

# Keynote Speech

## Experiences of the Development of Supercomputers - Earth Simulator and K computer -

### **Keynote speaker: Dr. Mitsuho YOKOKAWA**

Professor, Kobe University, Graduate School of System Informatics  
Director of the Operations and Computer Technologies Division,  
RIKEN Advanced Institute for Computational Science

The Earth Simulator was a distributed memory, parallel supercomputer using vector architecture for processors. The development project was started in 1997 and completed in 2002. The system was used to promote research into global climate change forecasts using computer simulations. The target performance was at least 5 tera-flop/s for an atmospheric, general circulation model. The system was operated for 6 years and during its operation many simulation codes were developed and various results were obtained. It is certain that the Earth Simulator raised the research level in the field of Geoscience.

The K computer project was started in Japan in 2006 as a seven-year project. Its objectives are: to develop the world's most advanced and high-performance supercomputer, and to develop and deploy the resulting technologies, including application software, in various scientific and engineering fields. The project is designated in the Japanese Third Science and Technology Basic Plan as one of the key technologies of national importance.

The K computer was officially released as a high-end system for the national High Performance Computing Infrastructure (HPCI) initiative at the end of September 2012. In November 2012 the K computer was the first in the world to break the 10 peta-flops barrier in the LINPACK benchmark. It has also achieved more than peta-flops sustained performance in real applications. This powerful and stable computing capability will take us a big step towards the realization of a sustainable human society and lead to breakthroughs in research and development as never before.

Experiences in the development of the systems I was engaged in will be introduced in the talk.