# Network Testbed for Enhanced Earth Science Simulations

## Science Mission Directorate

Using global satellite and remote sensory data, along with NASA's High-End Computing (HEC) capabilities, scientists are developing models to make highly accurate global predictions about Earth's climate. As both model fidelity and the number of remote sensory datasets increase, the amount of data scientists must handle has grown dramatically—some models require more than 120 terabytes per month in wide-area network transfers.

NASA has established a wide-area network testbed to help evaluate high-performance, easy-to-use hardware and software technologies for optimizing data transfer, access, and sharing. The successful outcome of the testbed will allow scientists to focus on their Earth science missions rather than on day-to-day data management tasks.

This testbed connects the NASA Center for Climate Simulation (NCCS) at Goddard Space Flight Center and the StarLight facility in Chicago. At SC10, the testbed has been extended to the research exhibits for the University of Illinois at Chicago's Laboratory for Advanced Computing, the National Oceanic and Atmospheric Administration, and NASA. The testbed involves 10-gigabit-per-second through 100-gigabit-per-second technologies and addresses distance issues through a suite of tests including experimental wire-speed tests, traditional and emerging file transfer applications, and file systems.

The testbed leverages national R&D networks, which enables cost-effective, real-world testing of potential hardware and software solutions for both data access and movement throughout the wide-area network, without impacting operational services.

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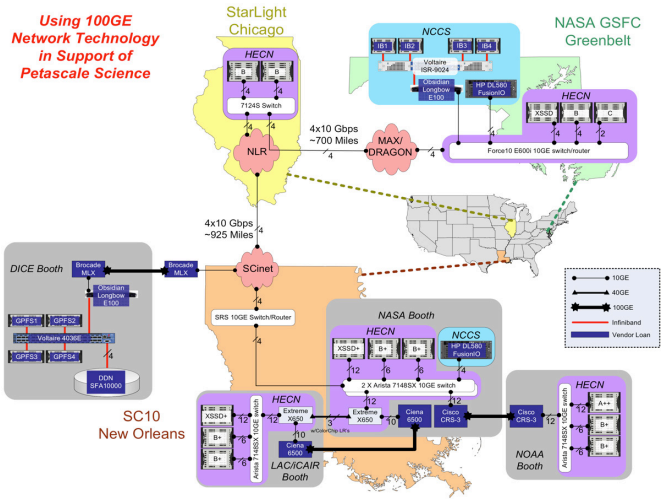


Major components and partners supporting NCCS high-performance file transfers over wide-area network testbeds and different approaches to 100 gigabit-per-second networking. *Pat Gary, NASA/Goddard*