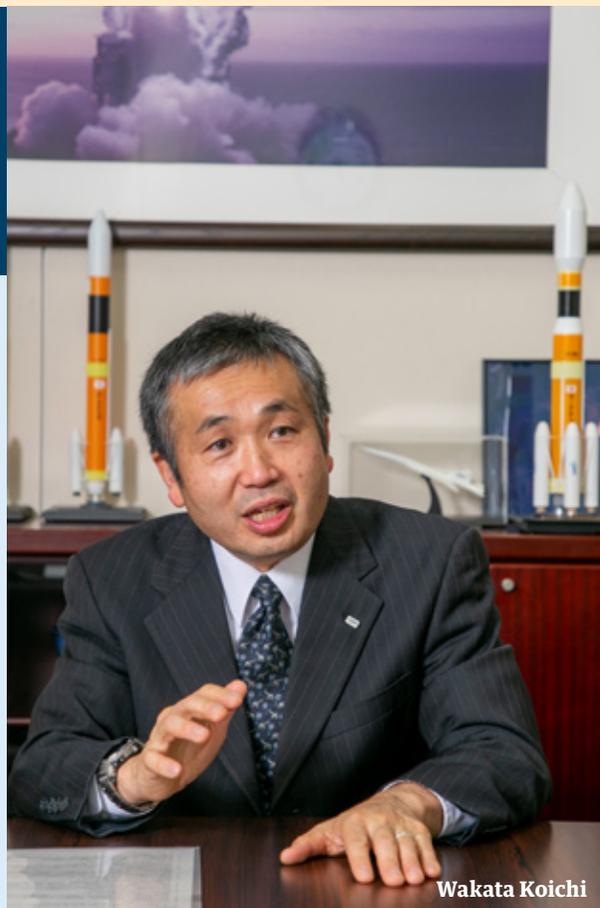


# Space Exploration to Protect Earth



Wakata Koichi

**W**AKATA Koichi, Vice President of the Japan Aerospace Exploration Agency (JAXA), is an astronaut who has had four space flights to date, logging a total of 347 days in space. We asked Wakata about his impressions of space, his work as an astronaut, and Japanese space development.

## What triggered your interest in space?

In 1969, when I was 5 years old, Apollo 11 brought humans onto the surface of the Moon for the first time. I watched the lunar landing on TV and longed to go to space. But at the time, astronauts were exclusively from the United States or the former Soviet Union, and I felt it would be difficult for me as a Japanese to get into space.

Because I've loved airplanes since I was a kid, after I studied aeronautical engineering at university, I joined an airline company as an engineer and I was fulfilled at work every day. During my third year with the airlines, I saw an advertisement for astronaut candidates in the newspaper. I recalled my dream of going to space at the age of five and applied. I never dreamed I would get through, but fortunately I was selected as a candidate in 1992.

## What impressions have you taken away with you from your space flights to date?

I will never forget the sight of the blue Earth when I flew in space for the first time on the Space Shuttle in 1996. It made me realize how lucky I was to have been born on such a beautiful planet.

My stay on the International Space Station (ISS) from November 2013 to May 2014, which was my fourth space flight, also made a lasting impression on me. The ISS orbits the Earth sixteen times a day, which means that if you stay on the ISS for six months, you will orbit the Earth more than 3,000 times. This gave me a sense of how small and vulnerable the Earth is. In the same way that a breakdown of the equipment that removes CO2 on the ISS would endanger the lives of its crew, the destruction of the Earth's natural environment poses a danger to humanity. I became acutely aware that the technologies developed and new knowledge gained in long duration space flight on the ISS and human exploration to the Moon and Mars not only expand the scope of human activities beyond the Low Earth Orbit but are also significant for protecting the Earth's natural

environment and the survival of humanity.

**During your fourth space stay, you became the First Japanese Commander of the ISS. What was your approach as commander?**

When I served as ISS commander, my crew consisted of two Americans and three Russians. The role of a commander is to bring out the abilities of individual crew members and maximize the outcome as a team. Also, as a crew commander, I tried to create a team which places importance on the spirit of harmony. From training before the flight onwards, I communicated frequently with my crew mates and worked to create a team in which crew members could speak their minds without hesitation.

ISS space food menu items consist of standard food and “bonus food,” and I also used the bonus food as a means of communication. Crew members can select their preferred bonus food items, and I selected the food items that my colleague crew members might like. Treating my crew mates with the bonus food helped me have smooth and relaxed communication with them. The curry rice, fish dishes and other Japanese food that I selected as bonus food went down extremely well. In the closed environment in the ISS with little entertainment to hand, such small shows of consideration for others are important.

**What are Japan’s strengths when it comes to space exploration?**

Japan is contributing to the resolution of global issues with its space technology. Japan’s strength lies in its technology, for instance, explorers such as Hayabusa2 landing on asteroid Ryugu, rockets with high launch success rates, and the cargo transporter Kounotori that delivers supplies to the ISS.

Moreover, Japan’s greenhouse gases observing satellites are internationally recognized for providing highly reliable data. The outcome of

the wide range of experiments being conducted on the Japanese Experiment Module called “Kibo” of the ISS will no doubt continue to make significant contributions in various fields such as development of new drugs and medical research to cope with aging. What is more, a total of 244 small satellites have been deployed from “Kibo” to date. These include many satellites developed as part of Japan’s international cooperation efforts, with some countries including Kenya, the Philippines and Costa Rica launching their first satellites from “Kibo.” Such human resource development in developing countries in the field of space technology is also an important role played by Japan.

**What projects is JAXA currently involved in?**

In October 2019, Japan decided to cooperate with the United States in the moon exploration which aims to land US astronauts on the moon by 2024. JAXA plans to launch Smart Lander for Investigating Moon (SLIM) in FY2021, which aims to demonstrate the high-precision landing technology necessary for lunar exploration. In FY2023, we plan to launch a robotic explorer that will land on the south pole region of the moon to explore the water resource in collaboration with India. The findings from these missions will also make a significant contribution to the crewed missions to the moon.

JAXA is also working with Toyota Motor on the joint research of a fuel cell-powered crewed pressurized rover which will roam the lunar surface. In the future, we plan to form more partnerships with the private sector that has had no previous involvement in space activities in order to research and develop technologies that are useful both in space and terrestrial applications. 

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Interview by SAWAJI OSAMU

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