NASA to launch FORTIS to study extra-galactic dust

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The FORTIS team prepares for a test on Dec. 8, 2015. FORTIS will study far-ultraviolet light from star-forming galaxy NGC 1365 to understand how material is flowing in and out of the galaxy. Credit: NASA/Johns Hopkins University/Stephan McCandliss

This month, the NASA-funded FORTIS sounding rocket—short for Far-

ultraviolet Off Rowland-circle Telescope for Imaging and Spectroscopy—will launch from the White Sands Missile Range in New Mexico to investigate the properties of galaxy NGC 1365, also known as the Great Barred Spiral Galaxy.

FORTIS will use an instrument called a spectrograph to split the light from the target galaxy into its composite wavelengths, creating a kind of image called a spectrum. How much of each wavelength is present can hold clues to the atoms present in the space through which the light is traveling. In this case, scientists will study the wavelengths of light emitted and absorbed by different types of hydrogen to quantify how much material is flowing in and out of the galaxy.

"Star-forming galaxies like NGC 1365 are swallowing mass from the intergalactic medium, and that material becomes stars," said Stephan McCandliss, principal investigator for FORTIS from Johns Hopkins University in Baltimore, Maryland. "When these new stars ignite, they heat the surrounding gas and dust, making it emit light in these particular wavelengths."

FORTIS will fly on a Black Brant IX suborbital sounding rocket to an altitude of about 173 miles, taking data for six minutes. In the first 30 seconds, FORTIS will use its auto-targeting system to pick out the 40 brightest regions of NGC 1365 to study. It will then focus in on these promising regions—using a micro-shutter array originally developed for NASA's James Webb Space Telescope—and take spectra of these regions focusing on far ultraviolet wavelengths of light.

These types of observations can only be taken from space, because Earth's atmosphere absorbs far ultraviolet light. Sounding rockets provide a low-cost way to access space, collecting valuable data from outside Earth's atmosphere for a fraction of the cost of a full-fledged satellite mission.

The FORTIS launch is supported through NASA's Sounding Rocket Program at the Goddard Space Flight Center's Wallops Flight Facility in Virginia. NASA's Heliophysics Division manages the sounding rocket program.

FORTIS will focus on galaxy NGC 1365, otherwise known as the Great Barred Spiral Galaxy. By examining specific wavelengths of absorption and emission, scientists will use FORTIS' data to quantify the amounts of materials flowing in and out of the galaxy. Credit: ESO/IDA/Danish 1.5 m/ R. Gendler, J-E. Ovaldsen, C. Thöne, and C. Feron

Provided by NASA's Goddard Space Flight Center