

World's First Real-Time Earth Magnetosphere Simulator

August 3 2004

NEC has contributed to the realization of real-time earth magnetosphere simulator developed by the National Institute of Information and Communications Technology (NICT, President: Dr. Makoto Nagao) and Kyushu University (President: Dr. Chisato Kajiyama). This is the world's first real-time earth magnetosphere simulator that incorporates real-time solar wind data observed by the ACE satellite as boundary conditions.

The real-time earth magnetosphere simulator analyzes the mechanism and influence of the geomagnetic disturbances in the interplanetary space-magnetosphere-ionosphere, which can be monitored continuously in real-time 3D magneto-hydrodynamic (MHD) simulation.

With this simulator, geomagnetic disturbances caused by solar activities can be predicted precisely and quantitatively. This is important as the more closely the utilization of artificial satellites and wireless communications are tied to our economical activities, the more seriously geomagnetic disturbances can affect those activities.

NEC delivered the SX-6 Series supercomputer, and has contributed to the enhancement of the performance of the MHD simulation code so that it can conduct simulation in sync with the actual physical phenomena. Furthermore, the analysis of phenomena has been realized in real-time by using NEC's application software RVSLIB that visualizes computational results concurrently with the on-going simulation on the supercomputer.

Source: NEC Corp

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