

## The High-End Computing Capability Project: A Year in Review

### High-End Computing

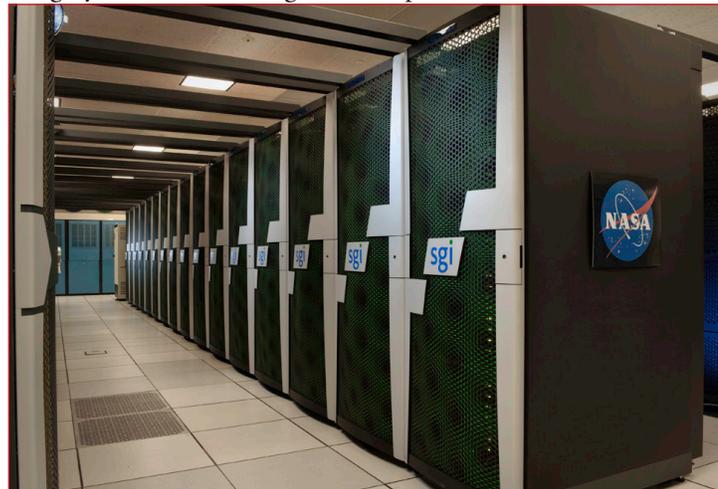
This has been a year of change for the High-End Computing Capability (HECC) Project at the NASA Advanced Supercomputing (NAS) facility. HECC has attained several milestones this year, including delivering over one billion computational hours since the project's inception in 2004, and having a single system pass the 1-petaflop peak performance mark.

Pleiades has quickly become NASA's leading high-end system, surpassing its predecessor, Columbia, in total computational capability delivered to the NASA user community. This year, Pleiades underwent two augmentations that increased its computing capacity by over 170% and brought its peak performance to over a petaflop. The first augmentation added 1,280 Intel Xeon X5570 (Nehalem) processor nodes to support growing analysis needs for Earth sciences. The second phase added 2,304 Intel Xeon X5670 (Westmere) processor nodes supporting all NASA science and engineering projects.

With this newer, more efficient Pleiades system, a large portion of the older Columbia supercomputer was decommissioned this year. Installed in 2004, Columbia was the original supercomputer that established the HECC Project. Although it continued to be highly successful throughout its operation, Columbia had become too expensive to continue operating. The electrical savings alone from the decommissioning paid for the augmentations to Pleiades.

Throughout these considerable changes, HECC has continued to successfully provide all of NASA's mission directorates with the leading-edge systems and computing resources that enable valuable science and engineering advancements.

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Pleiades Westmere-based racks: The addition of the Westmere and Nehalem nodes increased the computing capacity available on Pleiades by 170%. *Dominic Hart, NASA/Ames*