

New Technical Trends in Remote Sensing - Applications in Japan -

Yoshifumi Yasuoka

Institute of Industrial Science, University of Tokyo
4-6-1 Komaba, Meguro, Tokyo 153-8505 Japan

ABSTRACT

Remote sensing from space may provide an efficient tool to observe wide range of land surface, atmosphere and ocean variables over extensive areas at regular interval. Recent developments in remote sensing technologies have been very rapid and remarkable. They include, for example, following capabilities;

- High-spatial resolution observation: one meter (1m) spatial resolution
- Hyper-spectral observation: one nanometer (1nm) spectral resolution
- Microwave range observation: weather independent observation
- Scaling-up observation: linking observation from local to global
- Sensor fusion and data integration: integration of data from different sources (sensors)
- Coupling remote sensing with modeling: extension of observation to prediction.

In Japan, several attempts have been made to realize these new technologies, and apply them to various application fields including environmental and disaster monitoring. Regarding satellite missions, for example, the Tropical Rainfall Measuring Mission (TRMM) was successfully launched based on the collaboration between Japan and US, and it is planned to continue the mission along with the Global Precipitation Measurement (GPM) in the near future. Last year, ADEOS II (Midori II) was also successfully launched to tackle with global environment change monitoring. Next year, Advanced Land Observation Satellite (ALOS) will be launched to monitor detailed land surface processes with 2.5m spatial resolution. The Greenhouse Gas Observation Satellite (GOSAT) is planned to monitor atmospheric carbon dioxide distribution in regional or continental scale. Also, applications with these new technologies have been investigated to establish more efficient geospatial data infrastructure in local to global scale.

In this presentation, new technical trends in remote sensing are surveyed, and their applications are introduced with special emphasis on environmental and disaster risk assessment.