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Headline: Powerful replacement in works for climate-modeling computer

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CHEYENNE, Wyoming — One of the most powerful computers in the world dedicated to climate change, weather and other earth science research will be replaced in 2017 by an even faster machine, officials announced Monday.

The Yellowstone supercomputer in Wyoming currently ranks among the 60 fastest in the world. The new supercomputer, to be named Cheyenne, will be at least 2 1/2 times more powerful, the National Center for Atmospheric Research said.

Capable of 5.3 quadrillion calculations, or petaflops, per second, Cheyenne will be some 100,000 times faster than a typical home computer. The speed provides unprecedented detail in climate-change predictions, including regional modeling of effects, the center said.

A more powerful computer will allow researchers to see results in higher resolution, like a higher density of pixels sharpens images on a television or a stronger telescope brings a greater number of far-off galaxies into focus, explained Rich Loft, the center's director of technology.

Scientists since 2012 have been using the Yellowstone supercomputer near Cheyenne for a range of research that also includes modeling air pollution and ocean currents.

The atmospheric research center plans to install Cheyenne later this year and put it to work early next year. Questions it might help answer include:

The Yellowstone computer, located in a business park west of Cheyenne, put Wyoming's capital on the map as a potential technology hub. Facilities including a huge Microsoft data center have set up nearby since the center opened.

The Cheyenne supercomputer will be about three times as efficient as Yellowstone, using 90 percent as much electricity but taking up to a third as much space. The machine will be built by Milpitas, California-based Silicon Graphics International Corp.

The University Corp. for Atmospheric Research, a consortium of more than 100 North American universities and colleges, oversees the National Center for Atmospheric Research. Both organizations are based in Boulder, Colorado.