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New Horizons Student Dust Counter Instrument Breaks Distance Record

by Staff Writers
Boulder CO (SPX) Oct 13, 2010

The Venetia Burney Student Dust Counter, flying aboard NASA's New Horizons mission to Pluto, now holds the record for the most distant working dust detector ever to travel through space.

On October 10, the "SDC" surpassed the previous record when it flew beyond 18 [astronomical units](#) - one unit is the distance between the Sun and the Earth - or 1.67 billion miles, past the orbit of Uranus.

The only other dedicated instruments to measure space dust beyond Jupiter's orbit - which is closer to the Sun than Uranus - were aboard Pioneers 10 and 11 in the 1970s. Additionally, SDC is the first science instrument on a planetary mission to be designed, tested and operated by students.

The Venetia Burney Student Dust Counter, clearly visible on



A technician installs the Student Dust Counter detector, under its protective red cover, on the deck of the New Horizons spacecraft in a cleanroom at the Johns Hopkins University Applied Physics Laboratory, Laurel, Md., in August 2004. The device combines two major elements: an 18-by-12-inch detector mounted on the outside of the spacecraft, and an electronics box inside the craft that determines the mass and speed of the space-dust particles that hit the detector. The instrument was renamed the Venetia Burney Student Dust Counter in June 2006, honoring the girl who named the [planet Pluto](#) in 1930. Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Southwest Research Institute

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the lower deck of the New Horizons spacecraft. (Click for details and a larger image)

"The New Horizons mission is going to break a lot of records, but this early one is one of the sweetest," says New Horizons Principal Investigator Alan Stern, of the Southwest Research Institute, Boulder, Colo.

"We're very proud to be collecting solar system dust data farther out than any mission ever has, and we're even prouder to be carrying the first student-built and -operated [science](#) instrument ever sent on a planetary space mission."

The instrument is the work of students at the University of Colorado's Laboratory for Atmospheric and Space Physics (LASP). Andrew Poppe, a LASP graduate student in physics who operates SDC and analyzes the data, says "it's a once-in-a-lifetime experience to be part of the group of students who made this happen.

We built a record-breaking, successful instrument that is taking scientific measurements to advance our understanding of the role of dust in our solar system."

Poppe and several collaborators recently published the first results from SDC in [Geophysical](#) Research Letters. "The SDC measurements of dust inside five astronomical units agreed well with the earlier measurements made by the Galileo and Ulysses missions," Poppe says. "We also reported the first-ever measurements of sub-micron-sized dust grains in the outer solar system by a dedicated dust instrument."

Poppe is one of five students on the current SDC team, and one of 32 who have worked on the instrument since the project began in 2002.

The original team of approximately 20 undergraduate and graduate students has evolved over time, with new students brought into the fold as the nearly 20-year New Horizons mission has proceeded from concept development through launch and into its ongoing flight phase.

Close-up of the Venetia Burney Student Dust Counter on the lower deck of the New Horizons spacecraft. (Click for details and a larger image)

"The SDC was built and tested to the same [NASA](#) engineering standards as professionally built flight instruments, under the supervision of professionals," says SDC instrument Principal Investigator Mihaly Horanyi, a LASP researcher and University of Colorado professor.

"Students have filled roles from science and engineering to journalism and accounting; many of them have graduated and gone on to careers in the space industry. In addition to its significant contribution to science, SDC proved to be an excellent investment in the scientists and engineers of

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SDC was launched aboard New Horizons in January 2006; six months later the instrument was renamed for Venetia Burney, the English schoolgirl who, at age 11, offered the name "Pluto" for the newly discovered ninth planet in 1930.

SDC will continue to return information on the dust that strikes its detectors during the spacecraft's approach to Pluto and flight beyond. This dust is formed in the Kuiper Belt, a collection of asteroids orbiting the Sun outside of Neptune.

The improved observations that SDC will make available will advance our understanding of the origin and evolution of our own solar system, as well as helping scientists study planet formation in dust disks around other stars.

LASP manages the SDC project and has a long tradition of involvement with student instruments, including the Solar Mesosphere Explorer and the Student Nitric Oxide Experiment. LASP recruits both undergraduates and graduates from CU to help with instrument design, construction, maintenance, programming, and operations.

Funding for the SDC came primarily from the NASA New Horizons mission, through the Johns Hopkins University Applied Physics Laboratory, which manages New Horizons; and the Southwest Research Institute, home institution of Stern and the center of New Horizons instrument observation planning. LASP has also contributed funds to help pay students working on the SDC

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Flagstaff AZ (SPX) Oct 06, 2010
 A team of scientists at Northern Arizona University, Missouri State University, and Flagstaff's Lowell [Observatory](#) has revealed that

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