what is it?

The fastest supercomputer in the world.

Size:

The Earth simulator occupies the same area as four tennis courts and uses more than 5,000 computer processors connected by 2,800 kilometers of cable.

Where is it:

Yokohama Institute of Earth Sciences in Japan.

What is it for?

Modeling of complex physical systems. The main task of the Earth Simulator is to create the most detailed models of the Earth's climate in the world. It calculates the interaction between the oceans and the atmosphere, constantly managing a massive digital layout of the weather and climate of our planet. The Earth simulator can even speed up the action to get climate change forecasts for 50 years ahead. Moreover, the supercomputer simulates earthquakes, the dynamics of the Earth's core and the geomagnetic field. In addition to earth science, physicists use the machine to predict the properties of new materials, understand interactions between subatomic particles, and simulate fuel consumption in rocket engines.

Why is it so big?

It requires a lot of computing power to process signals from thousands of terrestrial and oceanic monitoring stations. And on meteorological satellites around the world. The latest simulation of the atmosphere in the Earth Simulator was calculated using pixels measuring only 10 square kilometers.

Who is working on this? 700 researchers from six countries.

Status: The Earth Simulator was turned on in April 2002 and soon produced 35,600 billion calculations per second, which is five times faster than the previous record holder. Two years later, it has twice topped the world ranking of supercomputers and is still far ahead of its closest competitor, the Thunder supercomputer at Lawrence Livermore National Laboratory in California.

Cost: about $430 million.

Descendant of the monster: Oak Ridge National Laboratory in Tennessee plans to build a supercomputer capable of performing 50,000 billion calculations per second by 2007

