

## An ambitious challenge of "science cloud" in NICT

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Main methodologies of Solar-Terrestrial Physics (STP) so far are theoretical, experimental and observational, and computer simulation approaches. Recently "informatics" is expected as a new (fourth) approach to the STP studies is a methodology to analyze large-scale data (observation data and computer simulation data) to obtain new findings using a variety of data processing techniques.

The first approach, theory, does not require any infrastructure. Maybe, pen and paper would be enough. In the STP fields, the infrastructure for observations is observatory and satellite. For simulations, the infrastructure is, of course, super-computer. What is the infrastructure for the fourth methodology? The answer is cloud. The cloud computing environments should play significant roles in science and technology. However, a variety of clouds have been used mainly for business fields, and

At NICT (National Institute of Information and Communications Technology) we are now developing a new research environment named OneSpaceNet. The OneSpaceNet is a cloud-computing environment, which connects many researchers with high-speed network (JGN: Japan Gigabit Network). It also provides the researchers with rich computational resources for research studies, such as super-computer, large-scale storage (disk) area, data processing parallel cluster workstations with GPGPUs, licensed applications, DB (database) and meta-DB, and communication devices. What is amazing is that a user simply prepares a terminal (low-cost PC) to make use of the resources. After connecting the PC to JGN, the user can make full use of the rich resources via L2 network. Using communication devices, such as video-conference system, streaming and reflector servers, and media-players, the users on the OneSpaceNet can make research communications as if they belong to a same (one) laboratory: they are members of a virtual laboratory.

We present two initial results using the OneSpaceNet for large-scale computer simulation data transfer and virtual observation data transfer system.

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