



June 4, 2009

Japan Agency for Marine-Earth Science and Technology

Earth Simulator Achieves High Performance on LINPACK Benchmark

The new Earth Simulator system ([*1](#) and [Photo](#)), which began operation in March 2009 at the Japan Agency for Marine-Earth Science and Technology (JAMSTEC: Yasuhiro Kato, President), achieved sustained performance of 122.4 TFLOPS and computing efficiency ([*3](#)) of 93.38% on the LINPACK Benchmark ([*2](#)). The sustained performance of the Earth Simulator would claim the No.1 position among supercomputers in Japan (No.16 worldwide) according to the "TOP500 Supercomputing Sites" released in November 2008. The simulator's computing efficiency would also be ranked at the highest among the world's supercomputers on the TOP 500.

The powerful performance of the Earth Simulator will allow JAMSTEC to make further contributions to earth science and technology, especially to the development of climate change projections with greater accuracy, for the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) in 2013.

***1. Earth Simulator**

The former Earth Simulator system was installed in JAMSTEC in March 2002. JAMSTEC upgraded it to SX-9/E this time, a vector supercomputer built by NEC Corporation. The new system consists of 160 computing nodes with a peak computing performance of 131.072TFLOPS. The high peak performance of the system was achieved by its hardware specifications including a high performance CPU (102.4 GFLOPS). TFLOPS, or Tera Floating point number Operations per Second, is a measure of computer's performance. One TFLOPS is one trillion floating-point calculations per second.

***2. LINPACK Benchmark**

The LINPACK Benchmark is a measure of a computer's performance and is used as a standard benchmark to rank computer systems in the TOP500 project. LINPACK is a program for performing numerical linear algebra on computers.

***3. Computing efficiency**

Computing efficiency is the ratio of sustained performance to a peak computing performance. Here, it is the ratio of 122.4TFLOPS to 131.072TFLOPS.



Photo: Earth Simulator System placed in service from March 2009

Contacts:

Japan Agency for Marine-Earth Technology and Science
(For Earth Simulator)

Toshiaki Shimada

System Engineering and Operations Group

Information Systems Department

Earth Simulator Center (ESC)

(For Publication)

Noriyuki Murata, e-mail: press@jamstec.go.jp

Manager, Planning Department Press Office

Japan Agency for Marine-Earth Science and Technology