



## Message from the Director

The year of 2004 was the third year for the Earth Simulator Research Project which brought a real bloom in practical applications. In the four categories (Climate Science, Solid Earth Science, Innovative Simulation Sciences and Computer Science), forty four projects were accepted. As the reader can find, many marvelous research products are summarized in this Annual Report. These include researches such as the global warming projections, the global eddy-resolving deep sea current behaviors, the clarification of relationship between earthquake disasters and crustal structures, the development of an innovative high-performance geodynamo simulation code, the design of superconducting Tera-hertz oscillation, and so on.

In the framework of the international collaboration through MOU, the real collaboration has started with the HCCPR (Hadley Centre for Climate Prediction and Research, UK) and CGAM (Centre for Global Atmospheric Modeling). Four scientists of HCCPR and CGAM are currently working at the ESC and conducting the collaborative research. CIRA of Italy sent to the ESC two young scientists who had stayed six months to learn technologies of large scale simulations. This year, our international research enterprise was further extended to advanced visualization research with the Center for Computational Visualization of the University of Texas and the Department of Geology & Geophysics of University of Minnesota.

Also particularly noted is the collaboration with Japan Automobile Manufactures Association. In this year we succeeded in demonstrating that the car crash dynamics could be more adequately simulated by using 10 million meshes. Simulation of the car crash dynamics with 1 million meshes had been far from reality. This finding is really a marvelous one that teaches us the real feasibility of simulation-leading manufacturing design.

Another new trend of the ES Research project is that we started “Humans and the Globe Economics Simulation Project” with Institute of Economics Research, Hitotsubashi University, which could be a realization of Von Neumann’s “Theory of Games and Economic Behavior” published in 1944.

Finally, we would like to mention the ES Network’s connection to the outside network systems. Currently, the ES Network is connected to the MEXT SuperSINET network system, so that ES users can bring their massive data to the home storage and do data analysis with ease. As our important task for the coming year, we would like to permit an external access to the Earth Simulator.



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