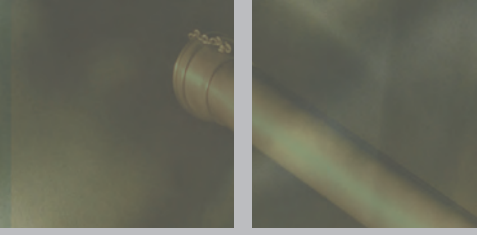
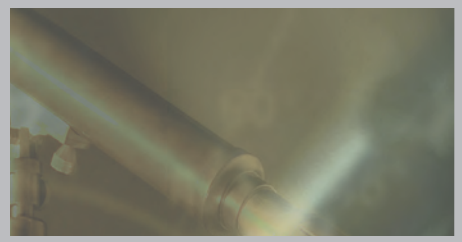
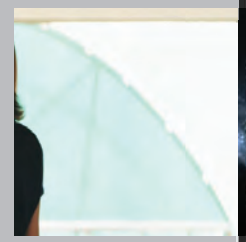
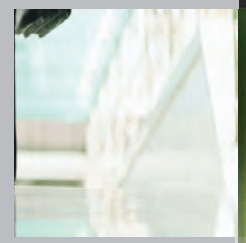







NASA Research at the University of Maryland



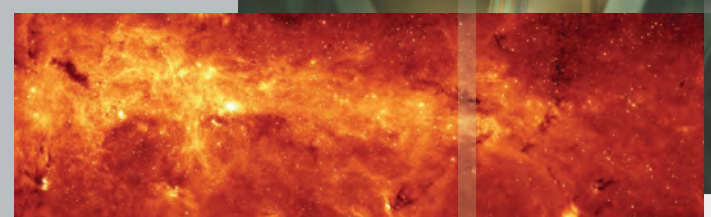
As a leading research and educational institution in physics, astronomy, engineering, computer science, Earth sciences and geography, the University of Maryland has a unique involvement with NASA' s missions. Working jointly with other universities and industries, the university plays an important role in developing technologies, designing and managing research projects, collecting and analyzing data, and preparing the next generation of scientists for NASA' s space exploration and Earth observation missions.

NASA funding of $44.5 million in fiscal year 2008 reflected an increase of $5 million over the previous year. In FY08 UMD had 221 active awards with a total of $111 million received for these projects. Maryland ranks fourth among major research universities in receiving NASA funding.

Inside are some of the largest activities sponsored by NASA at the University of Maryland:



2133 Lee Building College Park, MD 20742-5121


Exploring The Universe

EPOXI

Principal Investigator: Michael A' Hearn

The Deep Impact study, led by Maryland' s Michael A' Hearn, made history in July 2005 when its spacecraft blasted a crater in comet Tempel 1 and collected data on the comet' s composition. EPOXI extends the spacecraft' s mission with two distinct projects. The first, DIXI, continues the original investigation of cometary origin and evolution, with the spacecraft on course for an encounter with comet Hartely 2 in October 2010. On-board instruments will gather data on Hartely 2' s gas emissions, composition and surface features. The second project, EPOCh, will gather data useful in the search for Earth-like planets in distant star systems. EPOCh has already characterized the Earth from afar using visible-light and infrared analysis and will later study three stars with known giant planets to characterize those planets and search for others.

HTTP://EPOXI.UMD.EDU/

Center for Research and Exploration in Space Science and Technology (CRESST)

Principal Investigator: Lee Mundy

NASA in 2006 turned to the University of Maryland, College Park, the University of Maryland, Baltimore County, and the Universities Space Research Association (USRA) to create and manage CRESST. Led by the university' s Lee Mundy, CRESST recruits new scientists, holds scientific meetings and runs summer school programs at NASA' s Goddard Space Flight Center. With its highly regarded departments of astronomy and physics and its internationally recognized expertise in space science, the university provides key support for the center' s early research focus on neutron stars and black holes.

HTTP://CRESST.UMD.EDU/

Cosmic Ray Energetics and Mass (CREAM)

Principal Investigator: Eun-Suk Seo

Since the discovery of cosmic rays early in the 20th century, scientists have struggled to explain their origins. Current theory suggests that the highest energy cosmic rays result from supernovae. Some cosmic rays, however, may exceed the energies predicted by this theory. Because high-energy cosmic rays interact with the Earth' s atmosphere, they cannot be observed directly from the ground; and the indirect measurements taken during air shower events limit the amount and utility of data. The CREAM experiment was designed to obtain direct measurements of high-energy cosmic rays. Carried aboard zero- pressure balloons, the CREAM instrumentation developed by Eun-Suk Seo collects direct data on cosmic ray particle energy and identity. These data will be used to test the current theory of high-energy cosmic ray origin.

HTTP://WWW.COSMICRAY.UMD.EDU/CREAM/CREAM.HTML

Developing Space Exploration Technologies

Constellation University Institutes Project (CUIP)

Principal Investigator: Darryll Pines

Led by Darryll Pines, Dean of the A. James Clark School of Engineering, the CUIP is a consortium of more than 20 universities that supports NASA' s space exploration goals by providing long-term fundamental research and management services. CUIP focuses on developing safe, efficient, reliable and affordable space exploration technologies and on training the next generation of aerospace engineers. The project addresses NASA' s needs in six research areas: thrust chamber assembly, propellant storage and delivery, re-entry aerothermodynamics, structures for extreme environments, solids, and systems engineering and integration. The CUIP team also provides contractual management and administration; offers a communication forum for the participating entities; and encourages collaboration among principal investigators, research leads and NASA centers.

HTTP://WWW.CUIP.UMD.EDU/ABOUT.HTML

Institute for Dexterous Space Robotics

Principal Investigator: David Akin

Congress in 2005 allocated funds for NASA to create the Institute for Dexterous Space Robotics to address current and future needs for cutting-edge space robotics. The Space Systems Laboratory at the Clark School of Engineering, led by David Akin, established and heads this Institute, a university consortium for advanced robotics. The Institute' s goal is to develop new classes of space robotics systems able to interact with planetary surfaces and perform complex assembly and service missions in space. The Clark School' s testbed systems–the Ranger Dexterous Robotics System and the Neutral Buoyancy Research Facility, which is one of only two neutral buoyancy systems in the nation–are routinely used by institute partners to test their robotic technologies. Able to simulate the space environments in which robotic systems must operate, Maryland' s facilities provide a final step in qualifying robotics systems as ready for use.

HTTP://ROBOTICS.SSL.UMD.EDU/

Observing The Earth

Earth System Science Interdisciplinary Center (ESSIC)

Principal Investigator: Antonio Busalacchi

The Earth System Science Interdisciplinary Center (ESSIC) at the university is a collaborative effort between the departments of Atmospheric & Oceanic Science, Geology and Geography and the Earth Sciences Directorate at the NASA' s Goddard Space Flight Center. ESSIC, led by Maryland' s Antonio Busalacchi, also administers the Cooperative Institute for Climate Studies (sponsored by the National Oceanic & Atmospheric Administration' s National Satellite, Data, and Information Services and the NOAA National Centers for Environmental Prediction). ESSIC' s goal is to enhance our understanding of how the Earth' s atmosphere, ocean, land and biosphere interact as a system and how human activities influence that system. To achieve these goals, ESSIC studies the complex interactions between the physical climate system and biogeochemical cycles. The center' s major research concerns are climate variability and change, atmospheric composition and processes, the global carbon cycle and the global water cycle.

HTTP://WWW.ESSIC.UMD.EDU/

Fire Monitoring

Principal Investigator: Christopher Justice

Amid a shifting world population and changing climate, understanding the global and regional impact of fire becomes ever more important. To answer that need, NASA, supported by the university, is employing its satellite systems to develop a fire-monitoring system. Christopher Justice and his colleagues in the Department of Geography are using their extensive data analysis capabilities to generate global, daily fire monitoring data in near real-time for the fire-management and global-change research communities around the world. The Department of Geography is also working with NOAA and Science Systems Applications Inc., to design fire products for a new generation of operational, polar orbiting satellites and to ensure a long-term climate data record to meet the needs of the global-change research community.

HTTP://MODIS-FIRE.UMD.EDU/MCD45A1.ASP
HTTP://MAPS.GEOG.UMD.EDU/FIRMS/