Operation of data acquisition, transfer and storage system for world-wide observation networks

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The NICT (National Institute of Information and Communications Technology) has been making a progress of a project to establish a global network of space weather observations (NICT-SWM: Space Weather Monitoring Network). The basic concept of the project is to improve the reliability and probability of the space weather forecast by introducing real time data obtained by a global network of space-weather related observational facilities, e.g., ionosondes, magnetometers, HF radars, and GPS receivers. Data archives and data analyses of the archived data are also important for development of space weather forecasting.

In this project, NICT operates about 30 observatories covering wide-area over the world. All observational data will be transferred to NICT and stored in a large-scale storage system in the NICT Science Cloud in a real-time basis. However, it has been increasingly hard to manage the whole system operation because it contains such a large number of observational instruments, each having its own characteristics. The chance of trouble with data transfer networks connecting many observatories will be increased also. A shortage of human resources to maintain the system will be another difficult problem for us. For these reasons, we have developed an integrated management system of global multipoint observations.

We present an integrated system to acquire, transfer and store the world-wide observation data of Space and Earth environment, which is named as WONM (Wide-area Observation Network Monitoring) system.

Figure 1 shows a schematic picture of the WONM. A small PC equipped with the WONM software system and UPS is placed at each observatory. After setting-up, observation data file transfer starts to the NICT Science Cloud. Status (HK) information of PC, network, UPS, and others required for data transfer are collected with this system to be transferred to the NICT as well. Status information are monitored by operator of the system on web site. This system is already set at 8 observatories including the Showa station and the SEALION.

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