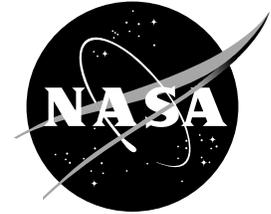


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TERRA SPACECRAFT TO LEAD THE WAY

NASA will launch and deploy the "flagship" to the Earth Observing System series of satellites, part of a precedent setting program designed to provide daily information on the health of the planet. The Terra spacecraft, formerly known as "EOS AM-1," is scheduled for launch Dec. 16, 1999.

Terra begins a new generation of Earth science - one that studies the Earth's land, oceans, air, ice and life as a total global system. Terra will carry a complement of five synergistic state-of-the-art instruments. Researchers now recognize that the Earth - land, oceans, life, and atmosphere - operates as a system - one part impacting the other. EOS will help us to understand how the complex coupled Earth system of air, land, water and life is linked. A series of 10 spacecraft, known as the first EOS series, are scheduled for launch into the next decade.

"After years of anxious anticipation we're extremely excited about this mission," said Dr. Ghassem Asrar, associate administrator, NASA's Earth Science Enterprise. "The Terra mission has nearly unlimited potential to improve scientific understanding of global climate change."

The EOS series spacecraft are the cornerstone of NASA's Earth Science Enterprise, a long-term coordinated research effort to study the Earth as a global system and the effects of natural and human-induced changes on the global environment. Terra will use this unique perspective from space to observe the Earth's continents, oceans, and atmosphere with measurement accuracy and capability never before flown. This approach enables scientists to study the interactions among these three components of the Earth system, which determine the cycling of water and nutrients on Earth.

"Terra will simultaneously study clouds, water vapor, aerosol particles, trace gases, terrestrial and oceanic properties, the interaction between them and their effect on atmospheric radiation and climate," said Dr. Yoram Kaufman, Terra project scientist from Goddard Space Flight Center, Greenbelt, Md. "Moreover, Terra will observe changes in Earth's radiation budget (a measurement of all the inputs and outputs of the Earth's radiative energy), together with measurements of changes in land/ocean surface and interaction with the atmosphere through exchanges of energy, carbon, and water. Clearly comprehending these interactive processes is essential to understanding global climate change," he said.

A polar-orbiting spacecraft, Terra is scheduled for launch aboard an Atlas-Centaur IAS expendable launch vehicle from Vandenberg Air Force Base, Calif. The 25-minute launch window opens

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at 1:33 p.m. EST (10:33 a.m. PST). Separation of the spacecraft from its launch vehicle will occur about 14 minutes after launch.

Once in its final orbital position, the satellite will orbit the Earth at an altitude of approximately 438 miles (705 kilometers) with a Sun-synchronous 98-degree inclination and descend across the equator at 10:30 a.m. Because Terra emphasizes observations of terrestrial surface features, its orbit is designed to cross the equator at this time when cloud cover, which obscures the land surface, is at its daily minimum. The orbit will be adjusted so that it covers the complete Earth every 16 days. This orbit will be maintained with periodic adjustments during the six-year life of the mission.

The spacecraft was built by Lockheed Martin Missiles and Space in Valley Forge, Pa. The five instruments onboard Terra include the Clouds and the Earth's Radiant Energy System (CERES), the Multi-angle Imaging SpectroRadiometer (MISR), the Moderate-Resolution Imaging Spectroradiometer (MODIS), the Measurements of Pollution in The Troposphere (MOPITT), and the Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) instrument.

The CERES instruments, provided by NASA's Langley Research Center, Hampton, Va., and built by TRW, Redondo Beach, Calif., perform measurements of the Earth's "radiation budget," the process that maintains a balance between the energy that reaches the Earth from the sun, and the energy that goes from Earth back out to space. The critical components that affect the Earth's energy balance are the planet's surface, atmosphere, aerosols, and clouds.

MISR, built and provided by NASA's Jet Propulsion Laboratory, Pasadena, Calif., will measure the variation of surface and cloud properties, and particles in the atmosphere, with cameras pointed in nine simultaneous different viewing directions. MISR will monitor monthly, seasonal, and long-term interactions between sunlight and these components of Earth's environment. Over a seven-minute period, points on the Earth within a 224 mile (360 kilometer) wide swath will be observed successively at all nine angles.

The Moderate-Resolution Imaging Spectroradiometer (MODIS), provided by Goddard., and built by the Raytheon (formerly Hughes) Santa Barbara Remote Sensing, Santa Barbara, Calif., will measure the atmosphere, land and ocean processes, (including surface temperature of both the land and ocean), ocean color, global vegetation, cloud characteristics, temperature and moisture profiles, and snow cover. MODIS will view the entire surface (land, oceans, clouds, aerosols, etc.) of the Earth every 1-2 days at a "moderate resolution" of one-quarter to one kilometer.

The Measurements Of Pollution In The Troposphere (MOPITT) instrument, provided by the Canadian Space Agency and built by COM DEV International of Cambridge, Ontario, will map carbon monoxide and methane concentrations at altitudes between 10 miles and the ground. MOPITT is an infrared gas correlation radiometer and will produce maps over the entire globe every 4-16 days. From these measurements the sources, motions and sinks of these gases can be determined.

The ASTER instrument, provided by Japan's Ministry of International Trade and Industry and built by NEC, Mitsubishi Electronics Company and Fujitsu, Ltd., will measure cloud properties, vegetation index, surface mineralogy, soil properties, surface temperature, and surface topography for selected regions of the Earth.

Hundreds of scientists from the U.S. and abroad are prepared to take full advantage of Terra observations to address key scientific issues and their environmental policy impacts.

Every 1 to 2 days Terra instruments will collect data over the entire Earth's surface, making measurements across a wide spectrum ranging from visible to infrared light. This research ideally will help scientists develop computer models of atmospheric, oceanic, and terrestrial dynamics and subsequently gain a better understanding of these complex systems and how they interact. With this information, scientists will improve their ability to predict significant changes in Earth's environment before

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they occur.

Terra will collect and archive an unprecedented quantity of high-quality multi-spectral data each day. The data will, for the first time, provide a high-resolution multi-faceted view of both seasonal and interannual changes in the terrestrial environment.

The Terra Project Office, located at Goddard, manages Terra development for NASA's Office of Earth Science in Washington, D.C. Goddard is responsible for the development of the satellite and the development and operation of the ground operations system. Spacecraft operations will be performed at a Mission Operations Center at Goddard.

Terra is part of a global research program known as NASA's Earth Science Enterprise, a long-term program that is studying changes in Earth's global environment.

NASA recognizes that the knowledge and data derived from Terra have significant practical value to society, and plans to foster increased access to, and use of, the information to make better, more informed decisions related to National needs which affect every American -- health and safety, economic wellbeing, and quality of life in our communities.

A goal of the Earth Science Enterprise is to expand knowledge of the Earth System, from the unique vantage point of space. Earth Science Enterprise data, which will be distributed to researchers worldwide at the cost of reproduction, is essential to people making informed decisions about their environment.