

Lockheed Martin Team Selected To Develop New Solar Mission

The Lockheed Martin Space Systems Company, the NASA Ames Research Center in Mountain View, and a national and international team of co-investigators have been selected by NASA to develop a new Small Explorer Mission (SMEX) called the Interface Region Imaging Spectrograph (IRIS). The Lockheed Martin Space Systems Advanced Technology Center (ATC) in Palo Alto has scientific payload and overall mission responsibility. Construction, integration and testing of the IRIS spacecraft will be done by the Lockheed Martin Space Systems Sensing & Exploration Systems (S&ES) organization. In addition, mission operations and some system engineering will be the responsibility of NASA Ames in Mountain View, Calif. Mission costs will be capped at \$105 million, excluding the launch vehicle.

IRIS fills a crucial gap in our ability to advance Sun-Earth connection studies by tracing the flow of energy and plasma through a dynamic interface region - the chromosphere and transition region - between the solar surface and the solar corona. Here all but a few percent of the non-radiative energy leaving the Sun is converted to heat and radiation. The remaining few percent create the corona and solar wind. Magnetic fields and plasma exert comparable forces in this region, and IRIS is uniquely suited to provide the observations necessary to pinpoint the physical forces at work in this little understood piece of real estate near the surface of the Sun.

"With IRIS we have a unique opportunity to provide significant missing pieces in our understanding of energy transport on the Sun," said Dr. Alan Title, IRIS principal investigator and solar physicist at the ATC Solar and Astrophysics Laboratory in Palo Alto. "The complex processes and enormous contrasts of density, temperature and magnetic field within this interface region require instrument and modeling capabilities that are only now within our reach."

The IRIS spacecraft will fly in a Sun-synchronous polar orbit for continuous solar observations on a two-year mission. It will obtain ultraviolet spectra and images with high resolution (1/3 arcsec) - with a cadence of as little as one second apart - focused on the chromosphere and the transition region. Spectra will cover temperatures from 4,500 K to 10,000,000 K, and images covering temperatures from 4,500 to 65,000 K.

The NASA SMEX Program is designed to provide frequent, low-cost access to space for heliophysics and astrophysics missions using small- to mid-sized spacecraft. The program also seeks to raise public awareness of NASA's space science missions through educational and public outreach activities.

The Solar and Astrophysics Laboratory at the ATC conducts basic research into understanding and predicting space weather and the behavior of our Sun including its impacts on Earth and climate. It has a long heritage of spaceborne solar instruments including the Soft X-ray Telescope on the Japanese Yohkoh satellite, the Michelson Doppler Imager on the ESA/NASA Solar and Heliospheric Observatory, the solar telescope on NASA's Transition Region and Coronal Explorer, the Focal Plane Package on the Japanese Hinode satellite, the Solar X-ray Imager on GOES-N, the Extreme Ultraviolet Imager instruments on NASA's twin STEREO spacecraft, and the Heliospheric and Magnetic Imager and the Atmospheric Imaging Assembly on NASA's Solar Dynamics Observatory.

The ATC is the research and development organization of Lockheed Martin Space Systems Company (LMSSC). LMSSC, a major operating unit of Lockheed Martin Corporation, designs and develops, tests, manufactures and operates a full spectrum of advanced-technology systems for national security and military, civil government and commercial customers. Chief products include human space flight systems; a full range of remote sensing, navigation, meteorological and communications satellites and instruments; space observatories and interplanetary spacecraft; laser radar; ballistic missiles; missile defense systems; and nanotechnology research and development.

Headquartered in Bethesda, Md., Lockheed Martin is a global security company that employs about 146,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. The corporation reported 2008 sales of \$42.7 billion.

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