

## A Virtual Observation Network System for Global Ground-Based Observatories

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As our ground-based global observation technology develops, the number of the observatory is getting larger. As the number increases, both maintenance of the observatories and data transfer gets harder. Most of such data transfer systems are equipped on the Internet. However, since the QoS of the Internet is not ensured in general, we need to monitor the data transfer manually, and it is one of the reasons of difficulty in operating our global observation systems. For instance, the number of NICT space weather observatories, domestic and international, is already more than 20 and the sort of the transferred data is more than 40. The condition of the data transfer networks depends on the location of the observatory: we need to collect observation data even from the worst network condition observatory. In order to unify such data collection networks, we have been developing a virtual observation network system for global ground-based observatories. We also equipped this network system on the small PC server, and deployed over 8 observatories of NICT space weather. The network technology used in the system is not new, but the system so far works continuously and successfully. The collected data are saved and managed in a distributed storage in the OneSpaceNet (a science cloud in NICT). Herein we discuss the concept and design of the virtual observation network system for global ground-based observatories and demonstrate how it works.