A Technique for High-performance Data Processing of Satellite Observation Data via NICT Science Cloud

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It is said that data-intensive/data-centric science is the fourth paradigm of science after observation/experiment, theory and computer simulation. The NICT science cloud is one of the cloud systems for scientists who are going to carry out their research works for their big-data science. The science cloud is not for simple uses: Many functions are expected to the science cloud; such as data standardization, data collection and crawling, large and distributed data storage system, security and reliability, database and meta-database, data stewardship, long-term data preservation, data rescue and preservation, data mining, parallel processing, data publication and provision, semantic web, 3D and 4D visualization, out-reach and in-reach, and capacity buildings.

The present talk is focused on the topics of applications of the NICT Science Cloud to environment sensing research works. There are three applications to be introduced: (1) real-time data processing and visualization of 3D Doppler radar, (2) GOSAT CH4 data processing for global mapping, and (3) high-performance simulation of the ISOSIM-L (Integrated Satellite Observation SIMulator for a spaceborne coherent Doppler lidar) for wind measurement from space. These three projects are started and carried out in the NICT. With help of the NICT Science Cloud, they show progressive development to either larger-scale studies or more practical uses.