Basic Plan for Space Policy

~Wisdom of Japan Moves Space~

Secretariat of Strategic Headquarters for Space Policy

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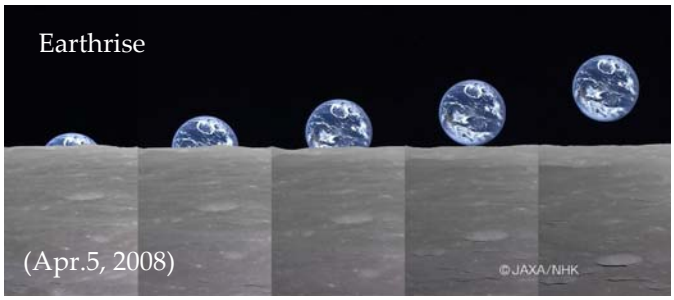
What is the Basic Plan

In view of the situation in which the role of the use and R&D of space has been expanding globally, the Basic Space Law was enacted in May 2008 to cope with challenges to Japan's space policy such as lack of a comprehensive strategy as a whole nation due to the absence of a policy headquarter.

The Basic Plan was decided as the first national comprehensive strategy by the Strategic Headquarters for Space Policy, which was established based on the Basic Space Law and chaired by the Prime Minister.



This Plan is a five-year-program, from FY2009 to FY2013, foreseeing the next ten years, describing the basic policy and the measures which the Government should take during this period.

A Special Committee for Space Policy, whose members are opinion leaders from various fields, chaired by Mr. Jitsuro Terashima, Chairman of Japan Research Institute, was established to make recommendations on the plan. Additionally we have received about 1500 public comments on this matter.

The Government will act comprehensively and systematically regarding this Basic Plan.

Special Committee on Space Policy(Member)

Setsuko Aoki Professor, Faculty of Policy Management, Keio University

Toshio Asakura Executive Managing Director, Chairman, Editorial Board, The Yomiuri Shimbun

Ryoko Fujimori Vice President, NPO Weather Caster Network

Shinichi Kitaoka Professor, Graduate Schools of Law and Politics, The University of Tokyo

Hideko S. Kunii Chairperson, RICOH SOFTWARE, Inc

Terunobu Maeda Chairman, Mizuho Financial Group, Inc.

Hiroshi Matsumoto President, Kyoto University

Reiji Matsumoto Manga Artist, President, Young Astronauts Club-Japan Chairman, National Council of Youth Organizations in Japan

Mari Matsunaga Director, BANDAI Co., Ltd.

Fujio Mitarai Chairman & CEO, Canon Inc.

Mamoru Mohri Executive Director, National Museum of Emerging Science and Innovation, Astronaut

Atsuhiro Nishida Former Director General, Institute of Space and Astronautical Science

Akira Sawaoka President, Daido University

Etsuhiko Shoyama Broad Director (Chairman), Board of Directors, Hitachi, Ltd

Jitsuro Terashima Chairman, Japan Research Institute

Katsuaki Watanabe President, TOYOTA MOTOR CORPORATION

※Cover：the composite photograph of the earth taken by "Midori 2" ©JAXA

Activities in the past and challenges in the future of our country

1. Use and R&D of space in Japan

From the beginning of the 20th century, the United States and the former Soviet Union played central roles in advancing the use and R&D of space.

First launch of the Pencil Rocket

Beginning with the Pencil Rocket created by Professor Hideo Itokawa, University of Tokyo, in 1955, Japan succeeded in launching a satellite in 1970, fourthly in the world, following the Soviet Union, United States and France.

Japan has developed several satellites and rockets, such as "Himawari" and the H-IIA rocket, participated in the International Space Station Program (ISS) and has played a significant part technologically among space advanced countries.

2. Insufficient use of Japan's space technology

However, because we have not made full use of space and have showed insufficient experience with rockets and satellites in Japan, our industrial competitiveness is not highly evaluated, compared with not only the space advanced countries but also late-starting countries such as China and India.

People point out that this is because Japan has concentrated on the R&D of space rather than the use of space.

The Government has decided to promote an appropriate space policy for better quality of life and large contribution to the international community. While keeping the R&D further developed, the Government intends to promote the use of space corresponding to social needs specifically, such as disaster relief, global environmental concerns, preservation and care of territorial land and search for the natural resources, and also take measures to enhance the strength of the space industry.

The Government will also promote further use of space for diplomacy and national security.

Six Basic Pillars

~For "Better Quality of Life" and "Contribution to the international community"~

1. Ensure a Rich, Secure and Safe Life

Our daily life depends on using space more effectively, such as for weather forecasts, telecommunications, a smooth supply of food and energy, car navigation systems and others. The Government will use as much of its potentiality as possible.

2. Contribute to Enhancement of Security

The use of space is extremely important in strengthening information gathering capability. The Government will promote the use of space in the field of national security, while maintaining our exclusively defense-oriented policy, in accordance with the principle of pacifism enshrined in the Constitution of Japan.

3. Promote the Utilization of Space for Diplomacy

The Government will promote using space to contribute to diplomatic efforts, such as providing imagery data to Asian neighbors in the event of disaster and providing necessary information to resolve the global warming and other global environmental concerns.

4. Create an energetic future by promoting R&D of the forefront areas

The Government will create the foundation stone of an energetic future by promoting space science, in which we have achieved world top class results by SELENE "Kaguya" and MUSES-C "Hayabusa", a lunar exploration, human space activity and a space solar power program.

5. Foster Strategic Industries for the 21st Century

The Government will place the space industry among the strategic industries in the 21st century and enhance industrial competitiveness by promoting making space machinery smaller, serialized, commonized and standardized.

6. Consider the Environment

The Government will take measures considering both the global and the space environment, such as space debris issue.

Systems and Programs for Six Basic Pillars

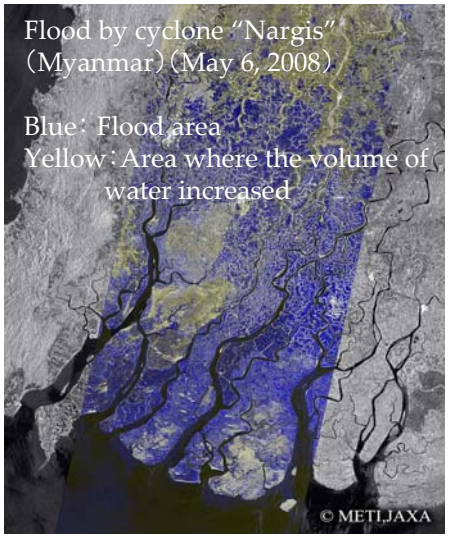
【5 Systems for utilization】

- **A. Land and Ocean Observing Satellite System to contribute to Asia and other regions**
- **B. Global Environmental Change and Weather Observing Satellite System**
- **C. Advanced telecommunication Satellite System**
- **D. Positioning Satellite System**
- **E. Satellite System for National Security**

【4 Programs of R&D】

- **F. Space Science Program**
- **G. Human Space Activity Program**
- **H. Space Solar Power Program**
- **I. Small Demonstration Satellite Program**

A. Land and Ocean Observing Satellite System to contribute to Asia and other regions



This system will enable us to;

- gather information within three hours, regardless of the weather and time of day, in the event of disaster, which is necessary for the efficient and effective disaster relief activities.
- search national resources and energy.
- observe deforestation and monitor World Heritage Sites

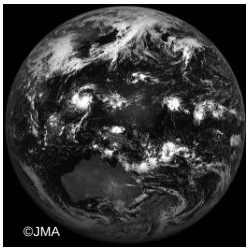
<Long term evaluation of change of the width of forest area (Rondonia, Amazon)>

B. Global Environmental Change and Weather Observing Satellite System

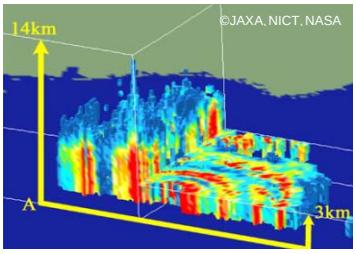
Although we use imagery data from MTSAT "Himawari" and other satellites for weather forecasts in our daily life, it is still insufficient to use them to deal with recent abnormal weather.

This system will enable us to;

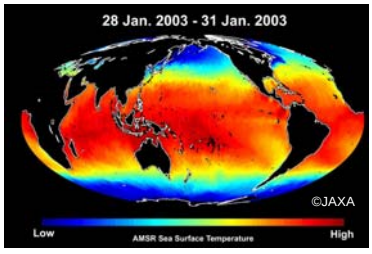
- forecast a very local and torrential downpour.
- forecast long-term weather by observing the sea surface temperature.
- grasp the distribution of greenhouse gases globally.



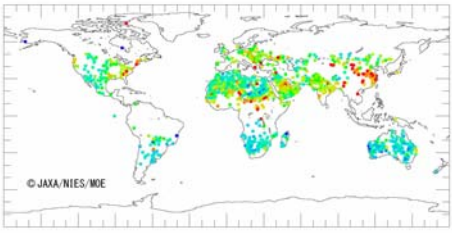
Imagery data of "Himawari"



Three-dimensional situation of rain of hurricane



Temperature of sea surface



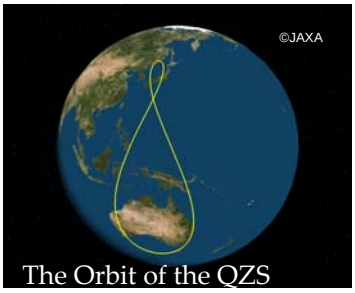
Distribution of carbon dioxide

C. Advanced telecommunication Satellite System

The BS and CS are used in our daily life.
Although satellite-based cellular phone services have not spread in Japan so far, compared with usual cellular phone services, it is useful when the ground facilities are down in the event of a disaster.

The cellular phone system, which enables telecommunication both via ground facilities and via the satellites, is under R&D.

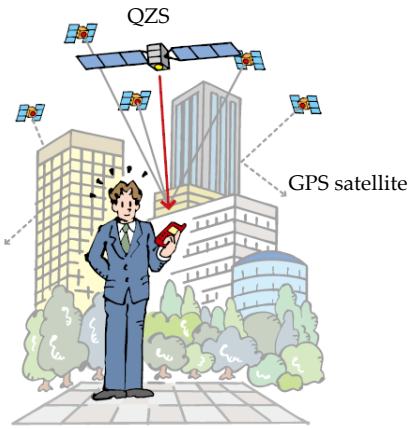
D. Positioning Satellite System



The Orbit of the QZS

We use positioning satellites, which consist of GPS satellites of the United States, for car navigation systems and other services in our daily life.

The Government will promote highly accurate positioning and create new services such as personal navigation systems by combining our QZS and GPS.



The Quasi-Zenith Satellite (QZS)

This satellite enables highly accurate positioning service even in mountain districts and in city parts with building shadow, which will be always located at almost the zenith.

E. Satellite System for National Security

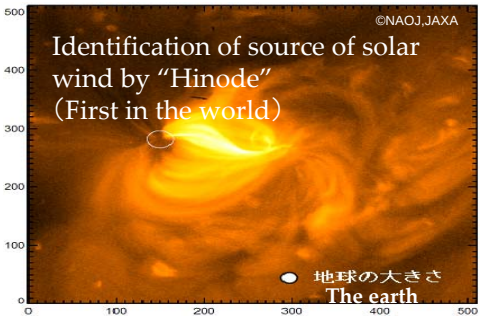
Chief example of the use of space for our national security purposes would be the Information Gathering Satellites introduced after the "Taepo-dong" missile launch by North Korea in 1998. However, the use of space in the area of national security has been limited compared with international standards.

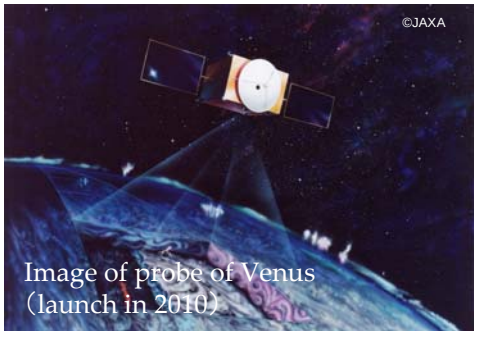
The Government will strengthen the information gathering capability and promote research in the field of early warning and signal information gathering, while maintaining our exclusively defense-oriented policy, in accordance with principle of pacifism enshrined in the Constitution of Japan.

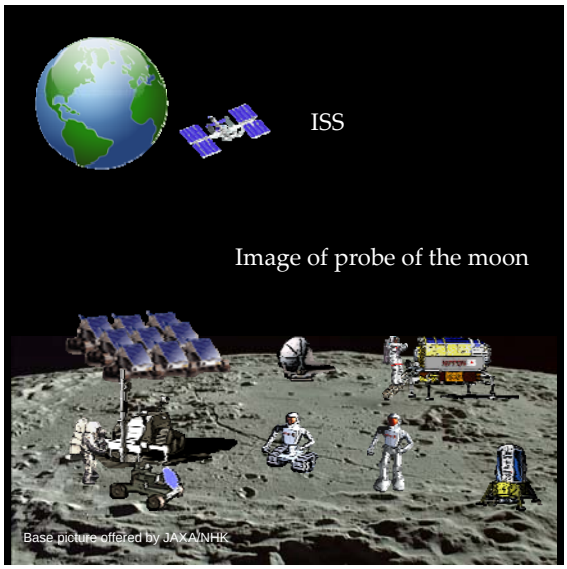
F. Space Science Program

We have achieved world top class results in the space science field, such as in space astronomy and solar system exploration.
(Landing of the MUSES-C "Hayabusa" on the Asteroid "Itokawa", Identification of the source of solar wind by SOLAR-B "Hinode", and so on)

The Government will continue to achieve world-leading scientific results, such as probes of Venus and Mercury, and the astronomical observations by X rays, and strengthen the cooperation with fields other than space science.







G. Human Space Activity Program

Japan has participated in the International Space Station Program (ISS) cooperating with the U.S., Canada, Russia and European countries, and has strived to accumulate fundamental technology.

Japan has contributed and will contribute to ISS by the Japanese Experiment Module "Kibo" and H-II Transfer Vehicle (HTV). The experiment of Kibo is expected to provide valuable results in such areas as medicine, which we cannot get on the ground.

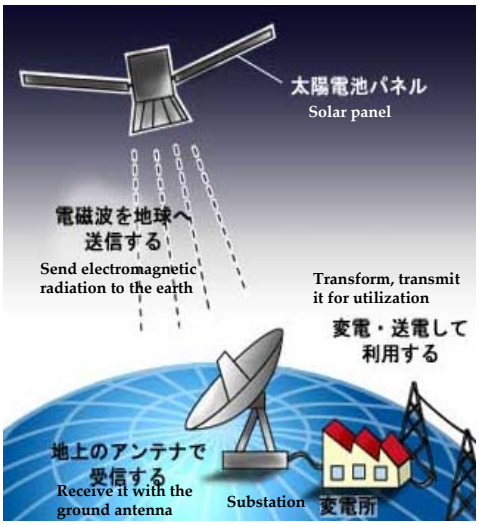
The Government is examining moon exploration with robots, aiming to achieve it around 2020, considering a manned exploration later.

H. Space Solar Power Program

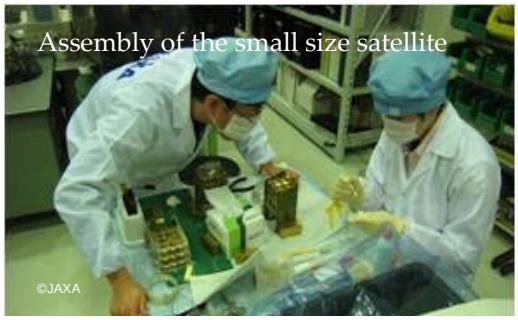
This program will enable the new system to gather solar power in space and to transfer it to the ground for our use.

Although solar power generation in space has advantages in that it will not be influenced by the weather nor time of day, we have to consider its economy compared with generation on the ground, technological feasibility and safety.

Taking those into consideration, the Government will demonstrate it on the orbit with an actual satellite, such as a small-size satellite.



I. Small Demonstration Satellite Program



The space industry is a very important foundation stone to promote the use and R&D of space.

To enhance space industry, we have to expand skirts of the space utilization industry. The government will promote such new entry to this field as the medium and small-sized enterprises in Higashi-Osaka produced a ultra-small size satellite SOHLA-1 "Maido 1".

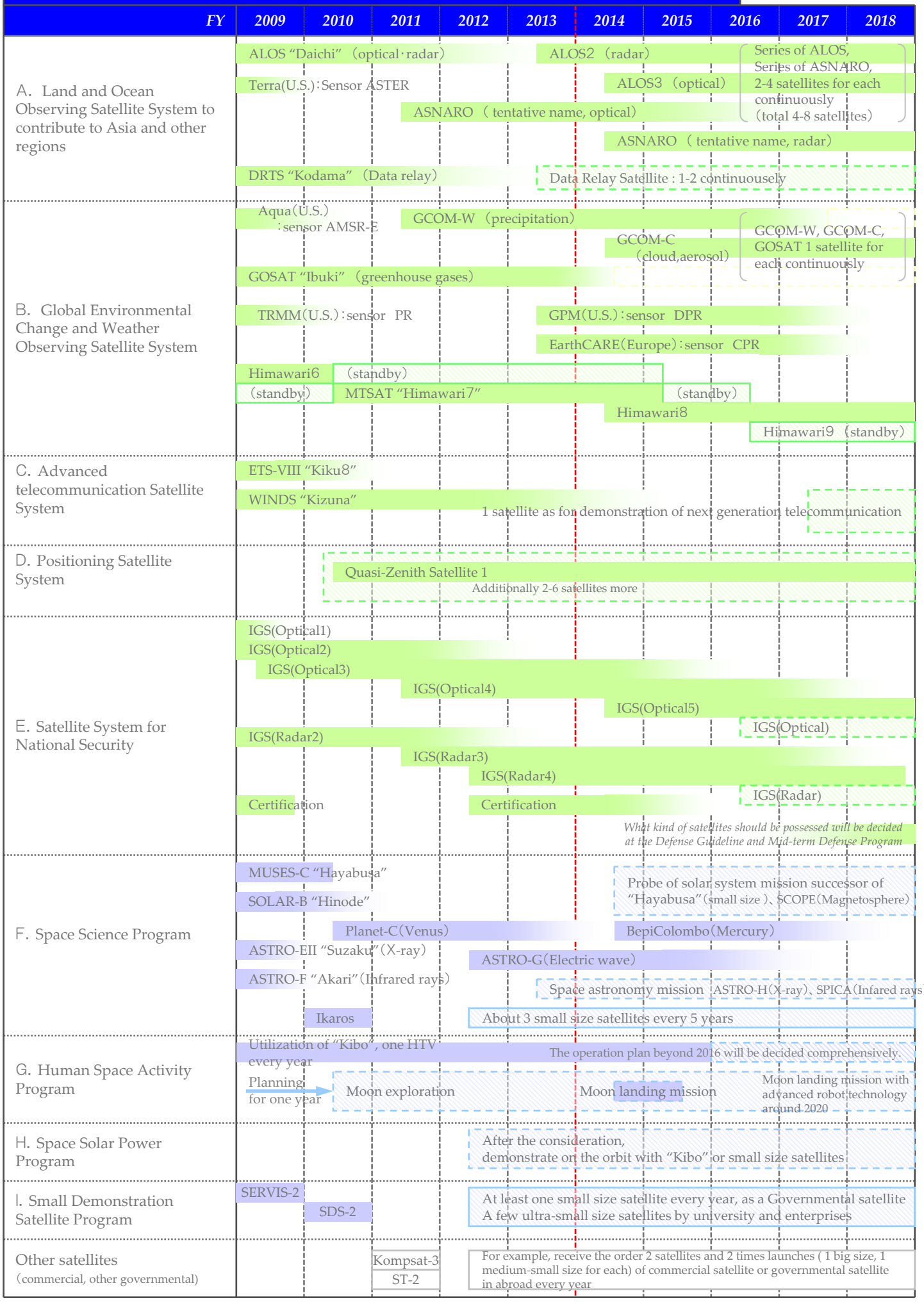
The government will promote demonstration of new technology in space using small-size satellites, and will support the medium and small-sized enterprises and universities.

【Invest for the next generation】

The government will promote both training of engineers and researchers, and educating children and measures for public relations.

June, 2009 ver.

R&D Plan of satellites (outline of the attachment 2 of Basic Plan)



※ Necessary fund is estimated to be JPY2,500B for the utilization, R&D of all satellites above, which should be shared by government and private sector.