**Office of Science and Technology Policy**
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## SPACE EXPLORATION

***Research and Development Funding in the President's 2005 Budget***

The President has committed the U.S. to a long-term human and robotic program to explore the solar system and beyond, including a human return to the Moon that will ultimately enable future exploration involving humans of Mars and other destinations. For the past thirty years, we have made an astounding series of discoveries about our space environment. We now know there are fascinating places within our solar system that bear close and detailed scrutiny. By exploring these places, we will be in a better position to understand the evolution of our own planet and the prevalence of life across the universe.

While this vision not only sets a course to the planets it also focuses technology development applicable to us at home on Earth. Anticipated advances in robotics, human-computer interface, electronic and mechanical miniaturization, and applications of nanotechnology should continue the impressive record of space technology developments that benefit all Americans. Equally important, the exploration of space provides inspiration to the next generation of scientists and engineers. The 2005 Budget provides NASA a new focus that is at once visionary and pragmatic.

- **Sustained and Affordable Human and Robotic Exploration of the Solar System.** The Budget requests $16.2 billion in FY2005 and $87 billion for NASA over five years, an increase of $1 billion over the FY 2004 five-year plan. NASA will reallocate $11 billion within this amount toward new exploration activities. Robotic trailblazers to the Moon will begin in 2008, followed by a human return to the Moon no later than 2020. Human missions to Mars will be conducted once robotic missions acquire adequate knowledge about the planet and after we have successfully executed sustained human exploration missions to the Moon. The pace of exploration will be driven by available resources, technology readiness, and our ongoing experience.

- **Enhancing Knowledge of our Solar System and Universe**. The Budget continues the growth in space science. This budget supports the next generation of space observatories that will be used to better understand the origin, structure, and evolution of the universe. The budget also initiates new exploration missions to Mars. Additionally, the budget commits to a series of lunar robotic missions that will enhance our understanding of the Moon's geology, history, and its potential natural resources that may be used to enable the space exploration vision.

- **Developing Innovative Technologies, Knowledge, and Infrastructures.** The 2005 Budget supports a variety of key research and technology initiatives to enable the space exploration vision. These initiatives include refocusing U.S. research on the International Space Station to emphasize understanding and countering the impact of long-duration space flight on human physiology. The budget also supports the development of processes to extract and use space resources to decrease the cost and logistics of future exploration missions. In addition, the agency will pursue optical communications for increased data rates throughout the solar system, radiation shielding, space nuclear power to enable high-power science instruments, and advanced in-space propulsion technologies, as well as systems that enable robots and humans to work together to assemble large structures in space.

- **Continuing to Improve Life on Earth**. Space observations are helping to improve techniques for forecasting the weather, monitoring forest fires, and tracking the spread of pollutants. The budget supports increased investments in the President's Global Climate Change Research Initiative, including investment in a critical satellite to help determine the impacts of aerosols such as soot and dust on global climate change. In addition, education programs highlighting space accomplishments and challenges continue to encourage students to enter science and engineering careers.