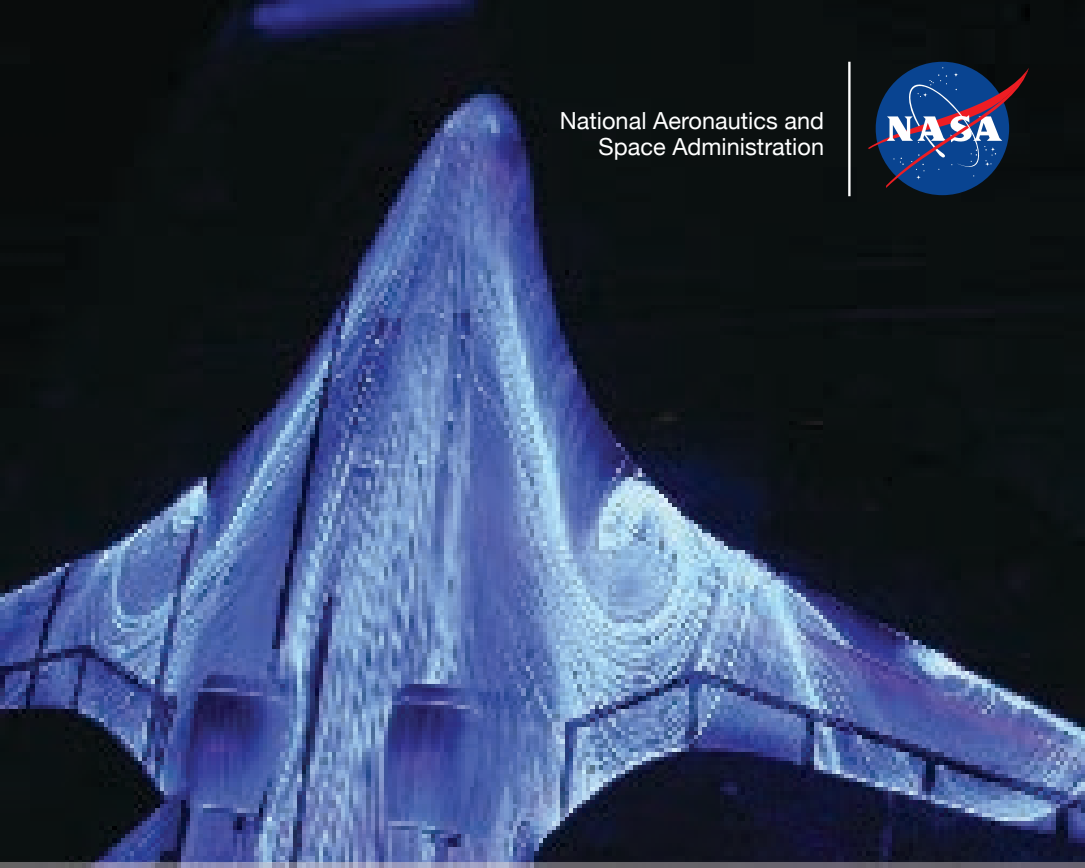
National Aeronautics and
Space Administration



AEROSCIENCES

NASA's Langley Research Center

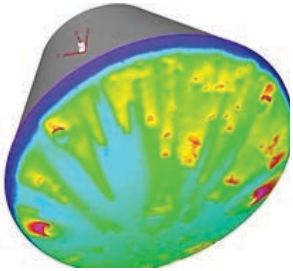


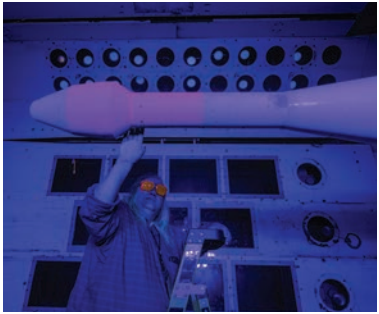
At NASA Langley, we steward and advance Aerosciences capabilities to enable current and future NASA missions and to maintain U.S. aerospace preeminence.



The High Lift Common Research Model (CRM-HL) semispan model is being utilized as a reference geometry in wind tunnels around the world to allow for Computational Fluid Dynamics validation at challenging conditions. Researchers at NASA Langley recently completed high Reynolds number testing at the National Transonic Facility.

After unexpected char loss was observed on the Artemis I heat shield in 2022, Langley researchers used a unique global phosphor thermography test to obtain data on 30 configurations and understand the heat-shield's aeroheating and boundary-layer transition response to char-loss cavities. The test results and simulations informed understanding of Artemis I char loss effects and will help reduce risks for the crewed Artemis II mission.

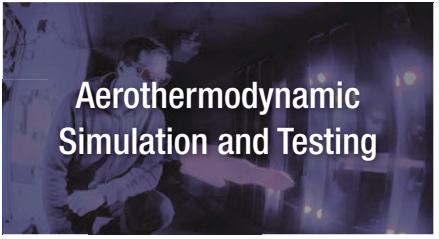




The proven viability of unsteady Pressure Sensitive Paint and Particle Image Velocimetry optical methods on the Coe launch vehicle model helps guide future research in NASA Langley's Transonic Dynamics Tunnel – the national resource for transonic buffet and flutter testing.


Vehicle
Aerodynamics

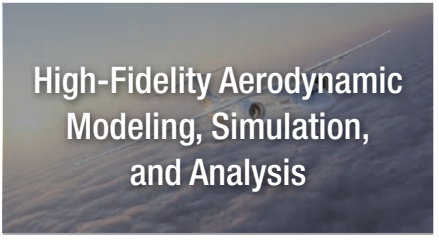

Hypersonic Airbreathing
Propulsion Technologies


Aerothermodynamic
Simulation and Testing


Aeroelastic Simulation
and Testing


Acoustic Design, Analysis,
and Control Technologies


Flow Control
Technologies


High-Fidelity Aerodynamic
Modeling, Simulation,
and Analysis


Advanced Measurement
Technologies

NASA Langley operates a world-class network of wind tunnels, specialized labs, and test facilities that are seamlessly integrated with the expertise of its researchers and engineers, creating a unique and unmatched aerospace capability. Langley's wind tunnels - spanning all speed regimes - provide the most complete ground testing capability in the world.

SUBSONIC

TRANSONIC

SUPERSONIC

HYPERSONIC



14- by 22 Subsonic Tunnel



Low-Speed Aeroacoustic Wind Tunnel



Flight Dynamics Research Facility



National Transonic Facility



Transonic Dynamics Tunnel



4-Ft Supersonic Wind Tunnel



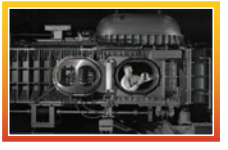
20-In Supersonic Wind Tunnel



Supersonic Low Disturbance Tunnel



8-Ft High Temperature Tunnel



Langley Aerothermodynamics Laboratory



Scramjet Test Complex

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NASA Langley is building new partnerships with industry, academia, and other government agencies to solve the world's toughest technical problems.

NASA's Front Door is your way in.

Connecting strategic partners with NASA Langley's expertise and world-class facilities moves ideas from concept to reality.

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