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Japan Agency for Marine-Earth Science and Technology

Upgrading the Earth Simulator System

The Japan Agency for Marine-Earth Science and Technology (JAMSTEC; Yasuhiro Kato, President) will introduce the system proposed by NEC selected through the general competitive bidding for updating the Earth Simulator, ultra high-performance supercomputer system, which has been running since March 2002.

Outline of the new system
Vendor: NEC Corporation
Type: vector type processor architecture (shared memory multi-node)
Peak performance*1: 131 teraflops (current system: 40 teraflops)
Application sustained performance *2: twice of existing system (estimation)
Main memory capacity: 20 terabytes (current system: 10 terabytes)
Date of upgrading: in the second half of FY2008

*1 peak performance:
the theoretical value determined by hardware specifications
*2 application sustained performance:
The actual performance depends on every application program. Criterion of selection is that the system has ability to run several programs on the Earth Simulator in less than half time of current one.)

(Reference)

After the launch of its operation since 2002, the Earth Simulator had been No.1 in ranking of "the TOP500 list (the list of the 500 most powerful supercomputer systems installed in the world)" for two and a half years. It contributed largely to the field of geosciences and related technology, especially in the field of atmosphere and ocean. For example, it contributed to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) through climate simulation up to year 2100 by using high-resolution Atmosphere-Ocean Coupled Model. And it also improves climate change and global environment predictions, which include circulation of the global atmosphere and atmospheric moisture, detailed structure of ocean current movement and time variability of seawater temperature, Dipole Mode event in Indian Ocean and El Nino event in equatorial area of Pacific Ocean that affect Japanese weather.

Six years have past since the Earth Simulator's beginning of mission. The aging component will be updated which will improve the Earth Simulator's effective performance and further advancement is expected for the research in marine-earth science field such as climate change and global warming, both with accompanying various complexly-intertwined phenomena.

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