

DEVELOPMENT OF WEB-DOWNLOADING SYSTEM ON WWW

Sun-Gu Lee, Jae Heon Jung, Yong Il Lee

Space Application Center, Korea Aerospace Research Institute
P.O. Box 113, Yusung, Daejeon 305-600, Korea
Tel) 82-42-860-2854, Fax) 82-42-860-2605
leesg@kari.re.kr, jjh583@kari.re.kr, yilee@kari.re.kr

ABSTRACT:

Korea Aerospace Research Institute(KARI) has been receiving Terra and Aqua MODIS data at ground station of Daejeon since July 2002. MODIS data can cover whole East Asia including the Korean Peninsula, Japan and The East China each almost scene and is monitoring ocean, atmosphere and land. By this time, over two thousand scenes have been archived including Terra and Aqua in the storage system and they occupied about over 10TB of disk space. In this study, Web-Downloading system of MODIS data developed on WWW is including following main functions: spectral subset (250m, 500m, 1000m chnnels) Level 1B data of HDF format, result display, ftp download and statistic viewer etc. Users using this system can directly download MODIS data on WWW with a few input parameters. This system is available via the Internet URL after October 2005 on the following, "<http://webmodis.kari.re.kr/>"

KEY WORDS: MODIS, Terra, Aqua, Web-Downloading, WWW

1. INTRODUCTION

MODIS (or Moderate Resolution Imaging Spectroradiometer) is a key instrument aboard the Terra (EOS AM) and Aqua (EOS PM) satellites. Terra's orbit around the Earth is timed so that it passes from north to south across the equator in the morning, while Aqua passes south to north over the equator in the afternoon. Terra MODIS and Aqua MODIS are viewing the entire Earth's surface every 1 to 2 days, acquiring data in 36 spectral bands, or groups of wavelengths. These data will improve our understanding of global dynamics and processes occurring on the land, in the oceans, and in the lower atmosphere

Korea Aerospace Research Institute (KARI) has been receiving Terra and Aqua MODIS image data at Daejeon since July 2002. They are covering whole East Asia including the Korean Peninsula, Japan and The East China and monitoring ocean, atmosphere and land. By this time, over two thousand scenes have been archived including Terra and Aqua in the storage system and they occupied about over 10TB of disk space. In this study, KARI developed a system to distribute directly MODIS data of Terra and Aqua on WWW using following main functions: spectral subset (250m, 500m, 1000m channels) of Level 1B of HDF format, spatial subset by date, result display, ftp download and statistic viewer etc. Users using this system can download MODIS data on WWW with a few input parameters. This system is available via the Internet URL after October 2005 on the following, <http://webmodis.kari.re.kr/>.

2. SYSTEM STRUCTURE

2.1 MODIS Data Web Downloading System

The Web Downloading System of MODIS data is mainly composed of three part; MODIS database, data-pre-processing and web downloading system (Figure1). All users can access on WWW directly and user can find necessary MODIS data under the date of data on this site. If users want to download MODIS data, first must login after user register. Secondly, users directly can download MODIS data from Web Downloading server.

2.2 PRE-PROCESSING SOFTWARE

2.2.1 DATABASE SYSTEM (MS-SQL 2000)

Aqua and Terra PC produce 1 km resolution image after processing the Raw Data to the Level1A. And then register and restore pre-processing production and Level 1A data. This system registers all ancillary information in the data DB server to support MODIS data for user. We used Database system of MS-SQL 2000 server

2.2.2 DATA PRE-PROCESSING SOFTWARE

We used IDL Simplemap software for data Pre-processing. IDL Simplemap is software to produce the image of the band wanted from level1A HDF file. And also, IDL Simplemap source and RSI IDL virtual Macine 6.1 was modified to produce RGB image of 1km from raw data automatically and image format of RGB is restored of JPEG. This modified software also can produce the RGB image of more high resolution using 250m and 500m data

3. WEB SYSTEM DESIGN

Nowadays, broadband Internet access is available at everywhere: universities, public institutes, schools and homes. To make the most of Internet network resources, all the processing is packed on WWW through HTTP access. Graphical user interface is designed under the following policy.

- At the top page, left frame is composed of introduction about development of MODIS downloading system and next is list of seven images uploaded recently. The upper part of right frame displays recent publication MODIS image and the bottom is window to search directly MODIS data by spatial resolutions or date. MODIS data has three resolutions including 250m(2 channels), 500m(5 channels) and 1000m(29 channels) with georeference file. In figure 2 shown graphic user interfaces for downloading of MODIS data

- In the second page, display all MODIS image searched by date. If users want to download MODIS data, must login after user register. In here, user can see by activating menu whether logins or not. When user login, all data can be download MODIS data from Web Downloading server. In figure 3, show the Hierarchical MODIS data search

In here, User can see quick look image with ancillary data that is composed of sequent number, satellite name, process level, receiving latitude and longitude, image quality and received day etc. User will be received download files as like below

- YYYYMMDDHHMM_QKM.hdf: hdf format, 250m, 32-bit floating values in radiance
- YYYYMMDDHHMM_HKM.hdf: hdf format, 500m, 32-bit floating values in radiance
- YYYYMMDDHHMM_IKM.hdf: hdf format, 1km, 32-bit floating values radiance

If user requests emptied data, request message will be sent to administrator.

4. DATA DISTRIBUTION

This system will be opened on October 20, 2005 on the following address: <http://webmodis.krsc.re.kr>. System configuration hardware and software are as follows (Table 1).

Table 1. System configuration of the server

Web/Database Server	- HP ML350T04 X3200 - Intel Xeon 3.2GHz - 2GB Memory - 300GB SCSI HDD - Raid: AR301 6.4 TB
Software	- OS: Window 2003 Server - Httpd : Apache Web Server - Database : MS-SQL 2000 Server - developing langage: JAVA-JSP

5. CONCLUSIONS

In this study, KARI developed a system to distribute directly MODIS data of Terra and Aqua on WWW that has been receiving since July 2002. Users will be available on this system within the year on the following, <http://webmodis.kari.re.kr/>. And developed download system will be modified of more convenience system for user. Finally, we expect to increase applications of satellite data with easily access of remote sensing data like MODIS

6. REFERENCES

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