



## **NASA's SMAP Satellite Becomes Operationally Successful with Northrop Grumman AstroMesh® Reflector**

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CARPINTERIA, Calif., May 26, 2015 /PRNewswire/ -- NASA's Jet Propulsion Laboratory has declared the Soil Moisture Active Passive (SMAP) spacecraft fully operational, officially beginning the satellite's three-year mission to provide global measurements of soil moisture. This milestone also continues the 100 percent on-orbit success rate of Astro Aerospace, a Northrop Grumman Corporation (NYSE: NOC) company, since its founding in 1958.



Launched Jan. 31 from Vandenberg Air Force Base, SMAP represents the future of Earth Science by helping researchers better understand our planet. SMAP's unmatched data capabilities are enabled in part by the largest spinning mesh reflector ever deployed in space, engineered by Astro Aerospace. The 6-meter reflector and boom are a critical system for SMAP, spinning at about 15 revolutions per minute (rpm) to create a conically scanning antenna beam of approximately 620 miles for total global mapping every two to three days.

SMAP data will improve weather and climate prediction models by increasing our understanding of the processes that link Earth's water, energy and carbon cycles. In addition to soil moisture levels, SMAP also will identify frozen or thawed water, which will be used to detect changes in growing season length and to help scientists better understand how much carbon plants absorb from the atmosphere each year. SMAP data will also be used to improve flood prediction and drought monitoring capabilities.

The 20-foot reflector, which successfully deployed Feb. 24, is the largest spinning reflector ever created, and represents many engineering successes for NASA JPL and Astro Aerospace. Because the reflector could not be dynamically tested on the ground, a verified mass properties model was developed. The Astro Aerospace team manufactured and assembled each component with utmost precision.

"SMAP has the potential to affect the lives of each of us, and it is an honor to have participated with the NASA JPL team on such an important project," said John A. Alvarez, general manager, Astro Aerospace. "Thank you to JPL for being a great partner on this program, and to the entire Astro team who worked tirelessly to ensure the success of the reflector and boom, and carry our 100 percent on-orbit success rate forward."

Despite the complexities of the mission, the SMAP reflector weighs only 56 pounds. The extremely stiff boom, which deployed the reflector into position and reduces deflections caused by the spin rate, weighs 55 pounds. With the remaining launch restraint equipment weighing approximately 15 pounds, the entire system totals a mere 127 pounds.

"This is an incredible achievement by JPL and the Astro Aerospace team and we congratulate NASA and JPL for advancing human discovery about our planet's soil moisture levels," said Chris Yamada, vice president, aerospace products, Northrop Grumman. "Our Astro Aerospace business continues to deliver advanced, innovative solutions for space deployable mechanisms and structures, such as this AstroMesh® reflector – the only deployable reflector with a flawless performance record."

The SMAP observatory holds a 426-mile near-polar, sun-synchronous orbit, with equator crossings at 6 a.m. and 6 p.m. SMAP is designed to operate for a minimum of three years and is managed for NASA's Science Mission Directorate, Washington, by NASA's Jet Propulsion Laboratory, Pasadena, California.

Since 1958, Astro Aerospace ([www.northropgrumman.com/astro](http://www.northropgrumman.com/astro)) has helped enable complex missions to Earth orbit, Mars and beyond with its innovative deployable space structures and mechanisms. The business unit's products have been successfully deployed on hundreds of space flights with a 100 percent success rate, a testament to Northrop Grumman's commitment to reliability, quality and affordability.

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