakoshi
Mr	Juan C H.	Guizar
	Eugene	Choi
	Emanuel H.	Pineda

AIAA LA Aerospace News Digests (by Dr. Ken Lui, AIAA Los Angeles Section)



(Mar. 26) Jeff Bezos's Blue Origin passes 4 key milestones for its \$172 million NASA contract to build a new space station



(Mar. 26) SpaceX's Starshield Contracts Are a Lot Bigger Than Just \$70 Million



(Mar. 26) Update: Severe solar storm warning, auroras possible as far south as Alabama



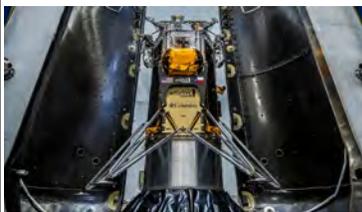
(Mar. 25) What travelers should know about FAA advisory on total solar eclipse before April 8



(Mar. 25) Boeing CEO Dave Clahoun is stepping down by the end of the year



(Mar. 25) NASA's next-generation spacesuit is absolutely amazing



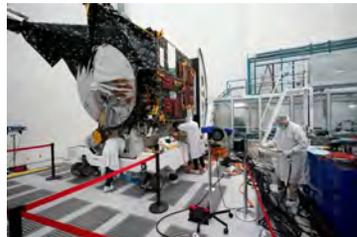
(Mar. 24) First American Moon mission since Apollo era ends after lunar lander doesn't 'call home'



(Mar. 24) Astrophysicist thinks he's cracked the equation for time travel



(Mar. 24) 'Most metal' rocket from United Launch Alliance set to retire after this week's launch



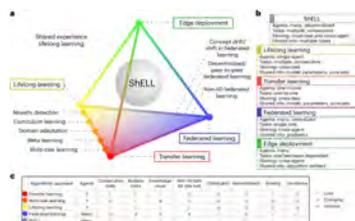
(Mar. 23) California must invest more in the space industry, say state's members of US House and Senate



(Mar. 22) Hawaii-Bound Supersonic Aircraft Soars In Test Flight



(Mar. 22) Boeing's Starliner Set for First Astronaut Flight After Engineers Remove a Mile of Flammable Tape



(Mar. 22) Top computer scientists say the future of artificial intelligence is similar to that of Star Trek



(Mar. 22) Boeing lawsuit accuses Virgin Galactic of stealing trade secrets



(Mar. 21) Northrop Grumman wins DARPA contract for a railway on the Moon



(Mar. 20) A snake-like robot designed to look for life on Saturn's moon



(Mar. 19) Astrobot readies next lunar lander following failed Peregrine moon mission



(Mar. 14) Tire issue reported as American Airlines Boeing 777 flight lands in L.A.



(Mar. 14) Starship's 3rd-launch success: Rocket finally soared to space without blowing up, but SpaceX lost it on reentry



(Mar. 12) People hit the roof on Boeing plane, passenger says as New Zealand probes sudden drop during flight

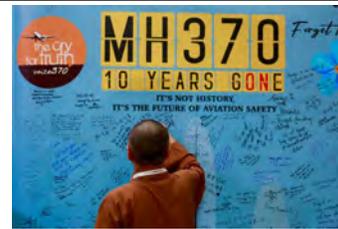
AIAA LA Aerospace News Digests



(Mar. 12) Boeing Whistleblower Who Raised Quality Concerns Is Found Dead



(Mar. 10) Paris Charles de Gaulle Airport Celebrates 50 Years Of Operations



(Mar. 8) Malaysia Airlines flight MH370 vanished 10 years ago today. What have we learned about what happened?



(Mar. 7) New look at NASA Boeing sustainable experimental airliner



(Mar. 7) Boeing plane loses landing gear tire after SFO takeoff



(Mar. 5) Video shows lightning striking Boeing 777 after takeoff at Vancouver airport



(Mar. 4) Nvidia's CEO Thinks AI Will Be Smarter Than Humans in 5 Years. Why We Should Listen Up



(Mar. 1) Boeing gets 439 million contract for U.S. military communications satellite

Upcoming AIAA / Los Angeles Events

AIAA Los Angeles Section Annual Awards Dinner

Wednesday, May 1st, 2024, 5 PM PDT (US and Canada) (GMT -0700)

RSVP and Information: (<https://lp.constantcontactpages.com/ev/reg/6sr22fr/lp/747511c1-f97e-4018-8907-6c34c7b985c6>)

AIAA Los Angeles Annual Awards Dinner



Keynote Address:

Dr. Jeff Puschell

"Hyperspectral coastal water imaging from space."

**AIAA LA Section Technical Excellence Award
Victus Nox SmallSat (Responsive Space)
Millennium Space Systems**



Recognitions:

Council Members, Membership Honors and Advancement, Volunteers

National Academy of Engineering Class of 2024

Dr. Jeff Puschell

AIAA Honorary Fellow Class of 2024

Prof. Azad Madni

AIAA Sustained Service Award

Ms. Marilee Wheaton and Dr. Kenneth Lui

AIAA LA Section K-12 Student Awards

AIAA LA Section James Wertz Scholarship

AIAA SSTC Middle School Essay Contest local entry Recognition

Physical Location

**Cambria Hotel LAX, Meeting Room/Patio
199 Continental Blvd, El Segundo, CA 90245**

(South of LAX/105 Hwy, West of 405 Hwy, and East of PCH 1. Adjacent to LAX, Raytheon, Aerospace Corp. Northrop Grumman, Boeing, LA AFB / Space Force, Millennium Space Systems, LA Kings/Toyota Sports Performance Center etc.)
Tentative Agenda (All time PDT (GMT -0700))

5:00 PM: Check-in / Cash Bar (Lobby) / Student Posters,

6:00 PM: Dinner,

7:00 PM: Keynote Address, 7:30 PM: Excellent Award,

7:55 PM: Recognitions, 8:20 PM: Best Event, Student Awards, James Wertz Scholarship, SSTC Essay Contest,

8:55 PM: Concluding Remarks



Disclaimer: The views of the speakers do not represent the views of AIAA or the AIAA Los Angeles Section.

Contact: General Contact: contact@aiaa-lalv.org, Events/Program events.aiaalalv@gmail.com



Congratulations AIAA Fellow Dr. Jeff Puschell inducted to the National Academy of Engineering (NAE) Class of 2024

(2024 February 6) (<https://www.nae.edu/19579/31222/20095/311406/312025/NAENewClass2024>)



"Puschell, Jeffery J., engineer, Northrop Grumman Corp., El Segundo, Calif. For development of optical, multispectral, and hyperspectral space-based remote sensing systems for Earth observation."

Dr. Jeff Puschell is AIAA Region VI Director of Education, AIAA Fellow, Advisor, AIAA Los Angeles - Las Vegas Section. He is also National Academy of Engineering Inductee 2024, and SPIE Fellow.

He is Chief Engineer, EO/IR Payloads, Northrop Grumman Corporation | Space Systems.

Congratulations! Millennium Space Systems / Victus Nox SmallSat AIAA Los Angeles Section Technical Excellence Award 2024

VICTUS NOX Small Satellite (Millennium Space Systems)

"For the milestone responsive space demonstration on 2023 September 14 with the successful launch of the U.S. Space Force's VICTUS NOX mission with 24-hour notice."



Name: VICTUS NOX

Mission: Space Domain Awareness

About:

VICTUS NOX centered on one key objective: speed. The goal? Build and launch a small satellite in rapid timeframes never before seen in industry. Eight months to build, and without notice standby for 60 hours for activation and 24 hours for launch. A seemingly impossible timeline for a national security space mission became reality September 14, 2023.

Millennium Space Systems and Firefly Aerospace entered into Hot Standby August 30. Upon notice to activate, the team drove VICTUS NOX from El Segundo, California to Vandenberg Space Force Base, fueled it and integrated it on the payload adaptor. Activation completed in 57 hours against a 60-hour goal. The team then waited for the notice to launch from the U.S. Space Force, which came September 13, and was launch ready in 24 hours. Physics made the earliest launch window at 27 hours after notice to launch. VICTUS NOX lifted off from Vandenberg Space Force Base aboard a Firefly Aerospace Alpha launch vehicle, September 13. Initial contact came on the first pass, followed by a vigorous initialization phase completed in 37 hours against a 48-hour goal.

VICTUS NOX tested the limits of what's possible. Today, the sky – or, in our case, space – is the limit.

*Astra Award from Everyday Astronaut and a Laureate Award from AvWeek.

News:

<https://www.c4isrnet.com/battlefield-tech/space/2023/09/15/us-space-force-launches-victus-nox-responsive-space-mission/>

<https://breakingdefense.com/2023/09/victus-nox-nails-space-force-24-hours-to-launch-goal/>

<https://www.airandspaceforces.com/space-force-victus-nox-launch/>

<https://payloadspace.com/firefly-and-millennium-ready-to-launch-victus-nox/>

<https://www.forbes.com/sites/lorenthompson/2023/10/12/record-fast-victus-nox-mission-demonstrates-us-space-force-will-be-able-to-turn-on-a-dime-in-future-conflicts/?sh=288fb97e614c>

<https://www.vandenberg.spaceforce.mil/News/Article-Display/Article/3526687/space-systems-command-successfully-launches-victus-nox-for-us-space-force-sets#:~:text=The%20mission%2C%20known%20as%20VICTUS,record%20for%20responsive%20space%20la>

[unch.](https://www.vandenberg.spaceforce.mil/News/Article-Display/Article/3526687/space-systems-command-successfully-launches-victus-nox-for-us-space-force-sets#:~:text=The%20mission%2C%20known%20as%20VICTUS,record%20for%20responsive%20space%20la)

AIAA Los Angeles Section Council 2024 Elections Announcement - Nominations (Deadline April 18, 2024, 11 AM PDT)

American Institute of Aeronautics and Astronautics Los Angeles Section 2024 Council Elections - Phase I: Nominations

Calling All AIAA Professional Members affiliated with the Los Angeles (Professional) Section - It's Election Time for the 2024-2025 Council. (Educator, Associate, and Corporate members, please contact us if interested.)

The Los Angeles Section of the AIAA will be holding elections soon. Please consider being an integral part of our section and participate in the nomination process. Current nominees include:

Officers:

- Chair: Mr. Luis Cuevas
- Treasurer: Mr. Lynn Jenson
- Secretary: Ms. Courtney Best

Council Members:

- Technical Chair: Mr. Gary Moir
- Membership Chair: Ms. Sherry Stukes
- Education Chair: Mr. Ian Clavio
- STEAM K-12 Outreach Chair: Ms. Arpine Ovsepyan
- Public Policy Chair: Mr. Daniel Robert Scalese
- Career and Workforce Development Chair: Nitish Chennoju
- Programs: Dr. Ken Lui



If you would like to nominate a Los Angeles Section Member in good standing to fill any of the Council Positions, please forward your nomination, including the member's name, contact information and proposed position to the Nominating Committee by **11:00am PDT on April 18, 2024** to the Nominating Committee at elections@aiaa-lalv.org. You may also contact the nominating committee if you have any questions concerning these Council positions or the nomination process. Thank you for your participation in our election process!

Thank you very much,

Secretary, AIAA Los Angeles Section
Courtney Best

Please click here to get the attachment:

([AIAA Los Angeles Regular Council Chair Positions](#) (with responsibilities of each position))
<https://drive.google.com/file/d/1B6bYLSxvA411VrU-fsqhM6DvfOJTI3B7/view?usp=sharing>

