

JAXA's corporate slogan, "Explore to Realize," captures both our aim of "exploration," which is the very foundation of our activities, and our determination as an organization to strive for "realization," which is our management philosophy. JAXA intends to unlock the door to a new era by uncovering true values, and in doing so, aims to solve problems within the society.

Development and Operation Transport Systems Linking Ground and Space

Developing space transport systems, including satellite launchers and exploration spacecraft, in addition to enabling the transport of supplies to the ISS, is indispensable for sustaining and developing space activities. Therefore, reliable launch vehicles and cargo transporters that have excellent technical capabilities are essential in linking the Earth with space.

Research on Aeronautical Technology

Aviation plays an important role in our society, helping to meet the needs for travel and transport, and there is growing demand for the next-generation aircraft that have better environmental compatibility and improved safety. JAXA promotes aeronautical research and development with a focus on the environment and safety. By making the R&D effort that lead to opens up more opportunities beneficial to Japan, JAXA contributes to the growth of the aviation industry in Japan and serves to meet the needs of people and the government.

Space Utilization with Satellites

Earth observation satellites view land and oceans with the aim of contributing to solving global-scale problems, such as those relating to resource development and global warming. In addition, global positioning satellites (GPS), which are expected to expand in application, are used in various ways such as traffic observation and disaster prevention. These satellites orbit our Earth and play an important role in our day to day lives.

Human Space Activities/Utilization of the Space Environment

The International Space Station (ISS) is located approximately 400 kilometers above the Earth, and is the largest manned space facility to have been built in human history. The Japanese Experiment Module (JEM) "Kibo" provides a particular space environment where a variety of experiments, such as those related to life sciences and material research, can be conducted. In addition, demonstrations of Japanese manned space technology are also being conducted. Through these experiments, JAXA aims to further the revitalization of industrial activities and the development of science and technology, with the aim of acquiring technology for future space exploration.

Research on space science

JAXA reinforces and expands its activities in space science through the close cooperation between scientists and engineers. It explores the frontiers of various fields, such as the solar system, to obtain clues to solving the mysteries of the Earth's origins and the birth of life from planets and minor bodies. It also conducts astronomical observations to understand the structure of the universe.

Research Relating to Fundamental Technology

We are working to maintain and improve our state-of-the-art research and test equipment, which provide the basis for technologic development in the field of aerospace. We are developing technology for parts and components, which will ensure flexibility in the use of launch vehicles and satellites, and in this respect, we continue to challenge unexplored technologies in order to realize future space concepts.

Budget and Employees, effective April 1, 2017

Japanese fiscal 2017 Budget: ¥153.7 billion
JAXA employees: 1,529

Missions

Challenges of H3 Launch Vehicle

The H3 development has now entered in the critical design phase toward its maiden flight scheduled for FY 2020. In FY 2017, JAXA continues the H3 development, including firing tests of its main liquid-fuel engine LE-9, which has the most powerful propulsion ever among engines developed in Japan.



Global Change Observation Mission-Climate (GCOM-C): Observe Earth's rich array of colors from space

Rosy red skies, deep-blue oceans, evergreen forests, and silvery white snow-the complex interactions among these various elements are responsible for the diverse climate of the Earth. Aimed at clarifying the mechanism of climate change, GCOM-C monitors the current global climate using a sensor capable of detecting 19 colors (wavelengths), named the Second-Generation Global Imager (SGLI).



The Super Low Altitude Test Satellite (SLATS): Open a new orbit



Creating new possibilities in satellite usage by developing new orbits SLATS will be put in a super low orbit, referring to an altitude lower than 300 km. SLATS conducts technological demonstrations in the orbit for the future earth observing satellites.

New-generation astronaut Norishige Kanai will be aboard the ISS

Astronaut Norishige Kanai, who was selected as a crewmember for the long-term stay missions of International Space Station (ISS) expedition 54 and 55, is expected to be the flight engineer in charge of ISS operations and scientific experiments in the space environment during his six-month stay. The launch and return will be performed with Russian Soyuz Spacecraft.



Aiming to understand the magnetic field and magnetosphere of Mercury

The Mercury Magnetospheric Orbiter (MMO) is a space probe tasked with investigating the magnetic field and magnetosphere of Mercury under the BepiColombo project, the first joint project of JAXA and the European Space Agency (ESA). By comparing two planets, namely Mercury and Earth, this project will help explain the magnetic fields and magnetosphere of the Earth and explore the mysteries of Mercury. Moreover, this project will investigate the various magnetospheres found in outer space and the mechanism of planet formation.



JAXA continues to take on challenges

Japanese fiscal 2016 brought a series of disappointing moments to JAXA and the rest of the country. One such instance was the discontinuation of the operation of the X-ray Astronomy Satellite ASTRO-H. JAXA accepted the failure and carried out a thorough error analysis and overhaul of the projects immediately before and after the ASTRO-H incident. JAXA will continue reforming the procedure of the projects and ensuring their execution. It is JAXA's mission to enrich the quality of life through research and development of key technology and thereby to contribute to solving social issues.



2016 2017

Contribution to relief work in the 2016 Kumamoto Earthquake with the Disaster Relief Aircraft Information Sharing Network (D-NET)

The Disaster Relief Aircraft Information Sharing Network (D-NET) enables real-time information sharing among rescue aircraft and emergency operation centers, and supports optimal aircraft operation management.

D-NET improves efficiency and safety by reducing both unnecessary time wasted while waiting for refueling spots, for example, and the number of near misses involving rescue aircraft during missions. Using D-NET technology, JAXA supported helicopter relief work in the aftermath of the 2016 Kumamoto Earthquake.



Cooperation on human resource training on the space development of Asian countries

In April 2016, the JAXA deployed DIWATA-1, which is the Philippines's first domestic satellite, from the Japanese Experiment Module, Kibo.

Only in a year, DIWATA-1 was developed by young Filipino engineers from the Department of Science and Technology and the University of the Philippines, in collaboration with Hokkaido University and Tohoku University.

Solving the impending energy problems

The Space Solar Power Systems (SSPS) have a potential to solve global issues that human beings face.

These systems are aimed to convert energy from solar rays in outer space into microwave or laser energy, and then transmit the latter from space to Earth where the energy is used as electricity.

From May to June 2016, the JAXA research team conducted an experiment on wireless power transmission by laser from the top of a 200-meter-high tower to the ground along a pathway similar to the space-to-ground pathway, and demonstrated the first practicability study of power transmission by laser beam with a highly accurate beam-steering-control system.



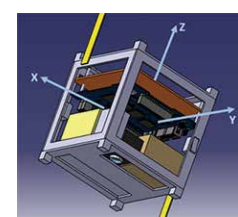
Human space activities passed on by new generation astronauts

Astronaut Takuya Onishi is among the new generation of astronauts selected after the start of the Kibo operation. During his first long-term stay aboard the International Space Station (ISS), he conducted various experiments on aging and the design of new medicines, such as the growth of high-quality protein crystals and long-term raising of small animals, in order to contribute to the development of an environment for using Kibo, for the benefit of our society. Please stay tuned for more updates on the roles played by Japanese astronauts and the results obtained from the use of Kibo.

Supporting the space development of developing countries through KiboCUBE

The JAXA and the United Nations Office for Outer Space Affairs (UNOOSA) provide countries, which are incapable of launching satellites on their own, with opportunities to deploy microsattellites (e.g., cube satellites or Cube Sats) from the Japanese Experiment Module, Kibo.

In this way, the countries' opportunities for space utilization will enlarge, thereby capacitating them to contribute to international efforts in space exploration.



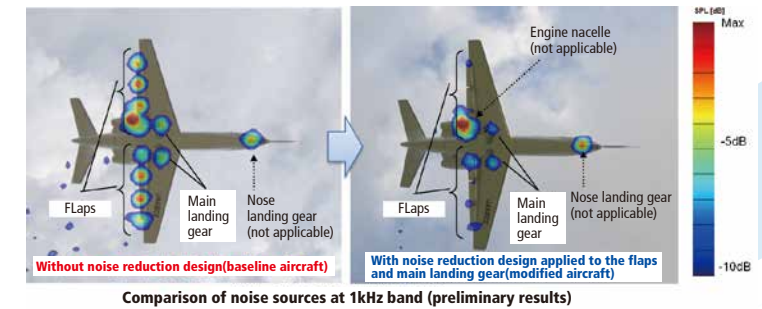
The University of Nairobi in Kenya was selected as the first winner from 13 applicants. They developed a CubeSat, which aims to test technologies and will be deployed from Kibo.

Making passenger aircraft quieter

JAXA conducted a flight demonstration test on airframe noise reduction technologies as part of the FQUROH (Flight Demonstration of Quiet Technology to Reduce Noise from High-lift Configurations) project.

Noise reduction designs developed and applied to flaps and main landing gear of JAXA's "Hisho" jet research aircraft were confirmed to be effective for noise reduction.

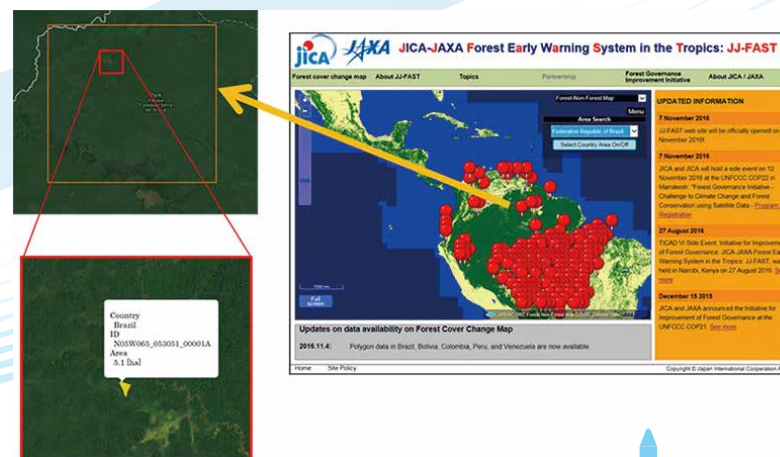
In particular, the demonstration of noise reduction of the flaps was a pioneering work in the world. Developing technologies to make aircraft quieter is an example of our efforts to reduce noise around airports.



Monitoring the world's tropical forests using JAXA's satellite

JAXA and the Japan International Cooperation Agency (JICA) have launched the JICA-JAXA Forest Early Warning System in the Tropics (JJ-FAST) service to frequently monitor deforestation and forest change in tropical regions using JAXA's Advanced Land Observing Satellite-2 (ALOS-2).

JJ-FAST can monitor vast forest areas from space, making it an effective means to monitor activities, such as illegal logging, in developing countries that have problems doing so owing to inadequate infrastructure, public security issues, a shortage of qualified personnel, or budgetary issues.



Supporting the International Space Station (ISS) with the world's most capable cargo spacecraft

Launched from the Tanegashima Space Center, the KOUNOTORI6 cargo spacecraft, also called HTV6, made a successful delivery of supplies, such as drinking water for the astronauts, experimental samples, a new type of Japanese lithium-ion battery, and seven microsattellites developed by universities and companies, to the International Space Station (ISS).

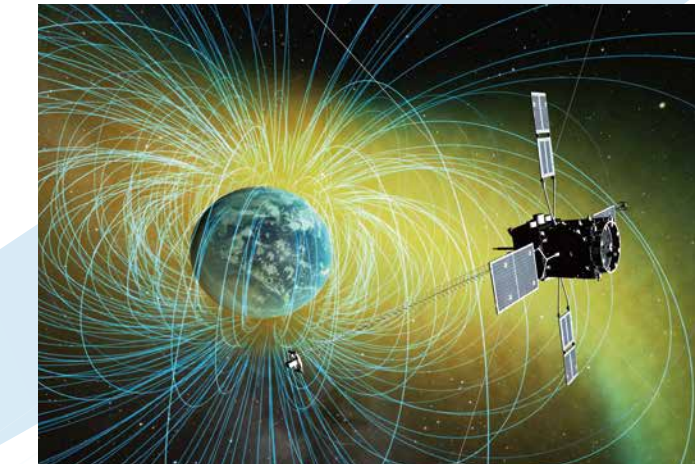


Get prepared for the increasing demand for small satellite launch

On December 20, 2016, JAXA successfully launched the second Epsilon Launch Vehicle, or Epsilon-2.

To respond to the growing demand for a variety of small satellites, JAXA has been engaging in the Enhanced Epsilon project aiming to increase the launch capability and enlarge the payload envelope.

The next Epsilon, Epsilon-3, will be equipped with a low-shock payload separation mechanism to provide the satellite with a more comfortable launch environment.



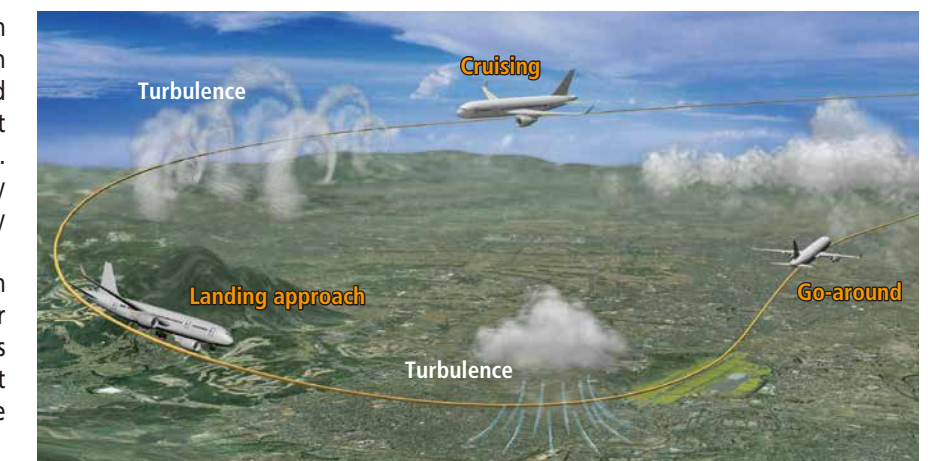
Solving a mystery of space storms

The Exploration of energization and Radiation in Geospace, or Arase(ERG), was launched by the second Epsilon Launch Vehicle on December 20, 2016 from the Uchinoura Space Center.

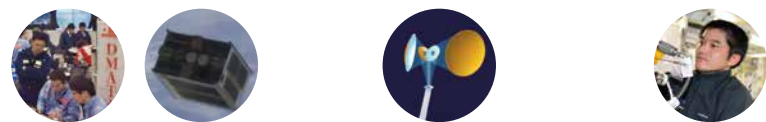
The Arase will reveal how highly charged electrons are generated, which are caused by solar wind in the Van Allen radiation belt lying within the geospace.

Preventing accidents by detecting clear-air turbulence

JAXA's clear-air turbulence detection system has successfully been flight demonstrated in the SafeAvio project (the R&D of onboard safety avionics technology to prevent turbulence induced aircraft accidents). Clear-air turbulence unaccompanied by rain clouds could not be detected by conventional on-board weather radars. JAXA's newly developed onboard system enables advanced detection of clear-air turbulence during flight, allowing crews and passengers to take measures against sudden shake, thereby expected to reduce air accidents.



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