



# SCIENCE

The Science Mission Directorate (SMD) studies the planet with an array of Earth-observing satellites; explores the solar system with spacecraft that visit other planetary bodies; deploys robotic landers, rovers, and sample return missions; and projects humankind's vantage point into space with Earth-orbit and deep space observatories. SMD organizes its work to achieve the goals through four divisions: Earth Science, Planetary Science, Heliophysics, and Astrophysics.

## Earth Science

The Science Mission Directorate (SMD) works to develop a scientific understanding of the most vibrant and fascinating planet in our solar system: Earth. SMD studies how Earth's systems respond to changes from both natural and human sources. NASA brings the view from space to bear on national priorities like climate change and improved weather forecasting.

## Planetary Science

SMD advances scientific knowledge of the solar system's origin and history, the potential for new life-forms on Earth and elsewhere, and the hazards and resources present as humans explore space. This includes exploring the wide variety of planets, moons, asteroids, and comets in our solar system, as well as the potential habitability of Mars and other bodies.

## Heliophysics

Through studying the Sun and its effects on Earth and the solar system, SMD seeks to understand space weather, the heliosphere (space dominated by the Sun) and planetary environments as a single system. Doing so will help reduce the vulnerability of human activities to dangerous space weather events like solar flares and protect human and robotic explorers as they travel the solar system.

## Astrophysics

SMD seeks to discover the origin, structure, evolution, and destiny of the universe and to search for Earth-like planets. Using space-based observatories, SMD exploits the entire spectrum of light in search of answers to fundamental questions, including the following: How did the big bang unfold? How were galaxies and stars created? What are dark matter and dark energy? Does life exist elsewhere in the cosmos?

SMD manages a diverse constellation of more than 60 spacecraft, and the Directorate is a world leader working in concert with the science community and NASA's international partners. SMD has missions in all phases of development, as well as grant-based research programs designed to derive new scientific discoveries from their data, imagery, and samples. These missions help fulfill NASA's science mission by providing information as practical as next week's weather and as profound as clues to the nature of the universe. Scientific exploration both enables and is enabled by the human.

For more information on the Science Mission Directorate, go to <http://science.hq.nasa.gov>.