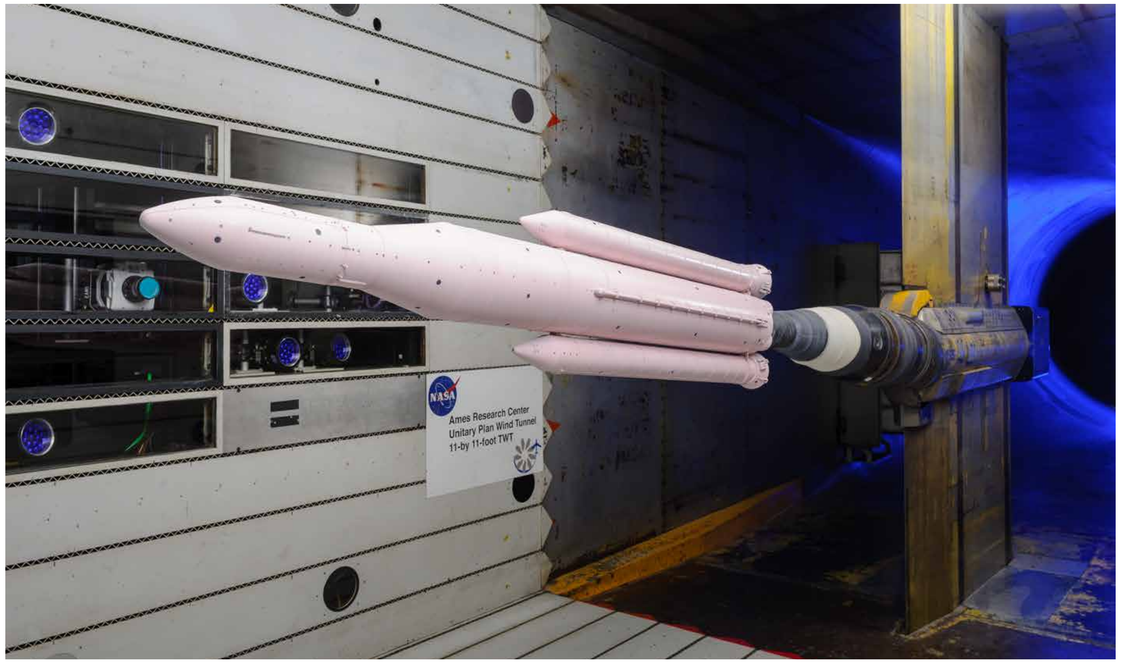
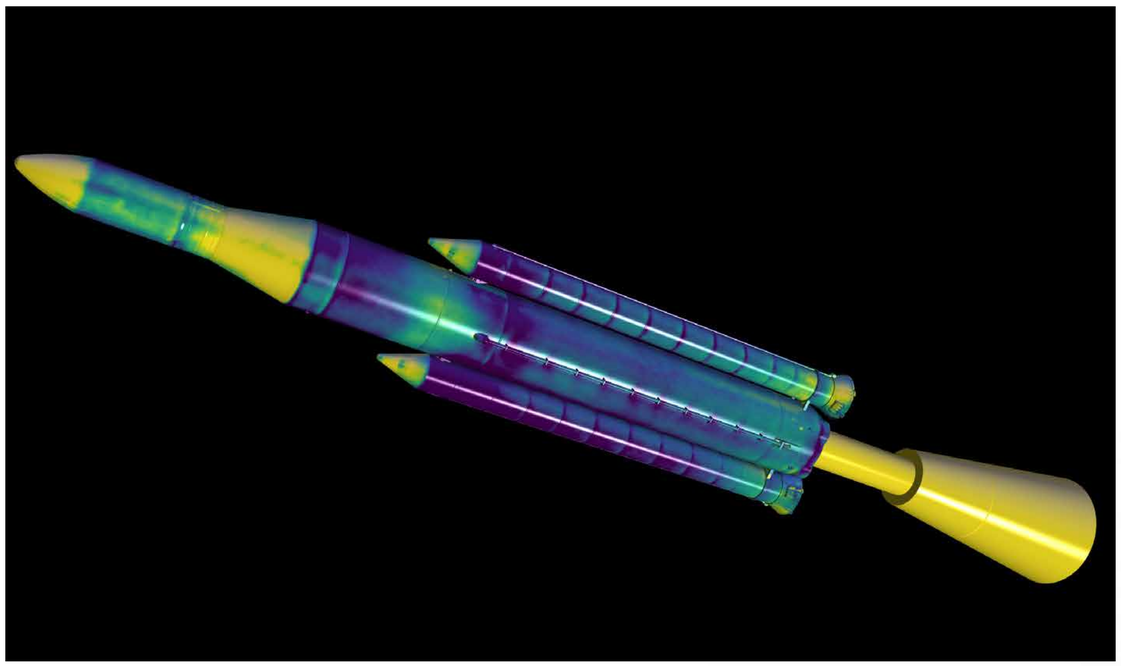


A model of NASA's Space Launch System (SLS) cargo variant, designated for the Europa mission called Science Mission 1 (SM1), was tested in the 11-by 11-foot Transonic Test Section of the Unitary Plan Wind Tunnel at NASA's Ames Research Center. Unsteady Pressure-Sensitive Paint (uPSP) was used to measure global unsteady pressure distributions on the model at 10,000 frames per second; data was transferred to the NASA Advanced Supercomputing (NAS) facility via a secure, one-way connection implemented by NAS teams. *Dominic Hart, Ross Flach, NASA/Ames*



Pressure distribution as measured by the uPSP on NASA's SLS SM-1 cargo vehicle (yellow is higher pressure; blue is lower). The data was processed on NASA's Pleiades supercomputer and visualized by the NAS Division's Visualization and Data Analysis team. *Jennifer Baerny, Paul Stremel, Timothy Sandstrom, NASA/Ames*

National Aeronautics and
Space Administration

Revolutionizing Assessment of Unsteady Flows Using Pressure-Sensitive Paint

Many important aeroscience problems involve unsteady separated aerodynamic flows, and the key measurement necessary for understanding these flows is surface pressure. An emerging optical technology, Unsteady Pressure-Sensitive Paint (uPSP), is now being used in wind tunnel tests to measure global fluctuating surface pressures on aerospace vehicles, including NASA's Space Launch System. To enable near-real-time collection and processing of the enormous amounts of data produced by this technology, a secure, uni-directional, high-bandwidth connection was established from the Unitary Plan Wind Tunnel at NASA's Ames Research Center to the compute, storage, and visualization resources at the NASA Advanced Supercomputing (NAS) facility.

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