# NASA's Pleiades supercomputer gets a little more oomph

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NASA's flagship Pleiades supercomputer just received a boost to help keep pace with the intensive number-crunching requirements of scientists and engineers working on some of the agency's most challenging missions.

Pleiades is critical for the modeling, simulation and analysis of a diverse set of agency projects in aeronautics research, Earth and space sciences and the design and operation of future space exploration vehicles. The supercomputer is located at the NASA Advanced Supercomputing (NAS) facility at Ames Research Center in Moffett Field, Calif.

An expansion completed earlier this month has increased Pleiades' sustained performance rate by 14 percent to 1.24 petaflops -- or a quadrillion calculations per second. To put this enormous number into perspective, if everyone in the world did one calculation per second for eight hours a day, it would take about 370 days to complete what this supercomputer can calculate in 60 seconds.

"As we move toward NASA's next phase in advanced computing, Pleiades must be able to handle the increasing requirements of more than 1,200 users across the country who rely on the system to perform their large, complex calculations," said Rupak Biswas, chief of the NAS division at Ames. "Right now, for example, the system is being used to improve our understanding of how solar flares and other space weather events can affect critical technologies on Earth. Pleiades also plays a key role in producing high-fidelity simulations used for possible vehicle

designs such as NASA's upcoming Space [Launch System](#)."

Since Pleiades' installation in 2008, NAS has performed eight major upgrades to the system. The latest expansion adds 24 of the newest generation systems containing advanced processors. More than 65 miles of cabling interconnects Pleiades nodes with [data storage systems](#) and the hyperwall-2 visualization system.

Recently, scientists have counted on Pleiades for generating the "Bolshoi" cosmological simulation -- the largest simulation of its kind to date -- to help explain how galaxies and the large-scale structure of the universe have evolved over billions of years. The system also has proven essential for processing massive amounts of star data gathered from NASA's Kepler spacecraft, leading to the discovery of new Earth-sized planets in the Milky Way galaxy. The upgraded capability of Pleiades will enable NASA scientists to solve challenging problems like these more quickly, using even larger datasets.

Provided by NASA

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