

3rd Quarter 2009

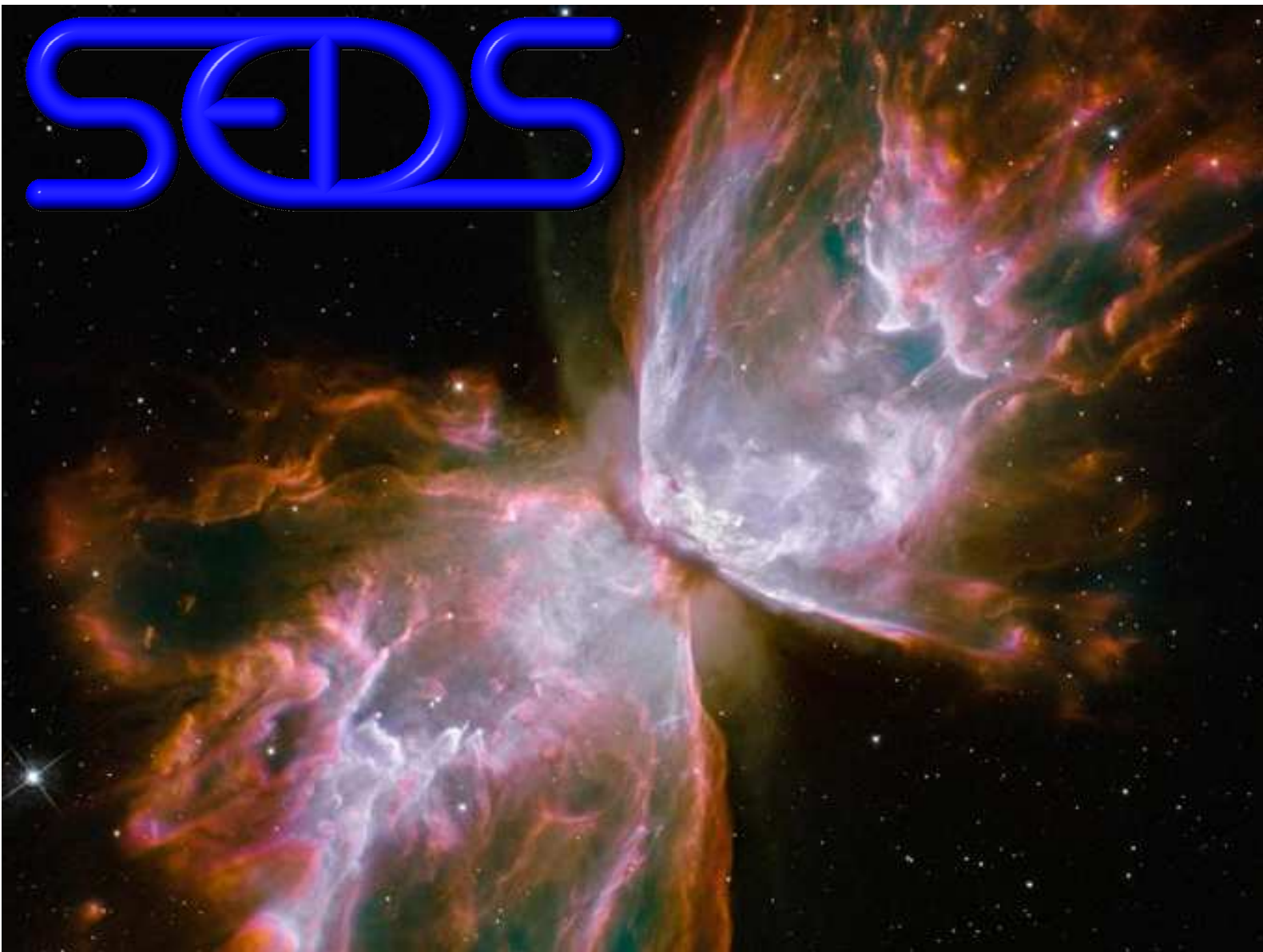
SEDS



The Official Publication of SEDS-USA



SEDS



Front Page:

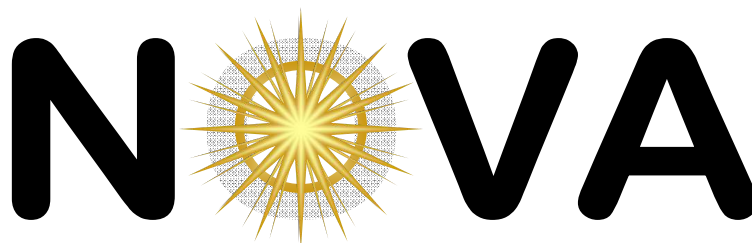
Space Shuttle Discovery begins its piggy back ride back to Florida on the back of NASA's modified Boeing 747 on September 20th. Discovery, back from STS-128, was forced to land at Edwards Air Force Base because of Inclement weather at Kennedy Space Center. *Credit: NASA.gov*

Above: Planetary Nebula NGC 6302 as viewed from the Hubble Space Telescope's new wide field camera 3. The Hubble, back online since early September, was recently upgraded and serviced by Space Shuttle mission STS-125 *Credit: NASA.gov*

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Letter from the Chair:

Members and friends of SEDS,

During May, approximately thirty SEDS members from over eight different universities volunteered at the International Space Development Conference in Orlando, Florida. Afterwards, the organizers of ISDC 2010 and 2011 were so impressed with the SEDS participation that they are already seeking SEDS volunteers for their conferences!

This is only one example of how SEDS is rapidly gaining notoriety in the space industry for providing competent, motivated, self-driven students who are passionate about space exploration. As our organization grows, more of these opportunities become available for everyone.

Remember that our university level chapters, projects, and activities are the driving base of SEDS. "My university doesn't do space" is never an excuse for a SEDS member! No matter what your major, school, or background, there are significant ways you can contribute to space exploration.

One of the best ways you can stand out in the current job market is to be involved in a new, innovative SEDS project. University Cubesat and Cansat projects are so overdone that they rarely make your resume stand out. By creating your own team for the upcoming SEDS Rockoon Competition you will receive extra attention from potential employers.

2010 promises to be an exciting year for SEDS. Make it your goal to attend at least one space conference. Be a team player on at least one chapter level SEDS project. And most importantly, attend at least one SEDS networking event.

Clear skies,

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NewSpace2009: Flags & Footprints or the New Frontier?

-A conference reflection by Brad Cheetham

A vast and diverse group of current and future space pioneers assembled July 17th-20th at NASA's Ames Research Center in Mountain View California to evaluate the past and plot the future of space exploration. The record number of attendees included Ames center director, eternal friend of SEDS, and space managerial pioneer General Simon "Pete" Worden, Space Frontier Foundation founders, NASA engineers, NewSpace entrepreneurs, and many future leaders of the industry from SEDS chapters across the country. In fact SEDS students not only volunteered to help at the conference: they planned it! Both co-chairs and both day managers are SEDS members -- showing yet again that membership and participation in SEDS provides vast opportunities.

Themes for the three day conference included a day detailing NewSpace visions and NASA Ames, a day discussing the business and policy aspects of NewSpace including the Heinlein Foundation sponsored business plan competition, and a day discussing both the past and future of the Moon. The main conclusion from NewSpace 2009, in an attempt to avoid reviewing every presentation, is that the exploration and development of the new frontier is continuing its steady and unstoppable advance and as a proud member of SEDS I believe it is not just our opportunity to create this future but it is our responsibility!



Conference members mingle at Ames Research Center



SpaceX's Falcon 1 flight 5 successfully launched from the Kwajalein Atoll on July 13th. This important launch for SpaceX marks the second successful flight, and delivery of the RazakSAT satellite. Credit: SpaceX

SEDS National Project Update:

SEDS Innovation Challenge 2010: The Rockoon Contest

The SEDS Innovation Challenge – in which teams of college students will launch rockoons (rocket-balloon hybrids) – is going to be held in August 2010 at the Black Rock Desert in Nevada. Teams will launch a balloon to a height of 75,000 to 85,000 feet and then launch a rocket from there.

SEDS-USA has formed a collaborative partnership with AeroPac Inc. to manage logistics and obtain necessary regulatory approvals for the contest next summer. AeroPac will participate in the safety review of the teams as well. They have also offered their Virtual Classroom platform, which provides features like real-time webcast and various tracking capabilities, for the teams to use as part of the downlink requirements for the contest.

Currently, four teams are actively working on their rockoons and have made considerable progress. MIT, University of Arizona, Iowa State University (http://wiki.seds.org/index.php/ISU_Rockoon_Project) and University of Kansas (<http://kuxbs.org/>) are the teams in the fray so far. SEDS will be accepting new entries for the contest till December 2009. Teams must consist of students (not necessarily SEDS members) and must have a certified L2 flier or equivalent on the roster.

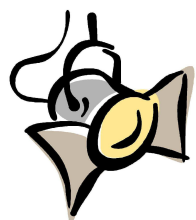
SEDS is presently in talks with corporate sponsors to fund the prize money and/or donate relevant hardware for the teams. The uniqueness of the contest is bound to attract considerable attention of the aerospace community and the media, making sponsorship a very attractive proposition.

The exact launch date will be announced soon. If you have any questions regarding sponsorship, participation or contest details, email projects@seds.org. If you are interested in the latest developments about the contest, subscribe to the rockets@seds.org mailing list.



Team members from Iowa State University test their balloon.

-Article by Basant Sagar, Director of Projects for SEDS-USA and Treasurer of MIT-SEDS



Alumni Spotlight

Name: Ben Brockert

University/SEDS Branch: Iowa State University,
Iowa State Space Society (ISSS)

Year Graduated/Degree(s): Attended for Computer Engineering,
no degree

Describe your current position with Masten Space Systems. What are your responsibilities, and what part do you play in Masten's vision as a whole?

Masten Space is a small company, so everyone does more than one thing. My current primary role is project manager, covering all of our current projects. That includes two rocket engine development programs, three vehicle programs, and oversight on a variety of sub-systems. On a practical level, this means that I keep a project plan, watch for deadlines, and tell people what they should be working on. Including the CEO.

Beyond that, I also run the test area when we're out firing engines or flying vehicles, ensuring safe and reliable operations. I also share hiring and training duties.

In the past I designed and built the electrical system on XA-0.1B, TIG welded most of the frame, fabricated many of the parts, and did much of the plumbing. I've also done a lot of fuel and liquid oxygen loading, have fired our igniter cart hundreds of times, and recently did some concrete work. The variety of tasks is great for me, I really enjoy the opportunity to do many different things in any given week.



Image courtesy of Robin Snelson

Do you feel that SEDS helped prepare you for your work? If so, how?

The Iowa State Space Society was good experience in working with a small group toward a goal. On more than one occasion, we built or modified rockets in a hotel or restaurant.

My first position in ISSS was that of Astronomy Chair, and I used star parties as an opportunity to teach about some specific aspect of the cosmos at night. That translates well to teaching someone why and how we clean parts for service in liquid oxygen, or how a pintle injector rocket engine works.



*Tethered test flight of Masten's XA-0.1B
Image courtesy of Masten Space Systems, Inc.*

Out of all the *annual* space conferences or events you have attended, which one would you suggest the most to current SEDS members? Why?

The first Space Vision I went to, at UIUC, was one of the most energizing conferences I ever attended. It was great to be able to talk with other chapters about what they're doing, and where they have had successes. I think one of the main areas of improvement for SEDS National would be to really encourage attendance at Space Vision (with travel money, A-list speakers, and good promotion), and improve inter-chapter communication during the other parts of the year.

Space Access is another really interesting conference. It's in Phoenix every year, and is one of the few opportunities to talk to people at companies like mine. Many of the attendees don't go to the bigger conferences. I led a panel there this year with 7 different VTVL rocket groups who had built hardware, which is more than most people know exist.

In what ways did your involvement with SEDS help you follow your dreams?

I moved from Iowa to Mojave without specific job prospects, and hung around bugging people until I someone gave me a job. It took six months of burning through savings and being very bored. I don't know if I'd have put space at as high of a priority if I hadn't been involved with SEDS.

If there's something you really want, you have to be willing to risk everything to try to get it. Otherwise you obviously don't want it very badly.

What is one fun/crazy/memorable SEDS event or memory which you will always remember?

I made 100 SEDS/X Prize Cup pins just before the 2006 XPC, to give to the SEDS volunteers who were making the event possible. I started meeting SEDS people and handing out buttons on the pre-dawn bus ride from the parking area to the event site. I handed them all out over the weekend, with a few to notable people like Anousheh Ansari.

Later on the second day, I was trying to get into the VIP area without a VIP badge. The people manning the gate saw my pin, remembered that most of the volunteers were wearing them, and let me in. They started just as a way to spot the SEDS people and ended up being as good as all-access badges! A great recognition of the work SEDS people do.



For more info on what Ben's up to, please visit <http://www.masten-space.com/>

Interviewed by: Matt Cannella

Know an outstanding SEDS Alumni from your chapter who is currently involved in the Space Industry? Email publications@sedds.org to suggest next issue's



Alumni Spotlight



Past, Present, and Future

Article by: Darrell Cain, MIT SEDS alumni

The original SEDS founders grew up in a world where space was the next frontier. In less than a decade, the human space race had gone from launching a single man into space to repeatedly sending crews of three to the Moon. For those who were growing up during this time the future seemed clear, and that future was in space exploration. But then something changed. Governmental investment in space slowly scaled back and projects started to get bogged down in bureaucratic mess, continuously pulling the cost of spaceflight upwards. The founding generation of SEDS had watched their solid future become an impossible dream, denied before it could even begin.

When that first letter was sent to Omni magazine, calling to arms that generation to fight back against the slow death of their dream, the response was overwhelming. Bob Richards and Peter Diamandis, the original SEDS founders, put words to a frustration that had slowly been growing among their generation. Using the response from this letter and a little of their own foresight, SEDS was formed by the founders as a small trail, one that allows us to continue now.

Today the alumni from previous generations of SEDS are scattered out across a wide variety of industries. Some of our alumni have spent their lives working in the space industry, others have worked in various technology industries and are just starting to re-enter the space scene. Still others are working elsewhere, waiting for the right moment to return to the space industry, or quietly promoting space across all industry. From nano-technology to rocketry, all have something in common: lessons learned from SEDS.

The fact that SEDS is an organization in which younger leaders are trained means the organization must pay a price. Every couple of years as the older leadership graduates the new leadership must find a new equilibrium in which to work or suffer serious setbacks. The cyclic nature of SEDS is well known among our alumni. For periods of time SEDS has disappeared as a national organization, existing as only a small number of chapters spread across the world, only to reemerge years later when the right leaders are lucky enough to run into each other early enough to recreate the organization.

This difficulty is a reflection upon the interests of the student population. Starting with the 1990's, SEDS existed in a community where the potential audience it was trying to reach had grown up in a world where the space program was not the dream. I know as a student myself I had been excited by space as a young kid and then slowly lost interest as I grew up due to the lack of any significant achievements. It wasn't until I had to address the issue of what I wanted to do my last year in high school that I decided to take on the space industry.

I was fortunate in my timing. The current leadership of the various SEDS chapters had been working for several years to relaunch the national organization and I entered the scene literally less than a year after the official relaunch. More importantly, I was at the chapter which was to host the first national conference in eight years, Massachusetts Institute of Technology SEDS (MITSEDS). Thus when I came to the current leadership of MITSEDS and asked them what SEDS was up to, they responded with the means to get me involved at a national level.

My focus and drive with the organization was shaped by my experiences in those first few years. Unfortunately I came in just as the leadership for the organization started to graduate and suddenly we found ourselves struggling with finding new leaders for the organization. Usually in this case SEDS starts to experience a slow decline as the leadership slowly dwindles and finally the few remaining leaders have to leave the organization. But then came a bit of luck: The X PRIZE was won a month before the national conference.

Suddenly the conversation had changed about the space industry. Instead of being an exorbitantly expensive realm which was doomed to be forever consigned to government programs, it was feasible that within our life time people could pay a reasonable price to go to space. This change made the student community much more receptive towards focusing their time and talents on an organization devoted to an industry that for the first time in almost thirty years was seen on the rise.

But this didn't make it easy for the rising new leadership, it just made it easier than it had been in quite some time. The current graduating leadership of SEDS grew up in an organization with a one dominant question on their mind. How do they keep the leadership from dying out once they leave?

Everything that we've seen in the last five years has been an expression of that. We've revamped the national organization so it's focused on networking our members together both with other members and with people within the space industry. We've focused on getting our members involved in national projects which allow them to learn logistics from those of us who learned the hard way. Our chapters are focused on recruitment and various projects at a local level, while the national organization is focused on keeping each chapter involved in the national conversation.

The people we meet in SEDS will be the people we will be working and competing with for the rest of our lives. They are the self starters, the students who had passion and a drive and were capable enough to reach out and grab what they cared about. The goal of SEDS national is not to create as many chapters as possible, but to be prevalent enough that those self starters find the organization.

To name a few of these projects:

- The revamped more prevalent Council of Chapters (a training ground for the younger leaders of the organization)
- The formalized Memorandums of Understandings with our affiliates (allowing our members to network with the general space community)
- The rebuilding of SEDS NOVA, a publication which raises awareness of the organization and reconnects our alumni.

Altogether this has provided an environment where our leadership is much more distributed, with new younger leaders constantly emerging into the environment. But this is where we are, the question that remains to be asked is where are we going?

There are two items to look at here. One is what safeguards and formal additions to the organization are being added by the leadership to ensure that the future generations are building upon our success instead of reinventing the wheel, the other is to look at what is coming up for the organization.

In terms of new projects, perhaps the most exciting is the recently created SEDS endowment fund. With safeguards in place to protect the money from a negligent (or worse corrupt) leadership, the endowment fund has already received over 30,000 dollars in pledges and started collecting money in mid July. By releasing a certain amount of money each year to the national organization the endowment fund will provide continuous money base to SEDS that will not go away.

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Another project currently being looked at is a more formalized use of the Alumni Listserv. By distributing information about SEDS to the alumni we provide a window into the current generation of SEDS students.

These projects though are just part of a foundation. The goal is to have them in place and functioning before the next stage of the organization. The last five years have been a grace period, where the leadership has found a more receptive audience to the goals of space exploration. That grace period is rapidly drawing to a close.

Sometime in the next few years it will become obvious to the general public that the private space industry will or will not succeed. There will be an event (nearly impossible to point to now, though there are some places to watch) which will radically change the perception of the world towards space. Furthermore this will happen just around the time the student population will be composed of people who grew up in an environment shaped by the winning of the X PRIZE.

At that point the tools being built right now by this generation of leaders will become critical. SEDS will have a brief period which in, if the leadership has been properly trained and provided with the proper tools, it will have a chance to grow into an organization much larger than anything ever seen before. Our leadership must be ready to seize that opportunity, and our alumni must be ready to provide a solid connection between the people brought into SEDS and the actual space industry.

I'm in the process of leaving the organization and feel that I have provided a lot, but it is the continuation of what has already been built. There is key groundwork that still needs to be laid by the current generation of leaders that will set SEDS up for the transformative moment that is coming in the near future.

SEDS Interviewed on SpaceVidCast



SEDS-USA Director of Chapter Affairs Grant Atkinson being interviewed by SpaceVidCast's Cariann and Benjamin Higginbotham. The interview, which took place on July 10th, 2009 discussed SEDS in depth: the projects, conferences, and students that make SEDS work. *Image Credit: Benjamin Higginbotham*

International Space University SSP 2009- aka: Starfleet Academy

-A summer reflection by Joshua V. Nelson

This summer I was honored to be awarded the National Space Society / Space Generation / SEDS scholarship to the International Space University. This annual scholarship provides up to \$12,000 USD to “exceptional members of the space community” interested in attending ISU. Established by the founders of SEDS in 1987, ISU brings together students and professionals from across the globe for a multidisciplinary introduction to space exploration.

The ISU program begins with three weeks of Core Lectures. These ‘traditional’ class lectures cover all of the basics of space exploration including: Engineering, Physical Sciences, Biology, Social Sciences, Policy and Law, Business, Satellite Applications and much more. Even though these lectures are at a basic level, everyone takes away valuable information. While I thought the core lectures in my field (Aerospace Engineering) would bore me, they were quite interesting due to the unique perspective provided by Nikolai Tolyarenko, a Russian rocket scientist.



ISU students tour Space X facility in Hawthorne, CA.

Photo Credit: Line Drube

After your core lectures, everyone selects one of the above departments to study further. Traditionally students select a department dramatically different than their undergraduate degree. I chose the Space Business and Management department. Each department consists of a series of lectures, activities, field trips, and a final project/paper.

Some of the Space Business and Management activities included:

- Toured Space Systems Loral (a major satellite manufacturer)
- Visited Google and spoke with the head of their space department
- Presented our ideas for a space business to a panel of space entrepreneurs
- Developed six unique space business ideas
- Had lectures from managers at MDA and Energia

Finally the last month of ISU is dedicated to your team project. Working with a team of over forty students from across the globe, you will tackle a modern problem or question facing the space industry. While at ISU I had the honor of working on the Disaster Risk Evaluation And Management (DREAM) team. In one month we assembled a 100 page report on the potential uses for satellite technology in reducing the risks posed by natural disasters. Never before have I had to work so hard, for so long, with such talented people.

In conclusion, I had to pay approximately \$6,000.00 USD out of pocket after the scholarship and other funding sources. Looking back, ISU was worth it. Even before I finished the summer program I was offered an internship at NASA Ames. My personal network has grown by 136 friends from 40 different countries. There is truly no other experience like it.

More information about ISU is available at: www.isunet.edu

More information on the NSS/SG/SEDS scholarship at: http://www.nss.org/education/ISU_scholarship.html



Students for the Exploration and Development of Space (SEDS) would like to invite you to our annual national conference, SpaceVision 2009! SpaceVision is the largest fully student-run space conference in the world, dedicated to facilitating networking between college students and professionals, furthering the development of SEDS-USA, and allowing the sharing of ideas through professional speakers and workshops.

SpaceVision 2009 is being held at the University of Arizona in Tucson, AZ from November 12th - 15th. Current speakers include:

Peter Diamandis (Chairman, X-PRIZE Foundation)
Simon "Pete" Worden (Director, NASA Ames Research Center)
Taber MacCallum (CEO, Paragon Space Development Corporation)
Richard Garriott (Private Space Explorer)

A student poster session will also be held to give students an opportunity to share their research. A career/ info fair will also take place during the conference featuring many major space-related organizations and companies.

For registration information, please email SpaceVision2009@gmail.com or visit:

<http://spacevision.seds.org>

Students for the Exploration and Development of Space

SEDS

October in Space

October 1st, 1958—NASA is formed

October 4th, 1957 - U.S.S.R. becomes the first nation into space with the launch of the Sputnik satellite

October 4th, 1969—U.S.S.R. launches Luna 3, which orbits the moon & returns photos of over 70% of the far side.

October 5th, 1882—Robert Goddard, Pioneering American Rocket Scientist is born

October 12th, 1964—U.S.S.R. Launches Voskhod 1, the countries first three man space vehicle.

October 13th, 1933—The British Interplanetary Society was founded.

October 18th, 1989—Galileo Space Probe is launched from Space Shuttle Atlantis, beginning its 6 year journey to Jupiter.

October 28th, 1998—Space Shuttle Discovery lifts off with 77 year old Senator John Glenn on board.

October 29th, 1991—Galileo Space Probe observes asteroid en route to Jupiter, becoming first space probe to do so.

October 31st, 1930—Michael Collins, command module pilot on Apollo 11, is born.

November in Space

November 1, 1962: The Soviet Mars 1 probe made the first successful flyby of Mars,.

November 3, 1957: The Soviets launched the first living being from Earth aboard Sputnik 2, a dog named Laika. The dog did not survive the trip.

November 9, 1967: The engines of the enormous Saturn V rocket used to launch all the moon missions were fired up for the first time. The launch registered on geological instruments as far away as New York, and a CBS broadcast booth three miles from the launch pad collapsed.

November 11, 1966: Gemini 12 was launched, the last flight of the two-man series whose many flights yielded information vital to the moon-bound Apollo program.

November 14, 1969: Apollo 12 was launched, the second manned moon landing; Alan Bean and Dick Gordon investigated the moon's surface and "recovered" the unmanned Surveyor 3 probe.

November 16, 1965: The Venera 3 probe launched by the U.S.S.R. became the first man-made object to enter the atmosphere of Venus, though the pressure of the atmosphere crushed the probe before it relayed any data.

November 19, 1996: Space shuttle Columbia lifts off for mission STS-80, the longest U.S. space shuttle mission to date.

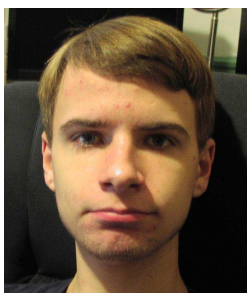
November 28, 1964: Mariner 4 was launched; it later returned the first close-up photos of Mars.

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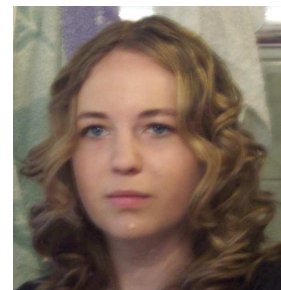
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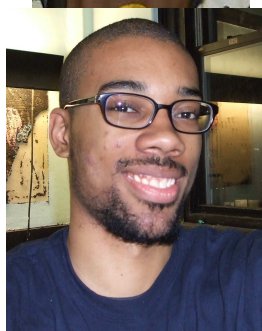
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SEDS Mission Statement:

SEDS, or Students for the Exploration and Development of Space, is an independent, student-based organization which promotes the exploration and development of space. SEDS pursues this mission by educating people about the benefits of space, by supporting a network of interested students, by providing an opportunity for members to develop their leadership skills, and inspiring people through our involvement in space-related projects. SEDS believes in a space-faring civilization and that focusing the enthusiasm of young people is the key to our future in space.

History of SEDS:

Students for the Exploration and Development of Space was founded in 1980 at MIT and Princeton and consists of an international group of high school, undergraduate, and graduate students from a diverse range of educational backgrounds who are working to promote space as a whole. SEDS is a chapter based organization with chapters throughout the United States, Canada, United Kingdom, Asia, Latin America, and the Middle East. The permanent National Headquarters for SEDS-USA resides at MIT. Each chapter is fairly independent and coordinates activities and projects in its own area.

What do SEDS members do?

SEDS members are people interested in doing as much as they can to promote space exploration and development. The first step in this continual process is learning. SEDS provides an excellent environment in which to obtain access to many sources of information including speakers, tours, films, discussion groups & daily NASA updates. Astronomical observing trips and tours of local space facilities also play a significant role in the life of many SEDS members.

SEDS members often take the knowledge they have gained and use it to influence the future of the space program. Students at several chapters have played major roles in organizing large conferences and have established important contacts with members of the space community. Others have helped increase public awareness of the benefits of space exploration by offering presentations to local primary and secondary schools as well as universities. All chapters keep in contact with each other through on-line computer networks.

Finally, SEDS provides an environment in which people of common interests can relax and freely discuss issues important to them.

What can SEDS do for you?

SEDS can provide an organized pathway for you to begin space related projects and give you a chance to break away from the usual class work. You can also use SEDS as a stepping stone to a space-related career. Being actively involved in SEDS can put you in touch with many members of the space, technology, and education community and will allow you to develop the experience necessary to take leadership roles in your future career, whatever that may be.

For more information on SEDS, or to join/start a new chapter, go to www.seds.org.



FIND A CHAPTER

Active SEDS-USA Chapters

Texas A&M

MIT

University of Arizona

University of Illinois

Iowa State University

Florida Institute of Technology

University at Buffalo

University of Central Florida

University of Colorado, Boulder

Purdue

George Washington University

Boston University

Olin University

Embry-Riddle Aeronautical University

University of California LA (UCLA)

University of Virginia

Princeton

University of Michigan

Or Start Your Own Chapter! Go to seds.org/join.php for more information.

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