

A Brief Overview of Aeronautics Testing and Analysis Capabilities at NASA Ames Research Center

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Aeronautics Flight Accelerator (AFA) Industry Day

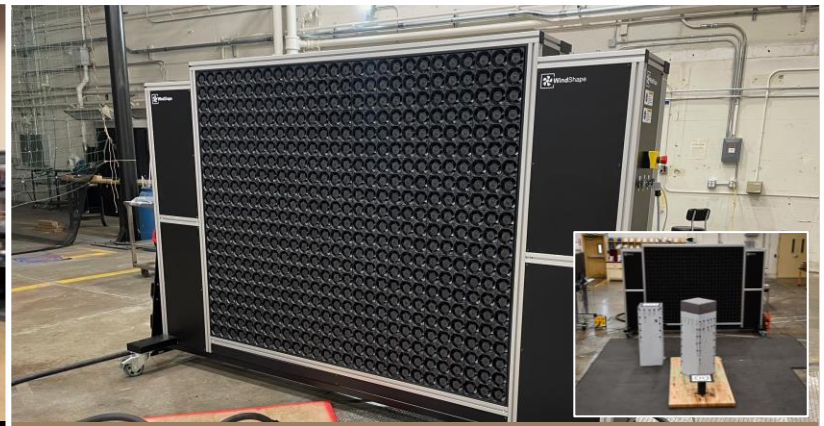
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Ames Experimental Test Facilities

NASA Ames Aeronautics has an extensive array of facilities for developing and evaluating numerous aspects of aeronautics technologies. The effectiveness of these facilities has been demonstrated over decades, and they are continuously upgraded to meet the demands of modern aviation.



Fluid Mechanics Lab (FML)



WindShape Dynamic Fan Array



Planetary Aeolian Lab (PAL)



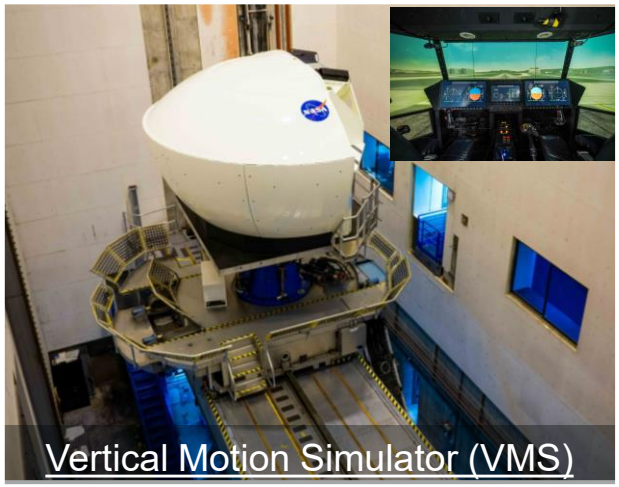
Outdoor Aeronautics Research Facility (OARF)



Unitary Plan Wind Tunnel (UPWT)



Multirotor Test Bed (MTB) in the US Army 7x10-ft Wind Tunnel



Vertical Motion Simulator (VMS)

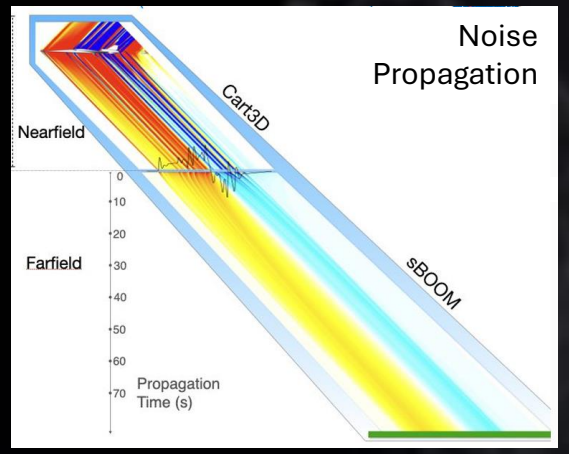
Ames Computational Aeroscience Tools

NASA Ames' award-winning innovations in computational aerosciences span low-fidelity modeling to high-fidelity CFD solutions supporting NASA Mission Directorates, government and industry partners, with a focus on state-of-the-art automation and algorithms for rapid-turnaround times without compromising the quality of the solutions.

Vehicle, System and Mission Trade Studies for Aircraft Concepts Flying in the National Airspace



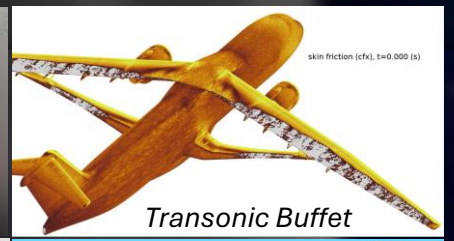
Noise Propagation

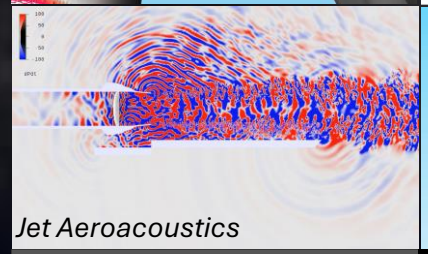


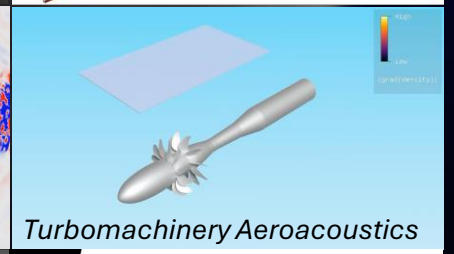
High-fidelity CFD for Aeronautics Using Launch Ascent and Vehicle Aerodynamics (LAVA) Solvers and Tools

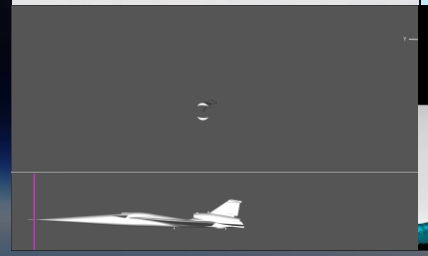
Release Status: v1.0.0 released March 19, 2026







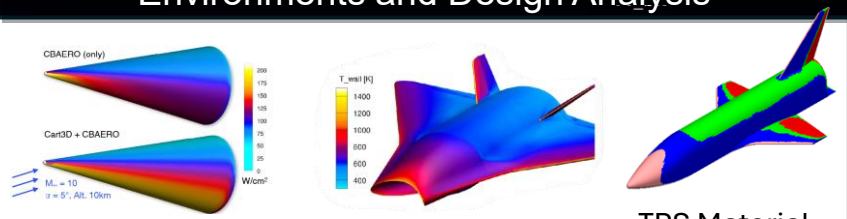






https://www.nas.nasa.gov/LAVA/

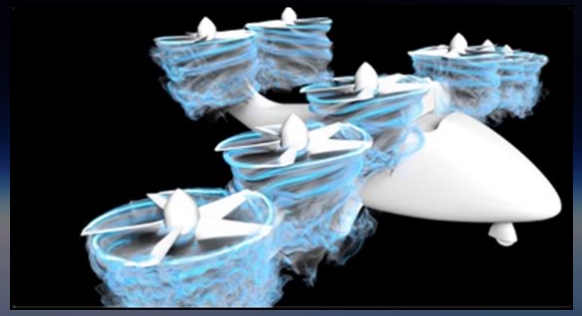
Tools for Rapid-Turnaround Aerothermodynamic Environments and Design Analysis



Aero and Aerothermal Databases with CART3D and CBAero

TPS Material Selection & Sizing TPSSizer

Rotor CFD

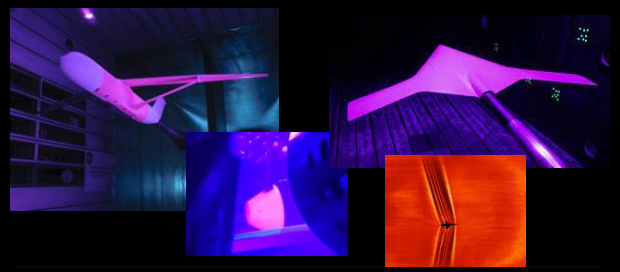


Integrating Experiments, Measurement Techniques, Computational Modeling, Visualization

Ames has integrated the advanced experimental data from the Unitary Wind Tunnel 11’ test section with the NASA Supercomputer through a high-speed fiber network connection. Simulations with cutting-edge CFD codes produce near real-time, high-fidelity solutions that are visualized on Ames’ Hyperwall for validation, test and design insight.



Wind Tunnel Facilities



Novel Measurement Techniques



CFD on Athena Supercomputer



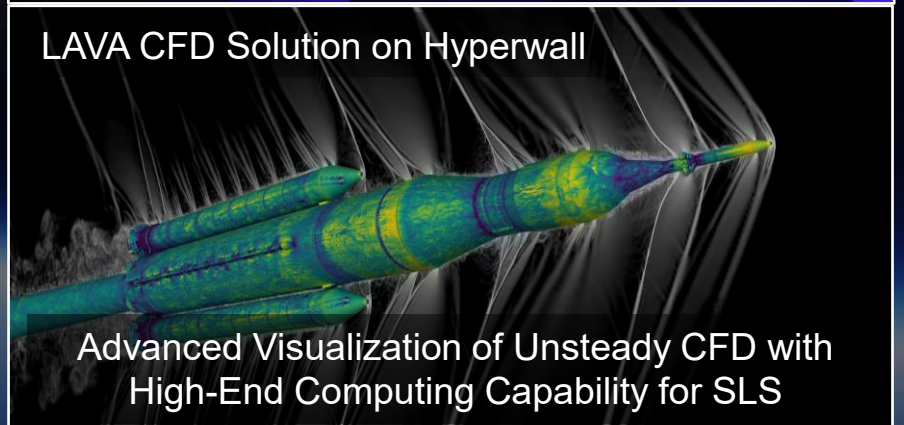
Hyperwall Visualization



Unitary Plan Wind Tunnel



Unsteady Pressure-Sensitive Paint



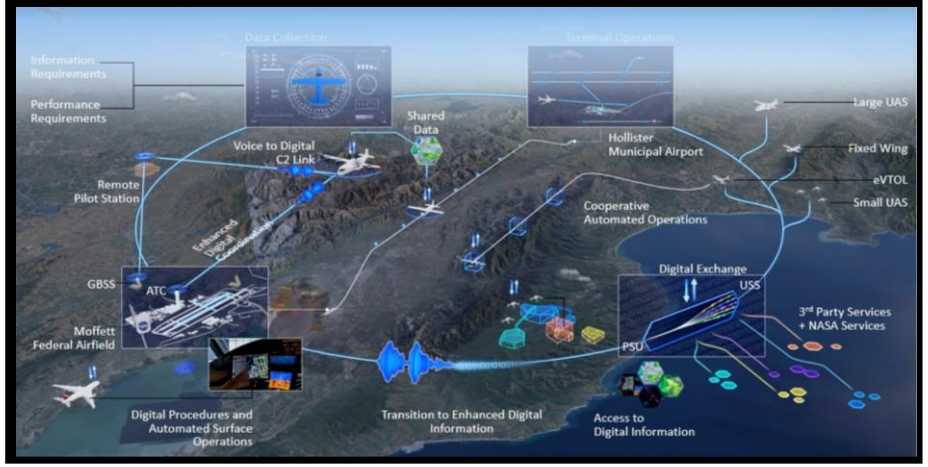
LAVA CFD Solution on Hyperwall

Advanced Visualization of Unsteady CFD with High-End Computing Capability for SLS

Ames Air Traffic Management Capabilities

Air Traffic Management research at Ames is transforming the National Airspace System by conducting a broad range of research from concept development to field evaluations while partnering with industry leaders and the FAA to introduce novel and remotely-piloted aircraft safely into a resilient and scalable future airspace.

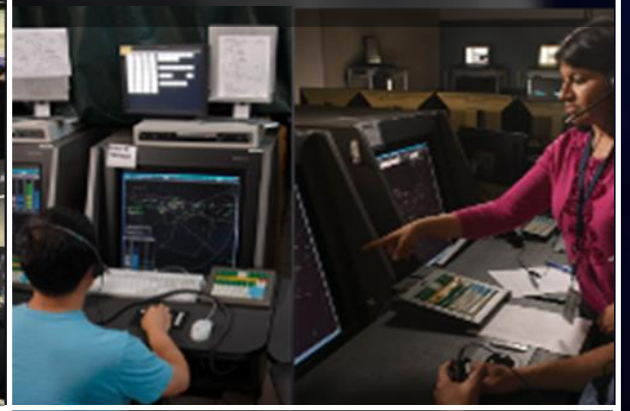
Hollister Airspace Ecosystem (HAE)



Future Flight Central (FFC)



Air Traffic Control (ATC) Simulation Laboratory



Portable Airspace Management and Field Evaluations



Mission Visualization Research Command Center (MVRCC) Lab



Airspace Integration of Autonomous Aircraft



Points of Contact at Ames

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