NASA Student Involvement Program

Aeronautics and Space Science Journalism - Educators’ Resource Guide
Aeronautics & Space Science Journalism

Select a newsworthy current event or on-going story about aeronautics, or Earth and space exploration, and prepare a news report for the general public. NASA’s aeronautics and space science programs are rich with topics for journalism, such as astronauts conducting experiments on the Space Shuttle, celebrating the 100th anniversary of flight, launching a new satellite, designing a new high speed airplane, building International Space Station, or making discoveries on another planet.

**Research Project Components**

I. Develop a News Report in one of the following media:

- **Print:** submit an article of 1,000 words or less, plus relevant photos, illustrations or other graphics, laid out for publication.
- **Cassette audio tape:** submit a five-minute (maximum) report in your choice of format (e.g. feature broadcast, news bulletin, interview, or talk show).
- **VHS videotape:** submit a five-minute (maximum) report in your choice of format (e.g. newscast, investigative or special report, or documentary).

II. Separately, submit supportive documentation, with two sections:

- **a. Investigation and Production Methods** — Describe the techniques used to gather information or opinions expressed, and the methods and equipment used in report production (maximum length 250 words)

- **b. Resource Credits** — List all reference books, periodicals, web sites, imagery, people (including names, work titles, and type of help provided) contributing to the research basis and validity of your news report.

**Judging Criteria**

**Story Development and Analysis** — 40 points

Prepare a news report on a current event in aviation, Earth or space science, including the “big ideas” which the event represents.

Judges will look for:

1. strong story line
2. objectivity and accuracy
3. relating event to “big ideas”
4. appropriate use of format
5. creativity and originality

**Research Basis** — 30 points

Use multiple sources and check for accuracy of information for your news report.

**Communication** — 30 points

Convey the event and big ideas in a way that is clear, accurate, and engaging.

Judges will look for:

1. clear organization
2. engaging tone
3. effective use of format
4. clarity of audio or video tape
5. creativity and originality

**Bonus Points for Publication**

Five bonus points will be awarded if your article, audio or video was presented to a real audience (such as a presentation in your school, community organization, or local media). You must provide either a copy of the printed article, or a letter signed and dated by a responsible official confirming the audio or video presentation. Publication must occur before the submission deadline.
This Educator’s Resource Guide provides background information and learning activities for you to help your students participate in the NASA Student Involvement Program (NSIP) competition "Aeronautics and Space Science Journalism."

Use this Educator’s Resource Guide as a supplement to the official NSIP Program Announcement brochure (see Resources page 15), which provides full details on the NSIP Program and entry form to submit your students’ "Aeronautics and Space Science Journalism."

The guide is designed for teachers of students in grades 3-12. This is a wide age-range, so feel free to adapt the materials and activities to make them easier or more challenging.

**NSIP "Aeronautics and Space Science Journalism" competition categories:**

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Aeronautics and Space Exploration are Big News!

Nearly every week, there is a new space launch, or a new discovery from the Hubble telescope, or an experimental high-speed aircraft being tested, or astronauts doing experiments on the Shuttle, or satellite images saving lives threatened by hurricanes, or a new part of the International Space Station in the news. All are newsworthy and all are covered by legions of newspaper, television, radio and magazine reporters.

But what happens behind the scenes as reporters cover these stories about aeronautics and space exploration? What knowledge of science do the reporters need? How do they decide what to focus on in their report? How do they translate complex topics into simpler terms for a wide audience? How do they decide what to focus on in their report? How do they find the human stories underlying the technological achievement? How do they check for accuracy? And how do they connect readers, listeners or viewers to the "big ideas" behind the big event?

What Your Students Will Learn

In this NSIP competition, your students experience the challenge of reporting on the aeronautics and space science news of today. In preparing a news report, students conduct research, learn core science and engineering concepts, find a human element, select graphics and prepare the news story for a general audience. In so doing, students learn science, develop research skills and learn how to communicate effectively. They become more observant, sensitive and savvy readers, listeners and viewers of aeronautics and space science news.

In accordance with the National Science Education Standards, your students will:

• Learn core concepts of aeronautics, Earth science and space science
• Develop skills of scientific inquiry
• Experience the unifying concepts and processes of science
• Appreciate the multi-faceted roles of science and technology in our society
• Analyze and report on the history and nature of science
• Gain new skills with technology (computers, Internet, satellite images and other data, and audio-visual production)
• Work collaboratively as team members
• Develop communication skills, including investigative research, interviewing, organizing, analyzing, summarizing, writing, and speaking.
Clear communication reflects clear thinking.
Preparing a Science News Report

This six-stage process may help you work with your students to select, research, write and produce the news report. However, creativity is encouraged, so feel free to use whatever approach works for you and your students.

I. What's News?
First find out what Earth or space science missions, aeronautics initiatives or related topics are currently in the news or will be within the next few weeks or months. Pay attention to the news on the TV, radio, newspapers or magazines, or log on to NASA's Website to find descriptions of current and future missions. You also can subscribe (for free) to NASA's e-mail news notification system or contact the Public Affairs Office (PAO) of a NASA Field Center to get information on missions and other news (see Resources).

II. Select a Relevant and Interesting Topic
As your students focus in on current space science and aeronautics news, they will find some topics are especially interesting. You might also select topics for them that are closely related to your curriculum. Have your students narrow the selection down to a few topics and then choose one based on criteria such as an engaging story, an important “big idea,” a local connection or convenient access to good sources of information.

III. Conduct the Research
Next, your students gather as much useful information as possible on this topic. Sources will depend on the topic, but might include the official Web site for a mission, or an official press release from a NASA Public Affairs Office, or an interview of an expert from a local university, or a business involved in mission or research initiatives. Your students might also find published articles or reports. If you have access to NASA TV, your students can watch live reports on launches, see the astronauts in orbit, or observe press conferences. Your students can videotape brief segments from NASA TV to include in their video (see Resources).
IV. Write the News Report

Have your students envision their audience. If your students will actually publish or disseminate the news report, then they probably have a clear picture of their audience (such as readers of the local community newspaper). If not, then imagine the audience as the general public with an interest in, but no advanced knowledge or understanding of aeronautics or space science. Next, brainstorm and list the key things your students want to communicate, including both the event or story and the “big ideas” embodied in the story. Then, have some team members write the first draft, others review and edit it, and others acquire or prepare the graphics, such as photos, graphs, charts or illustrations. Finally, your students pull all the pieces together into the final draft for print, audio, or video. Remind them to recheck for accuracy and clarity.

V. Publish or Broadcast the Report

NSIP encourages your students to publish or broadcast their news report. Not only is this a service to the audience, it also provides your students with a real context to help improve the content and style. (Publishing or broadcasting also adds five bonus points in the judging!) For example, the article might be published in a school newsletter or a local newspaper; the audio report might be broadcast on a public service radio station; or the video might be broadcast on a community access cable channel. Remember, a news report communicates to an audience. Your students have an essential role in telling the story clearly, accurately and engagingly.

VI. Prepare the Entry

Whether or not your news report is actually broadcast or published, your students can prepare their entry, as detailed in the NSIP guidelines for the competition. Print articles should be laid out as they would look in print, with text, titles and graphics. Audio and video reports need to be of high quality, with appropriate sound or visual elements. Each entry will be judged on the content of the report, the quality of the research and the effectiveness of the communication. Be sure to include the required separate description of the research and development process and the resource list.
Human drama – Aeronautics research and Earth and space exploration are innovative and challenging. These fields call on humans to test-pilot new aircraft, design powerful rockets, build solid and protective space ships, test the limits of human endurance, and "boldly go where no one has gone before." These are human stories with high aspirations and the inevitable mix of success and failure. We care about these heroic scientists, engineers, and astronauts. Their struggles and achievements inspire and challenge us all.

New Discoveries – The universe is so large and we know so little about it. The tools of space exploration enable us to see things we have never seen before. We see the drama of the universe and discover how galaxies, stars, and planets form; we see how black holes, quasars and supernovae develop; and we see how life might emerge on other planets. We also learn how to work in space, observing the growth of plants in low gravity, discovering new ways to grow crystals, and potentially developing new medicines.

Inventing the Future – The future doesn’t just happen. Our behavior, decisions, inventions, and actions shape the future. This is especially true in aeronautics and space exploration. Engineers and scientists are dreaming, designing, and experimenting. They are inventing the future – new high-speed civilian aircraft, spacecraft to study Earth, human missions to explore Mars and other planets, and more powerful telescopes to see farther into the universe. Many of these inventions will become reality in the years and decades ahead, and will define the future in which
today's students will live, enabling them to travel around the world at previously unheard of speeds and to journey into Earth orbit and beyond.

**Technological Achievements** –
The Mars Pathfinder was an amazing technological achievement. The landing itself involved aero-braking, parachutes, retro-rockets and airbags that enabled the spacecraft to bounce to a landing on Mars. Then the robotic rover wandered the surface of Mars, exploring rocks and surveying the landscape - all under remote control by a human "driver" 80 million kilometers away. This story made news, not just because of the images of Mars, but also because of the technological marvel of this robotic rover. The aeronautics and space programs are rich with such technological achievements.

**Exploring Our Home Planet** – The space age has provided us with a new perspective of Earth, transforming our understanding of our home planet. Satellites have a wide range of instruments to measure, monitor and observe Earth. Astronauts have taken over 300,000 photographs of Earth from space, which supplement the satellite data. All of these resources enable us to explore Earth in ways never before possible. They help us understand the interactions between the human presence and the physical environment, and help us manage our resources and our environment to improve life on Earth.

**Improving our daily lives** –
Weather satellites are an excellent example of the daily impact of the space program. Every night on the evening news, we see satellite images of weather that enable meteorologists to create more accurate forecasts and to communicate them to us more clearly. During the hurricane season, forecasts derived from weather satellites save many lives and reduce property damage. The global view of Earth from space helps us all appreciate how connected we are among ourselves and with our home planet – providing us with a new perspective that improves our daily lives on a deep and profound level.
Effective Journalism

Your students may have studied newspapers, radio, TV and journalism. They may have learned about the role of journalism in our society. They may also have learned some of the essential concepts and techniques in effective journalism. Regardless of background, your students can successfully report a good story by keeping three key points in mind:

1. Event ◆ Reporter ◆ Audience – Have your students contemplate how they learn about events around them. Rarely do your students (or any of us) directly experience a news event. Usually a reporter selects the most important elements of the event, prepares a news report and communicates it to us via print, audio, or video. The reporter has an essential role as the intermediary between the event and the audience. He or she (or the reporting team) must have good judgement to select elements which are most important. Good communication skills are essential for conveying this information clearly, accurately and engagingly. When the reporter deals with new topics such as space exploration, he or she also needs the ability to grasp new ideas and translate complex information into simpler explanations. Your students will be judged on their ability to communicate clearly, accurately and responsibly to the intended audiences.

2. Who, what, when, where and why? – Your students are probably familiar with these five classic "w" words of reporting. While they may seem elementary and obvious, they are all essential elements of a news story. Some news reports answer these questions at the very beginning; others weave the answers more subtly into the body of the report; some use graphics to convey these points; still others summarize this information in pithy statements at the end of the report. Regardless of technique, your students will be judged on how effectively they answer these five key questions.
3. Link Events with Big Ideas –
The best news reports go beyond the basic facts of the event to present the "big ideas." For example, the Pegasus Hypersonic Experiment aircraft isn’t just a test of new aircraft design and propulsion technologies; it’s about inventing the high-speed civilian transportation of the future. John Glenn’s return to space isn’t just about an astronaut, it’s the story of a courageous person who is pushing the limits of what elderly people can accomplish and helping us to understand the similarities between the effects of aging and space travel.

Mars Global Surveyor isn’t just the story of a spacecraft in orbit around Mars; it’s about our search for evidence of surface water in Mars’ ancient past and the potential connection with past or present life on Mars. Your students will be judged on how well they present the big ideas embodied in the events.
Suggestions for Production Design

Here are some suggestions on how to select and make effective use of print, audio, or video formats.

**Format**

In deciding which format to use, consider the following:

Reflect on what each format requires.

Video and audio presentations demand not only recording equipment, but editing equipment as well. You may want to use computers and still photography cameras for print production.

What’s the nature of your story?

Some stories offer strong images; some feature great sounds; and some require the depth and detail offered by print journalism. Use the format that best communicates your story.

Consider the time limitations.

Will you have enough time to develop photographs, process images, or edit tapes?

Which format fits the skills of your team?

Do you have good writers, photographers, or graphic artists in your team? Are there team members experienced in audio or video production?

**Print**

Think about the newspaper or magazine articles you have read. What components did they have in common? How did they appear on the page? What caught your eye?

A Bold Headline

The lead headline should be in large, bold lettering. It should capture the essence of the story in a way that encourages readers to read it.

Sub-head

Sometimes a story has a sub-head under the lead headline. It is in smaller lettering and can be italicized. It provides additional information about the significance of the story.

Body Text

This is the story presented in plain, easy-to-read lettering.

Graphics

These can be photographs, illustrations, drawings, tables, or charts that appear on a printed page. Either scan your graphics into a computer or lay out the original artwork on your pages.

Captions

Captions should identify graphics and cite their artists or photographers.

Page Design

If possible, lay out your story in two- or three-column pages. Many word processors have page design capabilities and your computers may have page layout applications. Plan where you want your illustrations and captions to appear.

**Audio**

What captures your attention when you hear a program on the radio? The narrator gives an interesting introduction; there is an intriguing background sound; or perhaps there is a hint of an unraveling mystery.

Writing Your Presentation

Include an introduction for your story, transitions between interviews or locations, and a strong conclusion. When reviewing your writing, don’t read the words; speak them.

Sound Quality

Speak a little more loudly and slowly than you normally would. Before recording, practice with your audio tape recorder and have the interviewer and interviewee speak into the microphone to test the sound quality. Use a hand-held microphone if possible.

Possible Job Responsibilities:

writer, reporter, editor, page designer, page layout artist, photographer, photography editor, or illustrator
Sound Effects
Listen to the sounds of your story. Use them to create a sense of location for your listeners. What does a factory sound like? A lab? A street? A meadow? At the launchpad? Sounds can effectively trigger our imagination. Use sounds so listeners can close their eyes and imagine seeing the story you tell.

Music
Use music for background sounds, for transitions, or for special. Make sure that you have permission to use the music.

Possible job responsibilities for an audio presentation:
reporter, narrator, writer, editor, sound editor, music editor, or the producer. The producer is not necessarily the boss; the producer arranges interviews, obtains any necessary permissions, and ensures that other team members are equipped to do their jobs.

Video
Think about how you respond to visual presentations. Do visuals sometimes help you understand the subject better? Do you get distracted sometimes, and find it difficult to focus on the essence of the presentation?

What kind of information can be conveyed better through video than through audio alone or in print?

Your first goal is to inform, not entertain.
Do not linger too long on any image, yet avoid the frenetic, fast-paced editing of an MTV video. When done, view your presentation without the sound and ask yourself if viewers can get a sense of your story from just watching the visuals.

Tell your story visually
Avoid too many “talking heads,” which are static shots of people speaking. Vary what you show and keep the pacing brisk. When people are speaking, show appropriate images to bolster what they are saying. Use images to convey a sense of location. For example, first show a full shot of a building, then take viewers inside.

Sound quality is an important consideration.
Make sure it is crisp and at an appropriate volume. Enhance your story with music. Make sure that you have permission to use any pre-recorded sound tracks.

Consider using a teammate as a "stand-up" reporter.
As in local news broadcasts, tape the reporter on location explaining the story. Frame the shot so that a visual component of the story, such as a building or a device, is in the background.

How about using recorded footage?
For minimal fees, you can obtain videos or slides from NASA CORE (see the Resource list on page 15). Acquiring news footage from local television stations is usually expensive. If you choose to record live newscasts off the air, be sure you get permission from your local television station.

Editing can be a challenge.
It is relatively easy to shoot interviews and capture images with video. The real challenge is in the editing, which requires some expertise. It is possible to “shoot in the camera,” i.e., you shoot your video in the exact sequence it will be presented on a single tape. In effect, you do all the editing in the camera. This requires much practice to do well. Remember, you can’t edit out mistakes this way.

Do you have the equipment?
Before planning a video project, find out about your access to equipment. What equipment is available at your school’s audio-visual department or from the community library? Do you have access to editing facilities at the local cable company? Many cable companies offer access to video production facilities to students and educators in their communities.

Possible job responsibilities:
camera person, reporter, writer, print editor, video editor, sound person, producer. The producer isn’t necessarily the boss; the producer arranges interviews, obtains any necessary permissions, and ensures that other team members are equipped to do their jobs.
Sample Learning Activities

This section describes activities presented as sample news stories to help your students get started.

I. Engaging student interest –
There are numerous possible entry points into this mission. For example, students might be interested because of the large-scale publicity (several magazines have done cover stories on Glenn). Or your students might ask their parents or grandparents what they remember about Glenn’s first mission. Or students might be interested in using the Web to learn about and monitor a current mission, which happens to be Glenn’s.

II. Background research – NASA’s Shuttle Web site is one of the best sources of information, providing background information about the shuttle, mission, goals, and crew. Your students might find articles in the general media about Glenn and this mission. Your students might also contact the NASA Web site for a press kit on STS-95 and John Glenn (see Resources).

III. Current status reports – Your students can monitor the progress of a shuttle mission in at least three ways: (a) use NASA’s Shuttle Web site for progress reports on crew activities and to track the current location of the Shuttle; (b) watch NASA TV (refer to the resource list) for almost non-stop coverage of each mission, including scenes on board the Shuttle, views of the Earth, mission status reports and press conferences; (c) read newspapers or magazines, listen to the radio and watch TV news for coverage of any current mission (see Resources).

IV. Historical Research – In 1962, John Glenn’s first space mission was a very big story. As the first American to orbit the Earth, Glenn returned to a hero’s welcome and shared with mankind some of the first impressions by a human seeing Earth from space. Your students might research Glenn’s first mission through books about the space age and through magazine articles published at the time, compare the original "Mercury" spacecraft with the current Space Shuttle, or note the mysteries and concerns about space travel then that have we now take for granted.

V. Students interview their parents or neighbors – Students can interview their parents, grandparents or neighbors to ask what they remember about Glenn’s first mission. Students might also solicit opinions about Glenn returning to space at the age of 77. Is he a role model for senior citizens? Or are the danger and risk too big?

VI. The Big Ideas – Your students could focus their news report on any of several “big ideas,” such as: (a) testing the limits of human capability; (b) comparing the effects of aging and space travel on human health; (c) how spacecraft have changed over 30 years; (d) how role models inspire; or (e) comparing attitudes of children and senior citizens towards space travel and space exploration.

News Story Sample 1 (grades 3-4):
John Glenn Returns to Space

This has several key elements of a good space science story – human drama, historical context, effects of growing older, inventing the future and so on. In 1962, Col. John Glenn was the first American to orbit the Earth. Now, after 36 years, at the age of 77, Senator Glenn returned to space aboard the Space Shuttle.

News Story Sample 2 (grades 5-6):
Young and Old – First and Last

Younger students might enjoy these stories as they are learning how to write a news story. Younger students might enjoy these stories as they are learning how to write a news story.
I. A local connection – In this example, imagine that a business in your community is involved in a NASA project. For example, the business might be designing the computerized flight deck, enabling the pilots to monitor the complex array of flight status sensors and control the operation of the aircraft. Perhaps the mother of one of your students is an electrical engineer for this corporation. A local connection often serves as an effective entry point into a news report.

II. A Visitor and a Field Trip – Building on this connection, your students might invite someone from the business (such as the mother who is an electrical engineer) to visit the school to share information about the hypersonic aircraft in general and the flight deck in particular. It helps to have more than one visit as your students develop deeper understandings of the project, which in turn lead to new questions for the visitor. Then conduct one (or more) field trips to the corporation to see the research process in operation.

III. Macro view and micro view – In conducting the research and preparing the news report, your students should keep two perspectives in mind. At the top-level, your students convey the nature, purpose and overall design of the aircraft. At the detailed level, your students can use the computerized flight deck (with its local connection) as an illustrative example of what it takes to design, build and test the aircraft.

IV. Extended Research – Your students can get further information on this project from several sources. They might contact a NASA center involved in designing, building or testing the hypersonic aircraft. Use NASA’s Web site to search for information on this project, and the NASA Image Exchange Web site to get support graphics and animations. And your students might find articles published in the popular press.

V. Why and why not? – Your students should research pro and con views. Some people think this is an important and inevitable development in transportation technology with a range of benefits. Others feel that our busy lives are already fast enough, this new technology is not necessary or that hypersonic transport may have a detrimental environmental impact. Your students might research articles published on this project, or interview people in the community.

VI. Producing and Broadcasting a Video – Your students might decide to use a video format for the news report. If so, they might want to include interviews, scenes from the field trip, and pictures of the aircraft design and flight deck. The video should include discussion of a “big idea,” such as the future of high-speed travel or the emerging role of computerized flight decks. If your students excel in the video, a local TV station might even want to broadcast it as a special news report!
I. Exploring the Sun – Perhaps you teach Earth science and have begun a unit on our Sun. After studying the relevant chapter in your textbook, you explain that new technologies enable us to investigate the Sun directly by accessing recent, detailed images of solar dynamics from advanced spacecraft. For example, your students can track sunspots and observe solar flares. Students logging on to SOHO's Web site find the historical archive of images, then a gap in the data starting June 25, 1998.

II. Following the Search and Rescue story – The lack of images leads your students to learn about SOHO’s problems and efforts by the international team to find and rescue the spacecraft. SOHO’s Web site includes almost daily status reports documenting the drama of the recovery process. Your students read about concerns for the stability of the satellite’s spin and the delicate balance of rejuvenating the power supply without reheating the instruments too quickly. Your students further explore the SOHO Web site to learn more about the design and operation of SOHO, and how scientists have used images and data from SOHO.

III. The Scientists and Engineers – Your students can monitor some of the human emotions through the comments from individual members of the SOHO team as posted on the Web site. Your students might also arrange a telephone interview with a scientist or engineer engaged in rejuvenating SOHO. They might ask about the technological challenges and the human emotions of this process, and about the particular role of the person they interview. Quotes from key people help engage the reader.

IV. Victory! (We hope) – After tracking this story for weeks or months, your students may be rewarded with the ultimate success of SOHO’s revival (this Teacher’s Guide was written during the SOHO revival effort). The SOHO Web site would report this result (with details) and then start re-transmitting images and data. Your students will have experienced a dramatic story as it happens. They can include their own observations and perceptions, and not simply report on it after-the-fact.

V. The Big Ideas – Your students can form their own judgement on what “big ideas” are embodied in this story. They might feel that the excitement of the “search and rescue” carries the story, or the technology of finding and repairing a satellite that is millions of miles away. Or perhaps your students might be most impressed with how their own education is already being radically transformed. Instead of simply reading about our Sun in textbooks, students are able to use the Web to access the same data and images that scientists use, directly from satellites like SOHO.
Resources

NSIP Competition Announcement
Full details for the NSIP competition are presented in the official NSIP Competition Announcement (EP-1998-10-367-HQ). To get a copy:
• download from the NSIP web site, or
• call to request a printed copy (800-848-8429, toll free)

NSIP Web Site
The NSIP Web Site provides additional information, learning activities and linkages to sites with NASA announcements, news, data and other resources (including all web sites listed here).
www.NSIP.net

NASA Educational Resources
NASA has a multi-faceted education and public outreach program, including a comprehensive web site, printed educational materials, image sets and other resources.

NASA Home Page – www.nasa.gov
NASA Spacelink – spacelink.nasa.gov
NASA CORE – spacelink.nasa.gov/CORE

The guidebook – How to Access Information on NASA’s Education Program, Materials and Services (EP-1998-03-345 HQ) is available through Spacelink

For further information, contact your local NASA Educator Resource Center, as listed in the NSIP Competition Announcement and website.

NASA Press Releases
Subscribe by sending an e-mail message to domo@hq.nasa.gov. In the body of the message (not the subject line), type the words “subscribe press-release” (no quotes).

Most NASA missions provide detailed Press Releases through the mission’s web site (find the sites through www.nasa.gov).

NASA TV
NASA TV shows live broadcasts, press briefings, and video files for NASA missions. NASA TV is available by satellite and on the web. For details: www.nasa.gov/ntv

On-line News
Science-Week
scienceweek.com/

ABC News: Science
www.abcnews.com/sections/science/index.html

BBC News: Science and Technology
news.bbc.co.uk/hi/english/scitech/default.htm

CNN Sci-Tech
www.cnn.com/TECH/index.html

Earth and Sky
www.earthsky.com/

Fox News: Science and Technology
www.foxnews.com/scitech/NASA Space

Science News
science.nasa.gov/

NASA Watch
www.reston.com/nasa/watch.html

NOVA Science in the News
www.science.org.au/nova/

USA Today: Science Digest
www.usatoday.com/life/science/lstd1.htm

Radio Broadcasts
Talk of the Nation: Science Friday
a weekly live radio program on National Public Radio

Sounds Like Science
a weekly science show from NPR News, every Saturday

Air and Space Magazines
Air and Space Magazine
Science News
Space News
Astronomy
Sky and Telescope
Planetary Report

Note: Many newspapers have daily, weekly, or monthly science sections.

Science Journalism Books
Field Guide for Science Writers, by Deborah Blum
ISBN 0-1951-2494-4

Resources
NASA’s Strategic Enterprises

NASA organizes its work into 4 major enterprises, as described below. Each offers a wealth of opportunities for science learning and journalism. For more information, refer to the NASA Web site, which has links to each enterprise (see Resources page 15).

**Aeronautics and Space Transportation Technology Enterprise**

**Mission**
The mission of the Aeronautics and Space Transportation Technology Enterprise is to pioneer the identification, development, verification, transfer, application and commercialization of high-payoff aeronautics and space transportation technology.

**Examples**
- Designing and testing the next generation of high speed airplanes
- Developing innovative methods for rocket propulsion
- Testing airplane designs to improve safety and efficiency

**NASA Centers**
- Ames Research Center (California)
- Dryden Flight Research Center (California)
- Langley Research Center (Virginia)
- Lewis Research Center (Ohio)
- Marshall Space Flight Center (Alabama)
- Stennis Space Center (Mississippi)

**Earth Science Enterprise**

**Mission**
NASA’s Earth Science Enterprise is dedicated to understanding the total Earth system and the effects of natural and human-induced changes on the global environment.

**Examples**
- Operating satellites to study Earth from space
- Providing life-saving weather information from satellites
- Developing new ways to visualize and widely distribute data about Earth

**NASA Centers**
- Goddard Space Flight Center (Maryland)
- Jet Propulsion Laboratory (California)
- Langley Space Center (Virginia)
- Stennis Space Center (Mississippi)
Human Exploration and Development of Space Enterprise

Mission
The mission of the Human Exploration and Development of Space Enterprise is to open the space frontier by exploring, using, and enabling the development of space and to expand the human experience into the far reaches of space.

Examples
- Launching astronauts on the Space Shuttle for science and research
- Building the International Space Station
- Preparing for human missions to Mars

NASA Centers
- Ames Research Center (California)
- Johnson Space Center (Texas)
- Kennedy Space Center (Florida)
- Marshall Space Flight Center (Alabama)
- Stennis Space Center (Mississippi)

Space Science Enterprise

Mission
The mission of the Space Science Enterprise is to solve mysteries of the universe, explore the solar system, discover planets around other stars, search for life beyond Earth; from origins to destiny, chart the evolution of the universe and understand its galaxies, stars, planets and life.

Examples
- Designing and launching spacecraft to explore Mars.
- Using the Hubble Space Telescope to explore the Universe.
- Researching the possibility of life on other worlds.

NASA Centers
- Ames Research Center (California)
- Goddard Space Flight Center (Maryland)
- Jet Propulsion Laboratory (California)
- Johnson Space Center (Texas)
Aeronautics and Space Science Journalism

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