

MGI016-10

Room: 201B

Time: May 27 15:50-16:02

Integration of Satellite imagery and In-situ measurements on GEO Grid

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The GEO (Global Earth Observation) Grid is primarily aiming at providing an e-Science infrastructure for the earth science community. The GEO Grid is designed to integrate various kinds of data related to the earth observation using the grid technology and is accessible as a set of services. We have been developing a system for integrating satellite and field sensor data based on the OGC (Open Geospatial Consortium) Web service standards such as SOS (Sensor Observation Service), WPS (Web Processing Service), and so on. The first application of this system is the validation of the MODIS aerosol products (MOD08, the gridded atmospheric product) by ground-based measurements using the sunphotometer (skyradiometer, Prede POM-02) installed at Phenological Eyes Network (PEN) sites in Japan. In this study, we show an integration system of satellite and field data and discuss the application for the integrated analysis of the MODIS surface reflectance products (MOD09, atmospherically corrected product) with field measurements at flux tower sites in Thailand and Japan. The objective of this study is to construct the daily regional scale maps of GPP with a high degree of accuracy by the field measurement data and the EVI calculated from MOD09. The integration system on GEO Grid will become an effective tool for other integrated data applications.

Keywords: Satellite imagery, Sensor Network, Grid Technology